

MEETING AGENDA

Southern Nevada Water Authority Integrated Resource Planning Advisory Committee 2020



Wednesday, November 20, 2019

3:00 p.m.

**Colorado River Conference Rooms, Southern Nevada Water Authority
100 City Parkway, Seventh Floor, Las Vegas, Nevada**

All items on the agenda are for action by the Advisory Committee, 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 Advisory Committee 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. No action may be taken upon a matter not listed on the posted agenda.

1. *For Possible Action:* Approve agenda and minutes from the October 30, 2019 meeting
2. *For Information Only:* Receive an overview of the SNWA’s capital planning efforts
3. *For Information Only:* Receive an overview of proposed regional water and power facilities recommended for inclusion in the SNWA’s Major Construction and Capital Plan

COMMENTS BY THE GENERAL PUBLIC

NO ACTION MAY BE TAKEN: At this time, the Advisory Committee will hear general comments from the public on matters under the jurisdiction of the Committee. Please limit your comments to three minutes or less. No action may be taken upon a matter not listed on the posted agenda.

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

City of Boulder City, City Hall
401 California Avenue
Boulder City, NV

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

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

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

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

Southern Nevada Water Authority
100 City Parkway
Las Vegas, NV

Clark County Water Reclamation District
5857 East Flamingo Road
Las Vegas, NV

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

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 Jordan Bunker at (702) 258-7296 at least 24 hours prior to the meeting.

Agendas for this meeting and others are available online. Visit snwa.com.



INTEGRATED RESOURCE PLANNING ADVISORY COMMITTEE 2020 MEETING SUMMARY

October 30, 2019, 3:00 p.m.

*Colorado River Conference Rooms, Southern Nevada Water Authority
100 City Parkway, 7th Floor, Las Vegas, Nevada*

IRPAC members present

Ken Evans
Carol Jefferies
Bob Murnane
Phil Ralston
Virginia Valentine

Peter Guzman
Tom Morley
Jonas Peterson
John Restrepo

IRPAC members absent

Andy Maggi

Paul Moradkhan

Staff present:

John Entsminger
Julie Wilcox
Andy Belanger
Peter Jauch
Colby Pellegrino
Jordan Bunker

Dave Johnson
Kevin Bethel
Tabitha Fiddymment
Greg Kodweis
Katie Horn

Others present:

Guy Hobbs

PUBLIC COMMENT

There were no speakers.

SUMMARY OF ACTIVITIES

The Southern Nevada Water Authority's (SNWA) Integrated Resource Planning Advisory Committee 2020 (IRPAC 2020) met on Wednesday, October 30, 2019. The meeting began at 3:12 p.m.

#1 Approve agenda. Peter Guzman motioned to approve the agenda. The agenda was approved.

#2 Welcome and introductions. Terry Murphy, facilitator, welcomed the committee members and introductions were made.

#3 Receive an overview of the committee process and administrative items relating to the committee. Ms. Murphy reviewed the scope of the advisory committee and stated that all meetings will follow Nevada's Open Meeting law. She reminded the committee that recommendations are made on a consensus basis and do not require unanimous agreement, and that the goal of the committee is to recommend a long-term planning and funding strategy. She also reviewed committee member and SNWA commitments as well as future meeting dates.

#4 Receive an overview of past SNWA committees. John Entsminger, SNWA General Manager, welcomed the committee and described previous citizen advisory committee processes and why the Authority uses advisory committees. He stated that past committees have evaluated a range of issues, including:

facilities, resources, water policy, drought and conservation, security, sustainability, water quality and funding.

The 1994 IRPAC made recommendations related to facilities, water quality and water resources as the Authority's facilities were unable to meet demand projections and Nevada was projected to exceed its Colorado River allocation. Mr. Entsminger reviewed several recommendations given by the 1994 IRPAC and gave an update on what the Authority has done as a result of their recommendations.

The 2004 Integrated Water Planning Advisory Committee (IWPAC) made recommendations related to water resources and conservation as the Colorado River Basin began to experience what would quickly become the worst drought in the basin's recorded history. Mr. Entsminger reviewed several recommendations given by the 2004 IWPAC and gave an update on what the Authority has done as a result of their recommendations.

While discussing the 2004 IWPAC resources recommendations, Mr. Entsminger stated the Authority has participated in pilot-scale desalination studies as was recommended by the committee. Ken Evans asked if desalination is currently available as a resource. Mr. Entsminger stated that desalination is viable as a future resource but is still expensive. He stated that, in the next 30 – 50 years, opportunities will present themselves for the Authority to participate in, but the preference would be to work out an exchange with California or Mexico for them to use the water from the ocean and leave water in Lake Mead for Southern Nevada to use. It would be cost prohibitive to run infrastructure from the coast to Las Vegas.

The 2012 IRPAC made recommendations primarily related to funding as the community was amid an economic recession. Mr. Entsminger reviewed several recommendations given by the 2012 IRPAC, which focused on recommending a funding formula to fund capital and ensure the organization's long-term financial stability. He then gave an update on what the Authority has done as a result of their recommendations.

While discussing the 2012 IRPAC resources recommendations, Mr. Entsminger discussed the Authority's debt service payments to fund capital projects and Mr. Evans asked what happens in 2038–2039 with the decrease in debt. Mr. Entsminger stated that if the Authority does not incur any new debt, all the long-term bonds will be paid off. Mr. Evans commented that as the committee give recommendations, overlaid with capital improvement projects, future debt projections will change, depending on what is recommended. Mr. Entsminger stated that much of what will be discussed with the committee will be capital infrastructure needs to support what the Authority believes the community will look like in the future.

The 2014 IRPAC made recommendations related to the drought, infrastructure and funding as Lake Mead's water levels were among the lowest since the reservoir was filled. The decline in lake elevations threatened the community's water supply. Mr. Entsminger reviewed several recommendations given by the 2014 IRPAC and gave an update on what the Authority has done as a result of their recommendations.

Mr. Entsminger recognized that the Las Vegas Valley Water District (LVVWD) is a separate agency but also reviewed the recommendations made by the 2016 LVVWD Rates and Rules Advisory Committee related to infrastructure, asset management, water quality and funding as the LVVWD service area was recovering from an economic recession. Asset management and the need for new infrastructure were critical parts of the discussions. Mr. Entsminger reviewed several recommendations given by the 2016

LVVWD Rates and Rules Advisory Committee and gave an update on what the District has done as a result of their recommendations.

#5 Receive an overview of the SNWA's history and key initiatives. Mr. Entsminger gave an overview of the Authority and its core responsibilities, which include water supply planning, infrastructure, conservation, water quality and stewardship. He stated that much of what the committee recommends may have an affect on not only the Authority, but its purveyor members, which include the City of Henderson, City of North Las Vegas, LVVWD and Boulder City.

