



Dave Johnson

DEPUTY GENERAL MANAGER
ENGINEERING & OPERATIONS

 SOUTHERN NEVADA WATER AUTHORITY®

2019 ANNUAL CONFERENCE
Oct. 20-23, 2019 | Rio Hotel & Convention Center



SOUTHERN NEVADA OVERVIEW



Approximately:

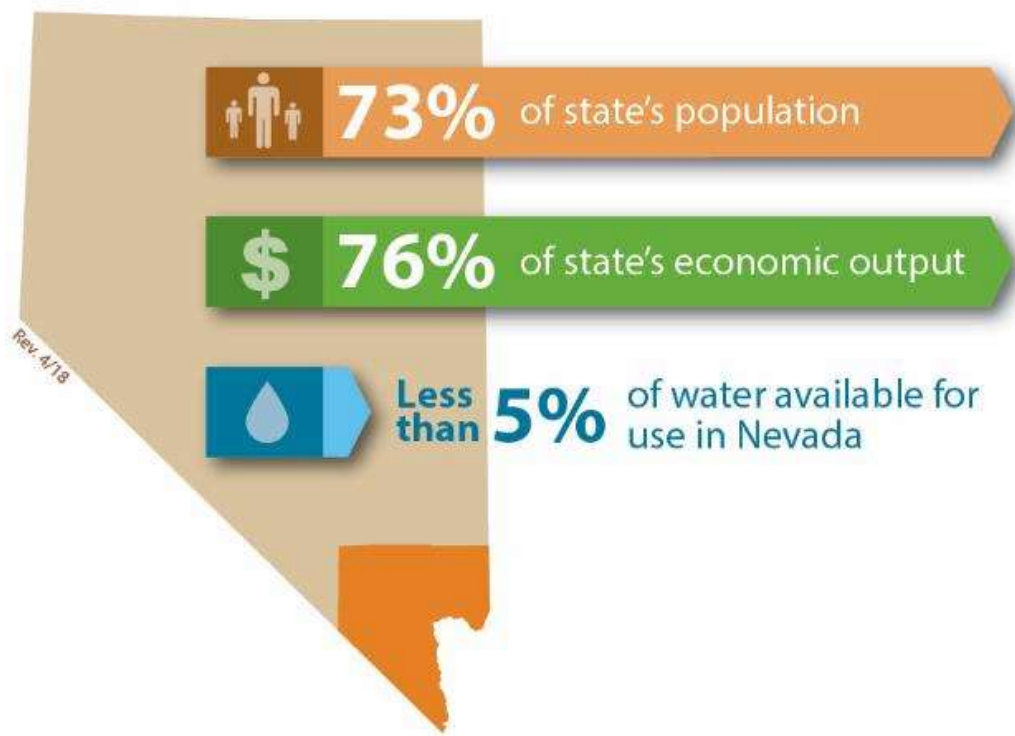
- 1,600 sq. miles (4,143 km²)
- 2 million residents
- 42 million annual visitors
- 4 inches (10 cm) annual precipitation

Las Vegas





Las Vegas



SOUTHERN NEVADA:

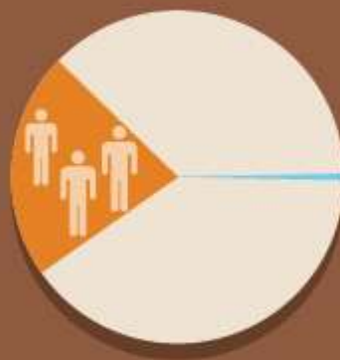
**Big impact on economy,
little impact on state
water resources.**



