SOUTHERN NEVADA WATER AUTHORITY

AGENDA

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS

REGULAR MEETING
9:00 A.M. – NOVEMBER 21, 2013

BOARD CHAMBERS, SOUTHERN NEVADA WATER AUTHORITY
100 CITY PARKWAY, SEVENTH FLOOR, LAS VEGAS, NEVADA
(702) 258-3100

Board of Directors
Mary Beth Scow, Chair
Sam Bateman, Vice Chair
Susan Brager
Bob Coffin
Duncan McCoy
Steve Sisolak
Anita Wood

Patricia Mulroy, General Manager

The Southern Nevada Water Authority makes reasonable efforts to assist and accommodate persons with physical disabilities who desire to attend the meeting. For assistance, call Katie Horn at (702) 870-2011 at least 24 hours prior to the meeting.

THIS MEETING HAS BEEN PROPERLY NOTICED AND POSTED IN THE FOLLOWING LOCATIONS:

City of Boulder City, City Hall
401 California Street
Boulder City, Nevada

City of Henderson, City Hall
240 Water Street
Henderson, Nevada

City of North Las Vegas, City Hall
2250 Las Vegas Boulevard North
North Las Vegas, Nevada

City of Las Vegas, City Hall
495 South Main Street
Las Vegas, Nevada

Clark County Government Center
500 S. Grand Central Parkway
Las Vegas, Nevada

Clark County Water Reclamation District
5857 E. Flamingo Road
Las Vegas, Nevada

Southern Nevada Water Authority
100 City Parkway, Suite 700
Las Vegas, Nevada

Las Vegas Valley Water District
1001 S. Valley View Boulevard
Las Vegas, Nevada

All items on the agenda are for action by the Board of Directors, unless otherwise indicated. Items may be taken out of order. The board may combine two or more agenda items for consideration, and the board may remove an item from the agenda or delay discussions relating to an agenda item at any time.

CALL TO ORDER

COMMENTS BY THE GENERAL PUBLIC

NO ACTION MAY BE TAKEN: This is a period devoted to comments by the general public pertaining to items on this agenda. If you wish to speak to the Board about items within its jurisdiction, but not appearing on this agenda, you must wait until the "Comments by the General Public" period listed at the end of this agenda. Please limit your comments to three minutes or less and refrain from making comments that are repetitious, offensive, or amounting to personal attacks. No action may be taken upon a matter not listed on the posted agenda.

ITEM NO.

1. *For Possible Action:* Approve agenda with the inclusion of tabled and/or reconsidered items, emergency items and/or deletion of items, and approve the minutes of the regular meeting of September 26, 2013.

BUSINESS AGENDA

2. *For Possible Action:* Approve a proposal to settle Case No. A-08-564089-C (consolidated with Case No. A566640) involving a Water Smart Landscapes Rebate.

3. *For Possible Action:* Approve Change Order No. 19 to Contract No. 070F 01 C1, Lake Mead Intake No. 3 Shafts and Tunnel, to extend the final completion date by 399 calendar days.

4. *For Possible Action:* Select a firm for award of the Request for Proposal No. 643-13, Laboratory Information Management System, authorize the General Manager to execute an agreement and required amendments in substantial conformance with the terms and conditions of the Request for Proposal, or take other action as appropriate.

5. *For Possible Action:* Adopt a resolution authorizing the General Manager, or her designee, to purchase approximately 22 acres of real property held by the federal government.

6. *For Possible Action:* Approve and authorize the General Manager, or her designee, to execute two right-of-way grants offered by the Bureau of Land Management for the construction, operation, maintenance, and termination of an irrigation ditch and pipeline across federal land to the El Tejon Ranch in Spring Valley, Nevada, and to pay 30 years of rental to the federal government.

7. *For Possible Action:* Authorize the General Manager, or her designee, to negotiate and execute agreements for facilities and services necessary to host the WaterSmart Innovations Conference from 2014 through 2016.

8. *For Possible Action:* Receive a report on the Water Resource Plan and, if appropriate, adopt the current plan for another year.

9. *For Possible Action:* Adopt the 2013 Water Budget for the Authority.

10. *For Possible Action:* Adopt the Southern Nevada Water System Operating Plan.

11. *For Possible Action:* Accept the Authority's Comprehensive Annual Financial Report for the period ending June 30, 2013, as presented by the Authority's external auditors, Piercy Bowler Taylor & Kern, and authorize its submission to the Nevada Department of Taxation.

12. *For Information Only:* Receive an update from staff on water resources including, but not limited to, drought conditions in the Colorado River Basin, the results of the implementation of the Authority's Water Resource and Conservation Plans, activities on the Colorado River, the development of in-state water resources, and the status of the third intake project.

COMMENTS BY THE GENERAL PUBLIC

NO ACTION MAY BE TAKEN: At this time, the Board of Directors will hear general comments from the public on matters under the jurisdiction of the Southern Nevada Water Authority. Please limit your comments to three minutes or less and refrain from making comments that are repetitious, offensive, or amounting to personal attacks. No action may be taken upon a matter not listed on the posted agenda.

Visit our website at www.snwa.com/apps/agenda/snwa/index.cfml
for Southern Nevada Water Authority Agenda Postings and Approved Minutes

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
SPECIAL MEETING
SEPTEMBER 26, 2013
MINUTES

CALL TO ORDER	4:03 p.m., SNWA Board Chambers, Southern Nevada Water Authority 100 City Parkway, Seventh Floor, Las Vegas, Nevada
BOARD MEMBERS PRESENT	Mary Beth Scow, Chair Sam Bateman, Vice Chair Susan Brager Bob Coffin (via phone for items 1, 2-3, 10, 12) Duncan McCoy Steve Sisolak Anita Wood
BOARD MEMBERS ABSENT	None
STAFF PRESENT	Pat Mulroy, Greg Walch, John Entsminger, Ron Zegers, Phil Speight
OTHERS PRESENT	Guy Hobbs, members of the Integrated Resource Planning Advisory Committee

Unless otherwise indicated, all members present voted in the affirmative.

Items 10, 12 and 13 were taken out of order.

COMMENTS BY THE GENERAL PUBLIC

Danny Thompson, Integrated Resource Planning Advisory Committee member, spoke to item numbers 12 and 13, and discussed the process, noting the recommendations reflected the opinions of a diverse group of individuals, and supported the committee's recommendations for Board consideration.

Ed Uehling, Las Vegas, noted his concerns about the proposed rate increase and suggested alternatives to the increase including conservation and reduced water deliveries. He referenced a chart he provided to the Board, attached to these minutes, and suggested charging more for consumptive water uses.

Chairwoman Scow recognized those members of the Integrated Resource Planning Advisory Committee (IRPAC) in attendance today: Thalia Dondero, Bob Ferraro, Carol Jefferies, Otto Merida, Phil Ralston, John Restrepo, Danny Thompson, Tom Warden, Joe Woody, Gay Shoaff, Bobbi Miracle and facilitator Dave Ebersold.

1. Approval of Agenda & Minutes

FINAL ACTION: A motion was made by Director Sisolak to approve the agenda for this meeting and the minutes of the special meeting of July 18, 2013. The motion was approved with Director Wood abstaining on the minutes.

12. *For Information Only:* Receive a presentation on the recommendations report from the 2012-2013 Integrated Resource Planning Advisory Committee.

John Entsminger, Senior Deputy General Manager, recognized the efforts of the Integrated Resource Planning Advisory Committee (IRPAC) members and noted the significant amount of time that they put into the meetings, materials and process. He and Guy Hobbs, SNWA financial advisor, went through a presentation that outlined the committee process and recommendations, which is attached to these minutes.

Director Sisolak asked what was the projection of connection charges moving forward. Mr. Hobbs noted that the 2013 actuals came in around $19 million, and FY 2014 was budgeted to be approximately $16 million. He clarified the committee's recommendation to use connection charge revenues in excess of $16.1 million to pay down existing debt and offset new capital.

Director Sisolak asked if the committee considered a fire line connection charge. Mr. Entsminger noted that the committee only evaluated the existing rates and fees associated with fire lines, not a new connection charge. He requested the committee explore a connection charge for fire line meters be discussed at a future IRPAC meeting.

Director Sisolak asked how the SNWA budgets for operations and maintenance of the regional water system. He noted his concerns about not setting aside enough funding to cover future repairs. Ms. Mulroy suggested having the committee review an asset management plan that takes into account the life of the SNWA's assets and anticipated costs. Mr. Hobbs clarified that the purpose of the proposed rate increase is to fund existing debt and does not account for new or unanticipated costs.

Staff answered questions from Board members, clarifying some of the IRPAC's recommendations and the purpose of the Infrastructure Charge. Director McCoy noted the committee members' time and effort put into the process.

NO ACTION NECESSARY.

13. *For Possible Action:* **Conduct a Public Hearing and subsequently adopt an increase to the Authority's Commodity Charge and Infrastructure Charge, authorize a temporary reduction in the annual rates for calendar years 2014-2016 in accordance with the Integrated Resource Planning Advisory Committee's rate proposal, and adopt the committee's Recommendations Report.**

Chairwoman Scow opened the Public Hearing:

John Restrepo; RCG Economics, Technical Review Committee member, IRPAC member, and North Las Vegas Chamber representative; reiterated the intention of the increase was to fund existing debt. He also noted the increase provided reliable funding and sent a message to capital markets and the business community that Southern Nevada has a reliable water system.

Paul Moradkhan, Las Vegas Metro Chamber of Commerce, expressed the Chamber's support for the community-based approach to developing the funding recommendations. He underscored the importance of the water infrastructure built and under construction for the community's use.

Ed Uehling, Las Vegas, expressed concern about the amount of money the rate increase would raise, varying water rates among customer groups, and suggested a flat fee for the first 20,000 gallons of water used.

Chairwoman Scow closed the Public Hearing. Directors Wood and Sisolak recognized the committee and the amount of work that was spent preparing for the meetings. Chairwoman Scow noted the work needed for the future.

FINAL ACTION: A motion was made by Director Sisolak to follow staff's recommendations. The motion was approved.

10. *For Possible Action:* **Receive an update regarding the September 5, 2013, determination of emergency for modifying Lake Mead Intake No. 1 to contend with projected low lake levels, and ratify Change Order No. 12 to Contract No. 070F 02 C2, Intake No. 3 – Connector Tunnel, for the amount of $12,200,000 and an extension of the contract time by 453 calendar days.**

Pat Mulroy, General Manager, gave a brief history of Intake No. 3's construction timeline, which is attached to these minutes. She noted that the Bureau of Reclamation's declaration of reduced flows from Lake Powell to Lake Mead intensified Lake Mead's rate of decline and made the loss of Intake Pumping Station No. 1 a potential reality. As a result, a new connection from the Connector Tunnel to Intake Pumping Station No. 1 guarantees that Intake Pumping Station No. 1 would pump down to elevation 1,050 feet. Director Sisolak confirmed that no money would be borrowed to execute the change order.

FINAL ACTION: A motion was made by Director Brager to follow staff's recommendations. The motion was approved.

CONSENT AGENDA

2. *For Possible Action:* **Approve Amendment No. 1 to the existing agreement between the Clark County Water Reclamation District and the Authority to conduct native plant revegetation on Clark County Water Reclamation District property.**

3. *For Possible Action:* **Approve and authorize the General Manager to sign an Easement Agreement between the Moapa Valley Water District and the Authority for water conveyance facilities on Twin Springs, located within the Authority's Warm Springs Natural Area, and authorize the General Manager or her designee to sign amendments or ministerial documents necessary to grant the easement.**

FINAL ACTION: A motion was made by Director Brager to follow staff's recommendations. The motion was approved.

BUSINESS AGENDA

4. ***For Possible Action:*** **Approve a funding contribution agreement between the Nevada Division of Water Resources and the Authority for surface and groundwater data collection services within Nevada to be performed by the U.S. Geological Survey for an amount not to exceed $206,875.**

FINAL ACTION: A motion was made by Vice Chair Bateman to follow staff's recommendation. The motion was approved.

5. ***For Possible Action:*** **Approve a joint funding agreement between the U.S. Geological Survey and the Authority for hydrologic data collection in western Utah in support of the Clark, Lincoln and White Pine Counties Groundwater Development Project for an amount not to exceed $36,360.**

FINAL ACTION: A motion was made by Director McCoy to follow staff's recommendation. The motion was approved.

6. ***For Possible Action:*** **Approve a joint funding agreement between the U.S. Geological Survey and the Authority for hydrologic data collection for an amount not to exceed $232,600.**

FINAL ACTION: A motion was made by Director Brager to follow staff's recommendation. The motion was approved.

7. ***For Possible Action:*** **Approve an agreement between Hazen and Sawyer, P.C., and the Authority for a WateReuse Research Foundation awarded project on alternative treatment technologies for controlling trace organic contaminants in potable water reused indirectly, and accept funds up to the amount of $99,787 for this research work.**

Deputy General Manager Ron Zegers answered a Board question, noting that Hazen and Sawyer, P.C. is a consultant. Director Sisolak asked whether local students were utilized to conduct this research. Mr. Zegers noted that UNLV students have been used to conduct these types of research projects.

FINAL ACTION: A motion was made by Director Wood to follow staff's recommendations. The motion was approved.

8. ***For Possible Action:*** **Approve an agreement between the Colorado School of Mines and the Authority for a National Science Foundation awarded project on water quality and supply impacts from climate-induced insect tree mortality, and accept funds in the amount of $29,846 for this research work.**

FINAL ACTION: A motion was made by Director Brager to follow staff's recommendations. The motion was approved.

9. ***For Possible Action:*** **Ratify the approval of the assistance agreement between the Bureau of Reclamation and the Authority to accept a grant in an amount not to exceed $149,961 to research and evaluate the impacts of climate change on water quality in Lake Mead, and authorize the General Manager to approve future modifications only if the future modifications do not fiscally impact the Authority.**

FINAL ACTION: A motion was made by Director Wood to follow staff's recommendations. The motion was approved.

11. ***For Possible Action:*** **Ratify General Counsel's intervention in Federal Energy Regulatory Commission Docket EC-13-128 and Public Utility Commission Docket 13-07021 involving the proposed acquisition of NV Energy by MidAmerican Energy Holdings Company.**

Commissioner Sisolak asked if external counsel was required. Greg Walch, General Counsel, noted that the SNWA would utilize an existing agreement with outside attorneys to provide the specialized legal work. Director Sisolak asked for the costs related to outside counsel, which Mr. Walch said he would provide.

FINAL ACTION: A motion was made by Vice Chair Bateman to follow staff's recommendation. The motion was approved.

14. ***For Information Only:*** **Receive an update from staff on water resources including, but not limited to, drought conditions in the Colorado River Basin, the results of the implementation of the Authority's Water Resource and Conservation Plans, activities on the Colorado River, the development of in-state water resources, and the status of the third intake project.**

Mr. Entsminger gave a presentation to the Board about ongoing hydrology conditions and Lake Mead Intake No. 3. A copy of the presentation is attached to these minutes.

NO ACTION NECESSARY.

Public Comment
Ed Uehling, Las Vegas, asked the Board to monitor SNWA spending and debt issuance.

(Name not given) A Henderson resident asked questions related to perchlorate within Southern Nevada's drinking water. Mr. Zegers answered his questions.

Mr. Ruth, Las Vegas, asked when the SNWA would discover the groundwater aquifer under Lake Mead, and wanted to get in touch with staff regarding his applications for groundwater.

Adjournment
There being no further business to come before the board, the meeting adjourned at 5:57 p.m.

APPROVED:

Mary Beth Scow, Chair

Patricia Mulroy, General Manager

Copies of all original agenda items and minutes, including all attachments, are on file in the General Manager's office at the Las Vegas Valley Water District, 1001 South Valley View Boulevard, Las Vegas, Nevada.

SOUTHERN NEVADA WATER AUTHORITY

Integrated Resource Planning Advisory Committee

Funding Recommendations

Background

Since its formation in 1991, the Southern Nevada Water Authority (SNWA) has actively engaged the public in its decision making processes through integrated resource planning.

IWPAC, 2004

Integrated Resource Planning

Integrated resource planning processes are a comprehensive form of planning that helps tie all of the individual elements of water resource planning together.

Successful integrated resource planning includes:

- **Consideration of supplies and demands**
- **Consideration of risk and reliability**
- **Consideration of environmental impacts, financing and cost-effectiveness**
- **Extensive public participation**

Citizen Advisory Committees

The SNWA often utilizes citizen advisory committees to influence policy decisions and program directives:

- **Integrated Resource Plan Advisory Committee (1994-96)**
- **Advisory Committee for Groundwater Management (1997-present)**
- **Water Quality Citizens Advisory Committee (1997-98)**
- **Las Vegas Wash Coordination Committee (1998-present)**
- **Drought Citizens Advisory Committee (2003)**
- **Integrated Water Planning Advisory Committee (2004-05)**
- Integrated Resource Planning Advisory Committee (2012-2014)

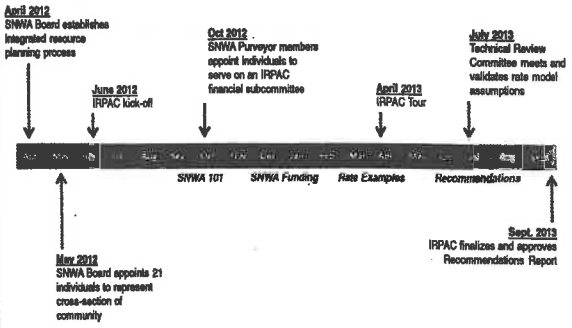
Citizen Advisory Committees

In April 2012, the SNWA Board again convened an advisory committee to develop recommendations that address the challenges faced by Southern Nevada's water utility managers:

Phase I
- **Review the previous rate increase**
- **Make recommendations to address future funding requirements**

Phase II
- **Long-term facility planning**
- **Water resource development and management**
- **Facility construction and maintenance**
- **Conservation**
- **Water Quality**

TIMELINE



TIMELINE

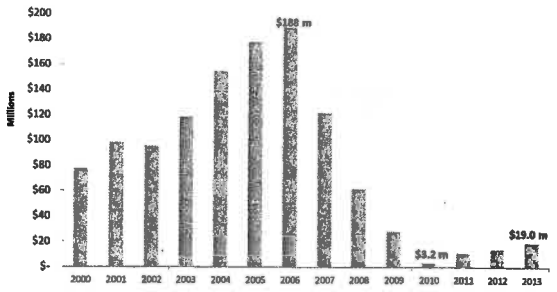
May 2012
SNWA Board appoints 21 individuals to represent cross-section of community

Advisory Committee

Tom Burns	Las Vegas Chamber
Yvanna Cancela	Labor
Kirk Clausen	Financial Industry
Thalia Dondero	Southern Nevada Residents
Bob Ferraro	Senior Citizens
Mike Forman	Homeowners Associations
Garry Goett	Golf Courses
Joyce Haldeman	Education
Warren Hardy	General Contractors
Katherine Jacobi	Restaurants
Carol Jefferies	Southern Nevada Residents
Bob Kasner	Henderson Chamber
Jennifer Lewis	Development
Otto Merida	Latin Chamber of Commerce
Bobbi Miracle	Real Estate
Phil Ralston	Industrial/Commercial Business
John Restrepo	North Las Vegas Chamber
Scot Rutledge	Environmental
David Scherer	Small Industrial/Commercial Business
Danny Thompson	Building Trades
Virginia Valentine	Hospitality/Gaming

SNWA Funding Challenges

SNWA Connection Charge Revenues



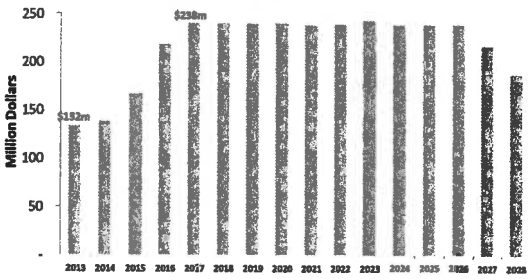
SNWA Response

To minimize impacts to ratepayers during the depressed economy, the SNWA took the following actions:

- **Refinanced bonds**
- **Deferred $400 million of capital projects**
- **Reduced workforce expenditures**
  - **SNWA's personnel budget decreased by 5.5 percent over the past four years**
- **Relied upon reserves to meet bond payments**

SNWA Funding Challenges

SNWA Annual Debt Service Obligations



*Debt attributed to New Expansion Debt Service Fund only

TIMELINE

June 2012
IRPAC kick-off

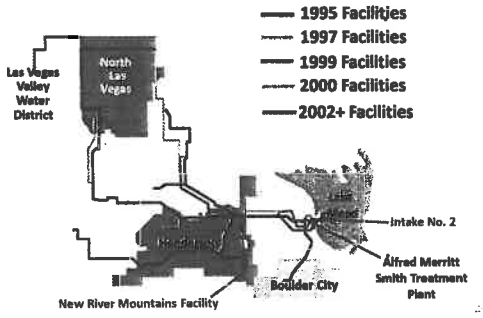
Committee Meetings

- All committee work conducted in public meetings
- Agendas were publicly noticed and posted
- All committee materials are available on SNWA.com for review, including audio recordings
- Information about committee activities shared in SNWA's Twitter account
- Recommendations were drafted by the committee at its public meetings

TIMELINE

SNWA 101

The SNWA has built more than $2.5 billion in critical water infrastructure.



TIMELINE

Oct 2012
SNWA Purveyor members appoint individuals to serve on an IRPAC financial subcommittee

SNWA 101

Financial Subcommittee

Las Vegas Valley Water District Ratepayer Representatives
Brian McAnallen, Business
Jarmilla-McMillan Arnold, Residents
Terry Murphy, Business
Tom Warden, Business
Joe Woody, Gaming

North Las Vegas Ratepayer Representatives
Jay King, Residents
Gay Shoaff, Residents

TIMELINE

SNWA Funding

SNWA Funding Topics

- The water utility industry is very capital intensive.
- The SNWA has built more than $2.5 billion in critical regional water infrastructure.
- Issuing bonds is an essential part of the SNWA's financial planning; helps fund infrastructure that has a long life.
- For more than a decade, new residents funded the majority of new capital projects.

TIMELINE

Rate Examples

Rate Attributes

- Committee identified rate attributes that were important within any rate structure
- First scenarios considered included an increase only on the Commodity Charge, increase only on the Infrastructure Charge or an equal increase to both

Rate Attributes

- Legal
- Sufficient / adequate
- Financeable
- Equitable and fair
- Stable
- Maintains stability
- Encourage conservation
- Simple to administer
- Predictable
- Understandable

Rate Examples

- Committee went on to consider more than 16 rate scenarios
- Scenarios were committee-suggested, such as fireline meter rates increasing with inflation

TIMELINE

July 2013
Technical Review Committee meets and validates rate model assumptions

Technical Review Committee

- Appointed by the SNWA Board in June
- Reviewed and validated the assumptions made within the rate model used by IRPAC
- Met qualifications set by the SNWA Board – experienced in public or private finance, utility ratemaking

Technical Review Committee

Mike Alastuey, Economist

Marcus Conklin, Economist

Paula Eylar-Lauzon, Business Finance

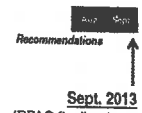
Bob Kasner, Public Finance, Utility ratemaking

John Restrepo, Economist

Technical Review Committee - Modifications

- Use a tapered sales tax projection
- Use more positive interest earnings
- Tie projected capitalized labor expenses to approved capital projects within the SNWA's Major Construction and Capital Plan

TIMELINE



Sept. 2013
IRPAC finalized and approved Recommendations Report

Committee Recommendations

Committee Recommendations

1. Develop rates through a transparent and inclusive community process.
2. Retain the existing rates and charges previously adopted by the SNWA Board and its purveyor members, formalizing the fire line meter charge at 17.5 percent of the current Infrastructure Charge.
3. Cap the Infrastructure Charge on fire line meters at the 2013 dollar amounts.
4. Increase the Commodity Charge $.18 per 1,000 gallons (from $.30 to $.48) to meet 50 percent of annual revenue requirements in the target year 2017 and increase the Infrastructure Charge to meet the other half of annual revenue requirements.

Committee Recommendations

5. Temporarily reduce the maximum rate in 2014, 2015 and 2016 to provide the community time to adjust to the new rates.
6. Separate money added to the New Expansion Debt Service fund and related interest attributed to the 2014 and 2015 phased-in rates from the remainder of the fund balance and use it to only offset forecasted operating deficits in 2016 to 2021 and not for any other purposes.

Committee Recommendations

7. Allocate Connection Charge revenues in excess of the 2014 base year ($16.1 million) exclusively to pay the following, in order of priority:
   - Early payment or pre-refunding of existing debt or one-time capital expenditures, whichever is most financially efficient, and
   - Water rate reductions.

Committee Recommendations

8. If funds in excess of the target fund balance remain in the New Expansion Debt Service fund (not including phased-in rate revenue), use the excess fund balance only for any of the following purposes:
   - To redeem outstanding bonds (thereby reducing outstanding debt and future debt service requirements) or to acquire capital assets that would otherwise need to be funded with borrowed money (thus avoiding additional debt and debt service), whichever is most financially efficient;
   - To moderate further the impact of future rate increases; or
   - To reduce water rates.

Committee Recommendations

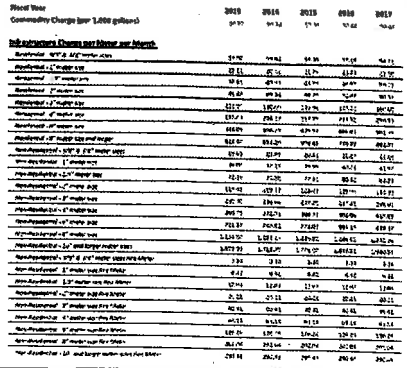
9. Encourage the Las Vegas Valley Water District and the cities of Henderson and North Las Vegas to assess the rates and charges approved by the SNWA Board.

Proposed Increases to Existing Rates

	2014	2015	2016	2017
Commodity Charge Increase (per 1,000 gallons)	$0.04	$0.08	$0.14	$0.18
Infrastructure Charge Increase*	$0.64	$1.36	$2.18	$3.11

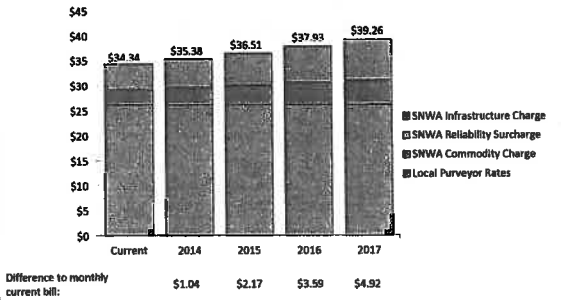
* Rates based on changes to a Residential Customer with a 5/8-inch or 3/4-inch meter

Proposed Rate Increases



Rate Impacts

5/8-inch and 3/4-inch meters, Residential Customer, 10,000 gallon use



Difference to monthly current bill:	$1.04	$2.17	$3.59	$4.92

Customer Examples

Customer		2013	2014	2015	2016	2017
SINGLE FAMILY RESIDENTIAL	Median of middle 80% - 5/8"	$34.34	$35.38	$36.51	$37.93	$39.26
SINGLE FAMILY RESIDENTIAL	Median of top 10% - 5/8"	$107.47	$109.23	$111.07	$113.58	$115.63
SINGLE FAMILY RESIDENTIAL	Median of middle 80% - 1"	$122.36	$125.97	$128.75	$132.40	$135.57
SINGLE FAMILY RESIDENTIAL	Median of top 10% - 1"	$488.77	$492.63	$496.65	$507.18	$513.59
SINGLE FAMILY RESIDENTIAL	Median of middle 80% - 1.5"	$305.93	$311.88	$318.13	$326.54	$333.59
SINGLE FAMILY RESIDENTIAL	Median of top 10% - 1.5"	$937.05	$949.22	$961.69	$979.42	$992.68
MULTI FAMILY RESIDENTIAL	Median of middle 80%	$47.94	$49.14	$50.42	$52.08	$53.57
MULTI FAMILY RESIDENTIAL	Median of top 10%	$322.72	$326.25	$329.86	$335.01	$338.82
GOLF COURSE		$114,348.64	$115,798.79	$117,142.36	$119,225.36	$120,644.79
SCHOOL		$11,485.53	$11,636.04	$11,789.60	$12,010.08	$12,171.58
MALL		$25,364.60	$25,635.11	$25,908.50	$26,309.17	$26,590.24
CAR WASH		$1,392.69	$1,412.69	$1,433.16	$1,462.30	$1,484.05
RELIGIOUS		$652.83	$657.94	$663.53	$670.35	$677.22
NON PROFIT		$1,733.20	$1,755.91	$1,780.06	$1,811.57	$1,839.56
COMMERCIAL LAUNDRY		$66,142.34	$66,967.26	$67,800.54	$68,023.28	$69,878.51
HOA / COMMON AREA		$5,214.27	$5,267.68	$5,321.57	$5,400.83	$5,456.00
DAYCARE		$412.29	$419.34	$426.70	$436.76	$444.91
HOSPITAL (NEW)		$11,968.44	$12,118.82	$12,271.56	$12,489.68	$12,651.38
HOSPITAL (OLD)		$20,340.25	$20,609.86	$20,885.72	$21,279.27	$21,571.40
STORAGE FACILITY		$903.57	$907.60	$911.79	$917.55	$922.16
HIGH-RISE CONDOS		$8,618.32	$8,757.30	$8,907.40	$9,096.35	$9,275.75
HIGH-RISE CONDOS - Downtown		$4,206.23	$4,221.75	$4,239.19	$4,259.07	$4,281.63
STANDALONE RESTAURANT - LARGE		$1,946.79	$1,967.89	$1,989.47	$2,020.27	$2,043.13
STANDALONE RESTAURANT - SMALL		$381.01	$387.70	$394.69	$404.20	$411.98

Customer Examples

Customer	2013	2014	2015	2016	2017
PUBLIC BUILDING	$8,550.32	$8,675.82	$8,806.49	$8,985.75	$9,129.91
CASINO - LARGE	$158,369.01	$159,927.65	$161,492.86	$163,819.71	$165,400.30
CASINO - DOWNTOWN	$11,748.15	$11,903.44	$12,063.52	$12,287.94	$12,460.82
CASINO - LOCALS	$36,880.28	$37,298.82	$37,720.40	$38,342.90	$38,772.42
MUNICIPAL PARK	$14,215.42	$14,407.12	$14,602.73	$14,883.45	$15,089.28
COMMERCIAL - STANDALONE	$345.29	$348.74	$352.50	$357.14	$361.68
COMMERCIAL PARK	$6,796.28	$6,862.85	$6,930.55	$7,028.44	$7,099.09
MOBILE HOME PARK - (300 Spaces)	$2,982.57	$3,059.47	$3,137.89	$3,250.59	$3,332.99
LARGE WAREHOUSE	$3,244.11	$3,282.86	$3,322.56	$3,379.05	$3,421.21
OFFICE PARK	$1,490.99	$1,503.17	$1,515.66	$1,533.40	$1,546.68
SMALL INDUSTRIAL	$383.74	$385.24	$386.90	$388.88	$390.92
HIGH RISE OFFICE TOWER	$15,530.06	$15,722.44	$15,918.88	$16,200.36	$16,407.47

Next Steps

- Utilize additional funding to meet debt obligations.
- Maintain reserves.
- Utilize revenue earned above projections as recommended by IRPAC members.

Rate Review Process 2013-2014

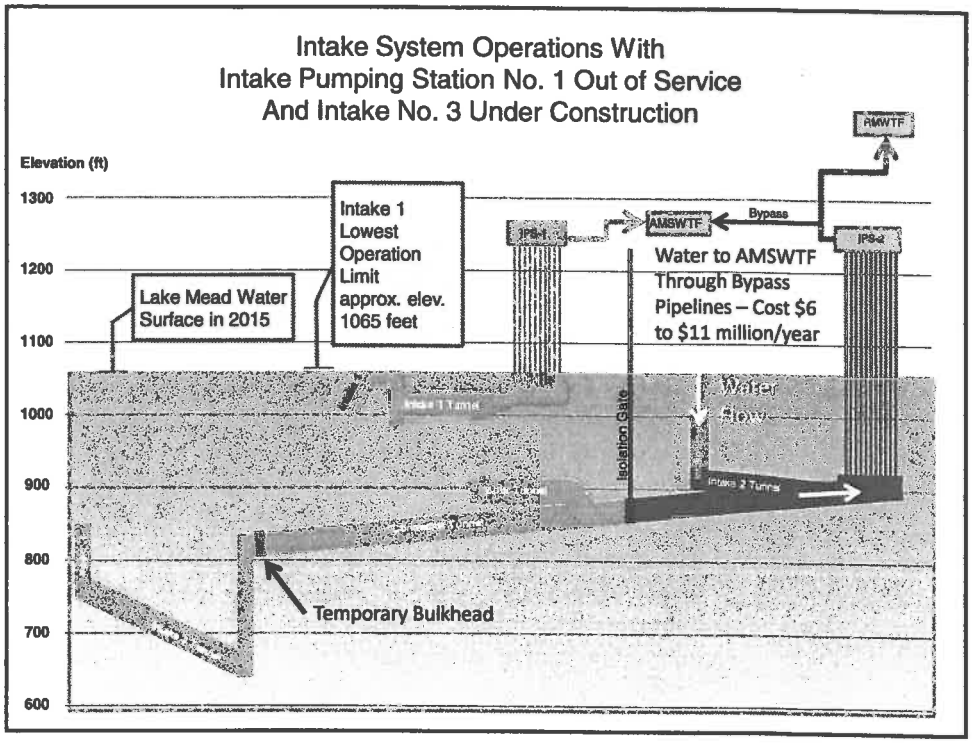
IRPAC Phase II Tentative Schedule

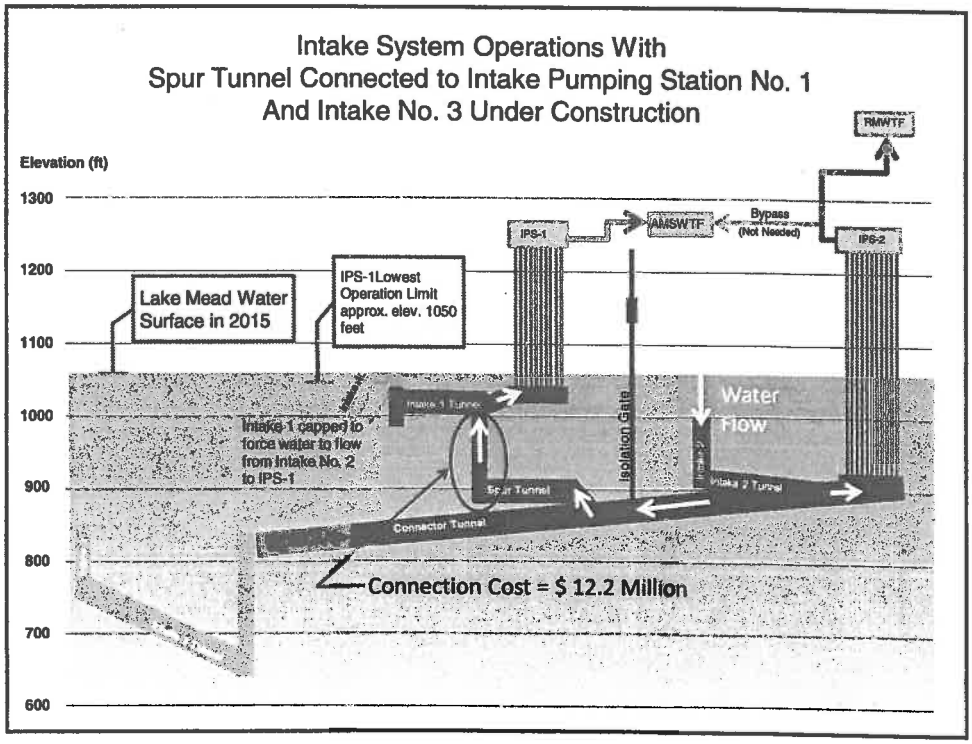
JANUARY: SNWA Board appoints individuals to fill vacancies

FEBRUARY: IRPAC reconvenes for Phase II, meetings begin
- Hydrology and drought
- Climate Change
- Facilities
- Resources
- Water Quality
- Funding

DECEMBER: Phase II Recommendations considered by SNWA Board

SOUTHERN NEVADA WATER AUTHORITY


Intake System Operations With
Intake Pumping Station No. 1 Out of Service
And Intake No. 3 Under Construction
Elevation (ft)
1300
1200
1100
1000
900
800
700
600
RMWTF
AMSWTF
Bypass
IPS-1
IPS-2
Intake 1 Lowest Operation Limit approx. elev. 1065 feet
Lake Mead Water Surface in 2015
Water to AMSWTF Through Bypass Pipelines – Cost $6 to $11 million/year
Intake 1 Tunnel
Isolation Gate
Water Flow
Intake 2 Tunnel
Temporary Bulkhead

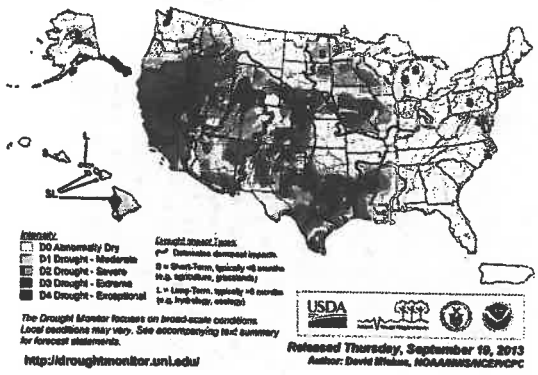

Intake System Operations With
Spur Tunnel Connected to Intake Pumping Station No. 1
And Intake No. 3 Under Construction
Elevation (ft)
1300
1200
1100
1000
900
800
700
600
RMWTF
AMSWTF
Bypass
(Not Needed)
IPS-1
IPS-2
IPS-1Lowest Operation Limit approx. elev. 1050 feet
Lake Mead Water Surface in 2015
Intake 1 Tunnel
Intake 1 capped to force water to flow from Intake No. 2 to IPS-1
Isolation Gate
Water Flow
Spur Tunnel
Intake 2 Tunnel
Connector Tunnel
Connection Cost = $ 12.2 Million

SOUTHERN NEVADA WATER AUTHORITY

Update on Drought Conditions and Water Use

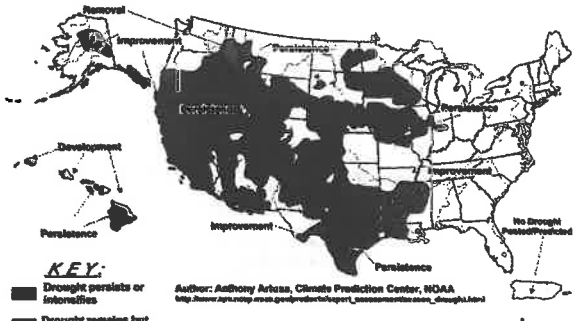
September 26, 2013

Drought Monitor



Seasonal Drought Outlook

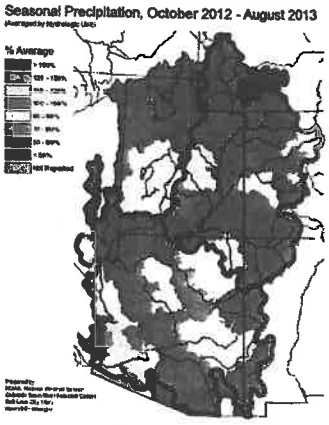
(Valid September – December, 2013)



Source: National Oceanic Atmospheric Administration and the U.S. Department of Commerce

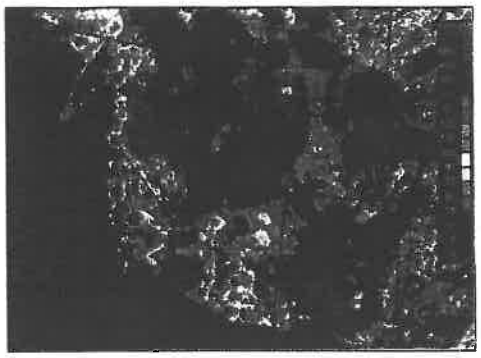
Colorado River Basin Conditions

- **July inflow to Lake Powell:** 13% of average
- **August inflow to Lake Powell:** 55% of average
- **Water Year 2013 Precipitation:** 90% of average
- **Forecasted Water Year 2013 Inflow to Lake Powell:** 46% of average



Precipitation (September 1- 18, 2013)

Percent of Normal Precipitation



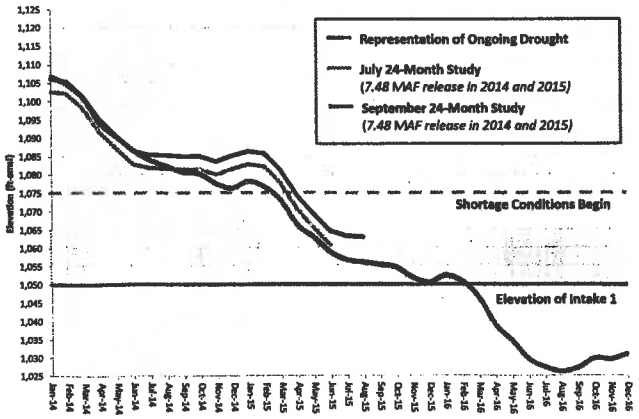
Source: Colorado Basin River Forecast Center

Precipitation and Inflow Forecast – Lake Powell

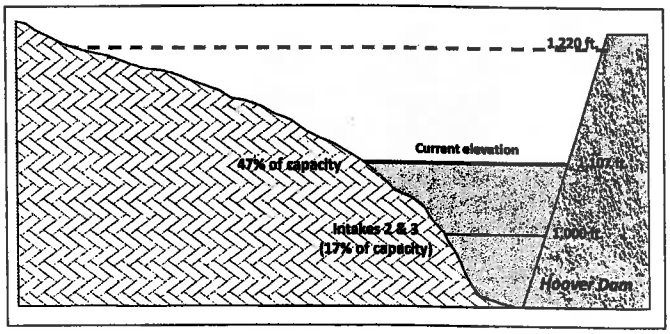
Month	2012 Water Year Actual Precipitation	2012 Water Year Inflows Forecast	2013 Water Year Actual Precipitation	2013 Water Year Inflows Forecast
Jan	75%	79%	72%	61%
Feb	84%	78%	78%	54%
Mar	86%	80%	76%	49%
Apr	78%	63%	78%	42%
May	74%	51%	80%	45%
Jun	71%	47%	77%	44%
Jul	71%	46%	80%	41%
Aug	74%	48%	81%	40%
Sept	74%	46%	80%	46%
Actual	74%	45%		

Source: Bureau of Reclamation, Lower Colorado Water Supply Reports

Lake Mead Elevation Projections

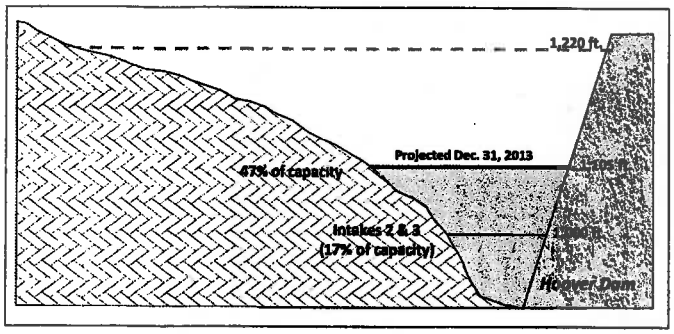


Lake Mead Capacity - Current

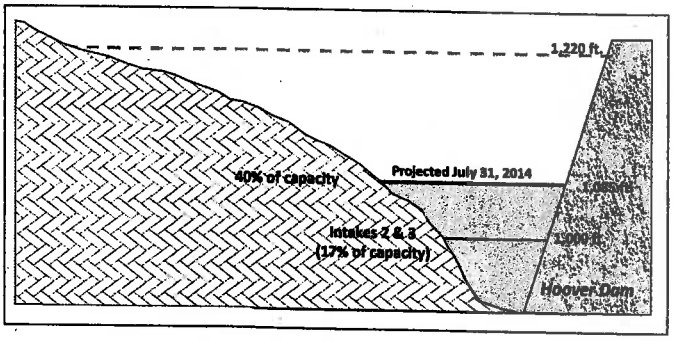


Lake Mead Capacity – Projected (12/31/13)

July and August Precipitation Increased Forecast ~ 4 feet

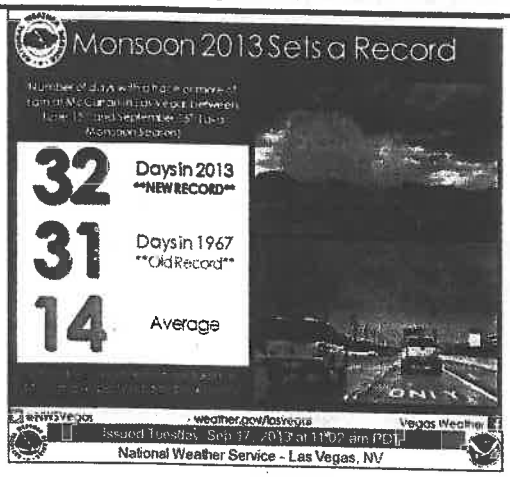


Lake Mead Capacity – Projected (7/31/14)

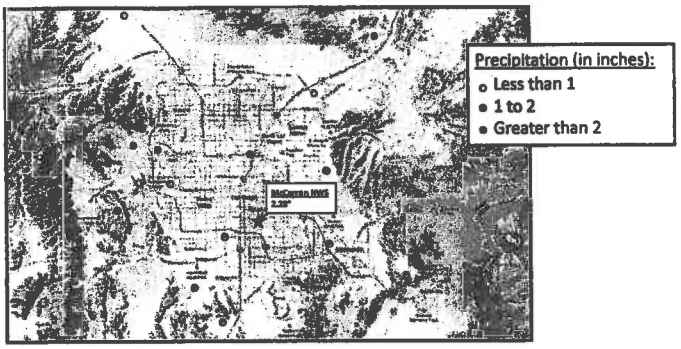


SNWA Water Use

Record Monsoon 2013

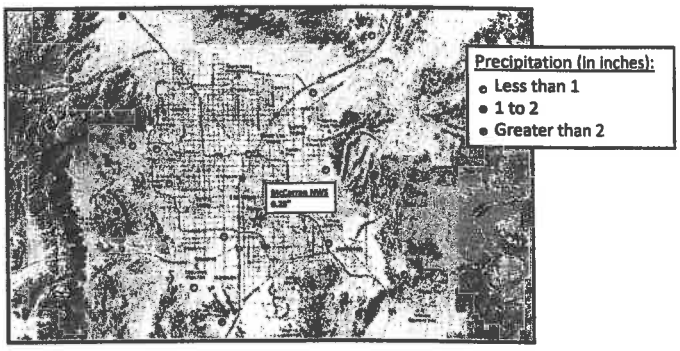


Precipitation (August 2012)



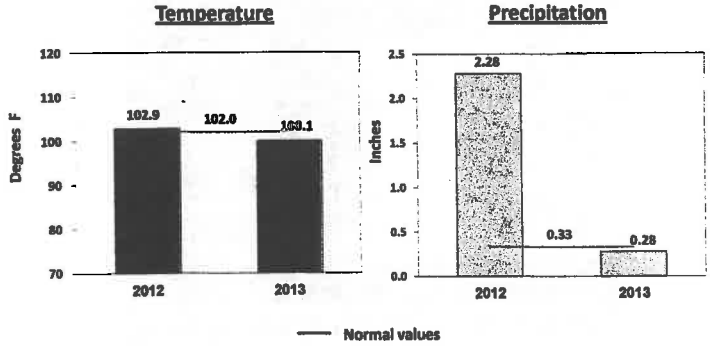
Source: Clark County Regional Flood Control District, National Weather Service

Precipitation (August 2013)

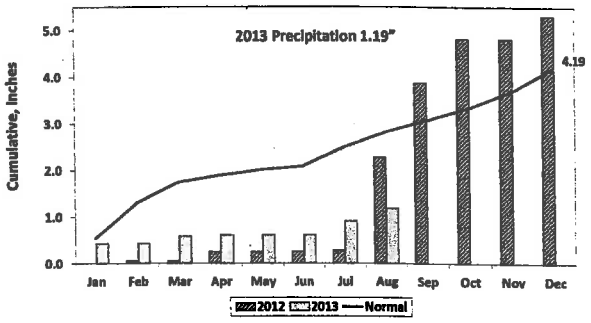


Source: Clark County Regional Flood Control District, National Weather Service

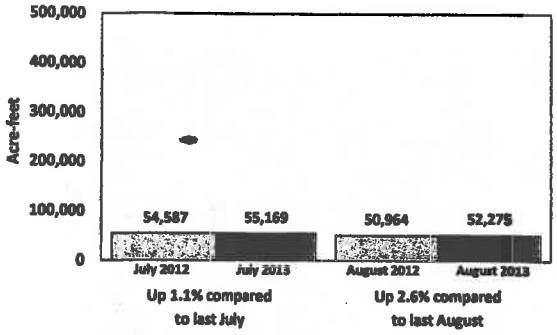
Weather Comparison (August)



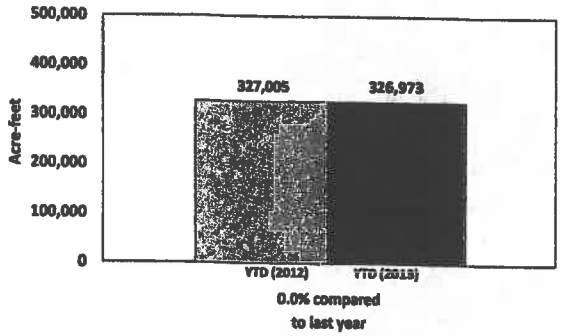
Annual Precipitation

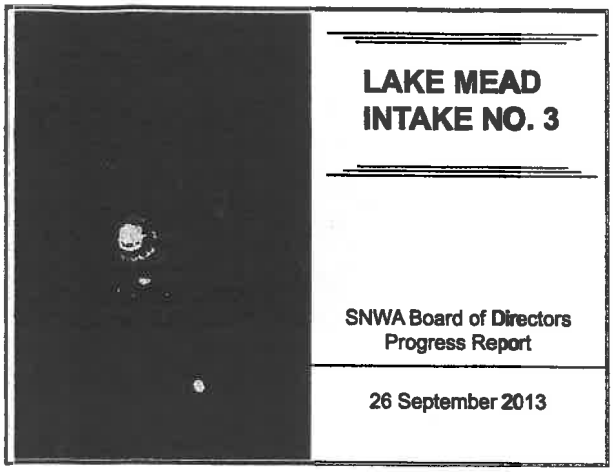


SNWA Total Water Use – July and August



SNWA Total Water Use – Year-to-Date 2013

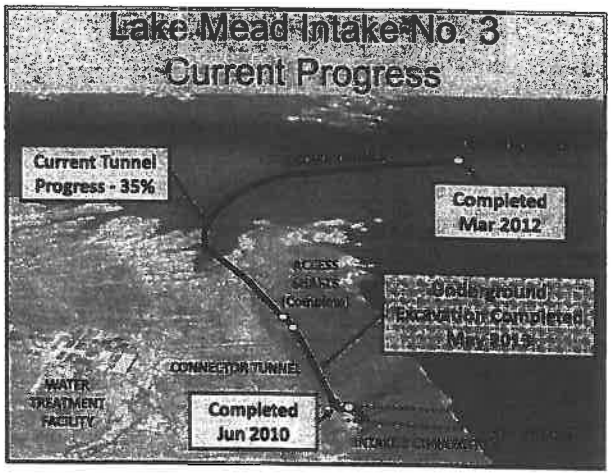




LAKE MEAD INTAKE NO. 3

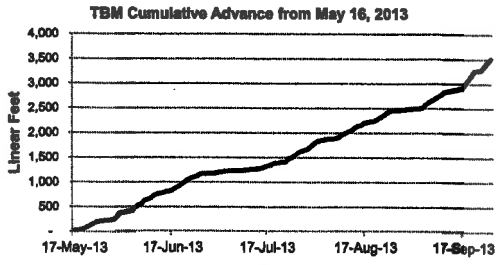
SNWA Board of Directors
Progress Report

26 September 2013



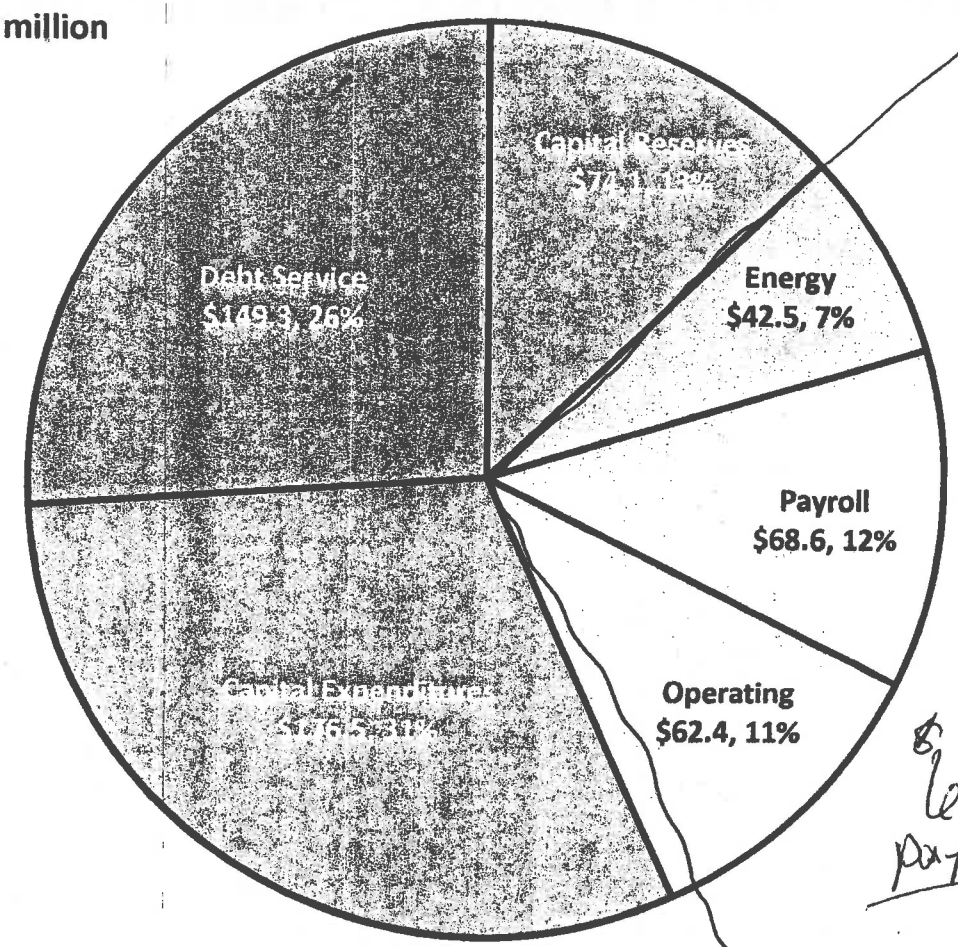
Current Tunnel Boring Status

- The TBM has averaged 27 feet/day since May
- 433 feet excavated the week of September 16



SNWA Uses of Funds – FY 2013

Total Uses: $573.4 million



Capital expenses

Operating expenses
30% of 570 M
= 171 M
$68 M = nearly 40%
Payroll

*Amounts in millions

APPENDIX F

IRPAC Customer Sample Set

CUSTOMER	Monthly Water Use (in 1,000 gallons)
Single Family Residential: 5/8" meter	Median: 10 High: 28
Single Family Residential: 1" meter	Median: 35 High: 116
Single Family Residential: 1 ½" meter	Median: 88 High: 243
Multi-Family Residential: 5/8" meter	Median: 14 High: 72
Mobile Home Park (Boulder Cascades)	1,616
Residential High Rise (Queensridge)	1,241
Downtown Residential High-Rise (Ogden)	1,263
Commercial High Rise (Wells Fargo Tower)	3,899
Commercial Stand-alone (Cragin & Pike)	25
Commercial Office Park (Desert Canyon)	238
Government Building (CC Justice Center)	2,057
Standalone Restaurant (Lawry's)	420
Standalone Fast Food (Cane's)	104
Golf Course (Southern Highlands)	32,799
Municipal Park (All-American)	3,915
Large Strip Property (Bellagio)	36,833
Downtown Hotel and Casino (El Cortez)	2,841
Locals Hotel and Casino (Suncoast)	9,617
High School (Palo Verde HS)	3,080
Retail Complex – Mall (Fashion Show)	6,030

NOTE: THIS IS NOT THE IRPAC CUSTOMER SAMPLE SET
THIS IS THE SNWA SET DOCTORED FOR SEPTEMBER 26 MEETING;
THE IRPAC SET IS ATTACHED SHOWING COST VARIATIONS/AC-FT

Customer Type Comparisons

Customer Type	Typical Monthly Consumption (in 1,000 gallons)	Monthly Bill	Cost Per 1,000 Gallons	Cost per $1,000 Gallons w/o Firelines
NON-RESIDENTIAL SAMPLES, *Continued*				
Municipal Park	3,915	$14,216	$4.32	n/a
Large Strip Property	36,833	$158,369	$4.30	$4.27
Downtown Hotel and Casino	2,841	$11,748	$4.14	$3.85
Locals Hotel and Casino	9,617	$36,880	$3.83	$3.76
High School	3,080	$11,487	$3.73	$3.52
Retail Complex – Mall	6,030	$25,365	$4.21	$4.11
Large Retail	1,405	$6,796	$4.84	$4.38
Car Wash	393	$1,393	$3.55	n/a
Religious	30	$653	$21.76	$6.42
Non-profit	269	$1,733	$6.42	$4.47
Commercial Laundry	18,488	$66,142	$3.58	$3.54
Large Industrial	762	$3,244	$4.26	$3.65
Small Industrial	7	$384	$54.82	$8.79
Self-Storage Facility	68	$904	$13.49	$3.87
HOA Common Area	1,208	$5,214	$4.32	n/a
Hospital – Older	5,364	$20,340	$3.79	$3.67
Hospital – Newer	2,981	$11,970	$4.01	$3.71
Day Care	113	$412	$3.65	n/a

Complete Chart

Customer Type Comparisons

Customer Type	Typical Monthly Consumption (in 1,000 gallons)	Monthly Bill	Cost Per 1,000 Gallons	Cost per $1,000 Gallons w/o Firelines
RESIDENTIAL SAMPLES				
Single Family Residential: 5/8" meter	Median: 10 High: 28	Median: $34 High: $107	$3.43 $3.79	n/a
Single Family Residential: 1" meter	Median: 35 High: 116	Median: $123 High: $487	$3.53 $4.20	n/a
Single Family Residential: 1 ½" meter	Median: 88 High: 243	$306 $937	$3.48 $3.86	n/a
Multi-Family Residential: 5/8" meter	Median: 14 High: 72	$49 $322	$3.36 $4.49	n/a
Mobile Home Park	1,616	$2,983	$1.77	n/a
Residential High Rise	1,241	$8,618	$6.94	$3.91
Residential High-Rise (Downtown)	1,263	$4,586	$3.63	$3.31
NON-RESIDENTIAL SAMPLES				
Commercial High Rise	3,899	$15,530	$3.98	$3.93
Commercial Stand-alone	25	$346	$13.81	$5.66
Commercial Office Park	238	$1,491	$6.26	$3.56
Government Building	2,057	$8,551	$4.16	$3.62
Standalone Restaurant	420	$1,947	$4.64	$3.54
Standalone Fast Food	104	$381	$3.66	n/a
Golf Course	32,799	$114,343	$3.49	n/a

see next page

APPENDIX F, *continued*

IRPAC Customer Sample Set

Large Retail (Sahara Pavilion North)	1,405
Car Wash (Terrible Herbst)	393
Religious (Lakes Lutheran Church)	30
Non-profit (Shade Tree)	269
Commercial Laundry (Brady Linen)	18,488
Large Industrial (Sunset Parkway Bus. Cntr)	762
Small Industrial (Baldwin Motor Sports)	7
Self-Storage Facility (StorageOne)	68
HOA Common Area (Summerlin HOA)	1,208
Hospital – Older (Sunrise Hospital)	5,364
Hospital – Newer (St. Rose San Martin)	2,981
Day Care (Kindercare)	113

NOTE: THIS IS NOT THE IRPAC CUSTOMER SAMPLE SET
THIS IS THE SNWA SET DOCTORED FOR SEPTEMBER 26 MEETING;
THE IRPAC SET IS ATTACHED SHOWING COST VARIATIONS/AC-FT

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM

November 21, 2013

Subject: Proposal to Settle Case	**Director's Backup**
Petitioner: Philip D. Speight, Deputy General Manager, Administration	
Recommendations: That the Board of Directors approve a proposal to settle Case No. A-08-564089-C (consolidated with Case No. A566640) involving a Water Smart Landscapes Rebate.	

Fiscal Impact:
The required $500,000 is available in the Authority's Operating Budget.

Background:
On or about July 2, 2008, Community Bank of Nevada, Inc. (CBN), filed an action initiating Eighth Judicial District Court Case No. A566640 (as subsequently consolidated with Case No. A-08-564089-C, the "Case") against various parties, including the Authority and the owners of Stallion Mountain Country Club (Stallion Mountain). CBN sought to force the Authority to pay CBN certain Water Smart Landscape Program incentive payments that the Authority had previously paid to the owners of Stallion Mountain, which payments totaled the aggregate amount of $1,172,458.50 (the Incentive Payments). The Authority contends that it properly paid the Incentive Payments to the owners of Stallion Mountain, and that CBN's claim to the Incentive Payments had no basis.

CBN was subsequently shut down and taken over by the Federal Deposit Insurance Corporation (the FDIC), which acted as Receiver for CBN. Mr. William T. Walters (Mr. Walters), another party in the Case, subsequently entered into a settlement with the FDIC in which the FDIC assigned CBN's claims against the Authority to Mr. Walters.

The only remaining parties to the Case are the Authority and Mr. Walters. The Authority and Mr. Walters have tentatively agreed to a settlement in which Mr. Walters will take a $500,000.00 payment in full satisfaction of all claims against the Authority in the Case, including any claim to the Incentive Payments. The settlement agreement would dispose of all remaining claims against the Authority in the Case, and result in a dismissal of the Case.

This proposed settlement is authorized pursuant to Sections 6(n) and 6(p) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved the settlement agreement.

Respectfully submitted:

Patricia Mulroy, General Manager
PM:JJE:PDS:GJW:MM

AGENDA ITEM # 2

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM

November 21, 2013

Subject: Change Order	**Director's Backup**
Petitioner: Ronald E. Zegers, Deputy General Manager, Engineering/Operations	
Recommendations: That the Board of Directors approve Change Order No. 19 to Contract No. 070F 01 C1, Lake Mead Intake No. 3 Shafts and Tunnel, to extend the final completion date by 399 calendar days.	

Fiscal Impact:
None by approval of the above recommendation.

Background:
On March 20, 2008, the Board of Directors awarded Contract No. 070F 01 C1 to Vegas Tunnel Constructors (VTC) in the amount of $447,085,629 for construction of the Intake No. 3 Shafts and Tunnel project that will provide a new and deeper intake in Lake Mead, located as generally shown on Attachment A. The Board further authorized a change order contingency in the amount of $40,000,000 to be utilized by the General Manager in accordance with Resolution No. 96-003. To date, the General Manager has approved 16 change orders and 7 work change directives for an aggregate increase of $16,352,468.

During the early phase of tunnel boring machine (TBM) excavation, VTC encountered ground conditions that were different and more difficult than represented in the baseline conditions of the contract. High water pressures and unstable ground forced operation of the TBM in the pressurized mode for a longer period of time than originally anticipated, resulting in lower production rates, higher operating costs, and the inability to perform routine inspection and maintenance on the cutter head. When VTC finally encountered ground conditions that allowed depressurization of the TBM for maintenance on the cutter head, the cutter head was found to have suffered extensive damage that required major structural repairs. Under the differing site conditions provisions of the contract, VTC is entitled to additional time for the work associated with these unexpected conditions.

The attached Change Order No. 19 provides VTC with additional time for addressing all time-related impacts by extending the contract time 399 calendar days. This change order is being presented for Board approval as the recommended time extension exceeds the General Manager's authorization under Resolution No. 96-003.

This action is authorized pursuant to NRS 338.1711 and Sections 5(d), 5(e), 5(g), 6(e), and 6(j) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved the change order.

Respectfully submitted:

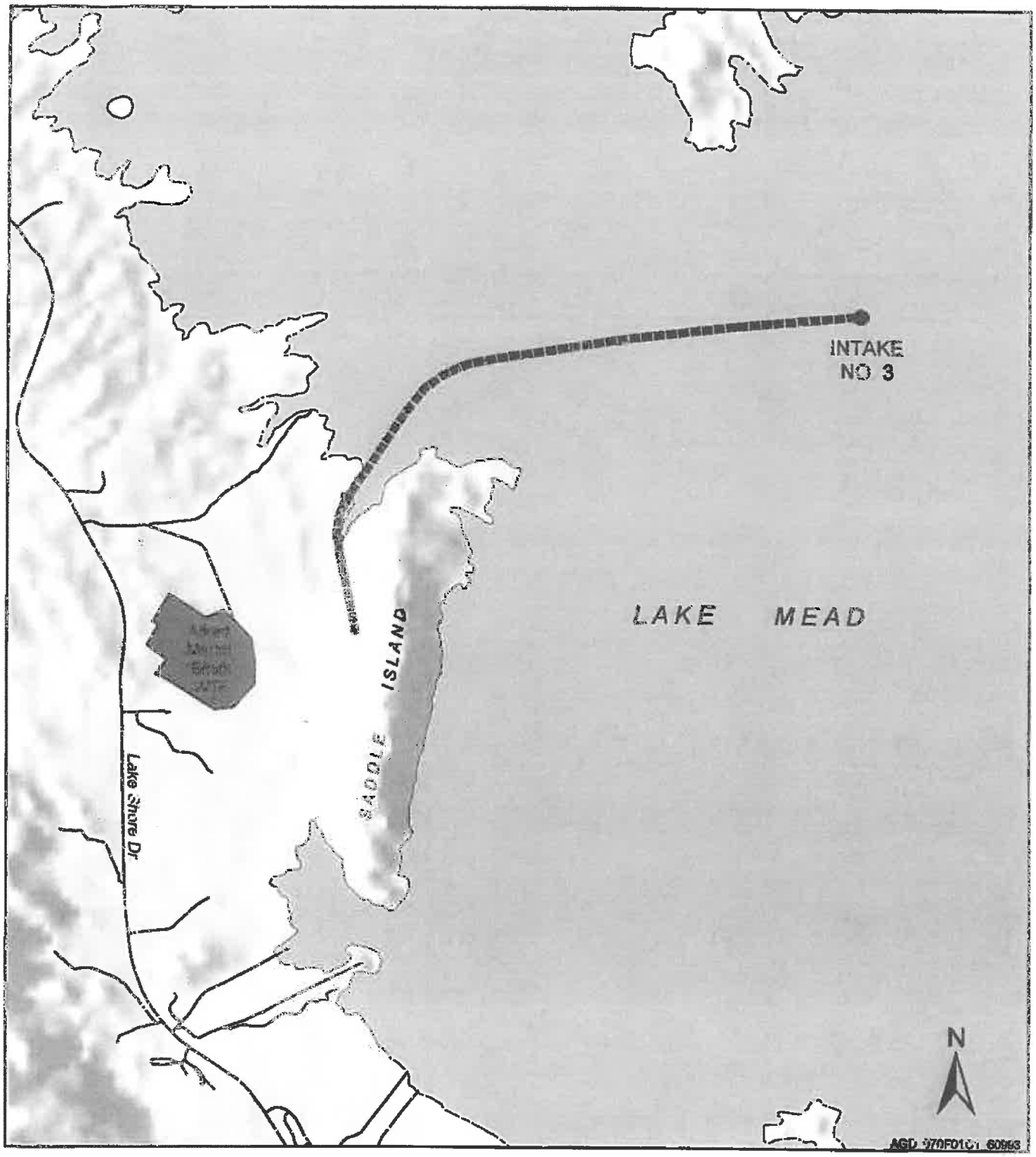
P Mulroy

Patricia Mulroy, General Manager
PM:JJE:REZ:MRJ:EPM:djt K0025
Attachments

AGENDA ITEM # 3

BOARD OF DIRECTORS
AGENDA ITEM

SNWA CONTRACT NO. 070F 01 C1
INTAKE NO. 3 -
SHAFTS AND TUNNEL



SHEET 1 OF 1

ATTACHMENT A

SOUTHERN NEVADA WATER AUTHORITY

CHANGE ORDER NO. 019
CONTRACT NO. 070F 01 C1
LAKE MEAD INTAKE NO. 3 SHAFT AND TUNNEL

DESIGN-BUILDER: Vegas Tunnel Constructors
244 Lakeshore Road
Boulder City, NV 89005

ITEM NO. **DESCRIPTION OF CHANGE**

CO019.1 TBM Tunneling Time Impacts

The Design-Builder experienced TBM tunneling impacts including but not limited to additional probe drilling, pre-excavation grouting, major cutter head structural repairs, loss of anticipated production in open mode operations and other work arising from Differing Site Conditions associated with unexpected geological and hydrological conditions. This Change Order provides the Design-Builder with additional time for addressing all time related impacts experienced through October 1, 2013 by extending the completion dates in the agreement as follows:

Modification of Completion Dates in Agreement:

Revise the dates in paragraph 3.02.A and 3.02.B, Dates for Substantial Completion and Final Completion in Section 00520, "AGREEMENT BETWEEN SOUTHERN NEVADA WATER AUTHORITY AND DESIGN-BUILDER", as follows:

A. "Substantial Completion" from May 30, 2014, to July 4, 2015.

B. "Final Completion" from August 31, 2014, to October 4, 2015.

Updated Baseline Schedule:

Within ten (10) Days after the full execution of

this Change Order, Design-Builder shall prepare and submit an updated Baseline Schedule which will include all remaining Work activities required under the Contract including monthly CPM update submittal provisions.

TOTAL CHANGE IN CONTRACT TIME FOR FINAL COMPLETION	**ADD**	**399 Calendar Days**

All necessary adjustments to all other portions of the original Contract Documents, including but not limited to all applicable Specification and Drawing notes and details, resulting from or as required by these changes, are hereby made.

This Change Order, together with the monetary compensation authorized under Change Order No. 18, executed by the AUTHORITY and DESIGN-BUILDER, shall constitute a full and final settlement of any and all Claims by the DESIGN-BUILDER for time extensions and/or additional costs arising out of or related to this Project through October 1, 2013. This settlement constitutes an agreement not to use this Change Order in association with any other Claim. All other requirements of Contract 070F 01 C1 remain unchanged.

Acceptance by DESIGN-BUILDER:

By: _____ 11-1-2013
Jim Nickerson, Project Manager — Date

Authorized by SNWA:

By: _____
Patricia Mulroy, General Manager — Date

Duplicate Originals: (1) Authority (1) Design-Builder

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM
November 21, 2013

Subject: Award of Proposal	**Director's Backup**
Petitioner: Philip D. Speight, Deputy General Manager, Administration	

Recommendations:
That the Board of Directors select ChemWare, Inc., for award of the Request for Proposal No. 643-13, Laboratory Information Management System, authorize the General Manager to execute an agreement and required amendments in substantial conformance with the terms and conditions of the Request for Proposal, in the estimated amount of $805,126, or take other action as appropriate.

Fiscal Impact:
The required $805,126 is available in the Authority's Operating Capital Budget.

Background:
This Request for Proposal (RFP) is for the purchase of a Laboratory Information Management System (LIMS), to include software and related installation services, training, and first year software maintenance. The Authority's existing LIMS was purchased in July 2003 and has been heavily customized to meet the continuing needs of the laboratory. For continued use of its current LIMS, each product upgrade requires significant information technology staff time. By updating to a contemporary product, many custom features in the existing LIMS will be available "off-the-shelf," provide the Authority with a more reliable system, and reduce the amount of in-house maintenance.

On May 22, 2013, RFP No. 643-13 was distributed to eight firms. Five firms responded:

Autoscribe Informatics
ChemWare, Inc.
Perkin Elmer
Promium
STARLIMS, Inc.

Proposals were evaluated by a team of representatives from the Authority's Laboratory Division, Research and Development, Information Technology, and Purchasing departments. Evaluation criteria included experience configuring and installing a LIMS in similar labs, staff qualifications, conceptual project, work plan, and design requirements. After reviewing the proposals submitted, ChemWare, Inc., Promium, and STARLIMS, Inc., were the top three firms in all ratings. Each of these firms participated in a presentation of their product to the RFP team and staff. Based on the proposal, presentation, and pricing, staff determined that ChemWare, Inc., best meets the needs of the Authority's Laboratory Division.

This agreement is being entered into pursuant to NRS 332.115(1)(b and h) and Sections 6(j) and 6(p) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved the agreement.

Respectfully submitted:

Patricia Mulroy, General Manager
PM:JJE:PDS:DHW:MCH:TAB:jd
Attachments

AGENDA ITEM # 4

Attachment 2
RFP 643-13

Laboratory Information Management System
Disclosure Of Ownership/Principals Form

Business Entity Type						
☐ Sole Proprietorship	☐ Partnership	☐ Limited Liability Company	☑ Corporation	☐ Trust	☐ Non-Profit Organization	☐ Other

Business Designation Group					
☐ MBE	☐ WBE	☐ SBE	☐ PBE	☐	☐
Minority Business Enterprise	Women-Owned Business Enterprise	Small Business Enterprise	Physically Challenged Business Enterprise		

Corporate/Business Entity Name:	ChemWare, Inc. (one of the New Resources Companies)		
(Include d.b.a., if applicable)			
Street Address:	1000 North Water Street, Suite 950 (New Resources)	**Website:**	www.gonrc.com
City, State and Zip Code:	Milwaukee, WI 53202	**POC Name and Email:**	Mark Grosskopf, mgrosskopf@gonrc.com
Telephone No:	(414) 289-7960	**Fax No:**	(414) 289-7979
Local Street Address:	900 Ridgefield Drive, Suite 150 (ChemWare)	**Website:**	www.chemware.com
City, State and Zip Code:	Raleigh, NC 27609	**Local Fax No:**	(919) 981-7436
Local Telephone No:	(919) 855-8716 x227	**Local POC Name Email:**	Conor Ward, cward@chemware.com

Number of Clark County, Nevada Residents Employed: 0

All entities, with the exception of publicly-traded and non-profit organizations, must list the names of individuals holding more than five percent (5%) ownership or financial interest in the business entity appearing before the SNWA Board of Directors.

Publicly-traded entities and non-profit organizations shall list all Corporate Officers and Directors in lieu of disclosing the names of individuals with ownership or financial interest. The disclosure requirement, as applied to land-use applications, extends to the applicant and the landowner(s).

Entities include all business associations organized under or governed by Title 7 of the Nevada Revised Statutes, including but not limited to private corporations, close corporations, foreign corporations, limited liability companies, partnerships, limited partnerships, and professional corporations.

Full Name	Title	% Owned (Not required for Publicly Traded Corporations/Non-profit organizations)
Mark Grosskopf	President	100%

This section is not required for publicly-traded corporations.

1. Are any individual members, partners, owners or principals, involved in the business entity, an SNWA full-time employee(s), or appointed/elected official(s)?

   ☐ Yes ☑ No (If yes, please note that SNWA employee(s), or appointed/elected official(s) may not perform any work on professional service contracts, or other contracts, which are not subject to competitive bid.)

2. Do any individual members, partners, owners or principals have a spouse, registered domestic partner, child, parent, in-law or brother/sister, half-brother/half-sister, grandchild, grandparent, related to an SNWA full-time employee(s), or appointed/elected official(s)?

   ☐ Yes ☑ No (If yes, please complete the Disclosure of Relationship form on Page 2. If no, please print N/A on Page 2.)

I certify under penalty of perjury, that all of the information provided herein is current, complete, and accurate. I also understand that the SNWA will not take action on land-use approvals, contract approvals, land sales, leases or exchanges without the completed disclosure form.

Signature

President
Title

Mark Grosskopf
Print Name

5/29/17
Date

SOUTHERN NEVADA WATER AUTHORITY
RFP NO. 643-13
LABORATORY INFORMATION MANAGEMENT SYSTEM

PURCHASE AGREEMENT

This Purchase Agreement is made and entered into this _____ day of _____, 20___, by and between ChemWare, Inc., hereinafter called "CHEMWARE," and the SOUTHERN NEVADA WATER AUTHORITY, a political subdivision of the State of Nevada, hereinafter called the ("AUTHORITY") to include staff of the AUTHORITY acting within their designated authority. CHEMWARE and the AUTHORITY are sometimes hereinafter referred to individually as "Party" and collectively as the "Parties."

WITNESSETH:

WHEREAS, the AUTHORITY desires to purchase a Laboratory Information Management System ("LIMS"), including hardware, software, training, and related services as more specifically described herein, and

WHEREAS, CHEMWARE is properly qualified and desires to provide the related product and services required by the AUTHORITY, and

WHEREAS, the AUTHORITY, in reliance on CHEMWARE's representations and proposals, agrees to retain CHEMWARE, and CHEMWARE agrees to furnish a LIMS, including hardware, software, training, and related services to the AUTHORITY, on the terms and conditions hereinafter set forth.

NOW, THEREFORE, in consideration of the promises and mutual covenants contained herein, the Parties hereto agree as follows:

1. SCOPE OF SERVICES:

A. Definitions.

("Change Order") means a written confirmation of a change in the Services, Deliverables or cost thereof that is executed by both Parties.

("Deliverable") means any software, reports, results, studies or other documentation identified as a "Deliverable" to be provided by CHEMWARE in Exhibit B, Statement of Work (SOW), incorporated herein as Exhibit B.

("Services") means the services to be provided by CHEMWARE pursuant to Exhibit B; Exhibit C, Software License Agreement; Exhibit D, Technical Services Agreement; and, Exhibit E, Software Maintenance Agreement. During the term and in accordance with the provisions of this Purchase Agreement, CHEMWARE will provide to AUTHORITY the Services and Deliverables described in the SOW, within the time periods set forth. Changes to the Services or Deliverables may only be made through a Change Order. CHEMWARE hereby grants to AUTHORITY a non-exclusive, perpetual license to use the Deliverables solely for AUTHORITY's internal purposes and in accordance with Exhibit C. AUTHORITY agrees to pay for Services in accordance with and at the rates set forth in Exhibit A.

B. CHEMWARE will provide maintenance services in accordance with the Software Maintenance Agreement attached hereto as Exhibit E.

C. All of the Services shall be performed and/or provided by CHEMWARE or an approved subcontractor. CHEMWARE shall submit a written request for approval of a subcontractor to Authority at least five days prior to the performance of any Services by subcontractor. The use of a subcontractor shall be at the sole discretion of Authority, but such approval shall not be unreasonably withheld. Services will be performed either on a fixed fee

basis or a time and materials basis as set forth on Exhibit A. Services performed on a time and materials basis will be invoiced at the end of the calendar month in which they are performed. Services that are performed on a fixed fee basis will be invoiced upon completion.

D. In performing Services under this Purchase Agreement, CHEMWARE shall observe and abide by the terms and conditions of all applicable laws, regulations, ordinances, or rules of the United States, of the State of Nevada, of any political subdivision thereof, and of any other duly constituted public authority or agency in force as of the Effective Date. CHEMWARE shall be responsible for obtaining any license, permit or other approval as required by law or otherwise, arising out of the Services to be performed hereunder.

E. Within five days of the execution of this Agreement, the AUTHORITY and CHEMWARE each will designate one person to act as that Party's "Project Manager". The Project Managers will be responsible for day-to-day communications between the Parties. Each Project Manager will be responsible for (1) monitoring the schedules and progress of work according to the SOW; (2) receiving and submitting requests for information and assistance; (3) receiving and submitting Deliverable; (4) cooperating with the other Project Manager and the other Party; and (5) providing timely decisions and approvals, including approval or disapproval of Deliverable or change requests on behalf of each Party.

F. CHEMWARE has, or will secure at its own expense, the qualified personnel required to deliver the product assigned under this Purchase Agreement. Such personnel shall not be employed by the United States, the State of Nevada, Clark County or any other political subdivision of the State of Nevada.

G. AUTHORITY agrees to provide CHEMWARE with access to its facilities and personnel as reasonably required for CHEMWARE to provide the Services and Deliverables. All

employees and representatives of CHEMWARE that perform Services on AUTHORITY's premises shall comply with reasonable guidelines pertaining to employee conduct, including AUTHORITY safety procedures and policies, provided to CHEMWARE by AUTHORITY. Neither Party shall require releases or waivers of any personal rights from representatives of the other in connection with visits to its premises, and the Parties agree not to plead any such releases or waivers in any action or proceeding.

H. CHEMWARE warrants to AUTHORITY that it shall perform the Services with reasonable care and in a diligent and competent manner. CHEMWARE's sole obligation and AUTHORITY's exclusive remedy in connection with a breach of the foregoing warranty shall be to correct or re-perform the non-conforming Services. If CHEMWARE, in its sole discretion, is unable to correct or re-perform non-conforming Services, its sole obligation will be to refund to AUTHORITY the amount paid for such Services. AUTHORITY must report any deficiencies in the Services to CHEMWARE in writing within 60 days of discovery of the breach of this warranty to receive the warranty remedies described herein.

2. PERIOD OF PERFORMANCE:

This Purchase Agreement shall become effective as of the date it is fully executed by both Parties ("Effective Date") and, unless terminated in accordance with the terms of this Purchase Agreement, will remain effective until all Deliverables and Services are complete, as further described in the exhibits.

3. COMPENSATION:

A. In consideration for completion of all duties and responsibilities under this Purchase Agreement, the AUTHORITY agrees to pay CHEMWARE for Deliverables and Services received in compliance with the Purchase Agreement.

B. CHEMWARE shall provide itemized invoices for Deliverables and Services delivered during the stated invoice date. Invoices are to be submitted to the AUTHORITY in accordance with the Notice provisions of this Purchase Agreement and must reference the name and date of the Purchase Agreement and Blanket Purchase Order.

C. The AUTHORITY shall pay invoiced amounts from CHEMWARE based on the costs set forth in Exhibit A within thirty 30 calendar days after the date of the invoice. No endorsement or statement on any check or payment or in any letter accompanying a check or payment or elsewhere shall be construed as an accord or satisfaction. Unless otherwise indicated on Exhibit A, AUTHORITY shall pay all amounts owing under this Purchase Agreement in U.S. Dollars. Payment terms shall be Net 30.

4. LIMITATION ON COSTS:

The estimated cost of Deliverables and Services provided under this Purchase Agreement, as identified in Exhibit A of this agreement, is $805,126.00 (Eight-hundred-five thousand, one-hundred and twenty-six dollars).

5. TRUTH-IN-NEGOTIATION CERTIFICATION:

Signing of this Purchase Agreement by CHEMWARE shall constitute a truth-in-negotiation certification by CHEMWARE that wage rates and other factual unit costs supporting the compensation of this Purchase Agreement are accurate, complete, and current at the time of execution of this Purchase Agreement. The original Purchase Agreement price and any additions thereto shall be adjusted to exclude any significant sums by which the AUTHORITY determines the Purchase Agreement price was increased due to inaccurate, incomplete, or noncurrent wage rates and other factual unit costs. All such Purchase Agreement adjustments shall be made within one (1) year following the end of the term of this Purchase Agreement.

6. INDEPENDENT CONTRACTOR:

The relationship of CHEMWARE to the AUTHORITY hereunder shall be that of an independent Contractor and not an agent or employee. CHEMWARE shall have complete control over its employees and the method of performing its Deliverables and Services under this Purchase Agreement. No permitted or required approval by the AUTHORITY of personnel, costs, documents, services, or products of CHEMWARE shall be construed as making the AUTHORITY responsible for the manner in which CHEMWARE performs its Deliverables or Services or for any acts, errors or omissions of CHEMWARE. Such approvals are intended only to give the AUTHORITY the right to satisfy itself with the quality of Deliverables and Services performed by CHEMWARE.

7. JOINT VENTURE:

Nothing herein shall be construed to imply a joint venture or principal and agent relationship between the AUTHORITY and CHEMWARE, and neither Party shall have any right, power or authority to create any obligation, expressed or implied, on behalf of the other.

8. INTERPRETATION:

The Parties agree that neither Party shall be deemed the drafter of this Purchase Agreement and, in the event this Purchase Agreement is ever construed by a court of law or equity, such court shall not construe this Purchase Agreement or any provision hereof against either Party as drafter of this Purchase Agreement.

9. CONFLICT OF INTEREST:

During the course of performance of the Purchase Agreement, CHEMWARE will not contract with any client whose interest is adverse to or would require CHEMWARE to take a

position contrary to that of the Las Vegas Water District and/or the Southern Nevada Water Authority.

10. PROHIBITION AGAINST COMMISSION FOR OBTAINING PURCHASE AGREEMENT:

CHEMWARE warrants that no person or company has been employed or retained to solicit or secure this Purchase Agreement upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except bona fide employees; nor has CHEMWARE paid or agreed to pay any person, company, corporation, individual or firm other than a partner or bona fide employee, any fee, commission, contribution, donation, percentage, gift, or any other consideration, contingent upon or resulting from award of this Purchase Agreement. For any breach or violation of this warranty, the AUTHORITY shall have the right to terminate this Purchase Agreement without liability, or at its discretion, to deduct from the contract price, or otherwise recover, the full amount of such fee, commission, percentage, gift or consideration and any other damages.

11. PROHIBITION AGAINST INTEREST BY GOVERNMENT EMPLOYEES:

A. No officer, employee or member of the governing body of the AUTHORITY shall (1) participate in any decision relating to this Purchase Agreement which affects his or her personal interest or the interest of any corporation, partnership, or association in which he or she is, directly or indirectly, interested or (2) have any interest, direct or indirect, in this Purchase Agreement or the proceeds thereof.

B. CHEMWARE represents that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of Deliverables or Services required to be performed under this Purchase Agreement.

CHEMWARE further covenants that in the performance of said Deliverables or Services, no person having any such interest shall be employed.

C. No member of, delegate to or officer or employee of the legislative, executive or judicial branches of the government of the United States, of the State of Nevada or any of its political subdivisions shall be entitled to any share or part hereof or to any benefit to arise therefrom.

12. COMPLETENESS AND ACCURACY OF SUPPLIER'S WORK:

A. CHEMWARE shall be responsible for the completeness and accuracy of its Deliverables and Services prepared or compiled under its obligation under this Purchase Agreement and shall correct, at its expense, all errors or omissions therein which may be disclosed.

B. The cost necessary to correct those errors attributable to CHEMWARE and any damage incurred by the AUTHORITY as a result of additional costs caused by such errors shall be chargeable to CHEMWARE. The fact that the AUTHORITY has accepted or approved CHEMWARE's Deliverables and Services shall in no way relieve CHEMWARE of any of its responsibilities.

13. INDEMNIFICATION:

Unless otherwise indicated herein, CHEMWARE shall indemnify, hold harmless, and defend without cost to the AUTHORITY, its Board of Directors and its officers, agents, and employees, against any and all losses, claims, costs, damages and liability arising out of, resulting from, or in any way incidental to CHEMWARE's provision of Deliverables and Services under this Agreement. This indemnification includes, but is not limited to, claims for or by reason of any death or deaths of, or any physical injury or injuries to, any person or persons or

damage to real or personal property of any kind whatsoever, whether the person(s) or property of CHEMWARE, its agents, or subconsultants, or of third parties; and harassment or discrimination or any theory of joint or dual employment by CHEMWARE's employees, agents, subcontractors or subconsultants, arising out of the Deliverables or Services under this Agreement.

14. INSURANCE:

A. General:

(1) CHEMWARE shall not commence any Deliverables or Services under this Purchase Agreement until CHEMWARE obtains, at its own expense, all insurance as required in this section; however, failure to obtain all insurance shall not relieve CHEMWARE of the obligation to achieve the schedule milestone dates as defined herein. The types of insurance to be obtained by CHEMWARE are Workers' Compensation, Employers' Liability, Automobile Liability, and Commercial General Liability, as outlined in the following portions of this section.

(2) The Workers' Compensation, Employers' Liability, and Automobile Liability insurance will be maintained in force for the full period of the Purchase Agreement.

(3) These insurance provisions are in addition and cumulative to any other right of indemnification or contribution that the AUTHORITY may have in law, in equity, or otherwise and shall survive the completion of the project.

(4) Nothing contained in these insurance requirements is to be construed as limiting the extent of CHEMWARE's total responsibility for payment of claims arising in whole or in part from the actions of a third party when such actions might be taken as a result of CHEMWARE's operations under this Purchase Agreement.

(5) At the time of executing this Purchase Agreement and before commencement of the Deliverables or Services, CHEMWARE shall have delivered to the AUTHORITY certificates of insurance and endorsements that attest to the fact that CHEMWARE has obtained the insurance as specified in this Purchase Agreement.

B. Other Insurance:

(1) All insurance (except Workers Compensation) provided by CHEMWARE shall be considered primary with respect to the AUTHORITY's insurance, and any similar insurance maintained by the AUTHORITY shall be considered excess and non-contributory.

(2) CHEMWARE's Workers' Compensation insurance shall be written with a property and casualty insurance company admitted to do business in the State of Nevada and rated A- or better and Class V or higher of financial size category in the current issue of Best's Key Rating Guide.

(3) CHEMWARE's Automobile Liability and Commercial General Liability insurance shall be written with property and casualty insurance companies admitted to do business in the State of Nevada and rated A- or better and Class VIII or higher of financial size category in the current issue of Best's Key Rating Guide.

(4) In the event any of CHEMWARE's insurance companies are not admitted to write business in the State of Nevada, then CHEMWARE will furnish evidence of insurance with insurance companies that are rated A- or better and Class IX or higher of financial size category in the current issue of Best's Key Rating Guide for each coverage written with a non-admitted carrier.

(5) The Certificate of Insurance and related endorsements must be satisfactory to the AUTHORITY as to form and content and must comply with all insurance requirements as

set forth herein, or the certificate and endorsements may be rejected and thereby, at the option of the AUTHORITY, render this Purchase Agreement cancelable.

(6) All endorsements are to be dated; reflect the name of the insurance company, the type of insurance, and the policy number; be executed by a duly authorized representative of the insurance company; and be attached to the certificate.

(7) The full legal operating names of CHEMWARE and insurance carrier shall be properly shown where applicable.

(8) CHEMWARE will provide 30 day written notice of cancellation (10 day for non-payment of premium).

(9) By endorsement (I.S.O. Forms CG 20 10 07 04 and CA 20 48 02 99, or equivalent), the AUTHORITY shall be included as an additional insured under the Commercial General Liability and Automobile Liability insurance policies as to bodily injury, sickness, disease, or death, personal injury, damage to or destruction of the property or persons which may arise out of or in connection with activities under the Purchase Agreement. CHEMWARE's insurance shall be primary with respect to the additional insureds; any insurance coverage maintained by the AUTHORITY shall be in excess of CHEMWARE's insurance and non-contributing.

(10) By endorsement (I.S.O. Form CG 24 04 10 93 or its equivalent), CHEMWARE's Commercial General Liability, Automobile Liability and Workers' Compensation Insurance carriers shall waive their transfer rights of recovery (Waiver of Subrogation) against the AUTHORITY, its members and affiliated companies, successors or assignees, including their directors, officers, and employees individually and collectively.

(11) The additional insured and waiver of subrogation endorsements shall read as follows:

> *The Southern Nevada Water Authority, its members, and affiliated companies, successors, or assigns, including their directors, officers, and employees individually and collectively, when acting within the scope of their employment.*

(12) If CHEMWARE fails to procure and/or maintain insurance set forth herein, in addition to other rights or remedies, the AUTHORITY shall have the right, if the AUTHORITY so chooses, to procure and/or maintain the said insurance for and in the name of CHEMWARE with the AUTHORITY as an Additional Insured, and CHEMWARE shall pay the cost thereof and shall furnish all necessary information to make effective and/or maintain such insurance. In the event CHEMWARE fails to pay the cost, the AUTHORITY hereby has the right to offset any premiums from the compensation set forth in this Purchase Agreement and directly pay for such coverage.

(13) With respect to any and all insurance required under this Purchase Agreement, the deductible shall not exceed $50,000 unless otherwise agreed to by the AUTHORITY or the AUTHORITY'S Risk Management Division.

C. Workers' Compensation and Employers' Liability Insurance:

(1) CHEMWARE shall procure and maintain such insurance and see that its subcontractors maintain such insurance as is required under the Nevada Industrial Insurance Act, Nevada Revised Statutes Chapters 616 and 617, for all of its employees working on the project to protect the AUTHORITY from any industrial insurance claims. The Workers' Compensation Insurance shall be written with liability limits consistent with applicable statutory requirements and with a minimum of $500,000 of Employer's Liability coverage

(2) In the event any class of employees engaged in any work on the Deliverables and Services relative to this Purchase Agreement is not protected under the Nevada Industrial Insurance Act, then CHEMWARE shall provide to the AUTHORITY adequate insurance coverage in a form and by an insurance carrier satisfactory to the AUTHORITY for the protection of such employees.

(3) In the event CHEMWARE is permissibly self-insured for Workers' Compensation insurance in the State of Nevada, CHEMWARE shall deliver to the AUTHORITY a copy of the Certificate of Consent to Self-Insure issued by the State of Nevada.

D. Commercial General Liability Insurance:

CHEMWARE shall procure and maintain Commercial General Liability insurance coverage. The coverage under this policy shall include, but not be limited to, commercial general liability, protective liability blanket contractual liability, and broad-form property damage. The Commercial General Liability Insurance policy shall be written with policy limits of $1,000,000 per occurrence and $2,000,000 in aggregate. The amount of coverage shall apply to bodily injury, sickness, disease or death, personal injury, damage to or destruction of the property of persons that may arise out of or in connection with the activities under this Purchase Agreement.

E. Automobile Liability Insurance:

CHEMWARE shall procure and maintain, at its own expense, automobile liability insurance with policy limits of $1,000,000 per occurrence, written on a combined-single-limit basis for bodily injury and property damage including all owned, leased, hired, or non-owned motorized vehicles and apparatus and shall indicate the coverage on the certificate.

F. Professional Liability Insurance:

CHEMWARE shall procure and maintain Professional Liability Insurance shall be written with policy limits of $1,000,000 per occurrence and $2,000,000 in aggregate. If this coverage is written on a claims-made basis, the retroactive date shall be prior to or coincident with the date of this Agreement and the certificate shall so state.

G. It is CHEMWARE's sole responsibility to ascertain that the aforementioned insurance requirements are fulfilled. In the event they are not, CHEMWARE shall not be relieved of their duty to perform, indemnify, defend, and hold harmless the AUTHORITY and all others concerned herein, nor shall the AUTHORITY and all concerned herein be liable to CHEMWARE or any others in the event CHEMWARE's insurance, as accepted by the AUTHORITY fails to meet the full requirements herein.

15. TERMINATION:

The AUTHORITY's General Manager, his/her designee and/or CHEMWARE may terminate this Purchase Agreement on thirty (30) days prior written notice. In the case of termination by the AUTHORITY, the AUTHORITY shall pay CHEMWARE for all Deliverables and Services performed or received to the effective date of termination and the reasonable costs of transferring all documentation of all work to the AUTHORITY.

Notwithstanding the foregoing, the term of any license provided by CHEMWARE hereunder shall be as set forth in the provision granting such license.

Other than AUTHORITY's nonpayment which shall constitute a breach of this Purchase Agreement, if full payment is not received within 30 days from the date of the invoice, and within five (5) days of written notice of nonpayment, either Party may terminate this Purchase Agreement by providing the other Party with written notice if the other Party (1) becomes

insolvent, executes a general assignment for the benefit of creditors or becomes subject to bankruptcy or receivership proceedings; (2) breaches its obligations related to the other Party's confidential information; or (3) commits a material breach of this Purchase Agreement that remains uncured for 30 days following delivery of written notice of such breach (including, but not necessarily limited to, a statement of the facts relating to the breach or default, the provisions of this Purchase Agreement that are in breach or default and the action required to cure the breach or default).

16. PUBLIC INFORMATION RELEASES

CHEMWARE shall make public information releases only as provided for and in accordance with this Purchase Agreement. Any and all other public releases of information gathered, obtained, or produced during the performance of this Purchase Agreement must be specifically approved in writing by the AUTHORITY prior to release. Such information shall include, but is not limited to, all products, ideas, data, reports, background materials, and any and all other materials belonging to the AUTHORITY. Such public releases of information shall include, but are not limited to, publication in any book, newspaper, magazine, professional or academic journal, the Internet, radio, television, and presentations to professional, academic, and/or other groups or conferences. Unless otherwise provided in a separate confidentiality agreement between the Parties, each Party may issue a press release following the execution of this Purchase Agreement, subject to the other Party's written approval, which shall not be unreasonably withheld. Each Party hereby consents to the other Party's use of its name, URL and logo on its website and in its customer and partner lists for corporate and financial presentations.

17. USE OF MATERIALS:

A. Between CHEMWARE and AUTHORITY, all patents, copyrights, mask works, trade secrets, trademarks and other proprietary rights in or related to any product, software or deliverable provided by CHEMWARE pursuant to this Purchase Agreement are and will remain the exclusive property of CHEMWARE. Any modification or improvement to a CHEMWARE product or deliverable that is based on AUTHORITY's feedback shall be the exclusive property of CHEMWARE. AUTHORITY will not take any action that jeopardizes CHEMWARE's proprietary rights nor will it acquire any right in any such product, software or deliverable or CHEMWARE's confidential information other than rights granted in this Purchase Agreement.

B. Upon termination of this Purchase Agreement, CHEMWARE shall turn over to the AUTHORITY any property of the AUTHORITY in its possession and any calculations, notes, reports, or other materials prepared by CHEMWARE in the course of performing this Purchase Agreement. Any proprietary software or other tools of CHEMWARE used to execute the Deliverables or Services shall remain the property of CHEMWARE.

18. RECORDS:

CHEMWARE shall retain financial and other records related to this Purchase Agreement for six (6) years, and shall make available to the AUTHORITY for inspection, all books, records, documents, and other evidence directly pertinent to CHEMWARE charges to the AUTHORITY for Deliverables or Services and the AUTHORITY'S payment thereof under this Purchase Agreement upon reasonable notice.

19. ASSIGNMENT:

Neither Party will assign this Purchase Agreement, directly or indirectly, without the prior written consent of an authorized executive officer of the other Party, provided that either

Party may assign all or any part of this Purchase Agreement to its successor in a merger, consolidation or comparable transaction or to the purchaser of all or substantially all of its assets (or the assets associated with a particular line of business) so long as such successor or purchaser agrees in writing to comply with the terms and conditions of this Purchase Agreement and, provided further that CHEMWARE may assign this Purchase Agreement, with written consent from the AUTHORITY, to an affiliate, including to a parent, subsidiary or sister entity. If an assignment is executed without the prior written consent of AUTHORITY, the assignment shall be void, and not merely voidable.

20. MODIFICATION OF PURCHASE AGREEMENT:

This Purchase Agreement may not be changed or modified except by written Change Order executed by both Parties or their designees.

21. ORDER OF PRECEDENCE

This Purchase Agreement represents the entire Agreement between the AUTHORITY and CHEMWARE. In resolving inconsistencies, precedence shall be given in the following order (with the first listed component having the highest precedent):

1. Change Orders
2. Purchase Agreement and Exhibits A-E attached thereto
3. Proposal in response to RFP No. 643-13 dated June 26, 2013
4. Request for Proposal

22. SEVERABILITY:

Any provisions or portions of this Purchase Agreement prohibited as unlawful or unenforceable under any application of law of any jurisdiction shall as to such jurisdiction be ineffective without affecting other provisions of this Purchase Agreement. If the provisions of such applicable law may be waived, they are hereby waived to the end that this Purchase

Agreement may be deemed to be a valid and binding Purchase Agreement enforceable in accordance with its terms.

23. NON-DISCRIMINATORY EMPLOYEE PRACTICES:

A. CHEMWARE shall not employ discriminatory practices in the provision of Deliverables or Services, employment of personnel, or in any other respect on the basis of race, color, religion, sex, sexual orientation, gender identity or expression, age, disability, or national origin.

B. No person in the United States shall, on the grounds of race, color, religion, sex, sexual orientation, gender identity or expression, age, disability, or national origin, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity made possible by or resulting from this Purchase Agreement.

C. CHEMWARE will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity or expression, age, disability, or national origin. CHEMWARE shall ensure that applicants are employed, and the employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity or expression, age, disability, or national origin. This non-discrimination provision shall include, but not be limited to employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. CHEMWARE agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provision of this non-discrimination clause.

D. CHEMWARE will, in all solicitations or advertisements for employees placed by or on behalf of CHEMWARE, state that all qualified applicants will receive consideration for

employment without regard to race, color, religion, sex, sexual orientation, gender identity or expression, age, disability, or national origin.

E. CHEMWARE will send to each labor union or representative of workers with which it has a collective bargaining Agreement or other contract or understanding, a notice advising the said labor union or workers' representatives of CHEMWARE's commitment under this provision and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

24. EQUAL EMPLOYMENT OPPORTUNITY:

A. CHEMWARE and any subcontractor or sub-Supplier working under the authority of CHEMWARE, who is responsible for the selection, referral, hiring, or assignment of workers for the Deliverables or Services provided pursuant to this Purchase Agreement, is required to comply with all applicable provisions of Title VII of the Civil Rights Act of 1964. This requirement includes compliance with Equal Employment Opportunity Commission regulations that prohibit discrimination based upon race, color, religion, sex, or national origin. Furthermore, CHEMWARE shall in all relevant manners comply with the Age Discrimination in Employment Act, the Civil Rights Act of 1991, the Equal Pay Act, and Title I of the Americans with Disabilities Act.

B. CHEMWARE shall make all necessary documentation as required to comply with the Acts referred to above and shall make such documentation immediately available to the AUTHORITY upon the AUTHORITY's request. CHEMWARE is solely liable for failure to comply with this provision.

25. APPLICABLE LAW:

Nevada law shall govern the interpretation of this Purchase Agreement.

26. VENUE:

The Parties agree that venue for any dispute arising from the terms of this Purchase Agreement shall be Clark County, Nevada.

27. ATTORNEYS FEES:

Except as otherwise set forth in this Purchase Agreement, the Parties shall bear their own attorneys' fees and costs incurred in resolving the claims, as well as on the preparation of this Purchase Agreement. In the event that any Party commences an action to enforce or interpret this Purchase Agreement, or for any other remedy based on or arising from this Purchase Agreement, the prevailing party therein shall be entitled to recover its reasonable and necessary attorneys' fees and costs incurred. For the purposes of this provision, the "prevailing party" shall be that party which has been successful with regard to the main issue, even if that Party did not prevail on all issues.

28. NO THIRD PARTY RIGHTS:

This Purchase Agreement is not intended by the Parties to create any right in or benefit to parties other than the AUTHORITY and CHEMWARE. This Purchase Agreement does not create any third party beneficiary rights or causes of action.

29. WAIVER:

The failure of either Party to enforce at any time, or for any period of time, the provisions hereof shall not be construed as a waiver of such provisions or of the rights of such Party to enforce each and every such provision.

30. CAPTIONS:

The captions contained in this Purchase Agreement are for reference only and in no way to be construed as part of this Purchase Agreement.

31. COUNTERPARTS:

This Purchase Agreement may be executed in any number of counterparts and by the different Parties on separate counterparts, each of which, when so executed, shall be deemed an original, and all counterparts together shall constitute one and the same instrument.

32. INTEGRATION:

This Purchase Agreement contains the entire understanding between the Parties relating to the transactions contemplated by this Purchase Agreement, notwithstanding any previous negotiations or Purchase Agreements, oral or written, between the Parties with respect to all or any part of the subject matter hereof. All prior or contemporaneous Purchase Agreements, understandings, representations and statements, oral or written, are merged in this Purchase Agreement and shall be of no further force or effect.

33. NOTICES:

Any and all notices, demands or requests required or appropriate under this Purchase Agreement (including invoices) shall be given in writing and signed by a person with authorization to bind CHEMWARE or AUTHORITY, either by personal delivery, via facsimile, via a scanned document sent via email, or by registered or certified mail, return receipt requested, addressed to the following addresses and fax numbers:

To CHEMWARE:

ChemWare, Inc.
Attention: Mark Grosskopf
900 Ridgefield Drive, Suite 150
Raleigh, NC 27609

To AUTHORITY:
Southern Nevada Water Authority
Attention: Stan K. Van Wagenen
1001 S. Valley View Blvd.
Las Vegas, Nevada 89153

When notice is given by mail, it shall be deemed served three (3) business days following deposit, postage prepaid in the United States mail. When notice is given by facsimile or email transmission, it shall be deemed served upon receipt of confirmation of transmission if transmitted during normal business hours or, if not transmitted during normal business hours, on the next business day following the facsimile or email transmission.

The Parties may designate a new contact person under this provision for notices or invoices or change the address, email address or fax number identified above by notifying the other Party.

34. SURVIVAL:

Any provision of this Purchase Agreement that contemplates performance or observance subsequent to termination or expiration of this Purchase Agreement shall survive termination or expiration and continue in full force and effect for the period so contemplated including, but not limited to, provisions relating to warranties and warranty disclaimers, intellectual property ownership, payment terms, confidentiality, waiver of consequential damages, and cap on liability.

35. CONFIDENTIALITY:

Through the terms of this Purchase Agreement, CHEMWARE may furnish AUTHORITY with information that CHEMWARE has independently determined to be confidential under Nevada law and that CHEMWARE will label "Confidential Information." "Confidential Information" means confidential and proprietary information of CHEMWARE

that is disclosed to AUTHORITY which, in the case of written information, is marked "confidential" and which, in the case of information disclosed orally, is identified at the time of the disclosure as confidential and will be summarized and confirmed in writing as such by CHEMWARE to AUTHORITY within thirty (30) calendar days of the disclosure. Confidential Information shall not include information that: (1) is now or subsequently becomes generally available to the public through no fault or breach of AUTHORITY; (2) AUTHORITY can demonstrate to have had rightfully in its possession prior to disclosure by CHEMWARE; (3) is independently developed by AUTHORITY without the use of any Confidential Information; or (4) AUTHORITY rightfully obtains from a third party who has the right to transfer or disclose it.

AUTHORITY and CHEMWARE recognize AUTHORITY's duties under the Nevada Public Records Act and do not, by this Purchase Agreement, intend to alter AUTHORITY's duties thereunder or to require AUTHORITY to do, or refrain from doing, anything contrary to the Nevada Public Records Act. AUTHORITY's Office of General Counsel shall be permitted to make an independent determination as to whether any document or record marked "confidential" is confidential or is a public record, pursuant to the Nevada Public Records Act. If AUTHORITY's Office of General Counsel determines that any document or record supplied by CHEMWARE and marked "confidential" is determined to be a public record, AUTHORITY may disclose that document or record without prior notice to or agreement by CHEMWARE.

36. FORCE MAJEURE:

Neither Party will be responsible for any failure or delay in performing any obligation hereunder if such failure or delay is due to a cause beyond the Party's reasonable control, including, but not limited to acts of God, flood, fire, volcano, war, third-party suppliers, labor disputes or governmental acts. Notwithstanding the foregoing, CHEMWARE shall have no

obligation to perform to the extent that AUTHORITY is unable to pay as a result of a force majeure event.

IN WITNESS WHEREOF, the Parties have caused this Purchase Agreement to be executed the day and year first above written.

CHEMWARE INC

By _____ 11/11/13
Mark Grosskopf Date
President, ChemWare

SOUTHERN NEVADA WATER AUTHORITY

By _____
Patricia Mulroy Date
General Manager

Approved as to form:

_____
Gregory J. Walch, Esq.
General Counsel

EXHIBIT A

SCHEDULE OF FEES, PRICES AND RATES

OCTOBER 2013

EXHIBIT A
SOUTHERN NEVADA WATER AUTHORITY
RFP NO. 643-13
LABORATORY INFORMATION MANAGEMENT SYSTEM

SCHEDULE OF FEES, PRICES AND RATES

A. SOFTWARE AND ADVANCED ENTERPRISE SOLUTIONS:

All Software, Licenses, and Related Services associated with the initial purchase of the HORIZON® Laboratory Information Management System identified by the prefixes "HC" and "HO" on the ChemWare Quotation #201306086-CCr3, dated October 9, 2013, shall be invoiced as follows:

Milestone	Approximate Completion	Amount
Software Delivery and Installation	1 month after Notice to Proceed	$316,727
Delivery of Initial System Configuration	4 months after Notice to Proceed	$48,727
Delivery of Instrument Interfaces	8 months after Notice to Proceed	$73,091
System Acceptance	12 months after Notice to Proceed	$48,728
Total Software Amount		$487,273

B. PROGRAM MANAGEMENT AND TECHNICAL SERVICES:

All labor for program management, software installation and configuration, training, and related services shall be billed at the rates and in the estimated number of hours shown in the table below and on ChemWare quotation number 201306086-CCr3 (incorporated herein by reference). On-site work shall be accomplished during normal Authority work hours of Monday through Thursday (excluding holidays) between the hours of 6:00 a.m. and 4:30 p.m. Pacific Time.