Mr. Entsminger gave information about the Authority's reliability on the Colorado River, the drought, current and future Lake Mead water levels, banked water resources and return-flow credits. He gave an overview of the Authority's infrastructure and the regional water system, and stated that the system is healthy, relatively new and has plenty of capacity, but there are a few pinch points in the system where additional facilities are needed and that these will be discussed with the committee in future meetings. He also provided highlights on the Authority's Intake No. 3 and the Low Lake Level Pumping Station.

Ms. Murphy mentioned that the committee will have the opportunity to tour the Authority's facilities and get a closer look at the water system and how it operates.

Mr. Entsminger gave a brief overview of the Authority's conservation program, but stated that there will be a future meeting solely dedicated to conservation. He stated that the program relies on four key parts, including regulations, incentive programs, pricing and education. He also stated that since the turn of the century, Southern Nevada has been a world leader in urban water conservation and that despite an increase in population since 2002, per capita water use and Colorado River consumption have decreased. However, over the past couple of years, progress towards the Authority's conservation goal has plateaued and given the continued drought and projected growth, the committee and the community will need to renew its conservation effort.

Phil Ralston asked if there is a volume or usage of water that is the new normal given the drought, population growth, the recession and conservation efforts, or, if there is a target consumption number that the Authority would like to see.

Mr. Entsminger stated that there is not one single target number because of the different options of controlling demand, and/or increasing supplies and/or driving down GPCD. He also stated that Nevada is allocated 300,000 acre-feet per year from the Colorado River, and permanent tributaries bring in 30,000 acre-feet. Maximum shortage under federal law is 30,000 acre-feet. Given that, the community cannot exceed 300,000 acre-feet of water consumption per year and this year's consumption was 244,000 acre-feet. Mr. Entsminger noted today's water use isn't an emergency, but that we need to ensure that there are sufficient incentives, regulations and planning in place to maintain reliability. There will be future discussions with the committee on how those goals can be achieved.

Mr. Entsminger spoke to water quality and reiterated that importance of the committee in visiting and viewing some of the treatment and labs facilities. He also spoke briefly to the Authority's funding and showed a summary of the 2019-20 sources and uses.

He then gave an overview of the Authority's current efforts which include:

- Completing L3PS on time and under budget
- Maintaining conservation progress

- Continuing working with Colorado River Basin partners to protect Lake Mead water levels
- Implementing the Drought Contingency Plan
- Maintaining credit worthiness

He then gave an overview of the Authority's long-term efforts, which include:

- New, major infrastructure to provide capacity, redundancy and reliability valley-wide
- Maintaining water recycling levels requires new infrastructure
- Pursuing resource opportunities on the Colorado River
- Renewable energy resources needed to achieve the state mandated Renewable Energy Portfolio Standard
- Progress towards the community's conservation goal must be maintained or surpassed

All of these efforts will be included in an amendment to the Authority's Major Construction and Capital Plan.

Mr. Evans asked if there was a component within the plan that the committee will come up with that will focus and provide funding to infrastructure maintenance to take care of what we already have.

Mr. Entsminger stated that system maintenance and asset management is very important and will be a key component moving forward.

Ms. Murphy asked for further questions from the committee, closed the meeting and stated that the next meeting will be November 20th.

PUBLIC COMMENT

There were no speakers.

ADJOURNMENT

The meeting was adjourned at 4:27 p.m.

FACILITIES AND PLANNING

11.20.2019



Regional Water System

The Southern Nevada Water Authority is the *regional* water provider in Southern Nevada.

It treats and delivers wholesale Colorado River water to local purveyors.

SNWA does not directly serve residents or businesses.



Benefits of Regional Agency

- Avoids competition between agencies for resources
- Consistent conservation programs applied valley-wide
- Consistent water conservation and resource messaging
- Cost savings on major infrastructure that benefits all of community
- All water users share in rates that benefit entire community

3

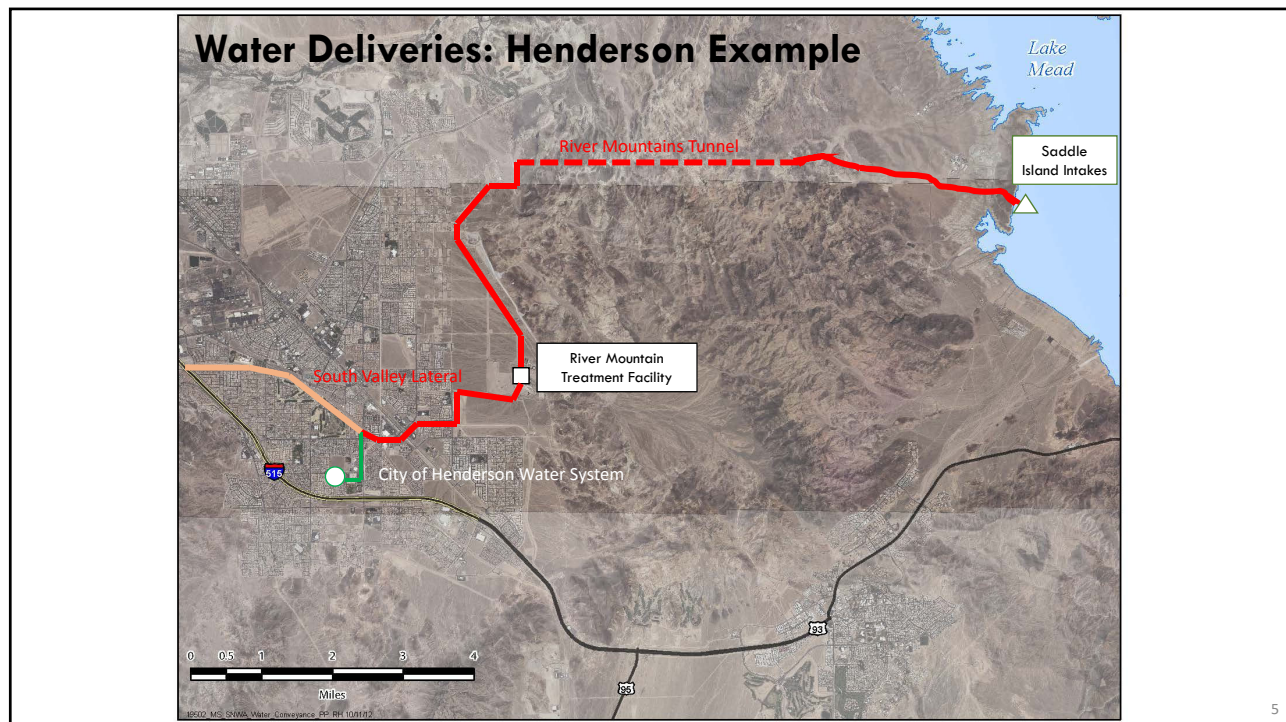
Retail Responsibilities

Municipal water purveyors work directly with residents and businesses to provide water service.