Rev. 4/19

SOUTHERN NEVADA RESORTS

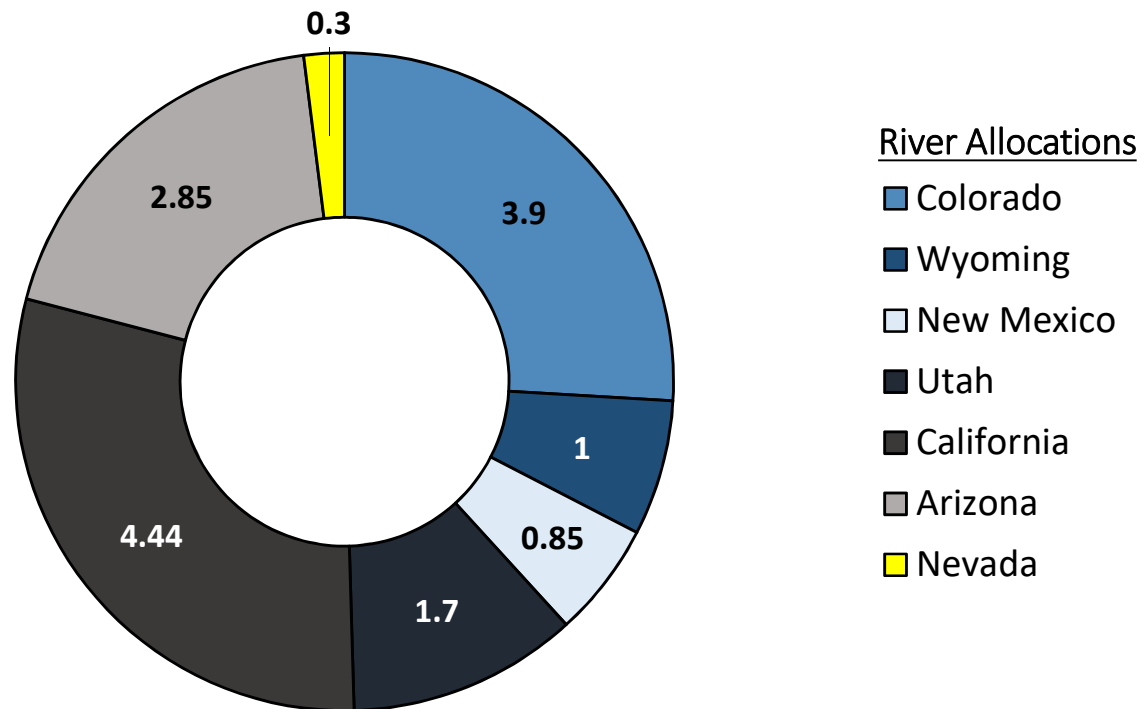
Employ
20%
of state's
workforce



Use about
1/10 of 1%
of water available
in Nevada

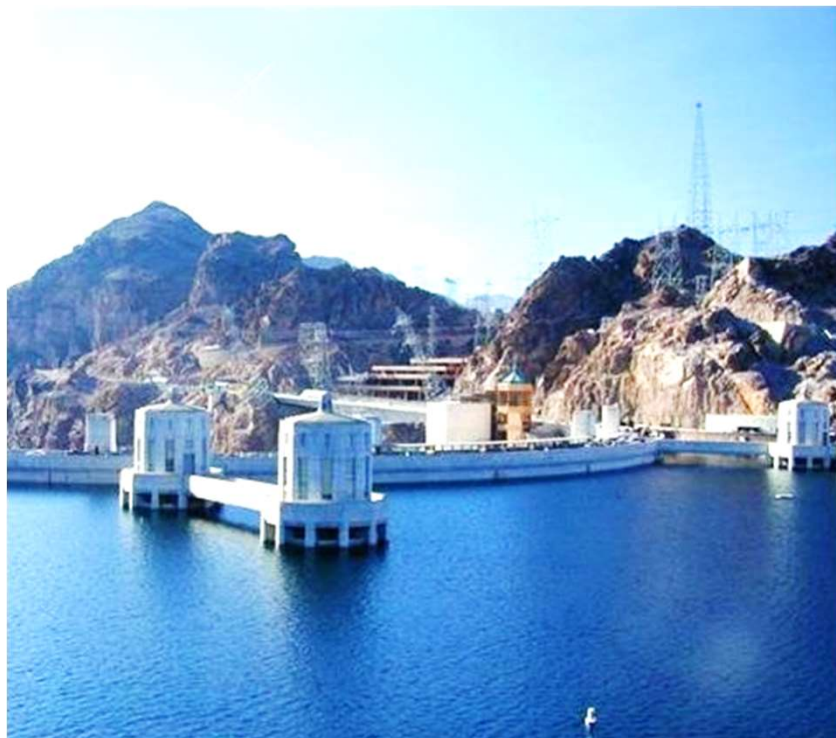
Data sources: NV Department of Water Resources, Bureau of Economic Analysis, SNWA, State Demographer, NV Department of Employment Training & Rehabilitation

Nevada receives 300,000 acre-feet of Colorado River water annually.



**millions of acre-feet*

Since 2000, the Colorado River has been experiencing severe drought conditions, affecting Lake Mead's water levels.