All labor will be billed monthly for the actual hours expended. Program Management and Technical Services are on a level-of-effort basis for estimated number of hours shown on ChemWare's quotation items IM-411 through IM-418.

Travel expenses for airfare and lodging shall be reimbursed in accordance with Authority's travel policy. Reasonable per diem travel expenses shall be reimbursed for meals and incidentals based on the federally established Internal Revenue Service (IRS) meal per diem rates for the travel location (which also includes all tips and most miscellaneous expenses). Alcoholic beverages and personal items such as in-room movies, reading materials, cigarettes, hygiene items, etc., are non-reimbursable.

Technical support provided by telephone or other electronic means shall be provided during normal ChemWare working hours defined as Monday through Friday (excluding ChemWare holidays) between the hours of 8:00 a.m. and 6:00 p.m. Eastern Time.

Emergency technical support is not within the scope of this Agreement.

All rates are billable in ½ hour increments, and are exclusive of any travel expenses or applicable sales or use taxes, which will be computed and billed separately. Travel time is not billable.

Service Level	Scheduled in Advance • Fixed SOW • Not-to-Exceed Quote	Unscheduled Services • Variable SOW • Hourly/Daily Rate	Emergency Support • Variable SOW • Hourly/Daily Rate
	Normal Working Hours		After Hours
General Services	**$168/hour**	$187/hour	$380/hour 4 hour minimum charge
Advanced/Other	**$225/hour**	$225/hour	$530/hour 4 hour minimum charge

General Services Level: Project Managers, Customer Support, Programmers

- Software Installation and Testing
- Custom Programming
- Methods Customization and Control Table Enhancements
- System Configuration Assistance
- Data Migration/Conversion
- Introductory Training

Advanced Services Level: Sr. Project Managers, Sr. Programmers, Developers, Certified Specialists/Engineers, Managers/Executives

- LIMS/Automation Needs Analysis
- Oracle Troubleshooting and Tuning
- Systems Consulting or Business Process Analysis
- Intermediate and Advanced Training
- Assistance with Hardware, Network, Printers, Operating Systems, Communications Systems

C. STANDARD SOFTWARE MAINTENANCE FEES

Software maintenance shall include Error Correction, Updates, and Covered Services on the Software and Documentation, each as described in Exhibit E Software Maintenance Agreement, for the following terms and rates:

Year 1 (January 1, 2014 – Later of December 31, 2014 or System Acceptance), 0% of the purchase price of the Materials licensed at the beginning of Year 1 term: $0.00

Year 2 (Later of January 1, 2015 or System Acceptance – Later of December 31, 2015 or 12 months after System Acceptance), 18% of the purchase price of the Materials licensed at the beginning of Year 2 term: $87.709[1]

System Acceptance shall be in accordance with the terms in Paragraph D of this Exhibit A.

[1]Estimated amount assuming no additional Materials licensed between contract execution and beginning of Year 2 term.

D. SYSTEM ACCEPTANCE

Following delivery and acceptance of all Deliverables and Services, AUTHORITY shall have a sixty (60) day period during which to conduct System Acceptance Testing in sufficient detail to verify that the system meets all requirements of the Statement of Work and is free of Errors as described in the Software Maintenance Agreement. Should the System Acceptance Test fail, CHEMWARE shall perform Error Correction and the System Acceptance Testing period shall resume upon delivery of the Error Correction.

E. ELECTRONIC NOTEBOOK DEVELOPMENT

CHEMWARE and the AUTHORITY will collaborate in enhancing and tailoring HORIZON functionality in an electronic logbook module, HORIZON Logbook Manager, to appropriately capture data from traditional bench sheets into electronic records managed in LIMS. The solution objectives are to:

- Reduce the overall number of logbooks (and their associated maintenance) in the lab;
- Reduce the amount of paper and manual transcription in the laboratory;
- Provide a portable, flexible and intuitive interface for entering logbook information;
- Link logbook entries to LIMS entities (i.e. if there is an issue with a sample preparation media the analyst can identify all samples in LIMS that are affected); and
- Provide a vendor supported and enhanced electronic logbook solution.

This solution will be integrated with HORIZON LIMS and supported and maintained as part of a core product module. CHEMWARE will provide the AUTHORITY with 375 hours of software programming assistance and 125 hours of configuration assistance to deliver HORIZON Logbook Manager. The functional specifications for HORIZON Logbook Manager will be described in the Application Blueprint document. The total cost for the HORIZON Logbook Manager deliverable is fixed-price.

Project Deliverables costs identified as IM-401, Application Blueprint for the Electronic Notebook feature shall be paid as a lump-sum, associated labor identified as IM-402, Horizon Logbook Manager Configuration, may billed monthly to a not-to-exceed amount of $21,000.

F. IMPLEMENTATION SERVICES

ChemWare's proposal and pricing assumes a level of effort by Authority personnel in several key areas in order that Authority may be relatively self-sufficient with respect to the ongoing maintenance and management of the system after go-live. This collaborative deployment approach requires SNWA team members to provide a level of effort on the following tasks:

Test code configuration

System testing and validation

Report writing

Instrument Integration

Should exigencies arise that prohibit the Authority from fulfilling its responsibility in this regard ChemWare has included in its quotation item IM-418, System Validation Assistance, in the estimated amount of $26,880 as a contingency against any schedule impact.

SOUTHERN NEVADA WATER AUTHORITY
RFP NO. 643-13
LABORATORY INFORMATION MANAGEMENT SYSTEM

EXHIBIT B

STATEMENT OF WORK

OCTOBER 2013

EXHIBIT B
STATEMENT OF WORK
RFP NO. 643-13
LABORATORY INFORMATION MANAGEMENT SYSTEM

1 CHEMWARE shall provide, install, integrate, and test a Laboratory Information Management System (LIMS) to replace the existing system in use by the Southern Nevada Water Authority. This Statement of Work defines the services to implement the LIMS and the project scope, tasks, activities, responsibilities and schedule. The services shall be governed by the terms and conditions of the RFP 643-13 and resulting Agreement. In the event of a conflict between the agreement and this Statement of Work, the Agreement will control.

2 The project objectives include the following:

A Transition from the existing LIMS to a system incorporating current technology solutions and tailored to meet the SNWA Laboratory process needs.

B On-site installation and implementation of a LIMS to include setup of the software on existing equipment, migration of historical data from the current system, and on-site training of the LIMS administrator on system architecture, installation and configuration.

C Develop a training program to include Train the Trainer instruction, manuals, visual aids, and all other course materials.

D Provide subject matter expertise to conduct an initial review of existing processes and recommend improvements to operations.

3 CHEMWARE shall prepare, deliver, and maintain a project execution schedule to include a detailed work breakdown structure for each phase of the project. The schedule should show the following general phases:

A Plan. This phase includes the initial investigation and review of the current system, existing processes, and developing specific milestones.

B Design. This phase includes development of detailed requirements to meet system and business process solutions. Deliverables for this phase include system architecture documentation, training plans, and testing scenarios.

C Execution. This phase includes the installation, integration, and configuration of the new system, training of SNWA personnel, pilot testing of individual component subsystems, and end-to-end testing in preparation of Go-Live.

D Go-Live. This phase includes all activities required to manage, run and optimize the system.

E Acceptance. This phase includes close out of all project activities at the completion of all tasks and transfers the system to SNWA. This phase also marks the transition to software support activities.

4 DESIGN REQUIREMENTS

The LIMS shall include all the processes identified in the following table entitled, "LIMS Design Criteria, Minimum Requirements."

LIMS DESIGN CRITERIA – MINIMUM REQUIREMENTS

PROCESS	MINIMUM REQUIREMENT
TEMPLATES (lists of sample locations and analyses for a specific project or body of work); in general, a template is created when a specific body of work is fixed over a period of time	• Template creation and updating • Application of specific sample or analysis requirements (filtered flags, mandatory flags, or reportable flags) • Indication of scheduled date and assignment to a user or user group. • Check that all inputs to any calculations used are included.
SAMPLE CREATION AND RECEIPT	• Convert templates to submissions (groups of samples collected together) and assign to field staff for collection (SNWA refers to as routine log-in) • Template is convertible only by the user or group to which it is assigned. • Adjustable collection date when converting templates to submissions. • Info from Templates, template-samples, template-tests, workflows (automated data processing particular analyses), containers and template-level reportable/mandatory/filtered flags (by template) are transferred. • Create and receive sample(s) individually (SNWA refers to as non-routine log-in) • Info for workflows, containers, and analysis-level reportable/mandatory/filtered flags (by analysis) are transferred. • Check that all inputs to any calculations used are included. • Info from workflows and containers is transferred

PROCESS	MINIMUM REQUIREMENT
SAMPLE CREATION AND RECEIPT (Cont.)	• Any sample or submission creation generates a pre-log status for the sample • Allows for deletion of samples • Allows for application of filtered and/or reportable flags to samples, analyses, or components of multi-parameter analyses (e.g., report only three of the ten metals shown in this analysis) • Label creation, including parent and daughter labels • Ability to write files containing sample and submission information to mobile devices (PC Laptops and Windows Mobile Tablets). • Ability to upload data collected by mobile devices into LIMS application. • Ability to edit samples by submission • Add / delete containers for one or more samples. • Verifies sample information (attributes) as a condition of (during) receiving • Allows for regeneration of deleted samples • Send e-mail notification during receipt if sample has been rejected. • Send e-mail notification that a group of samples has been received. • Submission-based reports: Sample and analysis listing along with chain of custody information
ANALYSIS	• Create workgroups (groups of samples analyzed together or batched together for data entry; may also be referred to as a QC batch) • Ability to enter data by workgroup • Regenerate deleted data for a workgroup from audit tables • Ability to establish sample parent-child relationships (reference sample) • Ability to calculate QC Recovery and Relative Percent Difference based on found value, true value and reference sample data. Ability to calculate Recovery based on

PROCESS	MINIMUM REQUIREMENT
	found and true value
ANALYSIS (Cont.)	• Ability to set flag on workgroup's components with blank results so they do not report. • Ability to display and update filtered flags for samples/analyses in workgroup. • Workgroup-based reports, e.g. bench sheets
DATA ENRY/PROCESSING	• Upload of data from subcontract lab electronic data interchange (EDI) files • Direct upload of data from laboratory instruments (all sections of the laboratory) • Automated unit of measure (UOM) conversions (for reporting purposes) • Automatic conversion to appropriate significant figures from entered data (for reporting, review and approval) • Entry of notes at all levels of data entry (analysis, sample, etc.) • Ability to correct/update minimum reporting level (MRL) for each analysis/parameter set • Ability to change method reference for an analysis, one or more samples at a time • Ability to add an one or more instances of an analysis for one or more samples • Ability to remove an instance of an analysis from a sample (except the first instance) • Ability to add an one or more instances of a component of an analysis for one or more samples • Ability to remove an instance of a component of an analysis from a sample (except the first instance) • Ability to create attachments on samples, analyses and chemical inventory items • Direct upload of data from the PCR instrument in microbiology • Notes associated with samples/results should be retrievable from a reporting standpoint

PROCESS	MINIMUM REQUIREMENT
	• Instrument upload software should be part of the LIMS package, not separate application/software
DATA INTEGRITY, QUALITY CONTROL, and QUALITY ASSURANCE	• Data review/approval at analyst, supervisor and manager level; also un-approval of data • Control charts for analytical results and for QC data • Flagging samples and/or results based on certain conditions (holding time exceedance (implies system monitoring of compliance with holding time requirements), QC failure, sample preservation issues, etc.) • Comparison of result with acceptable range of values • Notification at data entry of out-of-range values • Notification at data entry of out-of-range values included for entry of data into electronic notebooks • Comparison of entered results to calibration range to notify analyst of need for sample dilution • Review of corrective actions in LIMS that were precipitated by out-of-control event and documented in the SNWA discrepancy reporting system • Audit parameters set in the LIMS against regulatory requirements • Upload data from analytical balance to the electronic reagent preparation logbook • Tracking of filtered samples • Quality control parameters defined as part of the analysis/method (based on reference method) • Connection between LIMS and other databases (e.g., link between laboratory temperature monitoring system and sample information/location; also linking specific samples to information in electronic notebooks for traceability)

PROCESS	MINIMUM REQUIREMENT
INTERNAL SAMPLE TRACKING (INTERNAL CHAIN OF CUSTODY)	• Person-to-person batch container transfers • Batch disposal of containers • Track containers • General custody transfer • Ability to reject containers during initial scan • Refrigerator to analyst • Analyst to specialized sample storage then to disposal • Keeping track of minimum storage times (to avoid early disposal) • Disposal reports (again, to ensure samples not disposed of early) • Ability to undo rejection of containers • Reclaim a container from disposal (or other final destination) in the case of errors. • Scan sample (container) to determine is available for disposal • Enter a sample ID into the LIMS to determine the last custodian (place or person) • Create daughter labels for containers before they are officially received
REPORTING	• EDI files are created for reporting Safe Drinking Water Act (SDWA) compliance data to the NV Division of Environmental Protection • Ad-hoc database queries • Custom database queries • Standard paper reports (used especially for SDWA compliance reports)

PROCESS	MINIMUM REQUIREMENT
REPORTING (Cont.)	• Backlog reports o Sample load (by analysis, by analyst) o Daily instrument runs o Work schedules • Report packages that include quality control results • Ability to generate EDI that uploads to the Regional Water Quality database • Email notification of report availability or link to the report (e.g., backlog reports, compliance reports) • Tracking status of samples or groups of samples for reporting Special Reports • System Reports • Sample-based reports o Temperature Blank labels • Automation of peer review with notices sent to supervisor/QA if there are suspect data • One-business-day TAT reporting jobs need process revision (currently these samples are lost relative to the reporting job due to project changes after sample receipt) • Priority samples • Samples received with very short holding times • Various productivity reports o Turnaround time o Samples exceeding holding times o Numbers of samples and analyses per period (day, week, month, year) • Peer review reports based on analytical sequence • Report on the MRLs for all analyses/tests

PROCESS	MINIMUM REQUIREMENT
ELECTRONIC NOTEBOOKS Most of these notebooks needed for traceability purposes, so this function relates to data integrity/QC. Notebooks should be accessible to anyone so that multiple sections could use the same logbook, if needed or appropriate	• Logging bacteriological media preparation and its QC • Logging preparation of reagents/preservatives • Supply – receiving logbook (use bar coding wherever possible) • Equipment/Instrument maintenance and QC log, including field equipment • Container preparation log • Bacteriological media QC • Positive/Negative Bacteriological Control Organisms • Bacteriological Sample Bottle Lot Comparison • NIST Thermometer calibration log • Balance calibration log • Media moisture loss log • Standards preparation log, including traceability and reference capability • Reagent logbook (commercially prepared?) • Sample preparation logbook, including traceability and reference capability • General use lab notebooks • Professional and laboratory certifications, training • Air density log • Log of samples collected, mileage
SYSTEM MAINTENANCE	• Create container types and container sets • Create holding times • Create sample locations o Update templates (and optionally samples) if the characteristics of a location are changed.

PROCESS	MINIMUM REQUIREMENT
	• List templates in which location is used
SYSTEM MAINTENANCE (Cont.)	• Create Analyses • Define approval route, limit rule, department, method reference, workflow and parameter count for analysis. • Define parameters of analysis, stage (group of parameters in analysis), #replicates, mandatory flag, default value, data types, units, reporting precision, transform rules, calculation rules, define various limits. • Create Analyses (Cont.) • Set spike amounts for analysis parameters. Different amounts allowed for Matrix Spike, Lab Fortified Blank and Second Source QC. • Set QC Limits for analysis parameters • Set reportable and filtered flags for analysis parameters. • Check calculation rules of an analysis for correctness. • Analysis version control o Check calculation rules of analysis for correctness o Allow activation and expiration of analyses for selected roles. • Set reportable and filtered flags for analysis parameters.
SCHEDULING	• Schedule SDWA requirements for 13 public water systems for which SNWA is responsible • Scheduling employees' work (in some instances, replace the calendar function currently used) • Monitoring requirements embedded in the LIMS and associated with the PWS as a customer
SPECIAL EMAIL NOTIFICATIONS THROUGH	• Notice of Clean Water Act or Safe Drinking Water Act standards violations (permit

PROCESS	MINIMUM REQUIREMENT
MICROSOFT OUTLOOK	requirements or Maximum Contaminant Levels) • Notice of data outside of certain desired parameters (e.g., notice sent if chlorine level is less than 0.5 mg/L or greater than 1.5 mg/L)
SAFETY	• Chemical Inventory for compliance with Chemical Hygiene Plan (CHP) requirements • Include the drawing of the chemical structure for each chemical listed • Searchable chemical database
DOCUMENT VIEWING/CONTROL	• Able to access documents through the LIMS through reference to a linked drive outside of the LIMS • Direct access to documents (SOPs, QA Manual, Certificates of Analysis, Method notes, etc.) that are embedded in the LIMS
INVENTORY CONTROL	• Chemical Inventory Database • Display chemical by portion of name or CAS Number o Create and view synonyms for chemicals o View inventory of each chemical for each supplier o View attachments (usually PDFs) o Chemical Inventory report • Monitor consumables, including chemicals, reagents, standards (linked to supply receiving electronic notebook?)
CLIENT/CUSTOMER MANAGEMENT	• Client tracking • Reporting by client • Clients have direct access to their own data but limited to their own data • Web-based custom dashboards by internal and external clients; one-stop-shop, including custom layout of reports and search capabilities with no limit to the

PROCESS	MINIMUM REQUIREMENT
	number of clients
INFORMATION TECHNOLOGY	• The LIMS product must operate on either an Oracle or SQL Server • The LIMS product must handle efficiently 35 or more simultaneous users and must be capable of record-level locking while doing so • A 3-tier, thin client or web based application architecture • The mid-tier application server and database layers must operate on Windows Server (versions 2008 or 2012) or Solaris (versions 10 or 11) • A client layer, if it exists, must be a Windows operating system (Windows 7 or higher). • The preferred LIMS product will be installable into a virtualized environment (VMWare) • Be able to get enough licenses to accommodate the increase in simultaneous users • Voice data entry/voice recognition • Consider ISO regulated industry standards and current accrediting organizations supported by the vendor/software • LIMS products that offer Software-as-a-Service (SaaS) solutions shall not be acceptable • Maintenance support must be available Monday – Friday 6:00 AM to 6:00 PM PT with a guaranteed response time of 2 hours for telephone and 24 hours for on-site support.

5 ADDITIONAL DESIRED PROCESSES AND CRITERIA

In addition to the required processes and criteria shown above, the SNWA desires the following features:

A Specialized Workflows

(1) Workflow that requires sample digestion date/time to be entered if sample turbidity is >1 NTU (trace metals samples)

(2) Bacillus – Calculate log removal for Bacillus between raw and finished water samples.

(3) MPN workflows – Determine average and normalized average of most probable number of organisms obtained from a lookup table based on well data determined in the analysis. 4 workflows with slight variations for different analyses (CS_MPN, CS_HPC, FC_CS_MPN, RD_CS_MPN). Capable of averaging across multiple data sets.

(4) Conductivity Check- Determine if a sample's conductivity is > 4500. If so, set the value of the "Dilution Needed" parameter in the PERCHLORATE analysis attached to the same sample to "Yes".

(5) Membrane Filtration methods – Determine average and normalized average of observed counts by applying valid count range rules and subsequent calculations. Capable of averaging across multiple data sets. 5 workflows with slight variations for different analyses. (E Coli, Enterococci, Fecal Coliform, Fecal Strep, Heterotrophic Plate Count).

(6) Membrane Filtration Precision Criteria methods – Same functionality as the Membrane Filtration methods workflows with the difference that the observed counts are performed in duplicate (2 replicates), and the replicates are evaluated for precision against the previous 15 values for the given analysis and sample volume.

(7) Free Chlorine – Determine if the sample's Free Chlorine is <0.05 mg/L. If so, add the HPC Pourplate analysis, in triplicate, to the sample. If the sample's Free Chlorine is > 2.2, change the minimum reporting limit to 0.1.

(8) Giardia – Cryptosporidium –

(a) Perform a relative percent different (RPD) calculation between the sample volumes of the Matrix Spike and its reference sample. If the RPD is >10 apply a condition "QCFR" to all components of the analysis and add an analysis-level note" "** MS failed volume precision check with ref sample". If the RPD is <=10, remove the condition from all components of the analysis and also remove the portion of the analysis-level note described above.

(b) Read the value of a component "Confirmation Req" in the GIARDIA – CRYPTO / TEST analysis and add that many GIARDIA-CRYPTO CONFM analyses, minus the number already there, to the sample.

(9) HPC Pourplate –

(a) Determine average and normalized average of observed counts by applying valid count range rules and subsequent calculations. Capable of averaging across multiple data sets.

(b) If the normalized average is > 500, set the value of "CL2 Detected" to "No". Otherwise set the value of "CL2 Detected" to "Yes".

(10) Microscopic Particulate Analysis

(11) Phytoplankton – Requires a collection of data exist in the system containing the genus, division and shape code of commonly found phytoplankton organisms. Requires a series of conversion factors also exist.

(a) The user will put the cursor on each Genus cell and execute the workflow. It will retrieve the shape code, volume settled, magnification, no. of strips and strip width for the current data set of the Phytoplankton Test analysis of the sample. Using the shape code, the list of genera matching the entered shape code will be displayed from the phytoplankton data collection. The user is allowed to select one and only one genus. Using volume settled, magnification, no. of strips and strip width, the workflow will query the Conversion Factor data collection in order to retrieve the conversion factor. The value selected for the Genus will be copied to the selected cell (Genus). The value retrieved for Conversion Factor will be copied to the cell below the selected cell (Conversion Factor). If no. of strips n is greater than 1, the workflow will add n-1 replicates of the Count parameter to the current PHYTOPLANKTON TEST parameter list.

(b) This part will execute after analyst review of the data:

i Group all the data sets for the test together by the Division. The division for a specific genus is found by querying the phytoplankton data table. The workflow will need to determine the division associated with each genus that was entered as a separate data set.

ii Once the divisions are found and the data sets grouped, the Phytoplankton/Calculated variant parameter list can be updated.

iii The number of replicates of the division parameter in the Phytoplankton/Calculated parameter list will equal the number of divisions that were retrieved when all the data sets were grouped.

iv The biomass for a specific division will be computed by summing the biomass parameter value for all the data sets in the phytoplankton/test variant parameter list that are part of a division.

v The cells/ml for a specific division will be computed by summing the cells/ml parameter value for all the data sets in the phytoplankton/test variant parameter list that are part of a division.

vi The Total cells per ml parameter will be a Sapphire calculation that will Sum all the replicates of the cells/ml parameter on the phytoplankton/calculated variant parameter list

vii The Total Biomass parameter will be a Sapphire calculation that will Sum all the replicates of the biomass parameter on the phytoplankton/calculated variant parameter list

viii The bluegreen percentage parameter will be computed by dividing the biomass value for the bluegreen division by the total biomass parameter.

ix The MeasureBy and Test_DateTime parameters will be retrieved from the phytoplankton/test variant parameter list.

x All data will then be released

(12) Split Sample Averaging for Volatile and Synthetic Organic Compounds –

(a) When a detectable result is obtained for a sample for any Volatile Organic or Synthetic Organic compounds, a group of samples (submission) is set up to be collected at the same location. A workflow will allow the user to associate the samples in the group with the sample that contained the detectable result (original sample). The workflow then gives the user the opportunity to specify the compound or compounds for which detectable results were found. For each compound selected, the workflow retrieves key information and creates an additional, almost identical, entry (same compound name) on the original.

(b) After analyst review of the original sample, which is prevented by the system from happening until results of the associated samples have been reviewed, the average of each detected compound over the original and associated samples is calculated and automatically entered for the original sample. Also for each detected compound a detailed note at the compound level, describing how the average was arrived at, is automatically entered.

(13) VELIGERS

(14) Virus MPN

(15) Chromagenic Substrate for Inspection

(16) Chromagenic Substrate

(17) Total Coliform Membrane Filtration for Inspection

(18) Total Coliform Membrane Filtration

B Miscellaneous

(1) Ability to scan documents directly into the LIMS

(2) Ability to drag and drop components as needed

(3) Modular expansion ability

SOUTHERN NEVADA WATER AUTHORITY
RFP NO. 643-13
LABORATORY INFORMATION MANAGEMENT SYSTEM

EXHIBIT C

SOFTWARE LICENSE AGREEMENT

OCTOBER 2013

EXHIBIT C
SOUTHERN NEVADA WATER AUTHORITY
RFP NO. 643-13
LABORATORY INFORMATION MANAGEMENT SYSTEM

SOFTWARE LICENSE AGREEMENT

PARAGRAPH 1

Definitions

1.1 "Software" means the executable code of the HORIZON Laboratory Information Management System Software, together with the executable code for the modules, add-ins, options, special functions, and other ChemWare products identified in Table A under a "HC" or "HO' item designation.

1.2 "Database" means the single central Oracle® database including tables for housing Laboratory Information Management System (LIMS) data established by the Software, together with any Oracle software products identified in Exhibit A under a "OR" item designation.

1.3 "Documentation" means all information provided by ChemWare which describes the installation, operation and use of the Software, in printed or electronic format.

1.4 "Materials" means the Software, Documentation and Database.

1.5 "Oracle" means the Oracle Corporation, located at 500 Oracle Parkway, Redwood Shores, California 94065.

1.6 "Installation Date" means the earliest of the date on which: (a) the Software is delivered to the AUTHORITY; or (b) the Software is loaded onto AUTHORITY's hardware.

1.7 "Licensed Unit" means the unit of measurement used to define the quantity of Materials licensed to AUTHORITY according to the following definitions:

a. "Named User" means any real person authorized by AUTHORITY to use the Materials, regardless of whether that person is actively using the Materials at any given time.

b. "Concurrent User" means any real person authorized by AUTHORITY to use the Materials simultaneously with other authorized real persons.

c. "Processor" means the CPU in the computer on which the Materials are installed and/or running. In a virtual computing environment, to count as one (1) Processor it must be either dedicated to the Materials or the Materials must be bound to the Processor; otherwise all Processors in the computer must be counted when determining compliance with the license quantity.

d. "Server" means the computer on which the Materials are installed.

e. "Instrument" means the individual analytical instrument, or instrument data system controlling that instrument, as the case may be, on which the Materials are installed.

f. "Workstation" means the individual personal computer on which the Materials are installed.

g. "Device" means the individual hardware, hardware data system, network folder or other medium for data storage.

1.8 "Embedded Software License" means a special Database licensing option limiting the AUTHORITY's routine access to the Database to the functions provided through the Software interface.

1.9 "Licensor" means any third party software provider, including Oracle, from which ChemWare has secured the right to sublicense, distribute, integrate, and/or support the provider's product as a module, add-in, option or special function when used in conjunction with the Materials and the terms of this Agreement.

PARAGRAPH 2

License

2.1 Grant of License. ChemWare grants to AUTHORITY and AUTHORITY accepts, pursuant to the terms and conditions of this Agreement, nonexclusive, nontransferable license ("License") to use the Materials commencing on the Installation Date and continuing in perpetuity unless terminated in accordance with the terms herein, with the following restrictions:

a. The Materials may be used only by AUTHORITY. AUTHORITY may not sublicense, rent, distribute, lease, timeshare or otherwise transfer or assign AUTHORITY's rights in the Materials. AUTHORITY may not act as a service bureau or provide subscription services using the Materials.

b. AUTHORITY may not change, alter, modify, translate, disassemble, decompile or reverse engineer the Materials. If AUTHORITY has an Embedded Software License, AUTHORITY may not modify the Database data structures except as may be provided through the Software interface.

c. The Materials may be installed and used by no more than the quantity of Licensed Units specified in Table A (as may be amended from time to time). If Licensed Units are based on Concurrent Users or Named Users, authorization for use must be granted by defining unique individual user names and security credentials through the Software interface, which names and credentials may not be shared by other users. A previously authorized Named User may be deactivated and replaced by a new Named User, with no net change in license quantity.

d. AUTHORITY may not export or re-export the Materials or any copy, adaptation, or product thereof, directly or indirectly, in violation of any U. S. export law or other applicable regulation, or use the Materials for any purpose prohibited by these laws. The Materials, delivered to U.S. Government end users, are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation ("FAR") and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the Materials shall be subject to the license and license restrictions set forth in this Agreement, and, to

the extent applicable, the additional rights set forth in FAR 52.227-19, Commercial Computer Software – Restricted Rights (June 1987).

e. AUTHORITY may not publish any performance data, including the results of any benchmark tests, on the Materials in any periodical or other media intended for release to the general public, or to a third party unless release is required by and in accordance with Nevada statutes.

f. AUTHORITY may not remove or modify any ChemWare or Licensor program markings, copyright notices, trademarks or other notices of proprietary rights in the Materials.

g. All rights not expressly granted are reserved to ChemWare and its Licensors.

2.2 Additional Units and Materials. Any updates or new versions, modules, add-ins, options, customizations or special functions to the Materials provided to AUTHORITY by ChemWare shall also become part of the Materials and shall be governed by the terms of this Agreement. Additional Units may be added by an Addendum to Exhibit A, subject to payment of the required fees pursuant to Paragraph 4.

2.3 Copies. AUTHORITY shall not make any copies of the Materials except in accordance with the following:

a. The Materials may be copied as part of the standard backup process used by AUTHORITY, provided that such copies are used only when restored to the primary production environment and only during the term of the License granted herein.

b. One copy of the Materials may be used on an unlicensed spare (failover) Server provided that (i) such use is exclusively in a failover environment; (ii) use of the failover Server does not extend beyond a total of ten separate days in any given calendar year; and (iii) use of the failover Server in a production environment is discontinued when the primary production Server is repaired or replaced.

c. One copy of the Materials may be installed in development, test and/or training environments, provided that such copy is installed within a tablespace in the same database and on the same Server as the production environment.

d. ChemWare must approve, in advance and in writing, any additional copies, backups or archives AUTHORITY wishes to make, which approval may be contingent upon, among other conditions, the licensing rules of Oracle and other Licensors.

PARAGRAPH 3

License Fees

3.1 AUTHORITY agrees to pay ChemWare a license fee ("License Fee") for the License to use the Materials in accordance with the license quantities specified in Table A and payment terms specified in Exhibit A. An additional license fee will be required if

AUTHORITY adds to the quantity of Licensed Units or acquires licenses for additional modules, add-ins, options, special functions, customizations or other products from ChemWare, and such additional fee is deemed part of the License Fee.

3.2 Neither the License Fee nor any additional license fee shall include the right to new versions, updates, upgrades, or additional or different software or services of any kind.

3.3 All payments shall be made within the United States in U.S. dollars, and shall be nonrefundable.

3.4 Unless the License Fee is paid in full on or before the Installation Date, a temporary license key will be issued to AUTHORITY. At such time as AUTHORITY has paid the License Fee in full, AUTHORITY will be issued a permanent license key allowing access to the Materials. In the event AUTHORITY fails to pay the License Fee in full and pursuant to the terms of Exhibit A, the temporary license key will expire, certain functions of the Materials will cease to operate, and ChemWare may proceed with its remedies for breach.

PARAGRAPH 4

Ownership and Intellectual Property Rights

ChemWare and its Licensors retain all ownership and intellectual property rights in and to the Materials. AUTHORITY acknowledges that the Materials and any modifications, copies or derivatives thereof are the sole and exclusive property of ChemWare and its Licensors, regardless of the form or media in which the original or copies may exist. The Software, including its code, logic, design and structure, contains trade secrets which are the sole property of ChemWare, and AUTHORITY agrees to secure and protect the Software so that ChemWare's trade secrets therein are not disclosed to any third parties.

PARAGRAPH 5

Limited Warranties

5.1 ChemWare makes the following warranties to AUTHORITY with respect to the Materials:

a. For the first sixty (60) days after the Installation Date, if the Software, as delivered (and, if applicable, installed) by ChemWare fails to perform in accordance with the functional specifications in the Documentation, and provided that ChemWare is given written notice of the failure within this warranty period, ChemWare will correct or bypass such error to the extent the error (i) materially affects the user's ability to use the Software in accordance with the Documentation; and (ii) can be reproduced or recreated by ChemWare under similar conditions and in a commercially reasonable manner. ChemWare shall have no obligation to correct or bypass errors under this warranty which result from: (iii) modification of the Materials by a person other than ChemWare; (iv) errors caused by defects, problems or failures of hardware, software or other

components or systems not provided by ChemWare; or (v) introduction of errors caused by the negligence of AUTHORITY or other non-ChemWare personnel.

b. If the Materials, as delivered to AUTHORITY, are alleged to infringe any registered trademark, registered service mark, copyright or patent, or to misappropriate any trade secrets of a third party (or if ChemWare otherwise believes the Materials may infringe or misappropriate), ChemWare will make commercially reasonable efforts to either modify the Materials to be noninfringing (while substantially preserving the utility and functionality of the affected portion of the Materials) or obtain a license to continue use.

5.2 Other than the foregoing specific warranties, the Materials are provided "AS IS" and ChemWare makes no warranty, guaranty, condition, covenant or representation, express or implied. All other warranties, including without limitation the implied warranties of merchantability, fitness for a particular purpose, noninfringement, timeliness, currency, accuracy or other attributes, or from a course of dealing or usage, are specifically disclaimed. Without limiting the foregoing, ChemWare and its Licensors make no warranty or representation that the operation of the Software or the Database will be uninterrupted or the Materials will be error-free.

PARAGRAPH 6

Limitations on Liability

6.1 In the event of a breach of the warranty set forth in Paragraph 5.1a, and provided that such breach continues for a period of thirty (30) days after AUTHORITY gives written notice to ChemWare of the breach, then AUTHORITY may terminate this Agreement and recover the License Fees paid to ChemWare through the date of termination and once the License is terminated. This is AUTHORITY's exclusive remedy.

6.2 In the event AUTHORITY alleges a breach of the warranty set forth in Paragraph 5.1b, or in the event ChemWare otherwise terminates part of the License granted hereunder based on an allegation or determination that any part of the Materials infringe the intellectual property of a third party, then ChemWare's liability shall be limited to a refund of the License Fees actually paid to ChemWare for the applicable part of the Materials for which the License has been terminated. This is AUTHORITY's exclusive remedy.

6.3 Except with respect to damages arising out of or related to a breach of Paragraphs 5.1a or 5.1b, the remedies for which are set forth exclusively above, or damages which may arise as a direct result of ChemWare's gross negligence, ChemWare's liability to AUTHORITY for damages arising from or related to this Agreement shall be limited to the amount of the License Fees AUTHORITY has paid to ChemWare hereunder.

6.4 Neither party shall be liable for any indirect, incidental, special, punitive, or consequential damages, whether in tort or contract or based on any other legal theory. Neither ChemWare nor its Licensors, including but not limited to Oracle, shall be

liable for damages from interruption of business, loss of use of the Materials, loss of profits, revenue, data, or data use, cost of recreating data, cost of capital, cost of any substitute software, or losses caused by delay, even if ChemWare or its Licensors, including but not limited to Oracle, has been advised of the likelihood of such damages occurring.

PARAGRAPH 7

Indemnification

7.1 Subject to the limitations in Paragraph 7.2, ChemWare agrees to indemnify and defend AUTHORITY with respect to any claim brought against AUTHORITY based on alleged infringement by the Materials of the claimant's intellectual property rights, provided AUTHORITY must:

a. Provide written notice to ChemWare not later than fifteen (15) days after AUTHORITY receives notice of a claim or suit; and

b. Give ChemWare sole control of the defense and any settlement negotiations; and

c. Give ChemWare the information, authority and assistance requested to defend against or settle the claim. ChemWare may settle any such claim in any manner it deems appropriate, provided that AUTHORITY shall have no obligation to make a payment under any such settlement without its prior consent. AUTHORITY shall have the right to participate at its own expense in the defense of any such suit or proceeding through counsel of its own choosing.

7.2 ChemWare shall have no indemnification obligation to AUTHORITY other than as set forth in Paragraph 7.1. In clarification but not limitation of the foregoing, neither ChemWare will indemnify AUTHORITY if AUTHORITY:

a. Makes a claim based upon third party programs or ancillary programs not included in the Materials; or

b. Alters the Materials or uses a version of the Materials which has been superseded, and the infringement claim could have been avoided by using an unaltered current version of the Materials; or

c. Combines the Materials with any other software or hardware not furnished by ChemWare; or

d. Uses the Materials outside the scope of use set forth in the Documentation.

PARAGRAPH 8

Termination

8.1 The License granted hereunder shall automatically terminate with the termination of this Agreement.

8.2 In the event of any default of any obligation under this Agreement which remains uncured thirty (30) days after receipt of a written notice identifying in detail the nature of the default and the expectations to cure the default, the non-defaulting party may terminate this Agreement.

8.3 Within ten (10) days after termination of this Agreement, AUTHORITY shall discontinue use of the Materials; shall either return to ChemWare the Materials and all copies thereof, or delete or destroy all copies of the Materials; and deliver to ChemWare a written certification as such.

8.4 Upon termination of this Agreement, except termination by AUTHORITY as a result of a breach by ChemWare of Paragraph 5.1a or 5.1b, all unpaid License Fees shall immediately become due and payable.

8.5 Notwithstanding Paragraph 8.4, no further License Fee payment shall be due in the event of termination of this Agreement pursuant to the terms of Paragraph 6.1 or 6.2, and AUTHORITY may recover damages as set forth in Paragraph 6.1 or 6.2, as applicable and as limited thereby.

8.6 Any provision of this Agreement which by its terms imposes continuing obligations, including but not limited to Paragraphs 3, 4, 5, 6, 7, 8, and 9, shall survive the termination of this Agreement.

PARAGRAPH 9

Relationship Between ChemWare and Oracle

The parties agree that Oracle is a third party beneficiary of this Agreement. ChemWare is an independent contractor/licensee in all matters relating to its contracts with Oracle. Except for as specifically identified in this Agreement, neither ChemWare nor Oracle has any authority to assume or create any obligation, express or implied, on behalf of the other party, nor to represent the other party as agent, employee, franchisee, or in any other capacity.

TABLE A

A. LICENSED MATERIALS:

The Materials included in this License are itemized in the Licensed Units and quantities described below:

HC-001	HORIZON Central	LIMS License	40	Concurrent Users
HC-003	Standalone Test System	Test System Licenses	1	System
HC-004	Standalone QA System	QA System Licenses	1	System

HO-106	HORIZON Report Manager	Report Writer, Dev Tools	2	Processors
HO-107	LabOnline	Web Portal	1	Site
HO-109	HORIZON Statistical Analysis	Control Charts/Analysis Tool	1	Server
HO-110	HCM Enterprise Report Automation	Report Package Automation	1	System

HO-113	LimsLink Collect	Balance Integration Tool	10	Instrument Connections
HO-114	HORIZON Data Exchange (HDX)	Instrument Data Parsing Tool	1	Site
HO-117	HORIZON Field Data Capture Automation	Laptop/Field Data Integration	10	Named Users
HO-120	SimpleIndex Barcode OCR Software	Scanned Document Capture	1	Workstation
HO-121	HORIZON Logbook Manage	Electronic Logbook Capture	40	Concurrent Users

SOUTHERN NEVADA WATER AUTHORITY
RFP NO. 643-13
LABORATORY INFORMATION MANAGEMENT SYSTEM

EXHIBIT D

TECHNICAL SERVICES AGREEMENT

OCTOBER 2013

EXHIBIT D
SOUTHERN NEVADA WATER AUTHORITY
RFP NO. 643-13
LABORATORY INFORMATION MANAGEMENT SYSTEM

TECHNICAL SERVICES AGREEMENT

PARAGRAPH 1

Services

1.1 General Description. Subject to the terms of this Agreement, ChemWare agrees to provide certain services related to the installation, implementation, management, customization and use of the HORIZON® Laboratory Information Management System (the "Software") licensed to AUTHORITY by ChemWare pursuant to a separate license agreement (the "Software License Agreement"). The services to be provided to AUTHORITY by ChemWare shall include only those services ("Services") set forth in the services sections (project management and implementation, training and special programming/customization) of the associated ChemWare-issued quotation ("Quotation"), and, if applicable, the Request for Services or Software Change document(s) ("RSSC"), with effective dates as described in Exhibit A and for so long as this Agreement shall remain in effect. The tasks, dependencies, usability criteria and any other related description of Services in the Quotation and, if applicable, the RSSC, shall comprise the "Specifications." AUTHORITY acknowledges and agrees that it is responsible for carefully reviewing the Specifications prior to acceptance. AUTHORITY further acknowledges that ChemWare shall not be responsible for any additional costs or delays incurred as a result of AUTHORITY error, omission, or modification in the Specifications. If there is any conflict between the Quotation, RSSC and this Agreement, the provisions of this Agreement shall control.

1.2 Performance of Services. ChemWare shall perform the Services in accordance with the terms and conditions set forth in the Quotation. Subject to the terms of this Agreement: (a) ChemWare has the sole and exclusive right to control and direct the manner and means by which ChemWare renders the Services, provided that such manner and means meet the Specifications; and (b) ChemWare may perform the duties at any time or pursuant to any schedule, provided that such performance meets any schedules set forth in the Specifications. Notwithstanding the foregoing, ChemWare may, at its option, cancel or reschedule any scheduled Service in case of instructor illness or other unforeseen circumstance beyond ChemWare's direct control. In the event of such cancellation, ChemWare shall make commercially reasonable efforts to reschedule the Service at the AUTHORITY's convenience.

1.3 Installation and Testing Services. Prior to software installation, AUTHORITY shall, at ChemWare's request, provide a written description of AUTHORITY's system architecture, including but not limited to hardware and network configuration. ChemWare shall coordinate with AUTHORITY on timing, and at the agreed-upon time shall install the Software onto the hardware at such time as ChemWare has received: (a) the hardware shipped to ChemWare, or (b) notification from AUTHORITY that all necessary hardware described in the Specifications is installed on the AUTHORITY's network and ready for the installation of the Software.

1.4 System Configuration Services. AUTHORITY shall to the best of its abilities, provide ChemWare with all requested documentation and input necessary for ChemWare to commence configuration Services.

1.5 Training Services. Unless otherwise agreed by the parties with respect to a specific training session, all on-site training shall be scheduled for and take place between the hours of 6:00 am and 4:30 pm local time, Monday through Thursday. Unless authorized in writing by ChemWare, training Services may not be attended by third party persons, entities or personnel, including but not limited to AUTHORITY's contractors or consultants.

1.6 Customization/Special Programming Services. For any customization or special programming Services provided by ChemWare, a RSSC must be prepared by ChemWare, and reviewed and signed by AUTHORITY, prior to commencing Services. For data export or migration Services, AUTHORITY shall provide ChemWare with: (a) the data files to be migrated, in a format required by ChemWare; and (b) a description of the third party software on which the AUTHORITY applications and files are currently running, which may include an entity relationship diagram. AUTHORITY shall pay the full cost of obtaining and installing the data and information, including any costs of reruns or reinstallation if the data or the media on which it has been provided are in any way defective. AUTHORITY is responsible for keeping a backup of all data and information files that allow for the recreation of the data and information files in the event that those provided to ChemWare are lost or destroyed.

PARAGRAPH 2

AUTHORITY Obligations

AUTHORITY shall provide the information and services set forth below. Any failure to meet such obligations in the time period set forth may result in a claim against AUTHORITY for additional cost.

2.1 AUTHORITY Information Delivery. Prior to the commencement of Services, AUTHORITY shall provide ChemWare with the information identified in the Specifications. In addition, AUTHORITY shall make good faith efforts to promptly provide ChemWare with all additional information requested by ChemWare and necessary for the provision of Services.

2.2 Availability of Human Resources. AUTHORITY hereby acknowledges and agrees that it may be necessary for certain of its staff, vendors and/or consultants ("key contacts") to interact with ChemWare in order for ChemWare to perform the Services. Therefore, within one (1) week following a request by ChemWare that certain key contacts be made available on specified dates/times to participate in interactions with ChemWare, and provided that AUTHORITY shall be under no obligation to make former employees or former consultants so available, AUTHORITY shall: (a) make such key contacts available to ChemWare on the dates/times specified; or (b) provide qualified and suitable replacements for key

contacts on the dates/times specified; or (c) provide ChemWare with alternative dates/times that such key contacts will be available. Should AUTHORITY confirm that resources will be made available and then fail to meet its obligations with respect to this Paragraph 2.2, ChemWare shall have the right to cancel and reschedule the Services with no liability of any kind, and AUTHORITY shall be subject to a Cancellation Payment pursuant to Paragraph 5.2.

2.3 Third Party Software. AUTHORITY shall provide ChemWare with any software required for the performance of the Services together with a license to use such software, which software shall be returned to AUTHORITY upon completion or termination of the Services.

2.4 Working Facilities. AUTHORITY shall be responsible, at its own expense, for preparing its location/facilities for the Services, including but not limited to any modifications necessary to make the AUTHORITY location comply with any utility, climate control, communication interface or other specifications. AUTHORITY shall provide, at no cost to ChemWare, access to suitable office space with electrical connection and scanner/photocopier capabilities if such facilities are reasonably required to perform the Services. If performance of Services reasonably requires access to AUTHORITY facilities during non-business hours, AUTHORITY shall provide ChemWare such access. In addition, AUTHORITY shall provide access to or use of its records or documents as well as of its computer equipment, as are reasonably required for the performance of the Services. In connection with any disclosure, ChemWare agrees to execute in advance any necessary confidentiality agreement and to comply with all state and federal privacy regulations.

PARAGRAPH 3

Acceptance of Deliverables and Services

ChemWare shall notify AUTHORITY at such time as any service, milestone or other distinct portion of the Services provided under this Agreement ("Deliverable") has been delivered. Unless otherwise set forth in the Specifications, AUTHORITY shall then have twelve (12) business days to either accept or reject the Deliverable; provided however, that: (a) AUTHORITY must accept the Deliverable if it conforms in all material respects with the Specifications; and (b) if AUTHORITY fails to notify ChemWare of its rejection of the Deliverable, or the parties do not mutually agree in writing to extend the time for acceptance/rejection, the Deliverable shall be deemed accepted. Should AUTHORITY reject the Deliverable for nonconformance with the Specifications, ChemWare shall have twelve (12) business days to deliver a corrected Deliverable to AUTHORITY, and AUTHORITY shall then have an additional twelve (12) business days to accept/reject the corrected portion of the Deliverable. This process shall continue until the Deliverable is accepted or the Agreement terminated pursuant to Paragraph 6.1. If ChemWare is unable to provide AUTHORITY with a Deliverable that materially complies with the Specifications, ChemWare will refund the portion of the Services fees paid with respect to the nonconforming Deliverable, but shall be under no obligation to refund any portion of fees paid pursuant to other Services for, or agreements with, AUTHORITY, including but not

limited to the Software License Agreement. Following acceptance of the Deliverable, the Warranty shall be in effect, during which AUTHORITY shall have an additional sixty (60) days to report any material non-conformance with Specifications for the Deliverable, pursuant to Paragraph 6.1.

PARAGRAPH 4

Ownership and Intellectual Property Rights

4.1 Software. AUTHORITY acknowledges that any software code produced by ChemWare pursuant to this Agreement, whether in source, object or executable (human or machine-readable) form, regardless of whether it is compiled, and including without limitation all code for objects, algorithms, routines and utilities, and all documentation, regardless of the media on which it exists, is owned, and the copyright and trade secrets for such software, all interfaces to third party software, all patents rights and all right, title and interest associated with any ideas, concepts, techniques, inventions, processes, or works of authorship related to any modifications to the Software, including but not limited to all copyrights, patents, trade secrets, or other intellectual property rights, that are not physically incorporated in such modifications to the Software, shall be owned solely by ChemWare. Such ownership shall exist regardless of whether AUTHORITY's employees or contractors shall have contributed to the idea or conception of any part of the modification. AUTHORITY agrees to execute any documents that may become necessary to evidence such ownership. Any use of software code produced by ChemWare pursuant to this Agreement shall be governed by the terms and conditions of the Software License Agreement.

4.2 Training Materials. To the extent that ChemWare may prepare, create, customize or deliver any training services materials, all right, title and interest in and to the materials, including but not limited to the underlying intellectual property rights, shall be owned by ChemWare.

4.3 Skills. AUTHORITY recognizes that ChemWare may develop certain analytical skills, prepare certain analyses, develop or discover certain trade secrets and acquire certain general knowledge in the course of performing the Services under this Agreement (the "Intellectual Property"). AUTHORITY agrees that ChemWare is the owner of this Intellectual Property, including without limitation each and every invention, creation, discovery, improvement, design, or process made or discovered by ChemWare employees or subcontractors while working for AUTHORITY under this Agreement. ChemWare may use or disclose the Intellectual Property on behalf of or to any party, at the sole discretion of ChemWare, without any liability to AUTHORITY, provided such use or disclosure does not violate the confidentiality requirements of Paragraph 7 of this Agreement. AUTHORITY further agrees that it has no right to use or disclose this Intellectual Property, except to the extent that it is part of the reports, documents, training materials, memoranda or other deliverables prepared by ChemWare pursuant to this Agreement or as otherwise authorized in writing by ChemWare.

PARAGRAPH 5

Fees and Charges

5.1 Fees. All Services shall be billed according to the rates and terms described in Exhibit A. ChemWare does not currently bill for travel time to and from AUTHORITY's site

5.2 Cancellation Payment. AUTHORITY shall be obligated to pay any cost incurred in anticipation of any scheduled Service, if AUTHORITY: (i) cancels with less than one week's prior written notice, (ii) fails to show, or (iii) is otherwise unprepared to receive such Service. AUTHORITY shall have no obligation to pay for a cancelled Service if written notice is provided to ChemWare at least one week prior to the scheduled start date of the Service. Except for ChemWare's cancellation of a Service pursuant to Paragraph 2.2, AUTHORITY shall be under no obligation to pay ChemWare should ChemWare cancel a scheduled Service.

5.3 Expenses. AUTHORITY shall reimburse ChemWare for all reasonable out-of-pocket expenses incurred in connection with its provision of any Services pursuant to this Agreement, including without limitation, express mail, telephone, facsimile, reproductions, disposable supplies purchased exclusively for work for AUTHORITY, and travel (including airfare, rental cars, taxis, lodging, meals, parking and necessary incidentals). Such reimbursable expenses shall specifically include any expenses related to noncancellable travel and lodging, or cancellation charges that ChemWare may reasonably incur notwithstanding AUTHORITY's otherwise timely cancellation of the Services to which the travel and lodging relates. Expenses shall be billed in accordance with the standard practices and procedures of ChemWare in effect at the time the expenses are incurred.

Reimbursement for meals and incidentals may not exceed the federally established Internal Revenue Service (IRS) meal per diem rates for the travel location (which also includes all tips and most miscellaneous expenses).

Alcoholic beverages and personal items such as in-room movies, reading materials, cigarettes, hygiene items, etc., are non-reimbursable.

5.4 Payment Terms. ChemWare will submit an invoice to AUTHORITY immediately following completion of each Service, covering the charges accrued pursuant to Paragraphs 5.1, 5.2 and 5.3 Payments are due to ChemWare within thirty (30) days from receipt of invoice. If payment is not made within thirty (30) days, AUTHORITY agrees to pay interest on all unpaid amounts at the rate of the lesser of one and one-half percent (1.5%) per month or the highest rate allowed under applicable law. ChemWare may suspend all Services, without prior notice, at any time that payments for charges are late, and ChemWare shall have no liability related to such suspension.

PARAGRAPH 6

Limited Warranties

6.1 Warranty by ChemWare. ChemWare warrants that for a period of sixty (60) days after delivery of any Deliverable pursuant to this Agreement, the Deliverable shall

conform in all material respects to the Specifications. Except as provided in this paragraph 6.1, ChemWare makes no warranty, either express or implied, including the warranties of merchantability, fitness for a particular purpose or noninfringement, as to any matter, including but not limited to, the services, deliverables, reports, analyses, documents, memoranda, software, on-line works or other matters produced or provided under this Agreement. In no event shall any warranty provided hereunder apply to the functionality of the Software. All warranties related to the Software shall be as set forth in the Software License Agreement. The stated express warranties are in lieu of all obligations or liabilities on the part of ChemWare arising out of or in connection with the performance of this Agreement.

6.2 Warranty by AUTHORITY. AUTHORITY warrants that it owns all right, title, and interest in all data and information, and any specifications, design requirements, or other information furnished by AUTHORITY to ChemWare in connection with ChemWare' performance of the Services, or to the extent that AUTHORITY does not have such ownership rights AUTHORITY warrants it shall have obtained all rights required for ChemWare to make use of the data and information, prior to providing such other data and information to ChemWare.

PARAGRAPH 7

Limitations of Liability

AUTHORITY acknowledges that it is responsible for the successful configuration, application, validation, operation, and management of the Software, including implementation of appropriate systems, procedures, and safeguards, whether or not any part of the Software is configured or modified through Services provided by ChemWare. AUTHORITY further acknowledges that it is solely responsible for the results produced by the Software as they pertain to the AUTHORITY's business and requirements, and is solely responsible for hiring and training appropriate personnel to utilize the Services and operate the Software. AUTHORITY agrees that regardless of the form of any claim, AUTHORITY'S SOLE REMEDY AND CHEMWARE'S SOLE OBLIGATION WITH RESPECT TO ANY CLAIMS MADE RELATED TO OR ARISING OUT OF THIS AGREEMENT SHALL BE GOVERNED BY THIS AGREEMENT, AND IN ALL CASES AUTHORITY'S REMEDIES SHALL BE LIMITED SPECIFICALLY TO, AT CHEMWARE'S OPTION, CORRECTION OF THE DELIVERABLES OR REIMBURSEMENT OF PAYMENTS MADE FOR THE DELIVERABLES OR PORTION OF THE SERVICES IN DISPUTE; PROVIDED HOWEVER THAT WITH RESPECT TO A CLAIM OF BREACH OF THE EXPRESS WARRANTY IN PARAGRAPH 6.1, IF SERVICES ARE PERFORMED ON AN HOURLY/DAILY BASIS AS DESCRIBED IN EXHIBIT A, AUTHORITY SHALL PAY THE SAME HOURLY/DAILY RATE FOR CORRECTION OF THE DELIVERABLES OR PORTION OF THE SERVICES IN DISPUTE, AS IF THE PROBLEM HAD BEEN IDENTIFIED PRIOR TO ACCEPTANCE. IT IS EXPRESSLY AGREED THAT IN NO EVENT SHALL CHEMWARE OR ANYONE ELSE WHO HAS BEEN INVOLVED IN THE PERFORMANCE OF THIS AGREEMENT ON BEHALF OF CHEMWARE, INCLUDING ITS OFFICERS, DIRECTORS, EMPLOYEES, AGENTS, REPRESENTATIVES, OR SUBCONTRACTORS, BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES ARISING FROM BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, OR ANY OTHER LEGAL THEORY, WHETHER IN TORT OR CONTRACT, EVEN IF CHEMWARE HAS BEEN APPRISED OF THE LIKELIHOOD OF SUCH DAMAGES OCCURRING,

INCLUDING WITHOUT LIMITATION DAMAGES FROM INTERRUPTION OF BUSINESS, LOSS OF INCOME OR OPPORTUNITIES, LOSS OF USE OF SOFTWARE, LOSS OF DATA, COST OF RECREATING DATA OR COST OF CAPITAL.

PARAGRAPH 8

Non-Solicitation

Unless written approval is granted by the other party, each party agrees to refrain from soliciting, hiring or contracting or attempting to hire or contract the other's employees or subcontractors who have been involved with the provision of Services under this Agreement for a period of one (1) year from the last date of provision of such Services by such employee or subcontractor. In the event this provision is found to conflict with current labor laws or otherwise be unenforceable, or ChemWare grants permission to Customer to hire or contract with a ChemWare employee or subcontractor, ChemWare shall be entitled to receive from Customer a "placement fee," in the amount of 25% of the employee's or subcontractor's most recent total annualized compensation.

SOUTHERN NEVADA WATER AUTHORITY
RFP NO. 643-13
LABORATORY INFORMATION MANAGEMENT SYSTEM

EXHIBIT E

SOFTWARE MAINTENANCE AGREEMENT

OCTOBER 2013

EXHIBIT E
SOUTHERN NEVADA WATER AUTHORITY
RFP NO. 643-13
LABORATORY INFORMATION MANAGEMENT SYSTEM

SOFTWARE MAINTENANCE AGREEMENT

PARAGRAPH 1

Definitions

1.1 "Software" means the executable code of the HORIZON Laboratory Information Management System Software, together with the executable code for the modules, add-ins, options, special functions, and other ChemWare products included in the terms of the License Agreement.

1.2 "Database" means the single central Oracle® database including tables for housing Laboratory Information Management System (LIMS) data established by the Software, together with any other Oracle software products included in the terms of the License Agreement.

1.3 "Documentation" means all information provided by ChemWare which describes the installation, operation and use of the Software, in printed or electronic format.

1.4 "Materials" means the Software, Documentation and Database.

1.5 "Oracle" means the Oracle Corporation, located at 500 Oracle Parkway, Redwood Shores, California 94065.

1.6 "Parser" means an executable program, routine, or other code or method developed by ChemWare to reformat data and generate an output file.

1.7 "Error Correction" means (i) a software modification or addition that, when made or added to the Materials, establishes material conformity of the Materials to the Documentation; (ii) a procedure or routine that, when observed in the regular operation of the Materials, eliminates or bypasses the practical adverse effect on AUTHORITY of such nonconformity; or (iii) an update to the Documentation to reflect the intended description of the proper use of the Materials.

1.8 "Updates" means any additional or supplemental releases of the Materials made generally available under this Agreement, and which may include Error Corrections or enhancements to the Materials. The Updates do not include fundamental changes to the graphical user interface technology, supported database or operating system platform, or any additional hardware or software necessary to support such changes.

1.9 "Unsupported Items" shall include but not be limited to the following, whether or not provided by ChemWare: (i) scripts; (ii) Materials or other software beyond the warranty period; (iii) example software (e.g., off-the-shelf reports, calculations, triggers or interfaces) to assist users in extending the Software's functionality; (iv) Parsers for versions of instruments or data sources other than those for which the Parsers were originally developed; (v) Updates other than the most recent Update of the Materials, provided that ChemWare shall continue to support prior Updates for a period of sixty (60) days from the date of the most recent Update; and (vi) hardware.

1.10 "Customer Error" means an error in the functioning of the Materials which results from (i) defects, problems, failures, or use with hardware, software or other components or systems not provided by ChemWare; (ii) use with Unsupported Items; (iii) negligence of AUTHORITY or other non-ChemWare personnel; or (iv) modification of the Materials by AUTHORITY, including without limitation changes made by AUTHORITY to the control tables and computation routines in a manner inconsistent with the Documentation or ChemWare-provided training. AUTHORITY Error shall also mean an error resulting from AUTHORITY's use of the Materials (v) in a manner that is not within ordinary use of the Materials as described in the Documentation; or (vi) in a computing environment not certified or recommended by ChemWare for use with the Materials.

1.11 "Error" means any error in the Documentation or failure of the Software, as delivered (and, if applicable, installed) by ChemWare, that materially affects the user's ability to use the Software in accordance with the Documentation, to the extent the error or failure is not the result of AUTHORITY Error.

1.12 "Normal Working Hours" means the hours between 8:00 A.M. and 6:00 P.M. AUTHORITY local time, Monday through Friday, excluding regularly scheduled ChemWare holidays.

PARAGRAPH 2

Obligations and Services

2.1 AUTHORITY Obligations.

a. AUTHORITY shall be responsible for procuring, installing, and maintaining all equipment, telephone lines, communications interfaces, operating systems and other hardware and software necessary to operate the Materials in conformance with the Documentation.

b. AUTHORITY shall be responsible for installing and implementing the Materials, unless such services are provided by ChemWare pursuant to a separate agreement.

c. AUTHORITY shall designate up to three (3) contact persons ("AUTHORITY Technical Representatives") for all software support and maintenance communication with ChemWare's designated Technical Support and Project Management points-of-contact, and each AUTHORITY Technical Representative shall only be designated as such following successful completion of all ChemWare-recommended training on implementation and use of the Materials.

d. Prior to contacting ChemWare for assistance, the AUTHORITY Technical Representative shall use his or her own expertise and careful review of the Documentation to attempt to resolve AUTHORITY's questions or issues relating to the Materials.

e. The AUTHORITY Technical Representative shall provide ongoing and timely feedback to ChemWare in support of all troubleshooting and resolution activities relating to the Materials. In some cases, this feedback may require the

AUTHORITY Technical Representative to supply a reproducible test case, database export, documentation (such as screen captures), or remote or on-site access to AUTHORITY's software and hardware.

2.2 Covered Services. During Normal Working Hours and throughout the term of this Agreement:

a. ChemWare shall provide to the AUTHORITY Technical Representatives telephone and e-mail support related to (i) Error notification and resolution; (ii) questions on functional and operational issues related to the Materials; (iii) configuration of the control tables and results computations; and (iv) installation of new Updates.

b. ChemWare shall adequately staff a call support center with trained, full-time employees capable of rendering the Covered Services.

c. ChemWare shall maintain a technical support request database for tracking the disposition of all technical support requests, software change requests, and related communications and diagnostic information.

d. ChemWare shall be responsible for Error Correction, provided that (i) ChemWare is given written notice of the Error by the AUTHORITY during the term of this Agreement; and (ii) the Error can be reproduced or recreated by ChemWare under similar conditions and in a commercially reasonable manner.

e. If the Error affects the use of the Materials in a production environment, ChemWare shall provide Error Correction through a "service pack" or "patch," which may be downloaded from ChemWare's web site, and ChemWare shall include the Error Correction in all subsequent Updates of the Materials.

2.3 Other Services. Any services not specified in Paragraph 2.2 above will be considered "Other Services."

a. Other Services shall include, but not be limited to, (i) correction of AUTHORITY Errors; (ii) services provided outside of Normal Working Hours; (iii) assistance with installation of Updates if it is more practical, in ChemWare's sole opinion, to provide the service at AUTHORITY's site; (iv) training; (v) system configuration; (vi) custom programming; (vii) methods customization; (viii) data imports or conversion (such as client and sample results data migration); (ix) control table enhancements; (x) custom interface development; (xi) report customization or development; (xii) consulting or project management services; or (xiii) network, database management or recovery, operating system, hardware or other IT service not specifically identified in Paragraph 2.2 as a Covered Service.

b. Other Services may be provided by ChemWare, at its sole discretion, subject to staff availability and pursuant to the additional payments and terms specified in Exhibit A and (if applicable) a separate Technical Services Agreement by and between the parties.

c. If AUTHORITY notifies ChemWare of an Error, and after investigation by ChemWare it is determined that the problem is the result of AUTHORITY Error, ChemWare reserves the right to bill AUTHORITY as an Other Service for all time and expenses accrued in making this determination.

PARAGRAPH 3

Fees and Charges

3.1 Maintenance Fees. Fees for the term of this Agreement shall be as set forth in Exhibit A. Thereafter, AUTHORITY may renew this Agreement for consecutive one year terms upon payment of the annual maintenance fee; provided however, ChemWare hereby reserves the right to adjust annual maintenance fees and make other modifications to this Agreement so long as ChemWare notifies AUTHORITY of such changes no later than sixty (60) days prior to the renewal of this Agreement. A renewal notice and quotation shall be sent to AUTHORITY at least sixty (60) days before the beginning of each renewal term, followed by an invoice no later than thirty (30) days before the beginning of each renewal term. Full payment shall be due on or before the first day of the renewal support period.

3.2 Emergency Support. This Agreement does not include support services outside of Normal Business Hours or "on call" 24-hour/365 days support. Any such "Emergency Support" service is considered an Other Service.

3.3 Travel Expenses. AUTHORITY shall reimburse ChemWare for reasonable travel expenses (e.g., transportation, lodging, and meals), courier fees, and long distance telephone or modem expenses incurred by ChemWare in rendering services to AUTHORITY more than twenty five (25) miles from ChemWare's principal office. Reimbursement for meals and incidentals may be made based on the federally established Internal Revenue Service (IRS) meal per diem rates for the travel location(which also includes all tips and most miscellaneous expenses). Alcoholic beverages and personal items such as in-room movies, reading materials, cigarettes, hygiene items, etc., are non-reimbursable.

ChemWare shall provide documentation with the invoice in the form of copies of receipts for all billable expenses incurred. ChemWare shall not charge AUTHORITY for time spent traveling to and from AUTHORITY's site.

3.4 Payment Terms. Payments are due to ChemWare within thirty (30) days from receipt of invoice. If payment is not made within thirty (30) days, AUTHORITY agrees to pay interest on all unpaid amounts at the rate of the lesser of one and one-half percent (1.5%) per month or the highest rate allowed under applicable law.

3.5 Late Payment and Nonpayment. If AUTHORITY fails to pay any invoices issued when due, ChemWare reserves the right to withhold any and all services to the AUTHORITY, and no refund shall be due if services are so suspended. If ChemWare does suspend services, AUTHORITY may have the services reinstated only upon payment of all overdue invoices including interest. ChemWare also reserves the right to seek any other remedies available to collect delinquent payments from

AUTHORITY. Withholding of services by ChemWare for nonpayment does not release AUTHORITY of any obligations to ChemWare, including without limitation the obligation to pay the remaining amounts due for the term of this Agreement.

PARAGRAPH 4

Proprietary Rights

4.1 Any Updates or Error Corrections received by AUTHORITY shall also become part of the Materials and shall be governed by the terms and conditions of this Agreement and the License Agreement.

4.2 The Materials are and shall remain the sole property of ChemWare and its licensors, regardless of whether AUTHORITY, its employees, or contractors shall have contributed to the conception of such work, joined in the effort of its development, or paid ChemWare for the use of the work product. AUTHORITY shall take any further action and execute and deliver any further instrument, including documents of assignment or acknowledgment, that ChemWare may reasonably request in order to establish and perfect ChemWare's exclusive ownership rights in such works. AUTHORITY shall not assert any right, title, or interest in such works, except for the non-exclusive right of use granted to AUTHORITY at the time of its delivery or on-site development.

PARAGRAPH 5

Limited Warranties and Disclaimer of Liability

5.1 Except as set forth in this Agreement, ChemWare expressly disclaims any and all warranties concerning the Materials or the services to be rendered hereunder, whether expressed or implied, including (without limitation) any warranty of merchantability or fitness for a particular purpose.

5.2 AUTHORITY expressly agrees that in no event shall ChemWare be liable for any consequential or special damages arising from breach of warranty, breach of contract, negligence or any other legal theory, whether in tort or contract, even if ChemWare has been advised of the likelihood of such damages occurring, including without limitation, damages from interruption of business, loss of profits or business opportunities, loss of use of software, loss of data, cost of recreating lost data, cost of any substitute software, or losses caused by delay.

5.3 ChemWare shall not be liable for any failure or delay in performance of any obligation under this Agreement if such failure or delay is caused by circumstances not directly or substantially under the control of ChemWare, including without limitation, failures resulting from acts of God, acts of public authorities, fires or other natural disasters, delays of suppliers or carriers, or serious illnesses of key ChemWare personnel.

5.4 ChemWare shall not be liable for recovery of the database or lost data due to AUTHORITY Error, disk corruption or other factors outside of ChemWare's control, including but not limited to acts of God, power surges or other electrical malfunction,

neglect or inadequate maintenance of the Software, or problems caused by or related to the operating system, network or system hardware, which problems shall also be considered Other Services.

5.5 ChemWare's liability for damages to AUTHORITY shall be limited in all cases to the annual maintenance fee paid by AUTHORITY for this Agreement, for the year in which the alleged liability first arose.

PARAGRAPH 6

Term and Termination

6.1 The initial term of this Agreement shall be as described in Exhibit A. Unless ChemWare provides written notice to the contrary, this Agreement shall automatically terminate at the conclusion of any term if payment for the next consecutive term is not received by ChemWare as specified in Paragraph 3.

6.2 This Agreement may be terminated as follows:

a. This Agreement shall immediately terminate upon the termination of the License Agreement.

b. This Agreement may be terminated by either party upon the expiration of the then-current term of this Agreement, provided that at least thirty (30) days' prior written notice is given to the other party.

c. This Agreement may be terminated by either party upon thirty (30) days' prior written notice if the other party has materially breached the provisions of this Agreement and has not cured such breach within such notice period.

6.3 Following termination of this Agreement, ChemWare shall immediately invoice AUTHORITY for all accrued fees and charges and all reimbursable expenses, and AUTHORITY shall pay the invoiced amounts immediately upon receipt of such invoices.

6.4 Termination of this Agreement prior to the expiration of the then-current term specified in Exhibit A, and pursuant to the terms of this Paragraph, shall not obligate ChemWare to refund any amount paid by AUTHORITY for this Agreement nor result in any liability, under any theory of law or equity, of ChemWare to AUTHORITY, other than to provide AUTHORITY with all currently available Updates through the date of termination.

6.5 Provided that the License Agreement remains in effect, then upon termination of this Agreement AUTHORITY shall be permitted to continue use of the Materials pursuant to the terms of the License Agreement. If the License Agreement has terminated, AUTHORITY shall take such actions with respect to the Materials as required under the License Agreement upon its termination.

6.6 Notwithstanding termination of this Agreement, all obligations related to Proprietary Rights under Paragraph 4, all disclaimers and limitations under Paragraphs 5 and 6.4, and the terms in Paragraphs 3.5, 7 shall remain in effect.

6.7 Unless the provisions of this Agreement are changed by ChemWare prior to renewal, the terms of the Agreement shall renew automatically; in such cases, only the prior term's Exhibit A will be superseded by a revised Exhibit A for the renewal term.

PARAGRAPH 7

Miscellaneous

7.1 AUTHORITY shall be entitled to all benefits of the escrow arrangements ChemWare has with its independent software escrow services provider ("Escrow Agent"), so long as (i) AUTHORITY continuously renews this Agreement and pays in full any associated fees for this Agreement; and (ii) is not in material breach of this Agreement or other written contract between ChemWare and AUTHORITY. The escrow agreement ChemWare has with its Escrow Agent entitles AUTHORITY, with the exceptions described above and with the exception of any third party software not owned and controlled directly by ChemWare, to receive the source code in the event (iii) ChemWare ceases to offer support on the software as a commercial endeavor; (iv) ChemWare has made an assignment for the benefit of creditors; or (v) ChemWare institutes or becomes subject to a liquidation or bankruptcy of any kind. In the event that AUTHORITY does access the source code from escrow, the source code may only be used as set forth in the Software License Agreement and the Software Maintenance Agreement, and for no other purpose and to no greater extent. Release of source code from escrow shall not terminate this Agreement nor cause waiver of any of ChemWare's or ChemWare's successor's rights described by this Agreement.

RESPONSE TIME OBJECTIVES:

Service Level	Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
	Production Systems			General Questions	Enhancements
Description/ Examples	Complete loss of services; application unusable or inaccessible.	Severely impacted use of application with no reasonable workaround.	Moderately impacted use of application with reasonable workaround.	System configuration questions for additional features or new installation.	Enhancement requests or documentation errors.
ChemWare Response	Immediate	1 hour	4 hour response	1 business day	3 business days
Customer Response[2]	1 hour	Shorter of 4 hours or same business day	1 business day	1 business day	N/A
Escalation	Immediate (Tier 2)	4 hours	1 business day	1 business day	N/A
Resolution	1 hour	Shorter of 4 hours or same business day	3 business days	N/A	Other Service[1], if applicable.
Error Correction	Interim patch and next Update, if applicable	Interim patch and next Update, if applicable	Software Update	N/A	Other Service[1], if applicable.

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM

November 21, 2013

Subject: Resolution to Acquire Real Property	**Director's Backup**
Petitioner: Ronald E. Zegers, Deputy General Manager, Engineering/Operations	
Recommendations: That the Board of Directors adopt a resolution authorizing the General Manager, or her designee, to purchase approximately 22 acres of real property held by the federal government.	

Fiscal Impact:
If the above recommendation is approved, the $80,000 will be added to the Bond Fund commitments.

Background:
In 1995, the State of Nevada transferred the Southern Nevada Water System to the Authority via Assembly Bill No. 542, Nevada Revised Statues, Chapter 393, Section 2.1. The transfer included a water treatment residue disposal site located as generally shown on Attachment A. The site is located on federal land and use was authorized by Recreation and Public Purposes Lease (RPP Lease) N-24417.

The RPP Lease expired in 2006 and could not be renewed due to federal legislation that restricted lease of federal land for landfill purposes. The site is permitted as a non-hazardous sludge disposal site for Authority use. Without an option to renew the RPP Lease, the Authority requested the right to purchase the lease area in fee title. Staff negotiated a price of $75,000, as described in the attached Resolution. The projected fiscal impact includes the purchase, as well as the usual and customary closing costs and title insurance. The Authority is required to maintain the sludge disposal site, which was operational from 1972 – 1994, and ownership provides a future cost-effective method of disposal.

This resolution is being entered into pursuant to NRS 277.180(1) and Section 6(f) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved the Resolution.

Respectfully submitted:

P Mulroy

Patricia Mulroy, General Manager
PM:JJE:REZ:DLJ:LLM:KL:mhy
Attachments

AGENDA ITEM # 5

RESOLUTION

SOUTHERN NEVADA WATER AUTHORITY
AUTHORIZATION TO ACQUIRE A PARCEL OF LAND
FOR THE DISPOSAL OF SLUDGE MATERIAL

WHEREAS, the Southern Nevada Water Authority ("Authority") is a political subdivision of the State of Nevada, created on July 25, 1991, by a cooperative agreement entered into on that date to the provisions of NRS 277.080 to 277.180; and

WHEREAS, the Authority is responsible for treatment of raw water from Lake Mead to provide a potable water supply for the Las Vegas Valley; and

WHEREAS, waste products, known as sludge, generated during the treatment process must be properly disposed; and

WHEREAS, the Authority has previously utilized leased land under RPP Lease No. N-24417 (Property) to safely dispose of waste material; and

WHEREAS, the Property is permitted to accept treatment waste; and

WHEREAS, the Authority has continuing obligations to monitor and maintain the Property pursuant to the permit requirement.

NOW, THEREFORE, BE IT RESOLVED that the Authority's Board of Directors agrees and authorizes:

1. Public interest and necessity requires the acquisition of the real property described in Exhibit I for continued operation, maintenance, and monitoring of the established facility.

2. That the fair market value of the parcel has been established by appraisal and negotiation at Seventy-Five Thousand Dollars ($75,000).

3. That the Authority has the financial resources and ability to complete the acquisition.

BE IT RESOLVED THAT the Authority is hereby authorized and directed to acquire in its name, in fee simple absolute, unless a lesser estate is hereinafter described, the real property and interests described in Exhibit I.

THIS RESOLUTION is PASSED, ADOPTED, and APPROVED this _____ day of _____, 2013.

Approved As To Legality:

_____
Gregory J. Walch, General Counsel

SOUTHERN NEVADA WATER AUTHORITY

_____
Patricia A. Mulroy, General Manager

PROPERTY TO BE ACQUIRED:

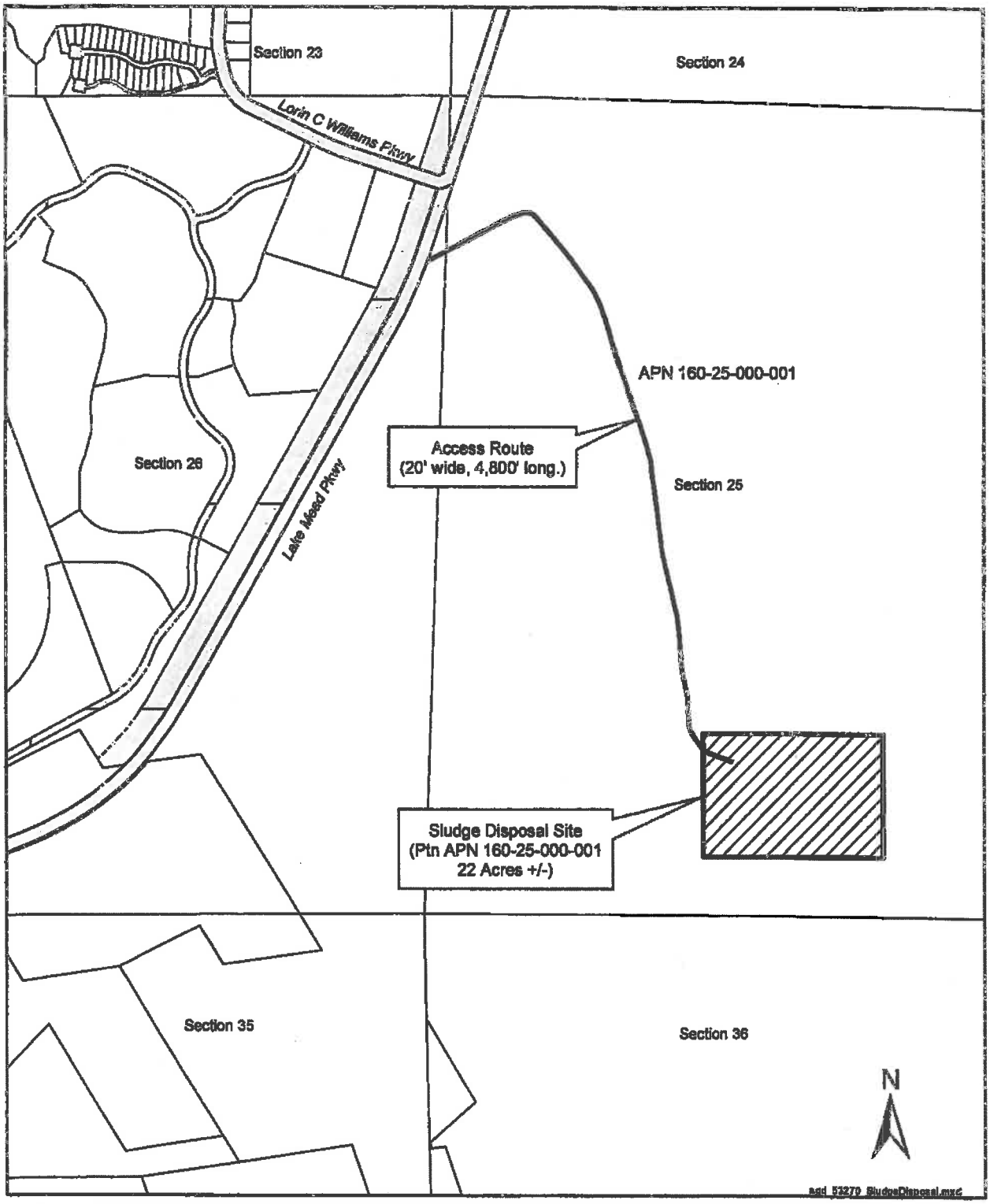
ASSESSOR PARCEL NO.	PERCENTAGE OF OWNERSHIP	PROPERTY OWNER
160-25-000-001	100 PERCENT	UNITED STATES GOVERNMENT

LEGAL DESCRIPTION FOR APN 160-25-000-001

The East 800 feet (800.0') of the South twelve hundred feet (1,200.0') of the Southwest quarter (SW 1/4) of Section 25, Township 21 South, Range 63 East, M.D.M., Clark County, Nevada, comprising 22.039 acres, more or less.

SNWA BOARD OF DIRECTORS
AGENDA ITEM

SLUDGE DISPOSAL SITE
PTN APN 160-25-000-001



SHEET 1 OF 1

ATTACHMENT A

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM

November 21, 2013

Subject: Right-of-Way Grants	**Director's Backup**
Petitioner: John J. Entsminger, Senior Deputy General Manager	

Recommendations:
That the Board of Directors approve and authorize the General Manager, or her designee, to execute two right-of-way grants offered by the Bureau of Land Management for the construction, operation, maintenance, and termination of an irrigation ditch and pipeline across federal land to the El Tejon Ranch in Spring Valley, Nevada, and to pay 30 years of rental to the federal government in the total amount of $13,707.95.

Fiscal Impact:
The required $13,707.95 for both rights-of way is available in the Authority's Operating Budget.

Background:
On March 15, 2007, the Board of Directors authorized the purchase of the El Tejon Ranch and associated water rights in Spring Valley, Nevada. The previous owners of the El Tejon Ranch had obtained two rights-of-way (ROW) from the Bureau of Land Management (BLM) to convey permitted water rights to private land. Both parcels are set to expire in 2015. The first BLM-issued ROW was for an irrigation ditch that directs water flow down Pine Creek to a second BLM-issued ROW for a pipeline that delivers the water to the El Tejon Ranch. The irrigation ditch and pipeline still exist, are in use by the Authority, and are necessary for the ongoing management of the ranch and associated water rights.

If approved, the attached ROW Grants NVN-039090 and NVN-040980 will ensure proper authorization for continued use of the irrigation ditch and pipeline by the Authority. The ROWs will be placed in the Authority's name, and the terms and conditions will be updated.

The rental payments for the ROWs are required under Title V of Federal Land Policy and Management Act of 1976, as amended. The BLM has calculated rental fees in an amount of $9,492.68 for the irrigation ditch ROW and $4,215.27 for the pipeline ROW. The total amount of $13,707.95 for the 30-year term of the ROWs is in accordance with the rental schedule under Section 367 of the ROW regulations at 43 CFR 2800 and 2880.

This action is being entered into pursuant to 43 CFR 2800 and 2880, and Section 6(f) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved these right-of-way grants.

Respectfully submitted:

P Mulroy

Patricia Mulroy, General Manager
PM:JJE:ZLM:LML:KR:df:nsh X0042
Attachments

AGENDA ITEM # 6

FORM 2800-14
(August 1985)

Issuing Office
Schell Field Office

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
RIGHT-OF-WAY GRANT/TEMPORARY USE PERMIT

SERIAL NUMBER NVN-039090

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1. A right-of-way is hereby granted pursuant to Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761).

2. Nature of Interest:

   a. By this instrument, the holder:

   Southern Nevada Water Authority
   P.O. Box 99956
   Las Vegas, NV 89193-9956

   receives a right to construct, operate, maintain, and terminate an irrigation ditch right-of-way on public lands described in Exhibit A, attached.

   b. The right-of-way or permit area granted herein is 25 feet wide, 24,734 feet long (BLM-Public Land Only) and contains 14.2 acres.

   c. This instrument shall terminate 30 years from its effective date (December 31, 2043) unless, prior thereto, it is relinquished, abandoned, terminated, or modified pursuant to the terms and conditions of this instrument or of any applicable Federal law or regulation.

   d. This instrument may be renewed. If renewed, the right-of-way or permit shall be subject to the regulations existing at the time of renewal and any other terms and conditions that the authorized officer deems necessary to protect the public interest.

   e. Notwithstanding the expiration of this instrument or any renewal thereof, early relinquishment, abandonment, or termination, the provisions of this instrument, to the extent applicable, shall continue in effect and shall be binding on the holder, its successors, or assigns, until they have fully satisfied the obligations and/or liabilities accruing herein before or on account of the expiration, or prior termination, of the grant.

3. Rental:

For and in consideration of the rights granted, the holder agrees to pay the Bureau of Land Management fair market value rental as determined by the authorized officer unless specifically exempted from such payment by regulation. Provided, however, that the rental may be adjusted by the authorized officer, whenever necessary, to reflect changes in the fair market rental value as determined by the application of sound business management principles, and so far as practicable and feasible, in accordance with comparable commercial practices.

4. Terms and Conditions:

a. This grant or permit is issued subject to the holder's compliance with all applicable regulations contained in Title 43 Code of Federal Regulations part 2800.

b. Upon grant termination by the authorized officer, all improvements shall be removed from the public lands within 90 days, or otherwise disposed of as provided in paragraph (4)(d) or as directed by the authorized officer.

c. Each grant issued for a term of 20 years or more shall, at a minimum, be reviewed by the authorized officer at the end of the 20th year and at regular intervals thereafter not to exceed 10 years. Provided, however, that a right-of-way or permit granted herein may be reviewed at any time deemed necessary by the authorized officer.

d. The stipulations, plans, maps, or designs set forth in Exhibit B, attached hereto, are incorporated into and made a part of this grant instrument as fully and effectively as if they were set forth herein in their entirety.

e. Failure of the holder to comply with applicable law or any provision of this right-of-way grant or permit shall constitute grounds for suspension or termination thereof.

f. The holder shall perform all operations in a good and workmanlike manner so as to ensure protection of the environment and the health and safety of the public.

IN WITNESS WHEREOF, The undersigned agrees to the terms and conditions of this right-of-way grant or permit.

(Signature of Holder)	(Signature of Authorized Officer)
Patricia Mulroy	
General Manager	FIELD MANAGER, SCHELL FIELD OFFICE
(Title)	(Title)
(Date)	(Effective Date of Grant)

SOUTHERN NEVADA WATER AUTHORITY
APPROVED AS TO FORM:

Dana Walsh

Dana R. Walsh, Deputy Counsel

Exhibit A
Legal Descriptions – REVISED 2
Pine Creek Irrigation Ditch N-39090

Use	Township	Range	Section	Aliquot Part Description	Acreage	Existing Disturbance
Irrigation Ditch ROW	13 North	68 East	17 Unsurveyed/Protracted	S½NESW, S½NWSW, NESESW, N½SWSE, NWSESE.	14.2 acres (25 feet wide by 24,734 feet long)	Pine Creek Irrigation Ditch
			18 Unsurveyed/Protracted	SESESW, S½NESE, NESWSE, S½SWSE, NWSESE.		
			19 Unsurveyed/Protracted	N½NENW, SWNENW, S½NWNW, NWSWNW.		
	13 North	67 East	23	SESWSE,N½SESE, SWSESE.		
			24	SESWNE, NESENE, SWSENE, SESENE, NENESW, S½NESW, S½NWSW, NWSWSW,N½NWSE.		
			26	E½NWNE, N½SWNE, SWSWNE, W½NWSE, W½SWSE.		
				Right-of-Way Total Acres	14.2 acres	

EXHIBIT- B
STANDARD and SPECIAL STIPULATIONS – REVISED 2
Southern Nevada Water Authority
Pine Creek Irrigation Ditch
N-39090

This Right-of-Way (ROW) is being assigned, amended and renewed as previously constructed by a separate party. Accordingly, the stipulations below are applicable to this ROW, although a specific stipulation may not apply in whole or in part to the extent that the specified activity is not currently applicable for the project.

STANDARD STIPULATIONS

General

1. In case of change of address, the holder shall immediately notify the Bureau of Land Management (BLM) Authorized Officer.

2. This grant is subject to all valid rights existing on the effective date of this grant.

3. The holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way (ROW) in strict conformity with the plan of development (POD) that accompanied the application and was approved and made part of the grant. Any relocation, additional construction, or use that is not in accord with the approved POD, shall not be initiated without the prior written approval of the Authorized Officer. A copy of the complete right-of-way grant, including all stipulations and approved POD, shall be made available on the right-of-way during construction, operation, and termination to the Authorized Officer. Noncompliance with the above will be grounds for immediate temporary suspension of activities if it constitutes a threat to public health and safety or the environment.

4. Holder may not construct or make new access roads or travel cross-county by vehicle to reach the grant area unless prior written approval is given by the Authorized Officer.

5. The holder shall protect all survey monuments found within the right-of-way. Survey monuments include, but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey Corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the holder shall immediately report the incident, in writing, to the Authorized Officer and the respective installing authority, if known. Where General Land Office or Bureau of Land Management right-of-way monuments or references are obliterated during operations, the holder shall secure the services of a registered land surveyor or a Bureau cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the Manual of Surveying Instructions for the Survey of the Public Lands in the United States, latest edition. The holder shall record such survey in the appropriate county and send a copy to the Authorized Officer. If the Bureau cadastral surveyors or other Federal surveyors are used to restore the disturbed survey monument, the holder shall be responsible for the survey cost.

6. The holder shall conduct all activities associated with the construction, operation, and termination of the right-of-way within the authorized limits of the right-of-way.

7. All design, material, and construction; and operation, maintenance, and termination practices shall be in accordance with safe and proven engineering practices.

8. The Holder shall provide the Authorized Officer with data in a format compatible with the Bureau's Arc-Info Geographic Information System to accurately locate and identify the right-of-way, within 90 days of construction completion. Acceptable data formats are: (1) Corrected Global Positioning System files with sub-meter accuracy or better, in NAD 83; (2) A Shapefile or Geodatabase. Data may be submitted in any of the following formats: (1) ARCInfo export files on a CD ROM or DVD. Compressed or ZIPed data must include a copy of the UNZIP.EXE file on the disk. All data shall include metadata for each coverage, and conform to the Content Standards for Digital Geospatial Metadata Federal Geographic Data Committee standards.

9. The Holder must submit an application to amend (SF-299) for any substantial deviation to this ROW. Per 43 CFR 2801.5, *"substantial deviation means a change in the authorized location or use which requires: (1) construction or use outside the boundaries of the right-of-way, or (2) any change from, or modification of, the authorized use. Examples of substantial deviation include: adding equipment, overhead or underground lines, pipelines, structures, or other facilities not included in the original grant."* Additional NEPA analysis may need to be conducted prior to the BLM's decision to amend the grant as applied for.

Public Health & Safety Environmental Protection

10. To the fullest extent allowed under Nevada law, the holder agrees to indemnify and hold harmless the United States for any and all liability, including injury to persons or damage of property, which may result directly from the use permitted.

11. The Authorized Officer may suspend or terminate in whole, or in part, any notice to proceed which has been issued when, in his/her judgment, unforeseen conditions arise which result in the approved terms and conditions being inadequate to protect the public health and safety or to protect the environment.

12. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 U.S.C. 2601 et. seq. (1982) with regards to any toxic substances that are used, generated by, or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.

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Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901 et seq.) on the right-of-way (unless the release or threatened release is wholly unrelated to the right-of-way holder's activity on the right-of-way). This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

Cultural

15. Any cultural or paleontological resource (historic or prehistoric site or object) or Native American human remains, funerary item, sacred object, or objects of cultural patrimony discovered by the permit holder, or any person working on their behalf, during the course of activities on Federal land, shall be immediately reported to the BLM Authorized Officer by telephone, with written confirmation. The permit holder shall suspend all operations 100 meters within the discovery and appropriately protect the discovery until an evaluation has been made by the BLM Authorized Officer.

    a. If Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony are encountered during an undertaking involving BLM managed lands, the parties will comply with the Native American graves Protection and Repatriation Act (NAGPRA) and its implementing regulations at 43 CFR Part 10, Subpart B. Human remains and associated grave goods on private land will be handled according to the provisions of Nevada statute NRS 383.

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Vegetation/Weeds (Prevention)

16. Where appropriate, vehicles and heavy equipment used for the completion, maintenance, inspection, or monitoring of ground disturbing activities; for emergency fire suppression; or for authorized off-road driving will be free of soil and debris capable of transporting weed propagules. Vehicles and equipment will be cleaned with power or high pressure equipment prior to entering or leaving the work site or project area. Special emphasis will be applied to axels, frames, cross members, motor mounts, on and underneath steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs will be swept out and refuse will be disposed of in waste receptacles. Cleaning sites will be recorded using global positioning systems or other mutually acceptable equipment and provided to the Ely District Office Weed Coordinator or designated contact person.

17. Prior to entry of vehicles and equipment to a planned disturbance area, a weed scientist or qualified biologist will identify and flag areas of concern. The flagging will alert personnel or participants to avoid areas of concern.

18. Monitoring will be conducted (by the proponent) for a period no shorter than the life of the permit or until bond release and monitoring reports will be provided to the Ely District Office. If the presence and/or spread of noxious weeds is noted, appropriated weed control procedures will be determined in consultation with Ely District Office personnel and will be in compliance with the appropriate BLM Handbook sections and applicable laws and regulations. All weed control efforts on BLM-administered lands will be in compliance with BLM Handbook H-9011, H-9011-

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19. Prior to entering public lands, the contractor, operator, or permit holder will provide information and training regarding noxious weed management and identification to all personnel who will be affiliated with the implementation of the project. The importance of preventing the spread of weeds to un-infested areas and importance of controlling existing populations of weeds will be explained.

20. Keep removal and disturbance of vegetation to a minimum through construction site management (e.g., using previously disturbed areas and existing easements, limiting equipment/materials storage and staging area sites, etc.).

21. Utility companies will manage vegetation in their rights-of-way for safe and reliable operation while maintaining vegetation and wildlife habitat.

Vegetation/Weeds (Reclamation)

22. Where appropriate, inspect source sites such as borrow pits, fill sources, or gravel pits used to supply inorganic materials used for construction, maintenance, or reclamation to ensure they are free of plant species listed on the Nevada noxious weed list or specifically identified by the Ely District Office. Inspections will be conducted by a weed scientist or qualified biologist.

23. To minimize the transport of soil-borne noxious weed seeds, roots, or rhizomes, infested soils or materials will not be moved and redistributed on weed-free or relatively weed-free areas. In areas where infestations are identified or noted and infested soils, rock, or overburden must be moved, these materials will be salvaged and stockpiled adjacent to the area from which they were stripped. Appropriate measures will be taken to minimize wind and water erosion of these stockpiles. During reclamation, the materials will be returned to the area from which they were stripped.

24. For soil disturbing actions which will require reclamation, salvage and stockpile all available growth medium prior to surface disturbances. Seed stockpiles if they are to be left for more than one growing season. Re-contour all disturbance areas to blend as nearly as possible with the natural topography prior to re-vegetation. Rip all compacted portions of the disturbance to an appropriate depth based on site characteristics. Establish an adequate seed bed to provide good seed-to-soil contact.

25. Keep removal and disturbance of vegetation would be kept to a minimum through construction site management (e.g. using previously disturbed areas and existing easements, limiting equipment/materials storage and staging area sites, etc.)

26. Generally, conduct reclamation with native seeds that are representative of the indigenous species present in the adjacent habitat. Document rationale for potential seeding with selected nonnative species. Possible exceptions would include use of nonnative species for a temporary cover crop to out-compete weeds. In all cases, ensure seed mixes are approved by the BLM Authorized Officer prior to planting.

27. Certify that all interim and final seed mixes, hay, straw, and hay/straw products are free of plant species listed on the Nevada noxious weed list (Certification could be presenting tag labels, bag label, or other means of certification of seed age and seed mix).

28. Re-spread weed-free vegetation removed from the right-of-way to provide protection, nutrient recycling, and seed source.

29. Restoration requirements include reshaping, re-contouring, and/or resurfacing with topsoil, installation of water bars, and seeding on the contour. Removal of structures such as culverts, concrete pads, cattle guards, and signs would usually be required. Fertilization and/or fencing of the disturbance may be required. Additional erosion control measures (e.g., fiber matting and barriers) to discourage road travel may be required.

30. An area is considered to be satisfactorily reclaimed when all disturbed areas have been re-contoured to blend with the natural topography, erosion has been stabilized, and an acceptable vegetative cover has been established. Use the Nevada Guidelines for Successful Revegetation prepared by the Nevada Division of Environmental Protection, the BLM, and the U.S. Department of Agriculture Forest Service (or most current revision or replacement of this document) to determine if revegetation is successful.

31. No noxious weeds will be allowed on the site at the time of reclamation release. Any noxious weeds that become established will be controlled.

Wildlife

32. In accordance with the Migratory Bird Treaty Act (MBTA), take of migratory birds is not authorized. Therefore, actions which have the potential to affect migratory bird species of concern must be minimized or avoided. Most migratory birds nest between April and July, dates will be adjusted for the species present in the area and the specific proposed activity. Activities may not occur during this period without special authorization, and only after breeding bird surveys have been conducted by a qualified biologist. Authorization for construction during this breeding period would be contingent on the findings of the survey, within seven days of the activity. Nests found will be protected by appropriate buffers agreed to by the BLM wildlife team.

Transfer of Federal Ownership/Relinquishment/Assignment

33. In accordance with federal regulations in 43 CFR 2807.21 any proposed transfer of any right or interest in the right-of-way grant shall be filed with the BLM Authorized Officer. An application for assignment shall be accompanied by a showing of qualifications of the Assignee. The assignment shall be supported by a stipulation that the Assignee agrees to comply with and to be bound by the terms and conditions of the grant to be assigned. No assignment shall be recognized unless and until it is approved in writing by the Authorized Officer.

34. In the event that the public land underlying the right-of-way encompassed in this grant, or a portion thereof, is conveyed out of Federal ownership and administration of the ROW or the land underlying the ROW is not being reserved to the United States in the patent/deed and/or the ROW is not within a ROW corridor being reserved to the United States in the patent/deed, the United States waives any right it has to administer the right-of-way, or portion thereof, within the conveyed land under Federal laws, statutes, and regulations, including the regulations at 43 CFR Part 2800, including any rights to have the holder apply to BLM for amendments, modifications, or assignments and for BLM to approve or recognize such amendments, modifications, or assignments. At the time of conveyance, the patentee/grantee, and their successors and assigns, shall succeed to the interests of the United States in all matters relating to the right-of-way, or portion thereof, within the conveyed land and shall be subject to applicable State and local government laws, statutes, and ordinances. After conveyance, any disputes concerning compliance with the use and the terms and conditions of the ROW shall be considered a civil matter between the patentee/grantee and the ROW Holder.

35. Prior to termination of the right-of-way, the holder shall contact the Authorized Officer to arrange a pre-termination conference. This conference will be held to review the termination provisions of the grant.

SPECIAL STIPULATIONS

36. There shall be no stream altering activities (including altering stream bottom and banks; and removing vegetation within the stream) east of NWNWSE of section 24, Township 13 North, Range 67 East, to the end of the ROW to prevent damage to the habitat of the Bonneville cutthroat trout. Any future maintenance, per stipulation #38 below, in this section of ditch shall be first approved by the Authorized Officer.
37. Due to the terrain and limited accessibility along the majority of the ditch, maintenance and repairs shall be done with minimal surface disturbance and with hand tools whenever possible. The stream bottom, banks, and riparian vegetation should be left in as natural state as possible, maintenance and emergency repairs shall be limited to only that disturbance which is necessary to keep the waterflow within the existing ditch banks. Use of heavy equipment or machinery shall be pre-approved by the Authorized Officer. Emergency repairs shall be reported to the Authorized Officer within 48 hours of being made.
38. Prior to any surface disturbing activity within the ditch along the west side of Highway SR894, you must contact the affected ROW Holders to address activity concerns.
39. Where the facilities authorized in this grant are for the purpose of executing a state water right, the design and placement of the facility and use of the water shall follow the limits and conditions set by the State Engineer at the time this grant is issued. The Holder shall provide a copy of the State water right to the Authorized Officer prior to issuance of this grant. The Holder shall notify BLM as to future changes of the State water right whereupon BLM will determine if those changes result in substantial deviation to the existing ROW.

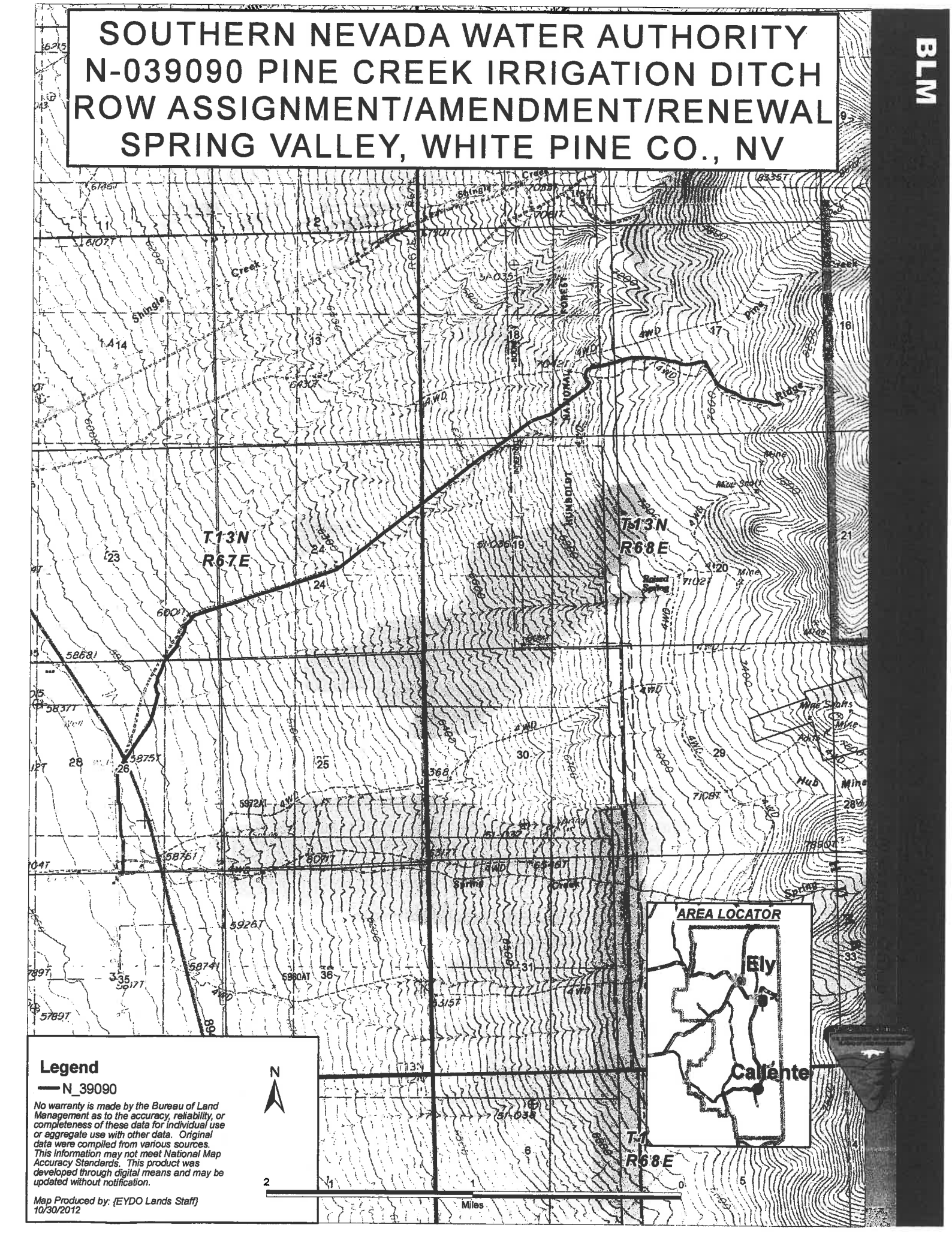
On behalf of Southern Nevada Water Authority, I have reviewed the above stipulations for the Pine Creek Irrigation Ditch ROW N-39090 and agree to follow them.

_____ _____

Authorized Signature Date

SOUTHERN NEVADA WATER AUTHORITY
N-039090 PINE CREEK IRRIGATION DITCH
ROW ASSIGNMENT/AMENDMENT/RENEWAL
SPRING VALLEY, WHITE PINE CO., NV

BLM



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Map Produced by: {EYDO Lands Staff}
10/30/2012

FORM 2800-14
(August 1985)

Issuing Office
Schell Field Office

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
RIGHT-OF-WAY GRANT/TEMPORARY USE PERMIT

SERIAL NUMBER NVN-040980

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1. A right-of-way is hereby granted pursuant to Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761).

2. Nature of Interest:

   a. By this instrument, the holder:

   Southern Nevada Water Authority
   P.O. Box 99956
   Las Vegas, NV 89193-9956

   receives a right to construct, operate, maintain, and terminate an irrigation pipeline and associated facilities right-of-way on public lands described in Exhibit A, attached.

   b. The right-of-way or permit area granted herein for the pipeline and maintenance road is 25 feet wide and 6,725 feet long, and for the fenced settling pond is 119 feet wide and 161 feet long, (BLM-Public Land Only) and contains 4.30 acres more or less.

   c. This instrument shall terminate 30 years from its effective date (December 31, 2043) unless, prior thereto, it is relinquished, abandoned, terminated, or modified pursuant to the terms and conditions of this instrument or of any applicable Federal law or regulation.

   d. This instrument may be renewed. If renewed, the right-of-way or permit shall be subject to the regulations existing at the time of renewal and any other terms and conditions that the authorized officer deems necessary to protect the public interest.

   e. Notwithstanding the expiration of this instrument or any renewal thereof, early relinquishment, abandonment, or termination, the provisions of this instrument, to the extent applicable, shall continue in effect and shall be binding on the holder, its successors, or assigns, until they have fully satisfied the obligations and/or liabilities accruing herein before or on account of the expiration, or prior termination, of the grant.

3. Rental:

For and in consideration of the rights granted, the holder agrees to pay the Bureau of Land Management fair market value rental as determined by the authorized officer unless specifically exempted from such payment by regulation. Provided, however, that the rental may be adjusted by the authorized officer, whenever necessary, to reflect changes in the fair market rental value as determined by the application of sound business management principles, and so far as practicable and feasible, in accordance with comparable commercial practices.

4. Terms and Conditions:

a. This grant or permit is issued subject to the holder's compliance with all applicable regulations contained in Title 43 Code of Federal Regulations part 2800.

b. Upon grant termination by the authorized officer, all improvements shall be removed from the public lands within 90 days, or otherwise disposed of as provided in paragraph (4)(d) or as directed by the authorized officer.

c. Each grant issued for a term of 20 years or more shall, at a minimum, be reviewed by the authorized officer at the end of the 20th year and at regular intervals thereafter not to exceed 10 years. Provided, however, that a right-of-way or permit granted herein may be reviewed at any time deemed necessary by the authorized officer.

d. The stipulations, plans, maps, or designs set forth in Exhibit B, attached hereto, are incorporated into and made a part of this grant instrument as fully and effectively as if they were set forth herein in their entirety.

e. Failure of the holder to comply with applicable law or any provision of this right-of-way grant or permit shall constitute grounds for suspension or termination thereof.

f. The holder shall perform all operations in a good and workmanlike manner so as to ensure protection of the environment and the health and safety of the public.

IN WITNESS WHEREOF, The undersigned agrees to the terms and conditions of this right-of-way grant or permit.

(Signature of Holder)	(Signature of Authorized Officer)
Patricia Mulroy	
General Manager	FIELD MANAGER, SCHELL FIELD OFFICE
(Title)	(Title)
(Date)	(Effective Date of Grant)

SOUTHERN NEVADA WATER AUTHORITY
APPROVED AS TO FORM:

Dana Walsh

Dana R. Walsh, Deputy Counsel

Exhibit A
Legal Descriptions – REVISED
Pine Creek Irrigation Pipeline N-040980

Use	Township	Range	Section	Aliquot Part Description	Acreage	Existing Disturbance
Irrigation Pipeline ROW	13 North	67 East	23	SENESESE, E2SESESE.	3.86	Buried Irrigation Pipeline & Access Road (6725' x 25')
			24	SWSWNWSW, W2NWSWSW.		
			26	E2NENE, W2NESENE, E2SWSENE, NWSESENE, W2NESE, W2NWSESE, E2SESWSE.	.44	Fenced Settling Pond (161' x 119')
				Right-of-Way Total Acres	4.3 acres	

EXHIBIT- B
STANDARD and SPECIAL STIPULATIONS – REVISED
Southern Nevada Water Authority
Pine Creek Irrigation Pipeline
N-40980

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21. Utility companies will manage vegetation in their rights-of-way for safe and reliable operation while maintaining vegetation and wildlife habitat.

Vegetation/Weeds (Reclamation)

22. Where appropriate, inspect source sites such as borrow pits, fill sources, or gravel pits used to supply inorganic materials used for construction, maintenance, or reclamation to ensure they are free of plant species listed on the Nevada noxious weed list or specifically identified by the Ely District Office. Inspections will be conducted by a weed scientist or qualified biologist.

23. To minimize the transport of soil-borne noxious weed seeds, roots, or rhizomes, infested soils or materials will not be moved and redistributed on weed-free or relatively weed-free areas. In areas where infestations are identified or noted and infested soils, rock, or overburden must be moved, these materials will be salvaged and stockpiled adjacent to the area from which they were stripped. Appropriate measures will be taken to minimize wind and water erosion of these stockpiles. During reclamation, the materials will be returned to the area from which they were stripped.

24. For soil disturbing actions which will require reclamation, salvage and stockpile all available growth medium prior to surface disturbances. Seed stockpiles if they are to be left for more than one growing season. Re-contour all disturbance areas to blend as nearly as possible with the natural topography prior to re-vegetation. Rip all compacted portions of the disturbance to an appropriate depth based on site characteristics. Establish an adequate seed bed to provide good seed-to-soil contact.

25. Keep removal and disturbance of vegetation would be kept to a minimum through construction site management (e.g. using previously disturbed areas and existing easements, limiting equipment/materials storage and staging area sites, etc.)

26. Generally, conduct reclamation with native seeds that are representative of the indigenous species present in the adjacent habitat. Document rationale for potential seeding with selected nonnative species. Possible exceptions would include use of nonnative species for a temporary cover crop to out-compete weeds. In all cases, ensure seed mixes are approved by the BLM Authorized Officer prior to planting.

27. Certify that all interim and final seed mixes, hay, straw, and hay/straw products are free of plant species listed on the Nevada noxious weed list (Certification could be presenting tag labels, bag label, or other means of certification of seed age and seed mix).