- Maintain thousands of customer accounts
- Deliver water to homes and businesses
- Turn on/off service
- Provide customer service
- Install and read water meters
- Enforce water waste ordinances
- Review construction plans for future jurisdiction development
- Manage individual groundwater rights
- Local water and wastewater treatment
- Meet water quality regulations

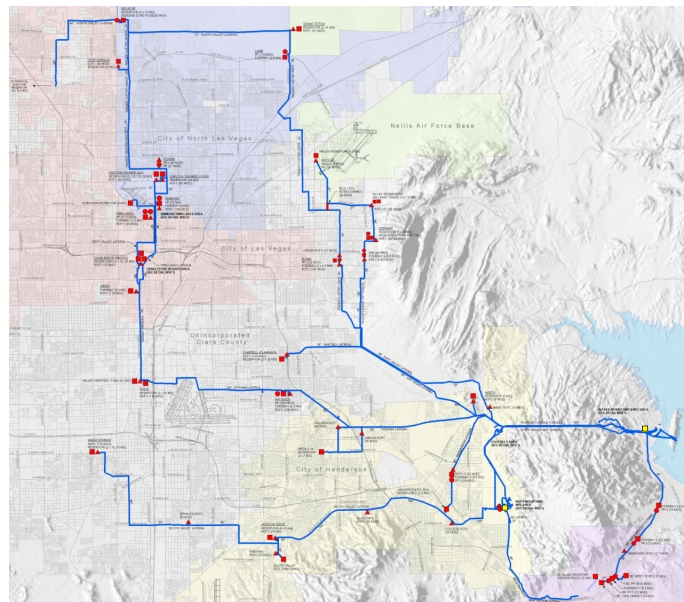
4



5

Regional Water System

- Two drinking water treatment facilities (Total Capacity: 900 MGD)
- Three drinking water intakes
- A water quality laboratory and research center
- Pumping stations and major reservoirs
- Transmission laterals



6

SNWA Capital Approach

- **Major Construction and Capital Plan** (major projects)
- **Operating Capital** (smaller asset management)
- **Capital Equipment** (trucks and tools)
- **Lower Las Vegas Wash**

7

Planning Facilities

Planning for future facilities requires the consideration of four principal variables:

1. Capacity
2. Reliability
3. Redundancy
4. Resource maximization



8

Planning Facilities

CAPACITY:

The maximum amount of water a component of infrastructure can transmit or produce.

Planning considerations:

- Short-term and long-term demand projections
- Peak day demands
- Emergency and crisis scenarios

9

Planning Facilities

RELIABILITY:

The ability of a system (or system component) to function under stated conditions for a specified amount of time.

Planning considerations:

- Age of component / life expectancy
- Changing conditions
- Environmental conditions

10

Planning Facilities

REDUNDANCY:

The ability of a system (or system component) to prevent or recover from the failure of another system component.

Planning considerations:

- Consequence of failure
- Cost

11

Planning Facilities

RESOURCE MAXIMIZATION:

The reuse of water involving collecting, treating, and returning wastewater flows back to Lake Mead for return-flow credits.

Planning considerations:

- Cost
- Value of returned water

12

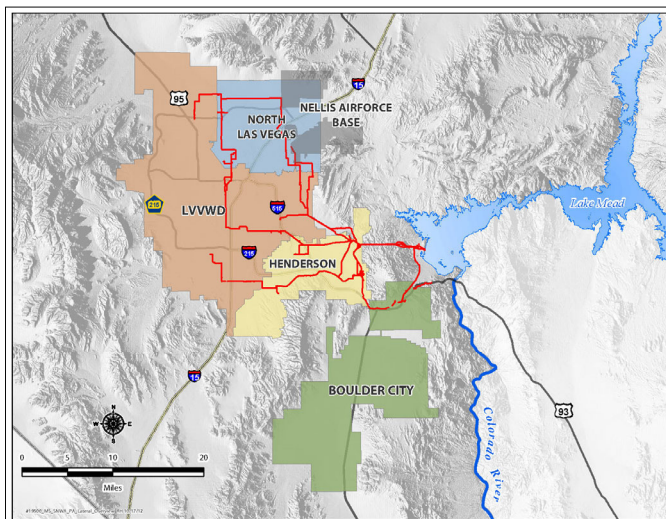
Planning Facilities

Planning, designing and constructing major facilities requires significant lead time.

<u>Infrastructure</u>	<u>Decision Made</u>	<u>Operational</u>
LV Wash CAMP	1999	2018
River Mountains WTF	1994	2002
South Valley Lateral	1994	1999
Intake No. 3	2002	2015
L3PS	2014	2020 <i>estimated</i>

13

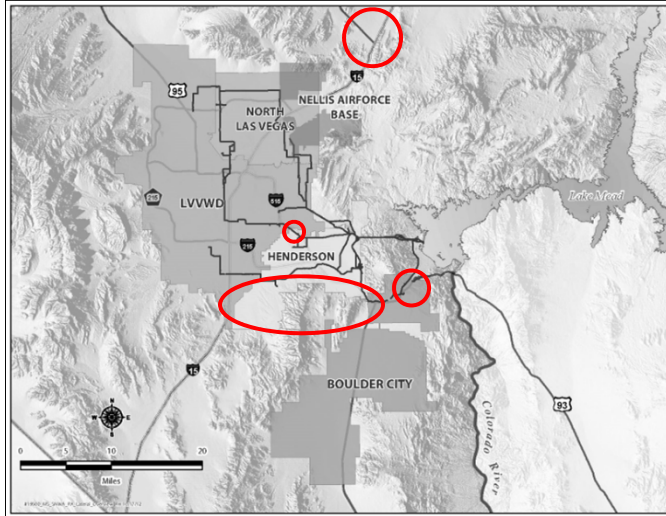
Planning Facilities



Today's regional water system has
sufficient capacity
to meet current demands.

14

Planning Facilities



Today's water system is **insufficient in meeting tomorrow's demands.**

Economic development efforts are underway throughout our community:

- Redevelopment and infill throughout the community
- Proposed industrial and commercial uses in the north
- Proposed industrial, commercial and residential uses in the south
- Existing infrastructure requires maintenance
- Reliability is needed in some parts of the system

15

Major Construction and Capital Plan (MCCP)

The MCCP is the planning document established to help meet the community's water needs.

The existing document needs to be updated to include:

- New system demands
- Maximization of existing resources
- Development of new resources
- Asset management and maintenance of existing infrastructure



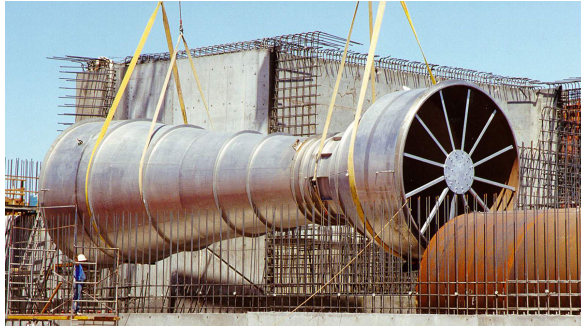
16

Major Construction and Capital Plan (MCCP)

The MCCP also establishes overall spending thresholds and identifies candidate projects for construction.