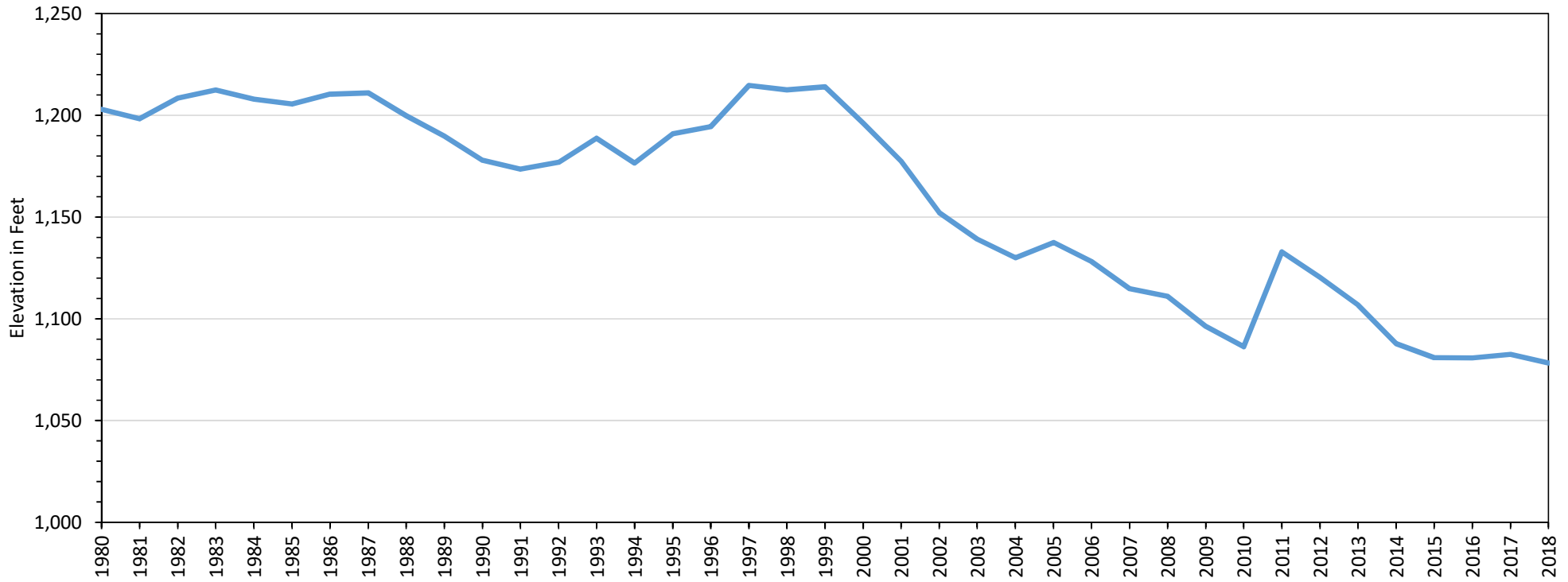


2000

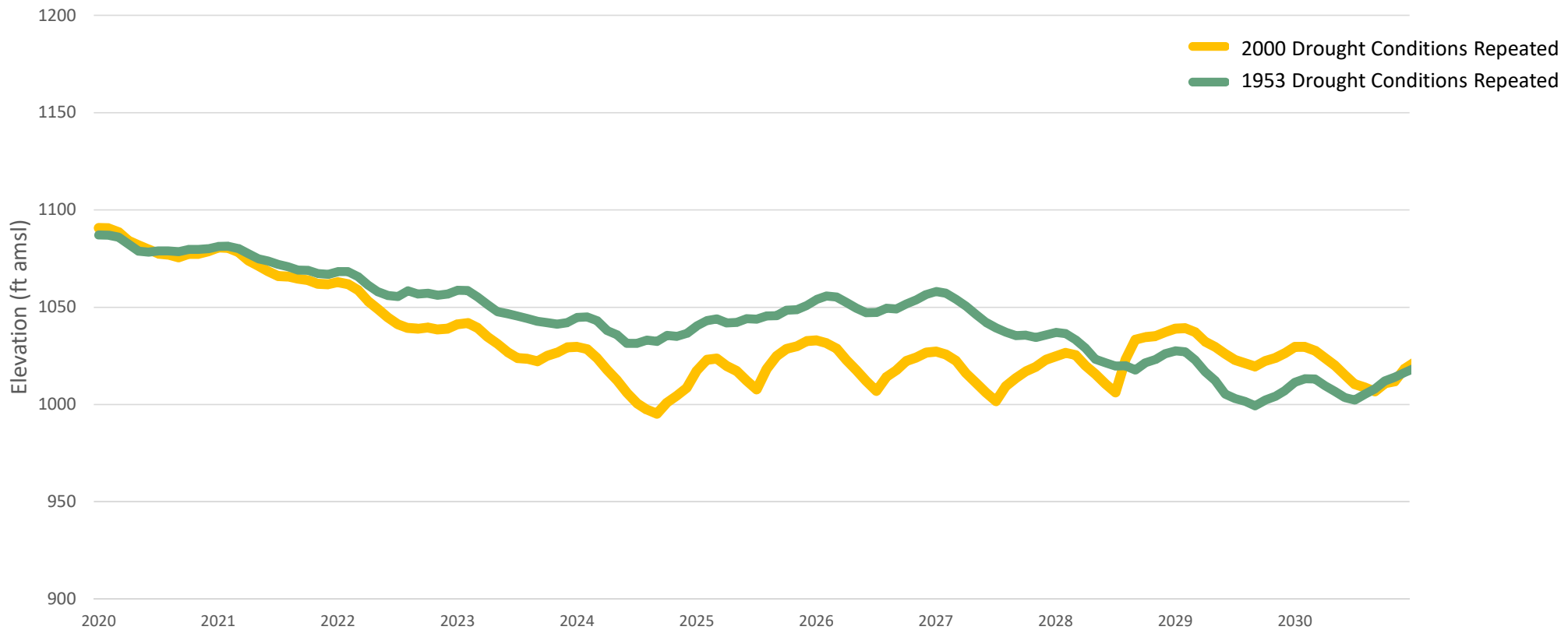


2019

Since the drought began, Lake Mead levels have fallen more than 100 feet.



Modeled with previous drought inputs, projections show Lake Mead water levels will decline.





SOUTHERN NEVADA WATER AUTHORITY®

Established to address water issues on a REGIONAL basis.



CONSERVATION

Incentives, Programs,
Regulation and Pricing



WATER SUPPLY PLANNING

Developing and managing
regional water supplies



WATER QUALITY

Maintaining and
protecting water quality



INFRASTRUCTURE

Building and operating
major facilities



STEWARDSHIP

Protecting
environmental resources

INNOVATION FOUNDATION

A man wearing a white hard hat and a high-visibility yellow safety vest over a plaid shirt is looking at a tablet computer. He is standing in an industrial facility with various pieces of machinery and pipes visible in the background. The scene is brightly lit, suggesting an outdoor or well-lit indoor environment.

Organizational goal:
“Develop innovative and sustainable solutions through research and technology.”