28. Re-spread weed-free vegetation removed from the right-of-way to provide protection, nutrient recycling, and seed source.

29. Restoration requirements include reshaping, re-contouring, and/or resurfacing with topsoil, installation of water bars, and seeding on the contour. Removal of structures such as culverts, concrete pads, cattle guards, and signs would usually be required. Fertilization and/or fencing of the disturbance may be required. Additional erosion control measures (e.g., fiber matting and barriers) to discourage road travel may be required.

30. An area is considered to be satisfactorily reclaimed when all disturbed areas have been re-contoured to blend with the natural topography, erosion has been stabilized, and an acceptable vegetative cover has been established. Use the Nevada Guidelines for Successful Revegetation prepared by the Nevada Division of Environmental Protection, the BLM, and the U.S. Department of Agriculture Forest Service (or most current revision or replacement of this document) to determine if revegetation is successful.

31. No noxious weeds will be allowed on the site at the time of reclamation release. Any noxious weeds that become established will be controlled.

Wildlife

32. In accordance with the Migratory Bird Treaty Act (MBTA), take of migratory birds is not authorized. Therefore, actions which have the potential to affect migratory bird species of concern must be minimized or avoided. Most migratory birds nest between April and July, dates will be adjusted for the species present in the area and the specific proposed activity. Activities may not occur during this period without special authorization, and only after breeding bird surveys have been conducted by a qualified biologist. Authorization for construction during this breeding period would be contingent on the findings of the survey, within seven days of the activity. Nests found will be protected by appropriate buffers agreed to by the BLM wildlife team.

Transfer of Federal Ownership/Relinquishment/Assignment

33. In accordance with federal regulations in 43 CFR 2807.21 any proposed transfer of any right or interest in the right-of-way grant shall be filed with the BLM Authorized Officer. An application for assignment shall be accompanied by a showing of qualifications of the Assignee. The assignment shall be supported by a stipulation that the Assignee agrees to comply with and to be bound by the terms and conditions of the grant to be assigned. No assignment shall be recognized unless and until it is approved in writing by the Authorized Officer.

34. In the event that the public land underlying the right-of-way encompassed in this grant, or a portion thereof, is conveyed out of Federal ownership and administration of the ROW or the land underlying the ROW is not being reserved to the United States in the patent/deed and/or the ROW is not within a ROW corridor being reserved to the United States in the patent/deed, the United States waives any right it has to administer the right-of-way, or portion thereof, within the conveyed land under Federal laws, statutes, and regulations, including the regulations at 43 CFR Part 2800, including any rights to have the holder apply to BLM for amendments, modifications, or assignments and for BLM to approve or recognize such amendments, modifications, or assignments. At the time of conveyance, the patentee/grantee, and their successors and assigns, shall succeed to the interests of the United States in all matters relating to the right-of-way, or

portion thereof, within the conveyed land and shall be subject to applicable State and local government laws, statutes, and ordinances. After conveyance, any disputes concerning compliance with the use and the terms and conditions of the ROW shall be considered a civil matter between the patentee/grantee and the ROW Holder.

35. Prior to termination of the right-of-way, the holder shall contact the Authorized Officer to arrange a pre-termination conference. This conference will be held to review the termination provisions of the grant.

SPECIAL STIPULATIONS

36. Holder shall repair/upgrade the existing fence around the settling pond by December 31, 2014 following the design features for a wildlife friendly fence as shown in Exhibit C of this grant. Holder shall notify the Authorized Officer upon completion of aforementioned repairs/upgrades.

37. Holder will maintain best management practices by limiting road improvements and/or road maintenance that requires the use of heavy equipment (i.e. grading, excavation, earthmoving activities), during sage grouse breeding and nesting season (March 1 thru July 30). If unavoidable, SNWA will first consult with BLM wildlife biologist(s) for appropriate guidance and receive approval from the Authorized Officer prior to conducting such activities during this time.

38. Improvements and maintenance of the road shall be conducted in accordance with Chapter 4 of the Gold Book, Surface Operating Standards and guidelines for Oil and Gas Exploration and Development, Fourth Edition, Revised 2007 (Exhibit D) of this ROW grant.

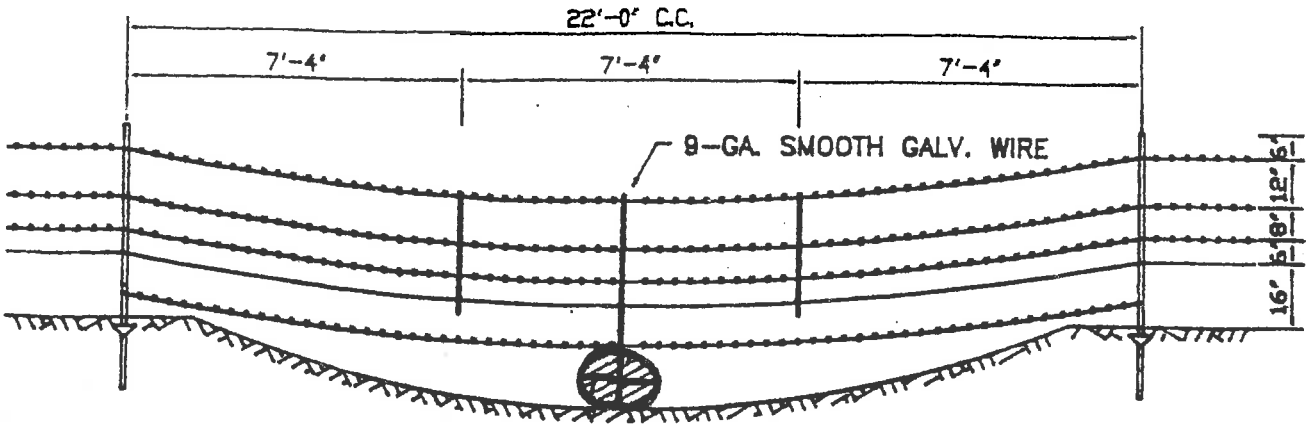
39. Where the facilities authorized in this grant are for the purpose of executing a state water right, the design, placement and use of the facilities shall be limited to the appropriations, locations and use as authorized by the State Engineer at the time this grant is issued. The Holder shall provide a copy of the State Water Right to the Authorized Officer prior to issuance of this grant. The Holder shall notify BLM as to future changes of the State Water Right whereupon BLM will determine if those changes result in substantial deviation to the existing ROW.

On behalf of Southern Nevada Water Authority, I have reviewed the above stipulations for the Pine Creek Irrigation Pipeline N-40980 and agree to follow them.

_____ _____

Authorized Signature Date

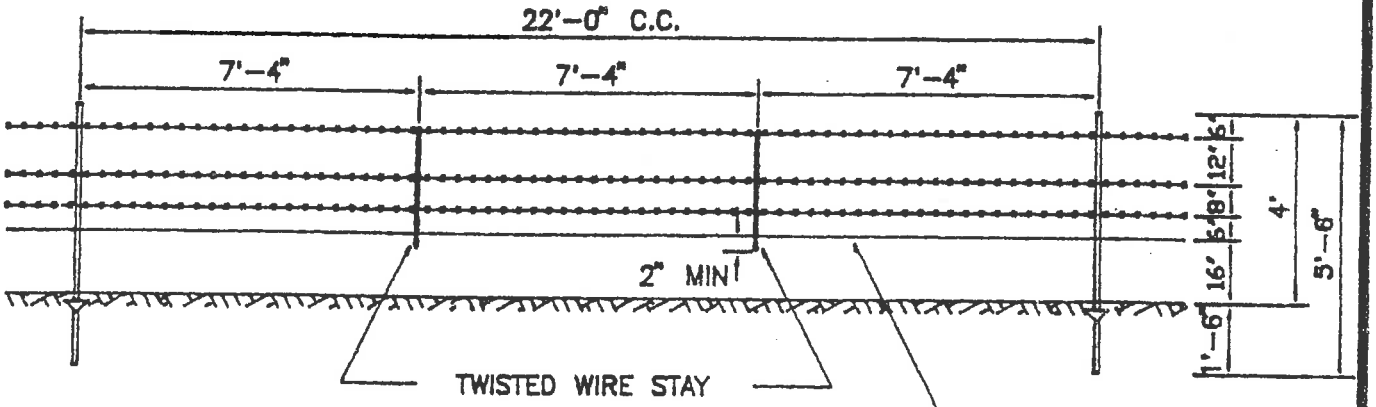
EXHIBIT C



STEEL LINE POST

PANEL AT MINOR DEPRESSION

ADD ADDITIONAL STRANDS OF BARBED WIRE AND/OR A ROCK DEADMAN (MIN. WEIGHT 50LB.) WHEN SPACE BETWEEN BOTTOM WIRE AND GROUND EXCEEDS 20 IN.



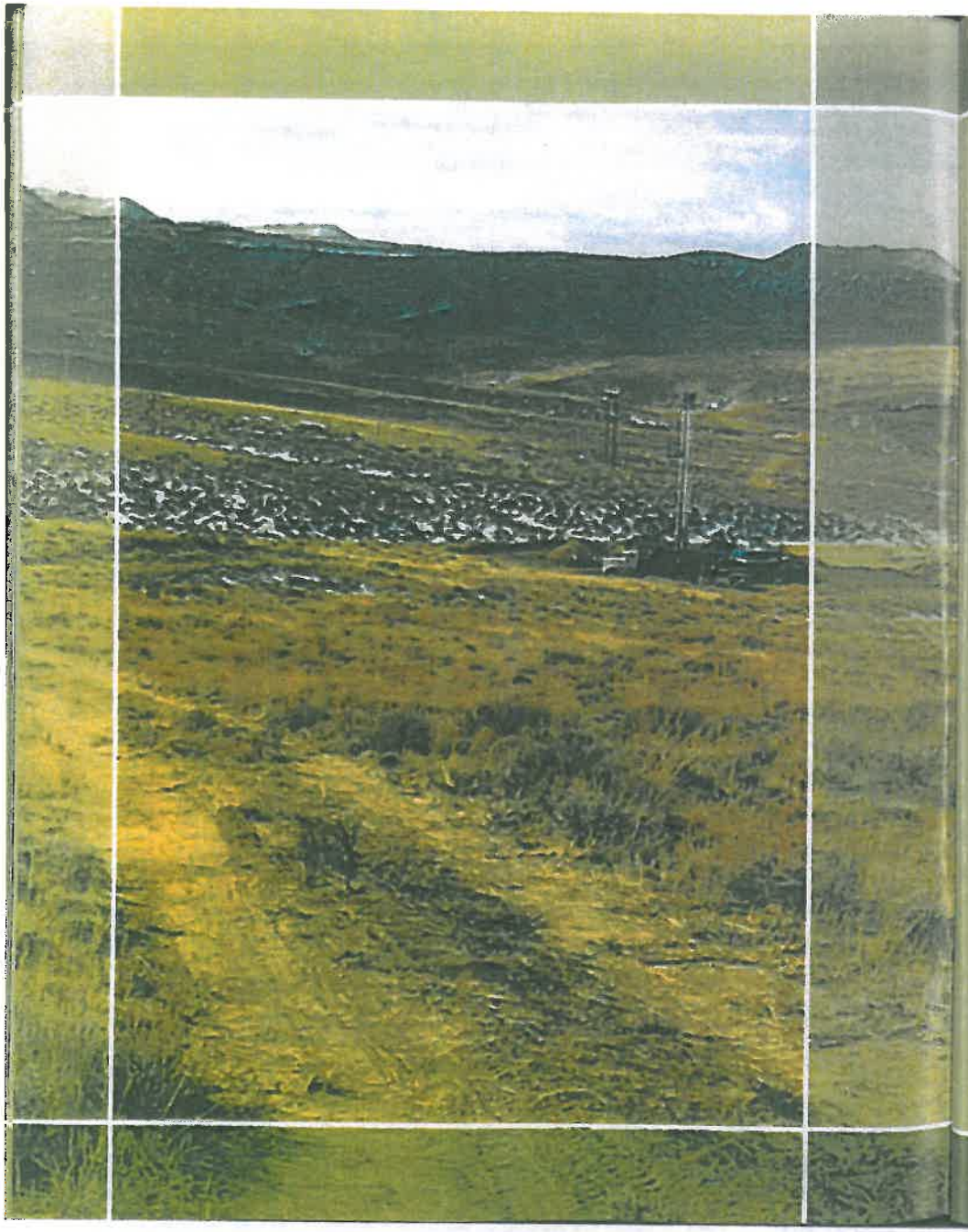
TYPICAL LINE PANEL

GENERAL NOTES:

1. A STEEL LINE POST DRIVEN A MINIMUM OF FOUR FEET INTO THE GROUND MAY BE USED IN LIEU OF A ROCK DEADMAN AT MINOR DEPRESSIONS.

ALWAYS THINK **SAFETY**

U. S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT Branch of Engineering NSO	
BARBED WIRE FENCE NV (4-WIRE x 22')	
DESIGNED By Others	
REVIEWED Roger L. Clarke	
APPROVED	
DRAWN J.L.C.	SCALE 1" = 4'
DATE 8/90	SHEET OF
DRAWING NO. NV-02834-55	



Chapter 4 – Construction and Maintenance

This chapter provides guidance for the operator about the basic requirements for safe and environmentally sound construction and maintenance of oil and gas-related infrastructure. Construction and maintenance must be performed to standards that ensure the long-term health and productivity of the land. The operator's representative must ensure compliance with all plans and designs. The representative should be designated prior to construction; be accessible to the surface management agency authorized officer; have immediate access to an approved copy of the Application for Permit to Drill (APD), including all maps, drawings, templates, and construction standards; and have the authority to make changes at the request or order of the BLM or surface management agency.

Well Sites

Site Selection and Design

To the extent permitted by the geologic target, well spacing, and drilling and production technology, the locations selected for well sites, tank batteries, pits, and compressor stations should be planned so as to minimize long-term disruption of the surface resources and existing uses, and to promote successful reclamation. Design and construction techniques and other practices should be employed that would minimize surface disturbance and the associated effects of proposed operations and maintain the reclamation potential of the site. The following guidelines can be used to assist in meeting these objectives and reducing the overall undesirable impacts from well sites and other construction areas.

Well sites should be designed to fit the landscape and minimize construction needs. In many cases, this means designing a well site that has an irregular shape, not rectangular. The site layout should be located and staked in the most level area, off narrow ridges, and set back from steep slopes, while taking into consideration the geologic target, technical, economic, and operational feasibility, spacing rules, natural resource concerns, and safety considerations. Well locations constructed on steep slopes cost more to construct, maintain, and reclaim and result in greater resource impacts. Locations on steep slopes that require deep, nearly vertical cuts and steep fill slopes should be avoided where possible or appropriately mitigated. Operations should also be avoided or properly mitigated in riparian areas, floodplains, playas, lakeshores, wetlands, and areas subject to severe erosion and mass soil movement. In visually sensitive areas, locations should be selected that provide for vegetative and topographic screening. The well site or production facility location should also be reviewed to determine its effect on the location of the access road. The advantages gained by a good well site or tank battery location should not be negated by the adverse effects of the access road location.

EXHIBIT D

Construction

Construction procedures must conform to the approved Surface Use Plan of Operations. In order to minimize surface disturbance, construction equipment appropriately sized to the scope and scale of the proposed operation should be used. All surface soil materials (topsoil) are to be removed from the entire cut and fill area and temporarily stockpiled for reuse during interim reclamation or final reclamation if the well is a dry hole. The depth of topsoil to be removed and stockpiled should be determined at the onsite inspection and should be stated either in the proposed Surface Use Plan of Operations or specified in the APD conditions of approval.

Topsoil should be segregated and stored separately from subsurface materials to avoid mixing during construction, storage, and interim reclamation. Subsurface materials should never be placed on top of topsoil material at any point in the operation. Stockpiles should be located and protected so that wind and water erosion are minimized and reclamation potential is maximized.

Excavation of the cut and fill slopes is normally guided by information on the slope stakes. Fills should be compacted to minimize the chance of subsidence or slope failure. If excess cut material exists after fill areas have been brought to grade, the excess material will be stockpiled at approved locations. Snow and frozen soil material is not to be used in construction of fill areas, dikes, or berms. To reduce areas of soil disturbance, the surface management agency may allow mowing or brush beating of vegetation for parts of the well location or access road where excavation is not necessary.

The area of the well pad where the drilling rig substructure is located should be level and capable of supporting the rig. The drill rig, tanks, heater-treater, and other production equipment are not to be placed on uncompacted fill material. The area used for mud tanks, generators, mud storage, and fuel tanks should be at a slight slope, where possible, or a suitable alternative, such as ditching, should be used to provide surface drainage from the work area to the pit.

To reduce erosion and soil loss, it may be appropriate to divert storm water away from the well location with ditches, berms, or waterbars above the cut slopes and to trap well location runoff and sediments on or near the location through the use of sediment fences or water retention ponds.

Reserve Pits

Reserve pits are generally used for storage or disposal of water, drill mud, and cuttings during drilling operations. The pit should normally be located entirely in cut material. Avoid constructing reserve pits in areas of shallow groundwater. Reserve pits should not be constructed in natural watercourses. Water courses include lake beds, gullies, draws, streambeds, washes, arroyos, or channels that are delineated on a 1:24,000 USGS quadrangle map or have a hydrologic connection to streams, rivers, or lakes.

For reserve pit construction on sloping sites, the preferred method is to locate the pit on the drill pad next to the high wall. Pits are constructed totally in cut at such locations. If this is not possible, at least 50 percent of the reserve pit should be constructed below original ground level to help prevent failure of the pit dike. Fill dikes should be properly compacted in lifts. The necessary degree of compaction depends on soil texture and moisture content. The pit should be designed to contain all anticipated drilling muds, cuttings, fracture fluids, and precipitation while maintaining at least 2 feet of freeboard.

Pits improperly constructed on slopes or poor soil types may leak along the plane between the natural ground level and the fill. There is a significant potential for pit failure in these situations. When constructing dikes for pits or impoundments with fill embankment, a keyway or core trench should be excavated to a minimum depth of 2 to 3 feet below the original ground level. The core of the embankment can then be constructed with compacted, water-impervious material.

To prevent contamination of ground water and soils or to conserve water, it is recommended that operators use a closed-loop drilling system or line reserve pits with an impermeable liner, particularly when it is anticipated that pits will contain moderate or high levels of hydrocarbons and chloride, or the pits are located in areas of shallow groundwater or porous soils over fractured bedrock aquifers.

Pits can be lined with synthetic liners or other materials such as bentonite or clay. Impermeable liners should have a permeability of less than 10^{-7} cm/sec. Liners must be installed so that they will not leak and must be composed of materials compatible with all substances to be placed in the pit. Synthetic liners with a minimum thickness of 12 mils and resistance to ultraviolet radiation, weathering, chemicals, punctures, and tearing are most commonly used, although some States may require liners that are thicker. Suitable bedding material, such as sand, clay, or felt liners should be used in areas where the base rock might puncture the liner.

Depending on the proposed contents of the pit and sensitivity of the environment, the surface management agency may require a leak detection system or the use of self-contained mud systems with the drilling fluids, mud, and cuttings being transported to approved disposal areas.

Reserve pits should be appropriately fenced to prevent access by persons, wildlife, or livestock. During drilling in active livestock areas, the reserve pit must be fenced with an exclosure fence on three sides and then fenced on the fourth side once drilling has been completed. Refer to Figure 1 for recommended fence construction standards in active livestock areas. In areas where livestock will not be present, other types of fences may be appropriate.

The fence should remain in place until pit reclamation begins. After cessation of drilling and completion operations, any visible or measurable layer of oil must be removed from the surface of the reserve pit and the pit kept free of oil. In some situations and locations, precautions, such as netting, may be required in order to prevent access and mortality of birds and other animals.

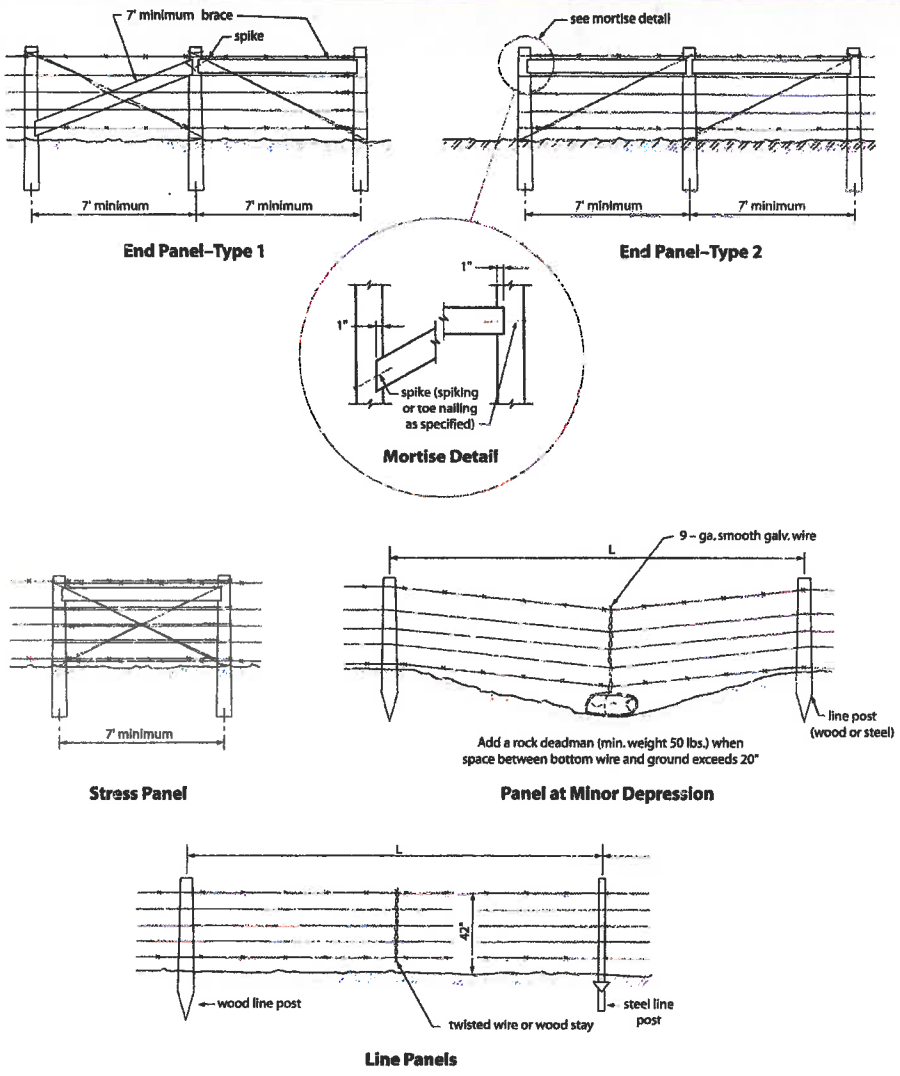
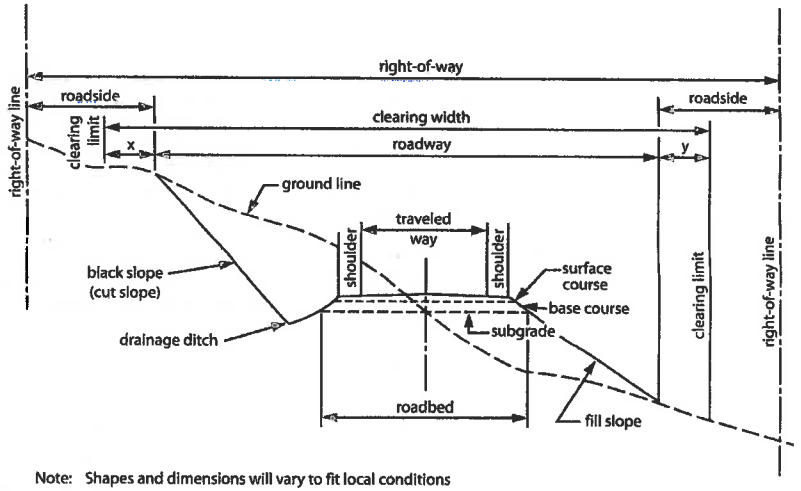


Figure 1. Recommended construction standards for exclosure fences in livestock areas.

Roads and Access Ways

This section provides the minimum guidelines for oil and gas operators on BLM and FS policy and standards relative to the planning, location, design, construction, maintenance, and operation of roads and access ways on public and National Forest System lands. Contact the local BLM or FS office for specific requirements. Exception to or modification of these guidelines is at the surface management agency's discretion based on the physical conditions at the site and the project proposal. Figure 2 illustrates commonly used terms in road design and should be referred to when reviewing this section.



Note: Shapes and dimensions will vary to fit local conditions
See drawings for typical sections
x and y denote clearing outside of roadway

Figure 2. Illustration of commonly used terms in road design

To ensure public safety and the protection of Federal resources, BLM and FS roads must be constructed to an appropriate standard no higher than necessary to accommodate the intended use. In many cases, the construction of a lower-class road will meet the operator's access needs, while minimizing the effects on other important resource values.

Roads used to access oil and gas locations are typically constructed for that primary purpose, are rarely permanent, and exist only as long as necessary to complete exploration and production operations. They are authorized with an accompanying reclamation plan and are to be reclaimed after well and field operations are completed. In relatively rare cases, the surface management agency or surface owner may assume responsibility for the continued operation and maintenance of roads deemed necessary.

The authorized officer has the option of determining whether professional engineering design and construction oversight is necessary or whether the road can be constructed by the operator consistent with site-specific standards and approved road design templates (Figures 2 and 3). The need for professional engineering design and oversight should be based on factors such as topography,

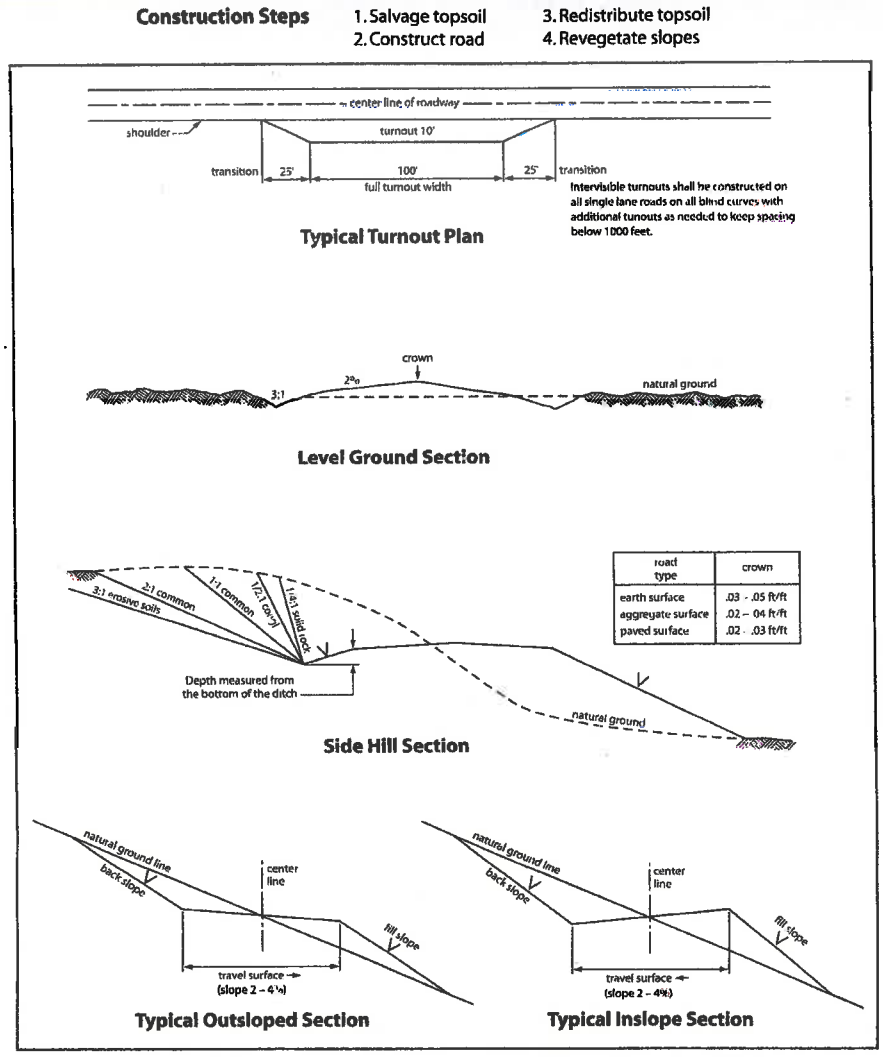


Figure 3. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

soils, hydrology, safety, and levels and types of use by the operator and general public. For oil and gas roads on National Forest System lands, a qualified FS engineer reviews all project design drawings, officially attesting to their technical adequacy.

To meet the requirements of Onshore Order No. 1 (Surface Use Plan of Operations, 2a and b) for new or reconstructed roads, the operator must provide information such as:

- Road width, maximum grade, and crown design
- Location of turnouts
- Plans for soils-, hydrology-, and topography-dependent drainage, including ditches and locations and sizes of culverts and bridges
- On- and off-site erosion control
- Plans for revegetation of disturbed areas
- Fence cuts and cattle guards
- Major cuts and fills
- Source and storage sites for topsoil
- Types of surfacing materials, if any
- Plans for maintaining or improving existing roads

All roads must be designed, constructed, and maintained by the operator in a safe and environmentally responsible manner. Oil and gas roads that are not closed to public use (through the use of gates or other traffic control devices) have the potential to serve secondary uses, such as providing access for hunters and other recreational users who may not be familiar with the road and area. Therefore, safety is a primary design consideration.

Roads also have the potential to cause environmental harm through erosion, air pollution, stream degradation, habitat alteration, and increased public use of an area. Careful attention to the proposed road location and design can significantly minimize environmental harm. For example, shorter roads constructed on steep slopes may cost more to construct, maintain, and reclaim and can also result in greater environmental impacts than would longer roads constructed along the contours of the land or constructed in flatter terrain. In areas of high environmental sensitivity, special road location, design, and construction and maintenance techniques may be required, as well as seasonal vehicular closures to the general public.

It is always a good practice to consult with the surface management agency or private landowner prior to submitting the road design. Helpful design information can also be found on agency websites. For the BLM, guidance can be found in BLM 9113–Roads Manual; and BLM 9130–Sign Manual. For the FS, information is available in EM-7100-15: Sign and Poster Guidelines for the FS or the FS Water/Road Interaction Series of publications.

Transportation Planning

The goal of transportation planning is to identify and analyze feasible alternatives for access that meet the objectives of the surface management agency, private surface owner, and the needs of the diverse users of Federal lands. The transportation planning process:

- Considers future road use needs, including public access and resource development or use
- Considers affected resource values and safety
- Avoids haphazard or unnecessary development of roads and utility corridors

Road location and design criteria are also developed and documented during the transportation planning process. Transportation planning can prevent unnecessary expenditures of time and money and prevent unnecessary surface disturbance. Therefore, it is important for the operator to become involved in the transportation planning process.

Road Location

Road location is critical to the long-term maintenance and environmental success of a road construction project. Proper road location can significantly reduce or eliminate impacts to cultural, scenic, biological, and other environmental resources. Operators are strongly encouraged to contact the surface management agency or private surface owner about possible route locations before surveying and staking. This early communication between the operator and the surface management agency or private surface owner can minimize changes made at the onsite inspection and reduce project delays.

Existing roads should be considered for use as access routes and may be used when they meet agency standards, transportation and development needs, and environmental objectives. When access involves the use of existing agency roads, operators must obtain agency approval and may be required to upgrade the roads, contribute to road maintenance funds, or participate in road maintenance agreements.

When selecting a location for new roads, consider following topographic contours. While laying out roads in a point-to-point approach minimizes the length of road, it often increases soil erosion, maintenance costs, long-term loss of vegetation, and visual contrast. Following natural topographic contours preserves natural drainage patterns and usually makes it possible to design a more aesthetically pleasing road with lower construction, maintenance, and reclamation costs and less impact on the environment.

Initial steps in road location include:

- Determination of the intended use of the road, planned season of use, type of vehicles to be used, road class, and needs of the surface owner or agency
- Examination of the surface management agency's transportation plan, which may already have identified feasible routes for the area
- Examination of existing data, including maps and aerial photos, land use plan decisions, and biological, physical, and cultural conditions of the area
- Determination of oil and gas lease obligations, future development needs, and safety considerations.

Once these steps have been taken, an appropriate route can be identified. This process is critical to ensuring that the safest and least intrusive route is chosen.

Geotechnical Factors

In complex terrain or conditions, it is recommended that the operator look at various route alternatives before selecting the preferred route. Field reconnaissance of alternative routes may be necessary in order to provide information on such factors as soil types, construction/reclamation limitations, type of excavation, landslide areas, subgrade conditions indicating the need for surfacing, potential cut slope problems, surface or subsurface water problem areas, suitability of fill material, potential gravel pits or quarries for road aggregate, and potential borrow and waste sites. A good road location analysis may avoid costly problems and identify cost-saving opportunities.

Other Factors

Other factors to consider that are unique to the oil and gas industry include:

- The potential for encountering sour gas (H_2S). Note the prevailing wind direction and identify a clear escape route from the drill site.
- The potential for year-round operation. Drill sites and producing locations may require all-weather access and special maintenance considerations for snow removal.
- The potential for exploratory drilling to result in a producing operation. Select initial road alignments and road classes based on the potential for upgrade if the wells are completed for production.

When the road location information is submitted to the surface management agency, the acceptability of the proposed route, and if applicable, alternative routes, can be evaluated. The preferred road location will be identified by the authorized officer at the onsite inspection in coordination with the private surface owner on non-Federal surface.

Road Design and Construction

Construction and Reclamation Considerations

New road construction or reconstruction by the operator must be suitable for the intended use and must comply with BLM road and safety standards, such as those found in BLM's 9113–Roads Manual. Roads constructed within the jurisdiction of the FS must comply with applicable FS road and safety standards.

Roads should be designed and constructed to allow for successful interim and eventual final reclamation. Revegetation of road ditches and cut and fill slopes will help stabilize exposed soils and reduce sediment loss, reduce the growth of noxious weeds, reduce maintenance costs, maintain scenic quality and forage, and protect habitat. To ensure successful growth of plants and forbs, topsoil must be salvaged where available during road construction and respread to the greatest degree practical on cut slopes, fill slopes, and borrow ditches prior to seeding. To ensure the stability of freshly topsoiled slopes during revegetation, the application of mulch or other sediment control measures may be appropriate.

Construction with saturated or frozen soils results in unstable roads and should be avoided. Vehicular travel under wet conditions can produce significant rutting of unsurfaced roads resulting in soil loss and safety concerns. If road use is anticipated during saturated soil conditions, the surface management agency may require road surfacing to provide safe vehicle access, ensure uninterrupted operations, and reduce road damage and sediment loss.

Nonconstructed Roads and Routes

When site conditions are appropriate, the surface management agency may approve the creation or use of "primitive," two-track roads or overland route corridors to meet the operator's access needs. Primitive roads and route corridors may serve as appropriate access to exploration drilling locations where it is not certain if the well will be productive, or to producing wells where vehicle traffic is infrequent due to the use of off-site production facilities and automated well monitoring.

The appropriateness of primitive roads or routes is both site-specific and use-specific and is typically based on many factors, such as anticipated dry or frozen soil conditions, seasonal weather conditions, flat terrain, low anticipated traffic, or driller's or operator's access needs. Primitive roads or routes necessitate low vehicle speed and are typically limited to four-wheel drive or high clearance vehicles. They can consist of existing or new roads with minor or moderate grading; two-track roads created by the operator's direct vehicle use with little or no grading; overland routes within a defined travel corridor leaving no defined roadway beyond crushed vegetation; or any combination along the route. Operators should not flat-blade roads. Drainage must be maintained, where appropriate, to avoid erosion or the creation of a muddy, braided road.

These roads and routes must be used and maintained in a safe and environmentally responsible manner and are not intended for use as all-weather access roads. Resource damage must be repaired as soon as possible and the operator must consult with the surface management agency

A minimum disturbance, primitive, two-track road winds its way to a drilling operation. To further reduce disturbance, most of the well location has not been stripped of vegetation or topsoil.

to determine if all or a portion of the road needs to be upgraded to an all-weather access road. When used and maintained appropriately, nonconstructed roads and routes have the advantage of reducing construction, maintenance, and reclamation costs and reducing resource impacts. The use of nonconstructed roads must be approved by the surface management agency.

Constructed Roads

The surface management agency determines the appropriate road type and associated road design standards based on the expected traffic volume and other factors, such as seasonal or year-round use, the design vehicle, soil types, rainfall, topography, construction costs, compatibility with other resource values, and safety. This information is documented during the transportation planning process and onsite meeting. Road types may vary along the same route depending on the operator's or the surface management agency's access or resource protection needs. In some cases, exploration drilling may warrant a lower design standard or primitive road, mentioned previously, which could be upgraded if the well becomes a producing well.

BLM Resource or FS Local Roads

BLM resource or FS local roads are low-volume, single-lane roads. They normally have a 12 to14 foot travelway with "intervisible turnouts," as appropriate, where approaching drivers have a clear view of the section of road between the two turnouts and can pull off to the side to let the approaching driver pass. They are usually used for dry weather, but may be surfaced, drained, and maintained for all-weather use. These roads connect terminal facilities, such as a well site, to collector, local, arterial, or other higher-class roads. They serve low average daily traffic (ADT) and are located on the basis of the specific resource activity need rather than travel efficiency.

BLM Local or FS Collector Roads

BLM local or FS collector roads may be single-lane or double-lane with travelways 12 to 24 feet in width and intervisible turnouts. They are normally graded, drained, and surfaced and are capable of carrying highway loads. These roads provide access to large areas and for various uses. They collect traffic from resource or local roads or terminal facilities and are connected to arterial roads or public highways. The location and standards for these roads are based on both long-term resource needs and travel efficiency. They may be operated for either constant or intermittent service, depending on land use and resource management objectives for the area being served.

BLM Collector or FS Arterial Roads

BLM collector or FS arterial roads are usually double-lane, graded, drained and surfaced, with a 20 to 24 foot travelway. They serve large land areas and are the major access route into development areas

General Design Specifications for Different Types of Roads

Definitions

Design Criteria are requirements that govern the selection of elements and standards for a road, such as resource management objectives, road management objectives, safety requirements, and traffic characteristics.

Design Elements are the physical characteristics of a road, such as the ditches, culverts, travelway clearing limits, curve widening, slopes, and drainage characteristics that, when combined, comprise the planned facility.

Design Standards comprise the lengths, widths, and depths of design elements, such as a 14-foot-wide travelway, 2-foot shoulders, 2:1 cut slopes, 3-foot curve widening, and 8 inches of crushed aggregate. Design terms are illustrated in Figure 2.

Design Vehicle is the vehicle most frequently using the road that determines the minimum standard for a particular design element. No single vehicle, however, controls the standards for all the design elements for a road.

with high average daily traffic rates. The locations and standards are often determined by a demand for maximum mobility and travel efficiency rather than a specific resource management service. They usually connect with public highways or other arterials to form an integrated network of primary travel routes and are operated for long-term land and resource management purposes and constant service.

BLM Resource and FS Local Roads

Basic Design Requirements

The surface management agency will provide requirements specific to proposed oil and gas roads during project planning and/or at the onsite review with consideration of safety, impacts on land and resources, and cost of transportation. Requirements for specific proposals may vary somewhat from the generalized requirements that follow.

- Design speed specific to oil and gas roads is 10 to 30 miles per hour. For the FS, this should generally be less than 15 miles per hour.
- Preferred travelway width is 14 feet with turnouts. For the FS, this can vary from two parallel vehicle tracks, bladed 12-foot sections with turnouts, or a broader defined overland corridor approved by the surface management agency.
- Recommended minimum horizontal curve radii is determined by the design vehicle and design speed. Where terrain will not allow the proper curve radii, curve widening is necessary. Specifications are available from the surface management agency.
- Road gradient has a major effect on the environmental and visual impact of a road, particularly in terms of erosion. The gradient should fit as closely as possible to the natural terrain, considering vehicle operational limitations, soil types, environmental constraints, and traffic service levels. The gradient should not exceed 8 percent except for pitch grades (300 feet or less in length) in order to minimize environmental effects. In mountainous or dissected terrain, grades greater than 8 percent up to 16 percent may be permissible with prior approval of the surface management agency.
- The primary purpose of turnouts is for user convenience and safety and to maintain user speed. Turnouts are generally naturally occurring, such as additional widths on ridges or other available areas on flat terrain. On roads open to the public, turnouts must be located at 1,000-foot intervals or be intervisible, whichever is less.
- Drainage control must be ensured over the entire road through the use of drainage dips, insloping, natural rolling topography, ditch turnouts, ditches, or culverts. Ditches and culverts may be required in some situations, depending on grades, soils, and local hydrology. If culverts or drainage crossings are needed, they should be designed for a 25-year or greater storm frequency, without development of a static head at the pipe inlet.
- Gravel or other surfacing is not always required, but may be necessary for "soft" road sections, steep grades, highly erosive soils, clay soils, or where all-weather access is needed.
- At times, a limited number of oil field vehicles (critical vehicles) larger than the design vehicle may make occasional use of the road. The operator should consider these needs in road design.

Field Survey Requirements

Field survey requirements vary with topography, geologic hazard, potential for public and recreational use, or other concerns. Each surface management agency has survey requirements based on design requirements and concerns specific to the area. The surface management agency should be contacted as early as possible to determine the survey requirements. The following general requirements are imposed to control work and produce the desired road.

- A flagline is established along the construction route. Flags should be placed approximately every 100 feet, or be intervisible, whichever is less.
- Construction control staking may be required depending on conditions of the site.
- Culvert installations are located and staked.

Design Drawings and Templates

- On side slopes of 0 to 20 percent, where horizontal and vertical alignment can be worked out on the ground, a plan and profile drawing may not be required. Standard templates, drainage dip spacing,

culvert locations, and turnout spacing guides would be acceptable.

- A plan and profile view would be the minimum drawing required on steeper slopes and in areas of environmental concern. The drawing should identify grade, alignment, stationing, turnouts, and culvert locations.
- Standard templates of road cross-sections and drainage dips are required for all resource, local, and higher-class roads. Figures 2 and 3 illustrate these sections.
- Additional information may be required in areas of environmental or engineering concern.

Construction

The operator must take all necessary precautions for protection of the work and safety of the public during construction of the road. Warning signs must be posted during blasting operations.

Clearing and Grubbing

Clearing and grubbing will normally be required on all sections of the road. Exceptions would be allowed in areas of sparse, non-woody vegetation.

All clearing and grubbing should be confined to a specified clearing width (Figure 2), which is usually somewhat wider than the limits of actual construction (roadway). Branches of all trees extending over the roadbed should be trimmed to provide a clear height of 14 feet above the roadbed surface. All vegetative debris must be disposed of as specified by the surface management agency.

Excavation

All soil material and fragmented rock removed in excavation is to be used as directed in the approved plan. Excess cut material shall not be wasted unless specified in the approved plan.

Roadbed Construction

Roadbed material should not be placed when the materials or the surface are frozen or too wet for satisfactory compaction. Equipment should be routed over the layers of roadbed material already in place to help avoid uneven compaction anywhere along the travel route. Borrow material shall not be used until material from roadway excavation has been placed in the embankments, unless otherwise permitted. Borrow areas used by the operator must be approved prior to the start of excavation.

Roadside ditches should conform to the slope, grade, and shape of the required cross-section with no projections of roots, stumps, rocks, or similar debris. Side ditches must be excavated to a depth of 1-foot minimum below the finished road surface. Drainage turnout spacing on these ditches should not exceed 500 feet; slopes greater than 5 percent may require closer spacing of turnout furrows (wing ditches or relief ditches).

BLM Local and FS Collector Roads

Basic Design Requirements

- Design speed is generally 15 to 50 miles per hour. For the FS, it is 15 to 25 miles per hour. The selected design speed establishes the minimum sight distance for stopping and passing, and road geometrics such as minimum radius of curvature, the gradient, and type of running surface.
- Travelway minimum is 14 feet (single lane) and 24 feet (double lane) with intervisible turnouts, as may be required.
- Recommended minimum horizontal curve radius is 220 feet. Where terrain will not allow 220-foot curve radii, curve widening is necessary. Super-elevation should be considered at speeds greater than 20 miles per hour. Specifications are available from surface management agency engineering offices.
- Vertical curves should be designed with an appropriate "k" value (rate of vertical curvature length per percent of "A", the algebraic difference in grade) based on design speed (for example on FS, crest vertical curves, 30 mph k=9; 40 mph k=22; 50 mph k = 45).
- Maximum grades should not exceed 8 percent. Pitch grades for lengths not to exceed 300 feet may be allowed to exceed 8 percent in some cases.
- All culverts must be sized in accordance with accepted engineering practices and any special environmental concerns. The minimum size culvert in any installation is 18 inches. Drainage crossings and culverts should be designed for a 25-year or greater storm frequency and allow fish passage in perennial streams where fish are present.
- Turnouts are required on all single-lane roads. Turnouts must be located at 1000-foot intervals or be intervisible, whichever is less. The length should not be less than 100 feet, with additional 50-foot transitional tapers at each end.
- Surfacing may be required to provide all-weather access. If surfacing is needed, aggregate size, type, amount, and application method will be specified by the local office of the surface management agency. Subgrade analysis may be required to determine load-bearing capacities.

Field Survey Requirements

Generally, the survey requirements for these roads are similar to those for BLM resource and FS local roads. These roads, however, are designed for higher average daily traffic rates and greater speeds. Thus, in addition to flagline and culvert survey requirements, an instrument or topographic survey with preliminary centerline staking and slope staking is usually required on steep terrain and in areas requiring special engineering. Specific survey requirements are available at the local office of the surface management agency.

Design Drawings and Templates

- Generally, the required drawings for this road class would include a plan and profile (Figure 4). The drawing should identify grade, location, stationing, surfacing, turnouts, culvert locations, and drainage dip spacing.
- Standard templates of the proposed road cross-section(s) (Figures 2 and 3) and drainage dip design are required for this type of road.
- Additional information may be required in areas of environmental or engineering concern.

Construction

- Drainage dips, construction, and spacing are the same as for BLM resource and FS local roads.
- Culvert cross-drains should be used in lieu of drainage dips for road grades in excess of 10 percent. Culvert installation is discussed in the Drainage and Drainage Structure Section.
- Construction standards are the same as given in the BLM Resource and FS Local Roads Section.

BLM Collector and FS Arterial Roads

Basic Survey and Design Requirements

- Vertical, horizontal, and topographic data, as well as significant features should be plotted on standard plan and profile sheets to a scale of 1 inch = 100 feet horizontal and 1 inch = 20 feet vertical, or as otherwise directed by the surface management agency. The design shall conform to the most current edition of the AASHTO, *Guidelines for Geometric Design of Very Low-Volume Local Roads*, for access roads with an anticipated average daily traffic of less than 400 vehicles.
- Plot "L" (layout) line along "P" (preliminary) line using the following design standards criteria:
  - Design speed is 30 miles per hour or greater unless otherwise directed.
  - Travel width-minimum is 20 feet, maximum is 24 feet.
  - Minimum horizontal curve radius is 460 feet unless shorter radii are approved. The curve radius must take into account super-elevation.
  - Design vertical curves with an appropriate "k" value based on design speed.
  - Maximum grade is 8 percent (except pitch grades not exceeding 300 feet in length and 10 percent in grade).
  - Mass diagrams and earthwork balancing may be required. Obvious areas of waste or borrow shall be noted on the plan and profile as well as proposed locations of borrow or waste disposal areas.
  - All culverts should be designed for a minimum 25-year storm frequency with an allowable head that does not overlap the roadway or cause damage. However, the minimum acceptable size culvert diameter is 18 inches. Show all culverts planned to accurate vertical scale on plan profile sheets.
  - Slope staking is required.

Design Drawings and Templates

- Complete plan and profile drawings are required for any BLM collector or FS arterial road (Figure 4). These drawings should identify grade, location, stationing, and all culvert sizes and locations (see Figure 7 for examples).
- Standard templates of road cross-sections, drainage design, and culvert location and installation are required (Examples in Figures 3 through 6).
- Mass diagrams and materials investigation and classification may be required.

Construction

Except for the specific items that follow, construction standards are given in the BLM Resource/FS Roads or the BLM Local/FS Collector Roads Sections. Construction shall be performed under the direction of a licensed, professional engineer as required by the BLM, or a qualified engineer for roads on FS lands.

Excavation and fill construction will be performed to secure the greatest practicable degree of roadbed compaction and stability. Roadbed materials shall be placed parallel to the axis of the roadway in even, continuous, approximately horizontal layers not more than 8 inches in thickness. The full cross-section of the fill must be maintained as each successive layer is placed. Place successive layers of material on embankment areas to produce the best practical distribution of the material. The materials throughout the roadbed shall be free from lenses, pockets, streaks, or layers of material differing substantially in texture, gradation, or compaction from the surrounding material. Ordinarily, stones coarser than a 3-inch-square mesh opening should be buried at least 4 inches below the finished surface of the roadway.

The operator should route construction equipment over the layers of roadbed material already in place and distribute the gravel evenly over the entire width of the embankment to obtain maximum compaction while placing the material and to avoid uneven compaction anywhere along the travel route.

Use excess excavation material, where practical, to improve the road grade line or to flatten fill slopes. Other waste areas must be approved prior to placement of waste material.

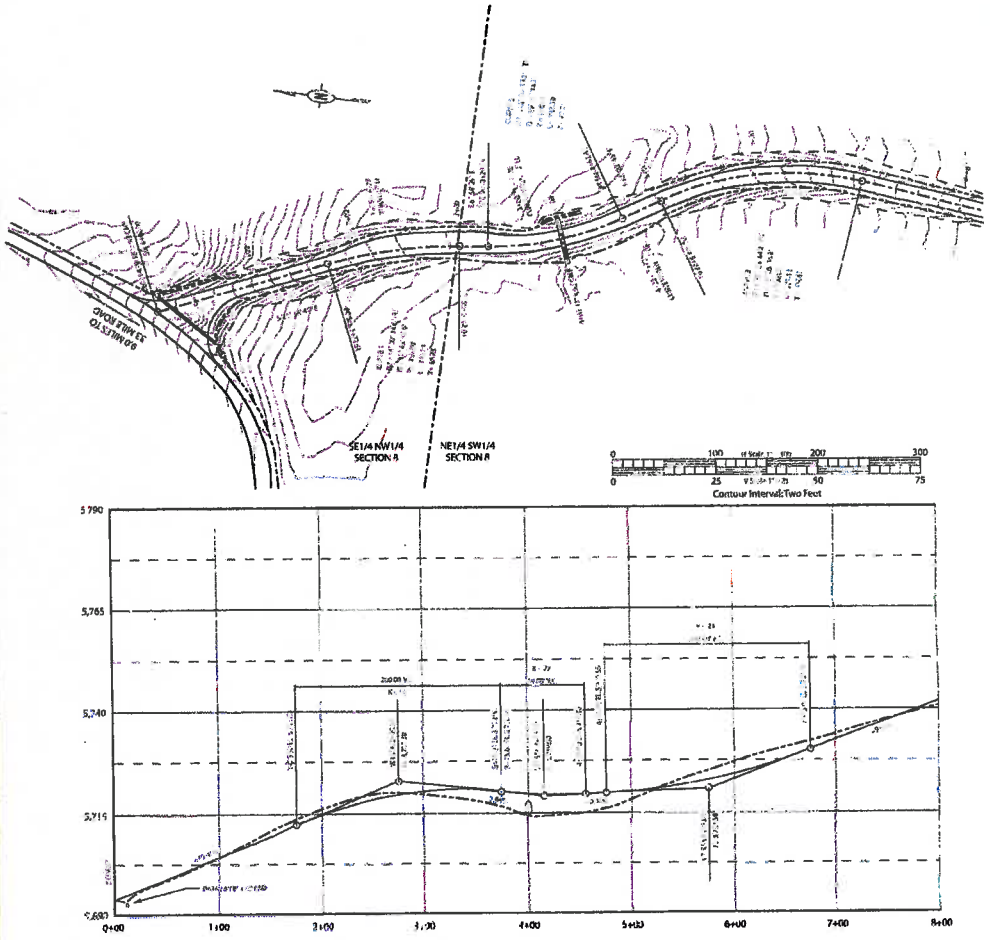


Figure 4. Typical road plan and profile drawing for an oil and gas road.

Road Maintenance

When required, the operator shall submit a road maintenance plan for all roads that will be constructed or used in conjunction with the drilling program. The maintenance plan will contain provisions for maintaining the traveled way, protection of the roadway features, requirements for road management, and the method to be used in carrying out maintenance activities.

Maintenance activities normally required include monitoring, blading, surface replacement, dust abatement, spot repairs, slide removal, ditch cleaning, culvert cleaning, litter cleanup, noxious weed control, and snow removal. When applicable, specific areas shall be identified in the road maintenance plan for disposal of slide material, borrow or quarry sites, stockpiles, or other uses that are needed for the project.

Key maintenance considerations include regular inspections; reduction of ruts and holes; maintenance of crowns and outslopes to keep water off the road; replacement of surfacing materials; clearing of sediment blocking ditches and culverts; maintenance of interim reclamation; and noxious weed control.

Conduct additional inspections following snowmelt or heavy or prolonged rainfall to look for drainage, erosion, or siltation problems. Blade only when necessary and avoid blading established grass and forb vegetation in ditches and adjacent to the road. Ensure that maintenance operators have proper training and understand the surface management agency's road maintenance objectives.

Authorized users may perform their share of road maintenance, enter into road maintenance agreements administered by the users, or may be required to deposit sufficient funds with the surface management agency to provide for their share of maintenance. If the road has only one permitted user, other than incidental use by others, that user may have total responsibility for maintenance.

This example of interim road reclamation shows that reapplying topsoil and the regrowth of vegetation along the road borrow ditches of this resource road reduces the loss of forage, habitat, and sediment, decreases maintenance costs, and helps maintain the scenic quality.

Drainage and Drainage Structures

The proper design and construction of structures for the drainage of water from or through the roadway often contributes the most to the long-term success of the road and structure and minimizes maintenance and adverse environmental effects, such as erosion and sediment production. It is vitally important to keep the water off the road.

Road Drainage Design

The most economical control measure should be designed to meet resource and road management objectives and constraints. The economic considerations should include both construction and maintenance costs. The need for drainage structures can be minimized by proper road location. However, adequate drainage is essential for a stable road. A proper drainage system should include the best combination of various design elements, such as ditches, culverts, drainage dips, crown, in-slope or out-slope, low-water crossings, subsurface drains, and bridges.

Surface Drainage

Surface drainage provides for the interception, collection, and removal of water from the surface of roads and slope areas. The design may need to allow for debris passage, mud flows, and water heavily laden with silt, sand, and gravel. Culverts should be designed in accordance with applicable practices adopted by State and Federal water quality regulators under authority of the Federal Clean Water Act (CWA). Culverts should accommodate a 10-year flood without development of a static head and avoid serious velocity damage from a 25-year flood.

Subsurface Road Drainage

Subsurface drainage is provided to intercept, collect, and remove groundwater that may flow into the base course and subgrade; to lower high water tables; or to drain locally saturated deposits or soils.

Drainage Structures

Proper location and design can provide economical and efficient drainage in many cases. However, structural measures are often required to ensure proper and adequate drainage. Some of the most common structures are drainage dips, ditches, road crowning, culverts, and bridges.

Drainage Dips

The primary purpose of a drainage dip is to intercept and remove surface water from the travelway and shoulders before the combination of water volume and velocity begins to erode the surface materials. Drainage dips should not be confused with water bars, which are normally used for drainage and erosion protection of closed or blocked roads. See Figure 5 for an illustration of a typical drainage dip and construction specifications. Spacing of drainage dips depends upon local conditions such as soil material, grade, and topography. The surface management agency should be consulted for spacing instructions.

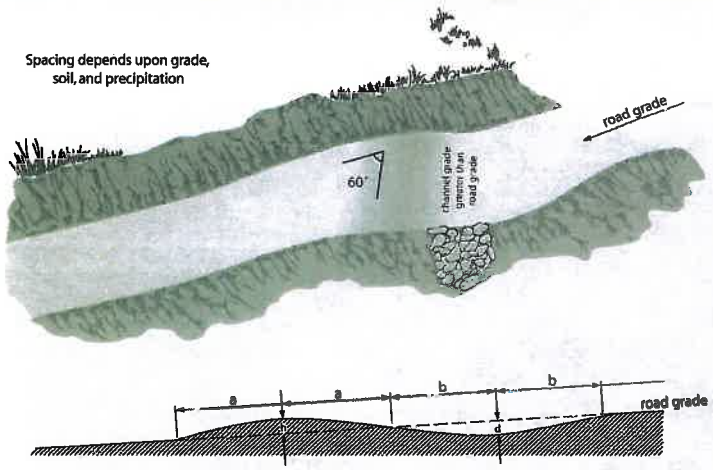
Ditches

The geometric design of ditches must consider the resource objectives for soil, water, and visual quality, maintenance capabilities and associated costs; and construction costs. Ditch grades should be no less than 0.5 percent to provide positive drainage and to avoid siltation. The types of ditches normally used are drainage, trap, interception, and outlet.

Road Crowning

Roads that use crowning and ditching are common and can be used with all road classes, except non-constructed roads. This design provides good drainage of water from the surface of the road.

Drainage of the inside ditch and sidehill runoff is essential if the travelway is to be kept dry and passable during wet weather.



Cross-Section of Waterdip on Center Line

Road Grade	d	h	a	b
2%	0.6'	0.4'	10'	10'
4%	1.0'	0.8'	14'	14'
6%	1.2'	1.4'	16'	18'
8%	2.0'	2.2'	22'	24'

Figure 5. Typical drainage dip and construction specifications.

Culverts

Culverts are used in two applications: in streams and gullies to allow normal drainage to flow under the travelway and to drain inside road ditches. The latter may not be required if drainage dips are used. The location of culverts should be shown on the plan and profile or similar drawings or maps submitted with the APD.

All culverts should be laid on natural ground or at the original elevation of any drainage crossed, except as noted for ditch relief culverts. See Figures 6 and 7 for installation details.

Culverts should have a minimum diameter of 18 inches. The diameter should be determined by the anticipated amount of water that would flow through the culvert. Factors to be considered include the geographic area being drained, soils and slopes in the drainage area, annual precipitation, and likely storm events.

The outlet of all culverts should extend at least 1 foot beyond the toe of any slope. It may be necessary to install rip-rap or other energy dissipation devices at the outlet end of the culvert to prevent soil erosion or trap sediment (see example in the photograph).

Properly sized rock rip-rap at culvert outlets helps reduce water velocity and resulting soil erosion.

Maximum Recommended Culvert Spacing (ft)

Soil Type	Road Grade 2–4%	Road Grade 5–8%	Road Grade 9–12%
Highly erosive granitic or sandy	240	180	140
Intermediate erosive clay or load	310	260	200
Low erosive shale or gravel	400	325	250

Figure 6. Culvert spacing.

All culverts used in the construction of access roads should be concrete, corrugated metal pipe made of steel, or properly bedded and backfilled corrugated plastic pipe. Only undamaged culverts are to be used, and any culvert should be inspected for damage prior to installation. All spots on the pipes where the zinc coating has been injured should be painted with two coats of zinc-rich paint or otherwise repaired as approved by the surface management agency.

Excavation, bedding, and backfilling of culverts should be conducted according to requirements of the surface management agency and good engineering practices. Compliance with applicable Clean Water Act Best Management Practices and requirements for passage of aquatic species is required.

Ditch Relief Culverts

Ditch relief culverts are installed to periodically relieve the ditch line flow by piping water to the opposite side of the road where the flow can be dispersed away from the roadway. The spacing of ditch relief culverts (Figure 6) is dependent on the road gradient, soil types, and runoff characteristics.

A culvert with an 18-inch diameter is the minimum for ditch relief to prevent failure from debris blockage.

The depth of culvert burial must be sufficient to ensure protection of the culvert barrel for the design life of the culvert. This requires anticipating the amount of material that may be lost due to road use and erosion.

Pipelines and Flowlines

Construction

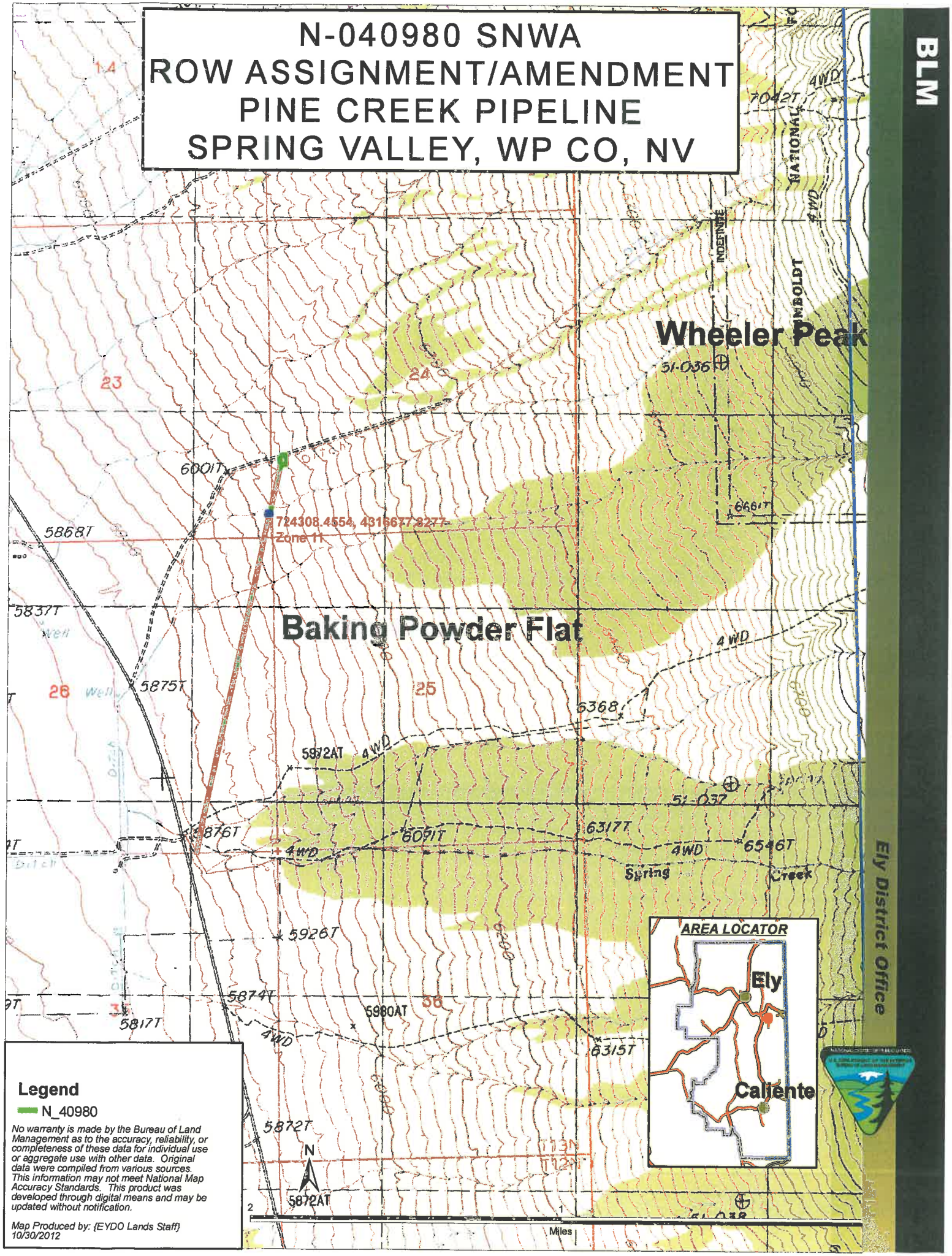
Steep hillsides and water courses should be avoided in the location of pipelines and flowlines. Flowline routes should take advantage of road corridors wherever possible to minimize surface disturbance and provide better leak detection and access for installation and repair operations. Consider maintenance needs and safety when burying power and pipelines in or immediately adjacent to the road.

When clearing is necessary, the width disturbed should be kept to a minimum. Topsoil material must be stockpiled to the side of the routes where cuts and fills or other surface disturbances occur during pipeline construction. Topsoil material must be segregated and not be mixed or covered with subsurface material. Bladed materials must be placed back into the cleared route upon completion of construction and returned back to the original contour before reapplying topsoil.

Pipelines and flowlines should be tested for leaks before backfilling trenches. Pipeline trenches should be compacted during backfilling. After construction, cut-and-fill slopes must be regraded to conform to the adjacent terrain and reclaimed. Pipeline rights-of-way must be maintained in order to correct backfill settling and prevent erosion.

Pipeline construction should not block, dam, or change the natural course of any drainage. Suspended pipelines should provide adequate clearance for high-flow events, floating debris, wildlife, or livestock. Pipelines buried across stream crossings should be buried below the scouring depth.

N-040980 SNWA
ROW ASSIGNMENT/AMENDMENT
PINE CREEK PIPELINE
SPRING VALLEY, WP CO, NV



SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM

November 21, 2013

Subject: WaterSmart Innovations Conference Agreements	**Director's Backup**
Petitioner: John J. Entsminger, Senior Deputy General Manager	
Recommendations: That the Board of Directors authorize the General Manager, or her designee, to negotiate and execute agreements for facilities and services necessary to host the WaterSmart Innovations Conference from 2014 through 2016.	

Fiscal Impact:
None by approval of the above recommendation. The WaterSmart Innovations Conference (WSI) has been self-sustaining since 2008. All obligations are expected to be paid with conference revenues.

Background:
Since 2008, the Authority partnered with the Environmental Protection Agency, the Alliance for Water Efficiency, the American Water Works Association, and other national organizations to host an annual international conference and exhibition in southern Nevada relating to urban water efficiency.

By hosting the WSI, the Authority maintains southern Nevada's reputation as a world leader in sustainability and water efficiency innovation, builds and strengthens effective relationships with regulators and peer agencies, and makes available international expertise to private- and public-sector professionals in Nevada. In addition, visitors to the WSI inject an estimated $1 million of non-gaming revenue into the local economy.

On June 21, 2007, and April 21, 2011, the Board of Directors approved the General Manager or her designee to enter into agreements and contracts for services, in three-year increments, to host WSI through 2013. Between 2008 and 2013, no direct expense has been incurred by the Authority. Services to be contracted include, but are not limited to, event management, conference facilities, and exhibition management services. All financial obligations are expected to be paid from event revenues, and no direct expense to the Authority is anticipated.

This action is authorized pursuant to NRS Chapter 332.115(1)(b) and Sections 6(j) and 6(p) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel will review and approve any applicable agreements prior to execution by the General Manager or her designee. The office of the General Counsel has reviewed and approved this agenda item.

Respectfully submitted:

P Mulroy

Patricia Mulroy, ~~General Manager~~
PM:JJE:ZLM:DB:cec:nsh

AGENDA ITEM # 1

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM

November 21, 2013

Subject: Water Resource Plan	**Director's Backup**
Petitioner: John J. Entsminger, Senior Deputy General Manager	
Recommendations: That the Board of Directors receive a report on the Water Resource Plan and, if appropriate, adopt the current plan for another year.	

Fiscal Impact:
None by approval of the above recommendation.

Background:
The SNWA 1995 Amended Cooperative Agreement requires that the Authority adopt a Water Resource Plan (Plan), review the Plan at least annually, and revise, if necessary. The Board of Directors first adopted the current Plan in May 2009. The Board has reviewed and adopted the Plan each year since 2009.

The Plan encapsulates uncertainties in current economic conditions in addition to normal Colorado River conditions and shortage scenarios, and continues to demonstrate the flexibility needed to respond to conditions as they develop and to meet future demands in a timely manner.

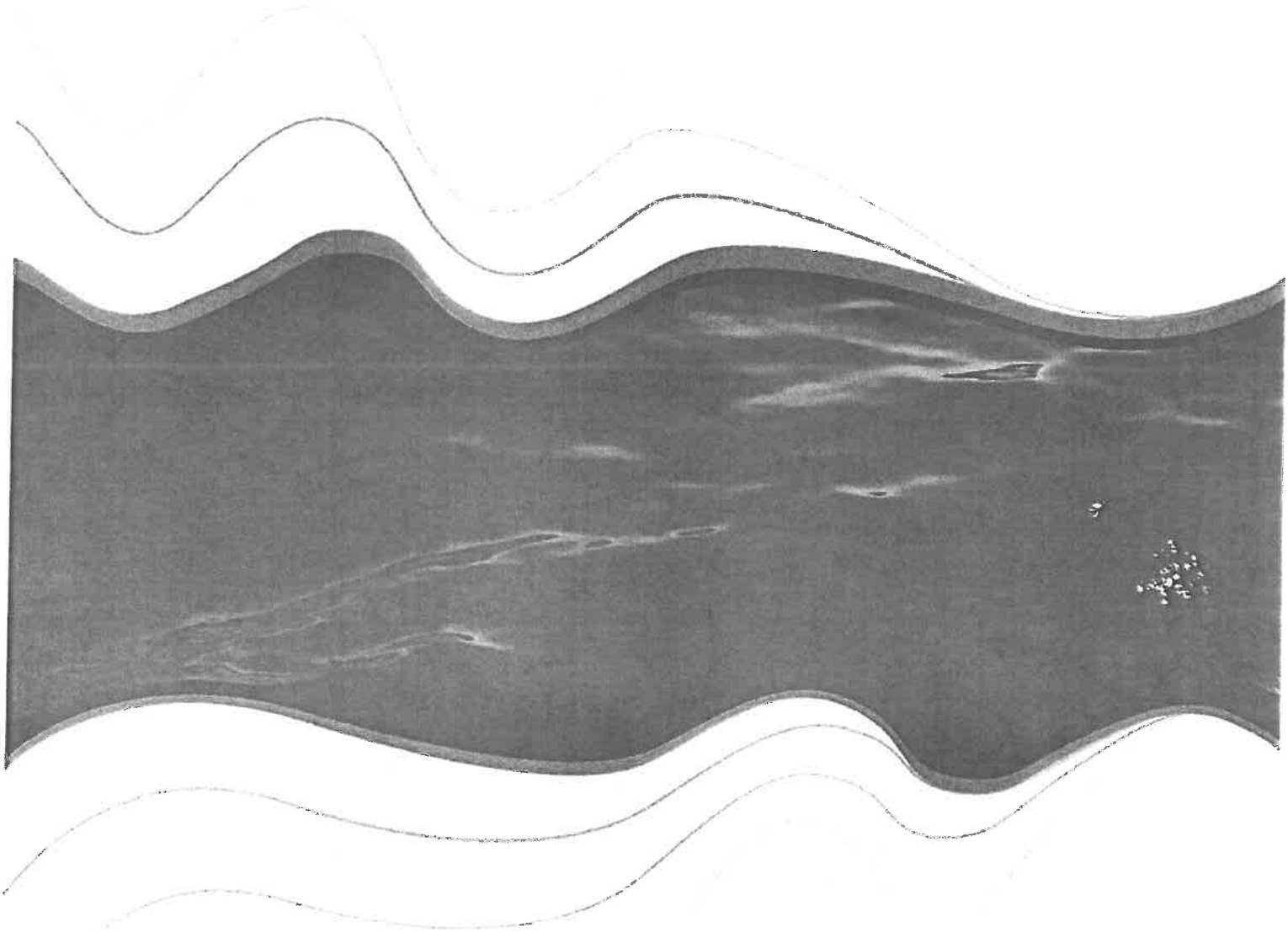
In 2012, the Authority formed the Integrated Resource Planning Advisory Committee (IRPAC) to help guide future water resource planning for southern Nevada. IRPAC members were tasked with developing recommendations on topics affecting the Authority. On September 26, 2013, the Board approved IRPAC's funding recommendations. In 2014, IRPAC will review the Authority's activities related to water resources, conservation, facilities, and water quality. Recommendations from the IRPAC process are anticipated to be incorporated into future Water Resource Plans.

This action is authorized pursuant to Sections 5(j) and 8(h) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved this agenda item.

Respectfully submitted:

Patricia Mulroy, General Manager
PM:JJE:ZLM:AB:JJ:lmv:nsh
Attachment

AGENDA ITEM # 8



Water Resource Plan 09

SOUTHERN NEVADA WATER AUTHORITY

Southern Nevada Water Authority

Board of Directors

Shari Buck, Chair
City of North Las Vegas

Steven Kirk, Vice Chair
City of Henderson

Andrea Anderson
City of Boulder City

Susan Brager
Las Vegas Valley Water District

Tom Collins
Clark County Water Reclamation District

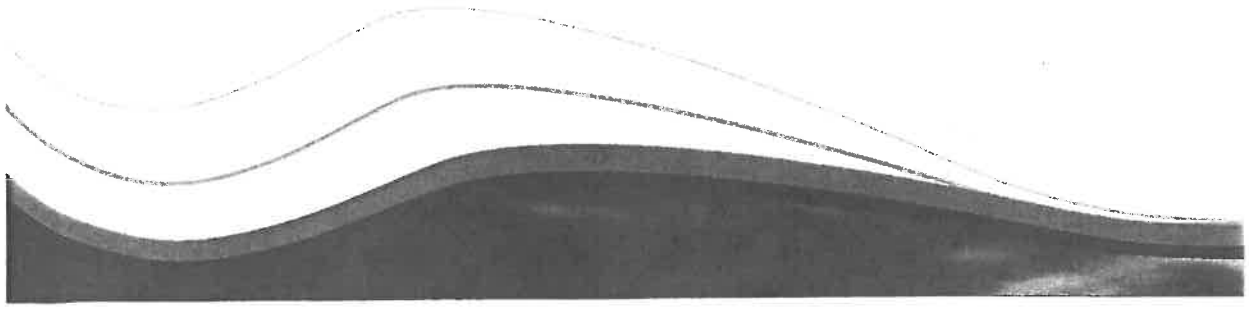
Steve Sisolak
Big Bend Water District

Lois Tarkanian
City of Las Vegas

Patricia Mulroy, General Manager

Member Managers

Elizabeth Fretwell, City of Las Vegas • Vicki Mayes, City of Boulder City
Richard Mendes, Clark County Water Reclamation District • Gregory Rose, City of North Las Vegas
Patricia Mulroy, Las Vegas Valley Water District • Virginia Valentine, Big Bend Water District
Mark Calhoun, City of Henderson



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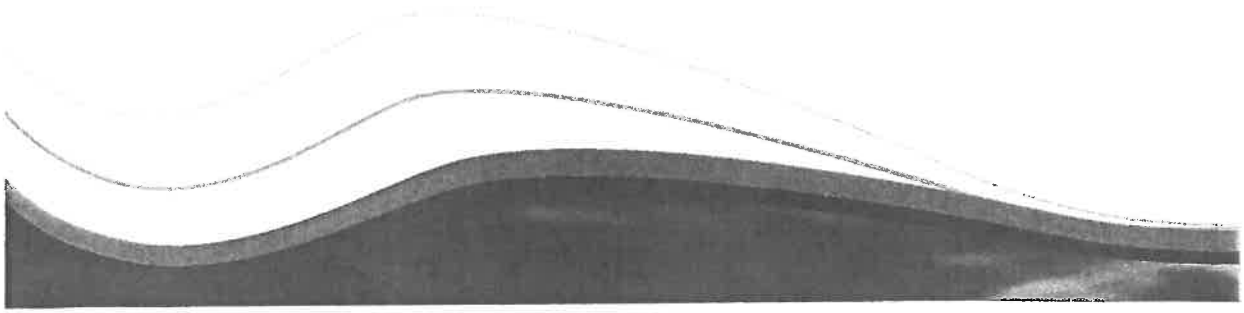

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Executive Summary

The Southern Nevada Water Authority (SNWA) was formed in 1991 by a cooperative agreement among the following agencies in Southern Nevada:

- Big Bend Water District
- City of Boulder City
- City of Henderson
- City of Las Vegas
- City of North Las Vegas
- Clark County Water Reclamation District
- Las Vegas Valley Water District

Together, these seven agencies provide water and wastewater service to nearly 2 million residents in the cities of Boulder City, Henderson, Las Vegas and North Las Vegas, and areas of unincorporated Clark County. As their wholesale water provider, the SNWA is responsible for water treatment and delivery, as well as acquiring and managing long-term water resources for Southern Nevada. Since its inception, the SNWA has worked to seek new water resources for Southern Nevada, manage existing and future water resources, construct and manage regional water facilities and promote conservation.

The SNWA prepared its first Water Resource Plan in 1996. Since then, the plan has been reviewed annually and updated as needed. The 2009 plan represents the eighth revision in 13 years. This plan provides a comprehensive overview of water resources and demands in Southern Nevada, including a history of water resources and demands in the region; an overview of the SNWA water resource portfolio; and the SNWA's approach to demand forecasting, demand management and meeting long-term resource needs, including during times of declared shortages. The plan also includes a discussion on environmental issues that will influence future resource planning in Nevada and the Colorado River Basin.

An underlying principle of the 2009 Water Resource Plan is to maximize the use of existing resources, while maintaining the flexibility to adjust planning as circumstances or conditions warrant. This approach has proved increasingly valuable as the SNWA continues to work to address unprecedented drought conditions along the Colorado River, evolving demand-forecasting scenarios, and local economic conditions.

The SNWA has worked diligently over the last decade to enhance regional conservation efforts, secure additional in-state resources, enhance the flexibility of Colorado River management, and respond to severe and sustained drought conditions in the region. The following provides an overview of recent developments that continue to influence water-planning efforts in Southern Nevada.

DROUGHT

The SNWA continues to respond to ongoing drought conditions in the Colorado River Basin. Between 1999 and 2008, the average annual inflow to the system was 66 percent of normal. As a result, the combined storage of Lake Mead and Lake Powell – the two primary reservoirs in the Colorado River system – was 52 percent of the total combined capacity in early 2009.

For the SNWA, there are two primary consequences of continued declines in Lake Mead water levels:

possible reduction of available Colorado River supplies and operating challenges associated with water intake facilities at Lake Mead. Drought conditions have required the SNWA to enact contingency plans for Lake Mead intake facilities and develop a plan for responding to severe and sustained shortage of Colorado River resources.

To this end, the SNWA Board of Directors updated its drought plan in 2009 to outline the SNWA's approach to meeting demands during declared shortages in light of new rules and agreements. The drought plan has been updated to include current conditions and incorporated as a new chapter in the 2009 Water Resource Plan.

The SNWA's new shortage response (Chapter 4) outlines several scenarios to offset drought impacts based on the severity of Colorado River conditions. These include the use of Intentionally Created Surplus (ICS), banked resources, shortage-sharing agreements and heightened conservation measures, and development of in-state groundwater resources. SNWA also continues to work with the other Colorado River Basin states to identify and explore options for long-term augmentation of Colorado River resources.

WATER CONSERVATION

Conservation is a long-standing component of the SNWA's water resource portfolio. Conservation will significantly lower projected demands during the 50-year planning horizon.

Building upon the success of its previous efforts, the SNWA Board of Directors in 2009 adopted a new conservation goal of 199 gallons per capita per day (GPCD) by 2035. Achieving this goal will reduce overall use by more than 50 GPCD and save the community approximately 276,000 acre-feet of water per year by the year 2035.

Based on the recommendation of a 2005 citizen advisory committee, the SNWA also is working with its member agencies to make major temporary drought-response measures permanent. These include, but are not limited to, landscape-development codes, assigned-watering schedules and golf course water budgets. The SNWA continues to maintain a broad mix of education and incentive programs, which is discussed further in Chapter 2.

COLORADO RIVER RESOURCES

The SNWA is actively engaged with the other Colorado River Basin states regarding Colorado River management and development guidelines.

In response to severe Colorado River Basin drought conditions, the Secretary of the Interior (Secretary), in cooperation with the seven basin states, initiated a process in 2005 to explore management options for lakes Mead and Powell. These efforts resulted in the Secretary's 2007 Record of Decision for Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (Interim Guidelines).

Since that time, the SNWA has worked to maximize use of Colorado River resources, including development of Intentionally Created Surplus (ICS). To this end, the SNWA partnered with California and Arizona on funding for the Drop 2 Storage Reservoir to capture U.S. Colorado River water that would otherwise go unused in the lower basin and pass into Mexico, and began utilizing pre-compact water rights from the Muddy and Virgin rivers for use in meeting regional demands. The latter represents the first "new" permanent water supply put to use in the region since large-scale diversions of Colorado River water began in the 1950s.

IN-STATE DEVELOPMENT

In light of ongoing drought conditions in the Colorado River Basin, the SNWA continues to work through the necessary state and environmental permitting processes to develop in-state, non-Colorado River resources.

The 2009 Water Resource Plan assumes the development of 134,000 acre-feet per year (AFY) of in-state groundwater based on current permits and outstanding applications. Under normal hydrological

conditions, the SNWA is planning for use of this resource in 2020 (Figure 1); however, these resources may be needed sooner if drought conditions persist or intensify.

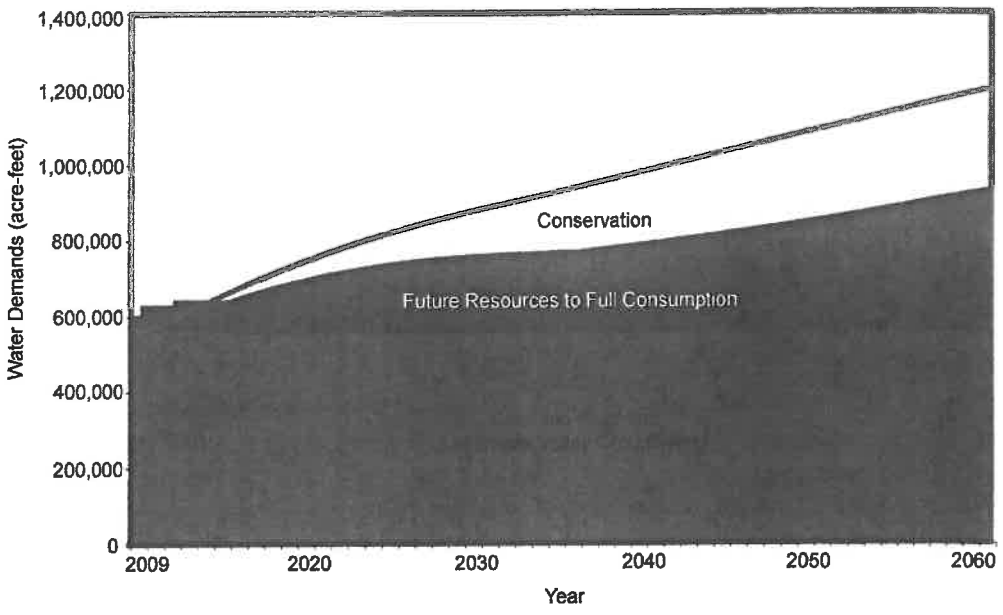
The SNWA depends on the Colorado River for 90 percent of its water-resource needs. Based on Colorado River hydrology and permitted uses, a long-term, non-Colorado River supply is needed to meet demands and provide protection for current and future drought.

DEMAND FORECAST

Several factors affect the timing of when and how resources are brought on-line, including growth, drought, cost and environmental permitting. Having a portfolio of resource options gives the SNWA enough flexibility to shift some resources if any of its other resources prove insufficient or unavailable over the long-term.

The current economic downturn affecting local, national and even global economies has presented unique challenges to planners as to when the local economic condition will recover and what future growth rates will occur. As a result, the 2009 Water Resource Plan reflects planning adjustments taken by the SNWA in response to latest conditions. Figure 1 displays the projected demands, the amount of conservation projected to be achieved and the additional resources needed to meet future demands through 2060.

FIGURE 1 – Summary of Projected Water Demands and Water Resources



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CHAPTER 1

A Brief History of Water in Southern Nevada

This chapter provides an overview of milestones and events that have shaped water management issues in the Southern Nevada region during the past century. An awareness and general appreciation of this history is necessary to understand the context in which the SNWA and its member agencies presently manage Southern Nevada's water future.

The chapter is divided into four sections – Introduction, History (1905 to 1945), History (1945 to 1990) and History (1990 to present) – each of which focuses on water demands and the resources that were used to meet those demands. This sets the stage for discussion of the SNWA water resource portfolio in Chapter 2, how SNWA plans to meet future demands in Chapter 3 and how the SNWA will meet demands during shortages in Chapter 4. Chapter 5 discusses the environmental planning and compliance activities relating to SNWA water resource planning and development.

INTRODUCTION

The history of Southern Nevada is inextricably tied to water. For much of its past, the area now known as Clark County was little more than a collection of scarce watering holes for various trails through the Mojave Desert. With the birth of Las Vegas in 1905 as a way station for the San Pedro, Los Angeles and Salt Lake Railroad, Southern Nevada began to attract a large number of residents and businesses. Over the next century, a series of social and economic developments – including legalized gaming, the construction of Hoover Dam, industrial production for the Second World War, atomic testing, tourism and the advent of the modern mega-resort – would steadily increase local populations and associated demands for water. These increases in population and water demand were often large and unanticipated, particularly in the latter half of the 20th century. As the following sections illustrate, long-term growth forecasts, and consequently water demands, have routinely not kept pace with the actual march of history in Southern Nevada. Forecasting is an effective and necessary tool for planning, but its accuracy over long periods of massive social and economic change (such as that experienced in the Las Vegas Valley) reflects, at best, only an educated guess. Typically, short-term forecasts are more accurate because they are based on the recent past. However, the current economic downturn affecting local, national and even global economies has presented unique challenges to planners as to when the economy will recover and what future growth rates will occur. This inherent uncertainty in forecasting is a routine challenge faced by local planners, one that will continue into the future. Water planning in present-day Southern Nevada is best understood with this in mind, and in the context of past and current events and the various constraints these events impose over time on contemporary resource management.

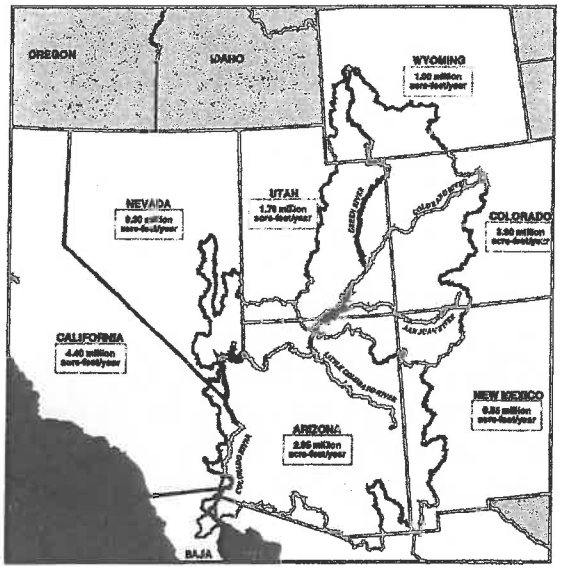
HISTORY (1905 to 1945)

From the beginning, the Las Vegas Valley was favored by immigrants, wayfarers and the railroad because of its artesian springs. With the coming of the railroad in 1905, the privately operated Las Vegas Land and Water Company was formed to build and operate the area's first system for moving local spring water. By 1913, a little more than 3,000 people resided in Clark County and there were approximately 100 groundwater wells in the Las Vegas Valley. In these early years and lasting for the next several decades,

the community viewed its supply of artesian water as virtually inexhaustible and more than adequate to meet the needs of any growth that might occur. By the mid-1920s, the population of Las Vegas would reach about 5,000.[1]

In 1922, the Colorado River Compact defined the geographic areas of the upper and lower basins of the Colorado River. It also apportioned 7.5 million acre-feet per year (AFY) to the upper basin and the same amount to the lower basin, in which Nevada is located (Figure 2). Of the lower basin's 7.5 million AFY, the 1928 Boulder Canyon Project Act authorized the apportionment of 300,000 AFY to Nevada, 2.8 million AFY to Arizona, and 4.4 million AFY to California. At the time, Nevada's negotiators viewed 300,000 AFY as a more than reasonable amount of water – Southern Nevada had no significant agricultural or industrial users, groundwater seemed plentiful and no one foresaw the changes that would occur.[2]

FIGURE 2 – Colorado River Basin and States



Although the United States suffered economically during the Depression in the 1930s, Southern Nevada flourished. Construction of Hoover Dam attracted thousands of workers to the area, resulting in the establishment of a camp that soon incorporated as the City of Boulder City. The region's first use of Colorado River water occurred when a small water line was built from Hoover Dam to supply water to the many construction workers living in the camp. The dam was completed in 1936 and turned over to the Bureau of Reclamation for operation. The creation of Hoover Dam eventually produced Lake Mead, the largest reservoir on the Colorado River and Nevada's source for its Colorado River allocation.[3]

While the Colorado River Compact and Hoover Dam made Colorado River water a viable future resource for Southern Nevada, the lack of infrastructure and sufficient funding for capital improvements precluded any immediate use. At this time, groundwater was still considered the basic water resource for the area. By 1940, groundwater use had reached almost 20,000 AFY and local resource managers began expressing concerns about limited water supplies, water waste and declining water levels. Their initial attempts to manage local water demands more effectively – for example, efforts to repeal a statutory ban on water meters – were not successful.[4]

With the advent of American involvement in the Second World War, several factors converged to accelerate Southern Nevada growth rates and water demands. In 1941, the City of Las Vegas and the Army Air Force signed an agreement for the establishment of the Las Vegas Aerial Gunnery School. To supply specialized materials for the war effort, construction began in the southeastern Las Vegas Valley on a vast industrial complex later known as Basic Management Inc. (BMI). The complex was granted access to Colorado River water and a small pipeline was built to deliver the water from Lake Mead. That same year, Thomas Hull, a Southern California hotel and motel owner, opened the El Rancho Vegas – the start of Southern Nevada's modern resort industry. This confluence of events significantly heightened interest in the area, attracted more businesses and residents, and led to rapid increases in demands for water.[5] It also marked the beginning of resource and forecasting challenges that continue to this day.

HISTORY (1945 to 1990)

Following the end of the Second World War, population growth continued to accelerate in the southwestern United States, particularly in Southern Nevada. In 1947, the Nevada Legislature created the Las Vegas Valley Water District (LVVWD). Over the next seven years, the LVVWD would acquire the assets of the Las Vegas Land and Water Company to become the municipal water purveyor for Las Vegas and unincorporated Clark County.[6]

By 1950, Southern Nevada's population was more than 40,000, groundwater use was almost 35,000 AFY in the Las Vegas Valley, and the BMI complex diverted about 15,000 acre-feet of Colorado River water annually. Planners forecasted that the area's population would not exceed 100,000 until the end of the century. The City of North Las Vegas was incorporated in 1946 and the City of Henderson in 1953. By the mid-1950s, the LVVWD had entered into agreements with BMI to expand the BMI water line. This effort resulted in the first delivery of Colorado River water into the valley to serve residences and businesses.

At this time, the region still relied significantly on groundwater – the LVVWD owned and operated 13 wells out of approximately 500 to 1,000 wells in the Las Vegas Valley. Planners no longer expected this reliance on groundwater to continue indefinitely. Consequently, the initial delivery of Colorado River water into the community – and the prospect of additional deliveries in the future – resulted in a short-term planning decision with long-term implications for overall resource management.

The Nevada Division of Water Resources (also known as the State Engineer), which is the state agency responsible for managing all non-Colorado River surface water, groundwater and well permits in Nevada, began to issue temporary permits for the Las Vegas Valley in 1955. A temporary permit allowed the permit-holder to pump groundwater, but with the understanding that the state would revoke the right if or when Colorado River water was available to the property.[7]

The decision had two far-reaching effects. First, it created a separate class of water rights ("revocable" water rights) that had to be co-managed with permanent water rights in the Las Vegas Valley. Second, it resulted in the issuance of pumping rights in excess of the perennial yield of the groundwater basin. Essentially, the idea was to over-pump the basin in the near term to meet increasing demands, but eventually to shift that excess use (represented by the temporary permits) to Colorado River water and return groundwater pumping to sustainable levels. In conjunction with the state decision, the LVVWD instituted water metering. Beginning in 1955, meters were installed for any new construction connecting to the LVVWD's distribution system.[8]

Changes also were made in the management of local wastewater. In 1954, the Clark County Sanitation District (now the Clark County Water Reclamation District) was created; the new district began treating county wastewater flows two years later. By 1957, the City of Las Vegas had installed a new sewer system and relocated its wastewater-treatment plant. The local wastewater facilities discharged their treated flows to the Las Vegas Wash, which until then was predominantly an ephemeral stream that ran into the Las Vegas Bay portion of Lake Mead.[9]

By 1960, the local population was just under 120,000, surpassing the forecast made only 10 years earlier for the year 2000. Land use in the Las Vegas Valley had almost doubled and groundwater use was just under 50,000 AFY. The BMI complex, City of Henderson and the LVVWD were receiving about 18,000 acre-feet of Colorado River water each year. Planners estimated that existing water supplies would be fully used in the next 10 years, at most.

Given the astonishing pace of growth and existing limits to the BMI pipeline, the LVVWD began formal engineering studies for new facilities to import additional Colorado River water into the Las Vegas Valley. The Colorado River Commission of Nevada and local leaders spent several years negotiating with the federal government for loans to pay for the work. After funding was approved in 1967, construction

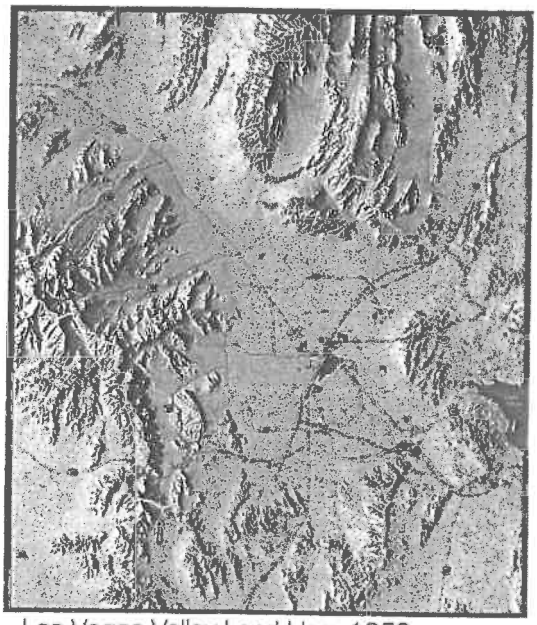
began in 1968 on the Southern Nevada Water System.[10] The project would prove timely. By 1970, population in the Las Vegas Valley had more than doubled to 263,000. Groundwater use had reached about 86,000 AFY and almost 35,000 acre-feet of Colorado River water was being imported annually through the BMI water line.

In 1971, the first stage of the Southern Nevada Water System was complete. It consisted of intake facilities and the Alfred Merritt Smith Water Treatment Facility at Lake Mead, eight pumping stations, a pipeline to Boulder City, a four-mile-long tunnel through the River Mountains and about 34 miles of major pipelines to deliver treated water into the Las Vegas Valley. The first stage provided a maximum capacity of 200 million gallons per day (MGD), and plans were underway for a second stage that would increase this to 400 MGD. It was now forecasted that available Colorado River water would meet local needs beyond 2020. Population for 2000 was forecasted to be 585,000.

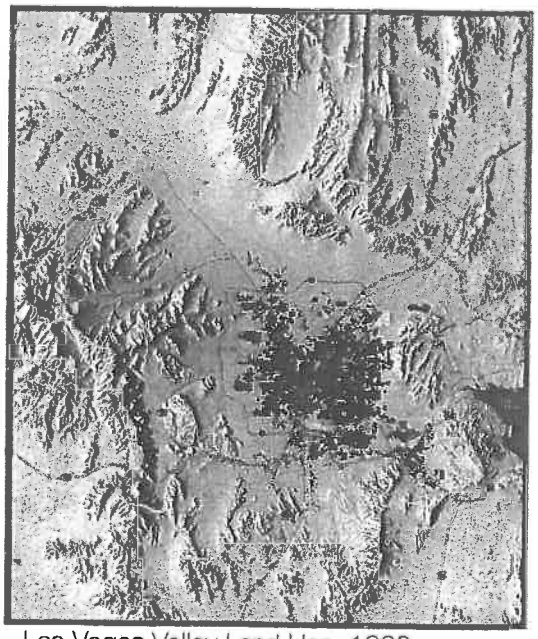
Over the next 20 years, population growth would increase almost threefold, surpassing the 2000 forecast of 1970 by almost 30 percent with many years yet to go. By 1982, the second stage of the Southern Nevada Water System was complete. However, water demands had continued to increase so unpredictably – moving up 13 percent from 1987 to 1988, and 14 percent from 1988 to 1989 – that planners estimated the region would reach the limits of its Colorado River apportionment within a few years, rather than in the next 40 or so years as projected in 1970.

As a result of the profound uncertainties created by massive population growth and the prospect of reaching its limits on Colorado River water, the LVVWD filed 148 applications in 1989 for unappropriated water in the counties of Clark, Lincoln, Nye and White Pine. Most of these applications were for rural groundwater with the exception of a few surface water applications on the Virgin River, which runs through northern Clark County into Lake Mead. After the initial filings with the Nevada Division of Water Resources, the LVVWD reviewed each hydrologic basin, eventually withdrawing a number of its applications. As the next section describes, by the mid-1990s, regional water management efforts, including conservation and other initiatives, returned to the Colorado River.

FIGURE 3 – Valley Land Use, 1950 and 1990



Las Vegas Valley Land Use, 1950



Las Vegas Valley Land Use, 1990

HISTORY (1990 to Present)

In 1990, there were almost 750,000 people in the Las Vegas Valley and land use exceeded 71,000 acres, more than 10 times that in 1950 (Figure 3). The 2000 population was forecast at one million residents, and planners estimated the community would reach its limit of Colorado River water sometime in the early years of the next century. Resource challenges at the end of the 1980s had reached a crisis point; with the new decade, local leaders began to aggressively explore different options for extending and managing water resources, while meeting the ongoing demands of the community. The following subsections discuss the major water management initiatives that were undertaken during this time.

WRMI Process

In 1990, municipal water providers in Southern Nevada began a comprehensive analysis of water resources and facilities. A consulting firm, Water Resource Management Inc., led the project and the effort became known as the "WRMI Process."[11] Population forecasts were provided by the Center for Business and Economic Research at the University of Nevada Las Vegas[12] and a conservation analysis was conducted by Planning and Management Consultants, Limited.[13] The 1991 published results were clear – without serious conservation, Southern Nevada would reach the limit of its existing Colorado River water supply by the mid-1990s; with conservation, the limit could be extended to 2007. The WRMI Process provided the impetus for creation of the SNWA, a study of water-facility expansion, implementation of an ongoing search for new water supplies and a renewed commitment to regional water conservation efforts. In 1991, the community implemented its first major conservation measure in decades – Operation Desert Lawn. The program resulted in ordinances by the local municipalities restricting lawn watering during the hottest times of the day.

Review of Water Commitments

One consequence of the WRMI Process was a temporary cessation of all new water commitments. The LVVWD, as the largest water provider in the Las Vegas Valley, had to ascertain how much water was already committed to new and planned development projects in its service area. To do this, it stopped accepting new applications for water service in February 1991. Upon completion of its analysis, the LVVWD instituted a more formalized water commitment process with the City of Las Vegas and Clark County. Henderson and North Las Vegas also instituted more formal commitment processes. Perhaps more than any other event, it was the temporary cessation of water commitments that awakened the community to the gravity of the water situation. This elevated awareness contributed in large part to the subsequent success of regional water management initiatives.

Creation of the SNWA

One of the most significant outcomes of the WRMI Process was the formation of the SNWA. The SNWA was created in 1991 through a cooperative agreement among the following seven water and wastewater agencies:[14]

- Big Bend Water District
- City of Boulder City
- City of Henderson
- City of Las Vegas
- City of North Las Vegas
- Clark County Water Reclamation District
- Las Vegas Valley Water District

The Big Bend Water District provides water service to Laughlin. The cities of Boulder City and Henderson provide water and wastewater service to their respective communities. The City of Las Vegas provides wastewater service to its residents. The City of North Las Vegas provides wastewater service to its residents, and water service to its residents, adjacent portions of Las Vegas and unincorporated Clark County. The City of North Las Vegas will be constructing its own water reclamation facility and currently has contract wastewater treatment services with the City of Las Vegas and the Clark County Water Reclamation District. The Clark County Water Reclamation District provides wastewater service for unincorporated Clark County and Laughlin. The LVVWD provides water service to Las Vegas and

portions of unincorporated Clark County. The SNWA was formed by these seven entities for the purpose of acquiring and managing water resources for Southern Nevada, constructing and managing regional water facilities, and promoting responsible water use.

Integrated Resource Planning

In April 1994, the SNWA began an integrated resource planning process to identify the appropriate combination of resources, facilities and conservation programs to meet future water demands in Southern Nevada. Integrated resource planning brings important concepts to traditional resource and facility planning, including involvement of the public early in the planning process; analysis of both supply-side (resources and facilities) and demand-side (conservation) solutions; consideration of different community goals; and analysis of the trade-offs among different, sometimes conflicting, goals.

Following more than a year of study and public interaction with a stakeholder advisory committee, the SNWA adopted a series of recommendations to guide its future planning efforts (Appendix 2). Principal recommendations related to water resources included:

- Seek permanent, long-term water supplies.
- Formulate a water resources plan that utilizes all available water supplies, including unused Colorado River apportionments, surpluses, leases and other water supplies.
- Place top priority on development of Colorado River water over development of a Virgin River pipeline or water in rural counties.
- Maximize use of the Las Vegas Valley shallow groundwater, when and where practical.

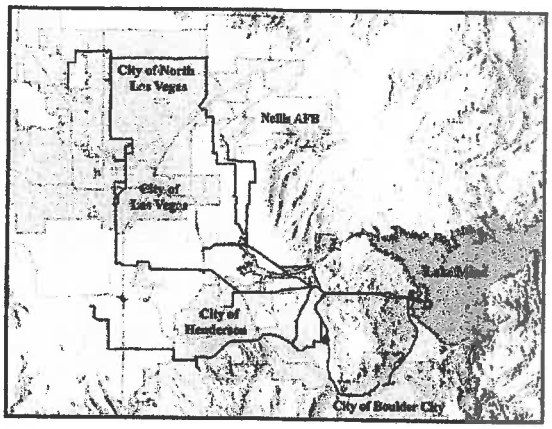
The recommendations also supported the "phasing in" of new regional facilities to meet future water demands.[15] As part of a subsequent planning phase in 1996, recommendations were developed on how to pay for new regional water facilities; specific proposals included a regional connection charge, regional water surcharge and sales tax increase.[16]

Expansion of Regional Facilities

The recommendations of the SNWA integrated resource planning effort supported the expansion of existing water treatment and transmission facilities for the Las Vegas Valley. The SNWA Board of Directors approved the recommendations; design and construction of new infrastructure, including a second intake at Lake Mead and a second water treatment facility (River Mountains Water Treatment Facility) in eastern Henderson, began later that year. The phased expansion increased the treatment capacity of the Southern Nevada Water System to 480 MGD by 1997, 600 MGD by 1999, 750 MGD by 2002, and 900 MGD by 2007.

Additional improvements have included major pipelines and pumping stations in and around the Las Vegas Valley; upgraded communications systems; process improvements at both treatment facilities; upgraded intake pumping capacity; and an emergency bypass pipeline from the second intake to the existing water treatment facility. Today, the Southern Nevada Water System has a treatment and delivery capacity of 900 MGD (Figure 4).

FIGURE 4 – Southern Nevada Water System



Environmental Initiatives

To support its resource planning and facility expansion activities, the SNWA began to participate in a number of environmental initiatives and coalitions in the mid-1990s, taking a proactive and integrated approach to environmental planning with respect to water resource management. The SNWA's commitment to

environmental responsibility typically goes beyond the steps necessary to ensure compliance with applicable regulations or statutes. Efforts have included the support of research and recovery activities related to federally endangered fish and birds, involvement in broader regional programs that address issues such as habitat conservation and water quality, and financial and staff support for environmental research and studies. These environmental planning efforts are discussed in more detail in Chapter 5.

Las Vegas Valley Groundwater Management Program
In conjunction with integrated resource planning and its focus on Colorado River water, the SNWA began working with local well users and the Nevada Division of Water Resources in 1996 to address groundwater management in the Las Vegas Valley. As a result of these efforts, state legislation was passed in 1997 and 1999 implementing a groundwater management program for the Las Vegas Valley hydrographic basin.[17] The Las Vegas Valley Groundwater Management Program (Groundwater Management Program) protects the local groundwater basin from over-drafting and potential sources of contamination. Efforts have included an inventory of all wells in the Las Vegas Valley; a cost-benefit analysis of permanent recharge; increased education of groundwater users; and development of well conversion, landscape conversion, sub-meter assistance and permanent recharge programs to benefit existing and future well users. To pay for these activities, the Nevada legislature authorized the SNWA to assess well users in the Las Vegas Valley hydrographic basin an annual fee.

Water Resource Plans
In 1996, the SNWA Cooperative Agreement was amended to require adoption of a Water Resource Plan. After the first plan was adopted in 1996, the SNWA has reviewed the plan annually, adopting revisions as needed. The 2009 Water Resource Plan represents the eighth revision in 13 years. As reviews and revisions demonstrate, the plan is a dynamic document, intended to reflect changing developments in the water resource picture for Southern Nevada. Since the plan's inception, those developments have come principally from increased water demands, as well as from landmark changes in rules, agreements or other factors affecting the use of Colorado River water (for example, water banking, intentionally created surplus and drought).

In-State Agreements
In the late-1990s, the SNWA and the LVVWD began to work closely with Lincoln, White Pine and Nye counties, as well as other in-state interests to negotiate equitable water-sharing arrangements for available water resources in areas outside the Las Vegas Valley. The various agreements have involved such resources as surface water rights on the Virgin and Muddy rivers, and groundwater rights and applications in Coyote Spring Valley and Lincoln County. These agreements, which are discussed in Chapter 2 in reference to the associated water resources, typify the philosophy that the SNWA brings to the development of in-state water resources. In every instance, the SNWA is open to working closely with counties of origin and local residents to address concerns and identify opportunities for the sharing of resources – not only to meet Southern Nevada's future water needs, but also to help these outlying areas develop the resources needed to meet their own near- and long-term plans for the future.

In-State Water Banking
To maximize the use of Nevada's Colorado River allocation, SNWA member agencies began storing or "banking" water in the Las Vegas Valley in 1987. In Southern Nevada, banking is accomplished by artificially recharging Nevada's unused Colorado River water into the local groundwater aquifer. This provides Southern Nevada with additional resources that can help bridge potential shortfalls in meeting demands while other resources in the SNWA resource portfolio are being developed.

Interstate Agreements

Beginning in the early-1990's and continuing to the present day, the SNWA has worked closely with other basin states to maximize opportunities for the flexible use of Colorado River water, thereby extending available supplies. The following sections highlight the principal achievements to date.

Arizona Water Banking. To develop its storage concepts further, the SNWA participated in a banking demonstration project with Arizona in 1993. Three years later, Arizona dramatically expanded its recharge and banking efforts when the state created and funded the Arizona Water Banking Authority (AWBA). The primary purpose of the AWBA is to ensure all of Arizona's unused Colorado River apportionment is utilized fully for the benefit of Arizona. The 1996 state legislation that created the AWBA also allowed for the creation of an interstate bank to give Nevada and California the opportunity to bank water in Arizona. Federal regulations to facilitate interstate banking were approved by the Secretary of the Interior in 1999 and 2001, allowing Arizona and Nevada to begin formal negotiations for Nevada's participation in Arizona's interstate bank. Shortly thereafter, other agreements were forged to establish, clarify and expand business arrangements for interstate banking efforts in Arizona.

California Water Banking. In October 2004, under existing federal regulations for interstate banking, the SNWA entered into an agreement with the Metropolitan Water District of Southern California (MWD) that allows the SNWA to store a portion of Nevada's unused Colorado River allocation in California for SNWA's future use. Provisions for the recovery of banked resources are discussed in Chapter 2.

Management of Surplus Colorado River Water. In 2001, the Secretary of the Interior implemented a methodology for managing additional supplies in the Colorado River. Interim Surplus Guidelines were established to help the Upper Colorado River Basin states preserve their respective apportionments, while providing time for California to reduce its uses on the Colorado River to its 4.4 million AFY allocation. The Interim Surplus Guidelines also provided the states of Nevada and Arizona with the opportunity to access temporary surplus Colorado River water above their respective basic apportionments for domestic uses through 2016, if there was adequate water storage in Lake Mead.[18]

As a result of worsening drought conditions, the Secretary of the Interior initiated a planning process in 2005 to develop lower basin shortage guidelines and management options for the coordinated operation of lakes Powell and Mead during low reservoir conditions. This planning process resulted in agreements among the seven basin states and a 2007 Record of Decision that modified and extended the 2001 Interim Surplus Guidelines. The process also established new Interim Guidelines for managing shortages, coordinating operations of lakes Mead and Powell, encouraging augmentation and conservation of water supplies in the lower basin. This agreement is discussed in more detail later in this chapter.