The MCCP requires approval by:

- SNWA Board of Directors
- SNWA purveyor member agencies
 - Las Vegas Valley Water District
 - City of Henderson
 - City of North Las Vegas
 - Boulder City
 - Big Bend Water District



17

MCCP CANDIDATE PROJECTS





Existing South Valley Lateral

- Conveys approximately 40% of all in-valley deliveries
- Projected to be operating at 95% of capacity in 2034
- Single feed with no redundant facilities



Proposed 2008 McCullough Lateral

The SNWA previously contemplated an additional lateral in the south end of the regional water system and completed two studies:

- “McCullough Lateral Draft Corridor Evaluation Report, Dec 2008”
- “South Valley Facilities Expansion Raw Water and Treatment Conceptual Planning and Corridor Evaluation Report, Dec 2008”

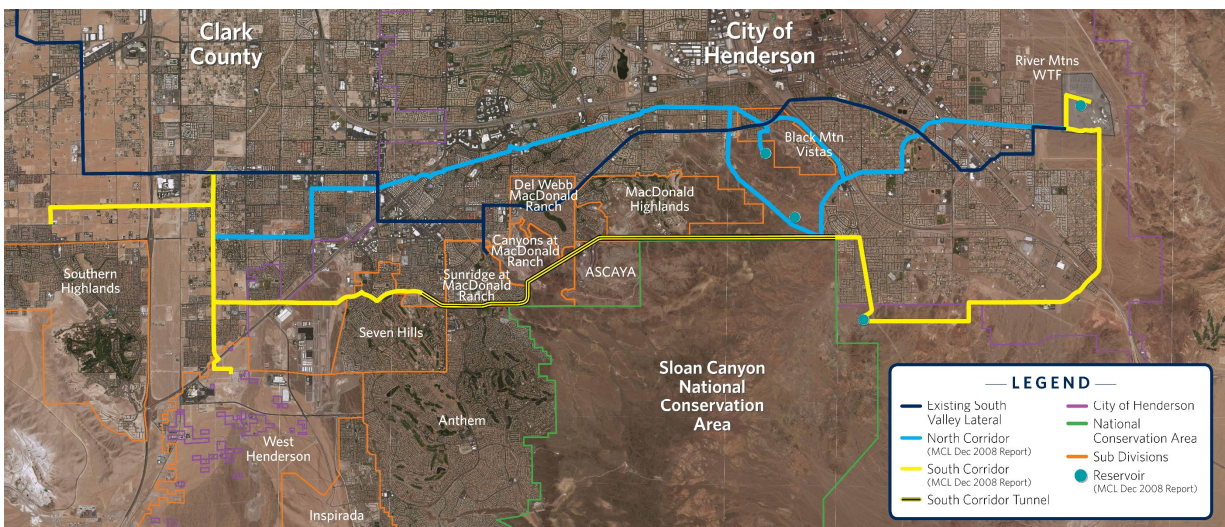
FINDINGS:

- ✓ The existing South Valley Lateral transmission system capacity is limited to 306 MGD
- ✓ There is limited storage and inter-connection capability on the southern side of the valley

21

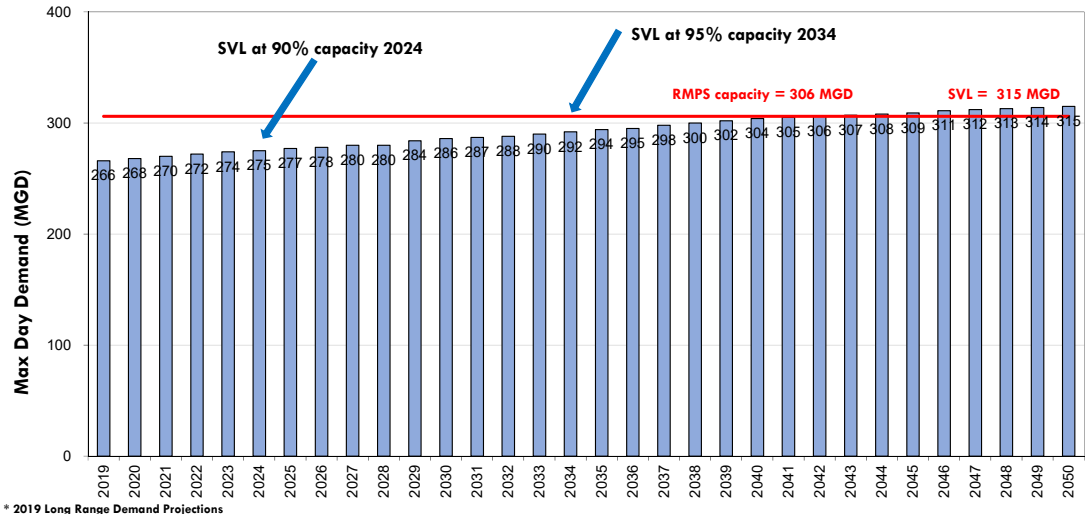
Proposed 2008 McCullough Lateral

A new lateral was contemplated for construction, but shelved due to the recession impacts.



22

South Valley Lateral Capacity vs. Demand

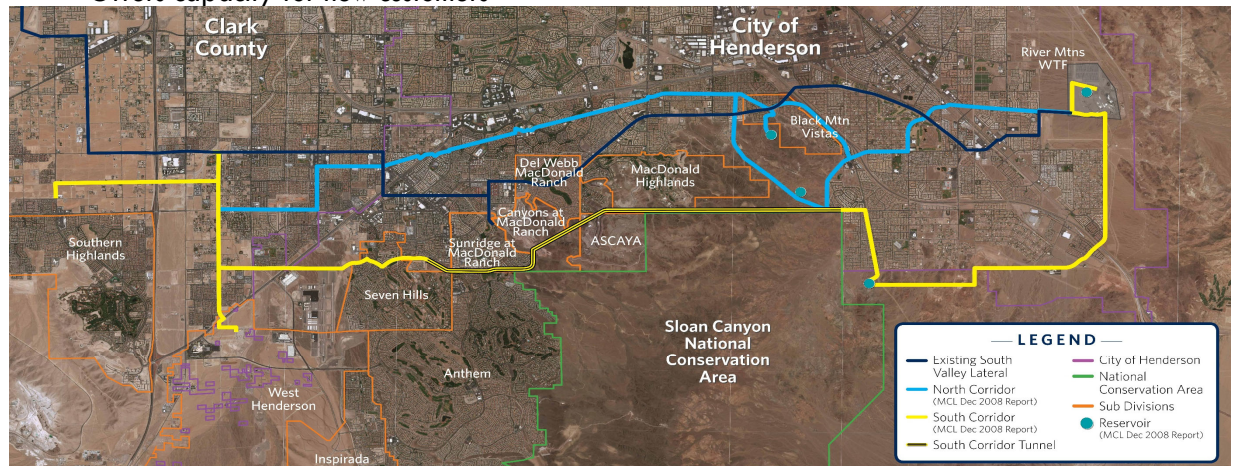


23

Meeting Future Demands

A new lateral is needed to support the regional water system:

- Offers redundancy and reliability for existing customers
- Offers capacity for new customers



24

Scoping Study

A scoping process is underway to evaluate various objectives:

- Enhance water system reliability, promote quality of life, and accommodate economic growth
- Maximize long-term stakeholder benefits
- Minimize temporary stakeholder impacts, such as service disruptions
- Minimize environmental impacts and maximize benefits
- Implemented within the needed schedule
- Minimize cost and risk

25

Horizon Lateral

Anticipated Facilities (based on 2008 Study)

- Transmission Capacity (407 million gallons per day)
- ~24 miles of pipeline ranging between 72 -120 inches in diameter (includes tunneling)
- ~7 miles of 114-inch diameter tunnel north of Sloan Canyon National Conservation Area
- ~2 Pump Stations (407 MGD and 155 MGD)
- Reservoir(s)
- Rate of Flow Control Stations

26

Meeting Future Demands

Board Approval and Consultant Selection – September 2019

Activity	Schedule (months)	Cost (\$ Million)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Planning																
Board Approval and Consultant Selection																

27

Meeting Future Demands

Scoping Study – January 2021

Activity	Schedule (months)	Cost (\$ Million)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Planning																
Board Approval and Consultant Selection																
Scoping Study	16.8															

28

Meeting Future Demands

Pre-Design – December 2023

Activity	Schedule (months)	Cost (\$ Million)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Planning																
Board Approval and Consultant Selection																
Scoping Study	16.8															
NEPA - EIS	35.6															
Land Acquisition	38.4															
Design / Construction																
Pre-Design (Surveying, Geotech etc.)	24															

31

Meeting Future Demands

Design – June 2026

Activity	Schedule (months)	Cost (\$ Million)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Planning																
Board Approval and Consultant Selection																
Scoping Study	16.8															
NEPA - EIS	35.6															
Land Acquisition	38.4															
Design / Construction																
Pre-Design (Surveying, Geotech etc.)	24															
Design	30															

32

Meeting Future Demands

Anticipated total project timeline before first deliveries: 13 years

Construction – December 2032

Activity	Schedule (months)	Cost (\$ Million)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Planning																
Board Approval and Consultant Selection																
Scoping Study	16.8															
NEPA - EIS	35.6															
Land Acquisition	38.4															
Design / Construction																
Pre-Design (Surveying, Geotech etc.)	24															
Design	30															
Construction	96															
SSE	13 yrs															

33

Horizon Lateral

INITIAL ESTIMATE OF COST

Planning	\$ 61.8 million
Design	144.5 million
Construction	1,135.6 million
Contingency	258.1 million
<u>FY2019-20 Expenditures</u>	<u>(3.3 million)</u>
TOTAL	\$1,596.7 million

*Based on 2008 Study, estimate in 2019 dollars

34

Horizon Lateral

Planning Considerations:

- ☒ Capacity
- ☒ Reliability
- ☒ Redundancy

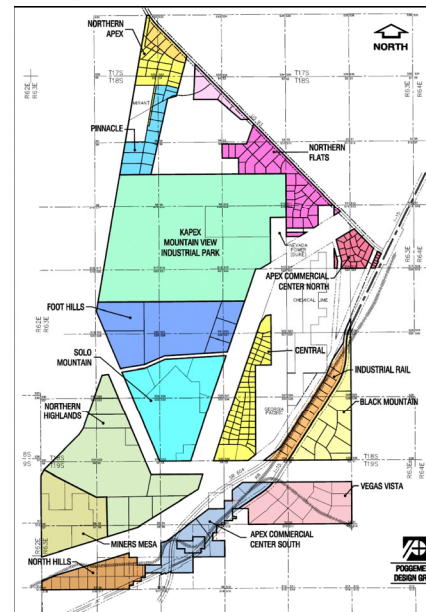
35



Garnet Valley Development

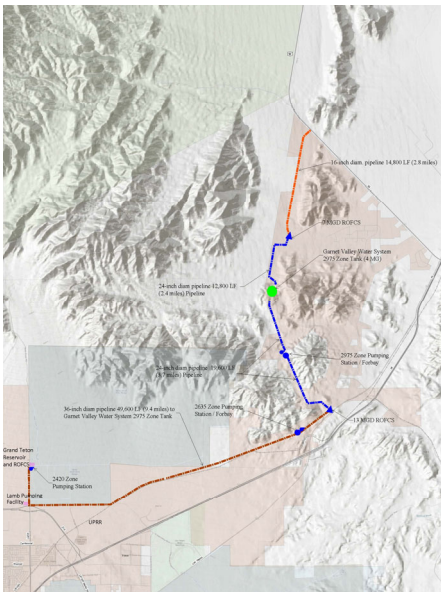
A proposed 16-parcel industrial park in North Las Vegas spanning 11,478 acres

Buildout Condition Water Demand: 20 MGD



37

Garnet Valley Water System



18 miles of pipeline (16" – 24")

1 reservoir (4 MG)

3 pumping stations (5 MGD/16 hr)

3 forebays (1.2 MG/forebay)

38

Garnet Valley Water System

PROJECT SCHEDULE

Activity	Schedule (months)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
8 years													
Design	36												
Construction	66												

39

Garnet Valley Water System

INITIAL ESTIMATE OF COST

Planning & Design	\$ 7.3 million
Construction	107.8 million
<u>Contingency</u>	<u>14.7 million</u>
TOTAL	\$129.8 million

40

Garnet Valley Water System

Planning Considerations:

☒ Capacity

☒ Reliability

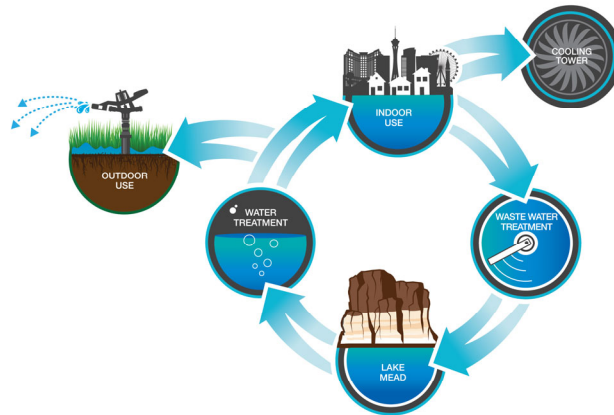
41



GARNET VALLEY
WASTEWATER SYSTEM

Maximizing Resources

Southern Nevada recycles 99% of water used indoors, thereby extending the availability of its resources.