CONSERVATION

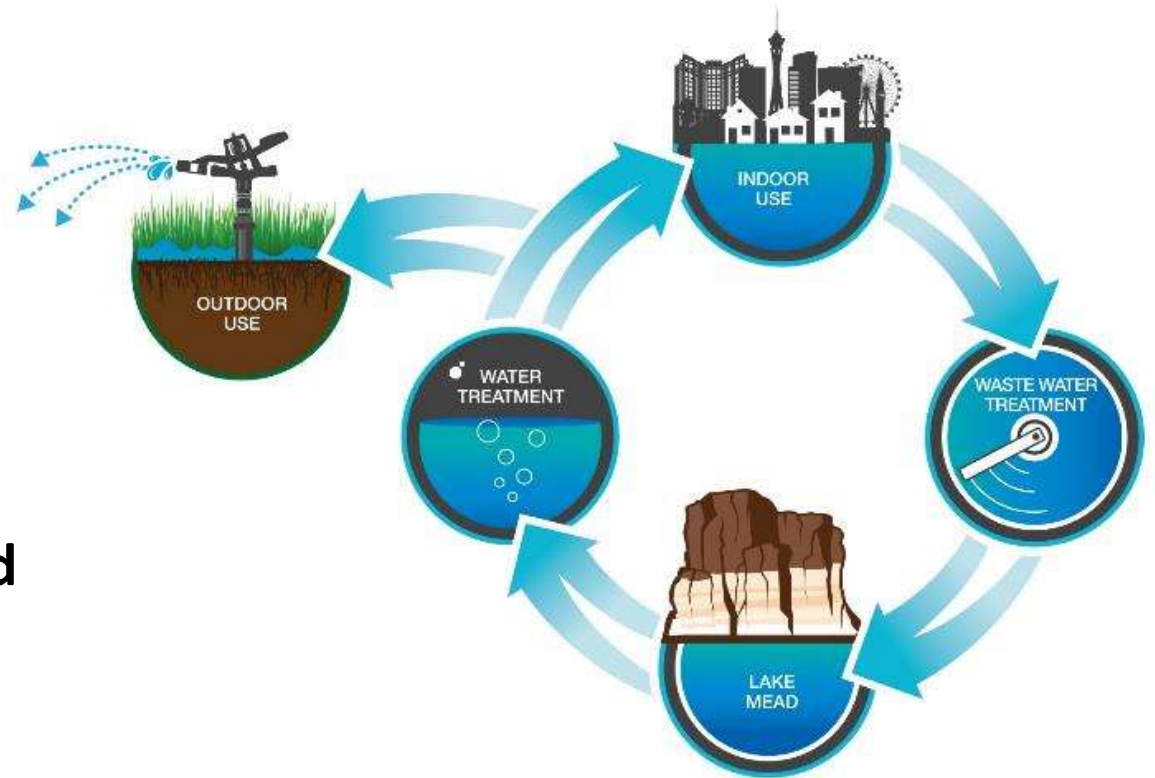


RETURN FLOWS

Conservation

40 percent of our water is used indoors, then captured, treated and returned to Lake Mead via the Las Vegas Wash.

We reuse all of the water returned to Lake Mead.



Despite population gains, water use has declined since 2002.

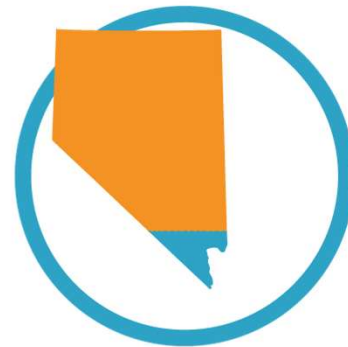
Southern Nevada
POPULATION



Per Capita
WATER USE



Colorado River Water
CONSUMPTION



Non-functional Turf Conversion



- An average 15,000 square-foot conversion saves 825,000 gallons each year (or \$300 a month)
- Receive \$3 per square foot converted
- Visit SNWA.com to enroll



WATER SMART LANDSCAPES PROGRAM FACTS

189 MILLION

Square feet of grass has been removed since the WSL program began in 1999

THAT'S EQUIVALENT TO:

Enough grass to cover more than



3,284

FOOTBALL FIELDS

OR

Rolling an 18" wide strip of sod



96%

AROUND THE EARTH

130 BILLION

Gallons of water saved to date.