Drought

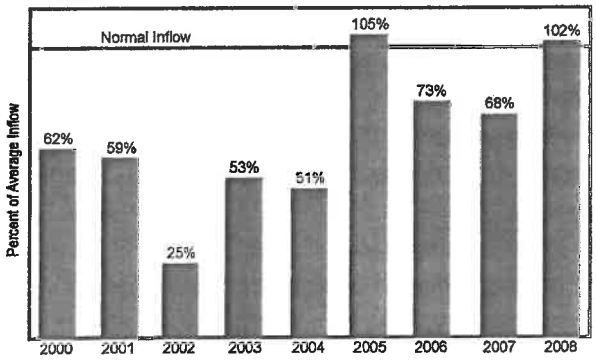
Defining drought can be difficult, since droughts are not distinct climatological events like floods, fires or hurricanes. Instead, numerous factors in the environment interact in complex ways that create conditions where water supplies are not replenished normally. Southern Nevada is dependent on flows from the Colorado River, which in turn are derived from snowmelt and runoff in the Rocky Mountains of the Upper Colorado River Basin. Recent years of below average snow pack in the Colorado Rocky Mountains have resulted in below average runoff to the Colorado River, the source of approximately 90 percent of the water delivered by SNWA and its purveyor members.

In 1999, the Colorado River Basin began to experience drought conditions that, from 2000 to 2004, became the worst five-year drought in the recorded history of the basin. These conditions were aggravated by several years of extremely dry soil conditions, which further reduced total runoff. As a result, water levels in the two primary storage

reservoirs on the Lower Colorado River (Lake Mead and Lake Powell) declined to levels not observed since Lake Powell began filling in the early-1960s. Over the next several years, snowfall and runoff in the basin was well below normal, the worst year (thus far) being 2002, when runoff to Lake Powell was approximately 25 percent of average (Figure 5).[19]

From 1999 to 2004, water levels in Lake Mead and Lake Powell declined by approximately 110 and 80 feet, respectively. These declines reduced the combined water storage in the two reservoirs to 46 percent of capacity.

FIGURE 5 – Lake Powell Annual Inflows[20]



To help offset the impacts of drought, the SNWA and its member agencies conducted a drought planning process in 2002 that resulted in the development of an aggressive plan to lower demands during times of significantly reduced Colorado River inflows. As described later in this chapter and in Chapter 2, this effort has resulted in both interim and permanent changes to how the community uses water.

Except for years 2005 and 2008, when the Colorado River Basin received slightly above-normal runoff (105 percent and 102 percent, respectively), drought conditions in the basin continued to persist. At the end of 2008, the combined storage of Lake Mead and Lake Powell was 52 percent of capacity and Lake Mead water level was about 100 feet lower than that experienced in the late-1990s.

Integrated Water Planning

Several in-state groundwater resources available within Nevada have long been part of the SNWA's water resource portfolio. These resources are available within our state in the form of unused groundwater in Clark, Lincoln and White Pine counties. The LVVWD and SNWA have been working for nearly two decades to secure some of this unused water.

Given persistent drought conditions in the Colorado River Basin, the SNWA began to accelerate the development of these in-state resources in early 2004. At that time, the SNWA Board of Directors approved a concepts document and a work plan for integrated water planning (discussed below) that together provide a framework for development of these in-state resources. Moving some of this unused water to Southern Nevada will increase the reliability of the region's water supply during droughts or future shortages on the Colorado River and also help to meet future demands.

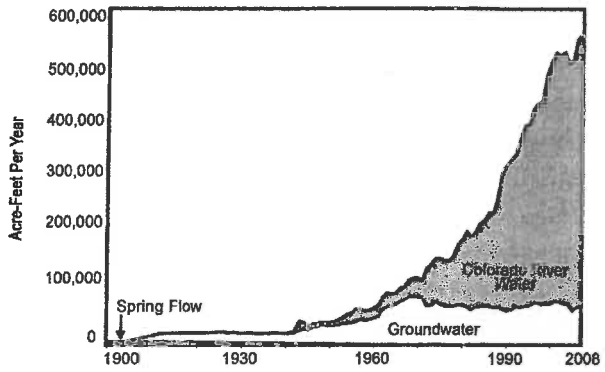
Development of some or all of these in-state water resources has potential implications for a wide range of water resource management and operational issues, as well as environmental and rural economic development issues. To address these questions in a comprehensive manner consistent with the overall resource goals of Southern Nevada, the SNWA initiated an integrated water planning process in early 2004. The purpose of this process was to identify the appropriate combination of in-state resources, facilities and conservation levels needed to provide greater drought protection for Southern Nevada, as well as meet future water demands given SNWA's reliance on Colorado River water (Figure 6). In this respect, the process focused on how best to integrate in-state resources into current SNWA planning and management activities, given the dramatic changes in Colorado River conditions.

Integrated Water Planning Advisory Committee

The SNWA convened an Integrated Water Planning Advisory Committee (IWPAC) to assist in its long-range planning effort. The IWPAC was comprised

of 29 stakeholder representatives. Unlike previous SNWA committees, the IWPAC included not only stakeholder representatives from the metropolitan Las Vegas area, but also representatives from Lincoln, Nye and White Pine counties, as well as the Moapa and Virgin Valley Water Districts. For more than a year, the committee worked with staff to explore various options and scenarios for in-state resource development, building on the previous work done by the Integrated Resource Planning Advisory Committee process of the mid-1990s. In September 2005, the IWPAC finalized 22 recommendations and presented them to the SNWA Board of Directors in November 2005 (Appendix 1).[21]

FIGURE 6 – Water Use by Source, 2008



In an effort to maintain and build upon the success of the community's conservation efforts, the committee recommended that the SNWA and its member agencies pursue more aggressive conservation achievements, including permanent implementation of major drought-related demand reduction tools.

Interim Guidelines and Associated Agreements

In response to severe Colorado River Basin drought conditions, the Secretary of the Interior, in cooperation with the seven basin states, initiated a process in 2005 to explore management options for lakes Mead and Powell. These efforts resulted in the Secretary of the Interior issuing a Record of Decision (ROD) in 2007 for Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead, "Interim Guidelines."[22]

Key elements of the Interim Guidelines include modification and extension of the 2001 Interim Surplus Guidelines, establishing how shortages in the lower basin will be implemented, and the adoption of coordinated operations of lakes Powell and Mead. In addition, the Interim Guidelines define the availability of Colorado River water for use in the lower basin based on the water surface elevation of Lake Mead and create a new type of surplus called Intentionally Created Surplus (ICS). The SNWA has a number of water resources available for use under rules for ICS and other agreements. These resources and provisions for recovery are discussed in detail in Chapter 2.

Intake No. 3

Ongoing drought conditions pose a number of challenges for Southern Nevada, including operational challenges associated with intake facilities at Lake Mead. To help protect Southern Nevada's access to Colorado River resources, the SNWA Board of Directors in 2005 approved the design and construction of a new water intake in Lake Mead.

In addition to preserving supply capacity, Intake No. 3 will provide access to better water quality as Lake Mead water levels decline in times of drought. Construction of Intake No. 3 is currently underway. The project is scheduled to be completed in 2013.

In-State Resource Developments

The SNWA continues to pursue permitting activities associated with development of its Clark, Lincoln and White Pine Counties Groundwater Development Project. Following administrative hearings in 2007 and 2008, the Nevada State Engineer granted the SNWA water rights in Spring, Delamar, Dry Lake and Cave valleys.[23] An administrative hearing for the SNWA's pending applications in Snake Valley is scheduled for 2011.

In conjunction with these water rights processes, the SNWA entered into stipulations with several federal agencies to establish a process for working together to monitor and protect federal resources as the rights are developed and managed.[24] Specific activities include the development of a regional groundwater

flow model; establishment of a regional groundwater monitoring network; the collection and analysis of additional information regarding the relationship between the development of groundwater resources and surface water resources; and the establishment of a technical review panel, biological work group and an executive committee to oversee the implementation of a monitoring, management and mitigation plan.

To more effectively manage water and environmental resources in the project area, the SNWA acquired ranch properties and associated surface and groundwater rights in Spring Valley. These land and water resources were acquired as part of the SNWA's commitment to the adaptive management of the groundwater basins that encompass SNWA's development of water in Clark, Lincoln and White Pine counties. The SNWA does not plan to export any of the acquired surface water resources; instead, the surface water will be used to recharge the basin and help manage and protect the aesthetic and environmental resources in Spring Valley. These surface water resources also will be used to continue ranching and agricultural activities in the area.

Conservation

The SNWA has a long history of setting and achieving water conservation goals to promote water efficiency and extend the availability of limited resources. To build upon this success and to induce additional water savings, the SNWA adopted a new, more aggressive, conservation goal in 2009.

To achieve its new goal of 199 gallons per capita per day (GPCD) by 2035, the SNWA's member agencies began working together to permanently implement previously approved major demand reduction tools such as landscape development codes, turf restrictions and golf course water budgets as part of the community's overall conservation effort. Further discussion is provided in Chapter 2.

The combined effect of Southern Nevada's conservation response and changing water use patterns have resulted in a reduction of consumptive use by approximately 21 billion gallons annually between 2002 and 2008, despite the addition of more than 400,000 residents during that time. A small portion of the reduction is likely due to the economic down-turn.

Climate Change

The onset of drought in the Colorado River has heightened attention to the broader issue of climate change, both within the Colorado River Basin and beyond. The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."[25] Climate change impacts on the Colorado River and the American Southwest are expected to be significant. The majority of regional climate models project a more arid climate and reductions in Colorado River runoff in the future.[26] These reductions are expected to be in addition to natural-flow variabilities and temporary drought conditions.

In an effort to begin a dialogue on future impacts of climate change for water management, the SNWA partnered with the Natural Resources Defense Council and the Desert Research Institute to host the Urban Water Supplies and Climate Change in the West Conference in September 2005.[27] Since then, the SNWA has worked collaboratively with water utilities across the country to raise awareness of the impacts that climate change will have on municipal water agencies and regional water management.

In 2008, the SNWA partnered with some of the nation's largest water agencies to form the Water Utility Climate Alliance (WUCA).[28] This group works to improve research related to the impacts of climate change on water utilities; develop strategies for adapting to climate change; and implement tactics to reduce their greenhouse gas emissions. Through ongoing collaboration, the SNWA will continue to support research and track potential influences of climate change and increased hydrologic variability.

CONCLUSION

By the end of the 20th Century, the Las Vegas economy had reinvented itself with new mega-resorts and a southwestern lifestyle that continues to attract people from around the world. By 2008, Southern Nevada's population had increased to nearly 2 million people, most of whom reside in the Las Vegas Valley (Figure 7).

From 1910 through 2000, the annual population growth in Southern Nevada averaged 7 percent per year, whereas growth in the United States over the same period has averaged about 1 percent (Figure 8).

Along with the rest of the nation, the Las Vegas Valley has been impacted by recent economic conditions. This has resulted in a near-term leveling of population growth. It is difficult to predict when these conditions will improve, but most forecasts agree that this trend is temporary. To this end, water managers and local planners must continue to take the steps necessary to ensure community water resources are available when needed. Current drought conditions in the Colorado River Basin and climate change predictions emphasize the need for continued assessment of resources, regardless of actual population trends. Current conditions require Southern Nevada to reduce its heavy reliance on Colorado River water and develop more of the non-Colorado River resources contained in its water resource portfolio. Existing in-state resources and other alternatives must be developed to bridge and supplement Nevada's Colorado River resources and provide a sustainable and diverse mix of water resources for the long-term.

In many respects, the challenges of the future of Southern Nevada are not dissimilar to the challenges of its past. Regardless of these challenges, the SNWA and its member agencies will continue to work diligently to anticipate, manage and meet the future water demands of the region. As described in Chapter 2, the SNWA has an extensive portfolio of existing and developing resources. The challenge will remain one of balancing the timing, development and use of these specific resource options.

The dynamic nature of water forecasting is among the key reasons the SNWA reviews its resource plan annually and makes adjustments as needed.

FIGURE 7 – Clark County Population, 2008

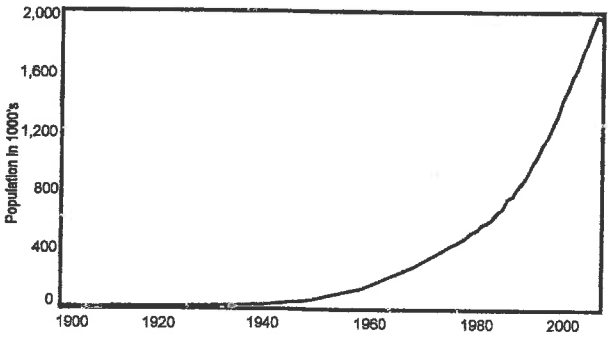
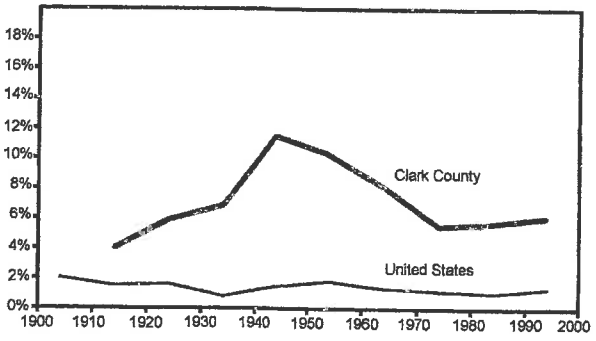


FIGURE 8 – Annual Change in Population



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CHAPTER 2

The SNWA Water Resource Portfolio

Since 1991, the SNWA has worked to develop and manage a flexible portfolio of diverse water resource options. This approach is commonly used in the field of resource planning and is essential in responding to future conditions that may result from drought or other forms of shortage.

The portfolio approach allows the SNWA to assess its overall resource options and make appropriate decisions regarding what to bring on-line when necessary. In determining the priority of resources, some of the factors considered include reliability, availability, accessibility, cost and need. As a result, the SNWA Water Resource Plan is reviewed annually and updated as needed to reflect changing conditions and developments in Southern Nevada's resource picture.

The 2009 Water Resource Plan includes conservation, Colorado River water, groundwater resources and augmentation in its portfolio of current and future resources that will be used to meet demands as needed. This chapter describes each of the water resources available to Southern Nevada over the planning horizon. It is important to note that while most resources are currently quantified, such as Nevada's Colorado River allocation, others are still being assessed, developed or are pending action by the state.

The development of some of the future resources discussed below depends on a number of factors, such as rulings by the Nevada State Engineer, interpretations of Colorado River law, negotiations with other users, and need. Consistent with its approach to capital improvements planning, the SNWA considers phasing when assessing the timing and use of resources. By securing future water resources, obtaining appropriate state and federal permitting and building infrastructure in advance of when they are needed, the SNWA retains the ability to adapt to changing demand and supply conditions. The resources currently available or under development to meet Southern Nevada's demands are described in the following sections.

CONSERVATION

Promoting the efficient use of water is central to the mission of the SNWA. The ability to increase efficient water use and reduce water waste wherever possible has a direct impact on the amount of resources that will be needed in the future. Conservation is a resource, but it is fundamentally different from other resources available in the SNWA portfolio. Unlike typical "wet" resources, which are acquired to meet demands, conservation is a tool that is used to reduce overall demands (relative to levels that would have occurred in the absence of conservation) and extend supplies. The more successful a community's conservation achievement becomes, the lower the community's overall demand for water and the more efficient its use of existing supplies.

However, the more aggressive and responsive a community is to calls for increased conservation, the more difficult it becomes to realize additional conservation gains. This phenomenon of diminishing returns is referred to as "demand hardening." For growing communities where a majority of the water supply comes from one source (such as Southern Nevada), the prospect of demand hardening requires development of additional alternative water supplies regardless of conservation levels achieved. The SNWA is pursuing such resource development as described

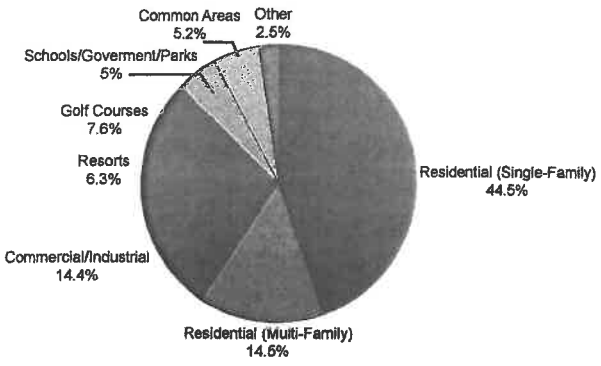
later in this plan. Conservation and the remaining elements of the SNWA water resource portfolio are described further in this chapter.

Conservation in Southern Nevada

Since its creation in 1991, the SNWA has implemented a number of conservation programs focused on reducing water use throughout the community. While the SNWA actively promotes indoor conservation, in Southern Nevada the greatest opportunity for water conservation lies in curbing outdoor water use.

According to consolidated data provided by SNWA member agencies, residents account for approximately 59 percent of water use (Figure 9). Most of that water is used consumptively for outdoor landscaping. While business and commercial customers account for a substantially smaller portion of the community's overall water use, the SNWA continues to work with all customer classes to identify opportunities for increased conservation.

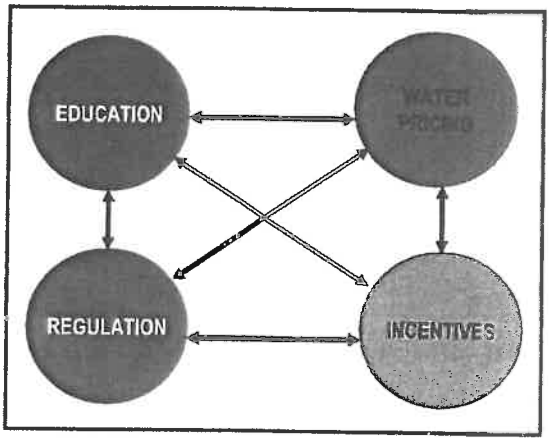
FIGURE 9 – Municipal Metered Water Use, 2007



CONSERVATION TOOLS

The SNWA and its member agencies utilize a variety of tools to promote conservation and reduce overall water use. These include a combination of regulation, water pricing, incentives and education to elicit the necessary community response to reduce demands (Figure 10). Because the biggest potential for water savings comes from reductions in consumptive water demands, primarily in the form of outdoor water uses such as landscape irrigation, the major conservation tools are designed to achieve results in these areas. Each conservation tool is related to the community's total conservation effort – used in concert, these tools maximize the water conservation potential in the community. The following sections describe the major conservation initiatives used by the SNWA and its member agencies.

FIGURE 10 – Demand Management Tools



Regulation

During the past 18 years, city and county governments have adopted a variety of land use codes and water use ordinances to promote more efficient use of water resources in Southern Nevada. In 1991, local government agencies adopted watering restrictions that prohibited watering during the hottest times of the day in the warmer months. In 2003 and in response to the onset of severe drought conditions in the Colorado River Basin, SNWA member agencies adopted more stringent policies designed to offset drought impacts. These policies included additional restrictions on landscape watering, vehicle washing, lawn installation, mist systems and golf course water use (budgets) during declared drought. In 2005, a citizen advisory committee recommended permanent adoption of these restrictions as a way to help meet long-term resource needs for the community. In the years following, the SNWA and its member agencies began working together to permanently implement the measures detailed below as part of the region's overall conservation effort.

- Landscape watering: customers are assigned mandatory watering groups that limit watering to one day a week in winter, three days a week in spring and fall, and prohibit watering from 11 a.m. to 7 p.m. in summer.
- Vehicle washing: a positive shutoff nozzle is required for residential vehicle washing. Commercial vehicle washing is prohibited unless water is captured to the sanitary sewer where that water can be treated and reused.
- Lawn installation: turf installation is prohibited in new residential front yards and is limited to a maximum of 50 percent the landscapeable area in new residential backyards. Turf is prohibited in new commercial development.
- Mist systems: use of commercial mist systems is limited to summer months.
- Golf course water budgets: golf courses are subject to mandatory water budgets (6.3 acre feet of water per year, per irrigated acre).
- Fountains and ornamental water features: these features are prohibited except as allowed by jurisdiction policy.
- Water waste: allowing water to runoff into streets and/or adjoining property is prohibited. It also is considered water waste to violate policies that limit the time of day or assigned days of the week when watering may occur.

Water Pricing

Water rates, including increasing block rate structures (tiered rates), are one of the most effective conservation tools. Tiered rate structures charge higher rates as water use increases. These rate structures encourage efficiency, while ensuring the affordability of water for essential uses.

While the SNWA member agencies have adopted conservation oriented water rates, the rates must be revisited regularly to ensure that they keep up with inflation and maintain their effectiveness in encouraging conservation. The SNWA member agencies regularly review their water rates to assess their effectiveness and make adjustments as needed.

In adjusting rates for conservation, one complexity that water managers must consider is the relationship between water pricing and the fiscal integrity of the water utility. Conservation results in a decline in purveyor water sales. When coupled with increasing operating costs, conservation that exceeds expectations may require additional rate increases to maintain financial integrity. This can, in turn, result in a further decrease in water sales, resulting in price instability, fiscal uncertainty and a loss of community confidence in the utility. As a result, water utilities must delicately balance pricing to ensure rate stability while sending an appropriate pricing signal that supports the community's conservation goals.

Incentives

Where regulation and water pricing are considered more common approaches to achieving conservation, incentives are more flexible tools that invite the community to participate in the conservation effort. Incentives give customers flexibility in determining how they will manage and reduce their overall water use. The SNWA has a number of "water smart" incentive programs that are critical to achieving its conservation goals.

Water Smart Landscapes Rebate Program. This program provides incentives for residential and commercial property owners to upgrade lawn to water-efficient landscaping. The current program rebate amount is $1.50 for the first 5,000 square feet of lawn removed and $1 for additional lawn removed, up to $300,000. Since program inception, more than 130 million square-feet of lawn have been replaced, saving an estimated 7 billion gallons of water annually.

Efficient Landscape Irrigation Equipment. This program pays up to half the cost of replacing inefficient irrigation controllers with new generation "smart" controllers. Smart controllers have the ability to predict plant water needs and apply the necessary amount of water at the appropriate time. These controllers are capable of reducing water use by 15 to 30 percent. This program also pays up to half the cost of rain sensors that can interrupt irrigation whenever the valley receives significant rainfall.

Water Efficient Technologies. Business customers who choose from a menu of proven conservation technologies, or who select a custom technology that conserves at least 500,000 gallons of water per year, qualify for a rebate of up to $150,000 per property. The program can be used to facilitate retrofit of existing equipment or to purchase certain approved technologies for new installations. It is estimated that businesses in Southern Nevada have conserved more than 1.75 billion gallons through participation in this program since its inception.

Water Smart Car Wash. The Water Smart Car Wash program is a public-private partnership that encourages residents to use commercial car wash facilities instead of washing their vehicles at home. Water Smart Car Washes recover all of their wastewater for treatment and reuse. Water used at these facilities is either reused on site, or treated and returned to Lake Mead for return-flow credits. In contrast, water used for car washing at home is largely lost to evaporation.

Pool Cover Rebate Program. The SNWA Pool Cover Rebate Program pays up to half the cost of a swimming pool cover. Typical use of a cover is estimated to save 13,000 gallons annually on an average-size pool. Since inception, the program has assisted more than 14,000 customers and produced estimated water savings of more than 187 million gallons annually.

Water Smart Contractor Program. The Water Smart Contractor Program is a highly successful partnership program in which landscape contractors assure that their projects meet specific criteria to conserve water. Close to 100 landscape contractors in Southern Nevada currently participate in the program. To obtain status as a Water Smart Contractor, licensed landscape contractors must attend SNWA water efficiency training and pass a proficiency exam.

Water Smart Homes. Launched in 2005, the Water Smart Home Program certifies new homes as water smart, ensuring that homeowners are purchasing a home that can save as much as 75,000 gallons of water per year. This is the nation's largest program for water efficiency in new homes, with almost 7,000 water smart homes constructed so far.

Water Upon Request. The SNWA and several local partners teamed up with local restaurants, which agree to serve water only when patrons request it. This program saves participating restaurants water, time and money by eliminating unconsumed glasses of water. For every glass of water not served, as much as 1.5 to 3 gallons of water is saved. There are currently more than 300 restaurants participating in the program.

Education

An integral element of the SNWA conservation strategy is education. Before communities will accept regulation and pricing mandates, or participate in incentive programs, they must recognize the importance of conservation and understand how they can conserve water most effectively. The SNWA public education programs described below are designed to elicit buy-in from the community and help residents to understand that responsible water use is a critical part of living in a desert environment.

Water Conservation Coalition. Established in 1995, the Water Conservation Coalition is a public-private partnership formed by community leaders to help increase water-efficient practices within the Southern Nevada business community and to promote community-wide water conservation. Through initiatives such as its speakers bureau, Business-to-Business Challenge and various public projects, the Coalition works closely with the SNWA to identify areas of conservation that are most beneficial to local businesses and the community's overall water conservation goal. For example, the Coalition has partnered with local resorts and other leading properties to initiate a Linen Exchange Program. As part of this voluntary program, linens are changed only on the third day of a guest's stay, unless otherwise requested.

Water Smart Innovations. In 2008, the SNWA, in partnership with the U.S. Environmental Protection Agency's WaterSense program, hosted the inaugural WaterSmart Innovations Conference & Expo. Roughly 1,200 participants from across the U.S. and 17 foreign nations came together to share information about conservation programs and water-efficient technologies.

Conservation Helpline. The Conservation Helpline is an information line that customers can call to obtain conservation information or report water waste. The Helpline is available in both English (258-SAVE) and Spanish (258-AGUA).

Publications and Media. The SNWA regularly executes a comprehensive campaign of television, print and radio ads that educates the community on the need for water conservation and offers help through the SNWA Web site and Conservation Helpline. In addition, the SNWA operates a speakers bureau, produces a news-and-information television show, and produces and distributes dozens of publications to help customers conserve water, including a landscape watering guide. The SNWA also continues to implement a bicultural outreach campaign specifically for Southern Nevada's Spanish-speaking audience.

Demonstration Gardens. Through the combined efforts of the SNWA and its member agencies, there is a demonstration garden in every part of the valley. The SNWA also promotes visits to the Springs Preserve, a 180-acre facility that offers hundreds of examples of water-efficient landscaping, as well as classes by master gardeners and horticulturists. Advice from the facility's staff is available seven days a week. Free tours also are available for area students.

The SNWA supports the development of smaller demonstration projects throughout the Las Vegas Valley to show the public that water-smart landscaping is attractive and a water-efficient choice for Southern Nevada. Currently, schools may apply annually for SNWA funded conservation grants of up to $5,000 to develop demonstration projects for their own campuses.

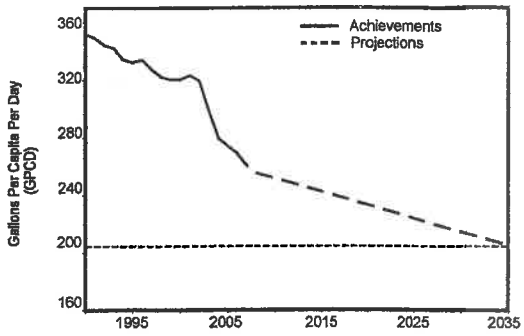
H2O University. The SNWA is committed to educating the next generation on the importance of water resources and conservation. To this end, the SNWA has partnered with the Springs Preserve to develop a comprehensive education program known as H2O University for teachers in the Clark County School District, one of the largest school districts in the nation. One innovative component of the program is the Youth Advisory Council, which allows select students to pursue an interest in water-related issues and further develop leadership skills.

Conservation Achievements

Since its formation in 1991, the SNWA has embarked on an aggressive long-term water conservation program that has contributed to extraordinary conservation gains. In recent years, participation in the SNWA's rebate programs realized record-breaking results, including peak participation levels in almost every area. The combined effect of Southern Nevada's conservation responses was a reduction of consumptive use by roughly 21 billion gallons annually between 2002 and 2008.

Figure 11 illustrates the results of past conservation efforts, reducing water use from approximately 350 gallons per capita per day (GPCD) in 1990 to approximately 250 GPCD in 2008.

FIGURE 11 – GPCD Reduction from Conservation



In an effort to maintain and build upon the community's response to calls for greater water conservation, the SNWA and its member agencies established a new conservation goal in early 2009 to reduce water use to 199 GPCD by 2035. Chapter 3

describes how this additional conservation will impact long-term water demand forecasts.

Conservation remains an important element in planning and balancing the various resource and infrastructure needs in Southern Nevada. Continued conservation, coupled with the acquisition and development of additional water resources, will allow SNWA to meet projected water demands through 2060.

COLORADO RIVER WATER

A series of documents composed of contracts and regulations, state/federal statutes and compacts, court cases, and a treaty known as the "Law of the River" governs how and where Colorado River water is used. The 1922 Colorado River Compact and the 1928 Boulder Canyon Project Act defined all apportionments of Colorado River water in "consumptive use" units. Consumptive use is defined as water diversions minus any water that is returned to the Colorado River (the latter is referred to as "return-flow credits").

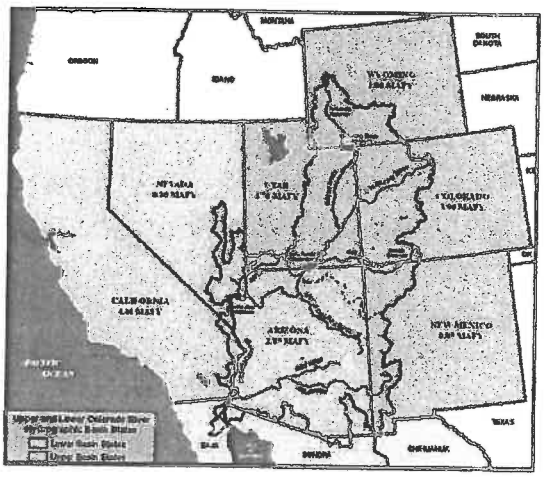
The 1948 Upper Basin Compact assigned the upper basin's apportionment of 7.5 million AFY among the states of Wyoming, Utah, Colorado and New Mexico. The 1964 Supreme Court Decree in Arizona v. California verified the lower basin apportionment of 7.5 million acre-feet among Arizona, California and Nevada, including Nevada's consumptive-use apportionment of 300,000 AFY of Colorado River water (Figure 12).[1]

With return-flow credits, Nevada can actually divert more than its 300,000 AFY apportionment, as long as there are sufficient return flows to ensure the consumptive or net use is no more than 300,000 AFY. Return flows in Nevada consist mainly of treated Colorado River wastewater that is returned to Lake Mead via the Las Vegas Wash and to the Colorado River at Laughlin, Nevada.

Nevada Basic Apportionment

Pursuant to the 1964 Supreme Court Decree in Arizona v. California, any entity wishing to divert Colorado River water within a state must have a specific contract with the Secretary of the Interior for the water. These contracts are typically called "delivery" contracts and are in diversion units, not consumptive-use units. Thus the sum of the delivery contract volumes within a state can be greater than the state's consumptive-use apportionment, as long as there are enough return flows to ensure that the consumptive or net use is within the consumptive-use apportionment.

FIGURE 12 – Colorado River Basin



Early on, the SNWA member agencies contracted for most of Nevada's 300,000 AFY of Colorado River water. Between 1992 and 1994, the SNWA determined that additional water was available and worked to acquire additional Colorado River water resources. The following subsections describe these contracts.

Colorado River Contracts (pre-SNWA). Prior to the SNWA's creation in 1991, total entitlements for diversion for Colorado River users in Nevada equaled 417,116 AFY (Appendix 3). Of that amount, 342,161 acre-feet of diversion rights belonged to the purveyors who would later form the SNWA.

1992 SNWA Colorado River Contract. In 1992, SNWA entered into a water delivery contract with the Secretary of the Interior that gave SNWA a right to the remainder of Nevada's consumptive-use apportionment that was not allocated under other

contracts.[2] This apportionment was estimated in 1992 to be 58,000 AFY, assuming a portion was returned to the river for return-flow credits. The 1992 contract also gave the SNWA the right to Colorado River water made available due to reduction, expiration or termination of a Nevada entitlement; surplus water; and unused Nevada apportionment and other states' unused apportionment. Portions of these rights are not quantifiable because they are dependent upon return-flow credits and the availability of Colorado River water (for example, surplus water).

1993 Colorado River Water (Edison). In 1993, Southern California Edison agreed to terminate its Colorado River water consumptive-use contract of 23,000 AFY. Under Section 4(a)(1) of the SNWA 1992 water delivery contract with the Secretary of the Interior, the SNWA has the right to Nevada Colorado River water made available by reason of entitlement termination. In return for Edison's contract termination, the SNWA purveyor members agreed to provide the Fort Mohave generating station in Laughlin with up to 19,000 AFY through July 2026.[3] The SNWA purveyor members agreed to meet the generating station's needs with unused/surplus Colorado River water available to Nevada, or with water that the LVVWD is storing for SNWA purveyor members in the Southern Nevada Water Bank.[4]

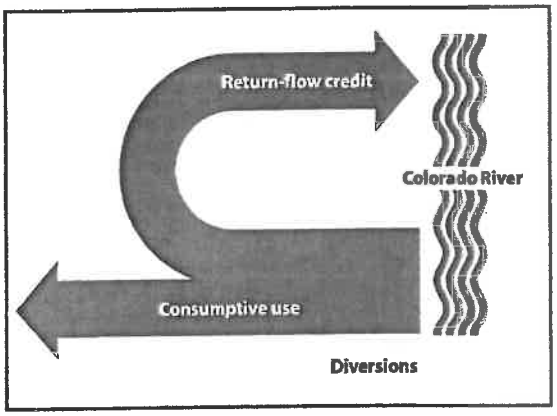
Several years ago, the station encountered substantial difficulties maintaining compliance with Clean Air Act standards and the plant was subsequently closed. There are no plans to reopen the plant at this time. As a result, the SNWA demand forecast presented in Chapter 3 no longer includes this obligation and the SNWA projects this water to be available for future use. Should the station come back on-line, the SNWA will meet the station's needs through 2026.

1994 Colorado River Water (BMI). In 1994, Basic Management Inc. agreed to transfer 14,550 AFY of its Colorado River consumptive use contract to the SNWA.[5] Under Section 4(a)(1) of the SNWA 1992 water delivery contract with the Secretary of the Interior, the SNWA has the right to use Nevada Colorado River water made available by reason of entitlement reduction.

Return-Flow Credits

As mentioned previously and shown in Figure 13, with return-flow credits, the total of Nevada's Colorado River delivery contracts is greater than the state's total Colorado River apportionment. Return-flow credits constitute a significant portion of the region's permanent Colorado River resource. The Las Vegas Valley returns most of its treated wastewater back to the Colorado River for return-flow credit via the Las Vegas Wash.[6]

FIGURE 13 – Return-Flow Credits



Unused Apportionment

Under the Law of the River, particularly the 1964 Supreme Court decision, at the Secretary of the Interior's discretion, Lower Basin States (Arizona, California and Nevada) are allowed to use the unused apportionment of another state. For example, if Arizona does not use all of its basic apportionment, the Secretary of the Interior may authorize Nevada and California to use the unused portion.

The SNWA also has a right to Nevada's unused Colorado River water as part of its 1992 Colorado River water contract. In recent years, a portion of Nevada's Colorado River apportionment contracted to Nevada users has been unused, and the SNWA has utilized this water. However, this water is expected to gradually decline in the long-term.

At present, Arizona plans on using or banking all of its apportionment in the future, as does California. As a result, none of the SNWA planning scenarios include unused apportionment from other Lower Basin States. However, the SNWA would utilize this resource if it becomes available to meet demands.

Flood Control Surplus

Each year, the Secretary of the Interior decides whether or not to declare a surplus of Colorado River water. The 1964 Supreme Court Decree in Arizona v. California defines "surplus" as follows: "If sufficient mainstream water is available for release, as determined by the Secretary, to satisfy annual consumptive use [in the Lower Division states of Arizona, California and Nevada] in excess of 7,500,000 acre-feet, such excess consumptive use is surplus."[7]

A surplus of water is typically a function of Colorado River reservoir storage and weather conditions, primarily snowmelt and the resulting runoff in the upper basin. Over the period of record, beginning in 1906, the average flow of the Colorado River has been 15 million AFY (Figure 14) at Lees Ferry, including flows from the Paria River just downstream of Lees Ferry.[8] However, the respective annual flows are highly variable – much higher or lower from year to year than the average. Because Colorado River uses are relatively constant, the variation in annual flows results in changes in reservoir storage, primarily in lakes Mead and Powell.

Surpluses have historically been limited to "flood control" surpluses, which allows the Lower Basin States to use excess water released from Lake Mead to control potential flooding along the Colorado River system. Every year, the Bureau of Reclamation issues its "Annual Operating Plan for Colorado River Reservoirs" and determines whether or not a surplus condition is expected to exist for the upcoming year. If additional water is available and demands are greater than 7.5 million acre-feet in the lower basin, then a surplus condition can be declared by the Secretary of the Interior.

A flood control surplus on the Colorado River was first declared in 1996 and in subsequent years through 2002 (Figure 15) because of the high storage content in Colorado River reservoirs. The 2009 Water Resource Plan does not assume the availability of flood control surplus during the planning horizon. However, the SNWA will utilize flood control surplus water when it is available and needed to meet demands.

FIGURE 14 – Colorado River Historical Flow

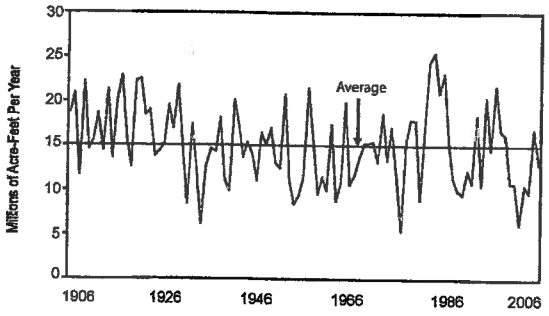
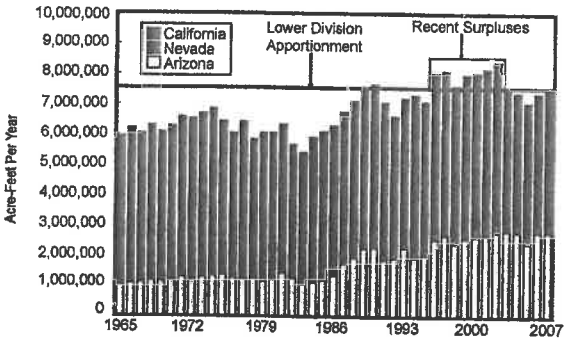


FIGURE 15 – Lower Basin Colorado River Water Usage



Domestic Surplus

As the water level in Lake Mead began to decline in the early 2000s, the Secretary of the Interior used the 2001 Interim Surplus Guidelines to declare "limited" surpluses from 2003 through 2007, based on specific Lake Mead elevations. During this period, the Lower Basin States did not utilize the limited surplus volumes and instead left the water in Lake Mead. As discussed in Chapter 1, the Interim Guidelines (implemented in December 2007) modified and extended the previously adopted 2001 Interim Surplus Guidelines.

Under provisions for "Domestic Surplus," when Lake Mead's elevation is above 1,145 feet, Nevada is allowed to consumptively use up to 400,000 AFY. In the future and until the Interim Guidelines expire in 2026, the SNWA will utilize domestic surplus water when it is available and needed to meet demands. However, the 2009 Water Resource Plan does not assume the use of domestic surplus during the planning horizon.

Intentionally Created Surplus

As discussed in Chapter 1, another element of the Interim Guidelines is the creation of a new type of surplus called Intentionally Created Surplus (ICS). In December 2007, the SNWA entered into a Delivery Agreement with the Secretary of the Interior and a Forbearance Agreement with lower basin water users that, in conjunction with the Interim Guidelines, ensure the availability and delivery of these water resources. ICS will enable the SNWA to develop some water resources by conveying them to the Colorado River for credit.[9] In addition, the SNWA will receive credits in exchange for funding a system efficiency project on the Colorado River. The SNWA's current ICS projects include:

- Virgin/Muddy Rivers Tributary Conservation ICS
- Coyote Spring Valley Groundwater Imported ICS
- Drop 2 Reservoir System Efficiency ICS

Tributary Conservation and Imported ICS credits can be created and used during any operating condition, including shortages. If the water is not used in the year it is created, it converts to Extraordinary Conservation ICS credits. Extraordinary Conservation ICS credits can be used like a bank account – the water is stored in Lake Mead for multiple years. The SNWA can accumulate up to 300,000 acre-feet of credits in Lake Mead for future use. Unlike other forms of ICS, Extraordinary Conservation ICS is not available during declared shortages.

Virgin/Muddy Rivers Tributary Conservation ICS. The SNWA is allowed to develop the full consumptive use of up to 95 percent of its Muddy and Virgin rivers rights that have a priority date that precedes the June 25, 1929 effective date of the 1928 Boulder Canyon Project Act. It is anticipated that more than 30,000 AFY of consumptive use rights will be acquired on the Muddy and Virgin rivers and conveyed to Lake Mead for ICS credit. Based on agreements with the Lower Division States, a maximum amount of 50,000 AFY could be acquired and used to create Tributary Conservation ICS.

These rights will be developed by allowing them to flow into Lake Mead as Tributary Conservation ICS under the Interim Guidelines. The ICS credits will then be withdrawn through existing SNWA facilities at Lake Mead. The SNWA is working with the U.S. Bureau of Reclamation and the Lower Basin States to account for the conveyance of SNWA's rights on the Muddy and Virgin rivers to Lake Mead.

In 2008, the SNWA began diverting approximately 10,000 AF of Muddy and Virgin Rivers Tributary Conservation ICS resources for use in Southern Nevada. Doing so marked an important milestone for the community – importation of these resources represents the first "new" water supply put to use in the region since large-scale diversions of Colorado River water began in the 1950s.

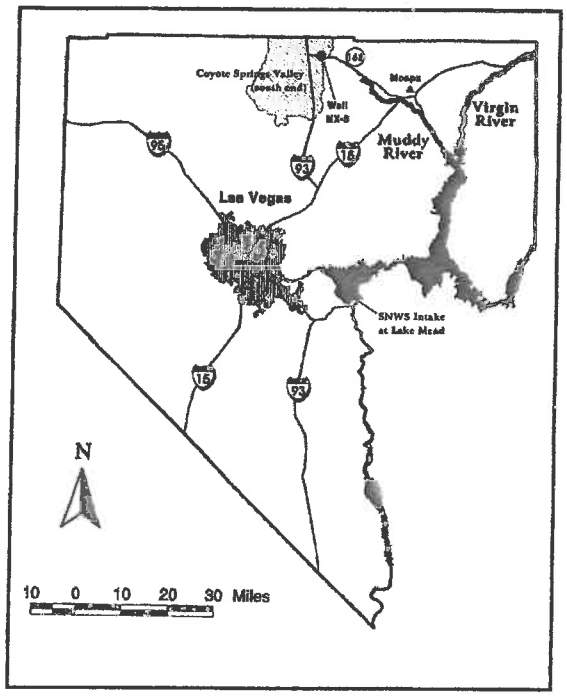
In 2009, the SNWA has approval from the Bureau of Reclamation to develop and use up to 30,000 AF (less 5 percent) of Tributary Conservation ICS. Creation of this ICS is based on SNWA's Muddy and Virgin rivers water rights discussed below and that the maximum amount that can be created is 50,000 AFY.

Muddy River. The Muddy River is a perennial river fed by the Muddy Springs in Southern Nevada, originating in Nevada and flowing into Lake Mead (Figure 16). The surface water on the Muddy River is fully appropriated with a priority date of pre-1905. Until recently, the majority of the flow was used for agriculture and power generation.

The SNWA has acquired about 9,200 AFY of Muddy River water rights represented by Muddy Valley Irrigation Company shares purchased from 1997 through 2009. In addition, SNWA is leasing

approximately 2,200 AF of Muddy Valley Irrigation Company shares in 2009. The leases are between the SNWA and individual shareholders and vary in length from one to 10 years.

FIGURE 16 – Virgin and Muddy Rivers



The SNWA also leases and owns water rights on the upper Muddy River. In March 2006, the SNWA and Moapa Valley Water District entered into a lease agreement with The Church of Jesus Christ of Latter-day Saints for 2,001 AFY of Muddy River water rights, allowing the SNWA to utilize half (1,000.5 AFY) of the leased rights. The term of the lease is 20 years with the option for two additional 10-year terms. The SNWA Board of Directors also approved the purchase of 1,340 AFY of upper Muddy River water rights in September 2008. In December 2008, the SNWA Board of Directors approved the purchase of 811 AFY, which will become available to the SNWA in 2011. In addition, the SNWA entered into a lease agreement with the Moapa Band of Paiutes in February 2009 to lease a portion of their upper Muddy River water rights for a period of five years. In 2009, this lease represents approximately 3,300 AF. The SNWA will receive Tributary Conservation ICS credits for conveying these and any other Muddy River water acquired to Lake Mead and can use the credits during any operating condition, including shortages.

Virgin River. The Virgin River originates in southwestern Utah, flows through the northwestern corner of Arizona and then into Nevada, where it eventually joins the Colorado River at Lake Mead (Figure 16). In 1994, the Nevada State Engineer granted to the SNWA an annual maximum diversion right to Virgin River surface flows of 190,000 AFY, with a long-term average annual diversion of 113,000 AFY. Under the Seven States' Agreement, the SNWA has agreed to postpone development of these rights while it makes efforts to pursue long-term Colorado River augmentation as described later in this chapter.

In 2000, the SNWA entered into an agreement with the Virgin Valley Water District establishing provisions for sharing surface water rights and groundwater rights from the Virgin Valley hydrographic basin. To ensure that future municipal water supplies exist for Virgin Valley Water District customers, the SNWA agreed to limit the amount of Virgin River water that will be purchased and transferred from Virgin Valley. In addition, for each acre-foot of Virgin River water acquired, the SNWA agreed to convey one acre-foot of its Virgin River rights to the Virgin Valley Water District. In 2003, pursuant to the agreement, the SNWA assigned an undivided one-half interest in 15 groundwater applications in the Virgin Valley hydrographic basin to the Virgin Valley Water District.

In July 2005, the SNWA entered into an agreement for the purchase of 350 shares in the Bunkerville Irrigation Company (representing approximately 3,710 AFY). Pursuant to its 2000 agreement with the Virgin Valley Water District, the SNWA transferred 3,710 AFY of its 1994 Virgin River rights to Virgin Valley. Acquisition of water rights from the Mesquite and Bunkerville Irrigation Companies is desired because these water rights have a priority date that precedes the Boulder Canyon Project Act.

In March 2008, the SNWA acquired 1,062 AFY of Virgin River surface water rights with a priority date

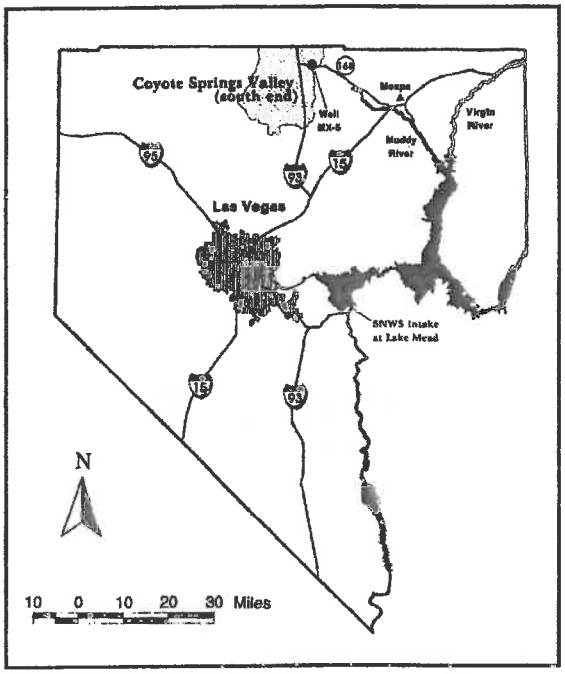
of 1914 and 1,200 AFY of surface rights with a priority date of 1990. Coincident with the purchase, the SNWA and Virgin Valley Water District entered into an agreement that exchanged the 1,200 AFY of 1990 priority rights for 89 shares in the Bunkerville Irrigation Company and removed the limitation on water rights SNWA could purchase and transfer from the Virgin River Valley. The SNWA also transferred to Virgin Valley Water District the remaining balance of the 5,000 AFY transfer obligation from its 1994 Virgin River rights pursuant to the 2000 Agreement. In addition, the SNWA transferred its remaining interest in the 15 groundwater applications in the Virgin Valley hydrographic basin to the Virgin Valley Water District.

Under the purchase agreements described above and recent purchases in 2008 and 2009 from shareholders in the Bunkerville and Mesquite Irrigation Companies, the SNWA has acquired about 5,000 AFY of pre-Boulder Canyon Project Act rights on the Virgin River. In addition, SNWA is leasing approximately 9,000 AF of Virgin River water rights in 2009. The SNWA will receive Tributary Conservation ICS credits for conveying these and any other Virgin River water acquired to Lake Mead and can use the credits during any operating condition, including shortages.

Coyote Spring Valley Groundwater Imported ICS. Coyote Spring Valley is located in northern Clark County (Figure 17). In 1998, the SNWA purchased 7,500 AFY of water rights in this valley, along with five one-acre parcels of land for placement of future wells to develop the water rights.[10] Another 1,500 AFY was purchased in 2002, for a total of 9,000 AFY. In addition, the LVVWD has 27,512 AFY in applications, filed in 1989. Up to 15,000 AFY of the Coyote Spring Valley permits and applications can be used to develop Imported ICS credits.

In 1996, the SNWA signed an agreement with the Moapa Valley Water District outlining various water management strategies for the area.[11] As part of that agreement, the SNWA agreed to assign up to half of the LVVWD filings in Coyote Spring Valley to the Moapa Valley Water District.

FIGURE 17 – Coyote Spring Valley



In 2001, the Nevada State Engineer considered the LVVWD's 1989 applications (27,152 AFY), as well as applications filed by Coyote Springs Investment (CSI), LLC (108,000 AFY). The CSI applications were filed after the LVVWD applications in 1989.

In March 2002, the SNWA, LVVWD, CSI and Moapa Valley Water District agreed to terms regarding groundwater applications in Coyote Spring Valley. Under this agreement, the Moapa Valley Water District will receive the first 3,750 AFY. Any water granted by the Nevada State Engineer above 3,750 AFY will be divided on a percentage basis between the LVVWD and the Moapa Valley Water District (58/42, respectively). This agreement effectively divides the total applications between the two entities, but ensures that the first cut of available water provides long-term benefit to the Moapa Valley Water District.

In March 2002, the Nevada State Engineer also issued Order No. 1169[12] regarding the LVVWD's 1989 groundwater applications for 27,512 AFY of water rights in Coyote Spring Valley. Per the ruling, the SNWA is conducting extensive monitoring, which included the construction of eight monitoring wells.

The SNWA is also working with other stakeholders to implement the five-year study mandated by the ruling. The study includes a two-year aquifer test to identify what potential impacts additional permits, if granted, may have on existing water right holders and regional springs in adjacent basins.

In April 2006, the SNWA entered into a Memorandum of Agreement with the U.S. Fish and Wildlife Service, CSI, Moapa Valley Water District and the Moapa Band of Paiutes that established conservation measures, and management and monitoring criteria for the SNWA's development of its 9,000 AFY and the future development of other groundwater resources in the area. To facilitate the pump test and deliver SNWA's existing water rights to meet demands, the SNWA is constructing a 15-mile pipeline that will tie into the Moapa Valley Water District's water distribution system, enabling the SNWA to develop and convey its existing 9,000 AFY of Coyote Spring Valley groundwater rights to the Lower Moapa Valley and Lake Mead. The water conveyed to Lower Moapa Valley can be used by the Moapa Valley Water District or by the SNWA through the creation of Imported ICS credits.

Following the completion of Order No. 1169 testing, the SNWA will provide a hydrological report to the Nevada State Engineer, detailing the results of the test. It is anticipated that following the submittal of the report, the Nevada State Engineer will determine the volume of water to be permitted under the LVVWD applications for 27,512 AFY in Coyote Spring Valley.

Drop 2 Reservoir System Efficiency ICS. System Efficiency ICS allows a water user to fund a system efficiency project to conserve Colorado River water. The project must increase the amount of water available in the U.S. and a portion of the saved water will be credited to the user funding the project. A project that meets this criteria is the Drop 2 Storage Reservoir Project.

This project will capture U.S. Colorado River water that would otherwise go unused in the lower basin and pass into Mexico. The SNWA has agreed to fund a portion of this project in exchange for receiving 400,000 acre-feet of available water (consumptive use volume) from Lake Mead under normal conditions on the Colorado River at a maximum rate of 40,000 AFY (consumptive use volume) beginning in 2011. These resources will expire upon full use, or in 2036, whichever comes sooner.

In 2008, the Secretary of the Interior and other project partners broke ground on the project. The reservoir is designed to conserve about 70,000 AFY of water and help manage flows along the lower Colorado River.

Banked Resources

Through local and interstate arrangements, the SNWA has acquired a number of banked resources. As discussed in Chapter 4, these temporary supplies serve as an important management tool – banked resources can be used to offset reductions in permanent supplies due to shortages, meet short-term gaps and serve as a temporary bridge to meet demands while other permanent resources are being developed. As discussed below, these banked resources include the Arizona, California and Southern Nevada water banks.

Arizona Water Bank. The SNWA acquires a storage credit by paying the Arizona Water Banking Authority (AWBA) to bank a portion of Arizona's Colorado River allocation, or other available Colorado River water, in Arizona's underground aquifer. In 2004, the SNWA Board of Directors approved an amendment to a previously approved agreement with the AWBA, ensuring Southern Nevada access to 1.25 million acre-feet of water in the Arizona Water Bank. As part of the agreement, SNWA could recover 30,000 AFY in 2009 and 2010. For 2011 and beyond, the parties agreed to a maximum recovery rate of 40,000 AFY until the banked reserves have been fully exhausted. Banked water is stored in the form of "credits." For the SNWA to recover a portion of its storage credits, Arizona will utilize the banked water and forego the credited amount of Colorado River water to Nevada. The SNWA will then divert the water from existing facilities at Lake Mead.

California Water Bank. In October 2004, the SNWA and Colorado River Commission of Nevada entered into agreements with the Metropolitan Water District and Bureau of Reclamation to store a portion of Nevada's unused Colorado River water in Southern California until it is needed. Under the agreements, Nevada can recover up to 30,000 AFY from the storage account, with six months notice provided to Metropolitan. The SNWA has banked 70,000 acre-feet in the California Water Bank through 2008.

Southern Nevada Water Bank. Within the Las Vegas Valley Groundwater Basin, the LVVWD and the City of North Las Vegas artificially recharge Nevada's unused Colorado River water directly into the primary aquifer using recharge wells during the winter months. In addition, the agencies have conducted in-lieu recharge by refraining from pumping their respective non-revocable groundwater rights.[13]

Since 1987, the LVVWD has recharged 333,639 acre-feet in the Las Vegas Valley groundwater basin through direct and in-lieu recharge. In addition, 17,378 acre-feet has been recharged by LVVWD for the Las Vegas Valley Groundwater Management Program (LVVGMP). The LVVGMP has purchased 9,303 acre-feet of this volume and has been approved to purchase the remaining 8,075 acre-feet based on SNWA Board action approvals in November 2008. The water acquired by the LVVGMP is not available to the SNWA for future use.

Colorado River Augmentation

In accordance with the 2007 Seven States' Agreement, the SNWA has agreed to suspend development of its 1994 Virgin River water rights until at least 2014 in exchange for agreement with the other Colorado River Basin states to cooperatively pursue the development of 75,000 AFY of permanent water supplies to augment the Colorado River for Nevada.

The SNWA will not pursue its 1994 Virgin River rights so long as the 75,000 AFY has been obtained or a specific project is being developed by the year 2020. In 2007, the SNWA funded the "Study of the Long-Term Augmentation Options for the Water Supply of the Colorado River System."[14] This study examined water resource augmentation options, evaluating engineering feasibility, environmental viability, and potential for water resource yield. This is an important first step in identifying and assessing potential actions to implement water supply augmentation on the Colorado River or through exchanges of Colorado River water.

Colorado River Transfers/Exchanges

In concept, water transfers involve moving water resources from willing sellers to willing buyers. There are a variety of ways in which this can occur: interbasin, intrastate and interstate. However, discussions of transfers/exchanges generally describe lower basin, interstate transfers of Colorado River water. Full-scale transfers and exchanges, over and above Colorado River augmentation to offset development of 1994 Virgin River rights, are still in the distant future. Examples of both short- and long-term augmentation and transfers/exchanges include desalination and transfers of conserved water.

Seawater Desalination Exchanges. Advances in technology may alleviate the high costs associated with seawater desalination, making it a potentially viable future water resource for Southern Nevada. This would occur in the form of an exchange. For example, Southern Nevada could pay California or Mexico to construct and operate desalination facilities in exchange for an equivalent portion of their Colorado River water at Lake Mead. The SNWA is currently participating in a bi-national process between the United States and Mexico to discuss desalination opportunities. Any formal arrangement regarding desalination exchanges is still many years out and subject to international treaty obligations.

Brackish Water Desalination. The Yuma Desalting Plant (YDP), a brackish water reverse osmosis plant near Yuma, Arizona, was constructed to treat pumped agricultural drainage water from the United States' lower Gila River Valley area. The quality of the desalted water would be improved so that it could become part of the U.S. treaty deliveries to Mexico.[15] Construction of the YDP was complete in 1992. The

YDP operated at one-third capacity for six months in 1992-1993 until flood damage caused operations to cease. The YDP has not operated since, except for a 90 day test at 10 percent capacity in 2007. Since 1993, the pumped agricultural drainage water from the U.S. has been conveyed in a concrete lined canal and released on a salt flat near the upper end of the Gulf of California. This water is not counted as part of Mexico's 1.5 million AFY Colorado River treaty water because of its salinity.

Under a proposed agreement among municipal water agencies in Nevada, California and Arizona, and the U.S. Bureau of Reclamation, a pilot operation of the YDP could begin as early as fall 2009. The YDP would operate at one-third capacity to collect data on the viability of operating the plant at full capacity on a sustained basis.

Transfer of Conserved Water: This potential resource would include interstate transfer of water that has been conserved through a verifiable water conservation program or through the fallowing of agricultural land with a recent history of use.[16] This conserved water would be leased or purchased by the SNWA. There is also an opportunity for interstate transfers of Tribal water, but the topic still needs considerable discussion and agreement.

While Colorado River transfers and exchanges are an important future resource for Southern Nevada, they do not resolve supply shortages associated with drought conditions. This is because all of these options would involve an exchange for Colorado River water. This would increase Southern Nevada's dependency on Colorado River water at a time when the SNWA and other users are exploring ways to reduce their dependency on the river and make their supplies more drought tolerant.

GROUNDWATER

The SNWA has acquired and continues to develop a significant number of in-state groundwater resources. These resources are intended to provide Southern Nevada with a more balanced mix of Colorado River water and non-Colorado River water than currently exists.

Nevada Water Law

Unlike the water of the Colorado River, which is managed by the U.S. Bureau of Reclamation through a series of agreements, laws, contracts and judicial or administrative decisions known collectively as the Law of the River, the groundwater and surface waters of Nevada are managed and controlled by the state. The Nevada Division of Water Resources (also known as the Office of the State Engineer) is the state entity that regulates groundwater and surface water resources within Nevada (other than the Colorado River).

The Office of the State Engineer was created in 1903 to protect existing water rights and bring about a better method for utilizing the state's water resources. The General Water Law Act of 1913 gave the office jurisdiction over all wells tapping into artesian water or water in definable underground aquifers. The 1939 Nevada Underground Water Act granted the Nevada State Engineer total jurisdiction over all groundwater in the state. The 1939 Act has been amended a number of times and is now considered one of the most comprehensive groundwater laws in the West.[17]

Nevada water law follows the doctrine of prior appropriation, or "first in time, first in right" – meaning the first person to file on a water resource for beneficial use is typically considered first for a permanent right to the water, subject to the Nevada State Engineer's determination of available unappropriated water. The process for obtaining a permit to develop unappropriated groundwater or surface water includes: filing an application, having the Nevada State Engineer act on the application, and then issuing the permit or denying the application.

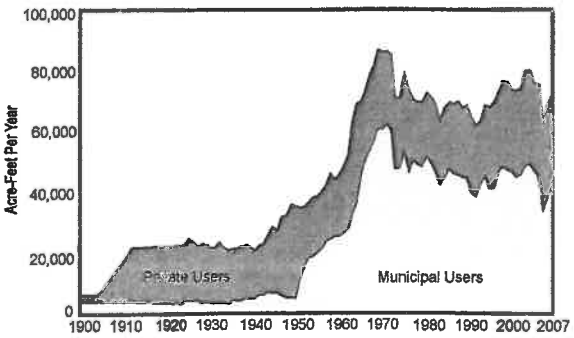
As indicated in Chapter 1, groundwater was the first and most critical resource for Southern Nevada for much of the last century. It remains a key component of Southern Nevada's water resource portfolio. In addition to the existing purveyor groundwater rights in the Las Vegas Valley, the SNWA has in-state groundwater rights and applications in hydrographic basins outside the Las Vegas Valley. Many of these rights and applications stem from filings made by the LVVWD, but others are the result of specific SNWA efforts that were initiated in the mid- to late-1990s. The following subsections discuss these in-state groundwater resources in more detail.

Las Vegas Valley Groundwater

Until large scale importation of Colorado River water was achieved in the early 1970s, the Las Vegas Valley relied on local groundwater supplies to meet demands. In this respect, it is worthwhile to note that older estimates of long-term annual groundwater supply or "perennial yield" for the Las Vegas Valley were about 30,000 AFY.[18] More recent analysis in the 1990s indicates the yield is approximately 57,000 AFY.[19] As part of its effort to manage excessive demands on this supply, the Nevada State Engineer designated a portion of the Las Vegas Valley as an underground artesian water basin in 1941. The designated area was expanded in 1944 and 1946, and a portion of the basin was closed to new irrigation rights in 1949. In 1955, the Nevada State Engineer began to issue temporary groundwater permits in the Las Vegas Valley. All permits within the designated portion of the basin and with a priority date after March 24, 1955, were issued as temporary rights subject to revocation.[20]

In the years that followed, the Nevada State Engineer issued a series of orders that systematically restricted the issuance of revocable water rights within the Las Vegas Valley. These orders culminated on April 15, 1992, with the issuance of Amended Order No. 1054. Order No. 1054 is significant because it means that, with few exceptions, all applications to appropriate groundwater in the Las Vegas Valley that are filed after March 23, 1992 will be denied.[21] Of the seven SNWA member agencies, the LVVWD and North Las Vegas have permanent groundwater rights totaling 40,629 acre-feet and 5,711 acre-feet, respectively. The two entities operate about 100 permitted municipal wells in the Las Vegas Valley. Figure 18 displays groundwater use in the Las Vegas Valley by type of user, and shows how this use shifted from primarily private wells around 1950 to primarily municipal wells by 1970.

FIGURE 18 – Groundwater Use by User Type

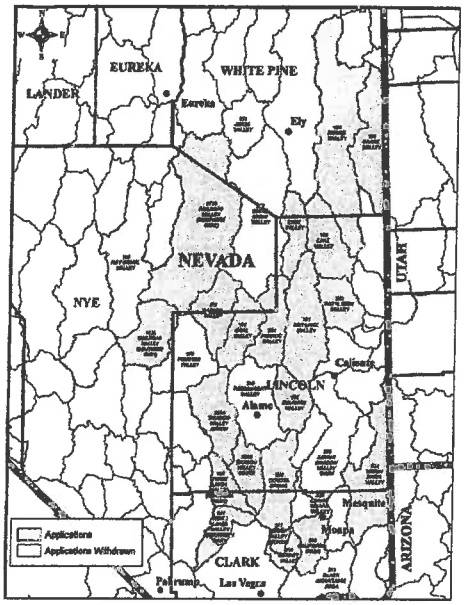


Although Southern Nevada's primary supply is Colorado River water (about 90 percent), the municipal groundwater rights of the SNWA member agencies are among the most senior groundwater rights in the valley, and groundwater remains a critical component of the area's resource picture. In particular, groundwater is instrumental in helping purveyors meet peak summer water demands.

In-State Groundwater Resources

In addition to the groundwater rights previously noted, the SNWA has a number of other groundwater permits and applications in southern and eastern Nevada. In 1989, the LVVWD filed 147 groundwater applications with the Nevada State Engineer to appropriate unallocated groundwater in 30 basins. Because of potential environmental concerns and existing appropriations, the LVVWD eventually withdrew some applications, limiting potential diversions to 21 basins in four Nevada counties, including Clark, Lincoln, Nye and White Pine (Figure 19).

FIGURE 19 – Groundwater Applications

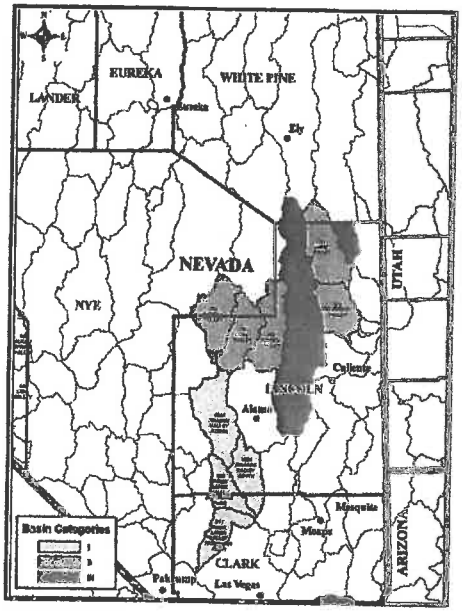


Since 1989, the LVVWD and/or the SNWA have withdrawn, transferred or otherwise declined to pursue development of 49 of its original applications. In 2003, the SNWA entered into an agreement with Lincoln County that effectively resolved longstanding concerns over applications for groundwater in that county. Under the agreement, the applications in Lincoln County are divided into three categories (Figure 20):

- Category I Basins are allocated to the SNWA;
- Category II Basins are allocated to Lincoln County;
- Category III Basins are shared, where Lincoln County is entitled to the first 3,000 AFY from the water rights that may be granted in these basins.

The agreement established a cooperative relationship between Lincoln County, the LVVWD and SNWA that includes sharing resources and data during the development of groundwater in eastern and central Nevada.

FIGURE 20 – Groundwater Basins Addressed in the SNWA/Lincoln County Agreement



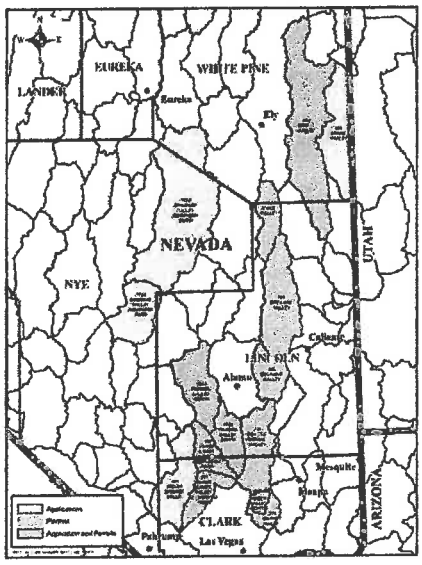
Several of the groundwater applications filed in 1989 have been reviewed by the Nevada State Engineer's office, and many have been permitted according to Nevada Water Law. The SNWA has also acquired groundwater rights through direct purchase. Figure 21 displays the groundwater basins in which the SNWA and/or LVVWD have groundwater rights, applications or both. The following sections describe the water rights and applications in these basins and the associated development projects.

Garnet and Hidden Valleys. The Nevada State Engineer permitted a combined total of 2,200 AFY to the LVVWD in 2001 based on the 1989 groundwater applications in these basins. The majority of these rights have been leased to dry-cooled power plants located in Garnet Valley, which are extremely water efficient. The SNWA owns a 25 percent interest in one of these facilities, the Silver Hawk facility, which is owned and operated by the NVEnergy Company.

California Wash Basin. In 2002, the Nevada State Engineer issued Ruling No. 5115, which permitted the SNWA 2,500 AFY of groundwater rights in the California Wash groundwater basin. The SNWA's other application in this basin was held in abeyance

until the completion of the study under Nevada State Engineer Order No. 1169. As part of the settlement agreement with the Moapa Band of Paiutes, which resolved regional water resources issues on the groundwater and surface water rights on the Muddy River, the 2,500 AFY of permitted rights and the application held in abeyance were transferred to the Moapa Band of Paiutes. The SNWA and the Moapa Band of Paiutes are working closely to manage and develop water resources on the Muddy River and surrounding groundwater basins.

FIGURE 21 –Groundwater Basins with Active Applications/Permits



Three Lakes Valley (North and South) and Tikaboo Valley (North and South). In 2003, the SNWA requested that the Nevada State Engineer act on 17,000 AFY of water right applications filed in 1989 for groundwater in Three Lakes Valley (North and South) and Tikaboo Valley (North and South). Following an administrative hearing in 2004, the Nevada State Engineer issued Ruling No. 5465 in 2005, approving permits totaling 8,905 AFY. Ruling No. 5465 also identified an additional 1,700 AFY of unappropriated water in Three Lakes Valley North. In 2005, the SNWA requested the Nevada State Engineer grant the 1,700 AFY under an existing SNWA application from 1989 that was not considered in Ruling No. 5465. The Nevada State Engineer subsequently issued Ruling No. 5533, granting SNWA the 1,700 AFY in Three Lakes Valley North, bringing the total rights from the four basins to 10,605 AFY.

In 2005, the SNWA filed applications to change points of diversion for a portion of the 8,018 AFY of water rights from Tikaboo Valley South and Three Lakes Valley North and South to proposed well sites. In 2006, the Nevada State Engineer issued Ruling No. 5621, which approved a portion of the change applications and denied others. The SNWA is working to develop options for the development of its 8,018 AFY of groundwater permits in Three Lakes Valley South and North and Tikaboo Valley South and deliver the water to the northwest part of the Las Vegas Valley. In 2008, the SNWA and LVVWD entered into an agreement with the Las Vegas Paiute Tribe establishing a right-of-way on the reservation for the proposed project.

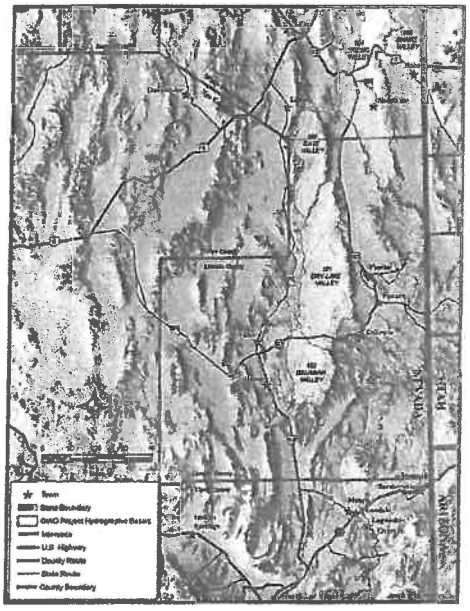
Indian Springs. In 2004, the SNWA filed applications for 16,000 AFY of groundwater in Indian Spring Valley. The availability and development of this resource is subject to further research and analysis.

Clark, Lincoln and White Pine Counties Groundwater. To develop and convey the SNWA's 1989 groundwater rights, applications, and acquired rights from Delamar, Dry Lake, Cave, Spring and Snake valleys for use by SNWA's member agencies in Clark County, the SNWA has proposed a pipeline project as defined in the Southern Nevada Water Authority Clark, Lincoln and White Pine Counties Groundwater Development Project. The proposed pipeline would extend from the Las Vegas Valley to Spring and Snake valleys (Figure 22). Based on the SNWA's current permitted rights, acquired rights, and pending applications, up to 137,000 AFY could be developed from these valleys, 3,000 AFY of which would be transferred to Lincoln County based on a 2003 agreement.

In 2006, the SNWA and the Lincoln County Water District (LCWD) passed a resolution through which the SNWA and the LCWD agreed to cooperate

in the National Environmental Policy Act (NEPA) process associated with the SNWA's proposed Clark, Lincoln and White Pine Counties Groundwater Development Project. The agreement provides that LCWD will pay a portion of any costs charged by the BLM to the SNWA for completing NEPA compliance. It also outlines the basic concepts for a future agreement that will allow the LCWD to acquire capacity rights in the future pipeline facilities to transmit water within Lincoln County, and sets forth a framework for a future operation, maintenance and replacement agreement.

FIGURE 22 – Clark, Lincoln and White Pine Counties Groundwater Development Project



While many of the water resources associated with the SNWA's Clark, Lincoln, and White Pine Counties Groundwater Development Project have been quantified, final project volumes remain uncertain because the SNWA still has applications in Snake Valley pending consideration by the Nevada State Engineer. The sections below discuss the SNWA's groundwater rights, applications, and acquired rights within the specific groundwater basins encompassed by the project.

Spring Valley. The Nevada State Engineer held an administrative hearing in 2006 to consider the SNWA's applications for 91,224 AFY of groundwater in Spring Valley hydrographic basin. In 2007, the Nevada State Engineer issued Ruling No. 5726, granting the SNWA 60,000 AFY of groundwater from Spring Valley, the pumping of which is limited to 40,000 AFY for the first ten years. In addition to these groundwater rights, the SNWA began acquiring various ranch properties in Spring Valley in mid-2006. In addition to substantial land holdings, the SNWA also acquired surface and groundwater rights associated with the properties. To date, the SNWA has acquired approximately 34,000 AFY of surface water rights, 6,000 AFY of groundwater rights and 24,000 AFY of supplemental water rights. The SNWA does not intend to export the surface water rights associated with these ranches. Instead, the surface water rights will be used to help manage the groundwater basin and support other environmental management activities associated with groundwater development.

Delamar, Dry Lake and Cave Valleys. In 2008, the Nevada State Engineer held an administrative hearing to consider the SNWA's applications for unappropriated groundwater in Delamar, Dry Lake and Cave valleys. Later that year, the Nevada State Engineer issued Ruling No. 5875 granting the SNWA 18,775 AFY of groundwater from these valleys.

Snake Valley. The Nevada State Engineer has scheduled a hearing for 2011 to consider the SNWA's applications for 50,679 AFY of unappropriated groundwater in Snake Valley. The Lincoln County Land Act requires that the states of Nevada and Utah reach an agreement regarding the division of water resources in the basin before water can be diverted. The two states continue to work together to reach an agreement that will allow the maximum sustainable beneficial use of the water resources and protect existing water rights.

RECLAIMED WATER RESOURCES

Southern Nevada currently reclaims all of its wastewater, either through return-flow credits

or direct reuse. The following sections describe Southern Nevada's efforts to maximize its use of both Colorado River and in-state groundwater resources.

Reclaimed Colorado River Water

While reclaimed Colorado River water may have distinct advantages in terms of environmental sustainability and lower cost, additional reuse does not extend Southern Nevada's Colorado River allocation. Comparing Figures 23a and 23b shows that the size of the total resource "pie" does not change when more wastewater is used to meet a reuse demand rather than returned to Lake Mead for return-flow credit. The reason for this is that an increase in reuse will offset or reduce the amount of water available for return-flow credit. That is, as wastewater reuse increases, the area's return-flow credits will decrease. However, the overall supply from consumptive use, return-flow credits and reclaimed water will not materially change.

Full Consumptive Use/Recycled In-State Groundwater Resources

The water resources described in this chapter have generally been quantified and discussed based on consumptive-use volumes. Through return-flow accounting and water reuse, the water supply available for diversion is approximately 70 percent greater than the consumptive-use volume.

Current Reclaimed Water Resources

The following describes current reclaimed-water activities among the SNWA member agencies.

Boulder City. Boulder City is both the potable and reclaimed water provider within its municipal boundaries. Currently a portion of its treated effluent is sold and used at sand and gravel operations (about 273 acre-feet in 2007).

City of Las Vegas. In the LVVWD service area, the City of Las Vegas provides reclaimed water within its municipal boundaries and unincorporated Clark County. The Water Pollution Control Facility (WPCF), the city's 91 million-gallon-per-day (MGD) main treatment plant, is located on the Las Vegas Wash in unincorporated Clark County. The WPCF currently provides reclaimed water to an adjacent power plant and four adjacent golf courses. The Bonanza Mojave Water Resource Center, a 1 MGD satellite reuse facility, became operational in May 1999. It is capable of providing approximately 1,120 AFY of reclaimed water to an adjacent park and golf course. The Northwest Water Resource Center, a 10 MGD satellite reuse facility, became operational in July 2001. It will ultimately be capable of providing more than 11,200 AFY of reclaimed water for use at golf courses, schools and parks. Total reuse for the City of Las Vegas in 2007 was about 5,538 acre-feet.

FIGURE 23a – SNWA Water Resources with Decreased Reuse

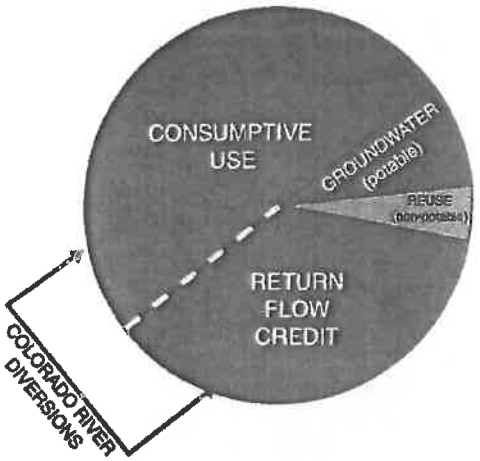
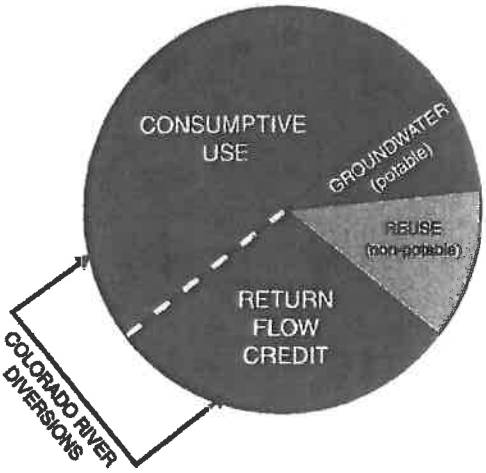


FIGURE 23b – SNWA Water Resources with Increased Reuse



Clark County Water Reclamation District. In the Clark County portion of the LVVWD service area, the Clark County Water Reclamation District currently provides reclaimed water to power plants, golf course irrigation and parks from the Water Pollution Control Facility, the county's 120 MGD main treatment plant located on the Las Vegas Wash. Phase I of the Desert Breeze Water Resource Center was completed in January 2003. The facility currently treats up to 5 MGD of reclaimed water. The facility can be expanded to 10 MGD, which is equivalent to 11,200 AFY, of reclaimed water for use at golf courses, schools and parks. In addition, Clark County now requires new golf courses and nearby landscape areas to utilize reclaimed water, when applicable. The Reclamation District recently completed an In-Valley Water Reclamation Facilities Master Plan to evaluate reclaimed water needs for the Reclamation District's service area. Total Reclamation District reuse in 2007 was approximately 12,693 acre-feet.

In Laughlin, the Clark County Water Reclamation District is currently supplying reclaimed water for dust control at a local landfill.

City of Henderson. The City of Henderson is both the potable-water and reclaimed-water provider within its boundaries. The city has a water-reclamation facility capable of treating 32 MGD of wastewater. Customers currently utilizing reclaimed water for irrigation include nine golf courses, highway landscaping and a mortuary. Total reclaimed water in 2007 was approximately 8,338 acre-feet.

City of North Las Vegas. The City of North Las Vegas currently receives wastewater treatment through an agreement with the City of Las Vegas. In November 2008, the City of North Las Vegas began construction of a water reclamation facility.[22] The City of North Las Vegas plans to construct a 50 MGD wastewater treatment facility to treat and reclaim a portion of its wastewater. The project is projected to consist of two phases with 25 MGD of operating capacity constructed in each phase. The first phase of construction is scheduled for completion in early 2011.

Valley-Wide Reuse Plans

The cities of Las Vegas, North Las Vegas and Henderson, the Clark County Water Reclamation District and the LVVWD completed an Area-Wide Reuse Study for the Las Vegas Valley in July 2000.[23] Opportunities for additional satellite reuse facilities were identified in North Las Vegas, the northwest area of the City of Las Vegas, and in the southwest area of Clark County near Henderson. The agencies are evaluating these opportunities to determine which projects might be the next most likely projects for development. A siting feasibility study in the southwest area of Clark County was jointly explored by Henderson, the Clark County Water Reclamation District and the LVVWD. This study, also completed in 2000, identified several locations for possible future satellite facilities in the valley, which are being considered independently by the Clark County Water Reclamation District. In response to the study, the City of Henderson has begun construction of its Southwest Water Reclamation Facility.

In September 2007, the SNWA and Clean Water Coalition initiated a cooperative effort to update the Area-Wide Reuse Study to reflect current conditions. The revised "Policy Regarding Recycled Water" presents seven recommendations for reuse practices in Southern Nevada. The plan was approved by the SNWA Board of Directors in December 2008.

ENDNOTES

1. "Compilation of Records in Accordance with Article V of the Decree of the Supreme Court in Arizona v. California et al. dated March 9, 1964," February 1967-June 2005, United States Bureau of Reclamation.

2. "Contract with the Southern Nevada Water Authority, Nevada for the Delivery of Colorado River Water," effective March 2, 1992; between Secretary of Interior, Colorado River Commission and Southern Nevada Water Authority. The contract was amended in 1994: "Amended and Restated Contract with the Southern Nevada Water Authority, Nevada for the Delivery of Colorado River Water," effective November 17, 1994.

3. "Contract for the Provision of Water to Mohave Generating Station," effective March 1, 1993; between Southern Nevada Water Authority Purveyors and Southern California Edison, on behalf of itself and the other co-tenants of the Mohave Generating Station.

4. "Cooperative Agreement for the Banking of Water in the Las Vegas Valley Groundwater Basin between the Southern Nevada Water Authority and the Las Vegas Valley Water District," effective February 21, 2006.

5. "Water Supply Agreement," effective November 17, 1994; among Victory Valley, SNWA, SNWA purveyors and BMI. "Amended Contract for Delivery of Water to Basic Management," effective November 17, 1994, between Secretary of Interior and BMI.

6. "Procedure for Determining Return Flow Credits to Nevada from Las Vegas Wash," 1984, U.S. Bureau of Reclamation. This procedure was modified slightly in "The Accounting of Return Flow Credits from Recharged Colorado River Water in the Las Vegas Valley," 1991, U.S. Bureau of Reclamation. There are three sources of water in the Las Vegas Wash – metered returns, which are mostly treated wastewater flows; urban runoff and intercepted shallow groundwater; and storm water. Nevada only receives credit for those return flows that are considered Colorado River water, not groundwater or storm water. There are meters on the wastewater flows exiting the wastewater-treatment plants, a meter on BMI's surface return flows, and a gauge at Lake Las Vegas that measures total flow in the Wash. However, these meters and gauges cannot physically measure what portion of the flows was originally Colorado River water. Given this limitation, the Bureau of Reclamation and the Colorado River Commission agreed in 1984 to a return-flow-credit methodology that would calculate how much of the flows in the Las Vegas Wash was originally Colorado River water diversions. Nevada is the only state on the Colorado River with such a detailed measuring procedure for its return flows. This procedure has been updated as needed in consultation with the U.S. Bureau of Reclamation.

7. Sometimes the phrases "lower division states" and "lower basin states" are used interchangeably. However, this document follows the definitions found in Article II of the "Upper Colorado River Basin Compact, 1948." Paraphrased, the lower division states are Arizona, California and Nevada; the lower basin states are Arizona, California, Nevada, New Mexico and Utah.

8. The U.S. Bureau of Reclamation and the U.S. Geological Survey estimate the yearly "natural flow" of the Colorado River at Lees Ferry, defined as the flow of the river without reservoirs, dams or diversions. Natural flow estimates for the period 1906 to 1995 are official, while estimates for the period 1996 to 2003 are provisional, October 2005, U.S. Bureau of Reclamation.

9. In the 2006 SNWA Water Resource Plan, SNWA's groundwater rights in Coyote Spring Valley and surface water rights in the Virgin and Muddy rivers were previously classified as an in-state water resource. The 2009 Water Resource Plan includes these resources under the Colorado River heading, since the Secretary of Interior's December 2007 Record of Decision concerning Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake

Mead (Interim Guidelines) allows the SNWA to receive Colorado River credit for conveying portions of these water resources to Lake Mead. Surface water rights controlled by the SNWA on the Virgin and Muddy rivers that pre-date June 25, 1929, the effective date of the 1928 Boulder Canyon Compact, can be used to generated Intentionally Created Surplus credits in Lake Mead. The Interim Guidelines allows the creation of up to 50,000 afy of Colorado River credits from the Virgin and Muddy rivers. In addition, Coyote Spring Valley groundwater rights controlled by SNWA can also be conveyed to Lake Mead for ICS credits. A maximum of 15,000 AFY of Colorado River credits can be created from Coyote Spring Valley. SNWA is credited for 95% of the water demonstrated to augment the Colorado River system from these sources. The remaining 5% benefits the Colorado River system-storage as a whole.

10. "Agreement for option, purchase and sale of water rights, real property and easements," approved by the SNWA Board of Directors on 4/16/98, between Southern Nevada Water Authority and Coyote Spring Investment, LLC.

11. "Agreement" signed February 14, 1996, between Southern Nevada Water Authority and Moapa Valley Water District.

12. The Nevada Division of Water Resources issued Order 1169 March 8, 2008, which addressed LVVWD's groundwater applications for 27,512 AFY. The Order also held in abeyance all groundwater applications in five nearby groundwater basins. The Order requires a 5-year minimum study during which at least 50% of the water rights currently permitted in the Coyote Spring Valley are pumped for at least 2 consecutive years. Following the study, the SNWA and Las Vegas Valley Water District (LVVWD) may update and resubmit its hearing documents from the July 2001 administrative hearing to include study results, allowing the Nevada State Engineer to further consider the LVVWD's groundwater applications in Coyote Spring Valley.

13. "In-Lieu Recharge Order," Order No. 1176, December 10, 2004, State of Nevada, Office of the Nevada State Engineer.

14. "Study of the Long-Term Augmentation Options for the Water Supply of the Colorado River System," March 2008. Prepared for the Colorado River Basin States by Colorado River Water Consultants - a joint venture by Black & Veatch and CH2MHill.

15. The 1944 United States-Mexico Treaty for Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande allots to Mexico a guaranteed annual quantity of water from these sources. Specifically, the treaty guarentees Mexico the delivery of 1.5 MAFY of Colorado River water, plus 200,000 AFY of any surplus Colorado River water. In 1974, an international agreement, interpreting the 1944 Treaty, guaranteed Mexico water of the same quality as that being used in the United States.

16. In 1989, the Metropolitan Water District paid the Imperial Irrigation District for canal lining and other conservation measures, in return for up to 106,000 acre-feet of conserved water per year for 35 years. In addition, from 1992 through 1994, 186,000 acre-feet of water was conserved from a land fallowing program that Metropolitan set up with the Palo Verde Irrigation District. The latest development is an agreement between the Imperial Irrigation District and the San Diego County Water Authority. Over an extended period San Diego will pay the Imperial Irrigation District to conserve up to 200,000 AFY.

17. "Groundwater and Wells in the Las Vegas Valley," 1998, Southern Nevada Water Authority and Clark County Conservation District.

18. "Available Water Supply of the Las Vegas Ground-Water Basin," U.S. Geological Survey Water Supply Paper 1780, 1965, G.T. Malmberg; "Geology and Water Resources of Las Vegas, Pahrump, and Indian Spring Valleys, Clark and Nye Counties, Nevada," State of Nevada, Office of the State Engineer Water Resources Bulletin No. 5, 1948, G.B. Maxey and C.H. Jameson.

19. "Hydrologic Implications of Greater Ground-Water Recharge to Las Vegas Valley, Nevada," Journal of the American Water Resources Association, Volume 36, Number 5, October 2000, David J. Donovan and Terry Katzer.

20. "Groundwater and Wells in the Las Vegas Valley," 1998, Southern Nevada Water Authority and Clark County Conservation District.

21. Ibid.

22. "Water Reclamation Facility Cost Analysis," October 20, 2004, prepared for the City of North Las Vegas by Black & Veatch.

23. "Area Wide Reuse Study Las Vegas Valley Area," July 2000, prepared by Black & Veatch for the City of Henderson, City of Las Vegas, City of North Las Vegas, Clark County Sanitation District and the Las Vegas Valley Water District.

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CHAPTER 3

Meeting Future Demands

This chapter discusses future water demands and resource options available to meet those demands, given current and projected conditions on the Colorado River and in Nevada.

Resource planning is dependent on conditions that may change in unpredictable ways. As evidenced by Southern Nevada's history, numerous factors can impact demands over long periods of time, as well as from year to year. The farther in the future that demands are projected, the greater the uncertainty in the forecast. This underscores the need for the SNWA to review its Water Resource Plan annually and make adjustments as needed.

To address this uncertainty, the SNWA has taken a portfolio approach to water resource development. The portfolio approach emphasizes acquisition and development of diverse resources, both surface water and groundwater (Colorado River and Nevada in-state resources), in an effort to offset risks typically associated with any single resource option (for example, availability, volume and timing of use). The SNWA water resource portfolio was described in Chapter 2.

Once a portfolio of resource options is acquired, the most challenging aspect is ensuring the development and availability of these resources when they are needed. Several of Southern Nevada's resource options require infrastructure investment or negotiation of legal, environmental, regulatory and administrative processes to bring the resources online. The SNWA works diligently to plan and prepare for these efforts, but the possibility always exists for short-term gaps to occur between demands and the specific resources identified in the SNWA Water Resource Plan to meet those demands. This is why conservation and banked resources are of paramount importance to Southern Nevada. Conservation helps reduce overall demands (relative to levels that would have occurred in the absence of conservation) and increase efficiency, thus extending the availability of existing developed resources over time. Banked resources, in turn, are intended to provide a bridge until permanent, long-term resources in the SNWA portfolio are fully developed and ready for use. Banked resources also provide flexibility in that these resources can help to offset reductions in permanent supplies due to shortages (discussed further in Chapter 4).

Meeting demands through 2060 will require both the efficient use of existing and future supplies and the development of additional water resources. Demands in the 2009 Water Resource Plan cover the SNWA member purveyor service area. The 2009 SNWA Water Budget, a companion document to the Water Resource Plan, provides more detailed forecasts by purveyor through the year 2011.

WATER DEMAND FORECAST

Forecasting is critical for the SNWA, which must plan and build costly infrastructure over a number of years to meet projected demands. Since 1996, the SNWA has adopted water resource plans that show demand forecasts for Southern Nevada across a long-term planning horizon, and the resources anticipated for meeting those demands. Water demand forecasting is based on both population projections and expected conservation. As a result, significant variations in

either factor can impact forecast demands. For example, both higher population and lower levels of conservation will result in higher demands and can significantly impact water resource planning.

The 2009 Water Resource Plan forecasts demands through 2060 based on the June 2008 Clark County Population Forecast prepared by the University of Nevada Las Vegas Center for Business and Economic Research (CBER) (Appendix 4).

Typically, short-term forecasts are more accurate because they are based on the recent past. However, the current economic downturn affecting local, national and even global economies has presented unique challenges to planners as to when the economy will recover and what future growth rates will occur.

As a result, the SNWA has made short-term adjustments to CBER's 2008 population forecast. To reflect current population trends for the year 2009, no growth/additional water demand is assumed; however, annual growth is assumed in future years to bring the forecast in line with the CBER 2008 Clark County Population Forecast. The SNWA will continue to assess these factors in future plan updates.

Figure 24 illustrates near-term adjustments and how water demand forecasts have changed over time as a result of conservation goals and achievements. The upper demand line reflects the SNWA's 2004 baseline water demand level of 274 GPCD. The middle demand line reflects the SNWA's 2005 water conservation goal of 250 GPCD by 2010 and 245 GPCD by 2035. The lower demand line reflects the SNWA's current conservation goal of 199 GPCD by 2035, which was established in 2009. Achieving this goal will reduce water demands by approximately 276,000 acre-feet in 2035, with additional savings in later years. Figure 25 shows the current SNWA demand forecast through 2035.

FIGURE 24 – Summary of SNWA Water Demands and Conservation

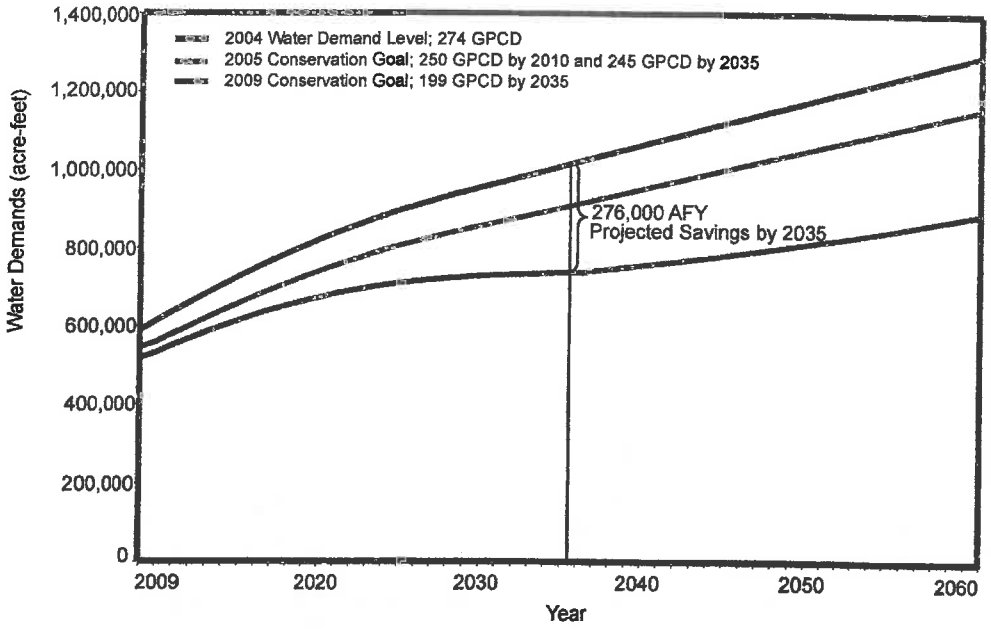


FIGURE 25 – SNWA Annual Demand Forecast*

Year	2010	2015	2020	2025	2030	2035
Demand	553	631	684	717	732	739

**Potable and Non-Potable voumes in thousands of acre-feet. Excludes Fort Mohave Generating Station Water Demands*

Colorado River Water and Las Vegas Valley Groundwater

To meet demands over the planning horizon, the SNWA intends to utilize a combination of Colorado River and groundwater resources. As discussed in Chapter 2, these include Nevada's basic consumptive-use apportionment of Colorado River water, return-flow credits, Las Vegas Valley groundwater rights, reclaimed water and unused Nevada Colorado River water. Figure 26 depicts these resources, as well as the updated demand forecast.

Nevada's Basic Apportionment and Return-Flow Credits

Nevada's basic Colorado River consumptive-use apportionment and associated return-flow credits is the first resource priority for use. Nevada is allocated 300,000 acre-feet of Colorado River water for consumptive use each year. When combined with return-flow credits, this allocation allows Southern Nevada to divert more than 300,000 acre-feet of water from the river annually. As the largest renewable resource in the SNWA portfolio, Nevada's basic Colorado River allocation and return-flow credits will be used throughout the planning horizon.

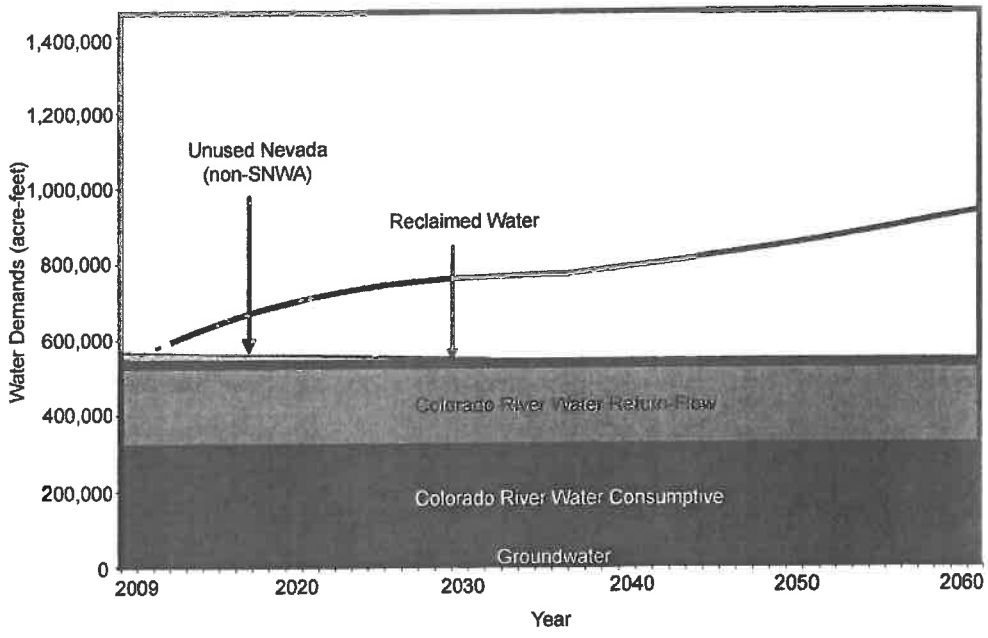
Las Vegas Valley Groundwater Rights

As its next priority, the SNWA will use a total of 46,340 acre-feet of permanent groundwater rights in the Las Vegas Valley each year to meet demands throughout the planning horizon. These groundwater rights are not only a fundamental resource, but also a critical tool to manage peak summer demands for municipal purveyors in the Las Vegas area.

Reclaimed Water

In addition to return-flow credits, Southern Nevada reuses a portion of its highly treated wastewater through direct reuse. This ensures maximum use of resources, including Colorado River and groundwater resources that are being used to meet the SNWA's water needs. As with Nevada's consumptive-use

FIGURE 26 – Water Demand Projections and Current Resources



apportionment and Las Vegas Valley groundwater rights, the SNWA will utilize reclaimed water throughout the planning horizon.

Unused Nevada Colorado River Water
Under existing contracts with the Secretary of the Interior, the SNWA has the right to utilize unused Nevada Colorado River water. In recent years, a portion of Nevada's Colorado River allocation that was contracted to other Nevada users has been unused. The SNWA may use this water to meet demands as appropriate. However, this water is expected to gradually decline in the long-term.

MEETING FUTURE DEMANDS

In addition to the resources just described, the following options are anticipated for use to meet water demands from 2009 through 2060.

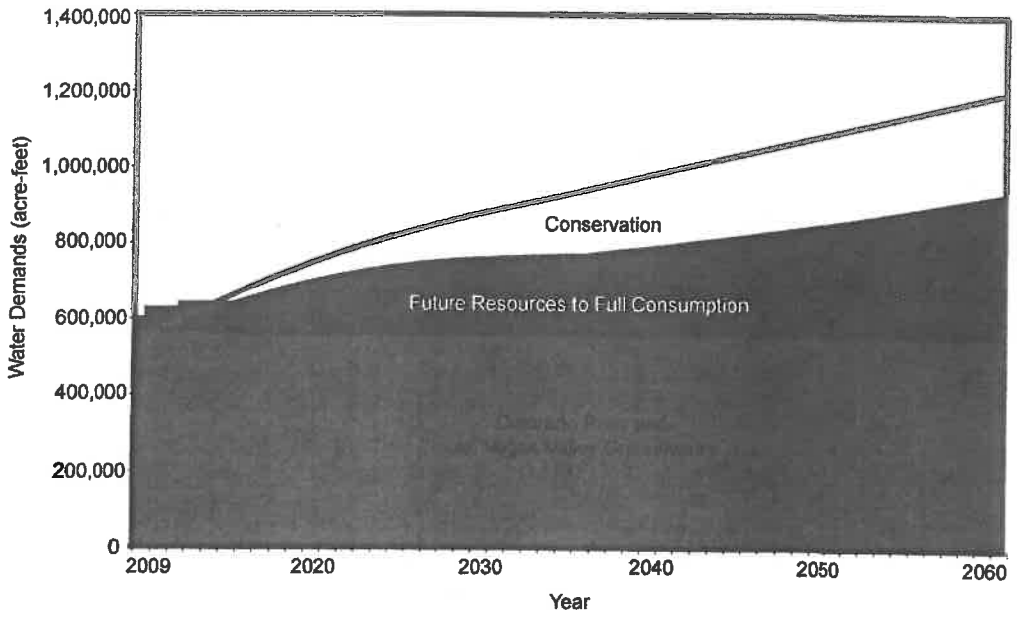
Conservation
As discussed in Chapter 2, achieving Southern Nevada's conservation goal is critical to meeting demands across the planning horizon. Figure 27 illustrates the amount of conservation projected to be achieved and the additional resources needed to meet future demands through 2060. The 2009 Water Resource Plan anticipates that conservation will save the community approximately 276,000 AFY by the year 2035.

Flood Control Surplus and Domestic Surplus
As noted in previous chapters, drought conditions on the Colorado River have affected storage on the river system and thus the availability of flood control surplus and domestic surplus water. The SNWA does not anticipate that flood control surplus or domestic surplus Colorado River water will be available in the near future, and does not include it as a resource available to meet future demands. If flood control surplus or domestic surplus water becomes available under the Interim Guidelines through 2026, these resources will be used to the fullest extent possible.

Intentionally Created Surplus
As discussed in Chapter 2, the SNWA anticipates developing ICS credits as discussed below.

Muddy River/Virgin River Tributary Conservation ICS.
The SNWA began using its pre-Boulder Canyon Project Act rights on the Muddy River in 2008. These

FIGURE 27 – Summary of Projected Water Demands and Water Resources



rights will be used in subsequent years and will be utilized to their full consumptive use volume through ICS. For planning purposes, it is anticipated that 30,000 AFY of these rights will be acquired and used to create ICS; however, more than 30,000 AFY may be acquired and used to create ICS in the future.

Coyote Spring Valley Groundwater Imported ICS. The SNWA is constructing a pipeline and facilities to convey its 9,000 AFY of Coyote Spring groundwater rights to the Muddy River and Lake Mead. The project is scheduled to be completed in 2010. These rights will be utilized to their full consumptive use volume through Imported ICS.

Drop 2 Reservoir System Efficiency ICS. The SNWA anticipates using 400,000 acre-feet of water generated by its financial contributions toward the construction of the Drop 2 reservoir project. A maximum of 40,000 AFY is available for recovery during normal conditions. Based on the Drop 2 agreement, the SNWA is limited to a cumulative use of 100,000 acre-feet from 2011 to 2015. The SNWA estimates that this resource could be fully exhausted by 2027.

In-State Groundwater

In-state groundwater resources are long-term, permanent resources that the SNWA will develop over time and manage in conjunction with its Colorado River water supplies. In-state groundwater resources are comprised of rights and applications for groundwater as discussed in Chapter 2, including existing groundwater rights from Three Lakes Valleys (North and South) and Tikaboo Valley South, and existing rights and applications associated with the Clark, Lincoln and White Pine Counties Groundwater Development Project. While many of the water resources associated with the project have been quantified, final project volumes remain uncertain because the SNWA still has applications pending consideration by the Nevada State Engineer.

The resource scenario presented in Figure 28 reflects the development of 134,000 AFY of groundwater associated with the Clark, Lincoln and White Pine Counties Groundwater Development Project. This amount represents the expected volume to be developed based on existing groundwater rights in Spring, Delamar, Dry Lake and Cave valleys, as well as the full volume of applications in Snake Valley that have not yet been acted upon by the Nevada State Engineer. This scenario also assumes the development of 8,018 AFY associated with permitted rights in Three Lakes Valleys (North and South) and Tikaboo Valley South. Current and possible future conditions in the Colorado River necessitate priority development of these resources to protect the community from drought and shortage impacts, and meet future demands.

Full Consumptive Use/Reclaimed In-State Water

As described in Chapter 2, the SNWA currently reclaims all of its wastewater through direct reuse or return-flow credits. Nevada's return-flow credit methodology acknowledges the diverse nature of SNWA's resource portfolio and provides Southern Nevada a method for accounting for future imports of Nevada in-state water to be consumptively used. This will increase the yield of the in-state groundwater imported to the Las Vegas Valley by approximately 70 percent. Figure 28 reflects this increased yield through the full consumption of these in-state resources.

Banked Resources

As discussed in Chapter 4, the SNWA does not anticipate the use of banked resources in the near-term planning horizon (2009-2024). While these resources are available for use if needed to meet short-term gaps between supply availability and demand, banked resources provide a critical tool for the SNWA to meet demands during shortage.

The amount and timing of banked resources that the SNWA ultimately uses will depend on the extent to which conservation continues to be effective in meeting demands, along with the progress achieved by the SNWA in its ongoing development of in-state groundwater resources. The SNWA projects utilizing up to 40,000 AFY of banked resources in Arizona beginning in 2025 until other permanent resources, such as in-state groundwater and Colorado River augmentation (below) are fully developed.

Colorado River Augmentation

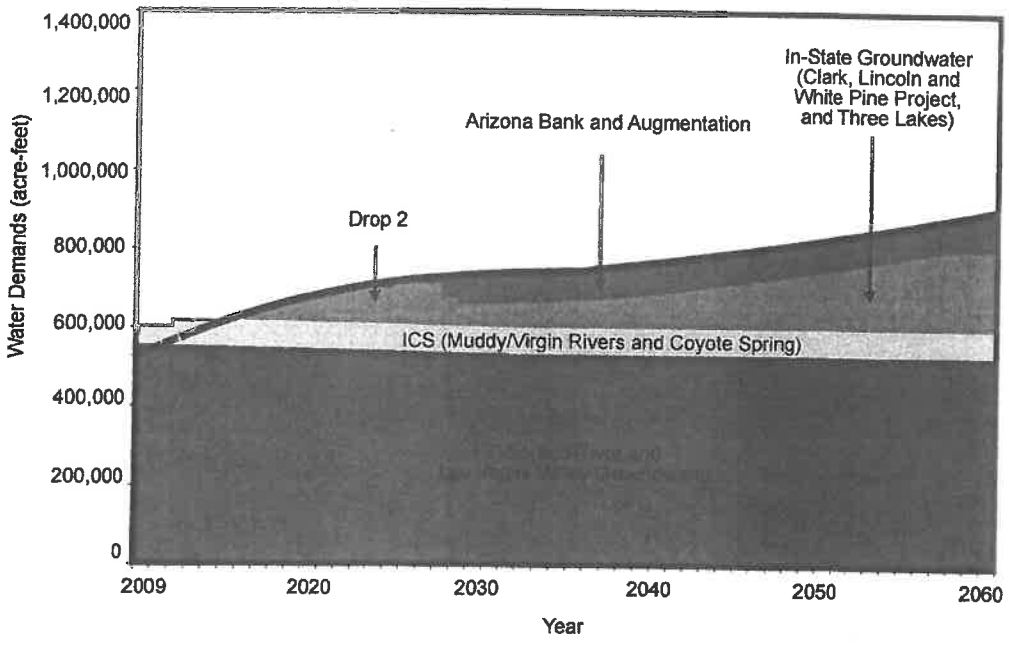
As described in Chapter 2, the other Basin States have committed to working with Nevada to develop additional permanent supplies through system augmentation projects in exchange for deferring development of SNWA's 1994 Virgin River rights. The 2009 Water Resource Plan reflects the consumptive use of up to 75,000 AFY anticipated to be available from future Colorado River augmentation projects. Augmentation is expected to replace banked resources when exhausted.

CONCLUSION

Based on current conditions, the SNWA has sufficient resources available or under development to meet water demands through the year 2060. Beyond continued conservation, Nevada's basic apportionment and Las Vegas Valley groundwater rights, the highest priority resources to meet demands will be development of ICS, in-state groundwater and non-Colorado River resources. When necessary, banked reserves and other temporary resources will be used to bridge demands while the SNWA brings other permanent in-state groundwater resources on-line.

As discussed in Chapter 2, several factors may affect the timing of when and how resources are brought on-line, including future agreements, cost and environmental concerns (see Chapter 5). As a result, having a portfolio of options permitted, under development or being pursued gives the SNWA the ability to adjust some resources if other resources are delayed or revised, or if demands decrease. Likewise, if options such as transfers or exchanges become a reality sooner rather than later, other options in the SNWA water resource portfolio may be given lower priority for development. As the SNWA continues its resource planning efforts, the outlook for future demands will be examined as part of the annual resource planning process and adjusted accordingly.

FIGURE 28 – Projected Water Demands and Future Resources (under normal Colorado River conditions)



CHAPTER 4

Meeting Demands During Shortage

From 2000 to 2004, the Colorado River Basin experienced the most severe 5-year drought in recorded flows on the Colorado River. This extreme drought has been followed by recent years of average and below average Colorado River in-flows.