43

Existing Out-of-Valley Water Use Policy

Objectives:

- Maximize the productivity of all SNWA water resources
- Provide for the long-term sustainable development of resources and reduce demand impacts to Colorado River resources.

POLICY PROVISIONS

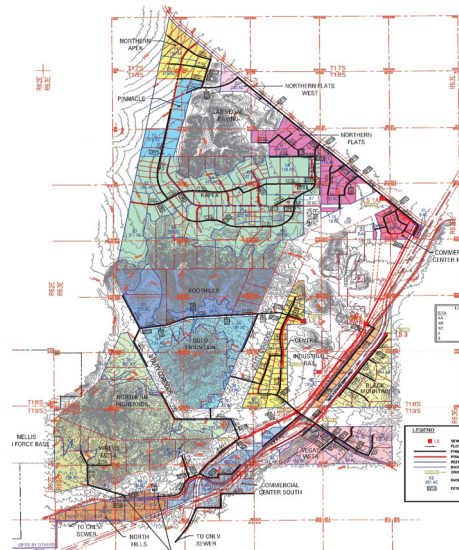
- Return treated wastewater to Lake Mead for return-flow credits
- Unreturned water should be reused to achieve full beneficial use of recycled water
- Wastewater will be treated to reusable levels
- Implement localized direct reuse within the development area for industrial and commercial uses
- Implement aquifer storage and recovery programs

44

Garnet Valley Wastewater System

Proposed Facilities – Backbone System

- Five wastewater lift stations
- 43 miles of wastewater pipeline (8 – 48 inches)
- 8 miles of force main pipe (14 – 30 inches)



45

Garnet Valley Wastewater System

PROJECT SCHEDULE

Activity	Schedule (months)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
7 years													
Design	36												
Construction	54												

46

Garnet Valley Wastewater System

INITIAL ESTIMATE OF COST

Planning & Design	\$6.8 million
Construction	\$99.6 million
<u>Contingency</u>	<u>\$13.6 million</u>
TOTAL	\$120 million

47

Garnet Valley Wastewater System

Planning Considerations:

☒ Resource maximization

48



Boulder City Wastewater System

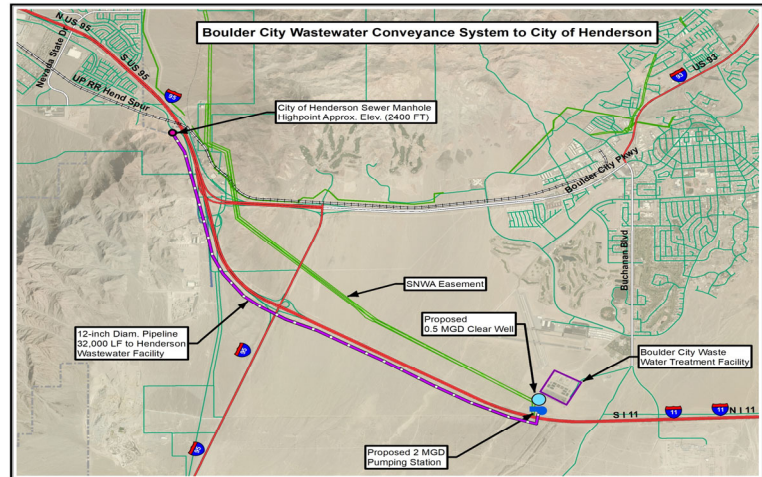
Boulder City currently does not return any water to Lake Mead and sends approximately 1.3 MGD to evaporation ponds annually.



Boulder City Wastewater System

Proposed Facilities:

- Pumping station
- Clear well
- 12" pipeline to Henderson Wastewater Facility (6.1 miles)
- 24" casing (1.3 miles)



51

Boulder City Wastewater System

PROJECT SCHEDULE

Activity	Schedule (months)	2021		2022		2023		2024		2025	
5 years											
Design	24										
Construction	36										

52

Boulder City Wastewater System

INITIAL ESTIMATE OF COST

Clear well	\$8.1 million
Pumping station	\$7.5 million
<u>Pipeline</u>	<u>\$10.4 million</u>
TOTAL	\$26.0 million

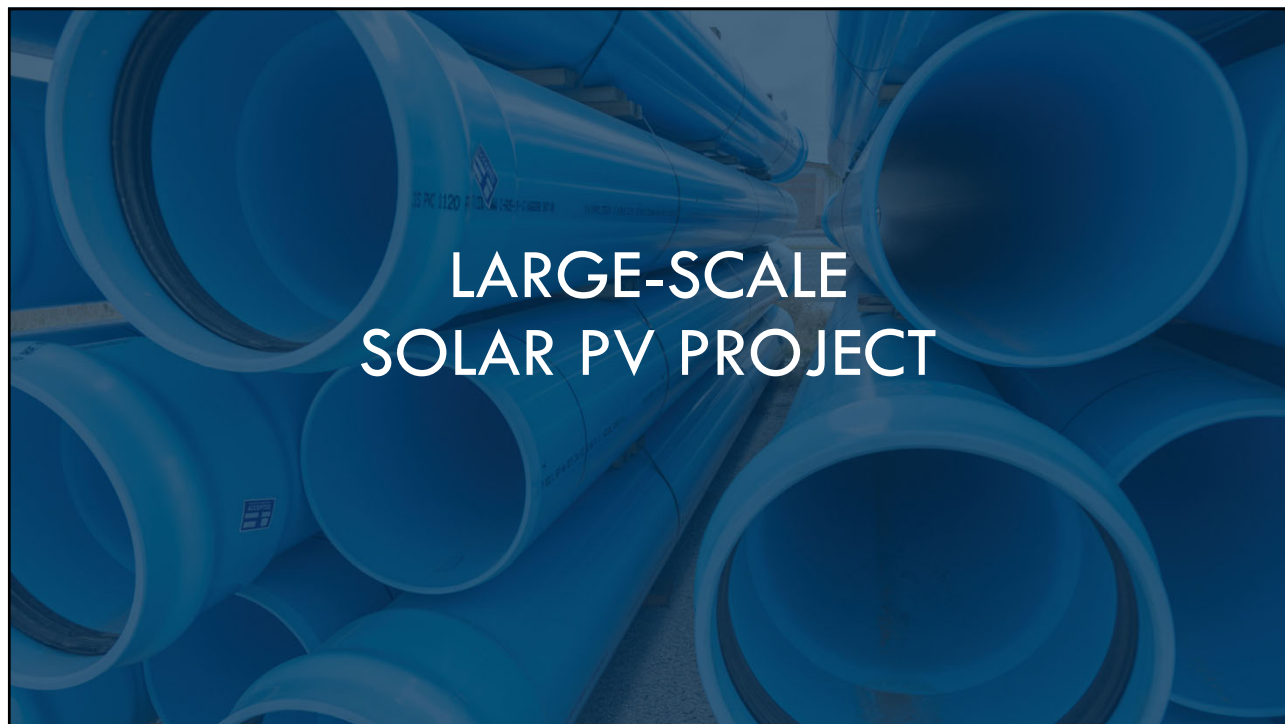
53

Boulder City Wastewater Systems

Planning Considerations:

- ☒ Resource maximization

54



Large-Scale Solar PV Project

Previously, SNWA has voluntarily adopted renewable energy targets consistent with the prior Nevada Renewable Portfolio Standard (RPS) of 25% by 2025

- SNWA's existing renewable energy portfolio: 18%
- SB358, passed at 2019 legislative session, progressively increases the RPS from 20% in 2019 to 50% by 2030
- This project is critical to meet the new standard



Large-Scale Solar PV Project

In 2018, SNWA issued a Request for Information for 50 MW of solar PV output

- Entered into an MOU with ibV to further pursue their proposed development

In September, ibV was awarded a solar land lease from Boulder City for 1,100 acres, allowing 130 MW of solar PV development

ibV will build, own and operate the solar PV plant; SNWA will enter into a 25-year Power Purchase Agreement (PPA)

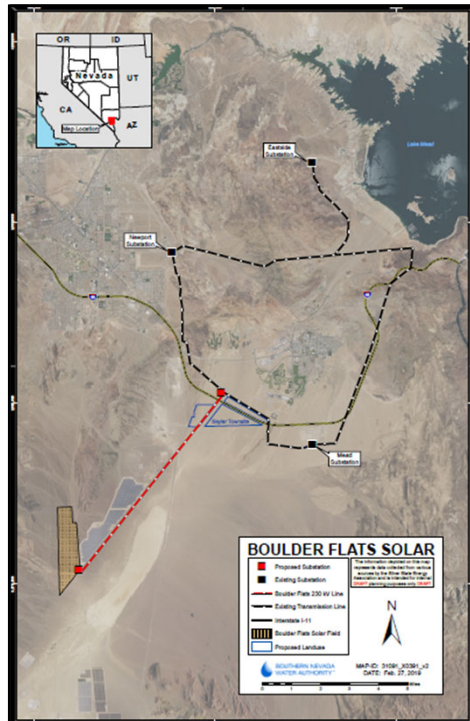
57

Large-Scale Solar PV Project

Resource Cost Comparison (\$/MWh)		
	2022	2047 (2% annual escalation)
Hoover Power	\$22.82	\$37.44
Market Power	\$38.61	\$63.34
SNWA Solar PPA (fixed price)	\$24.14	\$24.14

**Additional wheeling revenue expected*

58



Large-Scale Solar PV Project

8-mile expansion to SNWA's existing transmission system

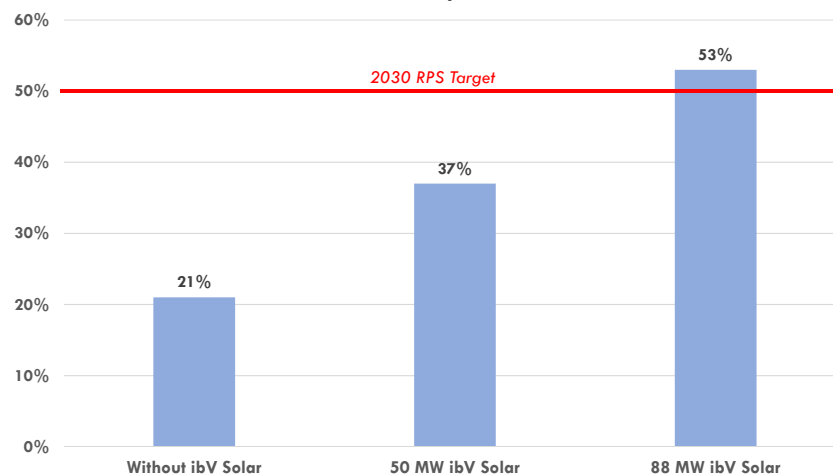
- Double-circuit 230 kV power line
 - Single-shaft steel poles with insulators to support power conductors
 - Fiber-optic lines for substation protection, control and communication
- 230 kV Switchyard
 - Circuit breakers for disconnecting lines and facilities
 - Meters to measure the power generated
 - Protective relays to operate the breakers
 - SCADA system for control and communication

When completed, the transmission expansion will interconnect a new solar photovoltaic system (Boulder Flats Solar) that can convey at least 50 MW.

59

Large-Scale Solar PV Project

Year 2030 RPS Compliance Scenarios



60

Large-Scale Solar PV Project

PROJECT SCHEDULE

Mar 2020 – Begin permitting and compliance activities

Jan 2021 – Begin engineering design and procurement

Jan 2022 – Commence construction

Dec 2022 – Estimated project completion



61

Large-Scale Solar PV Project

INITIAL ESTIMATE OF COST

Permitting/Compliance	\$ 0.4 million
Design/Procurement	11.0 million
Construction	9.0 million
Contingency	2.0 million
<u>FY2019-20 Expenditures</u>	<u>(1.6 million)</u>
TOTAL	\$20.8 million

62

Large-Scale Solar PV Project

Planning Considerations:

- ☒ Capacity
- ☒ Reliability
- ☒ Redundancy
- ☒ Resource maximization

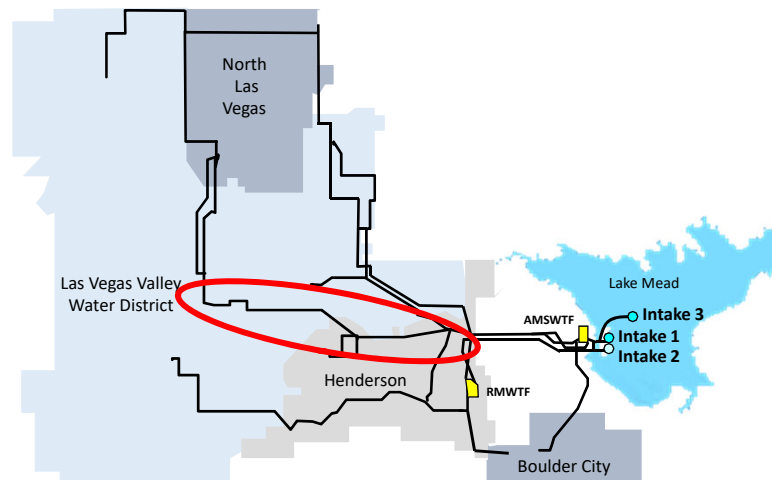
63



ASSET MANAGEMENT

Stage 2 Upgrade

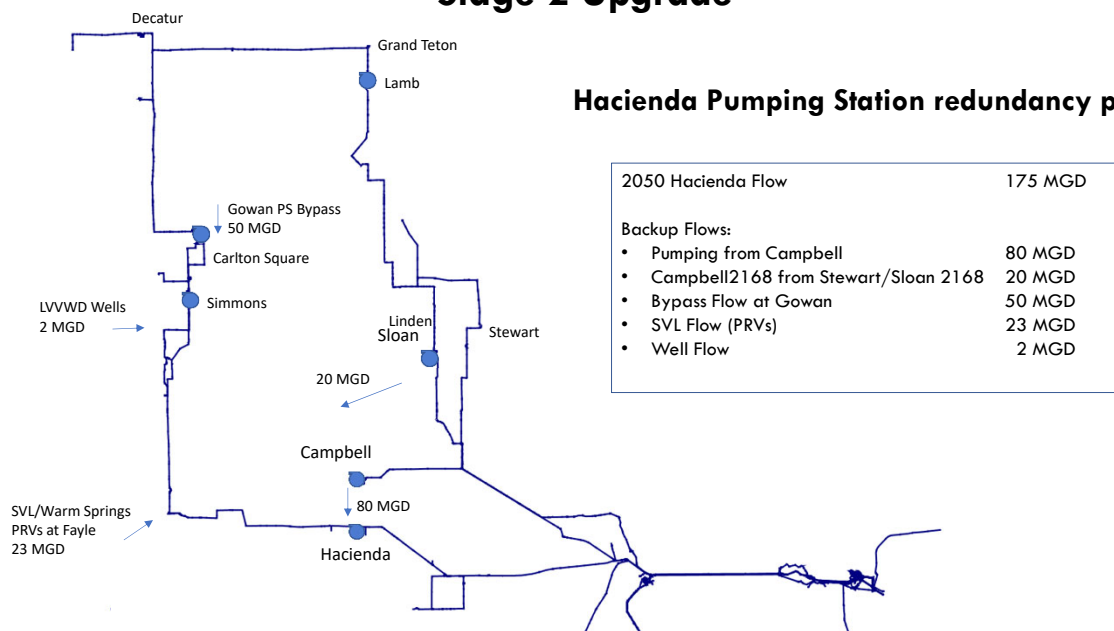
Upgrades to aging in-valley water storage and transmission facilities



65

Stage 2 Upgrade

Hacienda Pumping Station redundancy plan



66

Stage 2 Upgrade

PROJECTED COSTS

Stage 2 Reliability Upgrades	\$40.0 million
Sloan Pumping Station Expansion	12.9 million
Hacienda Pumping Station Switchgear upgrade	10.5 million
<u>Lamb Pumping Station Expansion</u>	<u>8.1 million</u>
TOTAL	\$71.5 million

67

Ozone Rehabilitation

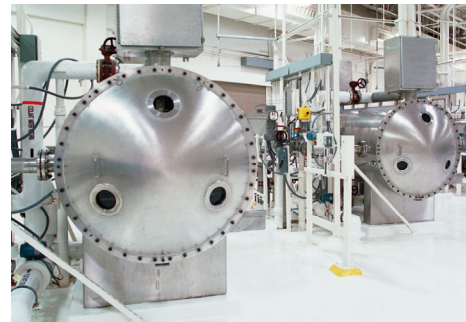
The current Ozone system is nearly 20 years old and nearing the end of its useful life.

Replacement parts are no longer manufactured.

This project will:

- Replace power supplies and ozone generator equipment with current technology
- Enable the system to continue to provide advanced water treatment for the next 20 years.

PROJECTED COST: \$38.5 MILLION



Alfred Merritt Smith Filter Improvements

Filter media at Alfred Merritt Smith Water Treatment Facility (AMS) was installed in the early 1980s and designed for higher lake levels and less turbidity.

This project will:

- Retrofit the underdrains in the filters and add a different media.
- Improve treatment of higher turbidity levels
- Install the same media that has worked successfully at River Mountains

PROJECTED COST: \$20.7 MILLION



In-Valley Maintenance Facility



Horizontal boring mill



30,000 lb. cone valve

With a significantly increased project workload to complete these facilities, staff will require additional space.

PROJECTED COST: \$20 MILLION

Low Lake Level Pumping Station (L3PS)

A few, smaller projects remain before SNWA can close out L3PS:

- Restore approximately 10 miles of Lakeshore Road
- Restore jobsite (removal of trailers and access roads)
- Environmental restoration

PROJECTED COST: \$16.4 MILLION



71

Other Asset Management Projects

Asset Management Software Replacement	\$15.5 million
RMWTF microbiology research lab retrofit	16.0 million
SCADA Upgrades	12.7 million
Water quality testing equipment	11.8 million
<u>System-wide valve actuator upgrades</u>	<u>6.6 million</u>
Other Asset Management Projects	\$62.6 million

72

Total Asset Management Projects

Stage 2 Upgrade	\$71.5 million
Ozone Rehabilitation	38.5 million
Filter Improvements	20.7 million
In-valley Maintenance Facility	20.0 million
L3PS Closeout Activities	16.4 million
<u>Other Asset Management Projects</u>	<u>62.6 million</u>
Total Asset Management Projects	\$229.7 million

73

Total MSCP Facility Project Costs

Horizon Lateral	\$1,596.7 million
Garnet Valley Water	129.8 million
Garnet Valley Wastewater	120.0 million
Boulder City Wastewater System	26.0 million
Large-Scale Solar PV Project	20.8 million
<u>Asset Management</u>	<u>229.7 million</u>
Total	\$2.1 billion

74



Operating Capital

The **Operating Capital** budget typically includes a large amount of smaller asset management projects, such as:

- Vault upgrades
- Valve repairs
- Equipment rehab

There are currently 190 projects in SNWA's Operating Capital Budget

Total cost: \$176 million





Capital Equipment

Capital Equipment includes items such as the tools, machines and vehicles used to carry out SNWA projects.

Total cost: \$50 million





Lower Las Vegas Wash

Significant erosion and deferred maintenance threaten the integrity of the Lower Las Vegas Wash, which conveys treated wastewater flows from the Las Vegas Valley to Lake Mead.

The SNWA estimates the current rate of channel erosion is 2-3 vertical feet per year.



Lower Las Vegas Wash



If current rates of erosion are not addressed:

- Water quality impacts (sediments and phosphates)
- May jeopardize discharge permit compliance
- Further degradation in Wash channel
- Threats to integrity of wash infrastructure upstream
- Potential ESA-compliance issues

81

Lower Las Vegas Wash

The Federal Highway Administration and the SNWA evaluated what is needed in the Lower Wash to reduce erosion, maintain water quality and protect existing infrastructure:

- Realign/Reconstruct Drop 2 structure
- Reconstruct Drop 3
- Construct six more weirs



TOTAL COST: \$122.5 million

82

Total SNWA Capital

Major Construction and Capital Plan	\$3,003.3 million
Facilities	\$2,123.0 million
Resources	\$880.3 million
Operating Capital	176.7 million
Capital Equipment	50.0 million
<u>Lower Las Vegas Wash</u>	<u>122.5 million</u>
TOTAL SNWA CAPITAL	\$3.35 billion

83