That's enough water to fill the Luxor Hotel Pyramid

360

TIMES



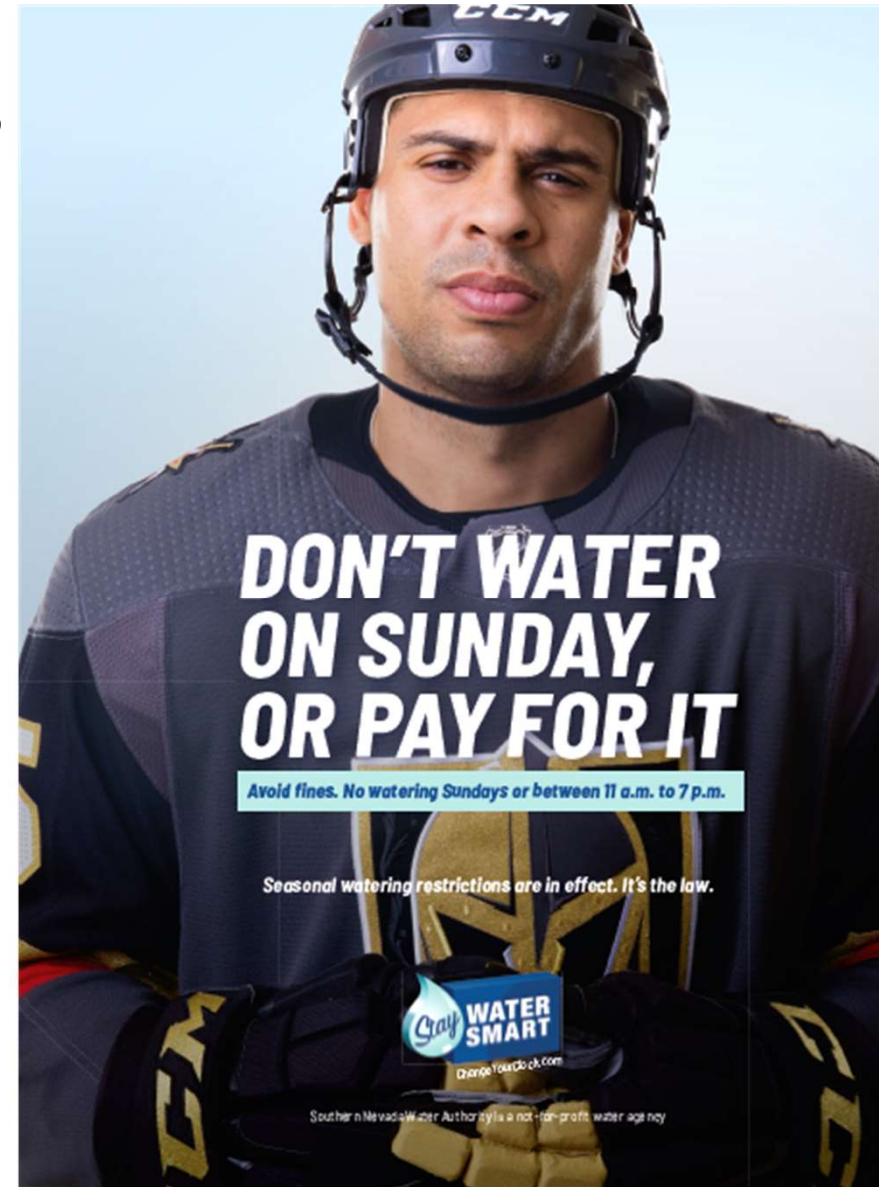
Water Efficient Technologies



- **Incentives for commercial & multifamily property owners who install water-efficient devices/ technology**
- **Earn up to \$45 for every 1,000 gallons saved**
- **Replace water fixtures or find a custom option**
- **Since 2001, participating businesses in the WET program have saved more than 14 billion gallons of water**

CONSERVATION INITIATIVES

- Increased rebate amounts for programs
- Increased water waste enforcement
- Increased media and public outreach
- Changing local ordinances
- New tools for customers to report waste
- New programs for large turf users (schools, parks)
- Leak notifications
- Sunday watering notifications







CONSERVATION COMPLIANCE

A moderate increase in watering schedule compliance could yield significant water savings.



Although compliance rates vary by season, an **average improvement of 15%** could yield **more than 19,500 acre-feet** of water savings annually.

In winter alone, **just a 1% improvement** in compliance could yield **approximately 350 million gallons** in water savings.

WATER SUPPLY PLANNING



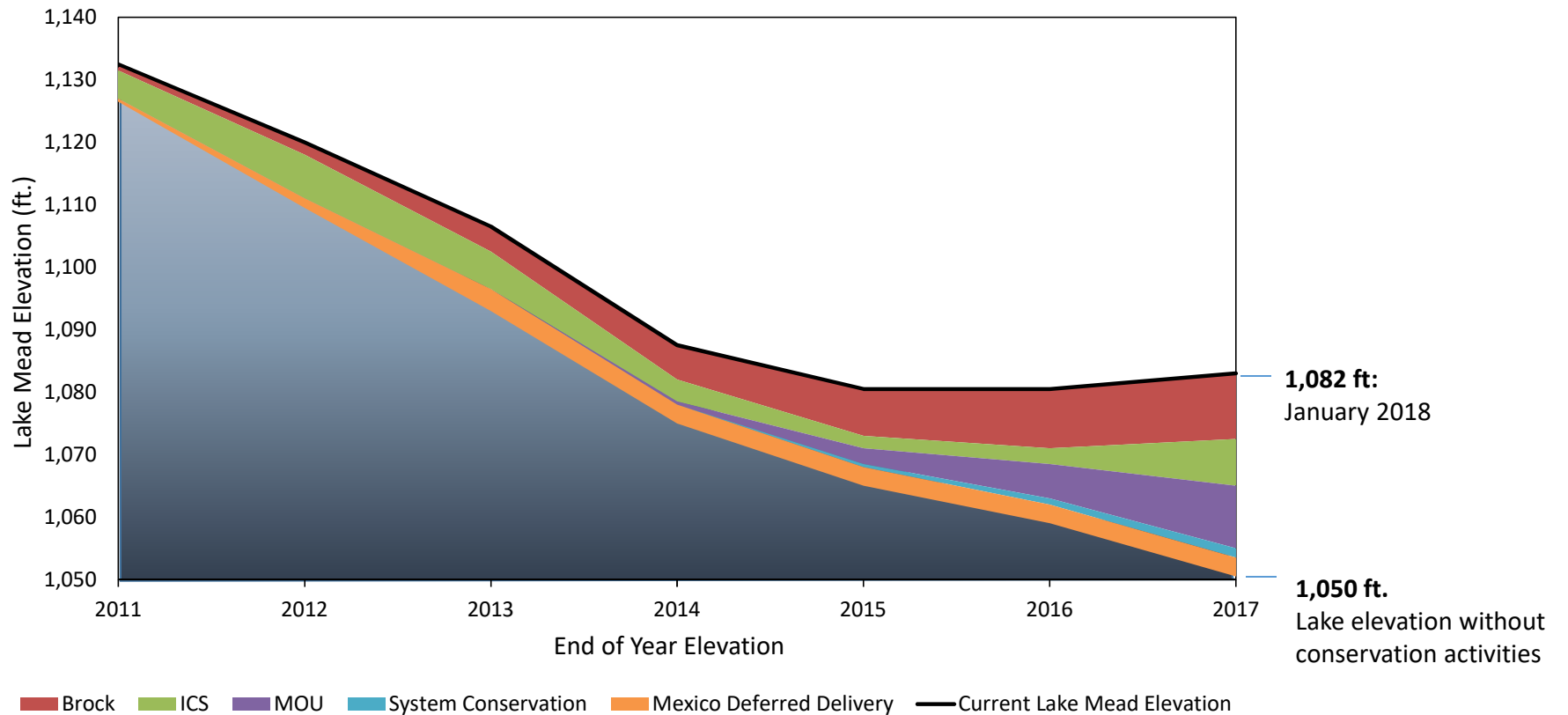
INNOVATIVE AGREEMENTS

Water Supply Planning

The seven Colorado River Basin States and the country of Mexico have been working together for 20 years to address drought impacts.