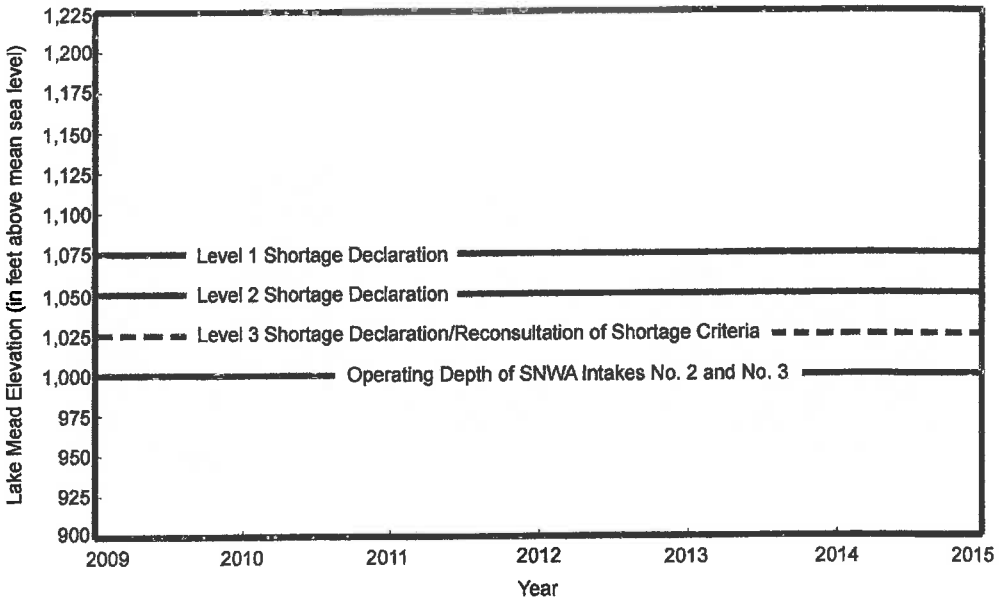
As a result, the water stored in Lake Mead and Lake Powell has declined to 52 percent of the total combined capacity. In early 2009, the surface elevation of Lake Mead was at 1,111 feet, down approximately 100 feet since the late 1990s.

These drought conditions may continue in the future, or may be further aggravated by the effects of climate change, which are not yet fully understood. For the SNWA, there are two primary consequences of continued declines in Lake Mead water levels: possible reduction of available Colorado River supplies and operating challenges associated with water intake facilities at Lake Mead.

This chapter describes how Colorado River shortages will be managed; the resources available to the SNWA during shortage; and what measures will be taken to ensure sufficient water resources are available to the SNWA in the event of supply reductions.

As described in Chapter 2, the Secretary of the Interior's Record of Decision on Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead established shortage levels based on Lake Mead elevation (Figure 29). Based on these levels, and according to the shortage sharing agreement

FIGURE 29 – Shortage Declarations



between Nevada and Arizona (Figure 30), the SNWA will incur shortages when Lake Mead water levels drop below 1,075 feet. The volume of water available to Nevada and Arizona decreases as lake levels continue to decline. If Lake Mead reaches an elevation of 1,025 feet, the lower division states of Arizona, Nevada, and California will re-consult with the Secretary of the Interior to determine what additional measures are necessary to minimize further declines in Lake Mead elevation and preserve Lower Basin States' access to Colorado River water.

Figure 30 – Nevada Share of Shortage

Lake Mead Water Level	Nevada Shortage	Arizona Shortage
1,075 - 1,050 ft.	13,000 afy	320,000 afy
1,050 - 1,025 ft.	17,000 afy	400,000 afy
Below 1,025 ft.	20,000 afy	480,000 afy
	Reconsultation	

As detailed in Chapter 3, the SNWA has a number of water resource options available for use under normal (non-shortage) conditions. However, many of these resources depend on the operation of existing and planned water intake facilities at Lake Mead. As a result, the community's ability to utilize these resources may be diminished as lake levels decline. To this end, the SNWA committed to sharing in Colorado River shortages to maintain Lake Mead surface elevations at or above 1,000 feet – the operational level of SNWA's lower intake facilities.

SHORTAGE RESPONSE

As outlined in Figure 30, reductions to Southern Nevada's Colorado River consumptive-use apportionment could reach 20,000 AFY when Lake Mead water levels are above 1,000 feet. Analysis of Colorado River Basin uses and inflow indicate a 1 percent probability that Lake Mead will reach an elevation of 1,075 feet by 2011 and 1,025 feet by 2014.

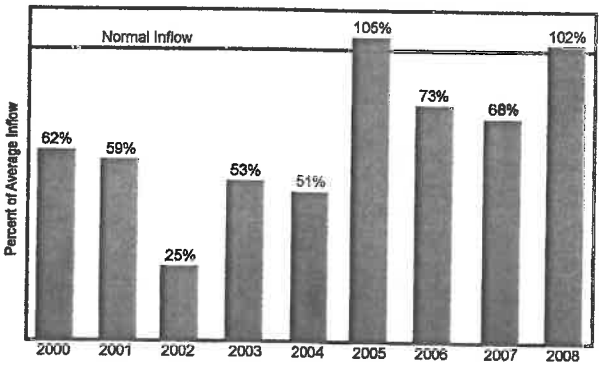
Figure 31 (page 46) displays one possible scenario for how the SNWA would adjust its water planning efforts to accommodate a long-term shortage through the year 2026.

The SNWA would continue to utilize tributary conservation and imported ICS water (Muddy/Virgin rivers and Coyote Spring Valley resources), but would be required to forego use of its System Efficiency ICS water (Drop 2 Storage Reservoir), which is restricted from use during a declared shortage. To bridge this gap, the SNWA could utilize temporary resources, including banked water supplies, until in-state groundwater is brought on-line.

SEVERE SHORTAGE RESPONSE

Between 2000 and 2008, the 9-year average historical inflow to Lake Powell was 66 percent of normal (Figure 32).

Figure 32 – Historical Lake Powell Annual Inflows



According to modeling conducted by the Bureau of Reclamation, with an average runoff of 69 percent of normal for the next six years (2009-2014), Lake Mead elevation could decline to 1,000 feet in as early as 2015. This elevation impairs the operational capability of SNWA intakes (Figure 33). Even more severe conditions, such as those experienced between 2000 and 2004 (50 percent of average) could cause Lake Mead water levels to decline even faster. In either case, water levels below 1,000 feet would impair SNWA's ability to access Colorado River water resources.

Figure 31 – Meeting Demands During Declared Shortage Conditions

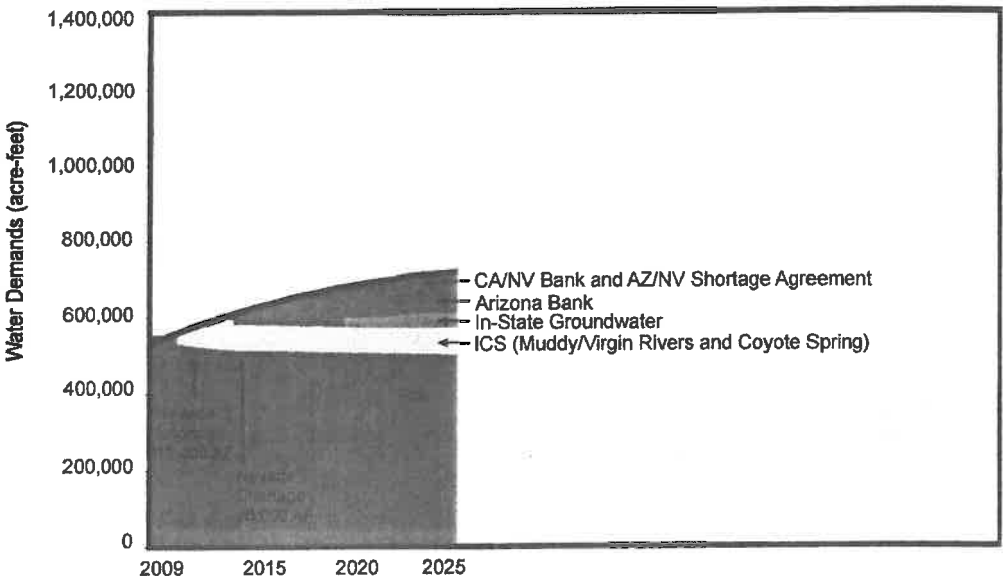
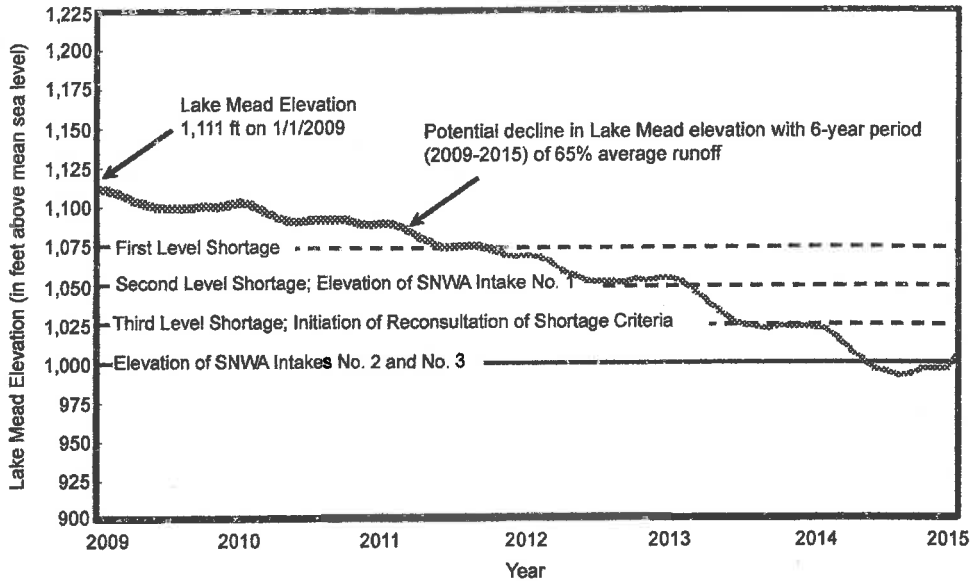


Figure 33 – Impacts to Lake Mead Intakes with Six Year Period of 65 Percent Average Runoff



The following section outlines SNWA's planned response to a "severe shortage." This response is intended to protect the SNWA by offsetting possible impacts of supply reductions and ensuring that sufficient resources are available to the community should the elevation of Lake Mead decline below 1,000 feet, the operational limit of SNWA's current and planned intake facilities.

A staged response, as detailed below, will occur based on Lake Mead water levels:

- 1,075 to 1,025 feet
- 1,025 to 1,000 feet
- Below 1,000 feet

Lake Mead Elevation 1,075 to 1,025 feet

Facility Construction. To preserve the lead time required to construct the Clark, Lincoln and White Pine Counties Groundwater Development Project, the SNWA will take the steps necessary to begin project construction when Lake Mead reaches a surface elevation of 1,075 feet; these resources are currently planned for use in 2020 under normal, non-shortage conditions.

Demand Management Assessment. The SNWA will also examine additional demand-management needs over and above existing water conservation goals and annual targets, as discussed in Chapter 2.

It is important to note that arbitrarily reducing water demands beyond those levels currently defined will not have a measurable benefit to Lake Mead water levels -- Nevada's Colorado River allocation represents approximately two percent of the recorded total average system flow. As an example, 100,000 acre-feet in Lake Mead is equivalent to about 1 foot of elevation. Evaporation on Lake Mead alone exceeds this amount by two to four times, depending on surface elevation. However, additional conservation will help extend the use of Nevada's existing supplies if severe shortages occur.

Lake Mead Elevation 1,025 to 1,000 feet

Reconsultation. In accordance with the Secretary of the Interior's 2007 Record of Decision, the Colorado River Basin states will re-consult on Colorado River management strategies when Lake Mead reaches a surface elevation of 1,025 feet and shortage volumes have the potential to exceed 500,000 AFY. Parties will work together to determine what measures can be employed to protect a Lake Mead surface elevation above 1,000 feet.

Demand Management. The SNWA will implement additional mandatory demand management tools defined by earlier assessment. These additional water saving measures will help to maximize the availability of existing supplies and new in-state supplies, when available.

Contingency Assessment. The SNWA will assess options for continued access to Colorado River resources in the event that Lake Mead intakes become inoperable. This includes examining the potential for temporary infrastructure to extend the operational capabilities of SNWA's intakes in Lake Mead to pump water below 1,000 feet into existing water intakes.

Lake Mead Elevation Below 1,000 feet

In the unlikely event that Lake Mead water levels reach a depth below 1,000 feet, the SNWA will have a significantly limited ability to withdraw its Colorado River apportionment, as well as other water supplies accessed through Lake Mead, including return-flow credits, ICS resources (Muddy/Virgin rivers and Coyote Spring), and banked resources such as the Arizona and California water banks.

Restrict Non-Essential Water Use. The SNWA will maximize in-state and locally banked resources when Lake Mead reaches 1,000 feet by restricting non-essential water uses. Doing so will ensure that critical supplies are preserved for health and safety uses.

Figure 34 provides a summary of these actions, as well as triggers associated with Lake Mead water levels.

Figure 34 – Severe Shortage Plan

Lake Mead Elevation	Goal	Action
1,075 to 1,025 ft.	Preserve lead time for new facility development.	Construct Clark, Lincoln and White Pine Counties Groundwater Development Project. Examine demand-management needs over and above existing conservation goals/annual targets.
1,025 to 1,000 ft.	Preserve Lake Mead elevation of 1,000 ft.	Reconsult with the Secretary of the Interior and Basin States on additional Colorado River shortage management strategies. Implement additional demand-management measures through mandatory policies to offset further Colorado River Basin supply shortages. Examine potential for temporary infrastructure to extend the operational capabilities of SNWA's intakes in Lake Mead.
Below 1,000 ft.	Preserve water supply for health and safety uses.	Maximize use of available groundwater supplies (Southern Nevada Groundwater Bank and in-state resources). Significantly limit non-essential uses.

CONCLUSION

Water managers throughout the West recognize that even if Colorado River system inflows consistently return to pre-drought levels, it will take several years of above-average runoff for system reservoirs to fully recover. Likewise, if drought conditions continue to persist, further declines to storage will occur, possibly resulting in shortages due to reduced water storage. Given the current elevation of Lake Mead, one exceptionally dry year – such as that experienced in 2002 (25 percent of average inflow) – could have a significant effect on area reservoirs.

To this end, the greatest protection the community has against further Lake Mead water level decline is development of in-state groundwater resources. Additional water conservation will also play a critical role by helping to reduce demands, but conservation alone will not provide sufficient protection to completely replace those supplies lost if access to Lake Mead is interrupted or otherwise significantly reduced.

To mitigate any possible supply reductions, the SNWA will utilize banked water resources to meet near-term community water demands during times of declared shortage or severe shortage. The SNWA must complete necessary permitting activities and construct in-state water facilities, as dictated by Colorado River hydrology, implement appropriate water demand management tools to extend available supplies during times of severe shortages and investigate alternatives for Colorado River access.

The SNWA will closely monitor drought conditions throughout the Colorado River Basin and enact the appropriate response necessary to help protect the community from possible supply reductions. While the SNWA Water Resource Plan is reviewed annually, a detailed assessment of Colorado River conditions will occur regularly to inform community response.

In the event Lake Mead water levels decline rapidly, the SNWA will take appropriate and measurable actions to ensure that sufficient resources are available to preserve essential municipal water supplies.

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CHAPTER 5

Environmental Commitment

To support its resource planning and facility expansion activities, the SNWA began to participate in a number of environmental initiatives and coalitions in the mid-1990s, taking a proactive and integrated approach to water resource management.

The SNWA's commitment to environmental responsibility typically goes beyond the steps necessary to ensure compliance with applicable regulations or statutes. Efforts have included the support of research and recovery activities related to federally endangered fish, birds and wildlife; involvement in broader regional programs that address issues such as habitat conservation and water quality; and financial and staff support for environmental research and studies.

As part of its long-term resource planning, the SNWA is working with various stakeholders in the region to address environmental issues and concerns through regional planning programs. Some of these programs form the basis for compliance with appropriate environmental laws and regulations.

The following sections briefly describe the SNWA's environmental initiatives – planning, compliance and environmental commitments – related to SNWA's water resource portfolio.

COLORADO RIVER

The majority of water used in Southern Nevada comes from the Colorado River, making Colorado River environmental issues among the most important to the SNWA. Alterations along the river have affected its ecosystems in both the United States and Mexico. Native fish, birds and other wildlife species have been listed by the U.S. Fish and Wildlife Service (USFWS) under the federal Endangered Species Act (ESA) as threatened and endangered. Riparian, wetland and aquatic habitats have been reduced and/or modified. These environmental issues have the potential to directly affect the SNWA's ability to construct necessary facilities and continue withdrawing water from the river.

Lower Colorado River Multi-Species Conservation Program

In 1994, major portions of the Colorado River were designated as critical habitat for four endangered fish. The four federally-listed endangered fish are the razorback sucker (Xyrauchen texanus), bonytail (Gila elegans), humpback chub (Gila cypha) and Colorado pikeminnow (Ptychocheilus lucius). The 1994 critical habitat designation meant that federal agencies had to consider not just potential project impacts on endangered fish, but also potential impacts on the habitat as well. This requires all federal agencies to consult with the USFWS under the ESA for most actions on the river, including the operation of existing facilities.

As a result of the critical habitat designation, Arizona, California, Nevada and the Department of Interior began developing the Lower Colorado River Multi-Species Conservation Program (MSCP) in 1994 and completed program development in 2004. The goal of the MSCP is to implement a coordinated conservation strategy that will permit federal and non-federal operations in the Lower Colorado River to continue with flexibility, while working toward the

recovery of listed species. A Steering Committee of stakeholders, including the SNWA, oversees program implementation, which will provide ESA compliance for federal and non-federal operations on the Lower Colorado River for the next 50 years.

Implementation of the program began in 2005 and is estimated to cost $626 million (in 2003 dollars) over the 50-year life of the program. The Bureau of Reclamation will provide 50 percent of the program funding with the remaining 50 percent to be split between the three Lower Basin States (California – 50 percent, Nevada – 25 percent, Arizona – 25 percent). The MSCP Steering Committee meets three times a year to discuss and approve action items for the MSCP. The Steering Committee has 56 members including federal agencies, state agencies, Indian tribes, and interested conservation organizations. The Bureau of Reclamation is currently pursuing more than 60 restoration and research projects as part of the Fiscal Year 2009 Work Plan.

Some of the MSCP projects currently underway in Nevada include razorback sucker studies on Lake Mead and southwestern willow flycatcher surveys along the Virgin and Muddy rivers. In December 2005, the SNWA purchased the Boy Scout Property in Laughlin, Nevada, a 15-acre property located along the Colorado River and surrounded by Big Bend State Park. In October 2008, the MSCP Steering Committee agreed to fund restoration of the property. The SNWA is currently working with Nevada State Parks, Nevada Department of Wildlife and the Bureau of Reclamation to develop a restoration plan.

In addition to the MSCP, the SNWA participates in species-specific research and conservation efforts related to Nevada's Colorado River resource. The information gained from these activities has proven instrumental to ensuring the best available information is utilized in making critical decisions concerning water resources and species conservation.

Colorado River Delta

Historically, the Colorado River Delta (Delta) in Mexico sustained significant wetland and estuarine ecosystems that support a diverse array of plant and animal species including several that are listed as endangered in both the U.S. and Mexico. During the last century, the construction of dams, and subsequent diversion of water from the Colorado River in the U.S. and Mexico to support agricultural and urban uses, reduced water and sediment flows to the Delta. This contributed to a substantial reduction of riparian and wetland areas in the Delta from pre-dam levels and resulted in listing of several species as endangered. Many environmental organizations have advocated increased water flows and changed management of the river flows to improve and restore more of the Delta ecosystem.

The SNWA participates in a bi-national process formed by the United States and Mexico International Boundary and Water Commissions. This process includes bi-national efforts to explore potential cooperative actions in the areas of water conservation, new water sources, environmental issues and system operations.

Continued drought and increased demands for Colorado River water resources will likely increase the complexity of Colorado River Delta issues.

Las Vegas Wash and Lake Mead

The Las Vegas Wash (Wash) plays an important role in the environmental and water-resource issues facing Southern Nevada. The Wash is the primary drainage channel for all stormwater flows, surface runoff, highly-treated wastewater flows and shallow groundwater flows in the Las Vegas Valley. These flows represent less than 2 percent of the flow into Lake Mead, but are an important component since they contribute to return-flow credits associated with Nevada's Colorado River allocation. Historically, wetlands to the Wash have served to remove pollutants and suspended solids as urban flows pass into the Colorado River system. However, since the 1970s, erosion and head-cutting have dramatically reduced the amount of wetlands in the Wash, leading to

increased sedimentation into Lake Mead, habitat loss and water quality concerns.

In 1998, the Las Vegas Wash Coordination Committee (Coordination Committee) was formed to address the many issues associated with the Wash. The Coordination Committee consists of 30 member entities, representing federal, state and local agencies, organizations and citizens. In 1999, the Coordination Committee completed the Las Vegas Wash Comprehensive Adaptive Management Plan, which provides a comprehensive set of management actions for stabilizing and enhancing the Wash. Implementing these actions are needed to improve water quality and protect the valley's watershed. Erosion control, environmental monitoring, and wetlands restoration and enhancement are key priorities. The plan was adopted by the SNWA Board of Directors in 2000.

Later that year, the SNWA was designated the lead agency for the implementation of the Las Vegas Wash Comprehensive Adaptive Management Plan and established the Las Vegas Wash Project Coordination Team to provide administrative and technical support to the Coordination Committee. Since its inception, the Coordination Committee and its partners have constructed eleven grade control structures, installed roughly 40,000 linear feet of stream bank protection, conducted bioassessment monitoring as well as water quality and tributary monitoring, implemented a variety of fish and wildlife surveys, revegetated more than 195 acres with native plants, and performed archaeological investigations. These efforts have resulted in a nearly 80 percent total sediment reduction, improving water quality in both the Wash and Lake Mead.

The Clean Water Coalition (CWC), comprised of the City of Las Vegas, City of North Las Vegas, City of Henderson and Clark County Water Reclamation District, has been studying alternatives to the discharge of treated effluent in the Wash for several years, known as the Systems Conveyance and Operations Program (SCOP). In 2002, the CWC formed a citizens advisory committee to address alternatives to protect water quality in the Wash and Las Vegas Bay of Lake Mead so that conditions do not degrade or result in regulatory action. In February 2004, the committee's recommendations were approved by the CWC Board. A Final EIS for the SCOP was completed in October 2006 and Records of Decision from both the National Park Service and Bureau of Reclamation were issued on July 5 and July 9, 2007, respectively.

Given the nexus between water and wastewater in Southern Nevada, the SNWA is working closely with the CWC to coordinate various activities. In January 2007, the SNWA entered into a Memorandum of Understanding (MOU) with the CWC, National Park Service and Bureau of Reclamation committing to participate in the development and implementation of the Boulder Basin Adaptive Management Plan (BBAMP). A subsequent MOU was approved that included a representative from the Metropolitan Water District of Southern California as a member of the Technical Coordination Team for the BBAMP. In September 2007, the USFWS was added as a participant in the BBAMP.

The BBAMP will:

1. Establish management objectives regarding water quality, nutrient management and recreational uses;
2. Establish procedures for and undertake water quality monitoring and analysis of the data;
3. Develop management indices and decision making processes to address areas of concern;
4. Develop an annual operation and management action plan; and
5. Establish a core management team to oversee and manage the BBAMP.

Four Technical Advisory Teams have been established, which include:

- Water Quality Objectives
- Monitor and Modeling
- Selenium Management
- Plant Operations

Las Vegas Valley Watershed Advisory Committee
In May 2007, SNWA adopted a resolution supporting the establishment of regional water quality goals and the development of a regional water quality committee. In support of this effort and in coordination with several regional partners, the Las Vegas Valley Watershed Advisory Committee (LVVWAC) was created. LVVWAC is comprised of the following agencies:

- Clean Water Coalition
- Clark County
- Clark County Regional Flood Control District
- Clark County Water Reclamation District
- City of Henderson
- City of Las Vegas
- City of North Las Vegas
- Las Vegas Valley Water District
- Southern Nevada Water Authority

Through its mission, the LVVWAC works to protect, preserve and enhance the quality and quantity of water resources in the Las Vegas Valley watershed and to sustain economic well-being and protect the environment for present and future generations. Another important charge of the LVVWAC is coordinating management decisions associated with the Las Vegas Wash.

A major accomplishment of the LVVWAC was the development of a Regional Water Quality Plan (Plan) in 2008. The Plan represents a demonstrated effort among agencies in Southern Nevada to coordinate all existing plans, policies, documents and efforts related to water quality in the Las Vegas Valley watershed and Lake Mead. The Plan identifies seven goals and associated strategies that work to protect the overall water quality of the Las Vegas Valley watershed, while also working to protect the watershed's resources, uses and values.

LVVWAC Regional Water Quality Goals include:

1. Protect Lake Mead as a source of water for Southern Nevada and downstream users.
2. Meet or surpass federal, state and local standards and regulations.
3. Preserve and enhance the natural, cultural, historic and recreational values for the watershed and Lake Mead.
4. Coordinate water resource management.
5. Manage flood risks.
6. Sustain water and energy resources for future generations.
7. Build community awareness and support for regional watershed management.

The regional member agencies of the LVVWAC (CWC, Clark County Regional Flood Control District and SNWA) have began developing Annual Operating Plans that detail operational-level tactics to achieve the water quality goals adopted in the plan.

MUDDY RIVER AND COYOTE SPRING VALLEY

As noted in Chapter 2, the SNWA has Muddy River surface water rights and Coyote Spring groundwater rights. This section describes the environmental initiatives underway with respect to the development of these resources. The Interim Guidelines include provisions that will allow the SNWA to recover Muddy River water rights it owns or leases that pre-date the Boulder Canyon Project Act and its Coyote Spring Valley groundwater rights as Intentionally Created Surplus (ICS) from Lake Mead through existing infrastructure. The mainstem Muddy River tributaries and springs of the upper Muddy River provide habitat for several fish species that are considered rare and sensitive. The Muddy River and the Warm Springs area are home to the endangered Moapa dace (Moapa coriacea) as well as species of concern, which include the Moapa White River springfish (Crenichthys baileyi moapae), the Moapa speckled dace (Rhinichthys osculus moapae), and the Virgin River chub (Gila seminuda).

The USFWS manages the Moapa Valley National Wildlife Refuge (MVNWR) in this area for conservation of the Moapa dace, as well as additional sensitive species on the river including three fish, two snails and two insect species. Conservation of the Muddy River species is a priority for local, state and federal agencies.

In April 2006, the SNWA approved a Memorandum of Agreement (MOA) among the USFWS, Coyote Springs Investment, LLC (CSI), Moapa Band of Paiutes (Tribe), Moapa Valley Water District (MVWD) and the SNWA, which establishes a plan for monitoring, management and mitigation that allows for groundwater development in Coyote Spring Valley and California Wash groundwater basins, while simultaneously working to protect and recover the Moapa dace. The MOA is also the subject of a Programmatic Biological Opinion that covers a total of 16,100 AFY of groundwater development. The 16,100 AFY includes 9,000 AFY by the SNWA in Coyote Spring Valley; 4,600 AFY by CSI in Coyote Spring Valley; and 2,500 AFY by the Tribe in California Wash.

The MOA and Programmatic Biological Opinion specify conservation measures to be implemented by the signatories. In 2007, the SNWA Board of Directors approved an agreement with USFWS to implement the following conservation measures:

- Construction of fish barriers in the Muddy River. The SNWA will contribute $50,000 towards construction of fish barriers.
- Eradication of non-native fishes. The SNWA will provide $25,000 to help eradicate tilapia and other non-native fishes on privately-owned lands in the area.
- Improvement/restoration of Moapa dace habitat on the Apcar Unit of the MVNWR. The SNWA will provide $750,000 to implement non-native vegetation removal and stream restoration within the Apcar Unit of MVNWR.
- Development of a Recovery Implementation Program. The SNWA will provide $300,000 towards development of a recovery program that will prioritize and identify implementation of recovery measures for the Moapa dace.
- Development of an Ecological Model. The SNWA and USFWS will provide $125,000 each for development of an ecological model for the Moapa dace. It is anticipated that the U.S. Geological Survey will develop the ecological model under contract with the USFWS.
- Establishment of a Hydrologic Review Team (HRT). The signatories to the MOA formed the HRT to develop and coordinate regional monitoring efforts of the groundwater pumping proposed under the MOA. The HRT members discuss and perform analyses of groundwater pumping effects and natural climatic variation on the Muddy River and Muddy Springs.

Muddy River Recovery Implementation Program

Development of the Muddy River Recovery Implementation Program (RIP) was identified in the Programmatic Biological Opinion. The purpose of the RIP is to provide a comprehensive umbrella ESA program for water resource management in the Coyote Spring Valley, as well as the Warm Springs and Muddy River areas, while working toward recovery of listed species and identifying opportunities for sensitive species and their habitat. The RIP Executive Committee is comprised of the SNWA, USFWS, CSI, the Tribe, and MVWD. The RIP geographic program area extends from the upper Muddy River to Lake Mead.

The RIP is expected to be completed in mid-2009 and program implementation will begin shortly thereafter. When the RIP is finalized, SNWA and the Executive Committee members will be able to undertake restoration actions that contribute toward the recovery of listed species. The restoration actions will contribute to a species recovery bank and can be utilized as credit toward future water development actions requiring ESA compliance.

Warm Springs Natural Area

In February 2006, the Secretary of the Interior approved funding through the Southern Nevada Public Lands Management Act (SNPLMA) for SNWA to purchase 1,218 acres of land historically known as the Warm Springs Ranch, located in the Moapa Valley. In July 2006, the SNWA Board approved a purchase agreement for the property located in the Moapa Valley, and completed the purchase in 2007. Because that funding was secured under the SNPLMA "Parks, Trails and Natural Areas" category, SNWA committed to protect and preserve the property as a natural

area. SNWA began convening cooperators to identify long-term management priorities and renamed the property the "Warm Springs Natural Area."

By purchasing the property, the SNWA was able to protect the majority of the endangered Moapa dace population and its habitat, and prevent the property from being developed for residential purposes. By protecting the Moapa dace and its habitat, the SNWA can responsibly move forward with development of SNWA's water resources in the Muddy River and Coyote Spring areas.

The Warm Springs Natural Area and the Moapa Valley National Wildlife Refuge encompass about 20 springs that form the headwaters of the Muddy River. The springs and their outflows onto the Warm Springs Natural Area are home to the majority of the Moapa dace population. A total of 18 endangered, sensitive and endemic species are found on the Warm Springs Natural Area. In addition, the property has the largest breeding population of vermillion flycatchers in Nevada.

Although the primary purpose is to manage the property for the protection of the Moapa dace, the SNWA committed to manage the entire property as a natural area and develop a long-term management plan. SNWA also committed to manage the property in close coordination with the Moapa Valley National Wildlife Refuge and the Nature Conservancy Muddy River property.

VIRGIN RIVER

As noted in Chapter 2, the SNWA has water rights in the Virgin River. The Secretary of the Interior's Interim Guidelines include provisions that will allow the SNWA to recover its Virgin River rights that pre-date the effective date of the 1928 Boulder Canyon Projects Act as ICS through existing facilities in Lake Mead. This section describes the environmental initiatives currently underway with respect to these resources.

The SNWA has been involved in environmental studies on the Virgin River since 1993. In fact, much of the available biological information concerning the lower Virgin River has been collected as a result of efforts by the SNWA. This includes population and habitat surveys for fish, birds, mammals, amphibians and sensitive plants. The SNWA participates in a number of environmental stakeholder forums involving the upper and lower Virgin River. For example, the SNWA has been a member of the Virgin River Fishes Recovery Team since 1994.

The Virgin River is one of the largest riparian corridors in the desert southwest and is home to the federally endangered woundfin (Plagopterus argentissimus), Virgin River chub, southwestern willow flycatcher (Empidonax traillii extimus) and Yuma clapper rail (Rallus longirostris yumanensis), and the candidate species yellow-billed cuckoo (Coccyzus americanna) and Virgin River spinedace (Lepidomeda mollispinis mollispinis). There are more than 200 other species of wildlife that also utilize this riparian corridor as a residence or seasonal migration route. Supporting a high level of biodiversity, the Virgin River is regarded by federal and state resource agencies and environmental organizations as an integral component of the desert southwest ecosystem.

In the upper Virgin River, in the State of Utah, federal, state and local agencies and various other stakeholders are implementing the Virgin River Resource Management and Recovery Program. This program provides environmental compliance for water development and flood-control projects by implementing resource-management agreements aimed at recovery of listed species, conservation of native species and protection of the river corridor.

The lower Virgin River in Nevada is increasingly facing similar ESA issues surrounding development pressures and as a result, has been begun a regional environmental planning effort called the Virgin River Habitat Conservation and Recovery Program.

Virgin River Habitat Conservation and Recovery Program

Developing the Virgin River Habitat Conservation and Recovery Program (VRHCRP) was a requirement of the Mesquite Lands Act of 1998. This Act authorized the BLM to sell 10,620 acres of BLM land to the City of Mesquite. The City of Mesquite plans to sell that land to developers and reserve some acreage for an airport.

In October 2002, special legislation as part of the Clark County Conservation of Public Land and Natural Resources Act of 2002 was passed in Congress. The legislation allows the City of Mesquite to use proceeds from the BLM land sale for the development of the VRHCRP and a Hydrological Monitoring and Mitigation Program (HMMP). The intention of the HMMP is to address future unknown potential effects of groundwater pumping on the Virgin River. The HMMP is designing a monitoring program and will collect and evaluate data from new and existing groundwater monitoring wells and existing surface water gages. The data will be used to determine a baseline and whether increased groundwater pumping by Virgin Valley Water District (VVWD) is affecting habitat or species along the Virgin River.

The City of Mesquite started development of the VRHCRP in 2004. In 2005, an Executive Committee was formed consisting of the City of Mesquite, SNWA, Clark County, VVWD, National Park Service, Nevada Department of Wildlife and BLM. Technical committees have also been established to provide recommendations to the Executive Committee. The VRHCRP is expected to become final through an implementation agreement in 2009.

In addition to the VRHCRP effort, the Lower Virgin River Recovery Implementation Team is working to develop a conservation action plan for the endangered woundfin and Virgin River chub. This team is also conducting research and implementing interim conservation measures for these listed fish. The Virgin River Conservation Partnership is a stakeholder group composed of federal, state and local agencies working to share information and make recommendations to planning efforts like the VRHCRP. The SNWA is a key participant in these Virgin River environmental efforts to ensure they are coordinated with the development of SNWA's water rights in the Virgin River.

CLARK COUNTY

After the ESA listing of the desert tortoise (Gopherus agassizii) in 1989, local agencies in Clark County recognized the need to address concerns about listed or sensitive species that could affect development in the county.

Clark County Multiple Species Habitat Conservation Plan

Beginning in 1998, the Clark County Multiple Species Habitat Conservation Plan (MSHCP) was developed to address biological resources within Clark County. In addition to the desert tortoise, the program provides ESA coverage for 77 additional species. The key purpose of the MSHCP is to achieve a balance between the conservation and recovery of listed and sensitive species in Clark County and the orderly beneficial use of land in order to meet the needs of the growing population in Clark County. The SNWA actively participates in the MSHCP. The MSHCP serves as an insurance policy to cover future federal listings of species in areas where urban development is taking place.

CLARK, LINCOLN AND WHITE PINE COUNTIES GROUNDWATER

In August 2004, the SNWA applied to the BLM for rights-of-way to construct facilities to develop the Clark, Lincoln and White Pine Counties Groundwater Development Project (GWP) in eastern Nevada. The BLM has determined that it is necessary to prepare an EIS and Biological Assessment (BA) to evaluate the environmental impacts of issuing these rights-of-ways. Public scoping for the EIS was held from April through August 2005, and again from July through August 2006.

The SNWA has submitted a draft Conceptual Plan of Development for the project to the BLM, which describes information such as project

location, construction methods, and operation and maintenance. The SNWA has conducted hydrologic and environmental research in this region since the early 1990s and has provided these data to the BLM for their consideration through the environmental compliance process. Biological information provided includes survey data for bats, small mammals, pygmy rabbits, sage grouse, raptors and ferruginous hawks, breeding birds, sensitive plants, general wildlife, weeds, terrestrial invertebrates and aquatic ecosystems The SNWA has also collected extensive geologic and hydrologic data from published sources, field surveys and studies, and new monitoring and testing wells. A groundwater flow model is being developed from this data as part of the EIS analysis, which will evaluate potential effects of groundwater production on water levels and spring flows. This information will allow SNWA and the BLM to better predict potential impacts from groundwater development and develop hydrologic monitoring and management plans to reduce or avoid impacts.

The EIS will analyze potential effects of the project on the human environment, which includes such resource topics as geology, soils, water, biology, paleontology, geologic hazards, land ownership and use, special use areas, noise, air quality, visual, cultural resources and socioeconomics. It is anticipated that the EIS will be available for public review in late-2009 and completed in late-2010. The BA will analyze potential project effects on federally listed and candidate species, and will be submitted to the USFWS late-2009

As noted in previous chapters, the SNWA entered into a stipulated agreement with the USFWS, National Park Service, BLM and Bureau of Indian Affairs (Department of Interior Agencies) to work together to protect the Great Basin National Park and the groundwater dependent ecosystems in Spring Valley. The stipulation establishes an Executive Committee, a Biological Work Group and a Technical Review Panel to develop and implement monitoring, management and mitigation measures. Both Hydrological and Biological monitoring plans have been completed and approved by the Nevada State Engineer, and implementation will begin in early 2009.

In 2008, the SNWA again entered into a stipulated agreement with the Department of Interior (DOI) Agencies, and a separate agreement with the Moapa Band of Paiutes. The stipulated agreement with the DOI is intended to protect groundwater dependent ecosystems and federal resources within Dry Lake, Delamar and Cave valleys, three of the five basins included in the GWP, and in White River and Pahranagat valleys. As with Spring Valley, this agreement provides for monitoring, management and mitigation measures, which are currently being developed by biological and hydrological technical committees. Baseline monitoring for Dry Lake, Delamar and Cave valleys is anticipated to begin in 2010.

To support groundwater development in eastern Nevada, the SNWA has acquired seven ranch properties comprised of more than 24,000 acres, approximately 950,000 acres in grazing allotment permits, more than 5,000 head of livestock, and more than 33,900 AFY in surface water rights. These land, water and livestock resources are an important suite of management tools that will allow SNWA to meet its environmental commitments by integrating their management with groundwater development. Protection of sensitive habitats, wildlife and the aesthetic values of eastern Nevada can be balanced with SNWA groundwater development through proactive integrated resource management.

THREE LAKES VALLEY GROUNDWATER

In April 2004, the SNWA applied to the BLM for rights-of-way to construct facilities to develop groundwater resources in Three Lakes Valley. After decisions have been made regarding water right points of diversion by the Nevada State Engineer, an Environmental Assessment will be prepared so the BLM can assess the environmental issues associated with this action. In addition to potential effects on desert tortoise from construction, the potential impacts from groundwater pumping on sensitive springs located at Ash Meadows, Corn Creek and Indian Springs would also be analyzed.

CONCLUSION

Access to water resources can be affected by a number of environmental laws, regulations or issues. Compliance requirements can significantly influence when certain resources are made available, or whether certain resources are ultimately made available at all. To facilitate development of future water resource options while taking steps to preserve and protect species and habitats, the SNWA participates in a broad range of environmental processes. The SNWA's commitment to the environment as well as these environmental processes are a critical component of SNWA planning, and will assist the SNWA in maintaining and developing a portfolio of water resource options, as described in Chapter 2.

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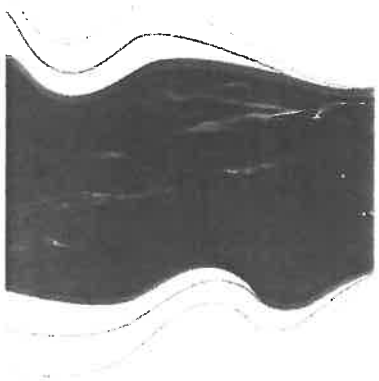


Appendices

Appendix 1
SOUTHERN NEVADA WATER AUTHORITY
INTEGRATED WATER PLANNING ADVISORY COMMITTEE
RECOMMENDATIONS

CONSERVATION

1. Pursue more aggressive promotion of water conservation and regulation of water use through methods such as the reduction of turf.

2. Decrease total water demand from 272 GPCD to 250 GPCD by 2010 and to 245 GPCD by 2035.

   a. Permananently implement major Drought Alert demand reduction tools identifi ed in the SNWA Drought Plan, including landscape watering restrictions, landscape development codes, golf course water budgets and increased water waste fi nes and enforcement

   b. Sustain current pricing signals by ensuring water rates keep pace with inflation.

   c. Maintain or exceed the 2004 participation levels in the SNWA Water Smart Landscapes Rebate Program.

3. Assess conservation achievement annually, investigate the potential for further GPCD reductions and revise conservation goals accordingly.

RESOURCE DEVELOPMENT

4. Pursue development of all the resource options considered in the IWPAC planning scenarios.

   - Arizona Water Bank
   - Coyote Spring Valley Groundwater Rights
   - Three Lakes Valley Groundwater Rights
   - Pre-Compact Water Rights (Virgin and Muddy Rivers)
   - Virgin River Water Rights
   - Clark, Lincoln and White Pine Counties Groundwater Applications
   - Augmentation Credits
   - Additional Conservation

5. Provide additional safeguards for communities and the environment in areas where in-state groundwater resources are developed.

   a. Implement a committee with SNWA and White Pine County representatives to develop annual pumping strategies for Spring and/or Snake Valleys.

   b. Comprehensively monitor and manage any in-state groundwater pumping to assess hydrological effects, sustain the resource and protect the surrounding environment.

   c. Review groundwater situation in Spring and/or Snake Valleys in 75 years, including White Pine County supply needs, basin hydrology and overall pumping data, and revise SNWA permits if conditions warrant it.

6. Work with the Colorado River Basin States and the Bureau of Reclamation to implement augmentation credits for in-state, non-Colorado River resources.

7. Pursue delivery of pre-compact Muddy and Virgin River water rights through Lake Mead and the existing Southern Nevada Water System ("lake conveyance").

8. Pursue "lake conveyance" for the development and use of post-compact Virgin River water rights.

9. Pursue an interstate agreement with Utah and Arizona concerning use of the Virgin River.

10. Pursue fl exible use of Colorado River resources over the long term.

11. Utilize the Southern Nevada Water Bank and California Water Bank as "bridge resources" to help meet any supply deficits.

12. Utilize surplus and interim surplus Colorado River water, if and when they are available.

13. Continue to pursue ocean desalination as a long-term resource.

14. Pursue additional wastewater reuse to maximize supply availability if augmentation credits can not be implemented.

RESOURCE MANAGEMENT

15. Restrict or eliminate the use of salt-using water softeners at residential and commercial facilities to reduce total dissolved solids ("salts") in wastewater discharge and to improve reuse and raw water quality.

16. Utilize the Integrated Water Planning Advisory Committee's evaluation criteria when assessing priorities for the development of in-state water resources.

17. Utilize and maintain water supplies in a sustainable manner.

FUNDING

18. Continue to support the use of diverse funding sources.

    - Commodity Charges (water rates)
    - Connection Charges
    - Sales Tax
    - Southern Nevada Public Land Management Act (SNPLMA) Funding
    - Other state and federal funding as available

19. Revisit the current funding formula for fairness and affordability when a specific project/funding scenario is determined.

20. Pursue an extension of the ¼ cent sales tax to help pay for future water infrastructure.

21. Support the continued allocation of 10% of the funds received from the SNPLMA to the SNWA.

22. Increase conservation education, including the financial ramifications that could occur if additional conservation is not achieved.

Appendix 2
SOUTHERN NEVADA WATER AUTHORITY
INTEGRATED RESOURCE PLAN ADVISORY COMMITTEE
RECOMMENDATIONS
(Adopted June 1995 by SNWA Board of Directors)

1.0 RESOURCES

1.1 Seek permanent, long-term water supplies. However, a water resources plan should be formulated to meet future water demands that utilizes all available water supplies, including unused apportionments, surpluses, leases, and other water supplies.

1.2 Place top priority on development of Colorado River water to meet future water demands over development of a Virgin River pipeline or the Cooperative Water Project.

1.3 Maximize the use of the Las Vegas Valley shallow aquifer when and where practical.

2.0 FACILITIES

2.1 Implement a water facilities program that is phased and expandable in order to respond to future uncertainties (e.g., demands, regulations, etc.).

2.2 Expand the existing Southern Nevada Water System from its existing capacity of 400 million gallons per day (MGD) to its ultimate capacity of 600 MGD as soon as possible.

2.3 Maximize the reuse of wastewater when and where practical.

2.4 Maximize artificial recharge when and where practical.

2.5 Build a new treatment and transmission facility (TTF) as soon as possible that is big enough to be reliable (avoid shortages) and to provide backup capability in the event of a catastrophic failure.

3.0 CONSERVATION

3.1 Achieve a 10% - 15% reduction in maximum day usage by summer 2000 through the "planned" conservation program or something similar. For facility planning purposes, assume this reduction will occur until further study.

3.2 Study conservation possibilities immediately to see if a higher level than "planned" is achievable, and incorporate as practical. Make adjustments to the facilities program as necessary.

3.3 Establish an SNWA water conservation committee to examine water conservation measures.

3.4 Promote economic incentives and provide economic information to encourage the efficient use of water.

4.0 FINANCE

4.1 Study the impacts of water and wastewater programs on customer costs.

4.2 Study demand elasticity (i.e., the impact of customer costs on water demands).

4.3 Study different approaches to financing and rate setting.

5.0 PLANNING

5.1 Continue the SNWA Integrated Resource Planning (IRP) process.

5.2 Integrate wastewater planning fully into the IRP process.

5.3 Maintain the SNWA Integrated Resource Plan Advisory Committee as a critical inputto the IRP process.

5.4 Continue to update water demand projections as needed.

Appendix 3
NEVADA COLORADO RIVER ENTITLEMENTS
PRIOR TO 1991 / PRE-SNWA

Entitlement Holder	Year[1]	Nature of Entitlement	Diversion Amount*
Fort Mojave Tribe	1890	Present perfected right	12,534
U.S. For Lake Mead Recreation Area	1926	Present perfected right	500
U.S. for Lake Mead Recreation Area[2]	1930	Perfected right	1,500
Basic Management, Inc.	1969	Contract	23,158
Lakeview Company[3]	1965	Contract	0
Pacifi c Coast Building Products	1965	Contract	928
CRC for Nellis AFB portion	1967/77	Contract	4,000
Southern Nevada Water System (SNWS)			
U.S.	1992	Secretarial Reservation	300
Nevada Division of Wildlife	1972	Contract (consumptive use)	25
Boy Scouts of America	1978	Contract	10
CRC for Southern California Edison	1966	Contract	23,000
Total			**65,955**
SNWA Purveyors (pre-SNWA)			
Boulder City[4]	1931	Prefected right	5,876
Las Vegas Valley Water District	1969	Contract	15,407
CRC for SNWS (minus 4,000 AFY Nellis, 9,000 AFY system loss)	1967/77	Contract	295,000
Big Bend Water District	1983	Contract	10,000
City of Henderson	1990	Contract	15,878
Total			**342,161**
CRC for SNWS (system loss)	1967/77	Contract	9,000
TOTAL NEVADA ENTITLEMENTS (prior to 1991 / pre-SNWA)			**417,116**

*All figures provided in acre-feet per year

[1] Year is priority date of present perfected rights and perfected rights and initial contract year for contract rights.
[2] Estimate; "annual quantities reasonably necessary to fulfill the purpose" of the Rec. Area. (1964 Supreme Court Decree).
[3] The contract entitlement is 120 AFY, which the Bureau of Reclamation currently has reduced to zero.
[4] Estimate; Boulder City's 1960 water delivery contract right was for 3,650 gallons-per-minute "maximum rate of delivery."

Appendix 4

CLARK COUNTY POPULATION FORECAST USED BY SNWA IN PREPARATION OF WATER RESOURCE DEMAND FORECAST IN SNWA 2009 WATER RESOURCE PLAN

Year	Population
2000*	1,428,690
2001*	1,498,274
2002*	1,578,332
2003*	1,641,529
2004*	1,747,025
2005*	1,815,700
2006*	1,912,654
2007*	1,996,542
2008	2,080,000
2009	2,166,000
2010	2,253,000
2011	2,336,000
2012	2,418,000
2013	2,498,000
2014	2,575,000
2015	2,649,000
2016	2,721,000
2017	2,790,000
2018	2,855,000
2019	2,917,000
2020	2,978,000
2021	3,036,000
2022	3,091,000
2023	3,144,000
2024	3,194,000
2025	3,243,000
2026	3,288,000
2027	3,332,000
2028	3,374,000
2029	3,414,000
2030	3,454,000
2031	3,492,000
2032	3,530,000
2033	3,569,000
2034	3,607,000
2035	3,646,000

*Historical Estimates

Source: "Clark County Nevada Population Forecast 2008-2035," June 2008, Center for Business and Economic Research (CBER) at the University of Nevada, Las Vegas.

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM

November 21, 2013

Subject: SNWA Water Budget	**Director's Backup**
Petitioner: John J. Entsminger, Senior Deputy General Manager	
Recommendations: That the Board of Directors adopt the 2013 Water Budget for the Authority.	

Fiscal Impact:
None by approval of the above recommendation.

Background:
The SNWA 1995 Amended Cooperative Agreement requires that the Authority adopt a Water Budget (Budget) showing the water resources available to the Authority and its purveyor members. The Budget is reviewed at least annually and revised if appropriate. Staff prepared the proposed 2013 Budget with input from the Authority's purveyor members. The Budget shows actual water usage by each purveyor member and by water source through 2012 as well as annual supply and demand projections through 2016.

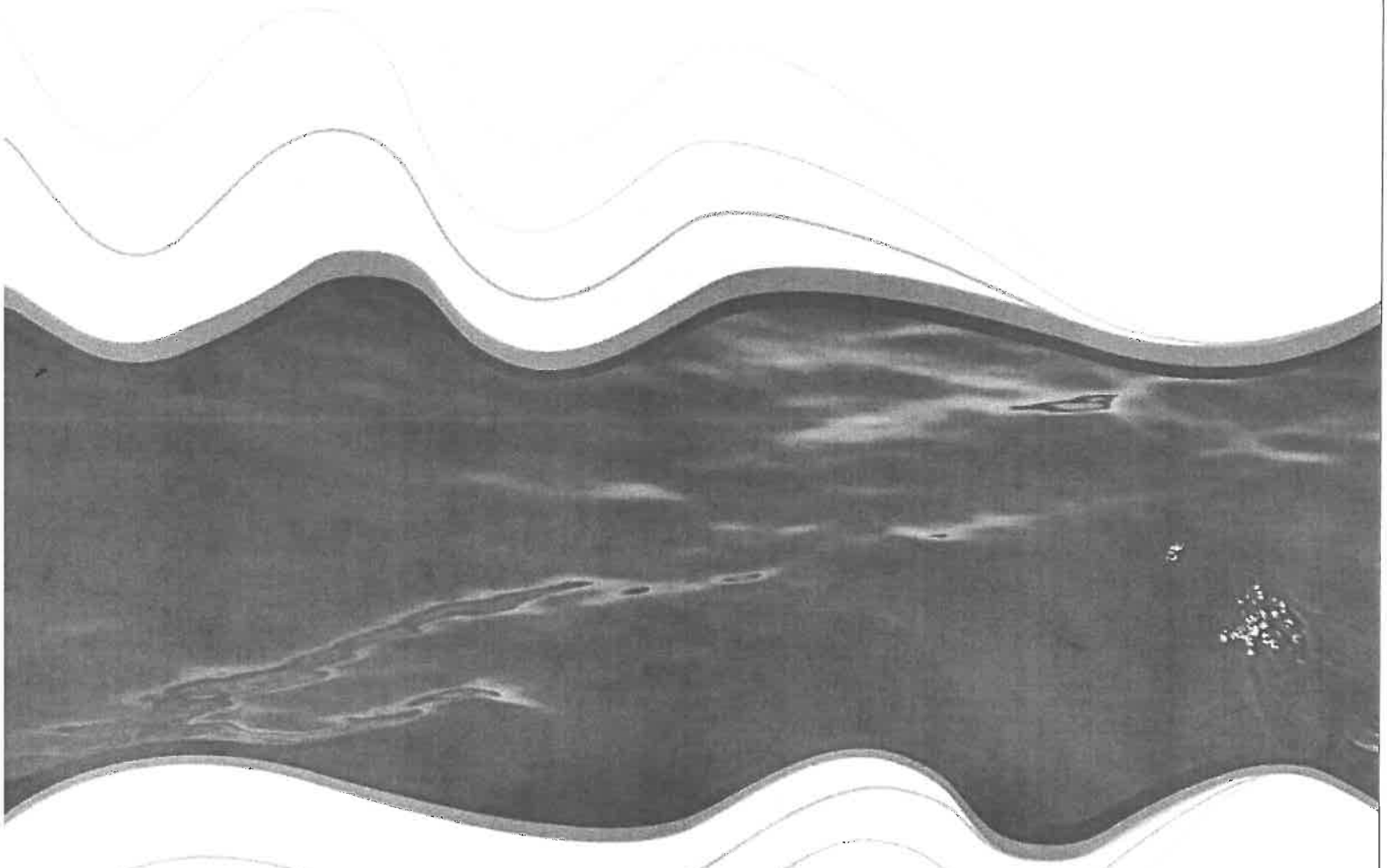
The Budget is intended to complement the Water Resource Plan by providing short-term, detailed forecasts, while the Water Resource Plan, also brought before the Board of Directors today, focuses on longer-term, regional supply and demand projections.

This action is authorized pursuant to Sections 5(j) and 8(h) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved this agenda item.

Respectfully submitted:

Patricia Mulroy, General Manager
PM:JJE:ZLM:AB:JJ:lmv:nsh
Attachment

AGENDA ITEM # 9



Water Budget 13

SOUTHERN NEVADA WATER AUTHORITY

Southern Nevada Water Authority

Board of Directors

Mary Beth Scow, Chair
Las Vegas Valley Water District

Sam Bateman, Vice Chair
City of Henderson

Susan Brager
Clark County Water Reclamation District

Bob Coffin
City of Las Vegas

Duncan McCoy
City of Boulder City

Steve Sisolak
Big Bend Water District

Anita Wood
City of North Las Vegas

Patricia Mulroy, General Manager

Member Managers
J. David Fraser, City of Boulder City • Elizabeth Fretwell, City of Las Vegas
Jeffrey Buchanan, City of North Las Vegas • Jacob Snow, City of Henderson
Tom Minwegen, Clark County Water Reclamation District
Patricia Mulroy, Las Vegas Valley Water District and Big Bend Water District

Summary

The Southern Nevada Water Authority (SNWA), pursuant to its Cooperative Agreement, is required to produce a water budget showing water resources available to the SNWA and its member agencies and water demands for each purveyor member. It is reviewed annually by the SNWA Board of Directors and revised as needed.

The SNWA staff prepared this 2013 Water Budget with input from technical representatives of the member agencies. The document consists of eight tables and four corresponding appendices showing annual potable and non-potable water demand projections by purveyor for the years 2013 through 2016, as well as actual demands for the years 2011 through 2012.

The Water Budget is short-term in focus, with detailed forecasts provided by each purveyor for its respective service area. The water demands in this Water Budget differ from the regional forecasts in the Water Resource Plan. Water demands in the Water Resource Plan are generated for the SNWA service area as a whole. The intent of the Water Resource Plan is to focus on the resources available to the region for the long-term. The Water Resource Plan should be consulted to understand what water resources are projected to meet long-term regional water demands. The Water Budget, on the other hand, is a good source document for water demand and supply details of a specific purveyor service area for the next few years.

Major findings of 2013 Water Budget

- Nevada's 2012 Colorado River consumptive use was approximately 237,000 acre-feet, including approximately 1,100 acre-feet of water banked through direct and in-lieu recharge in the Las Vegas Valley. SNWA delivered and created Intentionally Created Surplus (ICS) credits during 2012 by conserving purchased and leased water rights on the Muddy and Virgin Rivers and pumping Coyote Spring Valley Groundwater and conveying it to Lake Mead for storage and delivery. During 2012 SNWA delivered 1,000 acre-feet of Coyote Spring Valley Groundwater Imported ICS for use in the Las Vegas Valley and stored approximately 32,600 acre-feet of ICS credits in Lake Mead from these projects. Nevada directed approximately 63,000 acre-feet of unused Nevada Colorado River water for storage in California.

- The 2013 Water Budget projects Nevada Colorado River water consumptive use without direct recharge to be between approximately 230,000 and 242,000 acre-feet a year between 2013 and 2016. If Colorado River drought conditions persist, Lake Mead water levels may fall below 1,075 feet, resulting in a shortage declaration and a reduction in Nevada's Colorado River apportionment by up to 20,000 acre-feet annually. The 2013 Water Budget projections of Colorado River water use are well within this potential reduced annual Colorado River apportionment of 280,000 acre-feet, demonstrating SNWA's ability to meet water resource needs during declared shortages through 2016.

- SNWA plans to store between 15,000 and 30,000 acre-feet of ICS credits annually during this same period. During this period, SNWA will manage available water resources through a combination of water banking in the Las Vegas Valley, interstate banking, and leaving a portion of the available unused water in Lake Mead, benefiting Colorado River System storage and Lake Mead elevation.

- Between 2013 and 2016, projections show some purveyors may utilize all of their long-term resources and available purveyors' unused Nevada Colorado River water, as allowed for in the SNWA Water Delivery Contract and Cooperative Agreement. In addition, other water sources detailed in the 2009 Water Resource Plan may be used to meet demands during this period. The utilization of reclaimed water (wastewater reuse) is projected to be between 16,000 and 19,500 acre-feet a year during the period 2013 to 2016.

- The Las Vegas Valley Water District (LVVWD) is planning to recover water stored in the Las Vegas Valley Groundwater Basin during the period 2013 to 2016 to provide operational flexibility in the management of system water quality for the period of time before the Third Intake is completed. The recovery volumes are estimated to be 3,500 acre-feet during 2013, 7,000 acre-feet in 2014, 7,000 acre-feet in 2015 and 3,500 acre-feet in 2016, if needed. The source of this recovered water would include 7,621 acre-feet of in lieu storage credits held by LVVWD, with the remaining amount to be recovered from the SNWA's credits held in the Southern Nevada Groundwater Bank.

2013 SNWA Water Budget, November 21, 2013

TABLE 1: CUSTOMER WATER USAGE, numbers in acre-feet per year (a)

POTABLE	2011	2012	2013	2014	2015	2016
Groundwater customer usage (GW)						
LVVWD	40,629	40,404	40,629	40,629	40,629	40,629
North Las Vegas	1,236	4,876	4,919	5,250	5,250	5,250
Total	41,865	45,280	45,548	45,879	45,879	45,879
Colorado River customer usage (CR)						
Deliveries						
Big Bend (Laughlin)	4,339	4,646	4,153	4,403	4,447	4,491
Boulder City (b)	10,079	10,473	10,934	10,934	10,934	10,934
Henderson (b)	77,258	77,689	77,967	78,096	78,572	79,781
LVVWD	278,423	285,007	278,678	279,321	282,338	289,312
North Las Vegas	48,260	45,793	46,784	47,360	48,162	48,862
Total	418,359	423,608	418,515	420,114	424,453	433,380
Recovery of artificial recharge (AR recovery)						
Big Bend (Laughlin)	0	0	0	0	0	0
Boulder City	0	0	0	0	0	0
Henderson	0	0	0	0	0	0
LVVWD (c)	156	0	3,500	7,000	7,000	3,500
North Las Vegas	0	0	0	0	0	0
Total	156	0	3,500	7,000	7,000	3,500
Total Colorado River customer usage (CR + AR recovery)						
Big Bend (Laughlin)	4,339	4,646	4,153	4,403	4,447	4,491
Boulder City (b)	10,079	10,473	10,934	10,934	10,934	10,934
Henderson (b)	77,258	77,689	77,967	78,096	78,572	79,781
LVVWD (c)	278,579	285,007	282,178	286,321	289,338	292,812
North Las Vegas	48,260	45,793	46,784	47,360	48,162	48,862
Total	418,515	423,608	422,015	427,114	431,453	436,880
Total customer usage (GW + CR + AR recovery)						
Big Bend (Laughlin)	4,339	4,646	4,153	4,403	4,447	4,491
Boulder City (b)	10,079	10,473	10,934	10,934	10,934	10,934
Henderson (b)	77,258	77,689	77,967	78,096	78,572	79,781
LVVWD (c)	319,208	325,411	322,807	326,950	329,967	333,441
North Las Vegas	49,496	50,669	51,703	52,610	53,412	54,112
Total	460,380	468,888	467,563	472,993	477,332	482,759
NON-POTABLE (Wastewater Reuse)						
Customer usage						
Boulder City	146	263	263	263	263	263
CCWRD : Las Vegas Valley (d)	5,620	6,048	5,715	5,784	5,859	5,938
CCWRD : Laughlin	0	0	0	0	0	0
Henderson	6,268	6,924	6,600	6,600	6,600	6,600
Las Vegas (d)	4,688	4,256	3,500	4,500	5,000	5,500
North Las Vegas	0	0	0	600	1,200	1,200
Total	16,722	17,491	16,078	17,747	18,922	19,501
TOTAL POTABLE AND NON-POTABLE						
Customer usage (GW + CR + AR recovery + Wastewater Reuse)						
Big Bend (Laughlin)	4,339	4,646	4,153	4,403	4,447	4,491
Boulder City (b)	10,225	10,736	11,197	11,197	11,197	11,197
CCWRD : Las Vegas Valley (d)	5,620	6,048	5,715	5,784	5,859	5,938
CCWRD : Laughlin	0	0	0	0	0	0
Henderson (b)	83,526	84,613	84,567	84,696	85,172	86,381
Las Vegas (d)	4,688	4,256	3,500	4,500	5,000	5,500
LVVWD (c)	319,208	325,411	322,807	326,950	329,967	333,441
North Las Vegas	49,496	50,669	51,703	53,210	54,612	55,312
Total	477,102	486,379	483,641	490,740	496,254	502,260

NOTES

(a) Source(2011+): SNWA member.

(b) A portion of water usage is met with raw water used for irrigation.

(c) Includes banking operation recovery (e.g. water resource centers).

(d) CCWRD and LV provide sewer service to their service areas; both are in LVVWD's service area.

2013 SNWA Water Budget, November 21, 2013

TABLE 2: RESOURCES AVAILABLE, numbers in acre-feet per year

	Potable water resource									
	Colorado River water									
	Federal SNWS Water Delivery Contract (a)	SNWA Delivery Contract (b)	SNWA Delivery Contract (c)	Other Delivery Contracts (d)	Total Colorado Riv. water	Ground-Water	Total Potable Resource	Non-Potable Resource (e)	Total Long-term Resource (f)	Total Short-term Resource
Big Bend	0	5,352	0.0	10,000	15,352.0	0	15,352.0	0	15,352.0	-
Boulder City	8,918	3,948	0.0	5,876	18,742.0	0	18,742.0	0	18,742.0	-
CCWRD (h)(i)	0	0	0.0	0	0.0	0	0.0	11,100	11,100.0	-
Henderson	27,021	19,858	2,137.5	15,878	64,894.5	0	64,894.5	7,500	72,394.5	-
Las Vegas (h)	0	0	0.0	0	0.0	0	0.0	2,000	2,000.0	-
LVVWD	232,426	78,799	362.5	15,407	326,994.5	40,629	367,623.5	0	367,623.5	-
N. Las Vegas	26,635	15,043	0.0	0	41,678.0	6,201	47,879.0	1,200	49,079.0	-
Total	295,000	123,000	2,500.0	47,161	467,661.0	46,830	514,491.0	21,800	536,291.0	(g)

NOTES

(a) Contract 7-07-30-W0004 between SNWA and the Department of the Interior ("Federal SNWS Water Delivery Contract" or "SNWS Repayment and Delivery Contract"). Quantities for individual purveyors are outlined in Section 8(b) of the SNWA Cooperative Agreement.

(b) In Contract 2-07-30-W0266 between SNWA and the Department of the Interior ("SNWA Water Delivery Contract"), Sections 4(a)(1) and (2) gives to SNWA the right to use any remaining, uncontracted Nevada apportionment and water available because of reduction, expiration or termination of individual entitlements within Nevada. Section 8 (c) of the SNWA Cooperative Agreement (amended January 1, 1996) apportions among the purveyors 123,000 AFY of Colorado River water made available to SNWA under Sections 4(a)(1) and (2).

(c) As described in Section 8(d) of the SNWA Cooperative Agreement and in the Water Supply Agreement (formal agreement that transfers portion of BMI water to SNWA), 2,500 AFY of the transferred water is held in reserve by SNWA for Victory Valley (BMI land development company) projects. Once a specific project is proposed, the reserved water is transferred to the purveyor in whose service area the project is to be located; this transfer is effective upon the date that a service area "Purveyor Service Designation" letter is issued.

(d) Other delivery contracts as follows: 2-07-30-W0269 (Big Bend), 14-06-300-978 (Boulder City), 0-07-30-W0246 (Henderson), 14-06-300-2130 (LVVWD).

(e) Maximum 21,800 reuse per Cooperative Agreement, safeguards return flows to the Colorado River for return-flow credit. If reuse is greater than the reuse quantities outlined in the Agreement AND IF the excess reuse results in a reduction of return-flow credits which in turn reduces other purveyors' Colorado River water supplies, then the excess reuse quantity is reduced from the potable purveyor in whose service area the reuse provider resides.

(f) Expected to be available in perpetuity.

(g) Short-term resource includes: unused Colorado River apportionments, banked water as described in the SNWA's 2009 Water Resource Plan and flood control and domestic surplus Colorado River water made available to Nevada on a year-to-year basis by the Secretary of the Interior. Surplus Colorado River water includes Muddy and Virgin River Tributary Conservation Intentionally Created Surplus (ICS) credits and Coyote Spring Valley Groundwater Imported ICS.

(h) Both Clark County Water Reclamation District (CCWRD) and Las Vegas (City of) sewer service areas are within LVVWD's water service area. If reuse demands for either CCWRD or Las Vegas are greater than the reuse in the SNWA Cooperative Agreement AND IF they reduce return flow credits which in turn reduces other purveyors' Colorado River water supplies, then the excess reuse quantity is subtracted from LVVWD's potable water resource.

(i) Maximum reuse for CCWRD includes reuse for CCWRD in Laughlin and in the Las Vegas Valley.

2013 SNWA Water Budget, November 21, 2013

TABLE 3: FACILITY USAGE BY SNWA PURVEYOR, numbers in acre-feet per year (a)

	2011	2012	2013	2014	2015	2016
Colorado River facility usage (includes artificial recharge, but no recovery of artificial recharge)						
Big Bend Water District	4,339	4,646	4,153	4,403	4,447	4,491
Boulder City						
SNWS	10,079	10,473	10,934	10,934	10,934	10,934
USBR (raw water) system	0	0	0	0	0	0
Total	10,079	10,473	10,934	10,934	10,934	10,934
Henderson						
SNWS	62,152	63,482	62,482	63,351	64,172	65,381
BMI system						
Potable	12,193	11,700	13,433	12,495	12,150	12,150
Raw	2,913	2,507	2,051	2,250	2,250	2,250
Total	15,106	14,207	15,484	14,745	14,400	14,400
Total	77,258	77,689	77,967	78,096	78,572	79,781
LVVWD (SNWS)						
Customer usage (no AR recovery)	278,423	285,007	278,678	279,321	282,338	289,312
Artificial recharge						
Current year banking operations (b)	531	0	0	0	0	0
Other (c)	2,761	0	0	0	0	0
Total Artificial recharge	3,292	0	0	0	0	0
Total	281,715	285,007	278,678	279,321	282,338	289,312
North Las Vegas (SNWS)						
Customer usage (no AR recovery)	48,260	45,793	46,784	47,360	48,162	48,862
Artificial recharge	0	0	0	0	0	0
Total	48,260	45,793	46,784	47,360	48,162	48,862
Total Colorado River purveyor usage						
Customer usage (no AR recovery)	418,359	423,608	418,515	420,114	424,453	433,380
Artificial recharge	3,292	0	0	0	0	0
Total	421,651	423,608	418,515	420,114	424,453	433,380
SNWS system loss to LVV (d)	3,056	2,024	3,040	3,056	3,091	3,158
Total Colorado River purveyor usage (including SNWS system loss)	424,707	425,632	421,555	423,170	427,544	436,538
Groundwater facility usage (includes recovery of artificial recharge)						
LVVWD						
Pumpage of groundwater rights	40,629	40,404	40,629	40,629	40,629	40,629
Pumpage of artificial recharge (recovery)						
Banking operations (e)	156	0	0	0	0	0
Recovery for purveyor members (f)	0	0	3,500	7,000	7,000	3,500
Total pumpage of AR	156	0	3,500	7,000	7,000	3,500
Total	40,785	40,404	44,129	47,629	47,629	44,129
North Las Vegas						
Pumpage of groundwater rights	1,236	4,876	4,919	5,250	5,250	5,250
Total pumpage of AR	0	0	0	0	0	0
Total	1,236	4,876	4,919	5,250	5,250	5,250
Total groundwater facility usage	42,021	45,280	49,048	52,879	52,879	49,379

NOTES

(a) Source(2011+): SNWA member.

(b) Recharge recovered during current year for system management and water resource centers.

(c) Recharge for SNWA purveyors and Groundwater Management Program.

(d) Southern Nevada Water System system loss, see Appendix 4.

(e) Recovery for system management and water resource centers. Excludes recovery by Las Vegas Paiutes.

(f) LVVWD plans to recover water from the Las Vegas Valley Water Bank for operational reasons.

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TABLE 4: USAGE BY FACILITY, numbers in acre-feet per year (a)

	2011	2012	2013	2014	2015	2016
Usage by Colorado River facilities (includes artificial recharge, but no recovery of artificial recharge)						
Big Bend system	4,339	4,646	4,153	4,403	4,447	4,491
BMI system:						
Henderson	15,106	14,207	15,484	14,745	14,400	14,400
BMI Complex (b)	5,585	5,288	5,437	5,437	5,437	5,437
Total	20,691	19,495	20,921	20,182	19,837	19,837
BMI system loss (c)	690	999	669	646	635	635
Total BMI	21,381	20,494	21,590	20,828	20,472	20,472
Southern Nevada Water System (SNWS)						
Boulder City	10,079	10,473	10,934	10,934	10,934	10,934
Henderson	62,152	63,482	62,482	63,351	64,172	65,381
LVVWD	281,715	285,007	278,678	279,321	282,338	289,312
Nellis AFB (b)	1,129	1,075	1,102	1,102	1,102	1,102
North Las Vegas	48,260	45,793	46,784	47,360	48,162	48,862
Total	403,335	405,830	399,980	402,068	406,708	415,591
SNWS system loss (c)	3,056	2,024	3,040	3,056	3,091	3,158
Total SNWS	406,391	407,854	403,020	405,124	409,799	418,749
USBR (raw water) system						
Boulder City	0	0	0	0	0	0
Total Colorado River diversions by facility	432,111	432,994	428,763	430,355	434,718	443,712
Usage by groundwater facilities (includes AR recovery)						
SNWA purveyors (d)						
Pumpage of groundwater rights						
LVVWD	40,629	40,404	40,629	40,629	40,629	40,629
North Las Vegas	1,236	4,876	4,919	5,250	5,250	5,250
Total	41,865	45,280	45,548	45,879	45,879	45,879
Pumpage of AR (AR recovery)						
LVVWD	156	0	3,500	7,000	7,000	3,500
North Las Vegas	0	0	0	0	0	0
Total	156	0	3,500	7,000	7,000	3,500
Total SNWA pumpage	42,021	45,280	49,048	52,879	52,879	49,379
Las Vegas Valley groundwater pumpers						
Nellis AFB (e)	838	900	869	869	869	869
Private/permitted wells (e)	25,055	24,750	24,903	24,903	24,903	24,903
Total	25,893	25,650	25,772	25,772	25,772	25,772
Total pumpage of GW rights	67,758	70,930	71,320	71,651	71,651	71,651
Total pumpage of GW rights and pumpage of AR (AR recovery)	67,914	70,930	74,820	78,651	78,651	75,151

NOTES

(a) Source(2011+): SNWA member.

(b) Source(2011-2012): Colorado River Commission. Source(2013+): average 2011-2012.

(c) Southern Nevada Water System and BMI System loss, see Appendix 4.

(d) Total pumpage includes direct customer usage and recovery of artificial recharge.

(e) Source(2011-2012): NV Division of Water Resources. Source(2013+): average 2011-2012.

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TABLE 5: SNWA PURVEYOR POTABLE USAGE (including artificial recharge) BY RESOURCE, numbers in acre-feet per year

Purveyor potable usage (including artificial recharge) by resource	2011	2012	2013	2014	2015	2016	Resources Available
Big Bend Water District							
Groundwater rights	0	0	0	0	0	0	0
Federal Delivery Contract (a)	0	0	0	0	0	0	0
SNWA Delivery Contract (b)	0	0	0	0	0	0	5,352
Other contracts	4,339	4,646	4,153	4,403	4,447	4,491	10,000
Short-term resource (c)	0	0	0	0	0	0	(c)
Total	4,339	4,646	4,153	4,403	4,447	4,491	
Boulder City							
Groundwater rights	0	0	0	0	0	0	0
Federal Delivery Contract (a)	8,918	8,918	8,918	8,918	8,918	8,918	8,918
SNWA Delivery Contract (b)	1,161	1,555	2,016	2,016	2,016	2,016	3,948
Other contracts (USBR)	0	0	0	0	0	0	5,876
Short-term resource (c)	0	0	0	0	0	0	(c)
Total	10,079	10,473	10,934	10,934	10,934	10,934	
Henderson							
Groundwater rights	0	0	0	0	0	0	0
Federal Delivery Contract (a)	27,021	27,021	27,021	27,021	27,021	27,021	27,021
SNWA Delivery Contract (b)	19,858	19,858	19,858	19,858	19,858	19,858	19,858
SNWA Delivery Contract (d)	2,138	2,138	2,138	2,138	2,138	2,138	2,138
Other contracts (BMI)	15,106	14,207	15,484	14,745	14,400	14,400	15,878
Short-term resource (c)	13,136	14,466	13,466	14,335	15,156	16,365	(c)
Total	77,258	77,689	77,967	78,096	78,572	79,781	
LVVWD (includes artificial recharge)							
Groundwater rights	40,629	40,404	40,629	40,629	40,629	40,629	40,629
Federal Delivery Contract (a)	232,426	232,426	232,426	232,426	232,426	232,426	232,426
SNWA Delivery Contract (b)	33,882	37,174	30,845	31,488	34,505	41,479	78,799
SNWA Delivery Contract (d)	0	0	0	0	0	0	363
Other contracts (15,407)	15,407	15,407	15,407	15,407	15,407	15,407	15,407
Short-term resource (c)	0	0	3,500	7,000	7,000	3,500	(c)
Total	322,344	325,411	322,807	326,950	329,967	333,441	
North Las Vegas (includes artificial recharge)							
Groundwater rights	1,236	4,876	4,919	5,250	5,250	5,250	6,201
Federal Delivery Contract (a)	26,635	26,635	26,635	26,635	26,635	26,635	26,635
SNWA Delivery Contract (b)	15,043	15,043	15,043	15,043	15,043	15,043	15,043
Other contracts	0	0	0	0	0	0	0
Short-term resource (c)	6,582	4,115	5,106	5,682	6,484	7,184	(c)
Total	49,496	50,669	51,703	52,610	53,412	54,112	
Total purveyor usage by water resource (includes artificial recharge)							
Groundwater	41,865	45,280	45,548	45,879	45,879	45,879	46,830
Colorado River water (includes artificial recharge)							
Federal Delivery Contract(a)	295,000	295,000	295,000	295,000	295,000	295,000	295,000
SNWA Delivery Contract (b)	69,944	73,630	67,762	68,405	71,422	78,396	123,000
SNWA Delivery Contract (d)	2,138	2,138	2,138	2,138	2,138	2,138	2,500
Other contracts	34,852	34,260	35,044	34,555	34,254	34,298	47,161
Short-term resource (c)	19,718	18,581	22,072	27,017	28,640	27,049	(c)
Total	421,651	423,608	422,015	427,114	431,453	436,880	
Total	463,516	468,888	467,563	472,993	477,332	482,759	

NOTES

(a) Section 8(b) water in the SNWA Cooperative Agreement (295,000 AFY).

(b) Section 8(c) water in the SNWA Cooperative Agreement. This estimate corresponds with Table 2.

(c) Includes any Section 8(b) or 8(c) water that is unused by another individual SNWA purveyor; also includes "short-term resource" described in Table 2.

(d) Section 8(d) water in the SNWA Cooperative Agreement.

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TABLE 6: WASTEWATER AND USE OF WASTEWATER, numbers in acre-feet per year (a)

Wastewater effluent	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Las Vegas Valley						
BMI Discharge (b)	4,392	4,625	4,509	4,509	4,509	4,509
City of Las Vegas (c)	57,034	46,526	46,900	47,200	47,400	47,600
CCWRD: Las Vegas Valley	106,867	105,795	106,609	107,888	109,291	110,818
Henderson	22,561	22,350	22,383	22,515	22,760	23,121
North Las Vegas	9,816	18,427	18,676	18,863	19,050	19,236
Total	200,670	197,723	199,076	200,975	203,009	205,283
Boulder City	1,227	1,462	1,462	1,462	1,462	1,462
CCWRD: Laughlin	2,096	2,099	2,111	2,123	2,137	2,152
Total (LVV + BC + Laughlin)	203,993	201,284	202,649	204,560	206,608	208,897
Use of wastewater effluent						
Las Vegas Valley						
Direct reuse (reclaimed water)						
City of Las Vegas	4,688	4,256	3,500	4,500	5,000	5,500
CCWRD: Las Vegas Valley	5,620	6,048	5,715	5,784	5,859	5,938
Henderson	6,268	6,924	6,600	6,600	6,600	6,600
North Las Vegas	0	0	0	600	1,200	1,200
Total	16,576	17,228	15,815	17,484	18,659	19,238
Disposal to groundwater						
City of Las Vegas	0	0	0	0	0	0
CCWRD: Las Vegas Valley	0	0	0	0	0	0
Henderson	1,878	1,245	1,500	1,500	1,500	1,500
North Las Vegas	0	0	0	0	0	0
Total	1,878	1,245	1,500	1,500	1,500	1,500
Returns to surface water						
BMI Discharge	4,392	4,625	4,509	4,509	4,509	4,509
City of Las Vegas (c)	52,346	42,270	43,400	42,700	42,400	42,100
CCWRD: Las Vegas Valley	101,247	99,747	100,894	102,104	103,432	104,880
Henderson	14,415	14,181	14,283	14,415	14,660	15,021
North Las Vegas	9,816	18,427	18,676	18,263	17,850	18,036
Total	182,216	179,250	181,761	181,991	182,850	184,545
Boulder City (d)						
Direct reuse (reclaimed water)	146	263	263	263	263	263
Disposal to groundwater	1,081	1,199	1,199	1,199	1,199	1,199
Returns to surface water	0	0	0	0	0	0
CCWRD: Laughlin						
Direct reuse (reclaimed water)	0	0	0	0	0	0
Disposal to groundwater	0	0	0	0	0	0
Returns to surface water	2,096	2,099	2,111	2,123	2,137	2,152
Total direct reuse (reclaimed water)	16,722	17,491	16,078	17,747	18,922	19,501
Total Disposal to groundwater	2,959	2,444	2,699	2,699	2,699	2,699
Total returns to surface water	184,312	181,349	183,872	184,114	184,987	186,697
Wastewater used in return-flow credit calculation (returns to surface water + reuse) (e)						
Las Vegas Valley						
BMI Discharge	4,392	4,625	4,509	4,509	4,509	4,509
City of Las Vegas (c)	57,034	46,526	46,900	47,200	47,400	47,600
CCWRD: LVV	106,867	105,795	106,609	107,888	109,291	110,818
Henderson (f)	20,683	21,105	20,883	21,015	21,260	21,621
North Las Vegas (f)	9,816	18,427	18,676	18,863	19,050	19,236
Total	198,792	196,478	197,576	199,475	201,509	203,783

NOTES

(a) Source(2011+): SNWA member.

(b) Source(2011-2012): Colorado River Commission. Source(2013+): average 2011-2012.

(c) City of Las Vegas flows exclude dewatering flows to Las Vegas Wash at the Water Pollution Control Facility.

(d) Boulder City does not return to surface water.

(e) Consists of returns to surface water and direct reuse that could have been returned to surface water.

(f) Includes Henderson direct reuse and returns to surface water.

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TABLE 7: WASTEWATER REUSE AND REUSE THRESHOLD, numbers in acre-feet per year (a)

	2011	2012	2013	2014	2015	2016	Section 9 Threshold
1. Wastewater reuse by SNWA wastewater purveyor (a)							
Boulder City (b)	—	—	—	—	—	—	(b)
City of Las Vegas (c)	4,688	4,256	3,500	4,500	5,000	5,500	2,000
CCWRD:							
LVV (c)	5,620	6,048	5,715	5,784	5,859	5,938	10,550 (e)
Laughlin (d)	0	0	0	0	0	0	550 (e)
Total	5,620	6,048	5,715	5,784	5,859	5,938	11,100
Henderson	6,268	6,924	6,600	6,600	6,600	6,600	7,500
North Las Vegas	0	0	0	600	1,200	1,200	1,200
2. Wastewater reuse > Section 9(a) threshold (f)							
Boulder City (b)	—	—	—	—	—	—	(b)
City of Las Vegas	2,688	2,256	1,500	2,500	3,000	3,500	
CCWRD							
LVV	0	0	0	0	0	0	
Laughlin	0	0	0	0	0	0	
Total	0	0	0	0	0	0	
Henderson	0	0	0	0	0	0	
North Las Vegas	0	0	0	0	0	0	
3. If a purveyor reuses more than its 9(a) threshold, then its corresponding potable supply of 8(c) water (purveyor portion of 123,000 AFY) is reduced by an amount that will assure deliveries to other purveyors will not be less.(g)							
Even though the reuse of some purveyors is projected to be greater than the quantified threshold, there is also projected to be potable water available such that all projected demands will be met. Therefore, no purveyor's potable supply has been reduced in the accompanying tables.							

NOTES

(a) Source(2011+): SNWA member.

(b) Not applicable to Boulder City (Section 9c of SNWA Cooperative Agreement).

(c) In the LVVWD service area, LVVWD is the water provider. City of Las Vegas and CCWRD are the sewer services and reuse providers. If the City of Las Vegas and CCWRD combined reuse is greater than its combined threshold AND the other purveyors' deliveries are less as a result, then LVVWD's Section 8(c) potable resource is reduced correspondingly.

(d) In the Laughlin area, Big Bend Water District is the potable water provider and CCWRD is the sewer services and reuse provider. If CCWRD reuse is greater than its threshold AND the other purveyors' deliveries are less as a result, then Big Bend Water District's Section 8(c) potable resource is reduced correspondingly.

(e) In the SNWA Cooperative Agreement, there are no individual thresholds for CCWRD - LVV and CCWRD - Laughlin. Thresholds in this table are agreed to for planning purposes to determine whether the amount over the threshold comes out of LVVWD or Big Bend Water District.

(f) Source: Section 9 of the SNWA Cooperative Agreement.

(g) Source: Section 9(b) of the SNWA Cooperative Agreement as follows: "If in any year a Member uses or authorizes the use of Reuse Water in excess of the amounts specified in sub article 9(a) [refers to the purveyor portions of 21,800], then the allocation made by or pursuant to sub article 8(c) [123,000 AFY] to the Purveyor Member that serves such Member shall be reduced by an amount that will assure that deliveries to the other Purveyor Members of water (i) allocated to such other Purveyor Members by or pursuant to this Agreement, or (ii) to which such other Purveyor Members have a right pursuant to separate contracts with the United States will not be less than they would have been in the absence of such excess use of Reuse Water." In other words, if excess reuse causes a reduction in return-flow credits, which in turn causes a reduction in other purveyor's Colorado River supplies, the excess reuse quantity is subtracted from the potable purveyor in whose service area the reuse provider resides.

TABLE 8: COLORADO RIVER DIVERSIONS, RETURN FLOW CREDITS AND CONSUMPTIVE USE IN NEVADA, in acre-feet per year

Colorado River diversions	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	Available Resources
SNWA Purveyor Members customer usage (includes recharge for current year banking operations) (a)							
Big Bend	4,339	4,646	4,153	4,403	4,447	4,491	
Boulder City	10,079	10,473	10,934	10,934	10,934	10,934	
Henderson	77,258	77,689	77,967	78,096	78,572	79,781	
LVVWD	278,954	285,007	278,678	279,321	282,338	289,312	
North Las Vegas	48,260	45,793	46,784	47,360	48,162	48,862	
Total	418,890	423,608	418,515	420,114	424,453	433,380	
SNWA Net Artificial Recharge (includes recharge for carryover banking operations and other recharge) (a) (l)							
LVVWD	2,761	0	0	0	0	0	
North Las Vegas	0	0	0	0	0	0	
Total	2,761	0	0	0	0	0	
SNWA Purveyor Members CR diversions (customer usage + artificial recharge)							
Big Bend	4,339	4,646	4,153	4,403	4,447	4,491	
Boulder City	10,079	10,473	10,934	10,934	10,934	10,934	
Henderson	77,258	77,689	77,967	78,096	78,572	79,781	
LVVWD	281,715	285,007	278,678	279,321	282,338	289,312	
North Las Vegas	48,260	45,793	46,784	47,360	48,162	48,862	
Total	421,651	423,608	418,515	420,114	424,453	433,380	
Usage (customer + AR)	421,651	423,608	418,515	420,114	424,453	433,380	
Total System Loss (b)	3,746	3,023	3,709	3,702	3,726	3,793	
TOTAL	425,397	426,631	422,224	423,816	428,179	437,173	
Other Colorado River Users (c) (d)							
BMI Complex (e)	5,585	5,288	5,437	5,437	5,437	5,437	8,208
Fort Mohave Indian Res. (e)	4,738	4,670	4,704	4,704	4,704	4,704	12,534
Nellis AFB (e)	1,129	1,075	1,102	1,102	1,102	1,102	4,000
LMNRA at Lake Mead (e) (f)	431	427	429	429	429	429	2,000
LMNRA at Lake Mohave (e) (f)	189	151	170	170	170	170	
Pabco (e)	607	864	736	736	736	736	928
Secretarial Reservation (e)	40	29	35	35	35	35	300
Southern Cal. Edison	97	0	0	0	0	0	(g)
Nev. Division of Wildlife (e) (h)	220	244	232	232	232	232	
Small water users (e)	4	3	4	4	4	4	
TOTAL	13,040	12,751	12,849	12,849	12,849	12,849	
Total Nevada diversions	438,437	439,382	435,073	436,665	441,028	450,022	
Nevada Return flow credits							
Las Vegas Valley (c) (i)	211,693	198,299	200,835	201,257	202,277	204,174	
Laughlin (a) (c)	2,096	2,099	2,111	2,123	2,137	2,152	
Secretarial Reservation (c) (e)	28	22	25	25	25	25	
Nev. Division of Wildlife (c) (h)	208	234	221	221	221	221	
Unmeasured Returns (c) (j)	1,563	1,542	1,568	1,568	1,568	1,568	
TOTAL	215,588	202,196	204,760	205,194	206,228	208,140	
Nevada Consumptive use							
Consumptive use with AR (k)	222,849	237,186	230,313	231,471	234,799	241,882	
Net Artificial Recharge (l)	2,761	0	0	0	0	0	
Consumptive use no AR	220,088	237,186	230,313	231,471	234,799	241,882	

NOTES

(a) Source: SNWA members, see Table 3 and Table 6.
(b) From Appendix 4.
(c) Source(2011-2012): Bureau of Reclamation.
(d) Available resource assumed as consumptive use.
(e) Source(2013+): average 2011 to 2012.
(f) Lake Mead National Recreation Area (LMNRA).
(g) Terminated water supply agreement in 2011.
(h) Available resource is a consumptive use amount of 25 AFY.
(i) Source(2013+): Appendix 1, line 18.
(j) Source(2013+): one-third of Ft. Mojave Indian Res. use above.
(k) Excludes interstate banking.
(l) Total recharge less recovery, excludes in-lieu recharge.

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APPENDIX 1: RETURN FLOW CREDITS (U.S. Bureau of Reclamation method) AND NEVADA CONSUMPTIVE USE CALCULATIONS ADJUSTED FOR ICS AND INTERSTATE BANKING, numbers in acre-feet per year

CALCULATION OF DIVERSIONS AND RETURN FLOW CREDITS	2011	2012	2013	2014	2015	2016
ABOVE HOOVER DAM						
1. Total Colorado River Water Diverted Above Hoover Dam	429,070	429,912	426,042	427,384	431,703	440,653
2. Gauged Flow of Las Vegas Wash below Lake Las Vegas (USGS Station No. 09419800)	213,778	212,478	205,798	206,219	207,240	209,136
3. Precipitation Runoff (Estimated)	3,085	15,179	5,962	5,962	5,962	5,962
4. Imported Groundwater and Surface Water	0	0	0	0	0	0
5. 2% of Imported Groundwater and Surface Water	0	0	0	0	0	0
6. Effluent Reaching LM From the LV Valley M&I Groundwater Pumping (a)	0	0	0	0	0	0
7. Total Las Vegas Wash Adjusted Gauge Flow (2-3-5-6)	210,693	197,299	199,835	200,257	201,277	203,174
8. Total Other Nevada Flow to Lake Mead Above Hoover Dam	236	256	246	246	246	246
9. Colorado River Bypassing Gauge, less Phreatophyte Use below Gauge (a)	1,000	1,000	1,000	1,000	1,000	1,000
10. Total Flow to Colorado River Above Hoover Dam (7+8+9)	211,929	198,555	201,081	201,503	202,523	204,420
11. Consumptive Use Above Hoover Dam (1-10)	217,141	231,357	224,961	225,881	229,179	236,233
BELOW HOOVER DAM						
12. Total Colorado River Water Diverted Below Hoover Dam	9,367	9,470	9,031	9,281	9,325	9,369
13. Total Flow to Colorado River Below Hoover Dam	3,659	3,641	3,679	3,691	3,705	3,720
14. Consumptive Use Below Hoover Dam (12-13)	5,708	5,829	5,352	5,590	5,620	5,649
SUMMARY						
15. Total Nevada Diversions from Colorado River (1+12)	438,437	439,382	435,073	436,665	441,028	450,022
16. Total Nevada Return Flow Credit (10+13)	215,588	202,196	204,760	205,194	206,228	208,140
17. Total Nevada Consumptive Use Before Interstate Banking (15-16) (b)	222,849	237,186	230,313	231,471	234,799	241,882
18. Total Las Vegas Valley Return Flow Credit (7+9)	211,693	198,299	200,835	201,257	202,277	204,174
NEVADA CONSUMPTIVE USE CALCULATIONS ADJUSTED FOR ICS AND INTERSTATE BANKING						
19. Nevada Basic Apportionment	300,000	300,000	300,000	300,000	300,000	300,000
20. Total Volume of ICS Created (b)	32,025	33,573	29,300	25,800	14,900	14,900
21. Overrun Payback	0	0	0	0	0	0
22. ICS Delivery	0	1,000	0	0	0	0
23. ICS volume banked in Lake Mead (20-21-22) (c)	(32,025)	(32,573)	(29,300)	(25,800)	(14,900)	(14,900)
24. Resources available for Consumptive Use (19+20-21+23)	300,000	301,000	300,000	300,000	300,000	300,000
25. Total Nevada Consumptive Use (d)	222,849	237,186	230,313	231,471	234,799	241,882
26. Resources available for Interstate Banking / Colorado River System Benefit (24-22-25)	77,151	62,814	69,687	68,529	65,201	58,118
27. Nevada Underrun/(Overrun) (24-22-25-26) (d)	0	0	0	0	0	0

NOTES

(a) If Las Vegas Valley M&I Groundwater rights exceed 47,340, then lines 6 and 9 above will be recalculated based on the method approved by the USBR as referenced in a letter dated December 5, 2007.

(b) Total Verified Tributary Conservation ICS and Imported ICS after 5 percent deduction for system benefit.

(c) SNWA plans to store between 15,000 and 30,000 acre-feet of ICS credits between 2013 and 2016.

(d) May be subject to final USBR accounting.

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APPENDIX 2: PROJECTION OF ACCRUALS AND GAUGE FLOWS (used in calculation of return flow credits), numbers in acre-feet per year

ASSUME GAUGE FLOWS = EFFLUENT TO WASH + STORMWATER + ACCRUALS																							
1. Estimate accruals	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012				
(Accruals = Gauge Flows - Effluent to Wash - Stormwater)																							
a. Measured Wash flow at gauge (a)	132,099	143,496	146,017	170,514	170,329	170,585	160,246	173,235	173,302	193,412	203,195	218,115	219,972	213,163	206,609	206,377	215,501	213,778	212,478				
b. Effluent to Wash (b)	(123,040)	(127,434)	(132,245)	(143,025)	(145,770)	(149,781)	(155,174)	(159,337)	(160,811)	(169,754)	(177,312)	(186,468)	(187,816)	(188,569)	(187,791)	(185,709)	(184,871)	(182,216)	(179,250)				
c. Stormwater (a)	(2,155)	(3,896)	(1,429)	(8,696)	(11,357)	(5,405)	(2,746)	(2,959)	(1,410)	(7,049)	(14,377)	(15,369)	(1,761)	(2,829)	(1,678)	(1,910)	(9,993)	(3,085)	(15,179)				
d. Total (accruals) (c)	6,904	12,166	12,343	18,793	13,202	15,399	2,326	10,939	11,081	16,609	11,506	16,278	30,395	21,765	17,140	18,758	20,637	28,477	18,049				
2. Calculate ratio of accruals/LVV customer usage																							
a. Accruals	6,904	12,166	12,343	18,793	13,202	15,399	2,326	10,939	11,081	16,609	11,506	16,278	30,395	21,765	17,140	18,758	20,637	28,477	18,049				
b. Total LVV customer usage (b)																							
1. LVV customer usage (d)	373,396	377,699	413,741	415,082	412,450	452,639	480,652	503,977	519,685	497,726	490,346	499,109	532,335	540,446	515,624	502,337	484,813	478,569	485,782				
2. SNWS system loss	2,206	2,452	4,772	11,066	2,691	5,675	6,287	1,744	11,648	2,593	8,950	12,813	6,969	5,330	6,001	3,484	3,254	3,056	2,024				
3. Total	375,602	380,151	418,513	426,148	415,141	458,314	486,939	505,721	531,333	500,319	499,296	511,922	539,304	545,776	521,625	505,821	488,067	481,625	487,806				
c. Accruals/Total LVV usage (%)	1.84%	3.20%	2.95%	4.41%	3.18%	3.36%	0.48%	2.16%	2.09%	3.32%	2.30%	3.18%	5.64%	3.99%	3.29%	3.71%	4.23%	5.91%	3.70%				
3. Calculate median accruals/Total LVV usage (e)	3.71%																						
4. Project future accruals	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
a. Total LVV usage (b)																							
1. LVV usage (d)																				484,787	489,967	494,262	499,645
2. SNWS system loss																				3,040	3,056	3,091	3,158
3. Total																				487,827	493,023	497,353	502,803
3.71% * Total LVV usage																				18,074	18,266	18,427	18,629
5. Project future gauge flows	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2012	2013	2014	2015
(Gauge flows = Effluent to Wash + Stormwater + Accruals)																							
a. Effluent to Wash (b)																				181,761	181,991	182,850	184,545
b. Stormwater (average of 1994 - 2012)																				5,962	5,962	5,962	5,962
c. Accruals																				18,074	18,266	18,427	18,629
d. Estimated Wash flows at gauge																				205,798	206,219	207,240	209,136
6. Measured and estimated gauge flows	132,099	143,496	146,017	170,514	170,329	170,585	160,246	173,235	173,302	193,412	203,195	218,115	219,972	213,163	206,609	206,377	215,501	213,778	212,478	205,798	206,219	207,240	209,136

NOTES
(a) Source(1994 - 2001): U.S. Geologic Survey, "Water Resources Data Nevada". Source(2002 -2012): data reflected in the Year End Return Flow Credit Data (Colorado River Commission.)
(b) From Appendix 3.
(c) Accruals calculations and projections adjusted to correspond with Las Vegas Valley Return Flow Methodology adopted December 5, 2007.
(d) Includes recovery of artificial recharge (AR recovery)
(e) Median corresponds with the period 2003-2012, and the establishment of the current location of the gage at Las Vegas Wash below Lake Las Vegas on June 28, 2002.

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APPENDIX 3: LAS VEGAS VALLEY WATER USAGE AND WASTEWATER FLOWS (used in calculation of return flow credits), numbers in acre-feet per year

Las Vegas Valley customer usage	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Resources Available
Colorado River customer diversion (no AR; no AR recovery)(a)																								
SNWA Purveyor Members																								
Henderson	42,033	42,676	52,247	48,982	55,256	63,305	67,248	73,832	79,187	73,833	73,986	76,039	83,401	85,576	79,641	80,748	77,835	77,258	77,689	77,967	78,096	78,572	79,781	
LVVWD	223,298	223,682	244,824	249,210	243,140	272,749	294,109	304,368	313,091	297,111	288,216	305,349	320,495	319,644	304,945	292,645	283,514	278,423	285,007	278,678	279,321	282,338	289,312	
North Las Vegas	29,503	30,704	32,523	31,527	32,151	35,889	38,198	39,430	41,264	43,984	45,473	47,389	52,606	55,812	52,438	51,203	50,270	48,260	45,793	46,784	47,360	48,162	48,862	
Total	294,834	297,062	329,594	329,719	330,547	371,943	399,555	417,630	433,542	414,928	407,675	428,777	456,502	461,032	437,024	424,596	411,619	403,941	408,489	403,429	404,777	409,072	417,955	
Other Las Vegas Valley Users																								
BMI Complex (b)	6,496	5,084	4,988	6,730	6,339	5,489	5,286	5,210	5,372	5,332	5,861	5,820	6,184	5,696	5,948	5,355	5,079	5,585	5,288	5,437	5,437	5,437	5,437	
Nellis AFB (b)	3,193	3,015	3,251	2,781	2,525	2,248	2,206	1,760	2,410	1,993	1,787	2,271	2,118	2,873	2,107	1,672	1,371	1,129	1,075	1,102	1,102	1,102	1,102	
Total	9,689	8,099	8,239	9,511	8,864	7,737	7,492	6,970	7,782	7,325	7,648	8,091	8,302	8,569	8,055	7,027	6,450	6,714	6,363	6,539	6,539	6,539	6,539	
Total System Loss	2,816	3,043	5,439	11,698	2,691	5,763	6,896	2,194	11,825	2,721	9,144	13,401	7,067	5,831	6,166	3,972	3,818	3,746	3,023	3,709	3,702	3,726	3,793	
Total	307,339	308,204	343,272	350,928	342,102	385,443	413,943	426,794	453,149	424,974	424,467	450,269	471,871	475,432	451,245	435,595	421,887	414,401	417,875	413,678	415,018	419,337	428,287	
Pumpage of Artificial Recharge Recovery (c)																								
SNWA Purveyor Members																								
LVVWD	0	2,473	1,596	164	0	0	0	494	1,092	1	265	0	0	303	42	11	0	156	0	3,500	7,000	7,000	3,500	
North Las Vegas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	2,473	1,596	164	0	0	0	494	1,092	1	265	0	0	303	42	11	0	156	0	3,500	7,000	7,000	3,500	
Groundwater Usage																								
SNWA Purveyor Members (a)																								
LVVWD	37,907	40,247	39,947	40,152	39,857	39,028	38,255	40,126	40,126	40,126	40,612	31,661	35,845	40,629	40,629	40,629	39,208	40,629	40,404	40,629	40,629	40,629	40,629	40,629
North Las Vegas	2,569	3,345	5,669	5,614	5,687	4,135	5,226	5,449	5,586	4,878	2,398	1,694	1,355	749	1,725	1,511	633	1,236	4,876	4,919	5,250	5,250	5,250	6,201
Total	40,476	43,592	45,616	45,766	45,544	43,163	43,481	45,575	45,712	45,004	43,010	33,355	37,200	41,378	42,354	42,140	39,841	41,865	45,280	45,548	45,879	45,879	45,879	46,830
Other Las Vegas Valley Users																								
Nellis AFB (b)	920	815	1,019	1,144	1,005	1,530	2,083	2,367	2,206	1,955	1,816	1,242	1,151	1,399	657	907	927	838	900	869	869	869	869	2,950
Private/Permitted Wells (d)	27,477	25,658	27,677	28,778	26,490	28,266	28,041	30,941	29,351	28,513	29,932	27,644	29,180	27,765	27,492	27,656	25,976	25,055	24,750	24,903	24,903	24,903	24,903	
Total	28,397	26,473	28,696	29,922	27,495	29,796	30,124	33,308	31,557	30,468	31,748	28,886	30,331	29,164	28,149	28,563	26,903	25,893	25,650	25,772	25,772	25,772	25,772	
Total	68,873	70,065	74,312	75,688	73,039	72,959	73,605	78,883	77,269	75,472	74,758	62,241	67,531	70,542	70,503	70,703	66,744	67,758	70,930	71,320	71,651	71,651	71,651	
Las Vegas Valley Total Usage (includes recovery) (Including system loss)	376,212	380,742	419,180	426,780	415,141	458,402	487,548	506,171	531,510	500,447	499,490	512,510	539,402	546,277	521,790	506,309	488,631	482,315	488,805	488,496	493,669	497,988	503,438	
Las Vegas Valley Total Usage (includes recovery) (Excluding system loss)	373,396	377,699	413,741	415,082	412,450	452,639	480,652	503,977	519,685	497,726	490,346	499,109	532,335	540,446	515,624	502,337	484,813	478,569	485,782	484,787	489,967	494,262	499,645	
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2015	
LVV wastewater flow to Wash																								
Influent (e)	129,824	135,827	142,188	154,001	159,974	164,750	173,371	177,543	182,902	191,165	200,460	210,945	213,164	215,138	211,547	203,899	201,843	198,792	196,478	197,576	199,475	201,509	203,783	
Reuse (f)	6,784	8,393	9,943	10,976	14,204	14,969	18,197	18,206	22,091	21,411	23,148	24,477	25,348	26,569	23,756	18,190	16,972	16,576	17,228	15,815	17,484	18,659	19,238	
Effluent to Wash (influent - effluent)	123,040	127,434	132,245	143,025	145,770	149,781	155,174	159,337	160,811	169,754	177,312	186,468	187,816	188,569	187,791	185,709	184,871	182,216	179,250	181,761	181,991	182,850	184,545	

NOTES
(a) Source(1994 - 2012): actual; Source(2013+): SNWA Member.
(b) Source(1994 - 2012): actual; Source(2013+): Table 8.
(c) Includes recovery for banking operations and for purveyor members.
(d) Source(1994 - 2012): Nevada Division of Water Resources. Source(2013+): Table 4.
(e) Includes Henderson returns to the Colorado River, Henderson reuse, and BMI discharges to the wash beginning in 1994.
(f) Includes Henderson reuse beginning in 1994

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APPENDIX 4: COLORADO RIVER USAGE (CUSTOMER + AR) BY SYSTEM AND ESTIMATES OF SNWS SYSTEM LOSS, numbers in acre-feet per year

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Colorado River diversions by system (includes AR, but no AR recovery)(a)																							
Big Bend Water District	4,833	5,286	5,315	5,034	4,970	5,162	5,232	5,268	5,325	5,315	4,922	4,639	4,914	4,653	4,433	4,423	4,345	4,339	4,646	4,153	4,403	4,447	4,491
Boulder City																							
SNWS	7,325	7,327	8,098	7,708	7,670	8,858	10,616	10,168	13,346	12,254	11,013	10,130	11,406	11,302	11,369	10,980	10,663	10,079	10,473	10,934	10,934	10,934	10,934
USBR system	246	280	279	171	132	179	223	434	950	23	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	7,571	7,607	8,377	7,879	7,802	9,037	10,839	10,602	14,296	12,277	11,013	10,130	11,406	11,302	11,369	10,980	10,663	10,079	10,473	10,934	10,934	10,934	10,934
Henderson																							
SNWS	29,467	29,280	36,405	35,969	40,973	51,691	53,494	61,493	66,158	64,100	61,017	63,469	68,618	71,326	63,279	65,309	64,554	62,152	63,482	62,482	63,351	64,172	65,381
BMI system	12,566	13,396	15,842	13,013	14,283	11,614	13,754	12,339	13,029	9,733	12,969	12,570	14,783	14,250	16,362	15,439	13,281	15,106	14,207	15,484	14,745	14,400	14,400
Total	42,033	42,676	52,247	48,982	55,256	63,305	67,248	73,832	79,187	73,833	73,986	76,039	83,401	85,576	79,641	80,748	77,835	77,258	77,689	77,967	78,096	78,572	79,781
LVVWD (SNWS)	243,418	240,343	256,829	267,001	270,286	304,810	323,830	325,637	315,345	325,651	305,332	321,217	340,471	337,659	309,990	292,736	292,306	281,715	285,007	278,678	279,321	282,338	289,312
North Las Vegas (SNWS)	31,283	33,215	33,982	32,661	32,568	36,189	38,262	39,537	41,264	44,151	45,473	47,389	52,606	55,812	52,438	51,203	50,270	48,260	45,793	46,784	47,360	48,162	48,862
Systems with multiple users																							
BMI System:																							
Henderson	12,566	13,396	15,842	13,013	14,283	11,614	13,754	12,339	13,029	9,733	12,969	12,570	14,783	14,250	16,362	15,439	13,281	15,106	14,207	15,484	14,745	14,400	14,400
BMI Complex	6,496	5,084	4,988	6,730	6,339	5,489	5,286	5,210	5,372	5,332	5,861	5,820	6,184	5,696	5,948	5,355	5,079	5,585	5,288	5,437	5,437	5,437	5,437
Total	19,062	18,480	20,830	19,743	20,622	17,103	19,040	17,549	18,401	15,065	18,830	18,390	20,967	19,946	22,310	20,794	18,360	20,691	19,495	20,921	20,182	19,837	19,837
Southern Nevada Water System (at turnouts)																							
Boulder City	7,325	7,327	8,098	7,708	7,670	8,858	10,616	10,168	13,346	12,254	11,013	10,130	11,406	11,302	11,369	10,980	10,663	10,079	10,473	10,934	10,934	10,934	10,934
Henderson	29,467	29,280	36,405	35,969	40,973	51,691	53,494	61,493	66,158	64,100	61,017	63,469	68,618	71,326	63,279	65,309	64,554	62,152	63,482	62,482	63,351	64,172	65,381
LVVWD	243,418	240,343	256,829	267,001	270,286	304,810	323,830	325,637	315,345	325,651	305,332	321,217	340,471	337,659	309,990	292,736	292,306	281,715	285,007	278,678	279,321	282,338	289,312
Nellis AFB	3,193	3,015	3,251	2,781	2,525	2,248	2,206	1,760	2,410	1,993	1,787	2,271	2,118	2,873	2,107	1,672	1,371	1,129	1,075	1,102	1,102	1,102	1,102
North Las Vegas	31,283	33,215	33,982	32,661	32,568	36,189	38,262	39,537	41,264	44,151	45,473	47,389	52,606	55,812	52,438	51,203	50,270	48,260	45,793	46,784	47,360	48,162	48,862
Total	314,686	313,160	338,565	346,120	354,022	403,796	428,408	438,595	438,523	448,149	424,622	444,476	475,219	478,972	439,183	421,900	419,164	403,335	405,830	399,980	402,068	406,708	415,591
Estimate of BMI system loss																							
1. BMI diversions at intake (b)	18,615	18,486	20,830	19,743	20,828	17,191	18,353	17,999	18,578	15,193	19,024	18,393	21,065	20,447	22,475	21,282	18,924	21,381	20,494				
2. BMI diversions at turnout	19,062	18,480	20,830	19,743	20,622	17,103	19,040	17,549	18,401	15,065	18,830	18,390	20,967	19,946	22,310	20,794	18,360	20,691	19,495				
3. System loss (intake-turnout)(c)	-447	6	0	0	206	88	-687	450	177	128	194	3	98	501	165	488	564	690	999				
4. System loss percentage (%):																							
(system loss/diversion at turnout)	(c)	(c)	(c)	(c)	1.00%	0.51%	(c)	2.56%	0.96%	0.85%	1.03%	(c)	0.47%	2.51%	0.74%	2.35%	3.07%	3.33%	5.12%				
5. Median of reasonable system loss %(c)																			3.20%				
6. Replace unreasonable system loss figures and project																							
(* BMI diversions at turnout)																							
(3.20% * BMI div.at turnout)	610	591	667	632	660	88	609	450	177	128	194	588	98	501	165	488	564	690	999	669	646	635	635
Estimate of SNWS system loss																							
1. SNWS diversions at intake (b)	316,892	315,632	343,337	357,186	353,067	409,471	434,695	440,339	450,171	450,742	433,572	457,289	482,188	484,302	445,184	425,384	422,418	406,391	407,854				
2. SNWS diversions at turnout	314,686	313,180	338,565	346,120	354,022	403,796	428,408	438,595	438,523	448,149	424,622	444,476	475,219	478,972	439,183	421,900	419,164	403,335	405,830				
3. System loss (intake-turnout)(c)	2,206	2,452	4,772	11,066	(955)	5,675	6,287	1,744	11,648	2,593	8,950	12,813	6,969	5,330	6,001	3,484	3,254	3,056	2,024				
4. System loss percentage (%):																							
(system loss/diversion at turnout)	0.70%	0.78%	1.41%	3.20%	(c)	1.41%	1.47%	0.40%	2.66%	0.58%	2.11%	2.88%	1.47%	1.11%	1.37%	0.83%	0.78%	0.76%	0.50%				
5. Median of reasonable system loss %(c)																			0.76%				
6. Replace unreasonable system loss figures and project																							
(* SNWS diversions at turnout)																							
(0.76% * SNWS div.at turnout)	2,206	2,452	4,772	11,066	2,691	5,675	6,287	1,744	11,648	2,593	8,950	12,813	6,969	5,330	6,001	3,484	3,254	3,056	2,024	3,040	3,056	3,091	3,158
Estimate of Total system loss	2,816	3,043	5,439	11,698	3,351	5,763	6,896	2,194	11,825	2,721	9,144	13,401	7,067	5,831	6,166	3,972	3,818	3,746	3,023	3,709	3,702	3,726	3,793

NOTES

(a) Includes artificial recharge (AR) which is part of the Colorado River diversion; does not include recovery of artificial recharge (AR recovery) which is not a diversion.