- Interstate Banking Regulations
- Interim Surplus Guidelines
- Arizona Water Banking Agreement
- Quantification Settlement Agreement
- Interim Guidelines
- Mexico Minute 319
- System Conservation Agreement
- Mexico Minute 323
- Drought Contingency Plans

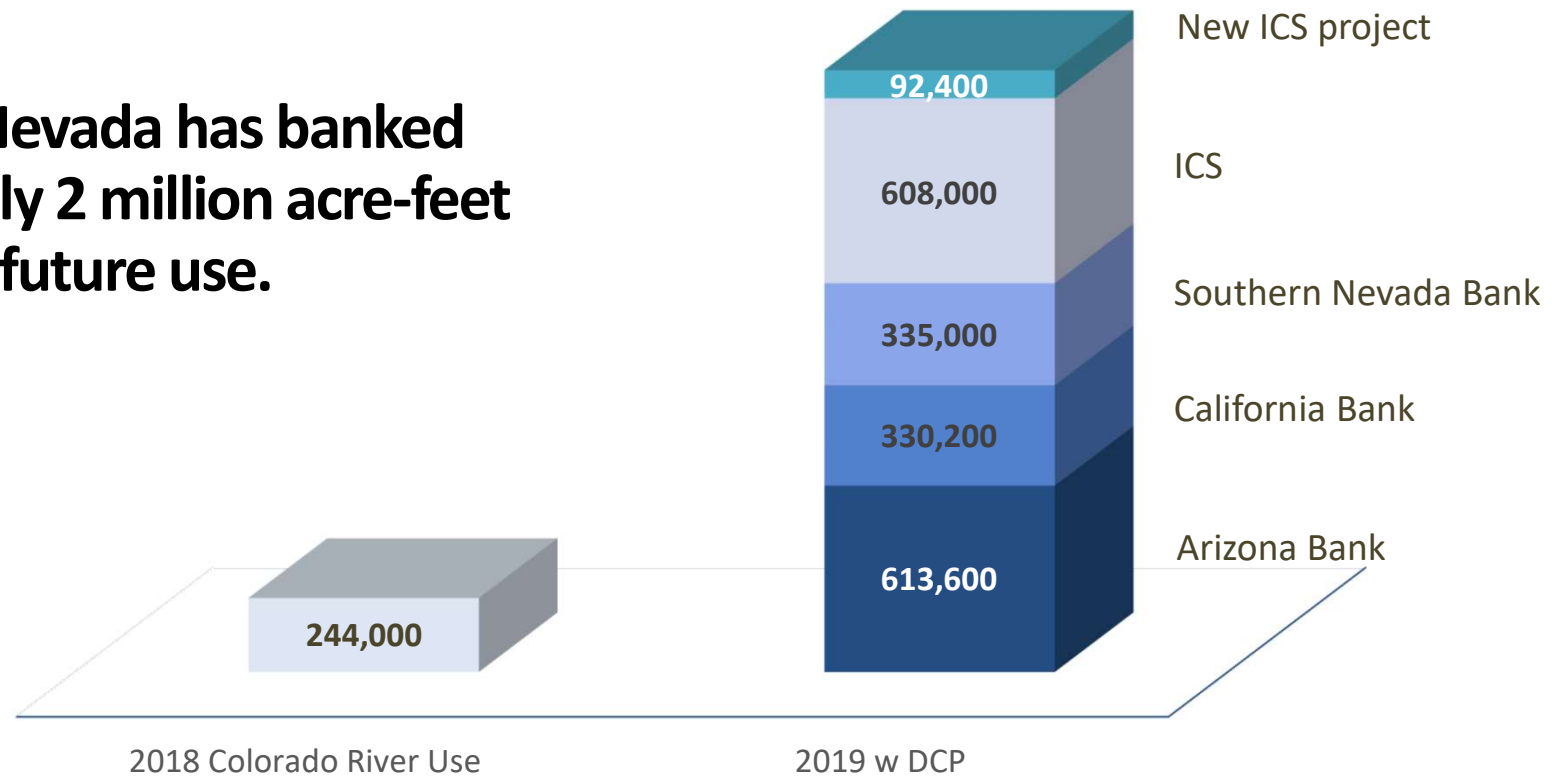
Innovative conservation investments have slowed Lake Mead's decline.



WATER BANKING

Water Supply Planning

Southern Nevada has banked approximately 2 million acre-feet for future use.



INFRASTRUCTURE & WATER QUALITY



INFRASTRUCTURE

Infrastructure & Water Quality

In 2005, planning was initiated to protect and improve Southern Nevada's infrastructure amid declining lake levels.

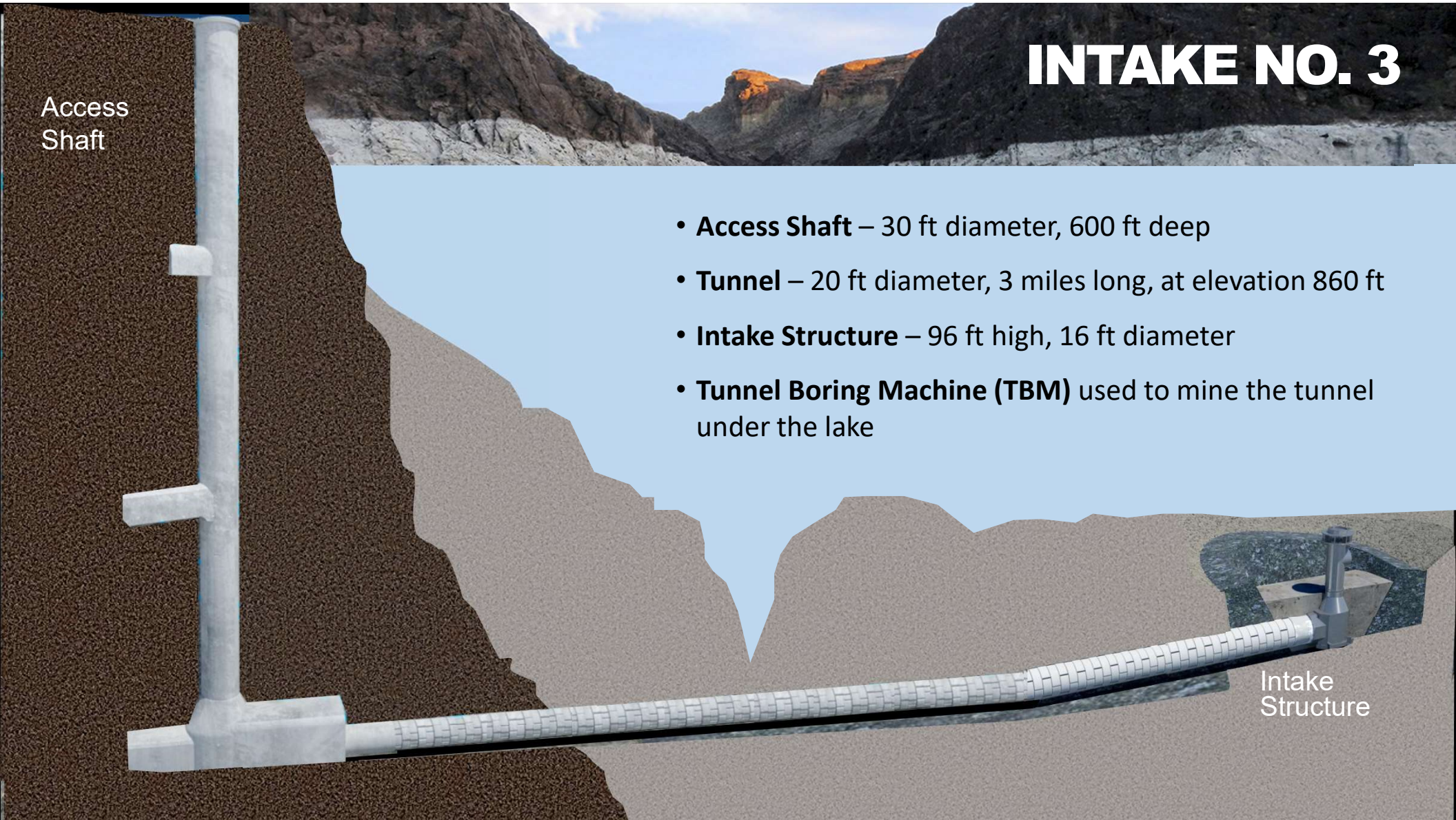


INTAKE NO. 3

Access
Shaft

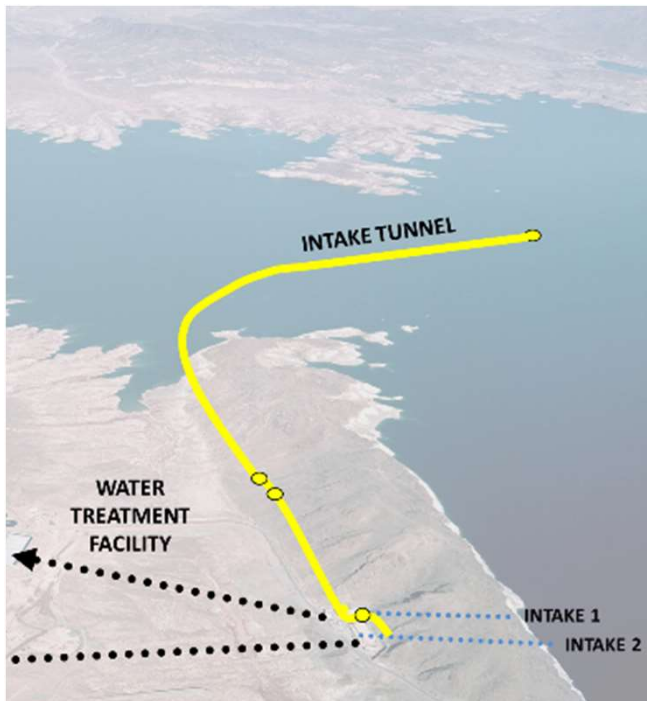
- **Access Shaft** – 30 ft diameter, 600 ft deep
- **Tunnel** – 20 ft diameter, 3 miles long, at elevation 860 ft
- **Intake Structure** – 96 ft high, 16 ft diameter
- **Tunnel Boring Machine (TBM)** used to mine the tunnel under the lake