(b) Source: "Colorado River Water Diverted for Use in Southern Nevada," CRC internal spreadsheets.

(c) System loss is estimated by subtracting turnout meter reading from intake meter reading. Because of meter imprecision, system loss figures are sometimes unreasonable, i.e., negative numbers or very small numbers.

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM

November 21, 2013

Subject: SNWS Operating Plan	**Director's Backup**
Petitioner: Ronald E. Zegers, Deputy General Manager, Engineering/Operations	
Recommendations: That the Board of Directors adopt the Southern Nevada Water System Operating Plan.	

Fiscal Impact:
None by approval of the above recommendation.

Background:
The Southern Nevada Water System (SNWS) Facilities and Operations Agreement between the Authority and its water purveyor members requires the Authority to adopt an Operating Plan (Plan) annually for the SNWS. The attached Plan for the period of January 1, 2014, through December 31, 2016, represents the joint effort of the water purveyors and SNWS operating staff.

The Plan is designed to establish key operational parameters for the SNWS that will meet each purveyor's water needs. The Plan includes, on a monthly basis, the maximum and average daily flows requested by the purveyors to be delivered at their respective turnouts, target levels of chlorine, and target hydraulic grade lines.

The Plan has been reviewed and approved by the SNWS Work Group.

This action is authorized pursuant to Section 3.1 of the Authority's 2012 Amended Facilities and Operations Agreement. The office of the General Counsel has reviewed and approved this agenda item.

Respectfully submitted:

P Mulroy

Patricia Mulroy, General Manager
PM:RZ:MRJ:GLN:VK:dc
Attachment

AGENDA ITEM # 10

ANNUAL OPERATING PLAN
FOR THE
SOUTHERN NEVADA WATER SYSTEM

The Annual Operating Plan for the Southern Nevada Water System (SNWS) covers the period of **January 1, 2014** through **December 31, 2016**. This Plan represents the purveyors' best estimate of projected water demands for the duration of the Plan. The Southern Nevada Water Authority expects to be able to supply water to meet these purveyor demands at the desired chlorine residuals.

MAXIMUM AND AVERAGE FLOWS

The enclosed tabulations present the maximum and average daily flows requested by the water users by month for the calendar years **2014, 2015,** and **2016**. The maximum and average daily flows requested are within the capacity of the system.

CHLORINE CONCENTRATIONS

Also included in the tabulations are the purveyors' requested chlorine concentrations for each turnout. The Southern Nevada Water Authority expects to meet the purveyor requested chlorine residuals at all the turnouts.

HYDRAULIC GRADE LINES

The tabulations also include the hydraulic grade lines requested by the water users for the water deliveries. Results of hydraulic modeling indicate that these hydraulic grade lines can be met during delivery of the projected water demands.

CURRENT AND FUTURE SYSTEM CAPACITY

The current maximum treatment capacity of the Alfred Merritt Smith Water Treatment Facility (AMSWTF) is 600 million gallons per day (MGD). The River Mountains Water Treatment Facility (RMWTF) expansion to 400 MGD is complete and operational, creating a combined treatment capacity for the SNWS of 1,000 MGD. The high lift pumping system that delivers potable water from AMSWTF has a nominal capacity of 580 MGD. The River Mountains Pumping Station that delivers potable water from RMWTF has a nominal capacity of 300 MGD, creating a combined potable water delivery to the Las Vegas Valley of 880 MGD. Pumping Station 1A that delivers potable water from AMSWTF to Boulder City has a nominal capacity of 20 MGD.

2014 - 2016 Annual Water Flow Projections

SUMMARY

	LVVWD		COH		NLV		BC		NELLIS		TOTAL	
	Flow (MGD)		Flow (MGD)		Flow (MGD)		Flow (MGD)		Flow (MGD)		Flow (MGD)	
MONTH	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max
Jan	189	209	33.5	51.5	29	38	4.4	11.3	0.9	1.7	256.8	311.4
Feb	193	213	35.5	54.0	31	46	4.2	10.5	1.1	2.3	264.8	325.5
Mar	232	264	44.5	62.0	34	43	7.4	12.3	1.7	2.3	319.6	383.8
Apr	266	300	53.5	73.5	40	50	9.8	17.5	1.8	2.4	371.1	443.9
May	304	340	67.5	87.0	47	58	12.0	16.2	2.0	2.8	432.5	504.2
Jun	275	308	80.5	98.5	52	61	13.3	18.8	2.3	3.0	423.1	489.2
Jul	293	327	91.0	108.0	57	65	15.3	20.0	3.0	3.9	459.3	524.2
Aug	288	313	91.0	108.0	55	65	14.2	19.9	2.6	3.9	450.8	509.6
Sep	233	284	74.5	93.0	50	60	14.2	20.4	2.2	3.5	373.9	460.9
Oct	279	320	62.0	82.0	44	54	11.3	16.9	1.4	2.0	397 7	475.0
Nov	226	268	44.0	65.5	36	45	7.3	12.1	0.9	2.0	314.2	392.6
Dec	190	214	34.5	55.0	31	39	4.1	11.1	0.9	1.9	260.5	321.0

2014

	LVVWD		COH		NLV		BC		NELLIS		TOTAL	
	Flow (MGD)		Flow (MGD)		Flow (MGD)		Flow (MGD)		Flow (MGD)		Flow (MGD)	
MONTH	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max
Jan	189	209	36.0	53.5	30	39	4.4	11.3	0.9	1.7	260.3	314.7
Feb	193	213	37.5	56.5	31	46	4.2	10.5	1.1	2.3	266.8	328.0
Mar	232	264	45.5	63.0	34	43	7.4	12.3	1.7	2.3	320.6	384.8
Apr	266	300	55.0	73.5	40	50	9.8	17.5	1.8	2.4	372.6	443.9
May	304	340	69.0	88.5	48	60	12.0	16.2	2.0	2.8	435.0	507.0
Jun	284	308	82.5	101.0	53	62	13.3	18.8	2.3	3.0	435.1	492.9
Jul	293	328	93.5	111.5	58	66	15.3	20.0	3.0	3.9	462.8	529.8
Aug	288	313	93.5	111.5	57	67	14.2	19.9	2.6	3.9	455.3	515.5
Sep	233	284	77.0	96.0	50	60	14.2	20.4	2.2	3.5	376.4	463.9
Oct	279	320	64.0	83.5	45	55	11.3	16.9	1.4	2.0	400.7	477.7
Nov	226	268	45.5	67.0	38	47	7.3	12.1	0.9	2.0	317.7	396.6
Dec	190	214	36.5	56.5	31	39	4.1	11.1	0.9	1.9	262.5	322.5

2015

	LVVWD		COH		NLV		BC		NELLIS		TOTAL	
	Flow (MGD)		Flow (MGD)		Flow (MGD)		Flow (MGD)		Flow (MGD)		Flow (MGD)	
MONTH	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max
Jan	189	209	38.0	55.0	31	41	4.4	11.3	0.9	1.7	263.3	317.6
Feb	193	213	40.0	58.0	31	46	4.2	10.5	1.1	2.3	269.3	329.7
Mar	232	264	49.0	64.5	35	44	7.4	12.3	1.7	2.3	325.1	387.5
Apr	266	300	56.5	74.0	41	52	9.8	17.5	1.8	2.4	375.1	445.6
May	304	340	72.5	91.0	49	61	12.0	16.2	2.0	2.8	439.5	510.7
Jun	275	308	85.5	103.0	53	62	13.3	18.8	2.3	3.0	429.1	494.8
Jul	293	330	96.5	113.0	59	68	15.3	20.0	3.0	3.9	466.8	534.8
Aug	288	313	96.5	113.0	58	68	14.2	19.9	2.6	3.9	459.3	518.2
Sep	233	284	80.5	99.5	51	61	14.2	20.4	2.2	3.5	380.9	468.6
Oct	279	320	65.5	84.5	45	55	11.3	16.9	1.4	2.0	402.2	478.7
Nov	226	268	47.0	67.5	38	48	7.3	12.1	0.9	2.0	319.2	397.1
Dec	190	214	37.5	57.5	31	39	4.1	11.1	0.9	1.9	263.5	323.5

2016

2014 - Annual Water Flow Projections

LAS VEGAS VALLEY WATER DISTRICT

	CAMPBELL					STEWART					FAYLE					LINDEN	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max
Jan	14	17	1836.9	1846	1	12	14	1973.5	1987.5	1	37	38	2175.3	2187.3	1	0	0
Feb	14	17	1835.9	1846	1	12	14	1973.5	1987.5	1	37	38	2175.3	2187.3	1	0	0
Mar	18	20	1835.9	1846	1	13	17	1973.5	1987.5	1	44	50	2175.3	2187.3	1	0	0
Apr	24	30	1835.9	1846	1	16	21	1973.5	1987.5	1	50	51	2175.3	2187.3	1	0	0
May	27	31	1835.9	1846	1	19	20	1973.5	1987.5	1	53	53	2175.3	2187.3	1	0	0
Jun	26	32	1835.9	1846	1	19	20	1973.5	1987.5	1	54	61	2175.3	2187.3	1	0	0
Jul	38	44	1835.9	1846	1	21	22	1973.5	1987.5	1	52	57	2175.3	2187.3	1	0	0
Aug	38	43	1835.9	1846	1	21	22	1973.5	1987.5	1	52	56	2175.3	2187.3	1	0	0
Sep	28	38	1835.9	1846	1	16	20	1973.5	1987.5	1	41	50	2175.3	2187.3	1	0	0
Oct	23	30	1835.9	1846	1	15	19	1973.5	1987.5	1	53	61	2175.3	2187.3	1	0	0
Nov	16	17	1835.9	1846	1	16	19	1973.5	1987.5	1	43	53	2175.3	2187.3	1	0	0
Dec	14	17	1835.9	1846	1	12	14	1973.5	1987.5	1	36	39	2175.3	2187.3	1	0	0

	BROADBENT					CHARLESTON HEIGHTS					CARLTON SQUARE				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	18	20	2182.6	2190.8	1	9	11	2154.7	2161.7	1	8	9	2207.7	2220	1
Feb	19	21	2182.6	2190.8	1	9	11	2154.7	2161.7	1	9	10	2207.7	2220	1
Mar	19	22	2182.6	2190.8	1	14	15	2154.7	2161.7	1	12	13	2207.7	2220	1
Apr	18	23	2182.6	2190.8	1	19	19	2154.7	2161.7	1	14	17	2207.7	2220	1
May	27	30	2182.6	2190.8	1	12	12	2154.7	2161.7	1	19	21	2207.7	2220	1
Jun	25	28	2182.6	2190.8	1	0	0	2154.7	2161.7	1	4	9	2207.7	2220	1
Jul	33	39	2182.6	2190.8	1	0	0	2154.7	2161.7	1	9	10	2207.7	2220	1
Aug	33	36	2182.6	2190.8	1	0	0	2154.7	2161.7	1	9	10	2207.7	2220	1
Sep	25	31	2182.6	2190.8	1	0	0	2154.7	2161.7	1	7	10	2207.7	2220	1
Oct	35	40	2182.6	2190.8	1	10	12	2154.7	2161.7	1	16	20	2207.7	2220	1
Nov	25	29	2182.6	2190.8	1	9	11	2154.7	2161.7	1	11	14	2207.7	2220	1
Dec	18	20	2182.6	2190.8	1	9	11	2154.7	2161.7	1	8	10	2207.7	2220	1

	DECATUR / TROPICAL					WARM SPRINGS					BERMUDA					Total	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max
Jan	18	19	2527.1	2540.5	1	51	55	2412.6	2427.6	1	22	26	2415	2427.4	1	189	209
Feb	19	20	2527.1	2540.5	1	52	56	2412.6	2427.6	1	22	26	2415	2427.4	1	193	213
Mar	21	26	2527.1	2540.5	1	67	74	2412.6	2427.6	1	24	27	2415	2427.4	1	232	264
Apr	25	27	2527.1	2540.5	1	73	81	2412.6	2427.6	1	27	31	2415	2427.4	1	266	300
May	24	32	2527.1	2540.5	1	96	106	2412.6	2427.6	1	27	33	2415	2427.4	1	304	340
Jun	14	17	2527.1	2540.5	1	107	113	2412.6	2427.6	1	26	28	2415	2427.4	1	275	308
Jul	20	21	2527.1	2540.5	1	94	106	2412.6	2427.6	1	26	28	2415	2427.4	1	293	327
Aug	18	20	2527.1	2540.5	1	93	100	2412.6	2427.6	1	24	26	2415	2427.4	1	285	313
Sep	15	18	2527.1	2540.5	1	77	91	2412.6	2427.6	1	24	26	2415	2427.4	1	233	284
Oct	26	28	2527.1	2540.5	1	74	80	2412.6	2427.6	1	27	30	2415	2427.4	1	279	320
Nov	19	23	2527.1	2540.5	1	63	75	2412.6	2427.6	1	24	27	2415	2427.4	1	226	268
Dec	18	19	2527.1	2540.5	1	53	58	2412.6	2427.6	1	22	26	2415	2427.4	1	190	214

2014 - Annual Water Flow Projections

CITY OF HENDERSON

	PARKWAY					BLACK MOUNTAIN					EQUESTRIAN					COLLEGE				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	12	17	2493	2500	1	3	4.5	2230	2238	1	2.5	3.5	2232	2239	1	2.5	3.5	2494	2501	1
Feb	13	19	2493	2500	1	3.5	5	2230	2238	1	2.5	3.5	2232	2239	1	2.5	3.5	2494	2501	1
Mar	16	21	2493	2500	1	4	6	2230	2238	1	3	4	2232	2239	1	3.5	4.5	2494	2501	1
Apr	19	24	2493	2500	1	4	6	2230	2238	1	3	4.5	2232	2239	1	4	5	2494	2501	1
May	24	28	2493	2500	1	5.5	7.5	2230	2238	1	3.5	4.5	2232	2239	1	4.5	5.5	2494	2501	1
Jun	28	31	2493	2500	1	6	8	2230	2238	1	4	5	2232	2239	1	5.5	6.5	2494	2501	1
Jul	29	31	2493	2500	1	7	8.5	2230	2238	1	4.5	5.5	2232	2239	1	6.5	7.5	2494	2501	1
Aug	29	31	2493	2500	1	7	8.5	2230	2238	1	4.5	5.5	2232	2239	1	6.5	7.5	2494	2501	1
Sep	24	28	2493	2500	1	6	7.5	2230	2238	1	4	5	2232	2239	1	6	6.5	2494	2501	1
Oct	20	25	2493	2500	1	5	7	2230	2238	1	3.5	4.5	2232	2239	1	4.5	5.5	2494	2501	1
Nov	15	21	2493	2500	1	4	6	2230	2238	1	3	4	2232	2239	1	3.5	4.5	2494	2501	1
Dec	12	18	2493	2500	1	3.5	5	2230	2238	1	2.5	4	2232	2239	1	2.5	3.5	2494	2501	1

	HORIZON RIDGE					GIBSON / GALLERIA					PUMPING STATION NO. 3					NORTH				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	7	10	2362	2369	1	3	5	1865	1873	1	1.5	2.5	2093	2101	1	0.5	1.8	1831	1839	1
Feb	7	10	2362	2369	1	3	5	1865	1873	1	2	2.5	2093	2101	1	0.5	1.8	1831	1839	1
Mar	8	11	2362	2369	1	4	5	1865	1873	1	2.5	3.5	2093	2101	1	1.0	2.3	1831	1839	1
Apr	11	16	2362	2369	1	5	6	1865	1873	1	3	4	2093	2101	1	1.3	2.5	1831	1839	1
May	13	18	2362	2369	1	8	10	1865	1873	1	3.5	4.5	2093	2101	1	1.5	2.8	1831	1839	1
Jun	17	22	2362	2369	1	9	11	1865	1873	1	4	5	2093	2101	1	2.0	3.0	1831	1839	1
Jul	23	28	2362	2369	1	9	11	1865	1873	1	4	5	2093	2101	1	2.5	3.8	1831	1839	1
Aug	23	28	2362	2369	1	9	11	1865	1873	1	4	5	2093	2101	1	2.5	3.8	1831	1839	1
Sep	17	22	2362	2369	1	8	10	1865	1873	1	3.5	4.5	2093	2101	1	1.8	3.0	1831	1839	1
Oct	15	20	2362	2369	1	6	8	1865	1873	1	3	4	2093	2101	1	1.3	2.5	1831	1839	1
Nov	9	14	2362	2369	1	4	6	1865	1873	1	2	3	2093	2101	1	1.0	2.3	1831	1839	1
Dec	7	11	2362	2369	1	3	5	1865	1873	1	2	3	2093	2101	1	0.5	1.8	1831	1839	1

	MAGIC					FOOTHILLS					Total	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max
Jan	0.5	1.8	1831	1839	1	1	2	1906	1907	1	33.5	51.5
Feb	0.5	1.8	1831	1839	1	1	2	1906	1907	1	35.5	54.0
Mar	1.0	2.3	1831	1839	1	1.5	2.5	1906	1907	1	44.5	62.0
Apr	1.3	2.5	1831	1839	1	2	3	1906	1907	1	53.5	73.5
May	1.5	2.8	1831	1839	1	2.5	3.5	1906	1907	1	67.5	87.0
Jun	2.0	3.0	1831	1839	1	3	4	1906	1907	1	80.5	98.5
Jul	2.5	3.8	1831	1839	1	3	4	1906	1907	1	91.0	108.0
Aug	2.5	3.8	1831	1839	1	3	4	1906	1907	1	91.0	108.0
Sep	1.8	3.0	1831	1839	1	2.5	3.5	1906	1907	1	74.5	93.0
Oct	1.3	2.5	1831	1839	1	2.5	3	1906	1907	1	62.0	82.0
Nov	1.0	2.3	1831	1839	1	1.5	2.5	1906	1907	1	44.0	65.5
Dec	0.5	1.8	1831	1839	1	1	2	1906	1907	1	34.5	55.0

2014 - Annual Water Flow Projections

NORTH LAS VEGAS

	8C					TWIN LAKES PUMPING STATION					CARLTON SQUARE				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	5	7	2016	2027.5	1	1	1	2199.5	2207.5	1	9	12	2215.5	2224.5	1
Feb	5	7	2016	2027.5	1	1	1	2199.5	2207.5	1	9	13	2215.5	2224.5	1
Mar	6	8	2016	2027.5	1	1	1	2199.5	2207.5	1	10	13	2215.5	2224.5	1
Apr	8	10	2016	2027.5	1	1	1	2199.5	2207.5	1	12	15	2215.5	2224.5	1
May	9	11	2019	2027.5	1	1	1	2199.5	2207.5	1	14	17	2215.5	2224.5	1
Jun	9	11	2019	2027.5	1	2	2	2199.5	2207.5	1	14	16	2215.5	2224.5	1
Jul	10	12	2019	2027.5	1	2	2	2199.5	2207.5	1	16	18	2215.5	2224.5	1
Aug	9	11	2019	2027.5	1	2	2	2199.5	2207.5	1	16	19	2215.5	2224.5	1
Sep	8	10	2019	2027.5	1	1	1	2199.5	2207.5	1	16	19	2215.5	2224.5	1
Oct	7	9	2016	2027.5	1	1	1	2199.5	2207.5	1	15	18	2215.5	2224.5	1
Nov	5	6	2016	2027.5	1	1	1	2199.5	2207.5	1	12	15	2215.5	2224.5	1
Dec	3	4	2016	2027.5	1	1	1	2199.5	2207.5	1	12	15	2215.5	2224.5	1

	GRAND TETON					DEER SPRINGS					DECATUR / MOCCASIN					Total	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max
Jan	3	4	2323.5	2329	1	4	5	2317	2329	1	7	9	2420	2430	1	29	38
Feb	3	4	2323.5	2329	1	5	7	2317	2329	1	8	12	2420	2430	1	31	46
Mar	3	4	2323.5	2329	1	5	6	2317	2329	1	9	11	2420	2430	1	34	43
Apr	5	6	2323.5	2329	1	5	6	2317	2329	1	9	11	2420	2430	1	40	50
May	7	9	2323.5	2329	1	5	6	2322	2329	1	11	14	2422	2430	1	47	58
Jun	10	12	2323.5	2329	1	5	6	2322	2329	1	12	14	2422	2430	1	52	61
Jul	10	12	2323.5	2329	1	6	7	2322	2329	1	13	15	2422	2430	1	57	65
Aug	10	12	2323.5	2329	1	6	7	2322	2329	1	12	14	2422	2430	1	55	65
Sep	8	10	2323.5	2329	1	6	7	2322	2329	1	11	13	2422	2430	1	50	60
Oct	6	7	2323.5	2329	1	5	6	2317	2329	1	10	12	2420	2430	1	44	54
Nov	5	6	2323.5	2329	1	4	5	2317	2329	1	9	11	2420	2430	1	36	45
Dec	3	4	2323.5	2329	1	4	5	2317	2329	1	8	10	2420	2430	1	31	39

2014 - Annual Water Flow Projections

BOULDER CITY

MONTH	HEMENWAY					PUMPING STATION NO 7				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	0.4	0.8	2305	2310	1	1.9	2.6	2560	2569	1
Feb	0.3	0.4	2305	2310	1	2.0	3.4	2560	2569	1
Mar	0.4	0.9	2305	2310	1	2.6	4.0	2562	2569	1
Apr	0.5	1.2	2305	2310	1	3.9	6.1	2562	2569	1
May	0.3	0.7	2310	2311.2	1	5.3	6.6	2565	2569	1
Jun	0.4	0.5	2310	2311.2	1	5.4	7.9	2565	2569	1
Jul	0.9	1.1	2310	2311.2	1	5.7	6.8	2565	2569	1
Aug	0.9	1.5	2310	2311.2	1	5.7	7.8	2565	2569	1
Sep	0.7	0.8	2310	2311.2	1	5.4	6.9	2565	2569	1
Oct	0.6	0.8	2305	2310	1	4.5	7.2	2562	2569	1
Nov	0.5	0.8	2305	2310	1	3.0	5.1	2560	2569	1
Dec	0.3	0.9	2305	2310	1	2.1	3.8	2560	2569	1

MONTH	PUMPING STATION NO.7B					BC RAW WATER PUMPING SYSTEM				Total	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Flow (MGD)	
	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	Avg	Max
Jan	1.4	3.8	2655	2660	1	0.7	4.1	2655	2660	4.4	11.3
Feb	1.3	2.8	2655	2660	1	0.6	3.9	2655	2660	4.2	10.6
Mar	2.1	3.5	2655	2660	1	2.3	3.9	2655	2663	7.4	12.3
Apr	2.0	3.4	2655	2660	1	3.4	4.8	2655	2663	9.8	17.5
May	2.4	3.6	2660	2667	1	4.0	5.3	2660	2668	12.0	16.2
Jun	2.8	3.5	2660	2667	1	4.7	6.9	2660	2668	13.3	18.8
Jul	3.6	4.7	2660	2667	1	5.1	7.4	2660	2668	15.3	20.0
Aug	3.5	4.2	2660	2667	1	4.1	6.4	2660	2668	14.2	19.9
Sep	2.8	4.3	2660	2667	1	5.3	8.4	2660	2668	14.2	20.4
Oct	2.4	3.2	2655	2660	1	3.8	5.7	2655	2663	11.3	16.9
Nov	1.8	2.8	2655	2660	1	2.0	3.4	2655	2660	7.3	12.1
Dec	1.4	2.4	2655	2660	1	0.3	4.0	2655	2660	4.1	11.1

NELLIS

MONTH	NELLIS	
	Flow (MGD)	
	Avg	Max
Jan	0.9	1.7
Feb	1.1	2.3
Mar	1.7	2.3
Apr	1.8	2.4
May	2.0	2.8
Jun	2.3	3.0
Jul	3.0	3.9
Aug	2.6	3.9
Sep	2.2	3.5
Oct	1.4	2.0
Nov	0.9	2.0
Dec	0.9	1.9

2015 - Annual Water Flow Projections

LAS VEGAS VALLEY WATER DISTRICT

	CAMPBELL					STEWART					FAYLE *					LINDEN	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max
Jan	14	17	1835.9	1846	1	12	14	1973.5	1987.5	1	37	38	2175.3	2187.3	1	0	0
Feb	14	17	1835.9	1846	1	12	14	1973.5	1987.5	1	37	38	2175.3	2187.3	1	0	0
Mar	18	20	1835.9	1846	1	13	17	1973.5	1987.5	1	44	50	2175.3	2187.3	1	0	0
Apr	22	28	1835.9	1846	1	15	19	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
May	24	30	1835.9	1846	1	19	20	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
Jun	26	32	1835.9	1846	1	21	22	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
Jul	38	44	1835.9	1846	1	21	22	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
Aug	38	43	1835.9	1846	1	21	22	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
Sep	28	38	1835.9	1846	1	16	20	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
Oct	23	30	1835.9	1846	1	15	19	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
Nov	16	17	1835.9	1846	1	16	19	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
Dec	13	16	1835.9	1846	1	12	14	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0

	BROADBENT					CHARLESTON HEIGHTS					CARLTON SQUARE				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	18	20	2182.6	2190.8	1	9	11	2154.7	2161.7	1	8	9	2207.7	2220	1
Feb	19	21	2182.6	2190.8	1	9	11	2154.7	2161.7	1	9	10	2207.7	2220	1
Mar	19	22	2182.6	2190.8	1	14	15	2154.7	2161.7	1	12	13	2207.7	2220	1
Apr	52	58	2182.6	2190.8	1	12	15	2154.7	2161.7	1	15	18	2207.7	2220	1
May	67	76	2182.6	2190.8	1	12	12	2154.7	2161.7	1	17	21	2207.7	2220	1
Jun	59	63	2182.6	2190.8	1	0	0	2154.7	2161.7	1	5	8	2207.7	2220	1
Jul	55	65	2182.6	2190.8	1	0	0	2154.7	2161.7	1	8	12	2207.7	2220	1
Aug	52	57	2182.6	2190.8	1	0	0	2154.7	2161.7	1	10	12	2207.7	2220	1
Sep	44	54	2182.6	2190.8	1	0	0	2154.7	2161.7	1	6	9	2207.7	2220	1
Oct	58	67	2182.6	2190.8	1	11	14	2154.7	2161.7	1	17	20	2207.7	2220	1
Nov	46	55	2182.6	2190.8	1	9	11	2154.7	2161.7	1	11	13	2207.7	2220	1
Dec	39	41	2182.6	2190.8	1	8	10	2154.7	2161.7	1	10	12	2207.7	2220	1

	DECATUR / TROPICAL					WARM SPRINGS					BERMUDA					Total	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max
Jan	18	19	2527.1	2540.5	1	51	55	2412.6	2427.6	1	22	26	2415	2427.4	1	189	209
Feb	19	20	2527.1	2540.5	1	52	56	2412.6	2427.6	1	22	26	2415	2427.4	1	193	213
Mar	21	26	2527.1	2540.5	1	67	74	2412.6	2427.6	1	24	27	2415	2427.4	1	232	264
Apr	25	27	2527.1	2540.5	1	99	107	2412.6	2427.6	1	26	28	2415	2427.4	1	286	300
May	22	29	2527.1	2540.5	1	116	124	2412.6	2427.6	1	27	28	2415	2427.4	1	304	340
Jun	16	19	2527.1	2540.5	1	128	134	2412.6	2427.6	1	29	30	2415	2427.4	1	284	308
Jul	16	20	2527.1	2540.5	1	126	135	2412.6	2427.6	1	29	30	2415	2427.4	1	293	328
Aug	18	21	2527.1	2540.5	1	123	129	2412.6	2427.6	1	26	29	2415	2427.4	1	288	313
Sep	15	19	2527.1	2540.5	1	99	117	2412.6	2427.6	1	25	27	2415	2427.4	1	233	284
Oct	26	29	2527.1	2540.5	1	103	111	2412.6	2427.6	1	26	30	2415	2427.4	1	279	320
Nov	20	23	2527.1	2540.5	1	83	102	2412.6	2427.6	1	25	28	2415	2427.4	1	226	268
Dec	19	21	2527.1	2540.5	1	66	75	2412.6	2427.6	1	23	25	2415	2427.4	1	190	214

* Fryts Reservoir to be taken out of service in 2015 for rehabilitation

2015 - Annual Water Flow Projections

CITY OF HENDERSON

	PARKWAY					BLACK MOUNTAIN					EQUESTRIAN					COLLEGE				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	12	17	2493	2500	1	3	4.5	2230	2238	1	3	3.5	2232	2239	1	3	4	2494	2501	1
Feb	13	19	2493	2500	1	3.5	5	2230	2238	1	3	4	2232	2239	1	3	4	2494	2501	1
Mar	16	21	2493	2500	1	4	6	2230	2238	1	3	4	2232	2239	1	3.5	4.5	2494	2501	1
Apr	19	24	2493	2500	1	4.5	6	2230	2238	1	3.5	4.5	2232	2239	1	4	5	2494	2501	1
May	24	28	2493	2500	1	5.5	7.5	2230	2238	1	3.5	4.5	2232	2239	1	4.5	5.5	2494	2501	1
Jun	28	31	2493	2500	1	6	8	2230	2238	1	4.5	5.5	2232	2239	1	6	7	2494	2501	1
Jul	29	31	2493	2500	1	7	8.5	2230	2238	1	5	6	2232	2239	1	6.5	7.5	2494	2501	1
Aug	29	31	2493	2500	1	7	8.5	2230	2238	1	5	6	2232	2239	1	6.5	7.5	2494	2501	1
Sep	24	28	2493	2500	1	6	7.5	2230	2238	1	4.5	5.5	2232	2239	1	6	7	2494	2501	1
Oct	20	25	2493	2500	1	5	7	2230	2238	1	4	4.5	2232	2239	1	5	6	2494	2501	1
Nov	15	21	2493	2500	1	4	6	2230	2238	1	3	4	2232	2239	1	4	5	2494	2501	1
Dec	12	18	2493	2500	1	3.5	5	2230	2238	1	3	4	2232	2239	1	3	4	2494	2501	1

	HORIZON RIDGE					GIBSON / GALLERIA					PUMPING STATION NO 3					NORTH				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	8	11	2362	2369	1	3	5	1865	1873	1	2	3	2093	2101	1	0.5	1.8	1831	1839	1
Feb	8	11	2362	2369	1	3	5	1865	1873	1	2	3	2093	2101	1	0.5	1.8	1831	1839	1
Mar	9	12	2362	2369	1	4	5	1865	1873	1	2.5	3.5	2093	2101	1	1.0	2.3	1831	1839	1
Apr	11	16	2362	2369	1	5	6	1865	1873	1	3	4	2093	2101	1	1.5	2.5	1831	1839	1
May	14	19	2362	2369	1	8	10	1865	1873	1	3.5	4.5	2093	2101	1	1.8	3.0	1831	1839	1
Jun	18	23	2362	2369	1	9	11	1865	1873	1	4	5	2093	2101	1	2.0	3.3	1831	1839	1
Jul	24	29	2362	2369	1	9	12	1865	1873	1	4.5	5.5	2093	2101	1	2.5	3.8	1831	1839	1
Aug	24	29	2362	2369	1	9	12	1865	1873	1	4.5	5.5	2093	2101	1	2.5	3.8	1831	1839	1
Sep	18	23	2362	2369	1	8	10	1865	1873	1	4	5	2093	2101	1	1.8	3.0	1831	1839	1
Oct	16	21	2362	2369	1	6	8	1865	1873	1	3	4	2093	2101	1	1.3	2.3	1831	1839	1
Nov	10	15	2362	2369	1	4	6	1865	1873	1	2	3	2093	2101	1	1.0	2.3	1831	1839	1
Dec	8	12	2362	2369	1	3	5	1865	1873	1	2	3	2093	2101	1	0.5	1.8	1831	1839	1

	MAGIC					FOOTHILLS					Total	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max
Jan	0.5	1.8	1831	1839	1	1	2	1906	1907	1	36.0	53.5
Feb	0.5	1.8	1831	1839	1	1	2	1906	1907	1	37.5	56.5
Mar	1.0	2.3	1831	1839	1	1.5	2.5	1906	1907	1	45.5	63.0
Apr	1.5	2.5	1831	1839	1	2	3	1906	1907	1	55.0	73.5
May	1.8	3.0	1831	1839	1	2.5	3.5	1906	1907	1	69.0	88.5
Jun	2.0	3.3	1831	1839	1	3	4	1906	1907	1	82.5	101.0
Jul	2.5	3.8	1831	1839	1	3.5	4.5	1906	1907	1	93.5	111.5
Aug	2.5	3.8	1831	1839	1	3.5	4.5	1906	1907	1	93.5	111.5
Sep	1.8	3.0	1831	1839	1	3	4	1906	1907	1	77.0	96.0
Oct	1.3	2.3	1831	1839	1	2.5	3.5	1906	1907	1	64.0	83.5
Nov	1.0	2.3	1831	1839	1	1.5	2.5	1906	1907	1	45.5	67.0
Dec	0.5	1.8	1831	1839	1	1	2	1906	1907	1	36.5	56.5

2015 - Annual Water Flow Projections

NORTH LAS VEGAS

	6C					TWIN LAKES PUMPING STATION					CARLTON SQUARE				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	5	7	2016	2027.5	1	1	1	2199.5	2207.5	1	9	12	2215.5	2224.5	1
Feb	5	7	2016	2027.5	1	1	1	2199.5	2207.5	1	9	13	2215.5	2224.5	1
Mar	6	8	2016	2027.5	1	1	1	2199.5	2207.5	1	10	13	2215.5	2224.5	1
Apr	8	10	2016	2027.5	1	1	1	2199.5	2207.5	1	12	15	2215.5	2224.5	1
May	9	11	2019	2027.5	1	1	1	2199.5	2207.5	1	14	17	2215.5	2224.5	1
Jun	9	11	2019	2027.5	1	2	2	2199.5	2207.5	1	14	16	2215.5	2224.5	1
Jul	10	12	2019	2027.5	1	2	2	2199.5	2207.5	1	17	20	2215.5	2224.5	1
Aug	9	11	2019	2027.5	1	2	2	2199.5	2207.5	1	17	20	2215.5	2224.5	1
Sep	8	10	2019	2027.5	1	1	1	2199.5	2207.5	1	16	19	2215.5	2224.5	1
Oct	7	9	2016	2027.5	1	1	1	2199.5	2207.5	1	15	18	2215.5	2224.5	1
Nov	6	8	2016	2027.5	1	1	1	2199.5	2207.5	1	13	16	2215.5	2224.5	1
Dec	3	4	2016	2027.5	1	1	1	2199.5	2207.5	1	12	15	2215.5	2224.5	1

	GRAND TETON					DEER SPRINGS					DECATUR / MOCCASIN					Total	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max
Jan	3	4	2323.5	2329	1	5	7	2317	2329	1	7	9	2420	2430	1	30	39
Feb	3	4	2323.5	2329	1	5	7	2317	2329	1	8	12	2420	2430	1	31	46
Mar	3	4	2323.5	2329	1	5	6	2317	2329	1	9	11	2420	2430	1	34	43
Apr	5	6	2323.5	2329	1	5	6	2317	2329	1	9	11	2420	2430	1	40	50
May	7	9	2323.5	2329	1	6	7	2322	2329	1	11	14	2422	2430	1	48	60
Jun	10	12	2323.5	2329	1	6	7	2322	2329	1	12	14	2422	2430	1	53	62
Jul	10	12	2323.5	2329	1	6	7	2322	2329	1	13	15	2422	2430	1	58	66
Aug	10	12	2323.5	2329	1	6	7	2322	2329	1	13	15	2422	2430	1	57	67
Sep	8	10	2323.5	2329	1	6	7	2322	2329	1	11	13	2422	2430	1	50	60
Oct	7	9	2323.5	2329	1	5	6	2317	2329	1	10	12	2420	2430	1	45	55
Nov	5	6	2323.5	2329	1	4	5	2317	2329	1	9	11	2420	2430	1	38	47
Dec	3	4	2323.5	2329	1	4	5	2317	2329	1	8	10	2420	2430	1	31	39

2015 - Annual Water Flow Projections

BOULDER CITY

	HENDERWAY					PUMPING STATION NO. 7				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	0.4	0.8	2305	2310	1	1.9	2.6	2560	2569	1
Feb	0.3	0.4	2305	2310	1	2.0	3.4	2560	2569	1
Mar	0.4	0.9	2305	2310	1	2.6	4.0	2562	2569	1
Apr	0.5	1.2	2305	2310	1	3.9	8.1	2562	2569	1
May	0.3	0.7	2310	2311.2	1	5.3	6.6	2565	2569	1
Jun	0.4	0.5	2310	2311.2	1	5.4	7.9	2565	2569	1
Jul	0.9	1.1	2310	2311.2	1	5.7	6.8	2565	2569	1
Aug	0.9	1.5	2310	2311.2	1	5.7	7.8	2565	2569	1
Sep	0.7	0.8	2310	2311.2	1	5.4	6.9	2565	2569	1
Oct	0.6	0.8	2305	2310	1	4.5	7.2	2562	2569	1
Nov	0.5	0.8	2305	2310	1	3.0	5.1	2560	2569	1
Dec	0.3	0.9	2305	2310	1	2.1	3.8	2560	2569	1

	PUMPING STATION NO.7B					BC RAW WATER PUMPING SYSTEM				Total	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	Avg	Max
Jan	1.4	3.8	2655	2660	1	0.7	4.1	2655	2660	4.4	11.3
Feb	1.3	2.8	2655	2660	1	0.6	3.9	2655	2660	4.2	10.5
Mar	2.1	3.5	2655	2660	1	2.3	3.9	2655	2663	7.4	12.3
Apr	2.0	3.4	2655	2660	1	3.4	4.8	2655	2663	9.8	17.5
May	2.4	3.6	2660	2667	1	4.0	5.3	2660	2668	12.0	16.2
Jun	2.8	3.5	2660	2667	1	4.7	6.9	2660	2668	13.3	18.8
Jul	3.6	4.7	2660	2667	1	5.1	7.4	2660	2668	16.3	20.0
Aug	3.5	4.2	2660	2667	1	4.1	6.4	2660	2668	14.2	19.9
Sep	2.8	4.3	2660	2667	1	5.3	8.4	2660	2668	14.2	20.4
Oct	2.4	3.2	2655	2660	1	3.8	5.7	2655	2663	11.3	16.9
Nov	1.8	2.8	2655	2660	1	2.0	3.4	2655	2660	7.3	12.1
Dec	1.4	2.4	2655	2660	1	0.3	4.0	2655	2660	4.1	11.1

NELLIS

	NELLIS	
	Flow (MGD)	
MONTH	Avg	Max
Jan	0.9	1.7
Feb	1.1	2.3
Mar	1.7	2.3
Apr	1.8	2.4
May	2.0	2.8
Jun	2.3	3.0
Jul	3.0	3.9
Aug	2.6	3.9
Sep	2.2	3.5
Oct	1.4	2.0
Nov	0.9	2.0
Dec	0.9	1.9

2016 - Annual Water Flow Projections

LAS VEGAS VALLEY WATER DISTRICT

	CAMPBELL					STEWART					FAYLE *					LINDEN	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max
Jan	14	17	1835.9	1846	1	12	14	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
Feb	14	17	1835.9	1846	1	12	14	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
Mar	18	20	1835.9	1846	1	13	17	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
Apr	22	28	1835.9	1846	1	15	19	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
May	24	30	1835.9	1846	1	19	20	1973.5	1987.5	1	0	0	2175.3	2187.3	1	0	0
Jun	26	32	1835.9	1846	1	21	22	1973.5	1987.5	1	54	61	2175.3	2187.3	1	0	0
Jul	38	44	1835.9	1846	1	21	22	1973.5	1987.5	1	52	58	2175.3	2187.3	1	0	0
Aug	38	43	1835.9	1846	1	21	22	1973.5	1987.5	1	52	56	2175.3	2187.3	1	0	0
Sep	28	38	1835.9	1846	1	16	20	1973.5	1987.5	1	41	50	2175.3	2187.3	1	0	0
Oct	23	30	1835.9	1846	1	15	19	1973.5	1987.5	1	53	61	2175.3	2187.3	1	0	0
Nov	16	17	1835.9	1846	1	16	19	1973.5	1987.5	1	43	53	2175.3	2187.3	1	0	0
Dec	14	17	1835.9	1846	1	12	14	1973.5	1987.5	1	36	39	2175.3	2187.3	1	0	0

	BROADBENT					CHARLESTON HEIGHTS					CARLTON SQUARE				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	38	39	2182.6	2190.8	1	7	9	2154.7	2161.7	1	10	11	2207.7	2220	1
Feb	39	41	2182.6	2190.8	1	8	10	2154.7	2161.7	1	10	11	2207.7	2220	1
Mar	50	55	2182.6	2190.8	1	9	11	2154.7	2161.7	1	12	14	2207.7	2220	1
Apr	52	58	2182.6	2190.8	1	12	15	2154.7	2161.7	1	15	18	2207.7	2220	1
May	67	76	2182.6	2190.8	1	12	12	2154.7	2161.7	1	17	21	2207.7	2220	1
Jun	25	28	2182.6	2190.8	1	0	0	2154.7	2161.7	1	4	9	2207.7	2220	1
Jul	33	39	2182.6	2190.8	1	0	0	2154.7	2161.7	1	9	10	2207.7	2220	1
Aug	33	36	2182.6	2190.8	1	0	0	2154.7	2161.7	1	9	10	2207.7	2220	1
Sep	25	31	2182.6	2190.8	1	0	0	2154.7	2161.7	1	7	10	2207.7	2220	1
Oct	35	40	2182.6	2190.8	1	10	12	2154.7	2161.7	1	16	20	2207.7	2220	1
Nov	25	29	2182.6	2190.8	1	9	11	2154.7	2161.7	1	11	14	2207.7	2220	1
Dec	18	20	2182.6	2190.8	1	9	11	2154.7	2161.7	1	8	10	2207.7	2220	1

	DECATUR / TROPICAL					WARM SPRINGS					BERMUDA					Total	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max
Jan	19	20	2527.1	2540.5	1	66	74	2412.6	2427.6	1	23	25	2415	2427.4	1	189	209
Feb	19	20	2527.1	2540.5	1	67	75	2412.6	2427.6	1	24	25	2415	2427.4	1	193	213
Mar	20	22	2527.1	2540.5	1	85	98	2412.6	2427.6	1	25	27	2415	2427.4	1	232	264
Apr	25	27	2527.1	2540.5	1	99	107	2412.6	2427.6	1	26	28	2415	2427.4	1	266	300
May	22	29	2527.1	2540.5	1	116	124	2412.6	2427.6	1	27	28	2415	2427.4	1	304	340
Jun	14	17	2527.1	2540.5	1	105	111	2412.6	2427.6	1	26	28	2415	2427.4	1	275	308
Jul	20	22	2527.1	2540.5	1	84	107	2412.6	2427.6	1	26	28	2415	2427.4	1	293	330
Aug	18	20	2527.1	2540.5	1	93	100	2412.6	2427.6	1	24	26	2415	2427.4	1	288	313
Sep	15	18	2527.1	2540.5	1	77	91	2412.6	2427.6	1	24	26	2415	2427.4	1	233	284
Oct	26	28	2527.1	2540.5	1	74	80	2412.6	2427.6	1	27	30	2415	2427.4	1	279	320
Nov	19	23	2527.1	2540.5	1	63	75	2412.6	2427.6	1	24	27	2415	2427.4	1	226	266
Dec	18	19	2527.1	2540.5	1	53	58	2412.6	2427.6	1	22	26	2415	2427.4	1	190	214

* Fayle Reservoir to be taken out of service in 2016 for rehabilitation

2016 - Annual Water Flow Projections

CITY OF HENDERSON

	PARKWAY					BLACK MOUNTAIN					EQUESTRIAN					COLLEGE				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	12	17	2493	2500	1	3.5	4.5	2230	2238	1	3	3.5	2232	2239	1	3	4	2494	2501	1
Feb	13	19	2493	2500	1	4	5	2230	2238	1	3	4	2232	2239	1	3	4	2494	2501	1
Mar	16	21	2493	2500	1	4.5	6	2230	2238	1	3.5	4	2232	2239	1	4	5	2494	2501	1
Apr	19	24	2493	2500	1	4.5	6	2230	2238	1	3.5	4.5	2232	2239	1	4.5	5.5	2494	2501	1
May	24	28	2493	2500	1	6	7.5	2230	2238	1	3.5	4.5	2232	2239	1	5	6	2494	2501	1
Jun	28	31	2493	2500	1	6.5	8	2230	2238	1	4.5	5.5	2232	2239	1	6	7	2494	2501	1
Jul	29	31	2493	2500	1	7	8.5	2230	2238	1	5	6	2232	2239	1	7	8	2494	2501	1
Aug	29	31	2493	2500	1	7	8.5	2230	2238	1	5	6	2232	2239	1	7	8	2494	2501	1
Sep	24	29	2493	2500	1	6.5	7.5	2230	2238	1	4.5	5.5	2232	2239	1	6	7	2494	2501	1
Oct	20	25	2493	2500	1	5.5	7	2230	2238	1	4	4.5	2232	2239	1	5	6	2494	2501	1
Nov	15	21	2493	2500	1	4.5	6	2230	2238	1	3	4	2232	2239	1	4	5	2494	2501	1
Dec	12	18	2493	2500	1	3.5	5	2230	2238	1	3	4	2232	2239	1	3	4	2494	2501	1

	HORIZON RIDGE					GIBSON / GALLERIA					PUMPING STATION NO. 3					NORTH				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	8	11	2362	2369	1	3	5	1865	1873	1	2	3	2093	2101	1	1.0	2.3	1831	1839	1
Feb	8	11	2362	2369	1	3	5	1865	1873	1	2.5	3	2093	2101	1	1.0	2.3	1831	1839	1
Mar	9	12	2362	2369	1	4	5	1865	1873	1	3	4	2093	2101	1	1.5	2.5	1831	1839	1
Apr	12	16	2362	2369	1	5	6	1865	1873	1	3	4	2093	2101	1	1.5	2.5	1831	1839	1
May	15	20	2362	2369	1	9	11	1865	1873	1	3.5	4.5	2093	2101	1	2.0	3.0	1831	1839	1
Jun	19	24	2362	2369	1	10	12	1865	1873	1	4	5	2093	2101	1	2.3	3.3	1831	1839	1
Jul	25	30	2362	2369	1	10	12	1865	1873	1	4.5	5.5	2093	2101	1	2.8	3.8	1831	1839	1
Aug	25	30	2362	2369	1	10	12	1865	1873	1	4.5	5.5	2093	2101	1	2.8	3.8	1831	1839	1
Sep	19	24	2362	2369	1	9	11	1865	1873	1	4	5	2093	2101	1	2.3	3.3	1831	1839	1
Oct	16	21	2362	2369	1	6	8	1865	1873	1	3	4	2093	2101	1	1.8	2.8	1831	1839	1
Nov	10	15	2362	2369	1	4	6	1865	1873	1	2	3	2093	2101	1	1.5	2.5	1831	1839	1
Dec	8	12	2362	2369	1	3	5	1865	1873	1	2	3	2093	2101	1	1.0	2.3	1831	1839	1

	MAGIC					FOOTHILLS					Total	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max
Jan	1.0	2.3	1831	1839	1	1.5	2.5	1906	1907	1	38.0	55.0
Feb	1.0	2.3	1831	1839	1	1.5	2.5	1906	1907	1	40.0	58.0
Mar	1.5	2.5	1831	1839	1	2	2.5	1906	1907	1	49.0	64.5
Apr	1.5	2.5	1831	1839	1	2	3	1906	1907	1	56.5	74.0
May	2.0	3.0	1831	1839	1	2.5	3.5	1906	1907	1	72.5	91.0
Jun	2.3	3.3	1831	1839	1	3	4	1906	1907	1	86.5	103.0
Jul	2.8	3.8	1831	1839	1	3.5	4.5	1906	1907	1	96.5	113.0
Aug	2.8	3.8	1831	1839	1	3.5	4.5	1906	1907	1	96.5	113.0
Sep	2.3	3.3	1831	1839	1	3	4	1906	1907	1	80.5	99.5
Oct	1.8	2.8	1831	1839	1	2.5	3.5	1906	1907	1	66.5	84.5
Nov	1.5	2.5	1831	1839	1	1.5	2.5	1906	1907	1	47.0	67.5
Dec	1.0	2.3	1831	1839	1	1	2	1906	1907	1	37.5	57.5

2016 - Annual Water Flow Projections

NORTH LAS VEGAS

	SC					TWIN LAKES PUMPING STATION					CARLTON SQUARE				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	5	7	2016	2027.5	1	1	1	2199.5	2207.5	1	9	12	2215.5	2224.5	1
Feb	5	7	2016	2027.5	1	1	1	2199.5	2207.5	1	9	13	2215.5	2224.5	1
Mar	6	8	2016	2027.5	1	1	1	2199.5	2207.5	1	11	14	2215.5	2224.5	1
Apr	8	10	2016	2027.5	1	1	1	2199.5	2207.5	1	13	16	2215.5	2224.5	1
May	9	11	2019	2027.5	1	2	2	2199.5	2207.5	1	14	17	2215.5	2224.5	1
Jun	9	11	2019	2027.5	1	2	2	2199.5	2207.5	1	14	16	2215.5	2224.5	1
Jul	10	12	2019	2027.5	1	2	2	2199.5	2207.5	1	17	20	2215.5	2224.5	1
Aug	10	12	2019	2027.5	1	2	2	2199.5	2207.5	1	17	20	2215.5	2224.5	1
Sep	6	10	2019	2027.5	1	1	1	2199.5	2207.5	1	16	19	2215.5	2224.5	1
Oct	7	9	2016	2027.5	1	1	1	2199.5	2207.5	1	15	18	2215.5	2224.5	1
Nov	6	8	2016	2027.5	1	1	1	2199.5	2207.5	1	13	16	2215.5	2224.5	1
Dec	3	4	2016	2027.5	1	1	1	2199.5	2207.5	1	12	15	2215.5	2224.5	1

	GRAND TETON					DEER SPRINGS					DECATUR / MOCCASIN					Total	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)	Avg	Max
Jan	3	4	2323.5	2329	1	5	7	2317	2329	1	8	10	2420	2430	1	31	41
Feb	3	4	2323.5	2329	1	5	7	2317	2329	1	8	12	2420	2430	1	31	46
Mar	3	4	2323.5	2329	1	5	6	2317	2329	1	9	11	2420	2430	1	35	44
Apr	5	6	2323.5	2329	1	5	6	2317	2329	1	9	11	2420	2430	1	41	52
May	7	9	2323.5	2329	1	6	7	2322	2329	1	11	14	2422	2430	1	49	61
Jun	10	12	2323.5	2329	1	6	7	2322	2329	1	12	14	2422	2430	1	53	62
Jul	11	13	2323.5	2329	1	6	7	2322	2329	1	13	15	2422	2430	1	59	68
Aug	10	12	2323.5	2329	1	6	7	2322	2329	1	13	15	2422	2430	1	58	68
Sep	8	10	2323.5	2329	1	6	7	2322	2329	1	12	14	2422	2430	1	51	61
Oct	7	9	2323.5	2329	1	5	6	2317	2329	1	10	12	2420	2430	1	46	56
Nov	5	6	2323.5	2329	1	4	5	2317	2329	1	9	11	2420	2430	1	38	48
Dec	3	4	2323.5	2329	1	4	5	2317	2329	1	8	10	2420	2430	1	31	39

2016 - Annual Water Flow Projections

BOULDER CITY

	HEMENWAY					PUMPING STATION NO. 7				
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Cl_2
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	(mg/L)
Jan	0.4	0.8	2305	2310	1	1.9	2.6	2560	2569	1
Feb	0.3	0.4	2305	2310	1	2.0	3.4	2560	2569	1
Mar	0.4	0.9	2305	2310	1	2.6	4.0	2562	2569	1
Apr	0.5	1.2	2305	2310	1	3.9	6.1	2562	2569	1
May	0.3	0.7	2310	2311.2	1	5.3	6.6	2565	2569	1
Jun	0.4	0.5	2310	2311.2	1	5.4	7.9	2565	2569	1
Jul	0.9	1.1	2310	2311.2	1	5.7	6.8	2565	2569	1
Aug	0.9	1.5	2310	2311.2	1	5.7	7.8	2565	2569	1
Sep	0.7	0.8	2310	2311.2	1	5.4	6.9	2565	2569	1
Oct	0.6	0.8	2305	2310	1	4.5	7.2	2562	2569	1
Nov	0.5	0.8	2305	2310	1	3.0	5.1	2560	2569	1
Dec	0.3	0.9	2305	2310	1	2.1	3.8	2560	2569	1

	PUMPING STATION NO.7B					BC RAW WATER PUMPING SYSTEM				Total	
	Flow (MGD)		HGL (ft)		Cl_2	Flow (MGD)		HGL (ft)		Flow (MGD)	
MONTH	Avg	Max	Min	Max	(mg/L)	Avg	Max	Min	Max	Avg	Max
Jan	1.4	3.8	2655	2660	1	0.7	4.1	2655	2660	4.4	11.3
Feb	1.3	2.8	2655	2660	1	0.6	3.9	2655	2660	4.2	10.5
Mar	2.1	3.5	2655	2660	1	2.3	3.9	2655	2663	7.4	12.3
Apr	2.0	3.4	2655	2660	1	3.4	4.8	2655	2663	9.8	17.5
May	2.4	3.6	2660	2667	1	4.0	5.3	2660	2668	12.0	16.2
Jun	2.8	3.5	2660	2667	1	4.7	6.9	2660	2668	13.3	18.8
Jul	3.6	4.7	2660	2667	1	5.1	7.4	2660	2668	15.3	20.0
Aug	3.5	4.2	2660	2667	1	4.1	6.4	2660	2668	14.2	19.9
Sep	2.8	4.3	2660	2667	1	5.3	8.4	2660	2668	14.2	20.4
Oct	2.4	3.2	2655	2660	1	3.8	5.7	2655	2663	11.3	16.9
Nov	1.8	2.8	2655	2660	1	2.0	3.4	2655	2660	7.3	12.1
Dec	1.4	2.4	2655	2660	1	0.3	4.0	2655	2660	4.1	11.1

NELLIS

	NELLIS	
	Flow (MGD)	
MONTH	Avg	Max
Jan	0.9	1.7
Feb	1.1	2.3
Mar	1.7	2.3
Apr	1.8	2.4
May	2.0	2.8
Jun	2.3	3.0
Jul	3.0	3.9
Aug	2.6	3.9
Sep	2.2	3.5
Oct	1.4	2.0
Nov	0.9	2.0
Dec	0.9	1.9

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM

November 21, 2013

Subject: Comprehensive Annual Financial Report	**Director's Backup**
Petitioner: Philip D. Speight, Deputy General Manager, Administration	
Recommendations: That the Board of Directors accept the Authority's Comprehensive Annual Financial Report for the period ending June 30, 2013, as presented by the Authority's external auditors, Piercy Bowler Taylor & Kern, and authorize its submission to the Nevada Department of Taxation.	

Fiscal Impact:
None by approval of the above recommendation.

Background:
The Authority's independent auditors, Piercy Bowler Taylor & Kern, will present the financial report to the Board of Directors, which includes their opinion and findings as required by State statutes.

At this time, the Board is being asked to accept the financial report. This report will be submitted to the Nevada Department of Taxation as outlined by NRS 354.624 and State regulations.

This action is required pursuant to NRS 354.624(6) and Section 6(p) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved this agenda item.

Respectfully submitted:

P Mulroy

Patricia Mulroy, General Manager
PM:JJE:PDS:DHW:IRB:kah
Attachment

AGENDA ITEM # 11

SOUTHERN NEVADA WATER AUTHORITY

Comprehensive Annual Financial Report

Fiscal Year End June 30, 2013

Mary Beth Scow, Chairwoman, Las Vegas Valley Water District
Sam Bateman, Vice Chairman, City of Henderson
Susan Brager, Clark County Water Reclamation District
Bob Coffin, City of Las Vegas
Duncan McCoy, City of Boulder City
Steve Sisolak, Big Bend Water District
Anita Wood, City of North Las Vegas

Patricia Mulroy
General Manager

David Wright
Treasurer

Prepared by the Finance Department
Randall Buie, SNWA Controller
1001 South Valley View Blvd., Las Vegas, Nevada 89153
702-258-3939 www.snwa.com

SOUTHERN NEVADA WATER AUTHORITY

Comprehensive Annual Financial Report
For The Fiscal Year Ended June 30, 2013

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Southern Nevada Water Authority
Comprehensive Annual Financial Report
For The Fiscal Year Ended June 30, 2013

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INTRODUCTORY SECTION

SOUTHERN NEVADA WATER AUTHORITY
1001 South Valley View Boulevard • Las Vegas, NV 89153
(702) 258-3939 • snwa.com

November 7, 2013

Board of Directors
Southern Nevada Water Authority
1001 South Valley View Boulevard
Las Vegas, Nevada 89153

FORMAL TRANSMITTAL OF THE COMPREHENSIVE ANNUAL FINANCIAL REPORT (CAFR)

We are pleased to present the Southern Nevada Water Authority's (SNWA) CAFR for the fiscal year ended June 30, 2013. This letter of transmittal is designed to complement the Management's Discussion and Analysis (MD&A) and should be read in conjunction with it. SNWA's MD&A can be found immediately following the report of the independent auditors.

This report was prepared by SNWA staff in accordance with current accounting and financial reporting principles promulgated by the Governmental Accounting Standards Board (GASB). The presentation of data is designed to conform to guidelines recommended by the Government Finance Officers Association of the United States and Canada (GFOA). SNWA management is solely responsible for the accuracy of the data presented and the completeness and fairness of presentation, including all disclosures. We believe the data to be accurate in all material respects and reported in a manner designed to fairly set forth the financial position and results of SNWA's financial activities and operations.

We believe SNWA's internal controls over financial reporting adequately safeguard SNWA's assets and provide reasonable assurance of proper recording of financial transactions and the preparation of financial statements and accompanying information. In developing and evaluating SNWA's accounting and financial reporting system, consideration is given to the adequacy of such internal controls. These controls are designed to provide reasonable assurance regarding safeguarding assets against loss from unauthorized use or disposition and also to prevent fraudulent financial reporting. The controls enhance the reliability of financial records for preparing financial statements and maintaining accountability of SNWA assets. Reasonable assurance recognizes that the cost of a control should not exceed the benefits likely to be derived from that control, and the evaluation of costs and benefits requires estimates and judgments by management. SNWA is committed to continually improve and strengthen its internal control procedures.

Bond covenants and state statutes require an annual audit of SNWA's basic financial statements. This year, the independent public accounting firm of Piercy Bowler Taylor & Kern, Certified Public Accountants and Business Advisors, performed the audit. Their report on the basic financial statements, which contains an unqualified opinion, is included in the financial section.

The independent audit of the basic financial statements of SNWA was part of a broader, federally-mandated "Single Audit" designed to meet the special needs of federal grantor agencies. The regulatory provisions governing Single Audit engagements require the independent auditor to report not only on the fair presentation of the basic financial statements, but also on the governmental entity's internal controls and compliance with legal requirements involving administration of federal awards. This report is available in a separate Single Audit Compliance Report.

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PROFILE OF SNWA

Basic Information -- SNWA is a political subdivision of the State of Nevada (the State), created in 1991 by a cooperative agreement among its member agencies. SNWA was created to address southern Nevada's unique water needs on a regional basis, and was charged with acquiring and managing current and future resources for southern Nevada, constructing and managing regional water facilities, and promoting water conservation. SNWA is governed by a seven-member Board of Directors (the Board) comprised of one director from each of its seven member agencies. Because its operations are autonomous from its member agencies and the State, SNWA's financial statements are not included in the financial statements of any other entity.

The Las Vegas Valley Water District (LVVWD) serves under contract as the operating agent for SNWA. In that capacity, LVVWD previously paid substantially all operating and capital expenses on behalf of SNWA and was reimbursed by SNWA. As payments for the SNWA Capital Improvement Plan increased to current levels, SNWA began paying construction contracts directly. SNWA also directly pays most of the cost of the power required to operate the Southern Nevada Water System.

Accounting System -- The SNWA accounting system is structured on the basis of fund accounting. In governmental accounting, a fund is a self-contained accounting entity with its own set of assets, liabilities, revenues, expenditures or expenses and fund balance. SNWA uses a single enterprise fund to present its financial operations. The enterprise fund is used to account for SNWA operations using full accrual accounting in a manner similar to a private business enterprise. It is the intent of SNWA to establish water rates and other charges at levels sufficient to provide for payment of general operations and maintenance expenses as well as capital improvements and required annual debt service. Under full accrual accounting, revenues are recognized when earned and expenses (including depreciation) as incurred.

Budgetary Controls -- As required by Nevada statutes, the Board approves SNWA's budget annually following a public hearing. A copy of the approved budget is then submitted to the Nevada Department of Taxation. Budgetary controls are established at the levels of total estimated operating and non-operating expenses. SNWA is a self-supporting operation of a commercial nature, and receives a portion of the ¼ cent sales tax known as the Clark County Tax for Infrastructure. Revenues and expenditures will vary, depending on the timing and level of demand for services.

The budget effectively controls expenditures at various levels. Most disbursements are made through the issuance of purchase orders or in connection with approved contracts. The LVVWD Operations Department administers purchasing of new furniture, vehicles and communication equipment. The Information Systems Department administers computer equipment purchases. Financial Services prepares periodic variance reports by division. In addition, departments can access budget and actual information in real time throughout SNWA's computer network. Division managers are accountable for over/under expenditures. The Human Resources Department controls new positions. All of the departments referred to above are LVVWD departments that provide support for SNWA.

FACTORS AFFECTING FINANCIAL CONDITION

Local Economy – Las Vegas and its surrounding areas in Clark County were negatively impacted by the recent economic downturn, but conditions appear to be improving. According to calendar year 2012 statistics provided by the Las Vegas Convention and Visitors' Authority, the total visitor count to the Las Vegas metropolitan area was 39.7 million, up 2.1% from the previous year's volume. Approximately 43% of all Las Vegas visitors arrive by air via McCarran International Airport, an international port of entry and one of the busiest airports in the world.

A significant decrease in building permits over the past several years affected not only the revenue streams of SNWA but also the revenues of many other ancillary businesses throughout Clark County. Information from the Clark County Department of Development Services shows that the number of permits issued for properties and construction subject to the SNWA Regional Connection Charge improved in calendar 2012 but was still significantly lower than amounts from a decade ago. For calendar 2012 issued building permits increased 25.7% over calendar 2011. However 2012's issued permits were 73.0% lower than calendar 2004, the year in which the most permits were issued.

According to the U.S. Bureau of Census (Bureau), Clark County experienced a population increase of 36.6% during the decade of the 2000s, up from 1,428,689 in 2000 to 1,951,269 in 2010. The most recent estimate of Clark County population is 2,008,654 for 2012.

The employment outlook for the area has improved when compared to twelve months prior but is still affected by the current economic slowdown. Statistics from the Nevada Department of Employment, Training and Rehabilitation show that for the period from July 1, 2012 to June 30, 2013, the workforce in the Clark County area increased 0.3% from 991,956 to 994,789. Total employment rose 2.2% from 875,375 to 894,671. Clark County experienced a 10.1% unemployment rate as of June 30, 2013, down from 12.1% a year ago and representing a 16.5% decrease in unemployment over the twelve month period. While the percentage data is an improvement over last year, Clark County's unemployment rate continues to be higher than the national rate. The 10.1% rate is 32.9% higher than the national unemployment rate of 7.6%.

Median home prices are recovering in the area but are still depressed compared to recent years. The median price for a home in the Las Vegas metropolitan area in 1995 was $125,100. The price peaked in 2006 at about $316,000 and was $175,000 in June 2013. Although this is 44.6% below the peak price, it shows a robust 32.8% gain over last year's median price of $131,785.

Long-term financial planning – SNWA's mission is to manage the region's water resources and develop solutions that will ensure adequate future water supplies for the Las Vegas Valley. To accomplish this, comprehensive capital plans are developed in conjunction with financial plans that show practical methods of paying future capital expenditures and debt service obligations.

Capital projects for the Authority are proposed in response to identified needs for improvements to the facilities that provide for delivery of community water supplies to the members of the Authority. These improvements may be either 1) new facilities to expand or enhance capabilities, 2) new water resources to expand available water supplies, or 3) repair, upgrade or replacement of existing facilities that no longer function as required.

SNWA Engineering issues, and the Board reviews and approves, capital plans annually. The capital plan reflects all capital projects, their projected start and end dates, their projected costs, the gross amount of expended or encumbered funds per project, and the projected future cash requirements. The Finance department models these costs fiscally to project the size and timing of future bond issues as well as probable revenue enhancements that might be needed to pay for the future costs.

As of June 30, 2013, SNWA has $3.4 billion in outstanding general obligation debt (see Notes 14 and 15 for a discussion of outstanding SNWA debt). SNWA is required to set rates and charges at levels sufficient to cover all operating costs and debt service when combined with accumulated funds. All applicable bond covenants have been met or exceeded.

SNWA has four options to sell debt –

- Have LVVWD issue debt on its behalf,
- Sell its bonds to the State Bond Bank, which then sells the State's general obligation bonds (per the 1997 Nevada Legislature) ,
- Sell its bonds to the Clark County Bond Bank, which can then sell Clark County general obligation bonds (per the 1999 Nevada Legislature), or
- Issue debt in its own name. However, SNWA cannot make a general obligation (property tax) pledge so interest rates would likely be higher.

Bond ratings as of June 30, 2013, for the four organizations listed above are –

	Moody's	Standard & Poor's
LVVWD	Aa2	AA+
State of Nevada	Aa2	AA
Clark County	Aa1	AA+
SNWA	N/A	A+
LVVWD Commercial Paper	P-1	A-1+

Relevant Financial Policies – Budgets are developed to maintain balance between recurring revenues and expenditures. These budgets become the financial road maps that assist engineering, operational and administrative departments in performing their daily duties in a financially prudent manner and support the Finance department in providing economic plans that can generate sufficient revenues to pay for projected expenses.

SNWA regards its cash reserves as a critical component of its fiscal health and a criteria for an above average bond rating. Cash reserves are monitored regularly and revenue shortfalls are managed through a combination of methods. Departments are required to practice careful management of financial resources. User fees and charges are adjusted to maintain required revenue bond coverage and sufficient working capital. Financial reserves are used sparingly. When used, the reserves are compared to long range projections of reserve levels and modifications to revenue and expense streams are made as needed.

Cash reserves and unspent bond proceeds are invested whenever practical in obligations of the U.S. government, obligations of government-sponsored agencies, certificates of deposit, money market accounts, and commercial paper in accordance with SNWA's investment policy. Government and agency obligations are purchased through recognized and regulated brokers dealing in government securities. All investments are held by a bank's trust department in SNWA's name or are insured or collateralized with securities held by a third party in SNWA's name. This is continually reviewed by the State treasurer's office.

Major Initiatives – The Colorado River system has experienced below average runoff for much of the last decade. As a result, the total volume of water stored in Lake Mead has been reduced to approximately 47 percent of capacity as of June 2013.

If the elevation of Lake Mead drops to approximately 1,062 feet, SNWA's upper Colorado River water intake (Intake No. 1) will become inoperable. Anticipating the loss of Intake No. 1, SNWA began planning Intake No. 3 in 2006 and has worked diligently to modify existing intakes and pumping systems to mitigate drought effects on capacity and water quality.

The recent reduction in demand has allowed the SNWA to delay some work associated with Intake No. 3, including construction of a pumping station, which will be built when needed to ensure required capacity. However, Intake No. 3 remains an important priority to help protect Southern Nevada's water supply. Continued construction of Intake No. 3 represents the majority of SNWA's capital commitments for the next fiscal year.

SNWA remains focused on its responsibility to ensure the acquisition, treatment and delivery of a reliable and quality water supply to the region. To this end, major activities in the next fiscal year will include:

- Operation and maintenance of facilities to treat and deliver water resources. These include the Alfred Merritt Smith Water Treatment Facility and the River Mountains Water Treatment Facility.
- Continuation of conservation education and incentive programs to maximize available water supplies.
- Continuation of work with state, local and federal agencies to develop and operate joint facilities that provide regional solutions to water quality, supply and environmental issues on the Colorado River.
- Continuation of Lake Mead Intake No. 3 construction to protect Southern Nevada from the effects of prolonged drought conditions on the Colorado River.
- Securing all necessary permitting for the Groundwater Development Project in northeast Nevada.
- Construction of a connector tunnel on Intake No. 1 allowing the intake to deliver water at lower elevations and to provide better quality water when Intake No. 3 is completed.

SEC REQUIREMENT

On November 10, 1994, the Securities and Exchange Commission amended the Securities Exchange Act of 1934, Rule 15c2-12, regarding continuing disclosure by issuers of municipal securities for the benefit of holders of such securities. The amendments require, among other things, that certain annual financial information be provided to various information repositories for bond issues sold on or after July 3, 1995. The annual financial information must include an update of the same financial statements, except for forecasts, that were included in the final official statement issued at the time of the bond sale. The required annual financial information for SNWA is presented in the SEC Disclosure Compliance Section of this report. SNWA forwards copies of its CAFR to appropriate information repositories.

AWARDS AND ACKNOWLEDGMENTS

The GFOA awarded the Certificate of Achievement for Excellence in Financial Reporting to SNWA for its CAFR for the fiscal year ended June 30, 2012. This was the seventeenth consecutive year that SNWA has achieved this prestigious award.

In order to be awarded the Certificate of Achievement for Excellence in Financial Reporting, a government unit must publish an easily readable and efficiently organized CAFR. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

The Certificate of Achievement for Excellence in Financial Reporting is valid for a period of one year only. We believe that our current CAFR continues to meet the program requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

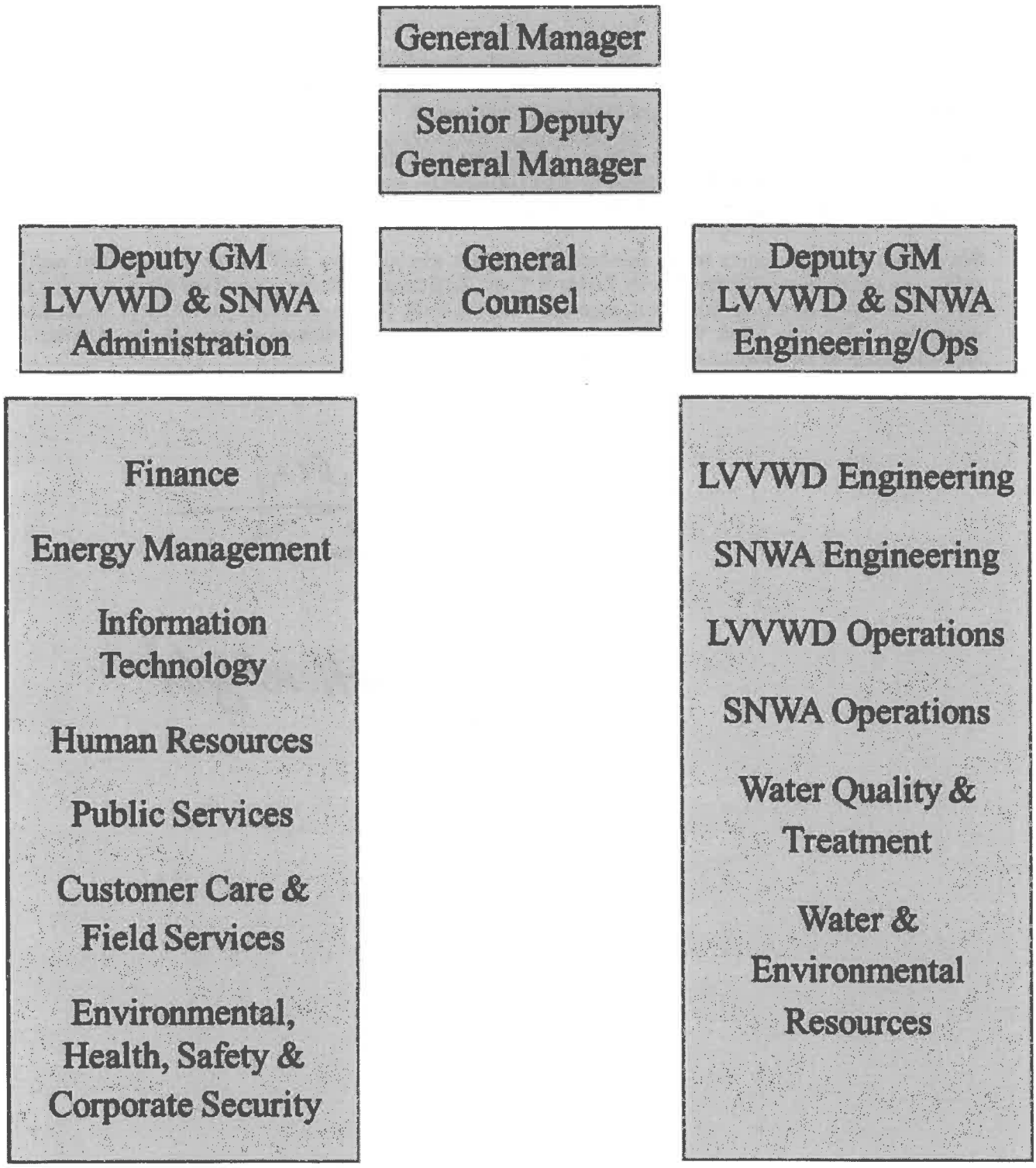
We express our appreciation to all members of SNWA's administrative staff and the independent certified public accounting firm of Piercy Bowler Taylor & Kern. Additionally, we recognize SNWA's Accounting staff for their efforts in preparing this report, especially Randall Buie, SNWA Controller, and Cheryl Styck, Senior Accountant. We also thank the members of the Board for their continued support in the planning and implementation of the financial affairs of SNWA.

Sincerely,

Patricia Mulroy
General Manager

David Wright
Treasurer

ORGANIZATION CHART



Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Southern Nevada Water Authority

For its Comprehensive Annual Financial Report for the Fiscal Year Ended

June 30, 2012

Executive Director/CEO

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FINANCIAL SECTION

P B T K
PIERCY BOWLER TAYLOR & KERN
Certified Public Accountants
Business Advisors

INDEPENDENT AUDITORS' REPORT ON FINANCIAL STATEMENTS AND SUPPLEMENTARY INFORMATION

Board of Directors
Southern Nevada Water Authority
Las Vegas, Nevada

We have audited the accompanying financial statements of the Southern Nevada Water Authority (SNWA) as of and for the years ended June 30, 2013 and 2012, and the related notes to the financial statements, which collectively comprise SNWA's basic financial statements as listed in the table of contents.

An audit performed in accordance with applicable professional standards is a process designed to obtain reasonable assurance about whether SNWA's basic financial statements are free from material misstatement. This process involves performing procedures to obtain audit evidence about the amounts and disclosures in the basic financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the basic financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to SNWA's preparation and fair presentation of the basic financial statements to enable the design of audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of SNWA's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of the accounting policies used and the reasonableness of significant accounting estimates made by management, as well as the overall presentation of the basic financial statements.

Management's Responsibility for the Financial Statements. Management is responsible for the preparation and fair presentation of the basic financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of basic financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility. Our responsibility is to express an opinion on the basic financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the basic financial statements are free from material misstatement.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion. In our opinion, the basic financial statements referred to above present fairly, in all material respects, the financial position of SNWA as of and for the years ended June 30, 2013 and 2012, and the changes in financial position and cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters. Accounting principles generally accepted in the United States of America require that the management's discussion and analysis on pages 3-12 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our

inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information. Our audit was conducted for the purpose of forming our opinion on the financial statements that collectively comprise SNWA's basic financial statements. The introductory section, other supplementary information, as listed in the table of contents, and statistical section are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The introductory section and statistical section have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by *Government Auditing Standards*. In accordance with *Government Auditing Standards*, we have also issued our report dated November 7, 2013, on our consideration of SNWA's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering SNWA's internal control over financial reporting and compliance.

Piercy Bowler Taylor & Kern

Las Vegas, Nevada
November 7, 2013

The management of the Southern Nevada Water Authority (SNWA), provides readers this narrative overview and analysis of the financial statements for the fiscal years ended June 30, 2013 and 2012. Readers are encouraged to consider the information presented here in conjunction with the additional information furnished in the letter of transmittal, which begins on page 1-1 of this report, and in the basic financial statements which begin on page 2-11.

Financial Highlights for 2013

- Total assets increased $451 million over the prior year totaling approximately $5.0 billion.
- Total liabilities increased $361 million over the prior year totaling approximately $3.6 billion.
- Total deferred outflows of resources decreased $2.8 million over the prior year totaling approximately $38.2 million.
- Total assets and deferred outflows of resources exceed total liabilities at the close of the fiscal year by approximately $1.4 billion (net position). Net position increased during the fiscal year by approximately $87.4 million.
- During the fiscal year, major balance sheet resources were generated from an increase in long-term liabilities ($349.0 million) and other liabilities ($11.6 million) arising from the issuance of new debt, a decrease in to deferred outflow of resources ($2.8 million) and an increase in net position ($87.4 million). Major balance sheet resources were used during the fiscal year for additions to current and other assets ($324.0 million) arising mainly from unspent bond proceeds and collections of capital contributions, and net additions to capital assets ($126.8 million).
- In fiscal 2013, SNWA participated in two debt issues. LVVWD 2012B was issued by the Las Vegas Valley Water District (LVVWD) with a par value of $360.0 million. The issue generated funds for future construction projects. The bond will add $692.3 million in aggregate debt service ($399.2 million in present value terms) while increasing annual debt payments by $23.6 million at its peak. SNWA 2013A was issued by the Clark County, Nevada bond bank for a par value of $21.7 million. The issue fully refunded SNWA 1998 and will save SNWA approximately $6.7 million ($5.1 million in present value terms).

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to SNWA's basic financial statements, which are comprised of two components: 1) enterprise fund financial statements, and 2) notes to basic financial statements. This Comprehensive Annual Financial Report also contains other supplementary and statistical information in addition to the basic financial statements.

Enterprise fund financial statements. SNWA's operations are accounted for as a single enterprise fund using the full accrual basis of accounting. In this regard, SNWA's operations are accounted for in a manner similar to a private business enterprise. Within this fund, SNWA segregates revenues and expenses in its financial statements for various purposes such as operations, debt service and capital improvements. This segregation is an internal discipline and does not create physically separate funds. The enterprise fund financial statements can be found beginning on page 2-11.

Notes to basic financial statements. The notes provide additional information that is essential for a full understanding of the data provided in the basic financial statements. Information included in the Management's Discussion and Analysis is at a summary level while the notes to the basic financial statements are required to achieve a full understanding of the company's financial position. The notes to the basic financial statements can be found beginning on page 2-17 of this report.

Other information. In addition to the basic financial statements and accompanying notes, this report also presents statistical information and Securities and Exchange disclosure compliance schedules. This information and schedules can be found starting on pages 3-1 and 4-1 respectively of this report.

Financial analysis. One indication of the financial health of SNWA is net position, which is the difference between assets and liabilities. Changes in net position over time may serve as a useful indicator of financial health. The condensed balance sheets below show the net position of SNWA for the fiscal years ended June 30, 2013, 2012 and 2011.

Southern Nevada Water Authority
Enterprise Fund
Condensed Statement of Net Position
June 30, 2013, 2012 and 2011
(In Millions)

	June 30, 2013	Change	June 30, 2012	Change	June 30, 2011
Capital Assets	$ 4,247.3	$ 126.8	$ 4,120.5	$ 115.8	$ 4,004.7
Current and Other Assets	744.3	324.0	420.3	(131.2)	551.5
Total Assets	4,991.6	450.8	4,540.8	(15.4)	4,556.2
Deferred Outflow of Resources	38.2	(2.8)	41.0	18.9	22.1
Total Assets and Deferred Outflow of Resources	**$ 5,029.8**	**$ 448.0**	**$ 4,581.8**	**$ 3.5**	**$ 4,578.3**
Long-Term Liabilities	$ 3,100.7	$ 349.0	$ 2,751.7	$ 20.4	$ 2,731.3
Other Liabilities	504.8	11.6	493.2	(13.4)	506.6
Total Liabilities	3,605.5	360.6	3,244.9	7.0	3,237.9
Net Position					
Invested in Capital Assets, Net of Related Debt	1,002.3	7.1	995.2	32.4	962.8
Restricted for Debt Service / Capital Assets	15.1	(7.6)	22.7	9.7	13.0
Unrestricted	406.9	87.9	319.0	(45.6)	364.6
Total Net Position	1,424.3	87.4	1,336.9	(3.5)	1,340.4
Total Liabilities and Net Position	**$ 5,029.8**	**$ 448.0**	**$ 4,581.8**	**$ 3.5**	**$ 4,578.3**

Total assets increased approximately $450.8 million (9.9%) in fiscal 2013 and decreased approximately $15.4 million (0.3%) in fiscal 2012. The 2013 increase was fueled primarily by the accumulation of unspent bond proceeds and a stronger collection of capital contribution items. The 2012 decrease was fueled primarily by SNWA using accumulated fund balance (i.e. cash, cash equivalents and investments) to pay regular annual debt service. Fund balance was accumulated in prior years intentionally to provide funds in years where other revenues were not sufficient to cover expenses. For fiscal 2013 capital assets increased ($126.8 million, 3.1%) as well as current and other assets ($324.0 million, 77.1%). For fiscal 2012 capital assets increased ($115.8 million, 2.9%) while current and other assets decreased ($131.2 million, 23.8%). See Note 7 for further discussion of capital assets.

Total deferred outflows of resources decreased approximately $2.8 million (6.8%) in fiscal 2013 and increased $18.9 million (85.5%) in fiscal 2012. SNWA was not extremely active in the bond market in fiscal 2013. The decrease in this account, therefore, was the result of average amortization of the deferred amount of refundings. Deferred refundings increased in fiscal 2012 because of SNWA's activity in refunding and restructuring existing bond issues.

Total liabilities increased approximately $360.6 million (11.1%) in fiscal 2013 and increased approximately $7.0 million (0.2%) in fiscal 2012. In fiscal 2013 long-term liabilities increased ($349.0 million, 12.7%) as did other liabilities ($11.6 million, 2.4%). A July 2012 new money bond issue increased both categories of liabilities. In fiscal 2012 long-term liabilities increased $20.4 million (0.7%) while other liabilities decreased $13.4 million (2.6%). The major cause for both of these movements was bond refunding and restructuring activity.

Fund equity increased $87.4 million (6.5%) in fiscal 2013 and decreased $3.5 million (0.3%) in fiscal 2012. Fund equity in 2013 benefited from increased connection charge collections, sales tax collections and the SNWA Infrastructure Surcharge which was introduced in February 2012. The fiscal 2012 decrease was due primarily to the utilization of fund equity to cover annual debt service.

The chart on the following page summarizes the statements of revenues, expenses and changes in fund equity for the fiscal years ended June 30, 2013, 2012 and 2011.

Operating revenues and expenses are defined as noncapital revenues and expenses incurred in the normal course of business. Examples of operating revenues are noncapital fees and charges collected from purveyor members such as wholesale delivery charges, Las Vegas Wash operating fees, groundwater fees, etc. Examples of operating expenses are payroll, power costs, and professional fees.

Wholesale delivery charge revenues decreased $1.7 million (1.4%) in fiscal 2013 and decreased $0.3 million (0.3%) in fiscal 2012. In fiscal 2013 SNWA sold 5,710 (1.4%) fewer acre-feet than in fiscal 2012 accounting for the entire variance. In fiscal 2012 SNWA sold 15,244 (3.6%) fewer acre-feet than in fiscal 2011 mainly due to SNWA's short-term curtailment of the artificial recharge program. However a $10 increase in the price per acre-foot of wholesale water helped minimize the overall decrease.

Southern Nevada Water Authority

Enterprise Fund

Condensed Statements of Revenue, Expenses, and Changes in Net Position

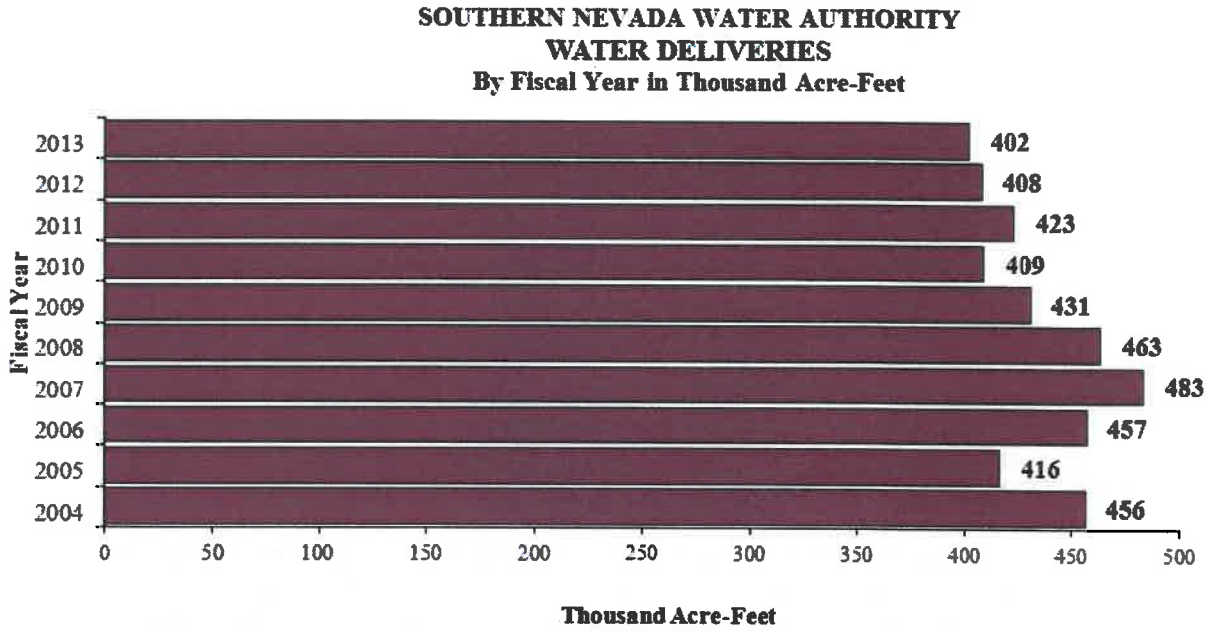
For the Fiscal Years Ended June 30, 2013, 2012 and 2011

(In Millions)

	June 30, 2013	Change	June 30, 2012	Change	June 30, 2011
Operating Revenues					
Wholesale Delivery Charges	$ 117.5	$ (1.7)	$ 119.2	$ (0.3)	$ 119.5
Other Revenues	5.2	0.9	4.3	(0.3)	4.6
Total Operating Revenues	122.7	(0.8)	123.5	(0.6)	124.1
Nonoperating Revenues					
Credit Payment Income	10.3	(0.6)	10.9	-	10.9
Investment Income	0.7	(0.1)	0.8	(0.2)	1.0
Total Nonoperating Revenues	11.0	(0.7)	11.7	(0.2)	11.9
Total Revenues	**133.7**	**(1.5)**	**135.2**	**(0.8)**	**136.0**
Operating Expenses					
Personnel and Related	43.9	0.4	43.5	1.0	42.5
Energy	36.3	(8.2)	44.5	8.5	36.0
Depreciation	74.9	-	74.9	0.5	74.4
Operating and Maintenance	27.9	(9.8)	37.7	3.3	34.4
Total Operating Expenses	183.0	(17.6)	200.6	13.3	187.3
Total Nonoperating Expenses	69.2	(4.6)	73.8	(8.9)	82.7
Total Expenses	**252.2**	**(22.2)**	**274.4**	**4.4**	**270.0**
Loss Before Capital Contributions	(118.5)	20.7	(139.2)	(5.2)	(134.0)
Capital Contributions	205.9	70.2	135.7	42.6	93.1
Increase (Decrease) in Net Position	**87.4**	**$ 90.9**	**(3.5)**	**$ 37.4**	**(40.9)**
Net Position, Beginning of Year	$ 1,336.9		$ 1,340.4		1,381.3
Net Position End of Year	**$ 1,424.3**		**$ 1,336.9**		**$ 1,340.4**

May be off slightly due to rounding

The chart below graphically shows water delivery volume over the past ten fiscal years.



The $0.7 million (6.0%) decrease in nonoperating revenues for fiscal 2013 and the $0.2 million (1.7%) decrease in nonoperating revenues for fiscal 2012 reflects lower returns on investments due to a soft investment market.

The $0.4 million (0.9%) increase in personnel and related expenses in fiscal 2013 mainly reflects the annual cost-of-living adjustment received by SNWA employees. However its financial impact was lessened by a reduction of staff. SNWA reviews any position that becomes vacant because of retirement, promotion, or other reasons to determine if the position needs to be filled immediately or whether the hiring can be delayed. The $1.0 million (2.4%) increase in personnel and related expenses in fiscal 2012 mainly reflects the annual cost-of-living adjustment received by SNWA employees. During both fiscal years SNWA reduced its number of full-time equivalent positions. The company consistently reviews methods for reducing personnel expenses whenever possible.

Energy costs decreased $8.2 million (18.4%) in fiscal 2013 and increased $8.5 million (23.6%) in fiscal 2012. In fiscal 2013 SNWA used slightly more megawatt hours (MWh) (0.6%). Additional energy is normally needed to draw water from lower levels as the lake level falls. However the cost per MWh decreased substantially, (18.8%) reflecting an improved power trading market. In fiscal 2012 SNWA used fewer MWh (3.3%) due to the reduced water sales previously discussed but had to pay more per MWh (27.9%) mainly because of uncertainty in the natural gas market throughout the year. Energy is a significant cost of doing business and SNWA aggressively attempts to keep the unit cost of power as low as possible.

Depreciation expense for fiscal 2013 remains at fiscal 2012 levels. The slight increase in depreciation for fiscal 2012 of $0.5 million (0.7%) is a function of adjustments in property, plant and equipment and a reappraisal of capitalization guidelines.

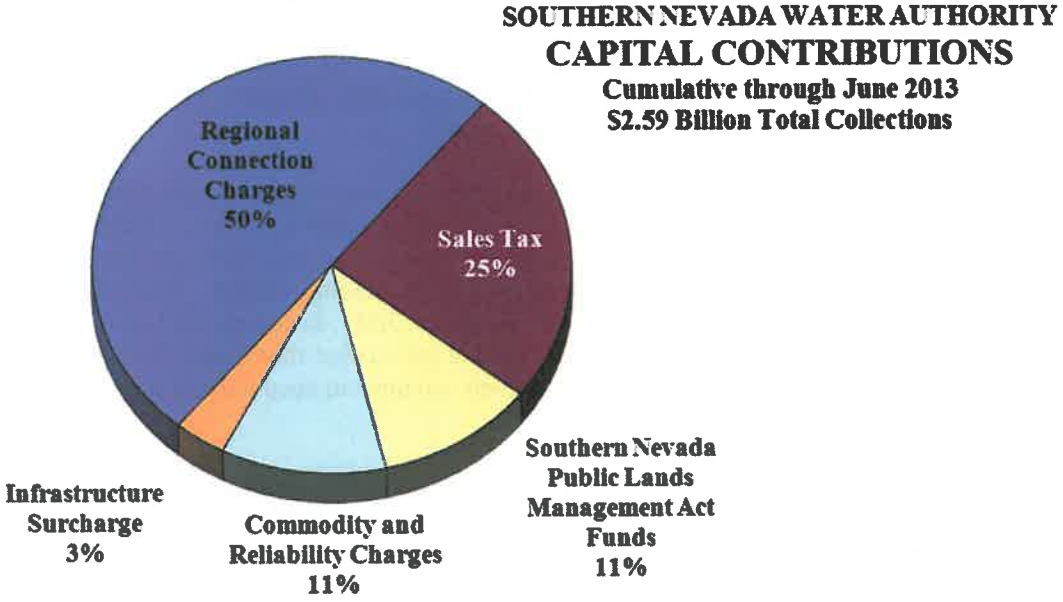
Operating and maintenance expenses decreased $9.8 million (26.0%) in fiscal 2013. SNWA continually reviews expenses to determine if there are areas where costs can be saved or avoided. In fiscal 2013, SNWA used in-house labor to perform tasks previously performed by outside consultants and professionals. In addition, the lower water sales permitted SNWA to use a lesser amount of purifying chemicals and other water treatment consumables. In fiscal 2012 operating and maintenance expenses increased $3.3 million (9.6%) fueled mainly by increases in professional, research and development expenditures.

Nonoperating expenses decreased $4.6 million (6.2%) and $8.9 million (10.8%) in fiscal 2013 and 2012, respectively. SNWA has been rigorously refunding and restructuring its outstanding debt. This has resulted in lower interest rates and thus lower interest expense. SNWA's bond staff and financial advisers regularly review SNWA's debt portfolio to identify opportunities to minimize interest expense.

Capital contributions are revenues SNWA receives to fund its $4.8 billion Major Construction and Capital Plan (MCCP). SNWA began collection of these revenues in early 1996. In order of the amount of revenue they have generated since 1996, those revenues include: (1) the regional connection charge, (2) sales tax (which also funds the Las Vegas Wash Capital Plan), (3) the Southern Nevada Public Lands Management Act (SNPLMA) funds, (4) the regional commodity charge, (5) the regional reliability charge, (6) the regional infrastructure surcharge, and (7) various other small charges.

Capital contributions increased by $70.2 million (51.7%) in fiscal 2013. Collections of sales tax, regional connection charge and regional commodity charge increased during the fiscal year. In addition, SNWA was able to collect the regional infrastructure surcharge for an entire year. The Board approved the new infrastructure charge in February 2012. This new capital source is charged on retail bills based on meter size. Capital contributions increased by $42.6 million (45.8%) in fiscal 2012. Collections of sales tax, regional connection charge and regional commodity charge increased during the fiscal year. The regional infrastructure charge was collected for three months in fiscal 2012. See Note 16 for a summary of Capital Contributions.

The following chart shows the major capital contribution cash sources and their relation to total capital contributions.



Capital Asset and Debt Administration

Capital Assets. SNWA's investment in capital assets as of June 30, 2013, amounted to approximately $4.2 billion, net of accumulated depreciation. The investment in capital assets includes land, transmission and distribution lines, pumping stations and equipment, water rights and other natural resources rights. Major construction expenditures in fiscal 2013 totaled approximately $108.5 million. Contract commitments total approximately $191.9 million. See Note 7 to the basic financial statements for additional information on the types and values of SNWA's capital assets.

Debt Administration. At the end of fiscal 2013, SNWA had general obligation debt totaling approximately $3.4 billion. Details concerning all debt issues can be found in Notes 14 and 15 to the basic financial statements.

In July 2012, LVVWD on behalf of SNWA issued $360.0 million of par value general obligation bonds. Proceeds were deposited in SNWA's capital fund for future capital projects. The bonds were sold at par with an offering premium of $40.0 million and had a true interest cost of 3.93%. The issue will add $692.3 million in total debt payment requirements equating to a $399.2 million in present value terms. Annual debt service will increase $23.6 million at the issue's peak payment.

In February 2013, the State of Nevada on behalf of SNWA issued $21.7 million of par value general obligation bonds. Proceeds from the issue fully refunded one outstanding issue. The bonds were sold at par with a $0.1 million offering premium and had a true interest cost of 3.01%. The new issue will save $6.7 million over its life equating to a $5.1 million gain in present value terms.

Economic Factors and Next Year's Goals

SNWA's financial outlook continues to remain satisfactory. The Las Vegas area was one of the hardest hit regions of the country during the recent recession. However, the local economy is gradually improving. The 2008 recession was the first time in decades that the Las Vegas area has experienced a sustained period of little or no growth. As a result, there was very limited demand for new service connections within the SNWA service area. Growth has returned to the area but its level is far less that Las Vegas experienced in the 1990s and early 2000s. However, because of its long range financial plan, SNWA has financial resources available from prior period savings to ease the financial stress of the current recession. Management continues to review the financial conditions of the area and actively takes steps to insure SNWA's financial stability. SNWA has been awarded an investment grade credit rating of "A+" by Standard & Poor's. With few exceptions, construction of the $4.8 billion MCCP is on schedule and within budget.

Currently, the major concerns for southern Nevada continue to be the multi-year drought affecting the Colorado River basin and the ongoing recession. Water levels in Lake Mead have declined approximately 108 feet (8.1%) since 2000. This water level decrease has equated to a reduction in the volume of water stored in Lake Mead to approximately 47 percent of capacity as of June 2013. Although these levels remain above SNWA's two intakes, the intakes are drawing water closer to the surface which creates water quality challenges. Lower lake levels have also impacted the amount of water SNWA can withdraw from the Colorado River basin in excess of its 300,000 acre feet net consumptive allocation. In response, SNWA has taken steps to develop in-state water resources and is currently constructing a third intake into Lake Mead.

Given conditions in the current financial markets, obtaining timely and affordable financing for large capital projects such as these is challenging. SNWA's strong bond ratings as well as its experienced financial staff gives the company a unique edge in financial markets that will help support the advancement of these goals.

Requests for Information

This financial report is designed to provide a general overview of SNWA's finances. Questions concerning any of the information provided in this report or requests for addition financial information should be addressed to:

The Office of the Chief Financial Officer
Southern Nevada Water Authority
1001 South Valley View Blvd., Mail Stop 320
Las Vegas, Nevada, 89107

The CAFR can also be viewed at www.snwa.com which also contains financial and operational information pertaining to SNWA as well as helpful information concerning conservation and water issues.

BASIC FINANCIAL STATEMENTS

SOUTHERN NEVADA WATER AUTHORITY

Southern Nevada Water Authority
Enterprise Fund
Statement of Net Position

	June 30, 2013	June 30, 2012
Assets		
Current Assets - Restricted		
Cash and Cash Equivalents		$ 998,258
Investments	$ 256,562,585	-
Sales Tax Receivable	13,917,603	13,264,923
Total Current Assets - Restricted	270,480,188	14,263,181
Current Assets - Unrestricted		
Cash and Cash Equivalents	96,655,866	89,011,675
Investments	211,978,725	147,240,709
Due From Member Agencies	37,452,834	40,490,774
Other Receivables	3,005,150	8,561,566
Other Current Assets	38,300,443	34,588,731
Total Current Assets - Unrestricted	387,393,018	319,893,455
Total Current Assets	657,873,206	334,156,636
Capital Assets		
Capital Assets Subject to Depreciation		
Property, Plant and Equipment	2,995,845,393	2,967,380,529
Accumulated Depreciation	(940,457,725)	(866,026,036)
Net Capital Assets Subject to Depreciation	2,055,387,668	2,101,354,493
Capital Assets Not Subject to Depreciation		
Land	92,248,192	92,271,442
Natural Resources Rights	391,792,304	389,961,251
Construction Work in Progress	1,707,861,690	1,536,891,327
Net Capital Assets Not Subject to Depreciation	2,191,902,186	2,019,124,020
Total Net Capital Assets	4,247,289,854	4,120,478,513
Other Noncurrent Assets		
Water Recharge Inventory	86,423,098	86,207,102
Deferred Outflows of Resources		
Deferred Amount on Refundings	38,181,345	40,998,258
Total Assets and Deferred Outflows of Resources	**$ 5,029,767,503**	**$ 4,581,840,509**

The accompanying notes are an integral part of these financial statements

Southern Nevada Water Authority
Enterprise Fund
Statement of Net Position

Liabilities and Fund Equity	June 30, 2013	June 30, 2012
Current Liabilities		
Accounts Payable	$ 50,834,146	$ 55,832,751
Accrued Interest Payable	15,008,127	13,358,032
Capitalized Interest Payable	17,015,050	
Pending Regional Connection Charge Refunds	5,043,115	8,916,511
Current Portion of Notes Payable	1,205,919	1,164,283
Current Portion of Bonds Payable	15,666,540	13,966,540
Short Term Debt Payable	400,000,000	400,000,000
Total Current Liabilities	504,772,897	493,238,117
Long-Term Liabilities		
Notes Payable, Net of Current Portion	9,207,366	10,413,285
Bonds Payable, Net of Current Portion, Unamortized Premiums and Discounts	3,091,474,683	2,741,255,255
Total Long-Term Liabilities	3,100,682,049	2,751,668,540
Total Liabilities	3,605,454,946	3,244,906,657
Net Position		
Invested in Capital Assets, Net of Related Debt	1,002,302,170	995,159,156
Restricted for Debt Service / Capital Assets	15,122,934	22,736,730
Unrestricted	406,887,453	319,037,966
Total Fund Equity	1,424,312,557	1,336,933,852
Total Liabilities and Net Position	**$ 5,029,767,503**	**$ 4,581,840,509**

The accompanying notes are an integral part of these financial statements

Southern Nevada Water Authority
Enterprise Fund
Statements of Revenues, Expenses and Changes in Net Position
For the Fiscal Years ended June 30, 2013 and 2012

	2013	2012
Operating Revenues		
Wholesale Delivery Charges	$ 117,534,578	$ 119,239,660
Groundwater Management Fees	863,417	867,716
Administration Costs Recoveries	383,443	318,886
Las Vegas Wash Revenues	397,708	397,407
Other Revenues	3,525,867	2,705,745
Total Operating Revenues	122,705,013	123,529,414
Operating Expenses		
Personnel and Related	43,880,414	43,450,464
Energy	36,347,165	44,527,798
Depreciation	74,943,316	74,918,789
Operating and Maintenance	27,943,415	37,685,150
Total Operating Expenses	183,114,310	200,582,201
Operating Loss	(60,409,297)	(77,052,787)
Nonoperating Revenues (Expenses)		
Investment Income	740,407	869,505
Credit Payment Income	10,316,798	10,867,008
Interest Expense	(64,010,853)	(67,567,023)
Amortization of Refunding Costs	(2,926,272)	(2,254,389)
Bond Issue and Commercial Paper Costs	(5,606,185)	(7,264,123)
Amortization of Bond Premiums and Discounts	3,291,755	3,211,357
Other	63,295	37,112
Total Nonoperating Revenues (Expenses)	(58,131,055)	(62,100,553)
Loss Before Capital Contributions	(118,540,352)	(139,153,340)
Capital Contributions	205,919,057	135,679,772
Net Income (Loss)	87,378,705	(3,473,568)
Net Position - Beginning of Year	1,336,933,852	1,340,407,420
Net Position - End of Year	$ 1,424,312,557	$ 1,336,933,852

The accompanying notes are an integral part of these financial statements

Southern Nevada Water Authority
Enterprise Fund
Statements of Cash Flows
For the Fiscal Years ended June 30, 2013 and 2012

	2013	2012
Cash Flows from Operating Activities:		
General and Administrative / Resources Charges	$ 1,629,728	$ 1,179,012
Groundwater Management Fees	863,417	867,716
Las Vegas Wash Revenues	397,708	397,407
Wholesale Delivery Charges	120,996,382	114,883,588
Other Revenues	2,273,173	2,102,013
Cash Payments to Suppliers of Goods and Services	(95,395,415)	(118,462,066)
Net Cash Provided by Operating Activities	30,764,993	967,670
Cash Flows from Capital and Related Financing Activities:		
Purchase or Construction of Capital Assets	(125,231,706)	(133,490,427)
Proceeds from Disposal of Property and Equipment	66,212	45,163
Proceeds of Debt Issuance	360,000,000	4,832,439,536
Principal Paid on Debt	(15,130,824)	(4,850,140,752)
Interest Paid on Debt	(124,023,036)	(140,829,557)
Capital Contributions	190,995,018	115,188,720
Credit Payment Income	10,394,293	10,867,008
Net Cash Provided by (Used in) Capital and Related Financing Activities	297,069,957	(165,920,309)
Cash Flows from Investing Activities:		
Purchases of Investment Securities	(1,011,501,617)	(176,011,316)
Proceeds from Sales or Maturities of Investment Securities	685,963,512	55,250,000
Investment Earnings	4,349,088	761,815
Net Cash Used in Investing Activities	(321,189,017)	(119,999,501)
Net Increase (Decrease) in Cash and Cash Equivalents	6,645,933	(284,952,140)
Cash and Cash Equivalents, Beginning of Year	90,009,933	374,962,073
Cash and Cash Equivalents, End of year	$ 96,655,866	$ 90,009,933
Reconciliation of Operating Loss to Net Cash Provided by Operating Activities		
Operating Loss	$ (60,409,297)	$ (77,052,787)
Depreciation	74,943,316	74,918,789
Operating Expenses Paid by Contributed Capital	11,886,752	11,470,927
Changes in Assets and Liabilities		
(Increase)/Decrease in Due from Member Agencies	3,279,032	(3,555,151)
(Increase)/Decrease in Other Receivables	6,926,362	(1,359,944)
(Increase) in Other Current Assets	(3,711,712)	(16,639,142)
(Increase)/Decrease in Water Recharge Inventory	(215,996)	121,100
Increase/(Decrease) in Accounts Payable	(1,933,464)	13,063,878
Net Cash Provided by Operating Activities	$ 30,764,993	$ 967,670
Non-Cash Investing, and Capital and Related Financing Activities		
Changes in Fair Value of Investments	$ (408,235)	$ 137,052
Deferred (Gain)/Loss on Refunded Bonds	109,358	(1,457,210)
Refunding Bonds Issued	(21,720,000)	(482,480,000)
Bonds Refunded	21,350,000	471,513,333
Contributed Capital	(3,037,287)	(9,020,125)

The accompanying notes are an integral part of these financial statements

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Reporting Entity

The Southern Nevada Water Authority (SNWA) is a political subdivision of the State of Nevada (the State) and is therefore the reporting entity. SNWA was created on July 25, 1991, pursuant to Nevada Revised Statutes (NRS) Chapter 277.080 to 277.180, inclusive, by a cooperative agreement and a facilities and operations agreement among its member agencies. These agencies include the Big Bend Water District, City of Boulder City, City of Henderson, City of Las Vegas, City of North Las Vegas, Clark County Water Reclamation District, and Las Vegas Valley Water District (LVVWD). The cooperative agreement was last amended in 2005. The facilities and operations agreement was last amended in 2012.

SNWA was created to secure additional supplies of water for southern Nevada and to effectively manage existing supplies of water through the cooperative action of its member agencies. A seven-member Board of Directors (the Board) comprised of one director from each member agency governs SNWA equally. SNWA operations are autonomous from its member agencies and the State, and its financial statements are not included in the financial statements of any other entity.

The Board has the power to periodically assess its member agencies directly for operating and capital budgets and for the satisfaction of any liabilities imposed against SNWA. In 1991, each member agency made an initial contribution to SNWA for operating and administrative expenses in the amount of $15,000. Assessments for additional funds needed by SNWA, in accordance with approved operating and capital budgets, have been apportioned to its member agencies on the basis of water deliveries to those agencies. Funding received by SNWA from its member agencies for operations is recorded as operating revenue, while funding received for capital purchases is recorded as contributed capital. Member agencies that are not potable water purveyors (the City of Las Vegas and the Clark County Water Reclamation District) each contributed $35,000 to SNWA operations during the fiscal year ended June 30, 2013.

Operating Agent (LVVWD) (Related Party Disclosure)

The Board has the responsibility to appoint a General Manager. The Board designated LVVWD's General Manager as the General Manager of SNWA in 1993. Simultaneously LVVWD was named the operating agent for SNWA.