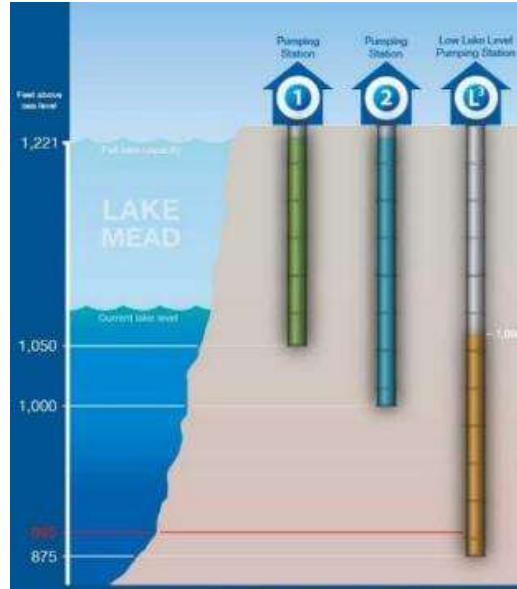
Intake
Structure



In 2015, Intake No. 3 was put into operation

- Protects water quality
- Avoids additional treatment processes
- Maintains access to Colorado River allocation
- \$817 million project





Low Lake Level Pumping Station

- The Low Lake Level Pumping Station is under construction near Lake Mead.
- When completed, the pumping station will ensure water deliveries if elevations fall as low as 875 feet.
- \$650 million project



High lift pump

HIGH LIFT & LOW LIFT PUMPS

Due to demanding operating conditions and unique design requirements, SNWA searched world-wide for pumps that would perform reliably to specifications.

Low Lift Pumps (22):

- 3 Test Pumps purchased (Andritz, Ebara, Indar)
- 19 Indar pumps purchased

High Lift Pumps (12):

- 12 Indar pumps purchased



Low lift pump



waterstart
channels for innovation

Global leaders dedicated to the implementation of water innovation



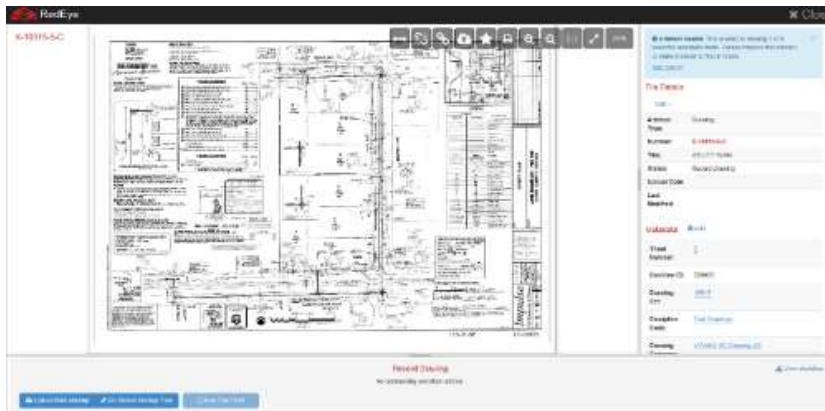
Nevada Governor's Office of
ECONOMIC DEVELOPMENT





ENGINEERING DATA MANAGEMENT TECHNOLOGY

- More than 150,000 drawings have been eliminated due to consolidation and improvement
- Field technicians have a single source of truth to work from
- The application automatically updates as the as-built drawings change
- A productivity increase has occurred with projections of **saving over 450 hours per month in staff time**





PUMP EFFICIENCY MEASUREMENT TECHNOLOGY



- Installed Riventa FREEFLOW technology at SNWA Hacienda Pump Station
- Delivered previously unattainable information on individual pump performance
- Identified \$77,000 in potential annual savings
- Using technology to test additional pumps at other pump stations

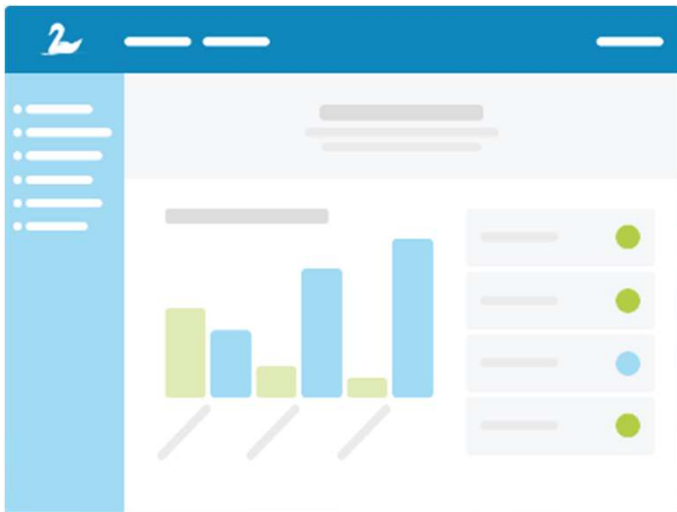


ACOUSTIC MONITORING TECHNOLOGY

- Installed nodes along Las Vegas Boulevard
- Uses wireless communications to transmit acoustical data to LVVWD
- **Monitors critical areas of water system** and ensures swift response if issues arise
- **Helps avoid costly emergency repairs**



Klir



PERMIT MANAGEMENT AND WORKFLOW TECHNOLOGY

- Technology to streamline permitting related processes (approximately 3,000 permits)
- Klir is a modular SaaS platform that centralizes workflow and data for environmental regulation, compliance and monitoring
- Provides dashboard with rolled-up summary of pending and active permits with important dates and notices
- Also, provides ability to assign tasks and track progress

STEWARDSHIP



WARM SPRINGS NATURAL AREA

Stewardship

- 1,220-acre property featuring more than two dozen springs, streams and wetlands
- 28 sensitive species, including the Moapa dace
- More than 200 species of birds
- Integral part of Southern Nevada watershed



SUMMARY

- Our vision is to be a global leader in service, innovation and stewardship
- As drought and climate change continue to impact water and environmental resources, we need more sustainable, innovative solutions to address the issues
- External relationships with international, national and local entities will be critical in developing solutions to the unique challenges facing the community
- We must also work internally to foster a work environment that encourages the development of innovative strategies and solutions





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