LVVWD allocates a portion of its payroll costs to SNWA for LVVWD employees who are utilized on SNWA-related matters and also pays certain costs and operating expenses on behalf of SNWA. SNWA has no employees of its own.

During the mid 1990s, LVVWD paid substantially all operating and capital expenses on behalf of SNWA, and SNWA reimbursed LVVWD monthly. In the late 1990s, to mitigate potential cash flow demands on LVVWD under this arrangement, SNWA began paying construction contracts directly, assumed responsibility for paying construction contract retention and paid most of the cost of power required to operate the Southern Nevada Water System (see below). In 2008, SNWA advanced a total of $19 million to LVVWD to fund future SNWA-related operating expenses made on its behalf. The advance is replenished monthly and will be applicable throughout SNWA's and LVVWD's operating agent relationship. SNWA also pays any large recurring expense that it deems would be detrimental to LVVWD's cash flow.

LVVWD hires all employees utilized by SNWA. Consequently, any financial reporting requirements regarding employees utilized by SNWA including but not limited to reporting on post employment benefits can be found in LVVWD's Comprehensive Annual Financial Report (CAFR).

LVVWD has no control over SNWA's operation or finances. SNWA is autonomous from LVVWD, does not include LVVWD's information within its own financial statements, nor is SNWA's information included in LVVWD's financial statements.

LVVWD is a quasi-municipal corporation created under a special act of the legislature of the State of Nevada in 1947 for the purpose of obtaining and distributing water primarily in the Las Vegas valley, which includes the metropolitan area of Clark County and the City of Las Vegas. A complete copy of LVVWD's CAFR can be found at www.lvvwd.com or can be obtained by mailing a request to the SNWA address listed on page 2-8.

Southern Nevada Water System

Effective January, 1996, pursuant to Assembly Bill No. 542 approved by the Nevada Legislature in 1995 (the Transfer Act), the assets of the Southern Nevada Water System (SNWS), as well as certain liabilities and responsibility for operation of the SNWS, were transferred from the Colorado River Commission (CRC) to SNWA. Along with the transfer of these assets, CRC transferred all books and records in its possession relating to SNWS and its facilities.

Fund Accounting

The accompanying basic financial statements are reported on the basis of fund accounting. A fund is a fiscal and accounting entity with a set of self-balancing accounts that comprise its assets, liabilities, fund equity, revenues, and expenses.

Enterprise Fund

SNWA operations have been accounted for as a single enterprise fund. Enterprise fund operations are presented using the full accrual basis of accounting wherein revenues are recognized in the accounting period in which they are earned, and expenses are recognized in the period incurred, regardless of when revenues are received or expenses are paid. In this regard, SNWA operations are accounted for in a manner similar to a private business enterprise, where the intent of the governing body is that the costs of providing goods and services to customers on a continuing basis are financed or recovered primarily through user charges, and its financial measurement focus is on determination of net income, financial position, and cash flows. SNWA is guided by the pronouncements of the Governmental Accounting Standards Board (GASB). As an enterprise fund, and as permitted under GASB Statement No. 20, *Accounting and Financial Reporting for Proprietary Funds and Other Governmental Entities that Use Proprietary Fund Accounting,* SNWA applies the requirements of the Financial Accounting Standard Board Statements, Interpretations, Accounting Principles Board Opinions, and Accounting Research Bulletins issued on or before November 30, 1989, that do not conflict with or contradict GASB pronouncements.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires the use of estimates by management. Such estimates primarily relate to unsettled

transactions and events as of the date of the basic financial statements. Actual results could differ significantly from those estimates.

Cash, Cash Equivalents and Investments

Cash and cash equivalents include cash on hand and cash on deposit with financial institutions including time deposits (Note 2). Investments include obligations of the U.S. government and obligations of government-sponsored agencies, certificates of deposit and investment grade corporate commercial paper. Investments with maturity dates of less than one year when purchased are stated at par. Premiums and discounts are amortized over the remaining life of the investment instrument. Investments with a maturity date in excess of one year when purchased are reported at estimated fair value as required by GASB Statement No. 31, *Accounting and Financial Reporting for Certain Investments and for External Investment Pools* (Note 3).

Restricted Assets

Restricted assets include unused bond proceeds and a portion of sales tax proceeds which are externally restricted by bond covenants.

Inventories

Inventories are recorded at lower of cost or market based on periodic reviews. Reduction of inventory is recorded using the first-in, first-out accounting method. Inventories are included in other current assets (Note 6).

Capital Assets

Property, plant, equipment and land (Note 7) are carried at historical cost if purchased or at engineering estimates of fair value at the time received if donated. Expenditures for improvements and betterments (including labor, overhead and net interest costs) are capitalized. Generally, SNWA capitalizes assets with a cost greater than $5,000 and a useful life greater than three years.

Depreciation of property, plant and equipment is computed using the straight-line method over the estimated service lives of the respective assets. Major utility plant categories and their estimated service lives are as follows:

Structures and Improvements	10 to 20	Years
Pumping Stations and Wells	40	Years
Transmission / Distribution / Mains	50 to 75	Years
Office Furniture and Equipment	5 to 15	Years
Transportation / Equipment	5 to 10	Years
Power Plant	30	Years
Northern Resource Assets	5 to 27.5	Years

Revenues

Operating revenues include wholesale delivery charges, groundwater management fees, administration cost recoveries, Las Vegas Wash fees and other ancillary revenues. The wholesale delivery charge, which for the year ended June 30, 2013, was $293 per acre-foot (AF) of treated Colorado River water delivered to the purveyor members of SNWA. The wholesale delivery charge is designed to fund operation and

maintenance of SNWS, as well as SNWA administration. SNWA also charged $226 per AF for raw Colorado River water delivered to the city of Boulder City for use on golf courses. For the fiscal year ended 2013, groundwater management fees consist of an annual fee of $13 per AF of permitted groundwater rights or $13 per domestic well. Administration cost recoveries are amounts charged to member agencies of SNWA that do not physically take potable water from the SNWA water system. These costs vary by purveyor and are designed to help compensate SNWA for administration costs associated with their membership. Las Vegas Wash fees consist of contributions from other local governments towards operating costs of the Las Vegas Wash Coordination Committee. Other revenues consist primarily of sales made from SNWA's northern resource properties' activities.

Nonoperating revenues consist of investment income, net of amounts capitalized, interest expense reimbursements related to Build America Bonds (BABs) and a minimal amount of other miscellaneous items.

Expenses

Operating expenses include the costs of personnel allocations from LVVWD, energy costs, and other costs associated with the operation and maintenance of SNWS, as well as SNWA administration and depreciation. Non-operating expenses include interest expense (net of amounts capitalized) as well as amortization of deferred amount on debt refundings and discounts.

Capital Contributions

Capital contributions include various contributed revenues SNWA receives that are restricted for use in a variety of capital improvement programs (Note 16).

Litigation Defense Costs

SNWA does not accrue for estimated future legal and defense costs, if any, to be incurred in connection with outstanding or threatened litigation and other disputed matters, but rather records such as period costs when services are rendered. See Note 13 for further information.

Water Rights Holding Company

In 1999, the Board established Muddy River Water Holdings, Inc., a non-profit corporation authorized to facilitate the acquisition and holding of water rights stock and stock options. This corporation holds any stock purchased by SNWA that represents water rights.

Restatement and Reclassifications

Certain minor reclassifications have been made to fiscal 2012 amounts to conform to the fiscal 2013 presentation.

New Accounting Pronouncements

In January 2013, the GASB issued Statement No. 69, *Government Combinations and disposals of Government Operations.* The requirements for Statement 69 are effective for periods beginning after December 15, 2013 and should be applied on a prospective basis. Early application of the standard is encouraged. In general, Statement No. 69 is intended to improve accounting and financial reporting for US state and local governments' combinations and disposals of government operations. SNWA has no

immediate plans for combinations or disposals of such operations so there will be no immediate impact to SNWA's financial position, results of operation, or cash flows.

In April 2013, the GASB issued Statement No. 70, *Accounting and Financial Reporting for Nonexchange Financial Guarantees.* The requirements of Statement 70 are effective for reporting periods beginning after June 15, 2013. Early application of the standard is encouraged. In general, Statement 70 is intended to provide accounting and financial reporting guidance to state and local governments that offer nonexchange financial guarantees and for governments that receive guarantees on their obligations. It requires a state or local government guarantor that offers a nonexchange financial guarantee to another organization or government to recognize a liability on its financial statements when it is more likely than not that the guarantor will be required to make a payment to the obligation holders under the agreement. SNWA currently does not offer or receive nonexchange financial guarantees where payments are likely required. Therefore Statement No. 70 is not expected to have an immediate impact to SNWA's financial position, results of operation, or cash flows.

NOTE 2. CASH AND CASH EQUIVALENTS

Cash and cash equivalents consist of demand deposit accounts containing restricted and unrestricted cash. Beginning in December 2009, SNWA deposited bond proceeds and matured investment proceeds in LVWWD's demand deposit account. The funds are readily available to SNWA as needed and are collateralized as described below. Cash balances as of June 30, 2013 and 2012, were $96,655,866 and $90,009,933 respectively. The corresponding unreconciled SNWA bank balances as of June 30, 2013, and 2012, were $11,198,575 and $67,495,869 respectively. LVWWD held $85,864,560 and $23,446,247 of the funds as of June 30, 2013 and June 30, 2012 respectively.

On July 22, 2003, the Nevada State Assembly approved an amendment to NRS 356.020 establishing a Nevada State Treasurer's Pooled Collateral program for local governments. The primary objective of the collateral pool is to reduce the risk for government agencies, while at the same time decrease the overall collateral requirement for depositories. By centralizing the administration and reporting functions through the State Treasurer's office, both government agencies and depositories realize cost savings in terms of operational support and collateral efficiency. The bank utilized by SNWA participates in the pool by pledging securities for SNWA monies on deposit. The collateral pool for public fund deposits administered and monitored by the Nevada State Treasurer's Pooled Collateral Office requires depository banks to place acceptable securities of no less than 102% of the market value of the aggregate total deposits of public entities in Nevada with a third party custodian.

NOTE 3. INVESTMENTS

Funds not immediately required for payment of operating or capital expenditures are invested by SNWA. SNWA complies with NRS 355.170, which governs permitted investments for "local governments" and includes –

- Bonds, debentures, bills, and notes of the United States, the maturity of which do not extend more than 10 years after the date of purchase,

- Farm loan bonds, consolidated farm loan bonds, debentures, consolidated debentures and other obligations issued by federal land banks and federal intermediate credit banks under the authority of the Federal Farm Loan Act and bonds debentures, consolidated debentures and

other obligations issued by banks for cooperatives under the authority of the Farm Credit Act of 1933,

- Obligations of United States agencies or instrumentalities or corporations sponsored by the government, not to exceed ten years maturity after the date of purchase,

- Commercial paper issued by corporations organized and operating in the United States that (1) is purchased from a registered broker-dealer, (2) at the time of purchase has a remaining term to maturity of no more than 270 days, and (3) is rated by a nationally recognized rating service as A-1, P-1 or its equivalent, or better, except that these investments may not, in aggregate value, exceed 20 percent of the total portfolio as determined on the date of purchase, and if the rating of the obligation is reduced to a level that does not meet these requirements, it must be sold as soon as possible,

- Negotiable certificates of deposit issued by commercial banks, insured credit unions or savings and loan associations,

- Non-negotiable certificates of deposit issued by insured commercial banks, insured credit unions, or insured savings and loan associations, except certificates that are not within the limits of insurance provided by an instrumentality of the United States, unless those certificates are collateralized in the same manner as is required for uninsured deposits,

- Negotiable notes medium-term obligations issued by local governments of the State of Nevada (NRS 350.007 defines "Medium-term obligation" as one to nine years),

- Obligations of the Federal Agricultural Mortgage Corporation, and

- Obligations of state and local governments rated "A" or higher if interest is tax exempt.

As required by GASB Statement No. 31, *Accounting and Financial Reporting for Certain Investments and for External Investment Pools,* an adjustment to estimated fair value has been made for investment securities with a maturity date in excess of one year at the time they were purchased. Estimated fair value was determined by quoted market prices provided by the Bank of New York Mellon Trust Company where SNWA has an investment custody account. The Bank of New York Mellon Trust Company acts as an agent for SNWA. For fiscal 2013 this adjustment decreased interest income by $408,235 and increased interest income by $137,052 in fiscal 2012.

The following investment schedules detail the securities SNWA was holding for investment as of June 30, 2013 and 2012. Three valuations of investments are shown. Par value is the amount that SNWA will receive at maturity. Also shown is the premium of investments. Most investment instruments purchased in recent months have been acquired with substantial premiums. Book value is the value calculated after adjusting investments with a maturity of one year or greater to estimated fair value using valuation methods previously described. This column is presented as the book value of investments on the balance sheet. Fair value is presented for informational purposes only and represents the estimated fair value for all investments regardless of maturity date. This information is derived from independent market research conducted by the Bank of New York Mellon Trust Company.

Investments at June 30, 2013

Security	Days to Maturity after Purchase Date	Par Value	Premiums (Discounts)	Fair Value Adjustment	Book (Fair) Value	MEMO Fair Value
CD (9 Issues)	<366	$ 2,160,000			$ 2,160,000	$ 2,160,246
CD (30 Issues)	>365	7,200,000		$ 2,553	7,202,553	7,202,553
FHLB	575	45,645,000	$ 660,788	32,559	46,338,347	46,338,347
FNMA	576	5,000,000	32,788	3,712	5,036,500	5,036,500
FHLMC	620	38,705,000	20,318	29,224	38,754,542	38,754,542
FHLB	644	63,000,000	617,288	42,243	63,659,531	63,659,531
FHLB	666	7,000,000	335,642	4,908	7,340,550	7,340,550
FFCB	686	5,000,000	2,216	3,834	5,006,050	5,006,050
T-Note	687	15,000,000	1,059,103	(853)	16,058,250	16,058,250
T-Note	689	10,000,000	694,751	10,749	10,705,500	10,705,500
T-Note	694	10,000,000	709,022	(3,522)	10,705,500	10,705,500
FFCB	696	2,000,000	(259)	1,419	2,001,160	2,001,160
FHLMC	701	13,125,000	842,650	(1,600)	13,966,050	13,966,050
T-Note	701	45,000,000	3,191,639	(16,889)	48,174,750	48,174,750
T-Note	702	1,000,000	70,825	(275)	1,070,550	1,070,550
FAMCA	718	6,200,000	32,827	5,551	6,238,378	6,238,378
FAMCA	720	1,000,000	5,287	903	1,006,190	1,006,190
FAMCA	720	1,000,000	5,287	903	1,006,190	1,006,190
T-Note	723	10,000,000	723,326	(17,826)	10,705,500	10,705,500
T-Note	752	5,000,000	710	(8,910)	4,991,800	4,991,800
MUNI	775	500,000	20,437	1,888	522,325	522,325
FHLB	785	3,000,000	25,627	2,303	3,027,930	3,027,930
FHLMC	804	47,000,000	1,465,855	21,695	48,487,550	48,487,550
FHLMC	805	3,000,000	93,371	1,579	3,094,950	3,094,950
FHLMC	834	2,000,000	62,527	(27)	2,062,500	2,062,500
MUNI*	852	1,000,000	30,181	5,739	1,035,920	1,035,920
FHLMC	854	1,000,000	4,549	(18)	1,004,531	1,004,531
FNMA	902	2,664,000	206,077	(1,082)	2,868,995	2,868,995
FHLMC	946	12,000,000	29,375	(695)	12,028,680	12,028,680
FNMA	982	65,000,000	190,588	(84,638)	65,105,950	65,105,950
T-Note	1089	4,000,000	783,169	(29,419)	4,753,750	4,753,750
T-Note	1146	1,000,000	39,799	(8,393)	1,031,406	1,031,406
T-Note	1149	5,000,000	166,946	(46,246)	5,120,700	5,120,700
FNMA	1322	1,000,000	12,309	7,541	1,019,850	1,019,850
T-Note	1506	1,000,000	3,897	(19,835)	984,062	984,062
MUNI*	1617	1,000,000	91,561	(8,061)	1,083,500	1,083,500
FHLB	1691	1,000,000	16,569	19,801	1,036,370	1,036,370
T-Note	1848	4,000,000	314,634	(120,884)	4,193,750	4,193,750
T-Note	1870	1,000,000	80,298	(31,860)	1,048,438	1,048,438
T-Note	2207	1,000,000	1,531	(30,981)	970,550	970,550
MUNI	2241	1,005,000	140,231	(3,762)	1,141,469	1,141,469
T-Note	2557	1,000,000	144,920	(38,590)	1,106,330	1,106,330
T-Note	2922	1,000,000	117,423	(43,593)	1,073,830	1,073,830
T-Note	3287	1,000,000	(2,005)	(44,475)	953,520	953,520
T-Note	3652	1,000,000	(18,532)	(44,905)	936,563	936,563
		$ 455,204,000	$ 13,025,545	$ (408,235)	$ 467,821,310	$ 467,821,556

Investments at June 30, 2012

Security		Days to Maturity after Purchase Date	Par Value	Premiums (Discounts)	Fair Value Adjustment	Book (Fair) Value	MEMO Fair Value
CP (8 Issues)		<366	$ 44,000,000	$ (87,952)	$ 87,952	$ 44,000,000	$ 43,919,399
CD (6 Issues)		<366	1,440,000			1,440,000	1,439,218
CD (20 Issues)		>365	4,800,000		(987)	4,799,013	4,799,013
MUNI		417	2,000,000	89,219.26	(2,979)	2,086,240	2,086,240
FHLB		418	10,000,000	8,198.35	1,902	10,010,100	10,010,100
FHLMC		434	3,000,000	1,795.81	154	3,001,950	3,001,950
FNMA		452	6,000,000	3,860.39	700	6,004,560	6,004,560
MUNI		775	500,000	41,681.31	(131)	541,550	541,550
MUNI		852	1,000,000	70,106.10	104	1,070,210	1,070,210
FHLB		966	1,000,000	39,105.75	4,374	1,043,480	1,043,480
FNMA		1322	1,000,000	26,284.53	13,403	1,039,688	1,039,688
MUNI		1617	1,000,000	119,297.42	5,303	1,124,600	1,124,600
FHLB		1691	1,000,000	25,190.27	25,790	1,050,980	1,050,980
MUNI		2241	1,005,000	166,870.55	1,467	1,173,338	1,173,338
MUNIP	*	8804	4,950,000	-	-	4,950,000	4,950,000
MUNIP	*	8823	3,285,000	-	-	3,285,000	3,285,000
MUNIP	*	8823	15,690,000	-	-	15,690,000	15,690,000
MUNIP	*	8845	715,000	-	-	715,000	715,000
MUNIP	*	8908	1,500,000	-	-	1,500,000	1,500,000
MUNIP	*	8910	2,900,000	-	-	2,900,000	2,900,000
MUNIP	*	8915	39,065,000	-	-	39,065,000	39,065,000
			$ 145,850,000	$ 503,657	$ 137,052	$ 146,490,709	$ 146,409,326

* Related Party

Non-negotiable CDs of $720,000 and $750,000 are also included in SNWA's investments for June 30, 2013, and June 30, 2012 respectively. They are not included in the detail above per GASB Statement No. 40, *Deposit and Investment Risk Disclosures.*

The following shows the distribution and credit quality of SNWA investments at June 30, 2013 and 2012. Ratings are derived from Standard & Poor's.

Investment Distribution and Quality

Investment Type	Rated	June 30, 2013	June 30, 2012
United States Treasury Notes	AA	26.6%	
Federal Home Loan Bank	AA	26.0%	8.2%
Federal Home Loan Mortgage Corporation	AA	25.5%	2.0%
Federal National Mortgage Association	AA	15.8%	4.8%
Certificates of Deposit	None	2.0%	4.8%
Federal Agriculture Mortgage Corporation	AA	1.8%	
Federal Farm Credit Banks Corporation	AA	1.5%	
Municipal Bonds (All Other)	AA	0.4%	1.5%
Municipal Bonds (Related Party)	AA	0.4%	46.3%
Municipal Bonds (Related Party)	A		2.6%
Commercial Paper	A		29.8%
		100.0%	100.0%

NOTE 4. DUE FROM MEMBER AGENCIES

SNWA bills its member agencies for wholesale delivery charges for water delivered to purveyor members, and/or reimbursement of general, administrative and other charges. In addition to these billings, purveyors collect regional connection charges, regional commodity charges and a regional reliability surcharge (the latter two known collectively as regional water charges). Revenue from billings and collections are remitted to SNWA monthly.

Also, SNWA has advanced funds to LVVWD that are used to fund daily operating costs paid by LVVWD. LVVWD sends SNWA monthly detailed bills for expenses LVVWD incurred on SNWA's behalf and SNWA pays these billings as they occur. At year end, SNWA nets any outstanding amounts owed to LVVWD against the advance and shows the unused balance of advanced funds in the due from member agencies account. As of June 30, 2013 and 2012, those net amounts shown in the sums below were $10,338,264 and $10,160,284, respectively.

Based on historical collection experience, management believes all accounts are collectible, and therefore no allowance has been provided for bad debts. At June 30, 2013 and 2012, the following amounts were due from SNWA's member agencies:

Due From Member Agencies

	June 30, 2013	June 30, 2012
Las Vegas Valley Water District	$ 29,599,559	$ 28,417,189
City of North Las Vegas	3,772,620	5,690,909
City of Henderson	3,600,997	5,860,873
City of Boulder City	367,065	376,006
Nellis Air Force Base	73,966	128,373
Big Bend Water District	35,710	14,507
Clark County Water Reclamation District	2,917	2,917
Total	$ 37,452,834	$ 40,490,774

NOTE 5. RECEIVABLES

Receivables include amounts due from the state of Nevada, grantors and businesses as well as accrued investment earnings on SNWA's investments. Based on historical collection experience, management believes all amounts are collectible, and therefore no allowance has been provided for bad debts.

The following amounts were due as of June 30, 2013 and 2012:

Receivables

Type	June 30, 2013	June 30, 2012
Current Receivables - Restricted		
State of Nevada - Department of Taxation	$ 13,917,603	$ 13,264,923
Current Receivables - Unrestricted		
Grants Receivable	573,699	5,036,569
Power Trading Accounts Receivable		2,465,108
Federal BAB Bond Interest Receivable	813,244	890,739
Accrued Investment Earnings	1,610,707	163,266
Northern Resource Property Receivable		5,884
Aerial Imagery Project--RTC	7,500	
Total Current Receivables - Unrestricted	3,005,150	8,561,566
Total Current Receivables	$ 16,922,753	$ 21,826,489

NOTE 6. OTHER CURRENT ASSETS

Other current assets consist of prepaid expenses and miscellaneous current assets located at SNWA's northern resource property locations. The $3.7 million (10.7%) increase in other current assets is due primarily to prepaid power. During the year, SNWA used funds to secure future power (electricity and natural gas) contracts.

The following items are included in other current assets for June 30, 2013 and 2012:

Other Current Assets

Type	June 30, 2013	June 30, 2012
Prepaid Power	$ 36,047,415	$ 31,760,882
Prepaid Leases	1,227,078	1,215,424
Ranch Inventory	570,934	1,185,393
Prepaid Insurance	453,967	425,983
Prepaid Retirement Premium	1,049	1,049
Total	$ 38,300,443	$ 34,588,731

NOTE 7. CAPITAL ASSETS

The following capital assets schedules summarize changes in major categories of capital assets for fiscal years ended June 30, 2013 and 2012. Natural resources rights are described in more detail in Note 8, and Construction Work in Progress is described in more detail in Note 9.

Capital Assets June 30, 2013

Capital Assets Category	Balance at June 30, 2012	Additions	Cost Adjustments	Retirements/ Transfers	Balance at June 30, 2013
Capital Assets Subject to Depreciation					
Structures and Improvements	$ 687,659,749	$ 1,841,426	$ 93,139		$ 689,594,314
Pumping Stations and Wells	614,975,819	23,564,487	17,047		638,557,353
Transmission/Distribution/Mains	1,427,477,488		$ 41,497		1,427,518,985
Office Furniture and Equipment	111,331,123	598,079	281,511	$ (93,133)	112,117,580.00
Transportation/Work/Equipment	6,288,448	323,164	4,690	(421,352)	6,194,950.00
Power Plant	101,854,657				101,854,657.00
Northern Resources Assets	17,793,245	533,108	1,698,701	(17,500)	20,007,554.00
Total Capital Assets Subject to Depreciation	2,967,380,529	26,860,264	2,136,585	(531,985)	2,995,845,393
Accumulated Depreciation					
Structures and Improvements	274,961,409	30,579,564			305,540,973
Pumping Stations and Wells	141,660,679	15,209,493			156,870,172
Transmission/Distribution/Mains	320,134,116	19,615,737			339,749,853
Office Furniture and Equipment	87,402,517	3,653,789		(75,692)	90,980,614
Transportation/Work/Equipment	5,517,691	376,831		(421,351)	5,473,171
Power Plant	27,727,100	3,395,155			31,122,255
Northern Resources Assets	8,622,524	2,112,746		(14,583)	10,720,687
Total Accumulated Depreciation	866,026,036	74,943,315	-	(511,626)	940,457,725
Net Capital Assets Subject to Depreciation	2,101,354,493	(48,083,051)	2,136,585	(20,359)	2,055,387,668
Capital Assets Not Subject to Depreciation					
Land and Land Rights	92,271,442		(23,250)		92,248,192
Natural Resource Rights	389,961,251	1,831,053			391,792,304
Construction in Progress	1,536,891,327	197,742,433		(26,772,070)	1,707,861,690
Net Capital Assets Not Subject to Depreciation	2,019,124,020	199,573,486	(23,250)	(26,772,070)	2,191,902,186
Total Net Capital Assets	**$ 4,120,478,513**	**$ 151,490,435**	**$ 2,113,335**	**$ (26,792,429)**	**$ 4,247,289,854**

Amounts may be slightly off due to rounding

Capital Assets June 30, 2012

Capital Assets Category	Balance at June 30, 2011	Additions	Cost Adjustments	Retirements/ Transfers	Balance at June 30, 2012
Capital Assets Subject to Depreciation					
Structures and Improvements	$ 664,330,857	$ 23,328,892			$ 687,659,749
Pumping Stations and Wells	604,556,458	10,424,555		(5,194)	614,975,819
Transmission/Distribution/Mains	1,407,974,333	19,503,155			1,427,477,488
Office Furniture and Equipment	110,172,675	588,987	601,898	$ (32,437)	111,331,123
Transportation/Work/Equipment	6,229,792	257,082		(198,426)	6,288,448
Power Plant	101,854,657				101,854,657
Northern Resources Assets	14,636,892	3,093,882	74,619	(12,148)	17,793,245
Total Capital Assets Subject to Depreciation	2,909,755,664	57,196,553	676,517	(248,205)	2,967,380,529
Accumulated Depreciation					
Structures and Improvements	240,029,935	34,931,474			274,961,409
Pumping Stations and Wells	126,852,475	14,813,398		(5,194)	141,660,679
Transmission/Distribution/Mains	305,544,488	14,589,628			320,134,116
Office Furniture and Equipment	82,514,061	4,915,301		(26,845)	87,402,517
Transportation/Work/Equipment	5,323,262	392,855		(198,426)	5,517,691
Power Plant	24,331,945	3,395,155			27,727,100
Northern Resources Assets	6,751,234	1,880,979		(9,689)	8,622,524
Total Accumulated Depreciation	791,347,400	74,918,790	-	(240,154)	866,026,036
Net Capital Assets Subject to Depreciation	2,118,408,264	(17,722,237)	676,517	(8,051)	2,101,354,493
Capital Assets Not Subject to Depreciation					
Land and Land Rights	92,271,442				92,271,442
Natural Resource Rights	389,574,983	386,268			389,961,251
Construction in Progress	1,404,518,678	190,920,503		(58,547,854)	1,536,891,327
Net Capital Assets Not Subject to Depreciation	1,886,365,103	191,306,771	-	(58,547,854)	2,019,124,020
Total Net Capital Assets	**$ 4,004,773,367**	**$ 173,584,534**	**$ 676,517**	**$ (58,555,905)**	**$ 4,120,478,513**

Amounts may be slightly off due to rounding.

NOTE 8. NATURAL RESOURCES RIGHTS

Arizona Water Bank

In 1993, the Board approved a cooperative agreement among its member agencies for funding and participation in the Arizona Underground Storage Demonstration Project (the Project). The Project was originally an agreement between the Central Arizona Water Conservation District (CAWCD) and the Metropolitan Water District of Southern California to store water from the Colorado River in underground aquifers in Arizona. SNWA agreed to participate in the Project and pay CAWCD to store Colorado River water in Arizona. In the event of either a flood release or an anticipatory release of Colorado River water, water stored in Arizona would then become the property of the States of California and Nevada. In 1996 and 1997, the United States Secretary of Interior declared a surplus, and 50,000 AF of water stored in Arizona were assigned to SNWA. Under the Project, SNWA purchased the 50,000 AF of water available for future use and funded the expenditure through capital contributions from SNWA's member agencies.

In 2001, SNWA and CRC approved an Agreement for Interstate Water Banking (Banking Agreement) with the Arizona Water Banking Authority (AWBA). AWBA agreed to use its best efforts to store 1.2 million AF of Colorado River water underground in Arizona for SNWA under the Banking Agreement, and two related agreements that were executed in 2002. Also in 2002, SNWA and CRC entered into an agreement with AWBA to allow SNWA to store water in Arizona during that year while the remaining agreements were being negotiated. Under the 2002 agreement, SNWA stored 66,595 AF of Colorado River water in Arizona. In 2004, as part of a subsequent agreement, AWBA agreed to store an extra 10,000 AF of Nevada's unused Colorado River water for SNWA.

In 2004, the Board approved an amendment to the 2001 Banking Agreement that guarantees Nevada 1.25 million AF of water storage in aggregate (approximately 1.13 million AF of additional storage plus utilization of the roughly 120,000 AF of water previously stored) in Arizona. In exchange for the water stored, SNWA agreed to make an initial payment of $100 million and payments of $23 million per year for a ten year period beginning in 2009. Additionally, SNWA agreed to pay AWBA's actual cost to recover the stored water.

After several mutually agreed upon deferrals of payment, the AWBA and SNWA approved an amendment to the 2001 Banking Agreement inn May, 2013 that relieved SNWA from its obligation to pay AWBA $217,315,000 in remaining annual payments. In exchange the AWBA will complete any additional storage of Colorado River water on a pay-as-you-go basis. Also SNWA will pay a $20,000 annual administrative fee for maintenance of SNWA's storage credits.

As of June 30, 2013, SNWA has capitalized a total of $131.4 million related to AWBA.

Northern Resource Properties and Related Rights

In 2006 and 2007, the Board approved the purchase of seven properties in Spring Valley, Nevada. In addition to its substantial land holdings (over 23,000 acres), SNWA also acquired surface and groundwater rights associated with the properties. Through June 30, 2012, SNWA has acquired more than 33,000 acre-feet per year (AFY) of surface water rights, more than 6,000 AFY of groundwater rights and more than 23,000 AFY of supplemental water rights. Additional negligible water rights were acquired in 2010. SNWA intends to use the surface water rights to help manage the groundwater basin and support

other environmental management activities associated with its Clark, Lincoln and White Pine Counties Groundwater Development Project.

The Bureau of Land Management (BLM) and United States Forest Service (USFS) issue permits allowing livestock to graze on lands in districts formed primarily under the Taylor Grazing Act. These grazing permits specify grazing preference and the terms and conditions under which permittees may graze these lands during the term of the permit. They are issued by land units called allotments with units known as Animal Unit Months (AUM). An AUM is defined as the amount of forage needed by an animal unit grazing for one month (approximately 1,000 pounds of dry forage). Permits issued by the BLM and USFS are effective for ten years and are subject to renewal. As of June 30, 2013, SNWA owned permits equivalent to 64,548 AUMs. SNWA has verified through a third party that the AUMs have not been impeded or decreased in value by any legal actions

As of June 30, 2013, SNWA has capitalized $62.2 million of costs to acquire the northern resource properties and related rights.

Muddy River Water Rights

In 1996 the Board authorized the General Manager to request proposals for acquisition of up to 5,600 AF of Muddy River water rights from shareholders of the Muddy Valley Irrigation Company (MVIC). In 1999, SNWA purchased 3,662 AF of water rights from several shareholders. In 2000, SNWA exercised all options possible and obtained the permanent water rights associated with those options totaling 1,764 AF. The Board authorized and executed an additional purchase of shares in 2001, representing a total of 188 AF of water. In 2002 and 2004, the Board authorized the acquisition of an additional 3,300 AF and 600 AF, respectively, of Muddy River water rights bringing the total authorized for purchase to 9,500 AF. Finally, in 2008 (amended 2011) the Board authorized the acquisition of additional shares of MVIC, along with additional shares of other northeastern Clark County rural irrigation companies. The authorization does not give a specific limit for MVIC acquisition but instead establishes a $57.1 million limit for post 2007 acquisitions or leases of MVIC and two other rural irrigation companies. SNWA has not exceeded this authorization.

As of June 30, 2013, SNWA has capitalized $62.1 million of costs related to the acquisition of Muddy River water rights.

Hydropower Rights

CRC was created in 1935 for the purpose of securing and distributing Nevada's right to Colorado River water and hydroelectric power. CRC delivers Nevada's allocation of Colorado River hydroelectric power to various municipal and non-municipal customers in southern Nevada. One of those customers located in Henderson, Nevada is Pioneer Americas, LLC (Pioneer), a manufacturer of chlorine and caustic soda used in various chemical processes.

In addition to hydropower, CRC also purchased supplemental energy for Pioneer in the wholesale energy market. As a result of regional market volatility in 2000 and 2001, the price of Pioneer's portfolio of supplemental energy was higher than market, and higher than Pioneer could pay. CRC purchased Pioneer's entire portfolio of energy contracts including hydropower. In January 2003, SNWA purchased Pioneer's hydropower contract from CRC for $53 million, allowing CRC to retain the Pioneer supplemental energy portfolio and use the $53 million to settle those contracts.

There are five contracts associated with the Pioneer hydropower. Two are associated with power generated at the Hoover Dam, two at the Parker-Davis Dam, and one is related to the transmission of the hydropower. The Hoover Dam contracts expire in 2017, and the Parker-Davis Dam contracts expire in 2028. SNWA expects that these contracts will be renewed for additional 20-year terms upon the initial expiration. Accordingly the hydropower is considered a perpetual resource.

The cost of the hydroelectric energy including amortization of debt for the $53 million has been and is projected to be very stable at about $37/megawatt hour (MWh).

Virgin River Water Rights Development

In 1994, the Board agreed to accept assignment of Nevada's Virgin River water rights from LVVWD, subject to SNWA reimbursing LVVWD for all costs incurred related to the acquisition of those water rights. Additionally SNWA acquired 350 shares of Bunkerville Irrigation Company (BIC) in September, 2005. The shares represent 3,710 AF of Virgin River surface water rights. Under the terms of an agreement between SNWA and the Virgin Valley Water District (VVWD) in 2000, SNWA transferred 3,710 AF of its water rights to VVWD to assist VVWD in the development of additional groundwater resources in the Virgin River Basin. Finally, in 2008 (amended 2011) the Board authorized the acquisition of additional shares of BIC and the Mesquite Irrigation Company (MIC). The authorization which includes MVIC as described above does not give a specific limit for acquisition. Instead it establishes a $57.1 million limit for post 2007 acquisitions or leases of MVIC, BIC, and MIC. SNWA has not exceeded this authorization.

As of June 30, 2013, SNWA has capitalized $38.9 million of costs associated with the acquisition of Virgin River water rights which includes all initial payments and any subsequent research and development costs.

Coyote Springs Water Rights

In 1997, the Board authorized the General Manager to initiate negotiations for the purchase of ground water rights and a well in the Coyote Springs valley located about 60 miles northeast of Las Vegas. The well is one of the highest producing wells ever drilled in southern Nevada. In 1998, the Board approved the purchase of 7,500 AF of groundwater rights and the well with associated real property including easements. In 2002, SNWA purchased another 1,500 AF of water rights from Coyote Springs Investment, LLC.

As of June 30, 2013, SNWA has capitalized $30.9 million of costs associated with the acquisition and subsequent maintenance of Coyote Springs water rights.

In-State Water Projects

In 1989, LVVWD filed applications to appropriate water from multiple hydrographic basins located in eastern Nevada. In 2003, the Board agreed to accept assignment of those applications from LVVWD for a payment of $9.9 million, which represented LVVWD's costs to date of developing and perfecting those water rights.

As of June 30, 2013, SNWA has capitalized $10.1 million related to the acquisition of these water rights which includes the initial payment to LVVWD plus additional costs that have been incurred.

Other Water Rights

In 2010, SNWA acquired the contractual rights to 400 AF of Colorado River water held by an outside corporation. The $2.0 million purchase does not increase Nevada's 300,000 AF basic apportionment of Colorado River water, but will ensure that SNWA is the sole entity authorized to receive this water.

Groundwater Management Program

In 1999, the Nevada Legislature directed SNWA to establish a Groundwater Management Program (GMP) for the Las Vegas valley. The GMP provided for the recharging of treated Colorado River water into the Las Vegas Valley Groundwater Basin (LVVGB) for the permanent benefit of the aquifer. Funds collected as part of the GMP are used for this recharge and other programs to benefit well owners.

As of June 30, 2013, SNWA has capitalized $1.2 million associated with the GMP.

The following table summarizes the amounts capitalized related to natural resources rights as of June 30, 2013 and 2012:

Natural Resources Rights

Type	June 30, 2013	June 30, 2012
Arizona Water Bank	$ 131,365,372	$ 129,766,558
Northern Resource Property and Rights	62,165,559	62,165,559
Muddy River Water Rights	62,134,195	62,128,556
Hydropower Rights	53,000,000	53,000,000
Virgin River Water Rights Development	38,949,207	38,722,607
Coyote Springs Water Rights	30,884,687	30,884,687
In-State Water Projects	10,134,854	10,134,854
Other Water Rights	2,000,000	2,000,000
Groundwater Management Program	1,158,430	1,158,430
Total Natural Resources Rights	$ 391,792,304	$ 389,961,251

NOTE 9. CONSTRUCTION IN PROGRESS

SNWA maintains two capital construction programs: (1) the Major Construction and Capital Plan (MCCP) which includes capital projects that expanded capacity of the SNWS from 400 million gallons per day (MGD) in 1996 to 1015 MGD currently, building two additional intakes into Lake Mead, the acquisition of water and water rights, and other miscellaneous capital projects, and (2) the Las Vegas Wash Capital Improvements Plan (LVWCIP), which includes capital projects associated with improving water quality in the Las Vegas Wash, the natural channel that drains the Las Vegas valley into Lake Mead. Each of these capital projects is discussed in more detail later in this note.

Land costs, which include the costs of easements and other rights-of-way, are allocated to Property, Plant and Equipment (PP&E) when purchased. Land costs are not depreciated. Direct and indirect costs of construction of a capital project including ancillary costs directly related to construction projects are

recorded as CWIP. When a project is finished, an agenda item is brought before the Board to accept the project as complete. With the Board acceptance, associated CWIP costs are closed out and allocated depreciable asset categories within PP&E.

Major Construction and Capital Plan (MCCP)

In 1994, SNWA began a capital improvements program (CIP) estimated to cost $2.1 billion. The purpose of the CIP was to expand the capacity of the SNWS from 400 MGD to 900 MGD giving Nevada the capacity and reliability to access its entire 300,000 AF consumptive use allocation of the Colorado River, plus any banked, transferred, or purchased water that may be delivered to Nevada via the Colorado River. In 2008, the CIP was amended to add funds to construct Lake Mead Intake No. 3 bringing the gross authorized amount of the CIP to $2.9 billion.

The express intent of the CIP was to build improvements on a phased or as-needed basis. All costs associated with the CIP were capitalized. Direct costs included land costs, costs of construction and engineering contracts. Indirect costs included items such as administration, planning and design, public information, program management, construction management, environmental mitigation, and interest.

In 2002, SNWA created the MCCP to address the need for capital projects not directly related to the expansion of the SNWS. The original MCCP defined and authorized projects that were necessary to maintain facilities in a sound and functional condition, maintain or improve water quality, develop water resources, reduce operating costs, address environmental and safety issues, provide support facilities (including power), and meet other objectives defined by the Board. The original MCCP authorized $328 million of capital projects. By the tenth amendment in December 2008, the MCCP's total authorization had risen over fivefold. In 2010 the CIP and MCCP were merged into one document.

The most recent amended MCCP to be approved by the Board was on February 17, 2011. On June 21, 2012, the Board approved an amendment to the Facilities and Operations agreement that removed the apparent requirement for the Authority to reaffirm or revise the MCCP with them at least annually. The MCCP is still updated at least annually with the most recent update performed in February, 2013. This amended MCCP includes details for $2.5 billion of completed projects, $1.9 billion of active projects and $0.4 billion of deferred projects. Of the 20 projects comprising the $1.9 billion of active projects, nearly all (98.9%) are funded by capital contributions with a minimal amount (1.1%) funded by the wholesale delivery charge. In terms of active projects, 13 (65.0%) are funded by capital contributions while 7 (35.0%) are funded by the wholesale delivery charge.

It is the express intent of the MCCP to build improvements on a phased or as-needed basis. All costs associated with the MCCP are capitalized. Direct costs include land costs, costs of construction and engineering contracts and interest. Indirect costs include items such as capitalized interest, administration, planning and design, public information, program management, construction management, and environmental mitigation.

Las Vegas Wash Capital Improvements Plan (LVWCIP)

The Las Vegas Wash (the Wash) is the primary urban runoff, wastewater and floodwater outlet from the Las Vegas valley into Lake Mead and the Colorado River. The Wash is considered a critical component in the many environmental and water resource issues facing southern Nevada. The LVWCIP presents a summary of planned capital requirements necessary to support long-term enhancement and management of the Wash.

The LVWCIP, revised and approved by the Board on February 21, 2013, includes future projects totaling approximately $59.8 million. Of that amount, about $54.8 million (91.6%) is for construction of facilities. The remaining $5.0 million (8.4%) is for design studies, revegetation activities, and miscellaneous programs. These projects will be funded by 4.0% of the gross sales tax SNWA receives which has been designated for the Wash, as well as grants and contracts provided by various state and federal agencies.

Indirect Costs

Indirect costs are defined as capital costs that have not been specifically identified as being generated by a single capital project. Indirect costs are composed of three major categories – 1) capitalized interest, 2) capitalized labor, and 3) other costs.

SNWA calculates capitalized interest based on total CWIP, not by project (see below). Indirect capitalized labor results from departments that work with multiple projects and find it cumbersome and ineffective to try and post their time to specific projects. Other indirect costs come primarily from outside consultants that SNWA hires to do planning, oversight, and other capital related tasks. Since these consultants invoice SNWA by total time spent on Authority projects and not specific tasks, the costs cannot be traced to specific items in the capital plan.

Capitalization of Interest Income / Expense

SNWA capitalizes the interest cost of restricted tax-exempt borrowings, less interest earned on temporary investment of the proceeds of those borrowings, from the date of borrowing until the assets acquired with those borrowings are ready for their intended use. These amounts are added to the indirect costs of total CWIP. SNWA capitalized $74,582,373 and $68,310,080 of interest expense, which was partially offset by $818,620 and $43,915 of interest income, in the fiscal years ended June 30, 2013 and 2012, respectively.

The following shows the construction in progress balance as of June 30, 2013 and 2012:

Construction In Progress

Type	June 30, 2013	June 30, 2012
Major Construction and Capital Plan	$ 1,197,584,619	$ 1,055,304,145
Las Vegas Wash Capital Improvement Plan	21,496,067	12,515,546
Indirect Costs	488,781,004	469,071,636
Total Construction In Progress	$ 1,707,861,690	$ 1,536,891,327

NOTE 10. WATER RECHARGE INVENTORY

In 1993, member agencies of SNWA entered into a cooperative agreement for the banking of water (recharge) in the LVVGB. The purpose of this agreement was to allow LVVWD to store water on behalf of the member agencies for future use. SNWA was not a party to the 1993 agreement.

In 2006, the Board approved an agreement between SNWA and the parties involved in the 1993 cooperative agreement for the sale and transfer of water banked in the LVVGB. The agreement centrally locates this water source with SNWA for future use by all member agencies. In addition SNWA entered into a cooperative agreement with LVVWD to allow SNWA to store water in the LVVGB for the future use of SNWA. As part of this agreement, LVVWD agreed to continue its recharge of the LVVGB, with SNWA reimbursing all related costs on a monthly basis. The agreement also allows SNWA to manage the water stored in the LVVGB for supplemental use of the valley's water supply in future years, to operate a GMP as directed by NRS 572, and other uses as deemed necessary. As of June 30, 2013, SNWA has paid $86.4 million net of sales for 351,312 AF of storage.

NOTE 11. DEFERRED AMOUNT ON REFUNDINGS

As required by GASB Statement No. 23, *Accounting and Financial Reporting for Refundings of Debt Reported by Proprietary Activities,* the difference between the reacquisition price and the net carrying amount of old debt that is current or advance refunded is capitalized, shown as a deferred outflow of resources, and amortized to interest expense over the shorter of the remaining life of the old debt or the life of the new debt. The decision to refund bonds can be made because there is an economic gain to be realized from refunding, even though there may be an increase in the amount of debt outstanding. Economic gain is determined by comparing the present value of cash flow of the existing bond issue with that of the refunding bond issue. Typically, the economic gain comes from lower interest rates of the refunding bonds. Refundings can also occur as needed to provide cash flow relief.

The balances are being amortized over the life of the associated debt. Deferred amounts on refundings as of June 30, 2013 and 2012 are $38,181,345 and $40,998,258, respectively. The decrease in fiscal 2013 occurred from the normal amortization of these deferred outflows of resources.

NOTE 12. ACCOUNTS PAYABLE

Accounts payable balances by category as of June 30, 2013 and 2012 are as follows:

Accounts Payable

Type	June 30, 2013	June 30, 2012
Construction Contracts Retention	$ 26,690,608	$ 27,115,685
Construction Contracts and Administration	17,435,927	20,075,992
Administration Expenses	6,707,611	8,641,074
Total Accounts Payable	$ 50,834,146	$ 55,832,751

As discussed in Note 1, SNWA advanced $19 million to LVVWD in fiscal 2009 to be applied against future daily operating costs paid by LVVWD on behalf of SNWA. The advance payment is first applied against (and eliminates) amounts currently due from SNWA to LVVWD. As of June 30, 2013, $10.3 million of the advance has yet to be applied against SNWA-related expenses. The unused amount is reported as a component of amounts due from member agencies (Note 4).

Effective July 1, 2007, LVVWD implemented the provisions of GASB Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions.* As a result of this implementation, LVVWD allocated a portion of the costs related to postemployment benefits other than pensions (OPEB) to SNWA. As of June 30, 2013, and 2012, allocated OPEB costs of $3.7 million and $3.1 million, respectively, are included in the administration expenses amounts above.

NOTE 13. COMMITMENTS, RESERVES AND CONTINGENCIES

Economic Conditions

The United States has experienced a widespread decline in residential real estate sales, mortgage lending and related construction activity, high unemployment, as well as weakness in the commercial and investment banking systems, which had far-reaching effects on the economic activity in the country. In fiscal years 2012 and 2013, the economy has begun to stabilize and has helped to stabilize SNWA's current operations as well. However, the long-term impact of these factors on the Southern Nevada economy and SNWA's future operations cannot be predicted at this time, but may be substantial.

Construction Contracts

In connection with its two capital improvements plans, SNWA makes commitments to pay contractors working on those projects. However, SNWA only pays those contractors for the work they have completed. As of June 30, 2013, SNWA had construction contract commitments totaling approximately $191.9 million. This is the amount SNWA will be obligated to pay if all contractors perform per their contracts. SNWA could substantially reduce the amount of this commitment by notifying contractors to suspend further work and by paying for work completed to that point.

Pending Regional Connection Charge Refunds

In accordance with Accounting Standards Codification No. 450, *Contingencies,* SNWA has recorded a contingent liability of $5.0 million for pending refunds related to development projects cancelled by purveyor members. Capital contributions include regional connection charge revenues which are refundable under certain circumstances. The Pending Regional Connection Charge Refunds balance is an estimated liability for possible future refunds based on all projects listed by SNWA purveyor members as cancelled at the end of a fiscal year, and adjusts the amount of Regional Connection Charges posted to Contributed Capital (Note 16).

The fiscal 2013 liability is $3.9 million (43.4%) less than fiscal 2012 and is based on information obtained from each of SNWA's three participating purveyors. The recorded obligation for pending regional connection charge refund account is expected to provide 1.6 years coverage of refunds if annual refund levels remain the same as those experienced in fiscal 2013.

Operating Leases

Lease Obligations

In 2004, the Board approved a non-cancelable operating lease agreement between Parkway Center, LLC (Molasky) and SNWA for office space at the Molasky Corporate Center located in downtown Las Vegas located at 100 City Parkway. The original lease allowed SNWA to lease 129,375 square feet of office space beginning August 1, 2007, for a period of twenty years with renewal options. Two additional

amendments approved in 2006 added an additional 52,994 square feet of office space for the same twenty year period. In December 21, 2007, SNWA exercised its purchase option on the office space described in the original 2004 lease, thereby reducing the amount of office space subject to the lease agreement with Molasky to 52,994 square feet. SNWA subleases 34,898 square feet within the area leased and/or owned by SNWA to LVVWD and 3,000 square feet to Faiss Foley Warren (see Lease Receivables below). The 2006 amendments allow for an escalation factor of 4% annually, with parking spaces receiving no escalation. For the fiscal year ended June 30, 2013, SNWA paid $4,765,331 on the lease and association fees. Leasehold improvements are charged to SNWA's MCCP as incurred.

SNWA leases 2.27 acres of land from the Moapa Valley Water District (MVWD). The land located in the Moapa Valley includes a fenced yard, approximately 1,200 square feet of office space and approximately 3,200 square feet of adjoining shop space. The lease expires in May 2014, and annual lease payments are $33,252. There is no escalation clause in the lease. This facility is being used to pursue additional water sources in the Moapa Valley where SNWA has substantial water rights. SNWA subleases this property to the MVIC (see Lease Receivables below).

In April 2005, SNWA agreed to lease approximately 2,000 square feet of office and visitor space, adjoining parking, and existing commercial signage located in downtown Ely, Nevada. The lease was renewed in 2012 and expires in 2016. The office is to facilitate staff involved in development and outreach in the Clark, Lincoln, and White Pine Counties' groundwater development projects and the integrated water planning process. Annual lease payments are $9,600. There is no escalation clause in the lease.

In March 2006, the Board approved an agreement between the Corporation of the Presiding Bishop of the Church of Jesus Christ of Latter-day Saints (CPB) and SNWA. The agreement allows SNWA to lease up to 2,001 AF of water annually from CPB. The initial lease is for a twenty year period with the option to renew for two additional ten year periods. The rate per AF is $130 with an additional $100 per AF surcharge if the water is used outside the MVWD service territory. The lease contains an escalation clause based on the Consumer Price Index for All Urban Customers All Items Unadjusted.

In April 2008, the Board approved agreements allowing SNWA to lease rights from shareholders of the MVIC, the BIC and the MIC (the Mesquite leases). The approval allows the Mesquite leases to be offered for any period of time that is agreeable to SNWA and the water rights holder. Initial Mesquite leases began on October 1, 2008, were from one to ten years in duration and had an annual escalation factor of 3%. In January 2011, the Board approved agreements extending expired leases through October 1, 2014. The rates for the extensions were 40.4% to 43.9% lower per acre foot than the original leases and contain no escalation clause.

In March 2009, the Board approved an agreement with MVIC allowing SNWA to lease winter irrigation water rights from MVIC. The nineteen year lease agreement allows SNWA to lease 3,000 AF of water per winter season at $442,801 per year for the first nine years and 1,000 AF of water per winter season at $259,488 per year for the next ten years. Each of these amounts has an attached escalation factor of 3% annually after the first year of activation. SNWA would also pay $25 per AF (escalated annually) to MVIC for conveying any of this water through the MVIC water distribution system to Lake Mead.

In May 2010, the Board approved an agreement with the BLM to lease 4,472.83 acres to expand SNWA's exploratory work on geothermal resources. Terms of the lease state that lease costs will be $2.00 per acre for year one, $3.00 per acre for years 2 through 10 and $5.00 per acre thereafter. There is no stated expiration date in the lease. SNWA staff believes that the lease will be used through fiscal 2015.

None of the leases listed above contain contingent rentals, which are rentals in which amounts are dependent upon some factor other than the passage of time.

The following table shows the remaining minimal rental payments due under the terms of the lease contracts described above.

Lease Obligations

Fiscal Year June 30	Molasky	MVWD	Ely Office Space	CPB	Mesquite Leases
2014	$ 2,805,708	$ 33,252	$ 9,600	$ 260,130	$ 2,366,237
2015	2,906,113		9,600	260,130	54,230
2016	3,010,505		9,600	260,130	55,857
2017	3,119,042			260,130	57,533
2018	3,174,506			260,130	59,258
2019-2023	17,405,564			1,300,650	
2024-2028	16,394,323			1,040,520	
	$ 48,815,761	$ 33,252	$ 28,800	$ 3,641,820	$ 2,593,115

Fiscal Year June 30	MVIC Lease	BLM Lease	**Total**
2014	$ 483,861	$ 13,440	$ 5,972,228
2015	498,377	13,440	3,741,890
2016	513,328		3,849,420
2017	528,728		3,965,433
2018	544,590		4,038,484
2019-2023	1,646,530		20,352,744
2024-2028	1,550,567		18,985,410
	$ 5,765,981	$ 26,880	$ 60,905,609

May be off slightly due to rounding

Lease Receivables

In 2006, SNWA entered into an interlocal sublease agreement with LVVWD regarding office space that is either purchased or leased from Molasky. The twenty year agreement allows LVVWD to lease 8,000 square feet of space from the floors owned by SNWA and 26,240 square feet from the area leased from Molasky. The space owned by SNWA that is being leased has an approximate carrying value of $5,736,119, with $1,428,241 in accumulated depreciation having been taken through June 30, 2013. In addition, LVVWD pays a share of leasehold improvements. The sublease assumes a ten year useful life on leasehold improvements and LVVWD pays a pro-rated share of the amortized value of such improvements. The sublease contains no escalation clauses. LVVWD is also responsible for any utilities

and services assessed to SNWA for the space occupied by LVVWD. For the remaining period of the lease, SNWA anticipates to receive a minimum $19,765,585 of aggregate sublease payments from LVVWD.

In March 2009, the Board approved three agreements with NV Energy Company (NVE). One agreement allows NVE to lease 1,050 AF of SNWA water over a ten year period for an annual price of $83,721. This annual payment is required to be paid regardless of whether or not the water is utilized. The lease expires in 2052. The second agreement allows NVE to lease a maximum of 2,200 AF of Muddy River water per winter season for the first nine years and a maximum of 1,000 AF of Muddy River water per winter season for years 10 through 19. Payments will be made only on an as-used basis with a maximum pre-escalation payment of $274,804 per year during the first nine years and a maximum pre-escalation payment of $259,493 per year during the remaining term of the lease. The final lease allows NVE to option an additional 800 AF of water per year during the first nine year winter season described above for a cost of $291.83 per AF. All amounts described in this paragraph are subject to a 3% annual escalation. For the remaining period of the leases SNWA anticipates to receive a minimum $6,712,311 of aggregate payments.

In 2012, SNWA entered into a sublease agreement with Faiss Foley Warren (Faiss) regarding office space at Molasky. The two year agreement allows Faiss to lease 3,000 square feet of space and provides the option for a two year renewal. The space owned by SNWA that is being leased has an approximate carrying value of $2,156,501, with $536,949 in accumulated depreciation having been taken through June 30, 2013. The sublease contains no escalation clauses. For the remaining period of the lease, SNWA anticipates to receive a minimum $66,000 of aggregate sublease payments from Faiss.

Except as noted, none of the subleases listed above contain contingent rentals.

The following table shows the future minimum rental incomes for the next five years due under the terms of the lease contracts described above.

Lease Receivables

Fiscal Year June 30	LVVWD	NVE	Faiss	TOTAL
2014	$ 1,613,517	$ 94,229	$ 66,000	$ 1,773,746
2015	1,613,517	97,056		1,710,573
2016	1,613,517	99,967		1,713,484
2017	1,613,517	102,966		1,716,483
2018	1,613,517	106,055		1,719,572
	$ 8,067,585	$ 500,273	$ 66,000	$ 8,633,858

Amounts may be slightly off due to rounding

Forward Energy Contracts

Because Las Vegas is uphill from its major water supply, reliable electrical service is essential to SNWA's ability to deliver water. To gain more control over energy reliability and costs, SNWA manages the majority of its power supply rather than purchasing energy from the local regulated investor-owned utility under tariff rates approved by the Nevada Public Utilities Commission. This provides greater

control of future prices and projected savings over the same commodity purchased from the investor owned utility.

SNWA began purchasing over 95% of its power requirements from the Silver State Energy Association (SSEA) beginning April 1, 2013 under Project Services Agreement #3: Power Supply Management Services Agreement, Load Requirements Service (LRS). SSEA is a joint powers association of public utilities (see Note 18) which was formed in 2007. Its members include the City of Boulder City, Overton Power District #5, Lincoln Power District #1, Colorado River Commission of Nevada, and SNWA. SNWA and CRC staff and run the SSEA which is governed by a Board of Directors with one representative of each member sitting on the Board.

The SSEA buys and sells fixed price power with the SNWA for the upcoming five calendar years to balance SNWA's total supplies with its total load and other obligations. SSEA then purchases and sells physical power and other financial products from the market to best hedge its portfolio of forward energy contracts. All SSEA energy activity is in compliance with established energy risk management procedures which were developed to fulfill the Energy Risk Management Policy adopted by the SSEA Board. Under LRS, SNWA is responsible for a portion of gains and losses and prepaid energy expenses that may be realized in SSEA's energy portfolio each month.

Prior to taking service from the SSEA, the SNWA managed its own portfolio of energy resources consisting solely of forward electricity, generation and transmission contracts as well as financial power and natural gas swaps. Among the forward electricity contracts are long-term contracts for the purchase of hydropower from federal dams along the Colorado River. Because this portfolio, as well as its energy contracts with the SSEA exist solely for purposes of serving SNWA's projected energy requirements over the next five years, the forward energy contracts are considered to be "normal purchases and sales contracts" and are considered to be outside the scope of GASB Statement No. 53, *Accounting and Financial Reporting for Derivative Instruments*.

Although SNWA is taking LRS Service from the SSEA it will continue to own existing energy assets and contracts and may add other energy assets or contracts in the future as part of its supply portfolio.

The primary risks associated with SNWA's energy portfolio, as well as SSEA's energy portfolio, are counter-party credit and termination risks, which are managed by policies and procedures that require careful financial evaluation of trading partners, trading limits and in some cases as specified by policy, the posting of collateral.

As of June 30, 2013, SNWA had net energy contract commitments totaling approximately $164 million, which includes its projected allocation of SSEA net energy contract commitments.

Generating Assets

SNWA owns 25% of the Silverhawk electric power generating plant located in the Apex industrial area approximately 20 miles northeast of Las Vegas. NVE is the majority owner of the 580 megawatt (MW), natural gas fired plant. SNWA has paid 25% of the Silverhawk construction costs, is obligated to pay 25% of the operating costs and is entitled to 25% of the generated electricity. For the period June 1, 2013 through December 31, 2018, SNWA entered into an energy exchange agreement with NVE whereby NVE has the right to dispatch the plant using their professional judgment, and SNWA receives 125 MW on peak and 25 MW off peak of firm delivered power.

In addition to Silverhawk, the SNWA also owns approximately 0.5 MW of solar generation and 2.1 MW of small hydro generation.

Federal Grants

SNWA has received a total of $19.9 million from the federal government through the U.S. Bureau of Reclamation as partial reimbursement of the costs incurred by its member agencies to build reclaimed water facilities in the Las Vegas valley. These reclaimed water facilities reduce the demand on potable water facilities by providing treated wastewater for irrigation use by golf courses. Pursuant to a 2004 agreement between SNWA and the Southern Nevada Water Recycling Project, SNWA has distributed $15.0 million of these funds through June 30, 2013. The remaining funds will be distributed in fiscal 2014.

Litigation

SNWA is a defendant in various litigation matters. Although the outcome of these matters is not presently determinable based on information currently available, it is management's opinion based upon advice from legal counsel that the risk of financial losses to SNWA from such litigation will not have a material adverse effect on its future financial position, results of operations or cash flows. Accordingly, no provision has been made for any such losses.

NOTE 14. SHORT-TERM DEBT

On March 10, 2004, LVVWD began a Tax-Exempt Commercial Paper (TECP) program for SNWA that authorized the issuance of up to $400 million in TECP notes. The TECP program was most recently renegotiated on March 1, 2011 and is currently facilitated by a letter of credit between LVVWD, JPMorgan Chase, National Association, and Wells Fargo Bank, National Association. The termination date for each agreement is February 28, 2014 with options for renewal. The entire balance is currently issued and outstanding.

The proceeds were used to fund SNWA's CIP, to purchase a 25% interest in the Silverhawk power plant, and to purchase water resources. Commercial paper is traded on the open market and is subject to market interest fluctuations.

The following chart summarizes key components of SNWA's short-term debt activity.

Outstanding Short Term Debt

	June 30, 2013	June 30, 2012
Balance Beginning of Period	$400,000,000	$400,000,000
Additions	3,226,340,000	4,831,440,000
Retirements	(3,226,340,000)	(4,831,440,000)
Balance End of Period	$400,000,000	$400,000,000
End Of Period --		
Accrued Interest	$100,395	$73,198
Average Interest Rate	0.17%	0.20%
Number of Traunches	13	13
Smallest	$300,000	$3,090,000
Largest	$100,000,000	$84,000,000
Shortest Maturity, in days	26	14
Longest Maturity, in days	129	125

NOTE 15. LONG-TERM DEBT

Pursuant to the Transfer Act discussed in Note 1, SNWA assumed responsibility for all CRC debt associated with the SNWS as of January 1, 1996. In 1997, SNWA received authorization to sell its bonds directly to the Nevada State Bond Bank. In 1999, SNWA received authorization to sell its bonds through a newly authorized Clark County Bond Bank. SNWA also has bonds payable, which were issued by LVVWD on SNWA's behalf. SNWA plans to use LVVWD to sell long-term fixed-rate bonds whenever feasible in the near future.

Debt Creation and Reporting

To avoid the carrying costs of bond proceeds that will not be used for some time to fund capital projects, SNWA generally issues bonds sufficient to fund about two years of estimated capital project expenditures. SNWA also can use capital contribution sources as needed to fund capital projects construction payments on a pay-as-you-go basis.

SNWA annually files a Debt Management Policy with the state of Nevada. The required policy details guidelines regarding the affordability of debt, debt capacity, and how debt will be repaid. The policy is provided to state and county officials and is available for review by bonding agencies and the general public. Additionally, the policy is reproduced annually in SNWA's operating and capital budget document.

Debt Covenants

Management believes that SNWA has complied with all legal requirements, limitations, and restrictions imposed by debt covenants. SNWA is required to set charges for its purveyor members that when combined with unrestricted assets available for debt service create levels sufficient to cover all operating and maintenance expenses (excluding depreciation), all debt service requirements and amounts required to be deposited in reserve accounts, if any. Other requirements of long-term debt covenants include adequate insurance coverage for liability, property, and LVVWD employees and an annual audit of

SNWA's basic financial statements by independent certified public accountants. Covenants are reviewed periodically by outside bond counsel to insure adherence.

Defeasance of Debt

CRC, LVVWD, and SNWA have issued bonds to advance refund portions of previous debt issues. Proceeds from advance refunding bond issuances have been placed in escrow accounts to fund debt service requirements as they come due. As of June 30, 2013, nine bond issues with $322,170,000 in prior year in-substance defeased debt remain outstanding. The assets in these escrow accounts, as well as the liabilities for those in-substance defeased debt issues, have been removed from SNWA's financial statements. Furthermore, in accordance with GASB Statement No. 23, *Accounting and Financial Reporting for Refundings of Debt Reported by Proprietary Activities,* any accounting gain or loss resulting from these transactions has been deferred and is being amortized over the life of the related debt (Note 11).

Current Year Debt Issuance Activity

On July 31, 2012, LVVWD on behalf of SNWA issued LVVWD 2012B bonds in the original amount of $360,000,000. Proceeds from the bonds along with $8,719,107 of premiums were reserved to pay for construction expenditures. An additional $31,241,522 was received from the bond sale and was reserved to pay two years of capitalized interest. The first principal payment due on the LVVWD 2012B bonds is scheduled for June 1, 2015 with maturities continuing through 2042. Interest on these bonds will be paid semiannually on December 1 and June 1 with the first four interest payments being capitalized. The interest rate is 3.93%. The bonds will add an additional $23,610,050 to yearly debt payment requirements at its peak.

On February 20, 2013, the state of Nevada on behalf of SNWA issued SNWA 2013A refunding bonds in the original amount of $21,720,000. Proceeds from the bonds along with $88,618 of premiums were deposited into escrow to fully refund the SNWA 0798 issue. SNWA 2013A bonds pay semi-annual interest beginning August 1, 2013 continuing to August 1, 2027. At that time the entire principal of $21,720,000 is scheduled to be paid. Interest on the new issue is paid semiannually on August 1 and February 1. The blended interest rate is 3.01%. Over the life of the bond, the issue will reduce debt payment requirements by $6.7 million. In present value (economic loss) terms, this equates to a $5.1 million savings in debt requirements.

The following is a comprehensive summary of each of the outstanding long-term debt issues as of June 30, 2013.

State of Nevada Loan No. SNWA-1

Nevada law has created an account for the Nevada revolving fund. This account finances the construction of public water system projects authorized by the federal Safe Drinking Water Act. This federally financed program requires that funds made available to each state must be committed and used each year; otherwise future financing opportunities under the program are lost to the state. In 1999, SNWA's CIP project to build ozone facilities to disinfect water at the Alfred Merritt Smith Water Treatment Facility qualified under the statutory and regulatory requirements. SNWA applied for and received a loan from Nevada for the $12,269,695 in available funding to keep the money within Nevada. The interest rate on the loan is fixed at 3.61% and the term is 20 years. Constant semiannual payments of principal and interest are due on August 1 and February 1.

State of Nevada Loan No. SNWA-2

On June 29, 2001, SNWA received a second loan from the Nevada revolving fund in the amount of $10 million. SNWA applied for this loan to help preserve Nevada's access to federal Safe Drinking Water Act funds that would otherwise be lost to the public water systems in Nevada. The funds were reserved to pay for CIP construction expenditures. The interest rate on the loan is fixed at 3.46%, and the term is 20 years. Constant semiannual payments of principal and interest are due on August 1 and February 1.

SNWA 1998 Bonds

These general obligation bonds in the original amount of $300,000,000 were sold by SNWA through the State Bond Bank on July 9, 1998. This was a new money bond issue and the $296,236,936 it generated was reserved for CIP construction expenditures. Originally these bonds matured annually on May 15 through 2028. Because $254,400,000 of SNWA's 2005F bond issue and $21,350,000 of the LVVWD 2013A bond issue were used to defease maturities of this issue, the bond was retired in February 20, 2013. The interest rate for the issue was 5.00%.

SNWA 2001 Bonds

These general obligation bonds in the original amount of $250,000,000 were sold by SNWA through the Clark County Bond Bank on June 13, 2001. $116,259,653 was used on July 3, 2001, to prepay the two federal repayment contracts related to the Robert E. Griffith Project title transfer. The remainder was reserved to pay for CIP construction expenditures. These bonds were originally scheduled to mature annually on June 1 from 2004 to 2031. Interest was payable semiannually on June 1 and December 1. Five refunding issues (SNWA 2006, SNWA 1106, SNWA 2009 Refunding, SNWA 2011C and SNWA 2012 Refunding) combined to reduce and eventually retire this issue in June, 2012. The interest rate was 5.00%.

SNWA 2002 Bonds

These general obligation bonds in the original amount of $200,000,000 were sold by SNWA through the Clark County Bond Bank on November 19, 2002. This entire issue's proceeds were reserved to pay for CIP construction expenditures. These bonds were originally scheduled to mature annually on June 1 from 2005 to 2032. Interest was payable semiannually on June 1 and December 1. Four refunding issues (SNWA 1106. SNWA 2009 Refunding, LVVWD 2011C, and SNWA 2012 Refunding) combined to reduce and eventually retire this issue in June, 2012. The interest rate was 4.78%.

LVVWD 2003B Bonds

The letter of credit which facilitated the tax-exempt commercial paper program that LVVWD started for SNWA in 1998 expired on January 14, 2003. On January 9, 2003, LVVWD issued $250,000,000 in long-term general obligation bonds to completely retire the $250,000,000 in tax-exempt commercial paper notes. These bonds mature annually on June 1 from 2004 to 2027. Interest was payable semiannually on June 1 and December 1. $23,385,000 of the SNWA 2009D issue and $188,880,000 of the LVVWD 2011C issue were applied to LVVWD 2003B to completely refund the issue in October, 2011. The interest rate was 4.66%.

SNWA 2005F Bonds

These general obligation bonds in the original amount of $249,365,000 were sold on May 17, 2005. The proceeds of the bond sale were used to partially refund $254,400,000 of SNWA's 1998 series bonds. The SNWA 2005F bonds mature annually on December 1 through 2026. Interest on these bonds is payable semiannually on June 1 and December 1. $52,335,000 of the proceeds from the LVVWD 2011B and LVVWD 2011C issues were used to partially refund selected payments of the SNWA 2005F issue. The interest rate is 4.30%.

CRC 2005H Bonds

These general obligation bonds in the original amount of $36,130,000 were sold on March 23, 2005. The proceeds of the bond sale were used to partially refund $35,615,000 of CRC 1994 series bonds. The CRC 2005H bonds mature annually on June 30 through 2027. Interest on these bonds is payable semiannually on January 1 and June 30. The interest rate is 4.73%.

CRC 2005I Bonds

These general obligation bonds in the original amount of $65,300,000 were sold on March 23, 2005. The proceeds of the bond sale were used to partially refund $41,550,000 of CRC 1994 series bonds, and $22,295,000 of CRC 1999A series bonds. The CRC 2005I bonds mature annually on September 15 through 2029. Interest on these bonds is payable semiannually on March 15 and September 15. $10,305,000 of the proceeds from the LVVWD 2011B issue was used to partially refund selected payments of the CRC 2005I bonds. Interest rate is 4.53%.

SNWA 2006 Refunding

These general obligation bonds in the original amount of $242,880,000 were sold on May 22, 2006. The proceeds of the bond sale were used to partially refund $170,730,000 of SNWA 2000 series bonds, and $63,795,000 of SNWA 2001 series bonds. The SNWA 2006 refunding bonds mature annually on June 1 through 2030. Interest on these bonds is payable semiannually on December 1 and June 1. The interest rate is 4.59%.

CRC 2006D Bonds

These general obligation bonds in the original amount of $111,840,000 were sold on July 11, 2006. The proceeds of the bond sale were used to fully refund the CRC 1995 series bonds. The CRC 2006D bonds mature annually on July 1 through 2024. Interest on these bonds is payable semiannually on January 1 and July 1. $25,865,000 of the proceeds from the CRC 2010B issue and LVVWD 2011B issue were used to partially refund selected payments of the CRC 2006D bonds. The interest rate is 4.50%.

SNWA 1106 Bonds

These general obligation bonds in the original amount of $604,140,000 were sold on November 2, 2006. The proceeds of the bond sale were used to partially refund $103,120,000 of SNWA 2001 series bonds, and $97,455,000 of SNWA 2002 series bonds. The issue also generated $392,810,379 of new money which was reserved for capital expenditures. Interest on these bonds is payable semiannually on May 1 and November 1. The SNWA 1106 bonds mature annually on November 1 through 2036. $61,340,000 of the proceeds from the SNWA 2009 refunding issue, the LVVWD 2011B issue and the LVVWD 2011C

issue were used to partially refund selected payments of the SNWA 1106 bonds. The interest rate is 4.49%.

LVVWD 2008B Bonds

These general obligation bonds in the original amount of $171,720,000 were sold on February 19, 2008. The proceeds of the bond sale were used to refund $183,420,000 of LVVWD 1998 series bonds. The LVVWD 2008B bonds mature annually on June 1 through 2026. $51,930,000 of the LVVWD 2011A issue was used to defease five years' principal on this issue. Interest on these bonds is payable semiannually on December 1 and June 1. The interest rate is 4.12%.

SNWA 2008 Bonds

These general obligation bonds in the original amount of $400,000,000 were sold on July 2, 2008. The proceeds of the bond sale were reserved to fund capital expenditures. The SNWA 2008 bonds mature annually on June 1 through 2038. Interest on these bonds is payable semiannually on December 1 and June 1. $37,845,000 of the proceeds from the SNWA 2009 refunding issue and the LVVWD 2011C issue were used to partially refund selected payment of the SNWA 2008 bonds. The interest rate is 4.63%.

SNWA Subordinate Lien Revenue 2008 Bonds

These subordinate lien bonds in the original amount of $6,900,000 were sold on July 30, 2008. The proceeds of the bond sale reimbursed SNWA for investments in clean energy capital projects. The SNWA Subordinate Lien Revenue 2008 bonds mature annually on December 15 through 2022. Interest on these bonds is payable quarterly on March 15, June 15, September 15, and December 15. The interest rate is 1.17%.

LVVWD 2009A Bonds

These taxable general obligation bonds in the original amount of $90,000,000 were issued on August 5, 2009. The proceeds of the bond sale were reserved to fund capital expenditures. The LVVWD 2009A bonds mature annually on June 1 through 2039. Interest on these bonds is payable semiannually on December 1 and June 1. Since the bonds were issued as BABs as defined under the American Recovery and Reinvestment Act of 2009 (ARRA) the United States Treasury Department refunds 35% of all interest expense to SNWA. On March 1, 2013, the Treasury Department lowered the refund to 31.955%. The interest rate net of this Federal participation was originally 4.67% and now stands at 4.89%.

LVVWD 2009B Bonds

These general obligation bonds in the original amount of $10,000,000 were issued on August 5, 2009. The proceeds of the bond sale were reserved to fund capital expenditures. The LVVWD 2009B bonds mature annually on June 1 through 2032. Interest on these bonds is payable semiannually on December 1 and June 1. The interest rate is 4.97%.

SNWA 2009 Refunding Bonds

These general obligation bonds in the original amount of $50,000,000 were issued on October 22, 2009. The proceeds of the bond sale were used to partially refund the coupons from the following five bond series – SNWA 2000, SNWA 2001, SNWA 2002, SNWA 1106, and SNWA 2008. The SNWA 2009

refunding bonds mature annually on June 1 through 2030. Interest on these bonds is payable semiannually on December 1 and June 1. The interest rate is 4.50%.

SNWA 2009 Water Revenue Bonds

These water revenue bonds were issued by the state of Nevada on behalf of SNWA on October 22, 2009. The obligation as represented by the bond is $2,214,457. Semi annual payments will be due on January 1 and July 1 with the final payment occurring on July 1, 2032. The bonds are interest free.

LVVWD 2009C Bonds

These taxable general obligation bonds in the original amount of $348,115,000 were issued on December 23, 2009. The proceeds of the bond sale were reserved to fund capital expenditures. LVVWD 2009C bonds will mature annually on June 1 through 2039. Interest on these bonds is payable semiannually on December 1 and June 1. Since the bonds were issued as BABs as defined under the ARRA the United States Treasury Department refunds 35% of all interest expense to SNWA. On March 1, 2013, the Treasury Department lowered the refund to 31.955%. The interest rate net of this Federal participation was originally 4.64% and now stands at 4.86%.

LVVWD 2009D Bonds

These general obligation bonds in the original amount of $71,965,000 were sold on December 23, 2009. The proceeds of the bond sale were used to partially refund LVVWD 2003B bonds with the remaining proceeds reserved for capital expenditures. The LVVWD 2009D bonds mature annually on June 1 through 2030. Interest on these bonds is payable semiannually on December 1 and June 1. The interest rate is 4.37%.

CRC 2010B Bonds

These general obligation bonds in the original amount of $7,405,000 were sold on June 24, 2010. The proceeds of the bond sale were used to fully refund CRC 1997B bonds and partially refund the CRC 2003C and CRC 2006D bonds. These bonds mature annually on June 1 through 2020. Interest on these bonds is payable semiannually on December 1 and June 1. The interest rate is 3.695%.

LVVWD 2011A Refunding Bonds

These taxable general obligation bonds in the original amount of $58,110,000 were issued on May 24, 2011. Proceeds from the bonds were deposited into escrow to refund $51,930,000 of the LVVWD 2008B bonds. The LVVWD 2011A refunding bonds mature annually on June 1 beginning in 2015 and continuing through 2026. Interest on these bonds is payable semiannually on December 1 and June 1. The interest rate is 4.88%.

LVVWD 2011B Refunding Bonds

These taxable general obligation bonds in the original amount of $129,650,000 were issued on October 19, 2011. The proceeds of the bond sale were used to partially refund coupons from the following five bond series – CRC 2005I, SNWA 2005F, CRC 2006D, SNWA 2006 Refunding and SNWA 1106. The LVVWD 2011B refunding bonds mature annually on June 1 through 2027. Interest on these bonds is payable semiannually on December 1 and June 1. The interest rate is 4.29%.

LVVWD 2011C Refunding Bonds

These general obligation bonds in the original amount of $267,815,000 were issued on October 19, 2011. The proceeds of the bond sale were used to partially refund coupons from the following five bond series – SNWA 2005F, SNWA 2001, SNWA 2002, SNWA 1106, and SNWA 2008—as well as fully refunding SNWA 2003B. The LVVWD 2011B refunding bonds mature annually on June 1 through 2038. Interest on these bonds is payable semiannually on December 1 and June 1. The interest rate is 3.90%.

SNWA 2012 Refunding Bonds

These general obligation bonds in the original amount of $85,015,000 were issued on June 20, 2012. The proceeds of the bond sale were used to completely refund SNWA 2001 and SNWA 2002 bonds. SNWA 2012 bonds mature annually beginning June 1, 2013 and continue through June 1, 2032. Interest on these bonds is paid semiannually on June 1 and December 1. The interest rate is 3.88%.

LVVWD 2012B Bonds

These general obligation bonds in the original amount of $360,000,000 were issued on July 31, 2012. The proceeds of the bond sale were reserved for capital expenditures. LVVWD 2012B bonds will mature annually beginning June 1, 2015 through 2042. Interest on these bonds is payable semiannually on December 1 and June 1. The interest rate is 3.93%.

LVVWD 2012B bonds will add annual debt payment requirements of $23,610,500 at its peak. Over the life of the bond the issue will add $692,259,872 of additional debt payment requirements. In present value (economic gain) terms, this equates to about 10% more than the par value of the bonds ($399,178,313).

SNWA 2013A Refunding Bonds

These general obligation bonds in the original amount of $21,720,000 were issued on February 20, 2013. The proceeds of the bond sale were used to fully refund the SNWA 1998 bond. The SNWA 2013A refunding bonds have one principal payment scheduled for August 1, 2027. Interest on the bonds is payable semiannually on February 1 and August 1. The interest rate is 2.96%.

The SNWA 2013A bonds reduce annual debt payment requirements by $553,700 at its peak. Over the life of the bond, the issue will reduce total debt payment requirements by $7,143,725. In present value (economic gain) terms, this equates to a $5,460,824 million reduction in debt requirements.

The following schedules present changes in long-term debt issues for the years ending June 30, 2013 and 2012.

Outstanding Debt Activity, June 30, 2013

Debt Issue	Beginning Balance July 1, 2012	Additions	Retirements	Ending Balance June 30, 2013
Long-Term Debt				
SNWA-1	$ 5,975,555		$ (656,820)	$ 5,318,736
SNWA-2	5,602,013		(507,463)	5,094,549
Subtotal Notes Payable	11,577,568		(1,164,283)	10,413,285
SNWA 1998	21,350,000		(21,350,000)	
SNWA 2005 F	173,520,000			173,520,000
CRC 2005 H	31,620,000			31,620,000
CRC 2005 I	47,755,000			47,755,000
SNWA 2006 Refund	210,210,000			210,210,000
CRC 2006 D	66,200,000			66,200,000
SNWA 1106	533,020,000			533,020,000
LVVWD 2008B	116,335,000			116,335,000
SNWA 2008	362,155,000			362,155,000
SNWA sub 2008	5,060,000		(460,000)	4,600,000
LVVWD 2009A	90,000,000			90,000,000
LVVWD 2009B	10,000,000			10,000,000
SNWA 2009 Refund	50,000,000		(1,780,000)	48,220,000
SNWA 2009 Water Revenue	2,214,457		(126,540)	2,087,917
LVVWD 2009C	348,115,000			348,115,000
LVVWD 2009D	71,965,000		(2,780,000)	69,185,000
CRC 2010B	7,405,000			7,405,000
LVVWD 2011A	58,110,000			58,110,000
LVVWD 2011B	129,650,000			129,650,000
LVVWD 2011C	267,815,000		(8,820,000)	258,995,000
SNWA 2012 Refunding	85,015,000			85,015,000
LVVWD 2012B		$ 360,000,000		360,000,000
State 2013A	-	21,720,000		21,720,000
Subtotal Bonds Payable	2,687,514,457	381,720,000	(35,316,540)	3,033,917,917
Total Long-Term Debt Before Unamortized Discounts and Premiums	$ 2,699,092,025	$ 381,720,000	$ (36,480,823)	3,044,331,202
Unamortized Discounts and Premiums				73,223,306
Net Debt				$ 3,117,554,508

Composition of Outstanding Debt, June 30, 2013

Debt Issue	Ending Balance	Current Portion	Long-Term Portion	Accrued Interest
Long-Term Debt				
SNWA-1	$ 5,318,736	$ 680,745	$ 4,637,991	$ 79,561
SNWA-2	5,094,549	525,174	4,569,375	73,040
Subtotal Notes Payable	10,413,285	1,205,919	9,207,366	152,601
SNWA 1998				
SNWA 2005 F	173,520,000		173,520,000	711,148
CRC 2005 H	31,620,000		31,620,000	4,059
CRC 2005 I	47,755,000		47,755,000	665,297
SNWA 2006 Refund	210,210,000		210,210,000	803,809
CRC 2006 D	66,200,000		66,200,000	
SNWA 1106	533,020,000		533,020,000	3,928,891
LVVWD 2008B	116,335,000		116,335,000	460,978
SNWA 2008	362,155,000		362,155,000	1,484,242
SNWA sub 2008	4,600,000	460,000	4,140,000	2,340
LVVWD 2009A	90,000,000		90,000,000	523,771
LVVWD 2009B	10,000,000	350,000	9,650,000	38,796
SNWA 2009 Refund	48,220,000	1,865,000	46,355,000	197,623
SNWA 2009 Water Revenue	2,087,917	126,540	1,961,377	
LVVWD 2009C	348,115,000		348,115,000	2,021,196
LVVWD 2009D	69,185,000	2,920,000	66,265,000	283,093
CRC 2010B	7,405,000	945,000	6,460,000	22,427
LVVWD 2011A	58,110,000		58,110,000	221,783
LVVWD 2011B	129,650,000		129,650,000	432,547
LVVWD 2011C	258,995,000	9,000,000	249,995,000	1,039,563
SNWA 2012 Refunding	85,015,000		85,015,000	283,246
LVVWD 2012B	360,000,000		360,000,000	1,394,676
State 2013A	21,720,000		21,720,000	235,646
Subtotal Bonds Payable	3,033,917,917	15,666,540	3,018,251,377	14,755,131
Total Long-Term Debt Before Unamortized Discounts and Premiums	$ 3,044,331,202	$ 16,872,459	3,027,458,743	$ 14,907,732
Unamortized Discounts and Premiums			73,223,306	
Net Long-Term Portion			$ 3,100,682,049	

Outstanding Debt Activity, June 30, 2012

Debt Issue	Beginning Balance July 1, 2011	Additions	Retirements	Ending Balance June 30, 2012
Long-Term Debt				
SNWA-1	$ 6,609,291		$ (633,736)	$ 5,975,555
SNWA-2	6,092,363		(490,350)	5,602,013
Subtotal Notes Payable	12,701,654		(1,124,086)	11,577,568
SNWA 1998	21,350,000			21,350,000
SNWA 2001	37,385,000		(37,385,000)	
SNWA 2002	69,730,000		(69,730,000)	
LVVWD 2003B	188,880,000		(188,880,000)	
SNWA 2005 F	225,855,000		(52,335,000)	173,520,000
CRC 2005 H	31,620,000			31,620,000
CRC 2005 I	60,330,000		(12,575,000)	47,755,000
SNWA 2006 Refund	235,765,000		(25,555,000)	210,210,000
CRC 2006 D	87,570,000		(21,370,000)	66,200,000
SNWA 1106	590,015,000		(56,995,000)	533,020,000
LVVWD 2008B	116,335,000			116,335,000
SNWA 2008	385,960,000		(23,805,000)	362,155,000
SNWA sub 2008	5,520,000		(460,000)	5,060,000
LVVWD 2009A	90,000,000			90,000,000
LVVWD 2009B	10,000,000			10,000,000
SNWA 2009 Refund	50,000,000			50,000,000
SNWA 2009 Water Revenue	1,214,921	$ 999,536		2,214,457
LVVWD 2009C	348,115,000			348,115,000
LVVWD 2009D	71,965,000			71,965,000
CRC 2010B	7,405,000			7,405,000
LVVWD 2011A	58,110,000			58,110,000
LVVWD 2011B		129,650,000		129,650,000
LVVWD 2011C		267,815,000		267,815,000
SNWA 2012 Refunding		85,015,000		85,015,000
Subtotal Bonds Payable	2,693,124,921	483,479,536	(489,090,000)	2,687,514,457
Total Long-Term Debt Before Unamortized Discounts and Premiums	$ 2,705,826,575	$ 483,479,536	$ (490,214,086)	2,699,092,025
Unamortized Discounts and Premiums				67,707,338
Net Debt				$ 2,766,799,363

Composition of Outstanding Debt, June 30, 2012

Debt Issue	Ending Balance	Current Portion	Long-Term Portion	Accrued Interest
Long-Term Debt				
SNWA-1	$ 5,975,555	$ 656,820	$ 5,318,735	$ 89,487
SNWA-2	5,602,013	507,463	5,094,550	80,408
Subtotal Notes Payable	11,577,568	1,164,283	10,413,285	169,895
SNWA 1998	21,350,000		21,350,000	136,338
SNWA 2001				
SNWA 2002				
LVVWD 2003B				
SNWA 2005 F	173,520,000		173,520,000	711,148
CRC 2005 H	31,620,000		31,620,000	4,059
CRC 2005 I	47,755,000		47,755,000	665,297
SNWA 2006 Refund	210,210,000		210,210,000	803,809
CRC 2006 D	66,200,000		66,200,000	
SNWA 1106	533,020,000		533,020,000	3,928,891
LVVWD 2008B	116,335,000		116,335,000	460,978
SNWA 2008	362,155,000		362,155,000	1,484,242
SNWA sub 2008	5,060,000	460,000	4,600,000	2,574
LVVWD 2009A	90,000,000		90,000,000	523,771
LVVWD 2009B	10,000,000		10,000,000	38,796
SNWA 2009 Refund	50,000,000	1,780,000	48,220,000	204,918
SNWA 2009 Water Revenue	2,214,457	126,540	2,087,917	
LVVWD 2009C	348,115,000		348,115,000	2,021,196
LVVWD 2009D	71,965,000	2,780,000	69,185,000	294,487
CRC 2010B	7,405,000		7,405,000	22,427
LVVWD 2011A	58,110,000		58,110,000	221,783
LVVWD 2011B	129,650,000		129,650,000	432,547
LVVWD 2011C	267,815,000	8,820,000	258,995,000	1,054,022
SNWA 2012 Refunding	85,015,000		85,015,000	103,656
Subtotal Bonds Payable	2,687,514,457	13,966,540	2,673,547,917	13,114,939
Total Long-Term Debt Before Unamortized Discounts and Premiums	$ 2,699,092,025	$ 15,130,823	2,683,961,202	$ 13,284,834
Unamortized Discounts and Premiums			67,707,338	
Net Long-Term Portion			$ 2,751,668,540	

SNWA total debt service (short-term and long-term) requirements to maturity are as follows:

Long-Term Debt Service Requirements

Fiscal Year Ending June 30	Principal	Interest [1]	Total
2014	$ 16,872,459	$ 135,763,339	$ 152,635,798
2015	24,290,584	152,086,105	176,376,689
2016	84,045,252	151,251,293	235,296,545
2017	110,456,517	146,802,056	257,258,573
2018	115,564,438	141,680,152	257,244,590
2019-2023	658,214,439	620,560,246	1,278,774,685
2024-2028	756,357,702	445,573,039	1,201,930,741
2029-2033	512,174,811	295,835,153	808,009,964
2034-2038	576,255,000	156,611,333	732,866,333
2039-2043	190,100,000	17,620,750	207,720,750
	3,044,331,202	$ 2,263,783,466	$ 5,308,114,668
Unamortized Discounts and Premiums[2/]	73,223,306		
Total Debt Service	$ 3,117,554,508		

[1]Gross interest, not reduced by anticipated BAB Federal credits.

[2]Total debt service on the Statement of Net Position includes unamortized discounts and premiums. The balance in that account is shown here for consistency purposes.

NOTE 16. CAPITAL CONTRIBUTIONS

Revenues received to fund new expansion are reported on the income statement as capital contributions. Capital contributions received for the fiscal years ended June 30, 2013 and 2012 are shown on the following page.

Capital Contributions

Type	June 30, 2013	June 30, 2012
Regional Infrastructure Charge	$ 79,114,278	$ 16,193,130
Sales Tax	48,847,306	46,222,883
Regional Commodity Charge	40,991,496	40,666,192
Regional Connection Charge [1/]	22,915,416	13,892,856
Contributed Capital - Cash and Equivalents	6,878,221	8,857,397
Regional Reliability Charge	4,649,642	4,597,700
Purveyor Member Debt Service Billings	2,522,698	5,249,614
Total Capital Contributions	$ 205,919,057	$ 135,679,772

1/ Adjusted by Pending Regional Connection Charge Refund Contingency. See Note 13.

Capital contributions presented in the Statement of Cash Flows differ somewhat from the amounts above because of accruals and use of some contributed capital for operating expenses. The differences in capital contributions for the fiscal years ended June 30, 2013 and 2012 were as follows:

Reconciliation Of Capital Contributions

Type	June 30, 2013	June 30, 2012
Capital Contributions per Income Statement	$ 205,919,057	$ 135,679,772
Operating Expenses Paid By Contributed Capital	(11,886,752)	(11,470,927)
Net Prior & Current Year Sales Tax Receivables	(652,680)	(831,039)
Net Prior & Current Year Sales Tax Payable To Rurals	(2,143,516)	2,715,504
Net Prior & Current Year Connection,Commodity, & Reliability Receivables	(241,091)	(10,904,590)
Capital Contributions Per Statement of Cash Flows	$ 190,995,018	$ 115,188,720

Boulder City and Nellis Air Force Base Interlocal Agreements

In addition to the revenues shown above, SNWA currently holds interlocal agreements with the City of Boulder City and Nellis Air Force Base. Neither of these SNWA members collects regional connection charges, regional commodity charges, regional reliability surcharges or regional infrastructure surcharges which help pay for many SNWA capital projects including the current Lake Mead Intake No. 3 project. Both Boulder City and Nellis realize that the construction of the intake will provide additional reliability of water resources for their areas and have therefore agreed to pay for a portion of the construction cost through annual payments to SNWA. Payments from the interlocal agreements are in lieu of the regional charges mentioned above and will be classified as capital contributions when received in compliance with the American Institute of Certified Public Accountants audit and accounting guide, *State and Local Governments* 6.79.

NOTE 17. RISK MANAGEMENT

SNWA is exposed to a variety of risks that may result in losses. These risks include possible losses related to torts; theft of, damage, or destruction of assets; extra expense; errors and omissions; job-related illnesses or injuries to employees; product liability claims; and natural disasters. SNWA manages these risks through a multifaceted approach, which includes transfer, elimination, avoidance, reduction, and/or assumption of risk of loss.

SNWA purchases insurance from the commercial insurance market on real and personal property, including earthquake and flood, with common policy restrictions covering direct physical loss of, or damage to, buildings, fixtures, equipment, boilers, machinery, and supplies. The blanket limit of liability under the property insurance program is $500 million with a deductible of $1 million for all locations except earthquake and flood which has a limit of $100 million and $50 million respectively and a deductible of $100,000. This program also provides terrorism insurance for all locations with a blanket limit of $500 million for all terrorist acts. SNWA self-insures the first $1 million for automobile and general liability exposure and purchases excess liability insurance in the amount of $30 million. Employee fidelity insurance in the amount of $3 million and other miscellaneous coverage are also purchased. SNWA purchased a separate Builders Risk policy to insure the Lake Mead Intake No. 3 project during construction. The limit on this policy is $580 million with deductibles of $1 million for all underground works losses and earthquakes, $250,000 for testing and $100,000 for any other loss. Insurance for terrorist acts was also purchased for this project with a limit of $580 million and a deductible of $100,000.

In contracts, SNWA obtains indemnification and hold harmless agreements. These agreements require that contractors name SNWA as an additional insured under the indemnitor's insurance coverage, usually in the amount of $1 million to $10 million for commercial general and automobile liability insurance. SNWA provides builders risk insurance for all construction projects with a blanket limit of $500 million per contract, with a $50,000 deductible per claim, except earthquake and flood where the deductible is $500,000 per claim. This coverage is included under the property insurance policy.

For the fiscal year ended June 30, 2013, SNWA has had no significant reductions in insurance coverage from the prior fiscal year. Also, the amount of settlements and awards has not exceeded insurance coverage for each of the past three fiscal years.

GASB Statement No. 10, *Accounting and Financial Reporting for Risk Financing and Related Insurance Issues,* requires that for retained risks, a liability for claims be reported if information available prior to issuance of the financial statements indicates that it is probable that a liability has been incurred at the date of the financial statements and the amount of the loss can be reasonably estimated. As of June 30, 2013, SNWA has no significant retained risks and therefore has no accrued liability for retained risks. In addition, there are also situations in which incidents occur before the balance sheet date, but claims are not reported or asserted when the financial statements are prepared. As of June 30, 2013, SNWA has no significant retained risks and therefore has no accrued liability for retained risks.

NOTE 18. JOINT VENTURE

SNWA is a member of the Silver State Energy Association (SSEA). SSEA was established as a joint venture through an interlocal agreement among the member agencies (Members), which, in addition to SNWA, include the City of Boulder City, Lincoln Power District No. 1, Overton Power District No. 5 and the CRC.

SSEA is an association of public agencies with the common goal of jointly planning, developing, owning and operating power resources to meet their own needs and those of their customers. The economies of scale produced by the SSEA offer improved project development opportunities and power purchasing capabilities, the sharing of resources and expertise, and the opportunity for jointly managed energy needs.

As appropriate projects are selected for development, the Members involved in each project enter into a project service agreement indicating each participating Member's allocation of project costs and benefits.

The business and other affairs of the SSEA are conducted by a Board of Directors consisting of one director appointed by each Member. The appointed director may, but need not be, a member of the governing body of the Member.

Financial information regarding SSEA can be obtained by writing to:

Finance Director
P.O. Box 99956, MS 115
Las Vegas, NV 89193-9956

NOTE 19. SUBSEQUENT EVENTS

Wholesale Delivery Charge

Effective July 1, 2013, the SNWA wholesale delivery charge was increased from $293/AF to $303/AF. The raw water wholesale delivery charge was also increased from $226/AF to $232/AF. If sales volumes stay consistent with fiscal 2012, these increases will generate approximately $4.0 million of additional annual revenue.

SNWA Infrastructure Surcharge (SIS)

On September 26, 2013, the Board approved an increase in the SIS effective January 1, 2014. The Board approved the existing SIS in 2012 and was told at that time that an additional increase would probably be required by fiscal 2016 to help pay for a spike in debt service payments of approximately $62 million.

The Board requested a citizens' advisory committee be formed to review proposed increases in the rate for future periods. The committee recommended that 1) current SIS charges based solely on meter size and customer class be retained, 2) any increases that are required be spread between an increase in the fixed charge and an increase in the volumetric SNWA Commodity Charge in a ratio of 50%/50%, and 3) increases needed to provide funding for the 2016 debt spike be phased-in over a three year period.

Additional revenue projected to be generated by the phase-in is approximately $5.1 million for fiscal 2014, $15.8 million for fiscal 2015 and $28.5 million for fiscal 2016.

Patricia Mulroy Retirement

On September 22, 2013, Patricia Mulroy, General Manager of SNWA, announced her retirement. Ms. Mulroy has been the only General Manager that SNWA has had since its creation in 1991. Though no firm date has been set as of the report date, Ms. Mulroy plans to depart from SNWA in early 2014. The Board will be in charge of appointing her successor.

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STATISTICAL SECTION
(UNAUDITED)

Statistical Section

This part of the comprehensive annual financial report of the Southern Nevada Water Authority (SNWA) presents detailed information as a context for understanding what the information in the financial statements, note disclosures, and required supplementary information says about the government's overall financial health.

Contents **Page**

Financial Trends Information **3-3 to 3-6**

These Schedules contain information to help the reader understand how SNWA's financial performance and well being have changed over time.

Revenue Capacity Information **3-7 to 3-17**

These schedules contain information to help the reader assess SNWA's most significant local revenue sources.

Debt Capacity Information **3-18 to 3-20**

These schedules present information to help the reader assess the affordability of SNWA's current levels of outstanding debt and its ability to issue additional debt in the future.

Because SNWA has only seven customers (the seven purveyor members as shown in the introductory section) ratios reflecting debt to SNWA's customer base were deemed meaningless. Alternative comparisons have been made to give the reader a better feeling of SNWA's debt levels.

Demographic and Economic Information **3-21 to 3-27**

These schedules offer demographic and economic indicators to aid the reader in understanding the environment in which SNWA's financial activities takes place.

Operating Information **3-28 to 3-30**

These schedules contain service and infrastructure data to help the reader understand how the information in the SNWA's financial report relates to the services SNWA provides and the activities it performs.

Other Information **3-31 to 3-50**

These schedules contain debt history and individual amortization schedules to help the reader understand SNWA's debt position both historically and in the future.

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Southern Nevada Water Authority
Enterprise Fund (Unaudited)

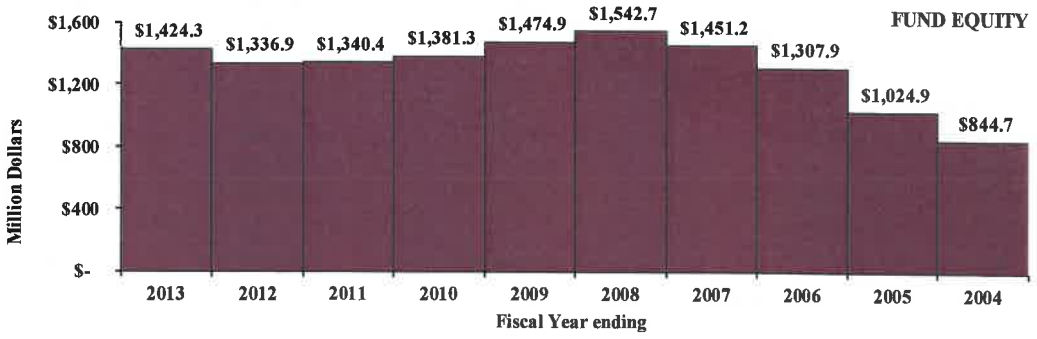
Net Position

Last Ten Fiscal Years

	Fiscal Year Ended June 30				
	2013	2012	2011	2010	2009
Invested In Capital Assets, Net of Related Debt	$ 1,002,302,170	$ 995,159,156	$ 962,800,479	$ 984,695,999	$ 953,273,244
Restricted	15,122,934	22,736,730	13,049,575	16,866,340	15,178,151
Unrestricted [1/]	406,887,453	319,037,966	364,557,983	379,702,030	506,480,037
Total Net Position	$ 1,424,312,557	$ 1,336,933,852	$ 1,340,408,037	$ 1,381,264,369	$ 1,474,931,432

	Fiscal Year Ended June 30				
	2008	2007	2006	2005	2004
Invested In Capital Assets, Net of Related Debt	$ 1,050,436,099	$ 879,151,397	$ 722,024,246	$ 577,586,397	$ 530,779,301
Restricted	102,040,416	50,122,513	23,331,858	52,240,725	16,083,037
Unrestricted [1/]	390,234,075	521,884,671	562,531,407	395,053,871	297,863,688
Total Net Position	$ 1,542,710,590	$ 1,451,158,581	$ 1,307,887,511	$ 1,024,880,993	$ 844,726,026

1/ Amounts after 2006 modified with a pending regional connection charge contingency.



Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Changes in Net Position
Last Ten Fiscal Years

	Fiscal Year Ended June 30		
	2013[1/]	2012[1/]	2011[1/]
Operating Revenues			
Wholesale Delivery Charges	$ 117,534,578	$ 119,239,660	$ 119,457,411
Groundwater Program Revenue	863,417	867,716	894,502
Purveyor Administration Costs Billings	383,443	318,886	362,263
Las Vegas Wash Revenues	397,708	397,407	397,408
Other Revenues	3,525,867	2,705,745	2,950,612
Total Operating Revenues	122,705,013	123,529,414	124,062,196
Operating Expenses			
Personnel and Related	(43,880,414)	(43,450,464)	(42,491,203)
Energy	(36,347,165)	(44,527,798)	(36,013,713)
Operation and Maintenance	(27,943,415)	(37,685,150)	(34,357,566)
Depreciation	(74,943,316)	(74,918,789)	(74,381,219)
Total Operating Expenses	(183,114,310)	(200,582,201)	(187,243,701)
Operating Loss	(60,409,297)	(77,052,788)	(63,181,505)
Non Operating Revenues and (Expenses)			
Investment Income	740,407	869,505	1,024,158
Credit Payment Income	10,316,798	10,867,008	10,896,699
Interest Expense	(64,010,853)	(67,567,023)	(79,960,800)
Amortization of Refunding Costs	(2,926,272)	(2,254,389)	(1,079,554)
Bond Issue and Commercial Paper Costs [2/]	(5,606,185)	(7,264,123)	(5,153,406)
Amortization of Bond Issue Costs, Premiums and Discounts [3/]	3,291,755	3,211,357	3,452,152
Gain/(Loss) on Sale of Assets	63,295	37,112	53,733
Total Non-Operating Revenues (Expenses)	(58,131,055)	(62,100,553)	(70,767,019)
Loss Before Capital Contributions	(118,540,352)	(139,153,341)	(133,948,524)
Capital Contributions	205,919,057	135,679,772	93,092,191
Change in Net Position	87,378,705	(3,473,568)	(40,856,333)
Net Position - Beginning of Year	1,336,933,852	1,340,407,420	1,381,263,753
Net Position - End of Year	$ 1,424,312,557	$ 1,336,933,852	$ 1,340,407,420

continued on next page

1/ Amounts from 2007 to 2013 were modified with a pending regional connection charge contingency.
2/ Per GASB 65, bond issue costs must be expensed in the year they occur. SNWA adopted GASB 65 with the fiscal 2010 financial information.
3/ Fiscal years 2009 and earlier contain the amortization of bond issue costs.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Changes in Net Position
Last Ten Fiscal Years (continued)

	Fiscal Year Ended June 30		
	2010[1/]	2009[1/]	2008[1/]
Operating Revenues			
Wholesale Delivery Charges	$ 110,097,368	$ 112,551,974	$ 118,782,982
Groundwater Program Revenue	872,104	2,047,626	1,976,911
Purveyor Administration Costs Billings	342,820	379,306	367,710
Las Vegas Wash Revenues	698,274	690,000	1,196,028
Other Revenues	2,563,872	2,648,858	2,010,404
Total Operating Revenues	114,574,438	118,317,764	124,334,035
Operating Expenses			
Personnel and Related	(37,948,022)	(39,671,513)	(37,430,481)
Energy	(39,656,635)	(40,184,442)	(35,233,331)
Operation and Maintenance	(45,801,462)	(73,740,385)	(63,839,825)
Depreciation	(76,350,465)	(66,726,519)	(59,173,267)
Total Operating Expenses	(199,756,584)	(220,322,860)	(195,676,904)
Operating Loss	(85,182,146)	(102,005,096)	(71,342,869)
Non Operating Revenues and (Expenses)			
Investment Income	1,374,146	10,709,321	24,494,593
Credit Payment Income	6,442,781	-	-
Interest Expense	(75,369,159)	(69,887,704)	(67,939,173)
Amortization of Refunding Costs	(969,032)	(1,118,050)	(1,286,877)
Bond Issue and Commercial Paper Costs [2/]	(5,473,902)	(2,249,341)	(866,470)
Amortization of Bond Issue Costs, Premiums and Discounts [3/]	3,537,813	2,877,933	1,810,746
Gain/(Loss) on Sale of Assets	(5,051)	(753,735)	5,200
Total Non-Operating Revenues (Expenses)	(70,462,404)	(60,421,576)	(43,781,981)
Loss Before Capital Contributions	(155,644,550)	(162,426,672)	(115,124,850)
Capital Contributions	75,876,870	94,647,515	206,676,859
Change in Net Position	(79,767,680)	(67,779,157)	91,552,009
Net Position - Beginning of Year	1,474,931,433	1,542,710,590	1,451,158,581
Adjustment per GASB 65 [4/]	(13,900,000)		
Net Position - End of Year	$ 1,381,263,753	$ 1,474,931,433	$ 1,542,710,590

continued on next page

1/ Amounts from 2007 to 2013 were modified with a pending regional connection charge contingency.
2/ Per GASB 65, bond issue costs must be expensed in the year they occur. SNWA adopted GASB 65 with the fiscal 2010 financial information.
3/ Fiscal years 2009 and earlier contain the amortization of bond issue costs.
4/ GASB 65 adopted April 2010. This entry eliminated the unamortized bond issue cost asset from SNWA's books.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Changes in Net Position
Last Ten Fiscal Years (continued)

	Fiscal Year Ended June 30			
	2007[1/]	2006	2005	2004
Operating Revenues				
Wholesale Delivery Charges	$ 121,449,812	$ 115,532,042	$ 100,460,557	$ 97,162,446
Groundwater Program Revenue	1,953,768	1,952,143	2,039,010	2,114,246
Purveyor Administration Costs Billings	359,042	351,527	361,958	321,253
Las Vegas Wash Revenues	842,700	1,074,374	1,071,600	1,037,400
Other Revenues	1,586,346	-	-	-
Total Operating Revenues	126,191,668	118,910,086	103,933,125	100,635,345
Operating Expenses				
Personnel and Related	(33,754,022)	(32,131,870)	(29,082,767)	(26,536,039)
Energy	(47,268,452)	(56,584,777)	(54,461,787)	(55,632,005)
Operation and Maintenance	(43,170,486)	(38,966,643)	(51,321,569)	(42,265,915)
Depreciation	(53,622,679)	(50,759,972)	(48,611,272)	(38,677,877)
Total Operating Expenses	(177,815,639)	(178,443,262)	(183,477,395)	(163,111,836)
Operating Loss	(51,623,971)	(59,533,176)	(79,544,270)	(62,476,491)
Non Operating Revenues and (Expenses)				
Investment Income	29,484,713	13,370,675	13,887,489	408,524
Credit Payment Income	-	-	-	-
Interest Expense	(71,907,034)	(66,724,948)	(64,898,632)	(61,809,663)
Amortization of Refunding Costs	(1,467,458)	(978,821)	(186,214)	(21,056)
Bond Issue and Commercial Paper Costs [2/]	(903,956)	(1,104,630)	(713,549)	(1,202,859)
Amortization of Bond Issue Costs, Premiums and Discounts [3/]	1,443,992	1,079,301	57,933	355,767
Gain/(Loss) on Sale of Assets	835,062	491,492	1,136	2,363
Total Non-Operating Revenues (Expenses)	(42,514,681)	(53,866,931)	(51,851,837)	(62,266,924)
Loss Before Capital Contributions	(94,138,652)	(113,400,106)	(131,396,106)	(124,743,414)
Capital Contributions	237,409,722	396,406,624	311,551,073	243,049,902
Change in Net Position	143,271,070	283,006,518	180,154,967	118,306,488
Net Position - Beginning of Year	1,307,887,511	1,024,880,993	844,726,027	726,419,539
Net Position - End of Year	$ 1,451,158,581	$ 1,307,887,511	$ 1,024,880,993	$ 844,726,027

1/ Amounts from 2007 to 2013 were modified with a pending regional connection charge contingency.
2/ Per GASB 65, bond issue costs must be expensed in the year they occur. SNWA adopted GASB 65 with the fiscal 2010 financial information.
3/ Fiscal years 2009 and earlier contain the amortization of bond issue costs.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)

Regional Connection Charges [1/]

Revenue Base / Principal Revenue Payers
Last Ten Fiscal Years

	Fiscal Year Ended June 30			
	2013	2012	2011	2010
Las Vegas Valley Water District	$ 16,232,230	$ 10,265,102	$ 7,504,785	$ (581,358)
City of Henderson	1,581,160	3,195,930	3,529,771	2,008,270
City of North Las Vegas	1,228,630	330,050	(258,942)	2,117,669
Total Connection Charge Collections	$ 19,042,020	$ 13,791,082	$ 10,775,614	$ 3,544,581
Less net adjustment to Pending Regional Connection Charge Refund [2/]	3,873,396	101,774	(4,172,886)	1,764,966
Adjusted Connection Charge Collections	$ 22,915,416	$ 13,892,856	$ 6,602,728	$ 5,309,547
Average Effective Rate per Blended Equivalent [3/]	$ 4,870	$ 4,870	$ 4,870	$ 4,870

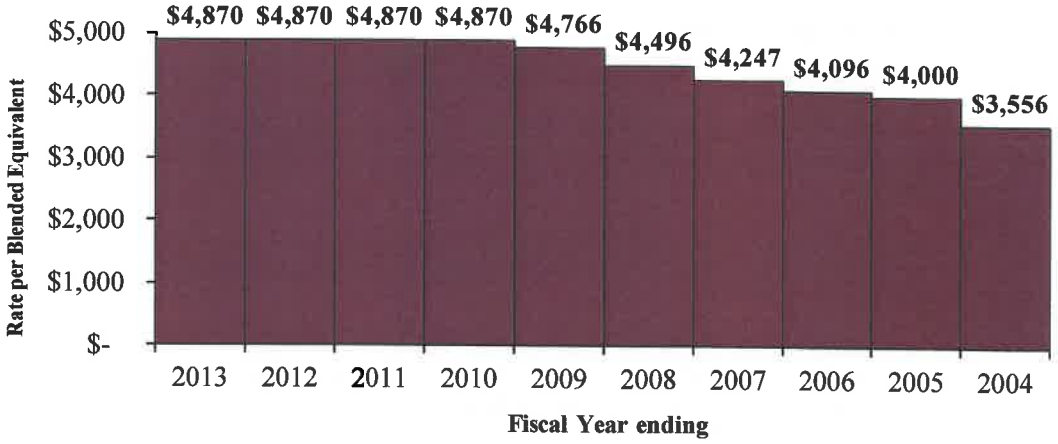
Continued on next page

1/ Connection charges are a component of Capital Contributions as displayed on the Statements of Revenues, Expenses, and Changes in Fund Equity. See Notes 1 and 16 to the Basic Financial Statements.

2/ Beginning in fiscal 2007 annual net cash collections of connection charges were modified by a loss contingency. The adjusted amount corresponds with the capital contributions section of the financial statements (Note 16).

3/ Connection charges are mainly set based on a "blended equivalent" which represents the equivalency of a 5/8" and 3/4" service size as defined by the American Water Works Association, weighted based on the population of such meters in service throughout the Southern Nevada Water Authority service area. Effective rate is based on rate charged to end customer and does not include pending regional connection charge refund alteration.

AVERAGE EFFECTIVE RATE PER BLENDED EQUIVALENT



Southern Nevada Water Authority
Enterprise Fund (Unaudited)

Regional Connection Charges [1/]

Revenue Base / Principal Revenue Payers
Last Ten Fiscal Years

	Fiscal Year Ended June 30		
	2009	2008	2007
Las Vegas Valley Water District	$ 17,943,571	$ 40,672,561	$ 83,294,414
City of Henderson	4,855,790	11,184,662	22,396,474
City of North Las Vegas	4,607,510	9,655,650	15,668,200
Total Connection Charge Collections	$ 27,406,871	$ 61,512,873	$ 121,359,088
Less net adjustment to Pending Regional Connection Charge Refund [2/]	(617,716)	(4,194,769)	(1,797,880)
Adjusted Connection Charge Collections	$ 26,789,155	$ 57,318,104	$ 119,561,208
Average Effective Rate per Blended Equivalent [3/]	$ 4,766	$ 4,496	$ 4,247

	Fiscal Year Ended June 30		
	2006	2005	2004
Las Vegas Valley Water District	$ 133,408,930	$ 102,009,777	$ 95,990,657
City of Henderson	26,548,685	31,316,388	23,469,506
City of North Las Vegas	28,496,396	44,167,000	34,533,890
Total Connection Charge Collections	$ 188,454,011	$ 177,493,165	$ 153,994,053
Average Effective Rate per Blended Equivalent [3/]	$ 4,096	$ 4,000	$ 3,556

1/ Connection charges are a component of Capital Contributions as displayed on the Statements of Revenues, Expenses, and Changes in Fund Equity. See Notes 1 and 16 to the Basic Financial Statements.

2/ Beginning in fiscal 2007 annual net cash collections of connection charges were modified by a loss contingency. The adjusted amount corresponds with the capital contributions section of the financial statements (Note 16).

3/ Connection charges are mainly set based on a "blended equivalent" which represents the equivalency of a 5/8" and 3/4" service size as defined by the American Water Works Association, weighted based on the population of such meters in service throughout the Southern Nevada Water Authority service area. Effective rate is based on rate charged to end customer and does not include pending regional connection charge refund alteration.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Pending Regional Connection Charges
Refund Contingency

Pending Regional Connection Charge Refund Contingency

	Fiscal Year Ended June 30		
	2013	2012	2011
Las Vegas Valley Water District	$ 2,217,149	$ 4,355,689	$ 4,420,439
City of Henderson	929,782	1,257,430	3,589,676
City of North Las Vegas	1,896,184	3,303,392	1,008,170
Total Pending Regional Connection Charge Refund Contingency	$ 5,043,115	$ 8,916,511	$ 9,018,285

	Fiscal Year Ended June 30			
	2010 [1/]	2009 [1/]	2008 [1/]	2007 [1/]
Las Vegas Valley Water District	$ 4,845,399	$ 6,610,365	$ 5,992,649	$ 1,797,880
City of Henderson	-	-	-	-
City of North Las Vegas	-	-	-	-
Total Pending Regional Connection Charge Refund Contingency	$ 4,845,399	$ 6,610,365	$ 5,992,649	$ 1,797,880

Actual Refunds

	Fiscal Year Ended June 30		
	2013	2012	2011
Las Vegas Valley Water District	$ 1,340,120	$ 1,593,238	$ 2,139,595
City of Henderson	1,206,150	32,910	99,059
City of North Las Vegas	658,870	162,410	1,008,170
Total Actual Refunds	$ 3,205,140	$ 1,788,558	$ 3,246,824

Actual Refunds	Fiscal Year Ended June 30			
	2010 [1/]	2009 [1/]	2008 [1/]	2007 [1/]
Las Vegas Valley Water District	$ 5,838,268	$ 2,750,260	$ 2,860,149	$ 1,313,640
City of Henderson	-	-	-	-
City of North Las Vegas	-	-	-	-
Total Actual Refunds	$ 5,838,268	$ 2,750,260	$ 2,860,149	$ 1,313,640

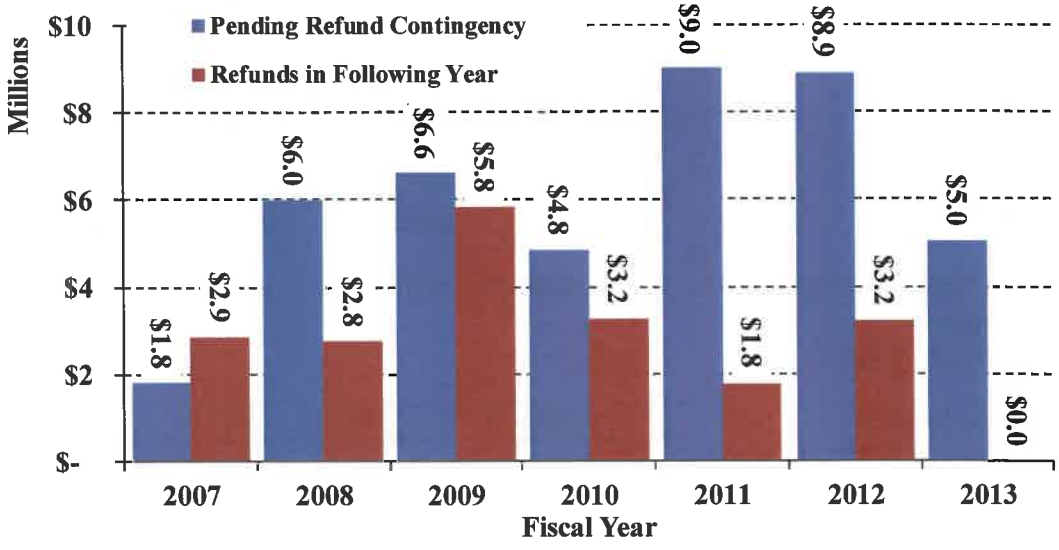
Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Pending Regional Connection Charges
Refund Contingency (continued)

Contingency Coverage (comparing to following year) 2/

	Fiscal Year Ended June 30		
	2013	2012	2011
Las Vegas Valley Water District	N/A	3.3	2.8
City of Henderson	N/A	1.0	109.1
City of North Las Vegas	N/A	5.0	6.2
Total Contingency Coverage	N/A	2.8	5.0

	Fiscal Year Ended June 30			
	2010	2009	2008	2007
Las Vegas Valley Water District	2.3	1.1	2.2	0.6
City of Henderson	1/	1/	1/	1/
City of North Las Vegas	1/	1/	1/	1/
Total Contingency Coverage	1.5	1.1	2.2	0.6

1/ Prior to Fiscal 2011, SNWA did not request projected refunds from City of Henderson or City of North Las Vegas. Information from 2010 and previous represents data obtained from the Las Vegas Valley Water District only.
2 / Year 1's Pending Regional Commodity Charge Refund Contingency divided by actual refunds in Year 2.



Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Regional Connection Charges
Revenue Rates
Last Ten Fiscal Years

	Fiscal year ended June 30,					
	2013	2012	2011	2010	2009	
	July 12 to Jun 13	July 11 to Jun 12	July 10 to Jun 11	July 09 to Jun 10	Nov 08 to Jun 09	Jul 08 to Oct 08
Residential - 8 or fewer units per acre						
5/8"	$ 4,870	$ 4,870	$ 4,870	$ 4,870	$ 4,870	$ 4,710
3/4"	4,870	4,870	4,870	4,870	4,870	4,710
1"	9,610	9,610	9,610	9,610	9,610	9,300
1 1/2"	19,170	19,170	19,170	19,170	19,170	18,560
2"	30,680	30,680	30,680	30,680	30,680	29,700
Residential - more than 8 units per acre Per Dwelling Unit						
Individually Metered	$ 3,400	$ 3,400	$ 3,400	$ 3,400	$ 3,400	$ 3,210
Master Metered	3,400	3,400	3,400	3,400	3,400	3,210
Non Residential excluding hotels, motels, golf courses and laundries						
5/8"	$ 4,870	$ 4,870	$ 4,870	$ 4,870	$ 4,870	$ 4,710
3/4"	4,870	4,870	4,870	4,870	4,870	4,710
1"	9,610	9,610	9,610	9,610	9,610	9,300
1 1/2"	19,170	19,170	19,170	19,170	19,170	18,560
2"	64,260	64,260	64,260	64,260	64,260	60,060
3"	237,900	237,900	237,900	237,900	237,900	216,610
4"	353,100	353,100	353,100	353,100	353,100	326,310
6" and larger, per thousand gallons estimated annual use	$ 29.20	$ 29.20	$ 29.20	$ 29.20	$ 29.20	$ 26.50
Hotels / Motels						
Per Room	$ 2,780	$ 2,780	$ 2,780	$ 2,780	$ 2,780	$ 2,690
Golf Courses						
Per Irrigated Acre	$ 45,640	$ 45,640	$ 45,640	$ 45,640	$ 45,640	$ 43,870
RV Parks						
Per Space	$ 1,380	$ 1,380	$ 1,380	$ 1,380	$ 1,380	$ 1,340
Industrial Laundries						
5/8"	$ 76,800	$ 76,800	$ 76,800	$ 76,800	$ 76,800	$ 74,350
3/4"	76,800	76,800	76,800	76,800	76,800	74,350
1"	151,460	151,460	151,460	151,460	151,460	146,620
1 1/2"	302,950	302,950	302,950	302,950	302,950	293,270
2"	484,700	484,700	484,700	484,700	484,700	469,220
3"	969,400	969,400	969,400	969,400	969,400	938,430
4"	1,514,690	1,514,690	1,514,690	1,514,690	1,514,690	1,466,300
6"	3,029,360	3,029,360	3,029,360	3,029,360	3,029,360	2,932,580
8"	4,846,980	4,846,980	4,846,980	4,846,980	4,846,980	4,692,140
10"	6,967,540	6,967,540	6,967,540	6,967,540	6,967,540	6,744,960

Continued on next page

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Regional Connection Charges
Revenue Rates
Last Ten Fiscal Years (continued)

	Fiscal year ended June 30,					
	2008			2007		
	May 08 to Jun 08	Nov 07 to Apr 08	Jul 07 to Oct 07	May 07 to Jun 07	Nov 06 to Apr 07	Jul 06 to Oct 06
Residential - 8 or fewer units per acre						
5/8"	$ 4,710	$ 4,560	$ 4,410	$ 4,410	$ 4,270	$ 4,130
3/4"	4,710	4,560	4,410	4,410	4,270	4,130
1"	9,300	9,000	8,710	8,710	8,430	8,160
1 1/2"	18,560	17,970	17,400	17,400	16,840	16,300
2"	29,700	28,750	27,830	27,830	26,940	26,080
Residential - more than 8 units per acre Per Dwelling Unit						
Individually Metered	$ 3,210	$ 3,030	$ 2,860	$ 2,860	$ 2,700	$ 2,550
Master Metered	3,210	3,030	2,860	2,860	2,700	2,550
Non Residential excluding hotels, motels, golf courses and laundries						
5/8"	$ 4,710	$ 4,560	$ 4,410	$ 4,410	$ 4,270	$ 4,130
3/4"	4,710	4,560	4,410	4,410	4,270	4,130
1"	9,300	9,000	8,710	8,710	8,430	8,160
1 1/2"	18,560	17,970	17,400	17,400	16,840	16,300
2"	60,060	56,130	52,460	52,460	49,030	45,820
3"	216,610	197,220	179,570	179,570	163,500	148,780
4"	326,310	301,550	278,670	278,670	257,530	237,990
6" and larger, per thousand gallons estimated annual use	$ 26.50	$ 24.00	$ 21.80	$ 21.80	$ 19.80	$ 18.00
Hotels / Motels						
Per Room	$ 2,690	$ 2,600	$ 2,520	$ 2,520	$ 2,440	$ 2,360
Golf Courses						
Per Irrigated Acre	$ 43,870	$ 42,170	$ 40,530	$ 40,530	$ 38,960	$ 37,450
RV Parks						
Per Space	$ 1,340	$ 1,300	$ 1,260	$ 1,260	$ 1,220	$ 1,180
Industrial Laundries						
5/8"	$ 74,350	$ 71,970	$ 69,670	$ 69,670	$ 67,440	$ 65,290
3/4"	74,350	71,970	69,670	69,670	67,440	65,290
1"	146,620	141,940	137,410	137,410	133,020	128,770
1 1/2"	293,270	283,900	274,830	274,830	266,050	257,550
2"	469,220	454,230	439,720	439,720	425,670	412,070
3"	938,430	908,450	879,430	879,430	851,340	824,140
4"	1,466,300	1,419,460	1,374,110	1,374,110	1,330,210	1,287,720
6"	2,932,580	2,838,900	2,748,210	2,748,210	2,660,420	2,575,430
8"	4,692,140	4,542,250	4,397,140	4,397,140	4,256,670	4,120,690
10"	6,744,960	6,529,490	6,320,900	6,320,900	6,118,970	5,923,490

Continued on next page

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Regional Connection Charges
Revenue Rates
Last Ten Fiscal Years (continued)

	Fiscal year ended June 30,					
	2006			2005	2004	
	May 06 to Jun 06	Nov 05 to Apr 06	Jul 05 to Oct 05	Jul 04 to Jun 05	Feb 04 to Jun 04	Jul 03 to Jan 04
Residential - 8 or fewer units per acre						
5/8"	$ 4,130	$ 4,000	$ 3,560	$ 3,560	$ 3,560	$ 3,520
3/4"	4,130	4,000	3,560	3,560	3,560	3,520
1"	8,160	7,900	7,030	7,030	7,030	6,960
1 1/2"	16,300	15,780	14,040	14,040	14,040	13,900
2"	26,080	25,250	22,470	22,470	22,470	22,250
Residential - more than 8 units per acre						
Per Dwelling Unit						
Individually Metered	$ 2,550	$ 2,400	$ 2,136	$ 2,136	$ 2,136	$ 2,112
Master Metered	2,550	2,400	2,136	2,136	2,136	1,924
Non Residential excluding hotels, motels, golf courses and laundries						
5/8"	$ 4,130	$ 4,000	$ 3,560	$ 3,560	$ 3,560	$ 3,520
3/4"	4,130	4,000	3,560	3,560	3,560	3,520
1"	8,160	7,900	7,030	7,030	7,030	6,960
1 1/2"	16,300	15,780	14,040	14,040	14,040	13,900
2"	45,820	42,820	38,110	38,110	38,110	34,760
3"	148,780	135,550	120,640	120,640	120,640	105,070
4"	237,990	219,930	195,740	195,740	195,740	169,960
6" and larger, per thousand gallons estimated annual use	$ 18.00	$ 16.30	$ 14.48	$ 14.48	$ 14.48	$ 12.22
Hotels / Motels						
Per Room	$ 2,360	$ 2,280	$ 2,029	$ 2,029	$ 2,029	$ 1,671
Golf Courses						
Per Irrigated Acre	$ 37,450	$ 36,000	$ 32,040	$ 32,040	$ 32,040	$ 25,886
RV Parks						
Per Space	$ 1,180	$ 1,140	$ 1,015	$ 1,015	$ 1,015	$ 836
Industrial Laundries						
5/8"	$ 65,290	$ 63,200	$ 56,250	$ 56,250	$ 56,250	$ 45,680
3/4"	65,290	63,200	56,250	56,250	56,250	45,680
1"	128,770	124,660	110,950	110,950	110,950	90,100
1 1/2"	257,550	249,320	221,890	221,890	221,890	180,190
2"	412,070	398,910	355,030	355,030	355,030	288,300
3"	824,140	797,810	710,050	710,050	710,050	576,590
4"	1,287,720	1,246,580	1,109,450	1,109,450	1,109,450	900,920
6"	2,575,430	2,493,160	2,218,900	2,218,900	2,218,900	1,801,850
8"	4,120,690	3,989,050	3,550,240	3,550,240	3,550,240	2,882,960
10"	5,923,490	5,734,260	5,103,470	5,103,470	5,103,470	4,144,250

Southern Nevada Water Authority
Enterprise Fund (Unaudited)

Wholesale Delivery Charge

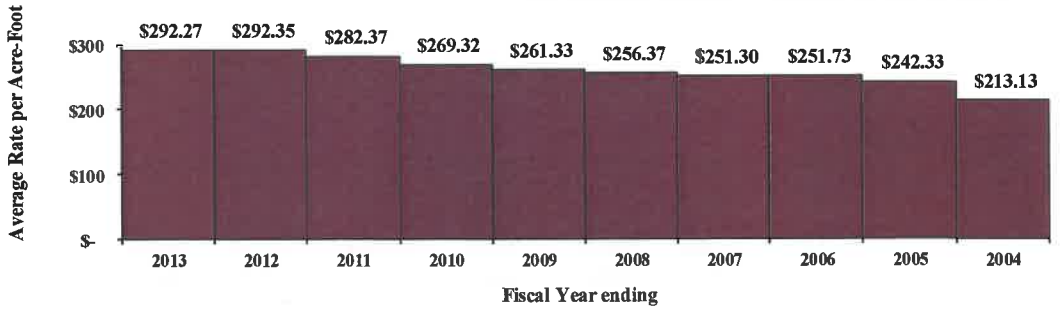
Revenue Base / Principal Revenue Payers
Last Ten Fiscal Years

	Fiscal Year Ended June 30				
	2013	2012	2011	2010	2009
Las Vegas Valley Water District	$ 83,269,369	$ 83,406,085	$ 83,958,256	$ 76,424,085	$ 79,085,752
City of Henderson	18,203,343	18,590,766	18,186,274	17,034,887	16,928,183
City of North Las Vegas	13,013,158	14,099,100	14,222,462	13,581,423	13,442,152
City of Boulder City	2,795,461	2,876,584	2,779,302	2,706,123	2,675,997
Nellis Air Force Base	253,247	267,125	311,117	350,850	419,890
Total Wholesale Delivery Charge Collections	$ 117,534,578	$ 119,239,660	$ 119,457,411	$ 110,097,368	$ 112,551,974
Average Effective Rate per Acre-Foot	$ 292.27	$ 292.35	$ 282.37	$ 269.32	$ 261.33

	Fiscal Year Ended June 30				
	2008	2007	2006	2005	2004
Las Vegas Valley Water District	$ 84,407,754	$ 86,738,398	$ 82,658,798	$ 72,173,474	$ 71,241,372
City of Henderson	17,192,550	17,574,018	16,745,595	15,143,461	13,484,000
City of North Las Vegas	13,874,638	13,969,835	13,147,489	10,472,255	9,713,658
City of Boulder City	2,727,909	2,621,610	2,540,316	2,282,861	2,374,060
Nellis Air Force Base	580,131	545,951	439,844	388,506	349,356
Total Wholesale Delivery Charge Collections	$ 118,782,982	$ 121,449,812	$ 115,532,042	$ 100,460,557	$ 97,162,446
Average Effective Rate per Acre-Foot	$ 256.37	$ 251.30	$ 251.73	$ 242.33	$ 213.13

May be off slightly due to rounding

AVERAGE EFFECTIVE RATE PER ACRE FOOT



Southern Nevada Water Authority
Enterprise Fund (Unaudited)

Wholesale Delivery Charge for Potable Water

Revenue Rates
Last Ten Fiscal Years

	Fiscal Year Ended June 30				
	2013	2012	2011	2010	2009
Charge per Acre-Foot*	$293.00	$293.00	$283.00	$270.00	$262.00

	Fiscal Year Ended June 30				
	2008	2007	2006	2005	2004
Charge per Acre-Foot*	$257.00	$252.00	$252.00	$243.00	$215.00

* City of Boulder City pays a slightly lower wholesale delivery charge for non potable water. Nellis Air Force Base pays a modified wholesale delivery charge plus a portion of debt service. Revenues from both these charges account for less than 1% of total wholesale delivery charge.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)

Regional Infrastructure Surcharges [1/]

Revenue Base / Principal Revenue Payers
Last Ten Fiscal Years

	Fiscal Year Ended June 30	
Participants	2013	2012[2/]
Las Vegas Valley Water District	$ 56,810,256	$ 12,659,145
City of Henderson	9,916,987	1,248,412
City of North Las Vegas	11,643,459	2,285,573
City of Boulder City [3/]	546,637	
Big Bend Water District [3/]	196,939	
Total Connection Charge Collections	$ 79,114,278	$ 16,193,130

1/ Regional Infrastructure Surcharges are a component of Capital Contributions as displayed on the Statements of Revenues, Expenses, and Changes in Fund Equity. See Notes 1 and 16 to the Basic Financial Statements.

2/ Partial year collections. Las Vegas Valley Water District collected for three months while other purveyors collected for two months.

3/ These participants pay fees in lieu of Infrastructure Surchange collections from the public. The amounts collected are credited to the Infrastructure Surcharge revenue source.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Regional Infrastructure Surcharges
Revenue Rates by Service Size
Inception to June 30, 2013

	Monthly Charge		
	Fiscal year ended June 30,		
	2013		2012
	Sept 12 to June 13	Jul 12 to Aug 12	Feb 12 to June 12
Residential - 5/8" & 3/4" meter sizes	$ 5.00	$ 5.00	$ 5.00
Residential - 1" meter size	19.21	19.21	19.21
Residential - 1.5" meter size	38.41	38.41	38.41
Residential - 2" meter size	61.46	61.46	61.46
Residential - 3" meter size	122.90	122.90	122.90
Residential - 4" meter size	192.03	192.03	192.03
Residential - 6" meter size	384.05	384.05	384.05
Residential - 8" meter size and larger	614.47	614.47	614.47
Non-Residential - 5/8" & 3/4" meter sizes	19.05	19.05	19.05
Non-Residential - 1" meter size	36.08	36.08	36.08
Non-Residential - 1.5" meter size	72.16	72.16	72.16
Non-Residential - 2" meter size	115.45	115.45	115.45
Non-Residential - 3" meter size	230.90	230.90	230.90
Non-Residential - 4" meter size	360.79	360.79	360.79
Non-Residential - 6" meter size	721.57	721.57	721.57
Non-Residential - 8" meter size	1,154.50	1,154.50	1,154.50
Non-Residential - 10" and larger meter sizes	1,659.59	1,659.59	1,659.59
Non-Residential - 5/8" & 3/4" meter sizes Fire Meter	3.19	6.67	6.67
Non-Residential - 1" meter size Fire Meter	6.05	12.63	12.63
Non-Residential - 1.5" meter size Fire Meter	12.09	25.26	25.26
Non-Residential - 2" meter size Fire Meter	19.34	40.41	40.41
Non-Residential - 3" meter size Fire Meter	38.67	80.82	80.82
Non-Residential - 4" meter size Fire Meter	60.42	126.28	126.28
Non-Residential - 6" meter size Fire Meter	120.83	252.55	252.55
Non-Residential - 8" meter size Fire Meter	193.33	404.08	404.08
Non-Residential - 10" and larger meter sizes Fire Meter	277.91	580.86	580.86

Southern Nevada Water Authority
Enterprise Fund (Unaudited)

Ratios of Outstanding Debt[1]

Last Ten Fiscal Years

	In Million Dollars			
Fiscal Year Ended June 30	General Obligation Bonds[2]	Notes Payable/ Repayment Contracts	Commercial Paper	Total Debt[3]
2013	$3,107.1	$10.4	$400.0	$3,517.5
2012	2,755.2	11.6	400.0	3,166.8
2011	2,737.5	12.7	400.0	3,150.2
2010	2,756.7	13.8	400.0	3,170.5
2009	2,285.5	21.3	400.0	2,706.7
2008	1,918.9	15.8	400.0	2,334.7
2007	1,962.4	16.8	400.0	2,379.2
2006	1,605.0	17.8	400.0	2,022.8
2005	1,635.2	18.7	300.0	1,953.8
2004	1,653.0	19.6	140.0	1,812.6

Fiscal Year Ended June 30	Debt as a Percent of Personal Income [4]	Debt per Capita In Dollars [5]
2013	4.6%	$1,729
2012	4.3%	1,583
2011	4.5%	1,601
2010	4.7%	1,623
2009	4.0%	1,396
2008	3.1%	1,221
2007	3.3%	1,274
2006	2.9%	1,121
2005	3.0%	1,130
2004	3.2%	1,090

(1) Details of the Southern Nevada Water Authority's (SNWA) outstanding debt can be found in the Notes 14 and 15 to the Basic Financial Statements and in the Other Information section of the Statistical Section.

(2) Net of related premiums and discounts as required per GASB Comprehensive Implementation Guide 9.24.6

(3) All SNWA bond and note debt is general obligation debt, additionally secured by pledged revenues. Please see "Pledged Revenue Coverage" immediately following this schedule.

(4) Total debt divided by total Clark County personal income. Please see page 3-24 for personal income data.

(5) Total debt divided by total Clark County per capita income. Please see page 3-24 for population data.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)

Ratios of General Bonded Debt[1]

Last Ten Fiscal Years

	In Million Dollars				
Fiscal Year Ended June 30	General Obligation Secured with SNWA Revenues [2]	Bonds with Sales Tax Pledge [2] [3]	Total General Bonded Debt	Restricted for Repayment of Principal [4]	Net General Bonded Debt
2013	$3,512.9	$4.6	$3,517.5	-$16.9	$3,500.6
2012	3,161.7	5.1	3,166.8	-15.1	3,151.7
2011	3,144.7	5.5	3,150.2	-31.9	3,118.4
2010	3,164.6	6.0	3,170.5	-31.2	3,139.3
2009	2,700.3	6.4	2,706.7	-55.8	2,650.9
2008	2,327.8	6.9	2,334.7	-48.9	2,285.8
2007	2,379.2		2,379.2	-47.2	2,332.0
2006	2,022.8		2,022.8	-44.3	1,978.5
2005	1,953.8		1,953.8	-38.1	1,915.7
2004	1,812.6		1,812.6	-36.4	1,776.2

Fiscal Year Ended June 30	Total Debt as Percent of Annual Applied Revenues [5][6]	Annual Debt Service as Percent of Annual Applied Revenues [5] [7]
2013	1122.3%	47.1%
2012	1308.8%	60.9%
2011	1506.6%	75.0%
2010	1746.2%	90.6%
2009	1296.5%	83.0%
2008	921.0%	62.0%
2007	740.5%	45.9%
2006	531.3%	37.8%
2005	566.8%	37.1%
2004	583.7%	39.3%

(1) Details of the Southern Nevada Water Authority's (SNWA) outstanding debt can be found in the Notes 14 and 15 to the Basic Financial Statements and in the Other Information section of the Statistical Section. As described in Note 1, SNWA has only seven customers, making per-customer ratios meaningless. Therefore alternate ratios have been used.

(2) All SNWA bond and note debt is general obligation debt, additionally secured by pledged revenues. Please see "Pledged Revenue Coverage" immediately following this schedule.

(3) Only one debt issue (SNWA 2008 sub) has sales tax specifically pledged to it. All other issues are general obligation bonds with additional security of SNWA pledged revenues.

(4) One year's principal for all outstanding debt except commercial paper.

(5) Although SNWA can enact property tax through the agencies that issue debt on behalf of SNWA as explained in the Long Range Financial Planning section of the transmittal letter, SNWA has never sanctioned any property tax and does not plan to do so in the foreseeable future. Therefore alternate ratios have been used.

(6) Total debt divided by total applied revenues. Applied revenues are revenues which are used to pay debt service. These revenues consist of wholesale delivery charge, regional connection charge, regional commodity charge, regional reliability surcharge, and regional infrastructure surcharge. Regional connection charges are adjusted by a refund contingency for fiscal year 2008 and forward. Additionally sales tax is included beginning in November 2006. Prior to this date, sales tax was used exclusively for pay-as-you-go construction.

(7) Total annual debt service (principal and interest) divided into total applied revenues as defined in (6) above.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)

Information about Debt Limitations and Pledged-Revenue Coverage

DEBT LIMITATIONS

The Authority does not have a dollar amount of debt limit. The Authority's ability to issue and pay its debt is a function of its capital needs and revenues generated from Authority facilities.

PLEDGED REVENUE COVERAGE

Fiscal Year Ended June 30	Pledged Revenues Sales Tax [1]	Bonds with Sales Tax Pledge [2]	Coverage Ratio
2013	$48,847,305	$4,600,000	10.6
2012	46,222,883	5,060,000	9.1
2011	43,577,390	5,520,000	7.9
2010	41,833,183	5,980,000	7.0
2009	46,333,942	6,440,000	7.2
2008	53,315,770	6,900,000	7.7

(1) Sales tax collections are restricted by law to be used only for capital acquisition and retirement of debt. SNWA ended its pay-as-you-go capital program in fiscal 2007, so there are no other specific expenses that must paid with sales tax exclusively.

(2) Only one debt issue (SNWA 2008 sub) has sales tax specifically pledged to it. All other issues are general obligation bonds with additional security of SNWA pledged revenues.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Pledged Revenue Coverage
Last Ten Fiscal Years

	Fiscal Year Ended June 30,		
	2013	2012	2011
Sources of Funds			
Wholesale Delivery Charge	$ 117,534,578	$ 119,239,660	$ 119,457,411
Regional Connection Charge [1/]	22,915,416	13,892,856	6,602,728
Regional Water Charges	45,641,138	45,263,892	37,335,440
Regional Infrastructure Surcharge	79,114,278	16,193,130	
Sales Tax	48,847,306	46,222,883	43,577,390
Groundwater Program Fees	863,417	867,716	894,502
Las Vegas Wash Program Fees	397,708	397,407	397,408
Interest Income & Capitalized Int	1,923,641	1,565,109	1,375,082
Other Revenues [2/]	3,909,310	3,024,631	3,590,639
Total Sources of Funds	321,146,792	246,667,284	213,230,600
Uses of Funds			
Energy	36,347,165	44,527,798	36,013,713
Personnel & Related	43,880,414	43,450,464	42,491,203
Operating Capital & Expenses	27,943,415	37,685,150	34,357,566
PAYG Capital Expenses [3/]			
Total Uses of Funds	108,170,994	125,663,412	112,862,482
Add Beginning Unrestricted Funds [4/]	308,634,591	305,553,937	366,951,904
Net Available for Debt Service	521,610,389	426,557,809	467,320,022
Total Existing Obligations Annual Debt Service [5/]	146,773,353	146,624,017	155,206,052
Debt Service Coverage Ratio	3.55	2.91	3.01

Continued on next page

1/ Prior to fiscal 2007, connection charges reflected the net cash received from this revenue source. Amounts for years after fiscal 2006 have been modified with a refund contingency.

2/Includes receipts from the Southern Nevada Public Lands Management Act (SNPLMA), raw water facilities charge and minor billings to purveyor members (Big Bend, City of Las Vegas and Clark County Reclamation District).

3/In 2008, SNWA ceased pay-as-you-go for the foreseeable future.

4/ Unrestricted funds include unrestricted cash and investments as shown on the Comprehensive Annual Financial Report and sales tax proceeds on hand regardless of classification.

5/Includes the interest amounts paid on the 2004 Commercial Paper Notes. Net of the BAB Credit received with respect to the 2009A Bonds and 2009C Bonds.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Pledged Revenue Coverage (Continued)
Last Ten Fiscal Years

	Fiscal Year Ended June 30,		
	2010	2009	2008
Sources of Funds			
Wholesale Delivery Charge	$ 110,097,368	$ 112,551,974	$ 118,782,982
Regional Connection Charge [1/]	5,309,547	26,789,155	57,318,104
Regional Water Charges	22,538,155	18,791,878	18,777,117
Regional Infrastructure Surcharge			
Sales Tax	41,833,183	46,333,942	53,315,770
Groundwater Program Fees	872,104	2,047,626	1,976,911
Las Vegas Wash Program Fees	698,274	690,000	1,196,028
Interest Income & Capitalized Int	1,789,048	13,607,423	30,676,718
Other Revenues [2/]	4,652,559	3,104,737	5,843,187
Total Sources of Funds	187,790,238	223,916,735	287,886,817
Uses of Funds			
Energy	39,656,635	40,184,442	35,233,331
Personnel & Related	37,948,022	39,671,513	37,430,481
Operating Capital & Expenses	34,357,566	73,740,385	63,839,825
PAYG Capital Expenses [3/]			
Total Uses of Funds	111,962,223	153,596,340	136,503,637
Add Beginning Unrestricted Funds [4/]	442,315,079	423,601,762	505,592,327
Net Available for Debt Service	518,143,094	493,922,157	656,975,507
Total Existing Obligations			
Annual Debt Service [5/]	162,911,866	169,717,981	153,769,711
Debt Service Coverage Ratio	3.18	2.91	4.27

Continued on next page

1/ Prior to fiscal 2007, connection charges reflected the net cash received from this revenue source. Amounts for years after fiscal 2006 have been modified with a refund contingency.

2/Includes receipts from the Southern Nevada Public Lands Management Act (SNPLMA), raw water facilities charge and minor billings to purveyor members (Big Bend, City of Las Vegas and Clark County Reclamation District).

3/In 2008, SNWA ceased pay-as-you-go for the foreseeable future.

4/ Unrestricted funds include unrestricted cash and investments as shown on the Comprehensive Annual Financial Report and sales tax proceeds on hand regardless of classification.

5/Includes the interest amounts paid on the 2004 Commercial Paper Notes. Net of the BAB Credit received in fiscal year 2010 with respect to the 2009A Bonds and 2009C Bonds.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Pledged Revenue Coverage (Continued)
Last Ten Fiscal Years

	Fiscal Year Ended June 30,			
	2007	2006	2005	2004
Sources of Funds				
Wholesale Delivery Charge	$ 121,449,812	$ 115,532,042	$ 100,460,557	$ 97,162,446
Regional Connection Charge [1/]	119,561,208	188,454,011	177,493,765	154,146,853
Regional Water Charges	18,829,058	14,213,843	10,101,548	10,139,199
Regional Infrastructure Surcharge				
Sales Tax	55,060,027	54,158,795	49,945,593	42,835,002
Groundwater Program Fees	1,953,768	1,952,143	2,039,010	2,114,246
Las Vegas Wash Program Fees	842,700	1,074,374	1,071,600	1,037,400
Interest Income & Capitalized Int	41,088,297	13,474,740	19,548,835	9,613,713
Other Revenues [2/]	41,594,501	137,335,841	69,010,167	35,928,848
Total Sources of Funds	400,379,371	526,195,789	429,671,075	352,977,707
Uses of Funds				
Energy	47,268,452	56,584,777	54,461,787	55,632,005
Personnel & Related	33,754,022	32,131,870	29,082,767	26,536,039
Operating Capital & Expenses	43,170,486	38,966,643	51,321,569	42,265,915
PAYG Capital Expenses [3/]	144,242,303	209,332,517	74,245,090	116,092,079
Total Uses of Funds	268,435,263	337,015,807	209,111,213	240,526,038
Add Beginning Unrestricted Funds [4/]	491,405,174	430,008,393	328,473,490	345,377,567
Net Available for Debt Service	623,349,282	619,188,375	549,033,352	457,829,236
Total Existing Obligations				
Annual Debt Service [5/]	144,484,915	140,855,868	125,502,473	119,659,294
Debt Service Coverage Ratio	4.31	4.40	4.37	3.83

1/ Prior to fiscal 2007, connection charges reflected the net cash received from this revenue source. Amounts for years after fiscal 2006 have been modified with a refund contingency.

2/ Includes receipts from the Southern Nevada Public Lands Management Act (SNPLMA), raw water facilities charge and minor billings to purveyor members (Big Bend, City of Las Vegas and Clark County Reclamation District).

3/ In 2008, SNWA ceased pay-as-you-go for the foreseeable future.

4/ Unrestricted funds include unrestricted cash and investments as shown on the Comprehensive Annual Financial Report and sales tax proceeds on hand regardless of classification.

5/ Includes the interest amounts paid on the 2004 Commercial Paper Notes. Net of the BAB Credit received in fiscal year 2010 with respect to the 2009A Bonds and 2009C Bonds.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)

Demographic Statistics

Clark County, Nevada
Last Ten Fiscal Years

Fiscal Year	Population (1)	Per Capita Income (2)	Clark County Personal Income In Million $ (2)	Median Household Income (3)
2013	2,034,140	$37,424	$76,125.7	$52,394
2012	2,000,759	36,542	73,111.7	51,159
2011	1,967,926	35,680	70,289.1	48,927
2010	1,953,422	34,668	67,738.3	52,610
2009	1,939,407	34,950	67,781.4	55,932
2008	1,912,349	38,842	74,279.8	58,874
2007	1,867,817	39,105	73,040.2	59,727
2006	1,803,774	38,183	68,874.1	59,119
2005	1,729,522	37,109	64,181.4	56,646
2004	1,662,773	33,959	56,465.9	54,380

Fiscal Year	School Enrollment (4)	Total Labor Force Thousands (5)	Unemployment Rate (5)
2013	311,429	992.0	10.1%
2012	308,447	980.7	12.1%
2011	309,893	992.0	14.4%
2010	309,476	970.7	15.3%
2009	311,240	974.5	13.0%
2008	308,783	960.7	6.3%
2007	302,763	933.5	4.6%
2006	291,510	910.0	4.4%
2005	280,275	915.4	4.3%
2004	269,960	870.6	4.7%

(1) Sources -- 2004 - 2009 U.S. Bureau of Economic Analysis, CA1-3 Population, Clark County, Nevada; 2010 to 2012, United States Census Bureau (estimates); 2013 trended

(2) Source -- U.S. Bureau of Economic Analysis, CA1-3, Clark County, Nevada, 2012 and 2013 trended.

(3) Source -- Automatic Data Processing report 2004 to 2011 ; 2012 and 2013 trended

(4) Source -- Clark County School District, Average Daily Membership.

(5) Source -- State of Nevada -- Department of Employment, Training and Rehabilitation (DETR), Clark County. In years where the DETR had conflicting information, the more conservative number was used.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Secured Tax Roll
Clark County, Nevada
2013 - 2014

Taxpayer	Taxable Assessed	Taxable Appraised
1. MGM Resorts International	$ 2,277,163,442	$ 6,506,181,263
2. NV Energy	1,713,383,806	4,895,382,303
3. Caesars Entertainment Corporation	1,487,183,551	4,249,095,860
4. Las Vegas Sands Corporation	838,249,998	2,394,999,994
5. Wynn Resorts Limited	660,875,539	1,888,215,826
6. Station Casinos Incorporated	452,546,828	1,292,990,937
7. Boyd Gaming Corporation	269,969,063	771,340,180
8. Southwest Gas Corporation	168,805,479	482,301,369
9. General Growth Properties Incorporated	165,123,869	471,782,483
10. Universal Health Services Incorporated	152,256,237	435,017,820
Total 2013 - 2014	$ 8,185,557,812	$ 23,387,308,035

SOURCE: Clark County, Nevada, assessor's office

* Most recent data available

Southern Nevada Water Authority
Enterprise Fund

Top Ten Employers [1][2]

Clark County, Nevada
Fiscal Year Ended June, 2012 and Fiscal Year Ended June, 2003

Employer	FY 2012			FY 2003 [3]		
Trade Name	Employees	Ranking	(4)	Employees	Ranking	(4)
Clark County School District	30000 to 39999	1	3.53%	20000 to 29999	1	3.11%
Clark County	8000 to 8499	2	0.83%	9000 to 9499	2	1.15%
Wynn Las Vegas	7500 to 7999	3	0.78%			
Bellagio LLC	7500 to 7999	4	0.78%			
Mgm Grand Hotel/Casino	7500 to 7999	5	0.78%			
Aria Resort & Casino LLC	7000 to 7499	6	0.73%			
Mandalay Bay Resort And Casino	6000 to 6499	7	0.63%	6000 to 6499	3	0.78%
Caesars Palace	5500 to 5999	8	0.58%	4500 to 4999	8	0.59%
Las Vegas Metropolitan Police	5000 to 5499	9	0.53%	4500 to 4999	7	0.59%
University Of Nevada Las Vegas	5000 to 5499	10	0.53%	5500 to 5999	5	0.72%
Mirage Casino-Hotel				5500 to 5999	4	0.72%
State Of Nevada				5000 to 5499	6	0.65%
Rio Suite Hotel & Casino				4000 to 4499	9	0.53%
University Medical Center				3500 to 3999	10	0.47%
Total Labor Force	*991,956*			*804,079*		

(1) Source -- Nevada Workforce Informer, Nevada Employer Directory, GASB 44 report as of June, 2013. Most recent figures available. Trade names are as-described in the source document. No attempt has been made to trace corporate name changes if any.

(2) Nevada law prohibits the disclosure of exact employee counts. All employee counts are shown in ranges. Calculations of total labor force per employer (column (4)) are estimates.

(3) Only the top ten employers of the period are listed.

(4) Estimated percent of total labor force attributed to this employer

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Building Permits Issued
Clark County, Nevada
Last Ten Calendar Years

	Calendar Year				
Classification	**2012**	**2011**	**2010**	**2009**	**2008**
Single Family Residential	2,966	1,599	2,023	1,930	2,451
Townhouses			6		11
Condominiums	18	13	54	89	115
Duplex/Apartment Buildings	20	40	8	19	99
Hotels & Motels	3			3	38
Moblie Home Parks				3	1
Guest Houses	52	23	29	28	46
Buildings	175	176	143	188	461
Structures Subtotal [1/]	**3,234**	**1,851**	**2,263**	**2,260**	**3,222**
Other New Projects [2/]	3,205	3,271	3,122	3,836	4,872
Total Permits Issued for New Projects	6,439	5,122	5,385	6,096	8,094
Permits for Add-ons, Alterations, Repair & Completion	4,402	4,420	4,665	5,122	5,731
Total Permits Issued	10,841	9,542	10,050	11,218	13,825

	Calendar Year				
Classification	**2007**	**2006**	**2005**	**2004**	**2003**
Single Family Residential	5,859	9,765	13,463	14,280	11,150
Townhouses				22	29
Condominiums	203	257	292	253	147
Duplex/Apartment Buildings	40	35	143	41	498
Hotels & Motels	61	33	23	69	33
Moblie Home Parks			3	2	1
Guest Houses	105	76	61	54	48
Buildings	844	893	1,050	858	865
Structures Subtotal [1/]	**7,112**	**11,059**	**15,035**	**15,579**	**12,771**
Other New Projects [2/]	6,823	8,022	8,273	8,226	7,875
Total Permits Issued for New Projects	13,935	19,081	23,308	23,805	20,646
Permits for Add-ons, Alterations, Repair & Completion	6,247	7,159	7,415	7,071	6,852
Total Permits Issued	20,182	26,240	30,723	30,876	27,498

Source -- Clark County Development Services, Department of Building

1/ Structures permits are important to SNWA as they translate into possible connection sales.

2/ Examples include signs, pools, spas, garages, walls, fences, and grading permits.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Full Time Equivalent Employees (FTE) by Department / Function [1] [2]
Last Ten Fiscal Years

Department[3]	Function	Fiscal Year Ended June 30									
		2013	2012	2011	2010	2009	2008	2007	2006	2005	2004
Southern Nevada Water Systems	Water Transmission	195.9	192.7	199.7	188.5	190.0	181.0	173.0	167.0	165.0	166.0
Las Vegas Valley Water District (LVVWD) Departments	Various Administrative, Construction and Maintenance Services	113.6	108.8	124.7	152.7	119.2	103.4	94.0	81.8	77.9	70.6
SNWA Engineering	Planning and Constructing Infrastructure	70.8	77.8	78.9	66.0	64.0	59.0	46.0	51.0	41.0	41.0
SNWA Water and Environmental Resources	Water Resources, Conservation, Ranch Operations, Environmental Resources	48.8	55.2	46.0	35.0	31.0					
SNWA Groundwater Resources	Procure New Water Sources	48.1	51.0	63.0	64.5	59.0	91.0	85.0	71.2	55.6	53.3
SNWA Surface Water Resources	Acquiring and Managing River Water Resources	14.0	25.0	24.0	20.0	35.0	16.0				
SNWA Energy Management	Acquiring and Managing Energy Resources	5.0	5.0	5.0	5.0	7.0	8.0	6.4			
GRAND TOTAL		**496.2**	**515.5**	**541.3**	**531.7**	**505.2**	**458.4**	**404.4**	**371.0**	**339.5**	**330.9**

Source -- LVVWD Human Resources department

(1) SNWA has no employees of its own. FTEs in this chart are employed by LVVWD. SNWA reimburses LVVWD for those expenses.

(2) FTE numbers are budgeted numbers. FTEs can be determined by department through reports generated during the annual budget process. However the payroll system can not at the present time determine FTEs from actual expenses because of the sharing between LVVWD and SNWA as described in footnote (1).

(3) Departments are in a constant state of rearrangement and realignment to better support projects of the SNWA. Therefore fluctuations in FTE levels by department are seen from year to year. Shaded areas designate that the indicated department did not exist at the time of budget preparation.

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Operating Indicators by Department / Function
Last Ten Years

	Calendar Year Ended December 31									
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
SNWA Operations										
System Capacity in Million Gallons per Day	1,015.0	1,015.0	1,015.0	1,015.0	1,015.0	900.0	900.0	900.0	750.0	750.0
Water Billed in Million Gallons per Day										
Average Day	361.0	360.1	374.2	354.7	368.2	402.7	399.6	371.4	356.2	379.7
Maximum Day	504.0	479.2	540.1	544.9	531.0	582.0	596.0	603.0	607.0	563.0
SNWA Resources										
Conservation -- Per Capita Water Usage in Gallons Per Day	222	222	223	240	248	255	264	269	274	294

	Fiscal Year Ended June 30									
	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004
SNWA Engineering										
Construction Contract Payments (Million Dollars)	$109	$113	$151	$226	$232	$371	$148	$145	$153	$164
US Department of Interior										
Lake Mead Level at Hoover Dam Elevation, in Feet	1,106	1,116	1,102	1,089	1,095	1,105	1,114	1,128	1,140	1,127

Source -- SNWA departments or US agency referenced

Southern Nevada Water Authority
Enterprise Fund (Unaudited)
Capital Asset Statistics
by Department / Function
Last Ten Fiscal Years

	Fiscal Year Ended June 30				
	2013	2012	2011	2010	2009
Miles of Pipeline	163	163	163	163	163
Ozone Treatment Capacity in Million Gallons per Day	1015	1015	1015	1015	1015
Ozone Treatment Facilities	3	3	3	3	3
Pumping Plants	31	31	31	31	31
Reservoirs & Forebays	32	32	32	32	28
Metering Stations	36	36	36	35	35
Rechlorination Facilities	11	11	11	11	11
Plant Facilities	3	3	3	3	3

	Fiscal Year Ended June 30				
	2008	2007	2006	2005	2004
Miles of Pipeline	163	163	163	163	155
Ozone Treatment Capacity in Million Gallons per Day	900	900	900	900	750
Ozone Treatment Facilities	2	2	2	2	2
Pumping Plants	30	30	30	30	27
Reservoirs & Forebays	28	28	28	28	27
Metering Stations	35	34	34	34	31
Rechlorination Facilities	9	9	9	9	12
Plant Facilities	2	2	2	2	2

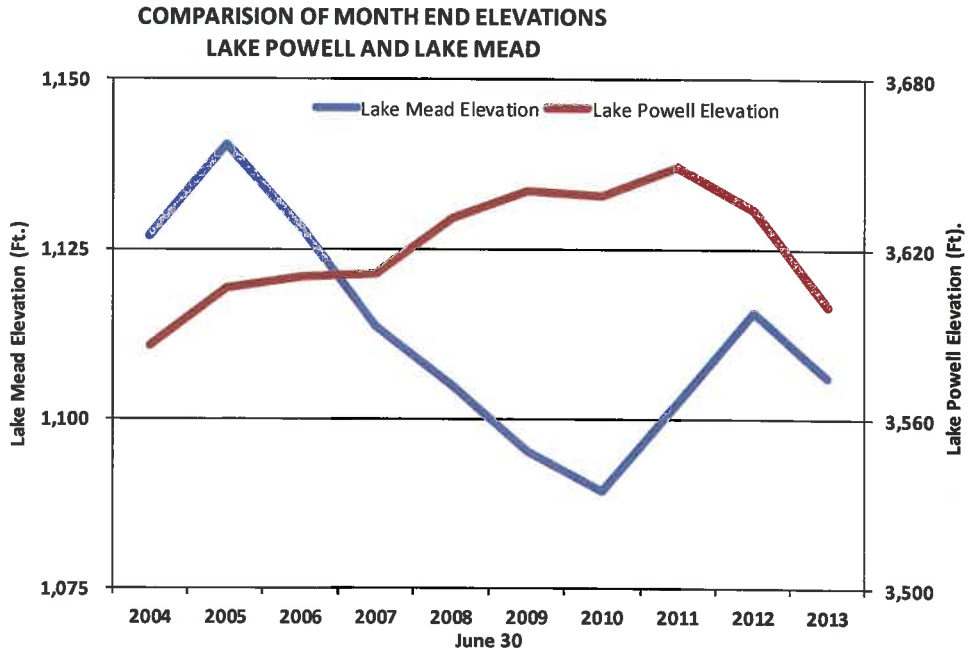
Source -- SNWA Operations department

Southern Nevada Water Authority
Enterprise Fund (Unaudited)

Lake Elevations by Quarter
Measured in Feet at Dam

Last Ten Fiscal Years

	Lake Mead	Lake Powell		Lake Mead	Lake Powell
30-Sep-03	1,142.1	3,626.5	30-Sep-08	1,105.8	3,601.9
31-Dec-03	1,139.1	3,620.1	31-Dec-08	1,111.0	3,594.6
31-Mar-04	1,138.7	3,607.1	31-Mar-09	1,107.4	3,589.8
30-Jun-04	1,126.9	3,616.2	30-Jun-09	1,095.3	3,631.1
30-Sep-04	1,125.9	3,603.7	30-Sep-09	1,093.7	3,626.9
31-Dec-04	1,130.0	3,597.2	31-Dec-09	1,096.3	3,617.9
31-Mar-05	1,147.7	3,582.8	31-Mar-10	1,100.7	3,610.4
30-Jun-05	1,140.5	3,586.2	30-Jun-10	1,089.3	3,640.5
30-Sep-05	1,138.4	3,570.8	30-Sep-10	1,083.8	3,635.4
31-Dec-05	1,137.5	3,564.4	31-Dec-10	1,086.3	3,626.2
31-Mar-06	1,139.5	3,555.9	31-Mar-11	1,096.4	3,619.4
30-Jun-06	1,128.3	3,606.3	30-Jun-11	1,102.4	3,638.8
30-Sep-06	1,125.4	3,619.4	30-Sep-11	1,116.0	3,653.0
31-Dec-06	1,128.1	3,610.7	31-Dec-11	1,132.8	3,639.8
31-Mar-07	1,125.8	3,652.4	31-Mar-12	1,129.4	3,635.3
30-Jun-07	1,113.5	3,651.8	30-Jun-12	1,115.8	3,633.9
30-Sep-07	1,111.1	3,601.7	30-Sep-12	1,115.2	3,621.6
31-Dec-07	1,114.8	3,603.4	31-Dec-12	1,120.4	3,609.8
31-Mar-08	1,115.7	3,598.8	31-Mar-13	1,118.6	3,599.0
30-Jun-08	1,105.0	3,611.5	30-Jun-13	1,106.0	3,600.1



Source -- US Department of Interior, Bureau of Reclamation, Lower Coloardo Region

Southern Nevada Water Authority

Debt History (Unaudited)

as of June 30, 2013

Issued By	Debt Name	Issue Date	Funds Used For	Original Amount $	Refunded Amount $	Refund Source	Principal Paid $	Balance @ 6/30/2013($)
CRC	1967 Debenture #1	Sept 1967	Interim Water Acquisition Planning & Design	10,000	10,000	1968 Bonds		
CRC	1967 Debenture #2	Oct 1967	Interim Water Acquisition Planning & Design	25,000	25,000	1968 Bonds		
CRC	1967 Debenture #3	Nov 1967	Interim Water Acquisition Planning & Design	365,000	365,000	1968 Bonds		
CRC	1968 Bonds	Jun 1968	First stage of the state facilities AMS Treatment Plant	8,900,000	5,580,000	1994 Bonds	3,320,000	
CRC	Federal Replacement Contract # 1	Mar 1973	First stage of the federal facilities - transmission	51,558,293	39,636,913	SNWA 0601 Bonds	11,921,380	
CRC	1978 A Bonds	Jan 1979	Second stage of the state facilities - design & equipment purchase	13,000,000	9,125,000	1994 Bonds	3,875,000	
CRC	1978 B Bonds	Feb 1979	Second stage of the state facilities -- construction	47,000,000	36,220,000	1993 Bonds	10,780,000	
CRC	1982 Debenture	Jul 1982	New computer system for the second stage state facilities	3,000,000	3,000,000	1978 C Bonds		
CRC	Federal Repayment Contract # 2	Mar 1983	Second stage of the federal facilities - transmission	131,480,402	122,617,366	SNWA 0601 Bonds	8,863,036	
CRC	1978 C Bonds	Jul 1984	Refund the 1982 debenture	3,000,000	2,595,000	1990 Bonds	405,000	
CRC	1978 D Bonds	Aug 1986	Relocate the Las Vegas Lateral under the Las Vegas Wash	11,000,000	8,550,000	1993 Bonds	2,450,000	
CRC	1990 Bonds	Aug 1990	Refund the 1978 C Bond and start the Communications Project	6,550,000	3,340,000	1993 Bonds	3,210,000	
CRC	1992 Bonds	Nov 1992	Lab equipment improvements Maintenance & operations facilities	9,815,000	5,125,000	CRC 1997B Bonds	4,690,000	

Continued

Southern Nevada Water Authority

Debt History (Unaudited) (Continued)

as of June 30, 2013

Issued By	Debt Name	Issue Date	Funds Used For	Original Amount $	Refunded Amount $	Refund Source	Principal Paid $	Balance @ 6/30/2013($)
CRC	1993 Bonds	Nov 1993	Refund the 1978B, 1978D and 1990 Bonds	46,805,000	23,125,000	CRC 2003C Bonds	23,680,000	
CRC	1994 Bonds	Nov 1994	Refund the 1968 & 1978A bonds & begin construction on the SNWA CIP	170,380,000	141,610,000	CRC 1995 & 2005H Bonds	28,770,000	
LVVWD	SNWA Mar 1995 Bonds	Mar 1995	SNWA CIP Construction	20,000,000	12,775,000	LVVWD 0498 & 2005B Bonds	7,225,000	
LVVWD	SNWA Jul 1995 Bonds	Jul 1995	SNWA CIP Construction	30,000,000	18,675,000	LVVWD 0498 & 2005B Bonds	11,325,000	
CRC	1995 Bonds	Dec 1995	Partially Refund the CRC 1994 Bonds	118,590,000	118,590,000	CRC 2006D Refunding	0	
LVVWD	SNWA Jul 1996 Bonds	Jul 1996	SNWA CIP Construction	180,000,000	168,300,000	LVVWD 0498 & 2005B Bonds	11,700,000	
CRC	1997A Bonds	Sep 1997	Phase I of the Power Delivery Project	49,270,000	41,550,000	CRC 2005I Bonds	7,720,000	
CRC	1997B Bonds	Sep 1997	Partially Refund the CRC 1992 Bonds	5,545,000	2,210,000	CRC 2010B	3,335,000	
LVVWD	SNWA Commercial Paper	Jan 1998	SNWA CIP Construction	250,000,000	250,000,000	LVVWD 0103 Bonds		
LVVWD	SNWA Apr 1998 Bonds	Apr 1998	Partially Refund the LVVWD 0395, 0795, & 0796 Bonds	190,255,000	183,420,000	LVVWD 2008 B Bonds	6,835,000	
SNWA	SNWA 0798 Bonds State Bond Bank	Jul 1998	SNWA CIP Construction	300,000,000	275,750,000	SNWA 2005F and SNWA 2013A Bonds	24,250,000	
CRC	1999A Bonds	Sep 1999	Phase II of the Power Delivery Project	25,730,000	22,295,000	CRC 2005I Bonds	3,435,000	
SNWA	State Drinking Water Revolving Fund Loan #1	Dec 1999	SNWA CIP Construction	12,269,695			6,950,959	5,318,736

Continued

Southern Nevada Water Authority

Debt History (Unaudited) (Continued)

as of June 30, 2013

Issued By	Debt Name	Issue Date	Funds Used For	Original Amount $	Refunded Amount $	Refund Source	Principal Paid $	Balance @ 6/30/2013($)
SNWA	SNWA 0700 Bonds Clark Co. Bond Bank	Jul 2000	SNWA CIP Construction	200,000,000	175,105,000	SNWA 2006 & SNWA 2009 Refunding	24,895,000	
SNWA	SNWA 0601 Bonds Clark Co Bond Bank	Jun 2001	SNWA CIP Construction Repay Federal Contracts Federal Contracts	250,000,000	222,095,000	SNWA 2006, 1106 2009, LVVWD 2011C & 2012A Refundings	27,905,000	0
SNWA	State Drinking Water Revolving Fund Loan #2	Jun 2001	SNWA CIP Construction	10,000,000			4,905,451	5,094,549
SNWA	SNWA 1102 Bonds Clark Co Bond Bank	Nov 2002	SNWA CIP Construction	200,000,000	180,790,000	SNWA 1106, 2009, LVVWD 2011C & 2012A Refundings	19,210,000	0
LVVWD	SNWA Commercial Paper Pay Off	Jan 2003	Refund Jan 1998 LVVWD Commercial Paper Program	250,000,000	212,265,000	SNWA 2009D & LVVWD 2011C Refundings	37,735,000	0
CRC	2003C Bonds	Sep 2003	Partially Refund CRC 1993 Bonds	21,515,000	455,000	CRC 2010B	21,060,000	0
LVVWD	SNWA Commercial Paper	Mar 2004	SNWA CIP Construction & Silver-hawk Purchase	400,000,000			0	400,000,000
LVVWD	2005B Refunding Bonds	May 2005	Partially Refund LVVWD 0395, 0795, and 0796 Bonds	27,925,000			27,925,000	
SNWA	2005F Refunding Bonds	May 2005	Partially Refund SNWA 0798 Bonds	249,365,000	52,335,000	LVVWD 2011B & 2011C Refundings	23,510,000	173,520,000
CRC	2005H Refunding Bonds	Apr 2005	Partially Refund CRC 1994 Bonds	36,130,000			4,510,000	31,620,000
CRC	2005I Refunding Bonds	Apr 2005	Partially Refund CRC 1997A & 1999A Bonds	65,300,000	10,305,000	LVVWD 2011B Refunding	7,240,000	47,755,000
SNWA	2006 Refunding Bonds	May 2006	Partially Refund SNWA 0700 & SNWA 0601 Bonds	242,880,000	25,555,000		7,115,000	210,210,000

Continued

Southern Nevada Water Authority

Debt History (Unaudited) (Continued)

as of June 30, 2013

Issued By	Debt Name	Issue Date	Funds Used For	Original Amount $	Refunded Amount $	Refund Source	Principal Paid $	Balance @ 6/30/2013(5)
CRC	2006D Refunding Bonds	July 2006	Refund CRC 1995 Bonds	111,840,000	25,865,000	CRC 2010B & LVVWD 2011B	19,775,000	66,200,000
SNWA	1106 New Money & Refunding Bond	Nov 2006	SNWA CIP Construction & Partial Refund of SNWA 0601 & 1102 Bonds	604,140,000	61,340,000	SNWA 2009 & LVVWD 2011B / C Refundings	9,780,000	533,020,000
LVVWD	2008B Refunding Bonds	Feb 2008	Refund LVVWD April 1998 Bond	171,720,000	51,930,000	LVVWD 2011A Refunding	3,455,000	116,335,000
SNWA	2008 New Money Bonds	July 2008	SNWA CIP Construction	400,000,000	37,845,000	SNWA 2009 & LVVWD 2011C Refundings	0	362,155,000
SNWA	2008 Clean Renewable Energy Bonds	July 2008	SNWA CIP Construction	6,900,000			2,300,000	4,600,000
LVVWD	2009A Build America Bonds	Aug 2009	SNWA CIP Construction	90,000,000			0	90,000,000
LVVWD	2009B New Money Bonds	Aug 2009	SNWA CIP Construction (Capital-ized Interest)	10,000,000			0	10,000,000
SNWA	2009 Refunding	Nov 2009	Partial Refund of SNWA 0700 SNWA 0601, SNWA 1102, SNWA 1106. SNWA 2008 Bonds	50,000,000			1,780,000	48,220,000
SNWA	2009 Water Rev Water Revenue Bonds	Dec 2009	SNWA CIP Construction	2,214,457			126,540	2,087,917
LVVWD	2009C Build America Bonds	Dec 2009	SNWA CIP Construction	348,115,000			0	348,115,000
LVVWD	2009D New Money & Refunding Bonds	Dec 2009	Capitalized Interest & Partial Refund of LVVWD Commercial Paper Payoff (Jan 03)	71,965,000			2,780,000	69,185,000

Continued

Southern Nevada Water Authority

Debt History (Unaudited) (Continued)

as of June 30, 2013

Issued By	Debt Name	Issue Date	Funds Used For	Original Amount $	Refunded Amount $	Refund Source	Principal Paid $	Balance @ 6/30/2013 (5)
CRC	2010B Refunding Bonds	June 2010	Refund CRC1997B & Partial Refund of CRC 2003C & 2006D Bonds	7,405,000			0	7,405,000
LVVWD	2011A Refunding Bonds	May 2011	Partial Refund LVVWD 2008B Bonds	58,110,000			0	58,110,000
LVVWD	2011B Refunding Bonds	Oct 2011	Partial Refund CRC 2005I, SNWA 2005F, CRC 2006D, & SNWA 1106	129,650,000			0	129,650,000
LVVWD	2011C Refunding Bonds	Oct 2011	Partial Refund SNWA 2005F, 2001, 2002, 1106, 2008, & 2003B	267,815,000			8,820,000	258,995,000
SNWA	2012 Refunding Bonds	June 2012	Refund SNWA 0601 and SNWA 1102	85,015,000			0	85,015,000
LVVWD	2012B New Money Bonds	July 2012	SNWA CIP Construction	360,000,000			0	360,000,000
SNWA	State 2013A Refunding Bonds	Feb 2013	Refunding SNWA 0798 Bonds State Bond Bank	21,720,000			0	21,720,000
				6,434,272,847	2,550,374,279		439,567,366	3,444,331,202

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal Year	SRF Loan Dec 1999			SRF Loan Jun 2001		
	Principal	Interest	Total	Principal	Interest	Total
2014	$ 680,745	$ 185,918	$ 866,663	$ 525,174	$ 171,768	$ 696,941
2015	705,542	161,121	866,663	543,502	153,439	696,941
2016	731,242	135,421	866,663	562,470	134,472	696,941
2017	757,878	108,785	866,663	582,099	114,842	696,941
2018	785,484	81,179	866,663	602,414	94,527	696,941
2019	814,096	52,567	866,663	623,438	73,503	696,941
2020	843,750	22,913	866,663	645,196	51,746	696,941
2021				667,712	29,229	696,941
2022				342,545	5,926	348,471
2023						
2024						
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Totals	$ 5,318,736	$ 747,902	$ 6,066,638	$ 5,094,549	$ 829,451	$ 5,924,000

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal	LVVWD Tax-Exempt Commercial Paper			SNWA 2005F Refunding Bonds		
Year	Principal	Interest	Total	Principal	Interest	Total
2014	$ 400,000,000	$ 8,000,000	$ 408,000,000	$ -	$ 8,676,000	$ 8,676,000
2015				-	8,676,000	8,676,000
2016				-	8,676,000	8,676,000
2017				12,135,000	8,372,625	20,507,625
2018				12,755,000	7,750,375	20,505,375
2019				13,410,000	7,096,250	20,506,250
2020				14,095,000	6,408,625	20,503,625
2021				14,815,000	5,685,875	20,500,875
2022				15,580,000	4,926,000	20,506,000
2023				16,380,000	4,127,000	20,507,000
2024				17,220,000	3,287,000	20,507,000
2025				18,095,000	2,404,125	20,499,125
2026				19,030,000	1,476,000	20,506,000
2027				20,005,000	500,125	20,505,125
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2043						
Totals	$ 400,000,000	$ 8,000,000	$ 408,000,000	$ 173,520,000	$ 78,062,000	$ 251,582,000

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal Year	CRC 2005H Refunding Bonds			CRC 2005I Refunding Bonds		
	Principal	Interest	Total	Principal	Interest	Total
2014	$ -	$ 1,501,950	$ 1,501,950	$ -	$ 2,266,938	$ 2,266,938
2015	-	1,501,950	1,501,950	-	2,266,938	2,266,938
2016	-	1,501,950	1,501,950	-	2,266,938	2,266,938
2017	-	1,501,950	1,501,950	2,905,000	2,194,313	5,099,313
2018	-	1,501,950	1,501,950	3,050,000	2,045,438	5,095,438
2019	-	1,501,950	1,501,950	3,190,000	1,897,413	5,087,413
2020	-	1,501,950	1,501,950	3,335,000	1,750,600	5,085,600
2021	-	1,501,950	1,501,950	3,485,000	1,592,794	5,077,794
2022	-	1,501,950	1,501,950	3,650,000	1,423,338	5,073,338
2023	-	1,501,950	1,501,950	3,820,000	1,245,925	5,065,925
2024	-	1,501,950	1,501,950	4,000,000	1,060,200	5,060,200
2025	10,060,000	1,501,950	11,561,950	4,185,000	865,806	5,050,806
2026	10,535,000	1,024,100	11,559,100	4,380,000	662,388	5,042,388
2027	11,025,000	523,688	11,548,688	4,585,000	449,469	5,034,469
2028				4,805,000	226,456	5,031,456
2029				1,630,000	73,625	1,703,625
2030				735,000	17,456	752,456
2031						
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2043						
Totals	$ 31,620,000	$ 19,571,188	$ 51,191,188	$ 47,755,000	$ 22,306,031	$ 70,061,031

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal Year	SNWA 2006 Refunding Bonds			SNWA 1106 Bonds		
	Principal	Interest	Total	Principal	Interest	Total
2014	$ -	$ 9,806,469	$ 9,806,469	$ -	$ 23,702,163	$ 23,702,163
2015	-	9,806,469	9,806,469	-	23,702,163	23,702,163
2016	14,845,000	9,806,469	24,651,469	-	23,702,163	23,702,163
2017	15,515,000	9,157,000	24,672,000	16,010,000	23,301,913	39,311,913
2018	16,240,000	8,458,825	24,698,825	16,815,000	22,481,288	39,296,288
2019	16,990,000	7,728,025	24,718,025	17,660,000	21,619,413	39,279,413
2020	17,770,000	6,942,238	24,712,238	18,555,000	20,714,038	39,269,038
2021	18,590,000	6,120,375	24,710,375	19,505,000	19,762,538	39,267,538
2022	19,470,000	5,237,350	24,707,350	20,500,000	18,762,413	39,262,413
2023	9,385,000	4,312,525	13,697,525	32,865,000	17,428,288	50,293,288
2024	9,885,000	3,866,738	13,751,738	34,520,000	15,743,663	50,263,663
2025	10,410,000	3,397,200	13,807,200	36,250,000	13,974,413	50,224,413
2026	10,970,000	2,902,725	13,872,725	38,070,000	12,116,413	50,186,413
2027	11,560,000	2,381,650	13,941,650	39,670,000	10,470,438	50,140,438
2028	12,185,000	1,832,550	14,017,550	41,030,000	9,058,188	50,088,188
2029	12,845,000	1,253,763	14,098,763	31,335,000	7,556,788	38,891,788
2030	13,550,000	643,625	14,193,625	18,110,000	6,377,256	24,487,256
2031				18,980,000	5,506,600	24,486,600
2032				19,955,000	4,533,225	24,488,225
2033				20,980,000	3,509,850	24,489,850
2034				21,830,000	2,657,900	24,487,900
2035				22,665,000	1,820,488	24,485,488
2036				23,530,000	957,575	24,487,575
2037				24,185,000	302,313	24,487,313
2038						
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2042						
2043						
Totals	$ 210,210,000	$ 93,653,994	$ 303,863,994	$ 533,020,000	$ 309,761,481	$ 842,781,481

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal Year	CRC 2006D Bonds			LVVWD 2008B		
	Principal	Interest	Total	Principal	Interest	Total
2014	$ -	$ 3,270,763	$ 3,270,763	$ -	$ 5,623,931	$ 5,623,931
2015	-	3,270,763	3,270,763	-	5,623,931	5,623,931
2016	6,020,000	3,270,763	9,290,763	10,445,000	5,623,931	16,068,931
2017	6,320,000	2,969,763	9,289,763	8,420,000	5,101,681	13,521,681
2018	6,635,000	2,653,763	9,288,763	8,835,000	4,680,681	13,515,681
2019	6,965,000	2,322,013	9,287,013	9,285,000	4,238,931	13,523,931
2020	7,310,000	1,973,763	9,283,763	9,760,000	3,774,681	13,534,681
2021	7,665,000	1,608,263	9,273,263	10,255,000	3,286,681	13,541,681
2022	8,030,000	1,244,175	9,274,175	10,780,000	2,773,931	13,553,931
2023	8,420,000	862,750	9,282,750	11,330,000	2,234,931	13,564,931
2024	8,835,000	441,750	9,276,750	11,825,000	1,753,406	13,578,406
2025				12,385,000	1,206,500	13,591,500
2026				13,015,000	618,321	13,633,321
2027						
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Totals	$ 66,200,000	$ 23,888,525	$ 90,088,525	$ 116,335,000	$ 46,541,539	$ 162,876,539

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal Year	SNWA 2008			SNWA Clean Renewable Energy 2008		
	Principal	Interest	Total	Principal	Interest	Total
2014	$ -	$ 18,107,750	$ 18,107,750	$ 460,000	$ 51,129	$ 511,129
2015	-	18,107,750	18,107,750	460,000	45,747	505,747
2016	8,740,000	18,107,750	26,847,750	460,000	40,365	500,365
2017	9,180,000	17,670,750	26,850,750	460,000	34,983	494,983
2018	9,635,000	17,211,750	26,846,750	460,000	29,601	489,601
2019	10,120,000	16,730,000	26,850,000	460,000	24,219	484,219
2020	10,625,000	16,224,000	26,849,000	460,000	18,837	478,837
2021	11,155,000	15,692,750	26,847,750	460,000	13,455	473,455
2022	11,715,000	15,135,000	26,850,000	460,000	8,073	468,073
2023	12,300,000	14,549,250	26,849,250	460,000	2,691	462,691
2024	12,915,000	13,934,250	26,849,250			
2025	13,560,000	13,288,500	26,848,500			
2026	14,240,000	12,610,500	26,850,500			
2027	14,950,000	11,898,500	26,848,500			
2028	15,700,000	11,151,000	26,851,000			
2029	16,485,000	10,366,000	26,851,000			
2030	17,305,000	9,541,750	26,846,750			
2031	18,170,000	8,676,500	26,846,500			
2032	19,080,000	7,768,000	26,848,000			
2033	20,035,000	6,814,000	26,849,000			
2034	21,035,000	5,812,250	26,847,250			
2035	22,090,000	4,760,500	26,850,500			
2036	23,195,000	3,656,000	26,851,000			
2037	24,355,000	2,496,250	26,851,250			
2038	25,570,000	1,278,500	26,848,500			
2039						
2040	-	-	-			
2041						
2042						
2043						
Totals	$ 362,155,000	$ 291,589,250	$ 653,744,250	$ 4,600,000	$ 269,100	$ 4,869,100

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal Year	LVVWD 2009 A			LVVWD 2009 B		
	Principal	Interest*	Total	Principal	Interest	Total
2014	$ -	$ 4,348,076	$ 4,348,076	$ 350,000	$ 473,313	$ 823,313
2015	-	4,348,076	4,348,076	365,000	459,313	824,313
2016	-	4,348,076	4,348,076	380,000	444,713	824,713
2017	-	4,348,076	4,348,076	395,000	429,513	824,513
2018	-	4,348,076	4,348,076	410,000	413,713	823,713
2019	-	4,348,076	4,348,076	425,000	397,313	822,313
2020	-	4,348,076	4,348,076	440,000	380,313	820,313
2021	-	4,348,076	4,348,076	460,000	362,713	822,713
2022	-	4,348,076	4,348,076	475,000	344,313	819,313
2023	-	4,348,076	4,348,076	500,000	320,563	820,563
2024	-	4,348,076	4,348,076	525,000	295,563	820,563
2025	-	4,348,076	4,348,076	550,000	269,313	819,313
2026	-	4,348,076	4,348,076	580,000	241,813	821,813
2027	-	4,348,076	4,348,076	610,000	212,813	822,813
2028	-	4,348,076	4,348,076	640,000	182,313	822,313
2029	-	4,348,076	4,348,076	670,000	150,313	820,313
2030	-	4,348,076	4,348,076	705,000	116,813	821,813
2031	-	4,348,076	4,348,076	740,000	79,800	819,800
2032	-	4,348,076	4,348,076	780,000	40,950	820,950
2033	1,620,000	4,348,076	5,968,076			
2034	1,700,000	4,269,810	5,969,810			
2035	1,775,000	4,187,680	5,962,680			
2036	1,855,000	4,101,926	5,956,926			
2037	1,940,000	4,012,307	5,952,307			
2038	26,520,000	3,918,582	30,438,582			
2039	54,590,000	2,637,349	57,227,349			
2040						
2041						
2042						
2043						
Totals	$ 90,000,000	$ 110,089,165	$ 200,089,165	$ 10,000,000	$ 5,615,463	$ 15,615,463

* Interest shown is net of Build America Bond federal participation.

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal Year	SNWA 2009 Refunding			SNWA 2009 Water Revenue		
	Principal	Interest	Total	Principal	Interest	Total
2014	$ 1,865,000	$ 2,411,000	$ 4,276,000	$ 126,540	$ -	$ 126,540
2015	1,960,000	2,317,750	4,277,750	126,540	-	126,540
2016	2,060,000	2,219,750	4,279,750	126,540	-	126,540
2017	2,160,000	2,116,750	4,276,750	126,540	-	126,540
2018	2,270,000	2,008,750	4,278,750	126,540	-	126,540
2019	2,380,000	1,895,250	4,275,250	126,540	-	126,540
2020	2,500,000	1,776,250	4,276,250	126,540	-	126,540
2021	2,625,000	1,651,250	4,276,250	126,540	-	126,540
2022	2,755,000	1,520,000	4,275,000	126,540	-	126,540
2023	2,895,000	1,382,250	4,277,250	126,540	-	126,540
2024	3,040,000	1,237,500	4,277,500	126,540	-	126,540
2025	3,190,000	1,085,500	4,275,500	126,540	-	126,540
2026	3,350,000	926,000	4,276,000	126,540	-	126,540
2027	3,520,000	758,500	4,278,500	126,540	-	126,540
2028	3,695,000	582,500	4,277,500	126,540	-	126,540
2029	3,880,000	397,750	4,277,750	126,540	-	126,540
2030	4,075,000	203,750	4,278,750	63,270	-	63,270
2031						
2032				-	-	-
2033				-	-	-
2034						
2035						
2036						
2037						
2038						
2039						
2040						
2041						
2042						
2043						
Totals	$ 48,220,000	$ 24,490,500	$ 72,710,500	$ 2,087,917	$ -	$ 2,087,917

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal Year	LVVWD 2009 C			LVVWD 2009 D		
	Principal	Interest*	Total	Principal	Interest	Total
2014	$ -	$ 16,778,939	$ 16,778,939	$ 2,920,000	$ 3,453,738	$ 6,373,738
2015	-	16,778,939	16,778,939	3,070,000	3,307,738	6,377,738
2016	-	16,778,939	16,778,939	3,220,000	3,154,238	6,374,238
2017	-	16,778,939	16,778,939	3,385,000	2,993,238	6,378,238
2018	-	16,778,939	16,778,939	3,550,000	2,823,988	6,373,988
2019	-	16,778,939	16,778,939	3,730,000	2,646,488	6,376,488
2020	-	16,778,939	16,778,939	3,910,000	2,459,988	6,369,988
2021	-	16,778,939	16,778,939	4,110,000	2,264,488	6,374,488
2022	-	16,778,939	16,778,939	4,315,000	2,058,988	6,373,988
2023	-	16,778,939	16,778,939	4,530,000	1,843,238	6,373,238
2024	-	16,778,939	16,778,939	4,755,000	1,616,738	6,371,738
2025	-	16,778,939	16,778,939	4,955,000	1,414,650	6,369,650
2026	-	16,778,939	16,778,939	5,205,000	1,166,900	6,371,900
2027	-	16,778,939	16,778,939	5,470,000	906,650	6,376,650
2028	-	16,778,939	16,778,939	3,815,000	633,150	4,448,150
2029	-	16,778,939	16,778,939	4,015,000	432,863	4,447,863
2030	-	16,778,939	16,778,939	4,230,000	222,075	4,452,075
2031	8,215,000	16,778,939	24,993,939			
2032	25,085,000	16,372,945	41,457,945			
2033	39,105,000	15,133,217	54,238,217			
2034	40,950,000	13,200,606	54,150,606			
2035	42,860,000	11,202,737	54,062,737			
2036	44,815,000	9,157,460	53,972,460			
2037	46,860,000	7,018,890	53,878,890			
2038	48,995,000	4,782,733	53,777,733			
2039	51,230,000	2,444,693	53,674,693			
2040						
2041						
2042						
2043						
Totals	$ 348,115,000	$ 381,334,188	$ 729,449,188	$ 69,185,000	$ 33,399,150	$ 102,584,150

* Interest shown is net of Build America Bond federal participation.

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal Year	CRC 2010B			LVVWD 2011A		
	Principal	Interest	Total	Principal	Interest	Total
2014	$ 945,000	$ 273,615	$ 1,218,615	$ -	$ 2,705,755	$ 2,705,755
2015	980,000	238,697	1,218,697	100,000	2,705,755	2,805,755
2016	1,020,000	202,486	1,222,486	4,255,000	2,702,704	6,957,704
2017	1,055,000	164,797	1,219,797	4,400,000	2,560,119	6,960,119
2018	1,095,000	125,815	1,220,815	4,560,000	2,398,551	6,958,551
2019	1,135,000	85,355	1,220,355	4,745,000	2,212,867	6,957,867
2020	1,175,000	43,416	1,218,416	4,950,000	2,007,219	6,957,219
2021				5,175,000	1,783,776	6,958,776
2022				5,415,000	1,542,414	6,957,414
2023				5,680,000	1,279,028	6,959,028
2024				5,960,000	995,937	6,955,937
2025				6,270,000	689,951	6,959,951
2026				6,600,000	358,644	6,958,644
2027						
2028						
2029						
2030						
2031						
2032						
2033						
2034						
2035						
2036						
2037						
2038						
2039						
2040						
2041						
2042						
2043						
Totals	$ 7,405,000	$ 1,134,180	$ 8,539,180	$ 58,110,000	$ 23,942,718	$ 82,052,718

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal Year	LVVWD 2011B			LVVWD 2011C		
	Principal	Interest	Total	Principal	Interest	Total
2014	$ -	$ 5,277,078	$ 5,277,078	$ 9,000,000	$ 12,682,663	$ 21,682,663
2015	-	5,277,078	5,277,078	9,385,000	12,292,663	21,677,663
2016	9,220,000	5,277,078	14,497,078	9,670,000	12,011,113	21,681,113
2017	9,475,000	5,019,932	14,494,932	10,115,000	11,562,713	21,677,713
2018	9,775,000	4,719,006	14,494,006	10,620,000	11,056,963	21,676,963
2019	10,000,000	4,384,115	14,384,115	11,260,000	10,525,963	21,785,963
2020	10,490,000	4,013,315	14,503,315	11,710,000	9,962,963	21,672,963
2021	10,900,000	3,603,366	14,503,366	12,295,000	9,377,463	21,672,463
2022	11,335,000	3,168,674	14,503,674	12,910,000	8,762,713	21,672,713
2023	11,805,000	2,699,631	14,504,631	13,555,000	8,117,213	21,672,213
2024	12,320,000	2,185,170	14,505,170	14,240,000	7,439,463	21,679,463
2025	12,870,000	1,629,784	14,499,784	14,950,000	6,727,463	21,677,463
2026	13,475,000	1,030,299	14,505,299	15,695,000	5,979,963	21,674,963
2027	7,985,000	395,896	8,380,896	22,625,000	5,168,475	27,793,475
2028				14,370,000	4,037,225	18,407,225
2029				15,090,000	3,318,725	18,408,725
2030				15,845,000	2,564,225	18,409,225
2031				3,745,000	1,771,975	5,516,975
2032				3,920,000	1,595,750	5,515,750
2033				4,115,000	1,399,750	5,514,750
2034				4,320,000	1,194,000	5,514,000
2035				4,540,000	978,000	5,518,000
2036				4,765,000	751,000	5,516,000
2037				5,000,000	512,750	5,512,750
2038				5,255,000	262,750	5,517,750
2039						
2040						
2041						
2042						
2043						
Totals	$ 129,650,000	$ 48,680,423	$ 178,330,423	$ 258,995,000	$ 150,053,938	$ 409,048,938

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal Year	SNWA 2012A			LVVWD 2012B		
	Principal	Interest	Total	Principal	Interest	Total
2014	$ -	$ 3,455,600	$ 3,455,600	$ -	$ -	$ -
2015	-	3,455,600	3,455,600	6,595,000	17,015,050	23,610,050
2016	5,500,000	3,455,600	8,955,600	6,790,000	16,817,200	23,607,200
2017	0	3,180,600	3,180,600	7,060,000	16,545,600	23,605,600
2018	0	3,180,600	3,180,600	7,345,000	16,263,200	23,608,200
2019	0	3,180,600	3,180,600	7,690,000	15,915,950	23,605,950
2020	0	3,180,600	3,180,600	8,055,000	15,551,450	23,606,450
2021	0	3,180,600	3,180,600	8,440,000	15,168,700	23,608,700
2022	0	3,180,600	3,180,600	8,690,000	14,915,500	23,605,500
2023	0	3,180,600	3,180,600	9,120,000	14,486,750	23,606,750
2024	0	3,180,600	3,180,600	9,565,000	14,044,750	23,609,750
2025	0	3,180,600	3,180,600	10,040,000	13,566,500	23,606,500
2026	0	3,180,600	3,180,600	10,545,000	13,064,500	23,609,500
2027	0	3,180,600	3,180,600	11,070,000	12,537,250	23,607,250
2028	0	3,180,600	3,180,600	11,625,000	11,983,750	23,608,750
2029	11,000,000	3,180,600	14,180,600	12,205,000	11,402,500	23,607,500
2030	27,370,000	2,740,600	30,110,600	12,815,000	10,792,250	23,607,250
2031	28,395,000	1,645,800	30,040,800	13,455,000	10,151,500	23,606,500
2032	12,750,000	510,000	13,260,000	14,130,000	9,478,750	23,608,750
2033				14,835,000	8,772,250	23,607,250
2034				15,580,000	8,030,500	23,610,500
2035				16,315,000	7,290,450	23,605,450
2036				17,095,000	6,515,450	23,610,450
2037				17,905,000	5,703,450	23,608,450
2038				18,755,000	4,853,000	23,608,000
2039				19,640,000	3,969,600	23,609,600
2040				20,565,000	3,044,600	23,609,600
2041				21,530,000	2,076,000	23,606,000
2042				22,545,000	1,061,900	23,606,900
2043						
Totals	$ 85,015,000	$ 56,611,000	$ 141,626,000	$ 360,000,000	$ 301,018,350	$ 661,018,350

Southern Nevada Water Authority
Schedule of Existing Debt Service (Individual Schedules) (Unaudited)
As of June 30, 2013

Fiscal	SNWA 2013			GRAND TOTAL		
Year	Principal	Interest	Total	Principal	Interest	Total
2014	$ -	$ 617,210	$ 617,210	$ 416,872,459	$ 133,841,761	$ 550,714,220
2015	0	651,600	651,600	24,290,584	142,164,527	166,455,111
2016	0	651,600	651,600	84,045,252	141,329,715	225,374,967
2017	0	651,600	651,600	110,456,517	136,880,479	247,336,996
2018	0	651,600	651,600	115,564,439	131,758,574	247,323,013
2019	0	651,600	651,600	121,009,074	126,306,797	247,315,871
2020	0	651,600	651,600	126,755,486	120,537,516	247,293,002
2021	0	651,600	651,600	130,729,253	114,464,878	245,194,131
2022	0	651,600	651,600	136,549,085	108,289,970	244,839,055
2023	0	651,600	651,600	143,171,540	101,353,197	244,524,737
2024	0	651,600	651,600	149,731,540	94,363,290	244,094,831
2025	0	651,600	651,600	157,896,540	86,980,868	244,877,409
2026	0	651,600	651,600	165,816,540	79,137,779	244,954,319
2027	0	651,600	651,600	153,201,540	71,162,667	224,364,208
2028	21,720,000	325,800	22,045,800	129,711,540	64,320,546	194,032,086
2029				109,281,540	59,259,940	168,541,480
2030				114,803,270	54,346,815	169,150,085
2031				91,700,000	48,959,190	140,659,190
2032				95,700,000	44,647,696	140,347,696
2033				100,690,000	39,977,143	140,667,143
2034				105,415,000	35,165,066	140,580,066
2035				110,245,000	30,239,855	140,484,855
2036				115,255,000	25,139,411	140,394,411
2037				120,245,000	20,045,960	140,290,960
2038				125,095,000	15,095,565	140,190,565
2039				125,460,000	9,051,643	134,511,643
2040				20,565,000	3,044,600	23,609,600
2041				21,530,000	2,076,000	23,606,000
2042				22,545,000	1,061,900	23,606,900
2043				-	-	-
Totals	$ 21,720,000	$ 9,413,810	$ 31,133,810	$ 3,444,331,202	$ 2,041,003,347	$ 5,485,334,548

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SEC DISCLOSURE COMPLIANCE SCHEDULES

(UNAUDITED)

SOUTHERN NEVADA WATER AUTHORITY

SOUTHERN NEVADA WATER AUTHORITY
OUTSTANDING DEBT OBLIGATIONS (UNAUDITED)
As of June 30, 2013

	Dated	Final Maturity	Original Amount	Principal Outstanding
SUPERIOR OBLIGATIONS [1]				
CRC Refunding Bonds, Series 2005H	04/13/05	07/01/27	$ 36,130,000	$ 31,620,000
CRC Refunding Bonds Series 2006D	07/18/06	07/01/24	111,840,000	66,200,000
CRC Refunding Bonds Series 2010B	06/24/10	06/01/20	7,405,000	7,405,000
TOTAL SUPERIOR OBLIGATIONS				**105,225,000**
PARITY OBLIGATIONS				
MBRA Parity Obligations [2]				
Refunding Bonds, Series 2008B	02/19/08	06/01/26	171,720,000	116,335,000
Water Revenue Bonds, Series 2009A (Taxable BABs)	08/05/09	06/01/39	90,000,000	90,000,000
Water Revenue Bonds, Series 2009B	08/05/09	06/01/32	10,000,000	10,000,000
Water Revenue Bonds, Series 2009C (Taxable BABs)	12/23/09	06/01/39	348,115,000	348,115,000
Water Revenue Bonds, Series 2009D	12/23/09	06/01/30	71,965,000	69,185,000
Refunding Bonds, Series 2011A	05/26/11	06/01/26	58,110,000	58,110,000
LVVWD 2011B Refunding Bonds	10/19/11	06/01/27	129,650,000	129,650,000
LVVWD 2011C Refunding Bonds	10/19/11	06/01/38	267,815,000	258,995,000
SNWA 2012 Refunding Bonds	06/20/12	06/01/32	85,015,000	85,015,000
Water Revenue Bonds, Series 2012B	07/31/12	06/01/42	360,000,000	360,000,000
Total MBRA Parity Obligations				1,525,405,000
LVVWD Commercial Paper Notes [3]	various	various	400,000,000	400,000,000
Total MBRA Obligations				1,925,405,000
SNWA Parity Obligations [4]				
CRC Refunding Bonds, Series 2005I	04/13/05	09/15/29	65,300,000	47,755,000
SNWA Water Revenue Refunding Bond, Series 2006	06/13/06	06/01/30	242,880,000	210,210,000
SNWA Water Revenue Bond, Series 2006	11/02/06	11/01/36	604,140,000	533,020,000
SNWA Water Revenue Bond, Series 2008	07/02/08	06/01/38	400,000,000	362,155,000
SNWA Revenue Refunding Bond, Series 2009	11/10/09	06/01/30	50,000,000	48,220,000
Total MBRA Parity Obligations				1,201,360,000
TOTAL PARITY OBLIGATIONS				**3,126,765,000**
SUBORDINATE OBLIGATIONS [5]				
State of Nevada Safe Drinking Water Loan #1	09/01/99	05/15/28	12,269,695	5,318,736
State of Nevada Safe Drinking Water Loan #2	06/29/01	02/01/20	10,000,000	5,094,549
SNWA Refunding Bonds, Series 2005F (State Bond Bank)	05/17/05	08/01/21	249,365,000	173,520,000
Subordinate Lien Revenue Bond (CREBS), Series 2008[6]	07/30/08	12/15/22	6,900,000	4,600,000
Water Revenue Bond Series 2009 (State of Nevada)	12/11/09	07/01/32	2,214,457	2,087,917
SNWA Refunding Bonds, Series 2013A (State Bond Bank)	02/20/13	08/01/27	21,720,000	21,720,000
TOTAL SUBORDINATE OBLIGATIONS				**212,341,202**
TOTAL OUTSTANDING OBLIGATIONS				**$ 3,444,331,202**

Footnotes on the following page

SOUTHERN NEVADA WATER AUTHORITY
OUTSTANDING DEBT OBLIGATIONS (UNAUDITED)
As of June 30, 2013

FOOTNOTES

(1) Payable from the SNWA Water Revenues prior to any payments under the Master Bond Repayment Agreement (MBRA). No SNWA Water Revenues become subject to the MBRA until all SNWA operation and maintenance expenses and all obligations with respect to the SNWA Superior Obligations are satisfied.

(2) SNWA Water Revenues are available to fund the MBRA after the SNWA Superior obligations are paid.

(3) Payable from the SNWA Pledged Revenues after payment of the MBRA Parity Obligations. The LVVWD is authorized to have a maximum of $400 million in Notes outstanding at any time.

(4) The SNWA Parity Obligations are not payable from the MBRA, but do have a lien on the SNWA Water Revenues that is on a parity with the lien thereon of the MBRA.

(5) Payable from SNWA Water Revenues after payment of the SNWA Parity Obligations.

(6) The SNWA Clean Renewable Energy Bonds (CREBs) have a lien on the SNWA Water Revenues that is subordinate to the lien thereon of the MBRA and the SNWA Parity Obligations. The CREBs also are secured with a lien on the quarter-cent Sales Tax.

SOUTHERN NEVADA WATER AUTHORITY
DEBT SERVICE REQUIREMENTS (UNAUDITED) [1]
As of June 30, 2013

Year Ending June 30	Outstanding Superior Obligations Debt Service	Outstanding Parity Obligations Debt Service [2][3]	Outstanding Subordinate Obligations Debt Service	Grand Total
2014	$ 5,991,327	$ 533,228,410	$ 11,494,483	$ 550,714,220
2015	5,991,410	148,940,210	11,523,491	166,455,111
2016	12,015,199	201,841,659	11,518,109	225,374,967
2017	12,011,510	211,981,134	23,344,352	247,336,996
2018	12,011,527	211,974,765	23,336,720	247,323,013
2019	12,009,317	211,974,341	23,332,213	247,315,871
2020	12,004,129	211,964,667	23,324,206	247,293,002
2021	10,775,213	211,969,506	22,449,412	245,194,131
2022	10,776,125	211,962,246	22,100,684	244,839,055
2023	10,784,700	211,992,206	21,747,831	244,524,737
2024	10,778,700	212,030,990	21,285,140	244,094,831
2025	11,561,950	212,038,193	21,277,265	244,877,409
2026	11,559,100	212,111,079	21,284,140	244,954,319
2027	11,548,688	191,532,255	21,283,265	224,364,208
2028	-	171,859,746	22,172,340	194,032,086
2029	-	168,414,940	126,540	168,541,480
2030	-	169,086,815	63,270	169,150,085
2031	-	140,659,190	-	140,659,190
2032	-	140,347,696	-	140,347,696
2033	-	140,667,143	-	140,667,143
2034	-	140,580,066	-	140,580,066
2035	-	140,484,855	-	140,484,855
2036	-	140,394,411	-	140,394,411
2037	-	140,290,960	-	140,290,960
2038	-	140,190,565	-	140,190,565
2039	-	134,511,643	-	134,511,643
2040	-	23,609,600	-	23,609,600
2041	-	23,606,000	-	23,606,000
2042	-	23,606,900	-	23,606,900
Totals	$ 149,818,893	$ 5,033,852,191	$ 301,663,465	$ 5,485,334,548

Amounts may be slightly off due to rounding

(1) Excludes debt service on the LVVWD Commercial Paper notes.
(2) Combined debt service on the MBRA Parity Obligations and the SNWA Parity Obligations.
(3) Net of Federal participation on Build America Bonds

SOUTHERN NEVADA WATER AUTHORITY
STATEMENT OF OPERATING REVENUES, EXPENSES
AND CHANGES IN NET POSITION (UNAUDITED)

Fiscal Year Ending June 30	2009 (Actual)	2010 (Actual)	2011 (Actual)	2012 (Actual)	2013 (Actual)
Operating Revenues					
Wholesale Delivery Charge	$ 112,551,974	$ 110,097,368	$ 119,457,411	$ 119,239,660	$ 117,534,578
Groundwater Program Revenues	2,047,626	872,104	894,502	867,716	863,417
Las Vegas Wash Revenues	690,000	698,274	397,408	397,407	397,708
Purveyor Admin Cost Billings	379,306	342,820	362,263	318,886	383,443
Other Revenues	2,648,858	2,563,872	2,950,612	2,705,745	3,525,867
Total Operating Revenues	118,317,764	114,574,438	124,062,196	123,529,414	122,705,013
Operating Expenses					
Personnel & Related	39,671,513	37,948,022	42,491,203	43,450,464	43,880,414
Energy	40,184,443	39,656,635	36,013,713	44,527,798	36,347,165
Operation and maintenance	73,740,385	45,801,462	34,357,566	37,685,150	27,943,415
Depreciation	66,726,519	76,350,465	74,381,219	74,918,789	74,943,316
Total Operating Expenses	220,322,860	199,756,584	187,243,701	200,582,201	183,114,310
Operating Loss	(102,005,096)	(85,182,146)	(63,181,505)	(77,052,787)	(60,409,297)
Non-operating Revenues/(Expense)					
Investment Income	10,709,321	1,374,146	1,024,158	869,505	740,407
Credit Payment Income	-	6,442,781	10,896,699	10,867,008	10,316,798
Interest Expense	(69,887,704)	(75,369,159)	(79,960,801)	(67,567,023)	(64,010,853)
Amortization of Refunding Costs	(1,118,050)	(969,032)	(1,079,554)	(2,254,389)	(2,926,272)
Bond Issue Costs	(2,249,341)	(5,473,902)	(5,153,406)	(7,264,123)	(5,606,185)
Amortization of Premiums/Discounts	2,877,933	3,537,813	3,452,152	3,211,357	3,291,755
Gain/(Loss) on Sale of Assets	(753,735)	(5,051)	53,733	37,112	63,295
Total Non-operating Revenues/(Expense)	(60,421,576)	(70,462,404)	(70,767,019)	(62,100,553)	(58,131,055)
Net Loss Before Adjustments	(162,426,672)	(155,644,550)	(133,948,524)	(139,153,340)	(118,540,352)
Add Capital Contributions [1/]	94,647,515	75,876,870	93,092,191	135,679,772	205,919,057
Net Income	(67,779,157)	(79,767,680)	(40,856,333)	(3,473,568)	87,378,705
Adjustment per GASB 65		(13,900,000)			
Net Position - Beginning of Year	1,542,710,590	1,474,931,433	1,381,263,753	1,340,407,420	1,336,933,852
Net Position - End of Year	$ 1,474,931,433	$ 1,381,263,753	$ 1,340,407,420	$ 1,336,933,852	$ 1,424,312,557

1/ Includes Regional Infrastructure Surcharges, Regional Connection Charges, Sales Tax Collections, Regional Commodity Charges and Regional Reliability Charges as well as other revenue sources. Regional Connection Charges have been altered with contingency estimates and do not reflect gross cash collections.

SOUTHERN NEVADA WATER AUTHORITY
BUDGET SUMMARY AND COMPARISON - BUDGETARY BASIS (UNAUDITED)

Fiscal Year Ending June 30	2012 (Budget)	2012 (Actual)	2013 (Budget)	2013 (Actual)	2014 (Budget)
Operating Revenues					
Wholesale Delivery Charge	$ 123,909,056	$ 119,239,660	$ 117,498,863	$ 117,534,578	$ 121,958,169
Groundwater Program Revenues	827,962	867,716	913,359	863,417	913,345
Las Vegas Wash Revenues	866,349	397,407	496,759	397,708	705,482
Purveyor Admin Cost Billings	2,887,935	318,886	301,584	383,443	1,013,138
Other Revenues	-	2,705,745	1,099,750	3,525,867	1,102,305
Total Operating Revenues	128,491,302	123,529,414	120,310,315	122,705,013	125,692,439
Operating Expenses					
Personnel & Related	35,247,482	43,450,464	43,405,732	43,880,414	43,868,607
Energy	46,862,060	44,527,798	39,311,358	36,347,165	41,484,548
Operation and maintenance	44,952,815	37,685,150	38,991,833	27,943,415	37,866,920
Depreciation	69,500,000	74,918,789	76,000,000	74,943,316	80,000,000
Total Operating Expenses	196,562,357	200,582,201	197,708,923	183,114,310	203,220,075
Operating Loss	(68,071,055)	(77,052,787)	(77,398,608)	(60,409,297)	(77,527,636)
Non-operating Revenues/(Expense)					
Investment Income	1,682,481	869,505	1,762,923	740,407	714,982
Credit Payment Income		10,867,008		10,316,798	
Interest Expense	(70,740,741)	(67,567,023)	(61,726,000)	(64,010,853)	(60,068,182)
Amortization of Refunding Costs		(2,254,389)		(2,926,272)	
Bond Issue Costs		(7,264,123)		(5,606,185)	
Amortization of Premiums/ Discounts		3,211,357		3,291,755	
Gain/(Loss) on Sale of Assets		37,112		63,295	
Total Non-operating Revenues/(Expense)	(69,058,260)	(62,100,553)	(59,963,077)	(58,131,055)	(59,353,200)
Net Loss Before Adjustments	(137,129,315)	(139,153,340)	(137,361,685)	(118,540,352)	(136,880,836)
Add Capital Contributions [1/]	96,789,839	135,679,772	197,998,278	205,919,057	201,691,955
Net Income	$ (40,339,476)	$ (3,473,568)	$ 60,636,593	$ 87,378,705	$ 64,811,119

1/ Includes Regional Connection Charges, Regional Infrastructure Surcharges, Regional Commodity Charges and Regional Reliability Charges as well as other revenue sources. Actual Regional Connection Charges have been altered with a refund contingency.

SOUTHERN NEVADA WATER AUTHORITY
ANNUAL WATER DELIVERED BY
THE SOUTHERN NEVADA WATER SYSTEM (UNAUDITED)
(Acre-Feet)

Fiscal Year Ended June 30	Boulder City	Henderson	Las Vegas Valley Water District	Nellis Air Force Base	North Las Vegas	Total Deliveries
2004	11,939	62,716	334,580	1,837	45,180	456,252
2005	10,367	62,473	298,261	1,938	43,096	416,135
2006	10,887	66,451	328,012	2,022	49,527	456,899
2007	11,239	69,738	344,200	2,682	55,436	483,295
2008	11,345	66,897	328,435	2,664	53,987	463,328
2009	11,121	64,611	301,854	1,800	51,306	430,692
2010	10,845	63,092	283,052	1,511	50,302	408,802
2011	10,534	64,262	296,672	1,334	50,255	423,059
2012	10,514	63,450	284,662	1,069	48,120	407,815
2013	10,280	62,127	284,196	1,088	44,414	402,105

May be off slightly due to rounding

HISTORIC SNWA PLEDGED REVENUES

Fiscal Year Ended June 30	SNWA Pledged Revenues [1,2]
2009	$47,052,322
2010	49,830,542
2011	49,472,713
2012	49,040,027
2013	70,780,624

1/ Pledged Revenues are exactly equal to the amounts payable on the LVVWD bonds and other obligations issued on behalf of the SNWA, including debt service on the LVVWD Commercial Paper Notes.
2/ Beginning in fiscal year 2010, these about do not represent the full debt service payable: they are net of the BAB Credit received beginning in fiscal year 2010. Does not include debt service on SNWA Parity Bonds.

SOUTHERN NEVADA WATER AUTHORITY
HISTORY OF WATER REVENUES (UNAUDITED)

Fiscal Year Ending June 30	2009 (Actual)	2010 (Actual)	2011 (Actual)	2012 (Actual)	2013 (Actual)
Operating Revenues					
Wholesale Delivery Charge	$ 112,551,974	$ 110,097,368	$ 119,457,411	$ 119,239,660	$ 117,534,578
Regional Connection Charge [1/]	26,789,155	5,309,547	6,602,728	13,892,856	22,915,416
Regional Water Charges	18,791,878	22,538,155	37,335,440	45,915,806	45,641,138
Sales Tax	46,333,942	41,833,183	43,577,390	46,222,883	48,847,306
Regional Infrastructure Charges				16,193,130	79,114,278
Total Operating Revenues	204,466,949	179,778,253	206,972,969	241,464,335	314,052,716
Operating Expenses [2/]	153,596,341	123,406,119	112,862,482	125,663,412	108,170,994
Net SNWA Water Revenue	50,870,608	56,372,134	94,110,487	115,800,923	205,881,722
Annual Debt Service on the SNWA Superior Obligations	15,733,838	13,596,088	11,053,346	2,659,971	5,991,327
Remaining SNWA Water Revenues [3/]	35,136,770	42,776,046	83,057,141	113,140,952	199,890,395
Unrestricted Fund Balance [4/]	423,601,762	442,315,078	366,951,904	305,553,937	322,552,194
Total	458,738,532	485,091,124	450,009,045	418,694,889	522,442,589
Annual Debt Service on the SNWA Parity Obligations [5/]	120,442,065	127,968,971	120,652,753	124,121,600	125,228,410
Less Capitalized Interest [6/]	(45,349,235)	(53,224,059)	(61,829,184)	(68,310,080)	(73,763,753)
Net Annual Debt Service on Parity Obligations	$ 75,092,830	$ 74,744,912	$ 58,823,569	$ 55,811,520	$ 51,464,657

1/ Regional Connection Charge revenues decreased significantly in 2009 through 2012 due to slowing sales of new connections. Cash collections have been further modified with refund contingency adjustments.
2/ Excludes depreciation
3/ Represents SNWA Water Revenues that are available to pay debt service on the SNWA Parity Obligations, and to fund the MBRA.
4/ Consists of unrestricted cash, unrestricted investments, and unused sales tax proceeds.
5/ Includes debt service paid on the SNWA Parity Obligations and MBRA Parity Obligations, but does not include principal debt service on the Notes.
6/ Includes debt service paid from capitalized interest on prior bond issues. These figures include amounts that the SNWA capitalizes for accounting purposes; those amounts do not necessarily include amounts available to offset debt service payments.

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INDEPENDENT AUDITORS' REPORT

SOUTHERN NEVADA WATER AUTHORITY

P B T K
PIERCY BOWLER
TAYLOR & KERN
Certified Public Accountants
Business Advisors

INDEPENDENT AUDITORS' REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS*

Board of Directors
Southern Nevada Water Authority
Las Vegas, Nevada

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the Southern Nevada Water Authority (SNWA) as of and for the year ended June 30, 2013, and the related notes to the financial statements, which collectively comprise SNWA's basic financial statements as listed in the table of contents, and have issued our report thereon dated November 7, 2013.

Internal Control over Financial Reporting. In planning and performing our audit of the basic financial statements, we considered SNWA's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the basic financial statements, but not for the purpose of expressing an opinion on the effectiveness of SNWA's internal control. Accordingly, we do not express an opinion on the effectiveness of SNWA's internal control.

A *deficiency* in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of SNWA's basic financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters. As part of obtaining reasonable assurance about whether SNWA's basic financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of basic financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

We noted certain matters that we reported to management of SNWA in a separate letter dated November 7, 2013.

Purpose of this Report. The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of SNWA's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering SNWA internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Piercy Bowler Taylor & Kern

Las Vegas, Nevada
November 7, 2013

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM

November 21, 2013

Subject: Update on Water Resources	**Director's Backup**
Petitioner: Patricia Mulroy, General Manager	
Recommendations: That the Board of Directors receive an update from staff on water resources including, but not limited to, drought conditions in the Colorado River Basin, the results of the implementation of the Authority's Water Resource and Conservation Plans, activities on the Colorado River, the development of in-state water resources, and the status of the third intake project.	

Fiscal Impact:
None by approval of the above recommendation.

Background:
The Colorado River Basin has been experiencing a severe drought that began in 2000. The severity of these conditions has become increasingly evident in lake levels along the lower Colorado River Basin, where major reservoirs such as Lake Powell and Lake Mead are experiencing some of the lowest water levels in recent memory.

The nature of the drought in the Colorado River Basin has direct effects on water resources and future planning. The drought has prompted communities to launch major conservation initiatives to reduce water use among citizens and businesses, and has resulted in the development and implementation of the Authority's Water Resource and Conservation Plans.

In May 2005, the Board of Directors approved a project for design and construction of a third intake in Lake Mead with the primary objective of protecting southern Nevada's water supply from significant loss of system capacity resulting from a continuing decline in lake elevation. The project design and environmental approvals were completed by 2007. Construction began on the project in March of 2008.

This agenda item provides for an update from staff on the drought, the results of the implementation of the Authority's Water Resource and Conservation Plans, activities on the Colorado River, the development of in-state water resources, and the status of the third intake project.

The office of the General Counsel has reviewed and approved this agenda item.

Respectfully submitted:

Patricia Mulroy, General Manager
PM:JJE:td

AGENDA ITEM # 12