Lake Mead National Recreation Area: USGS Depth-Dependent Water-Quality Monitoring at Lakes Mead and Mohave

Prepared for

Lower Colorado River Science Symposium 2016

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USGS Lake Mead National Recreation Area data collected in cooperation with the following:

NATIONAL PARK SERVICE

SOUTHERN NEVADA WATER AUTHORITY®

Clark County Water Reclamation DISTRICT

"The Clean Water Team"

Overview

- Lakes Mead and Mohave background
- Why collect the data?
- USGS depth-dependent water-quality monitoring
- Data graphs
- Data products
- Questions

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Hoover Dam – Lake Mead Reservoir

- **Hoover Dam on the Colorado River was completed in 1936**
- **Hoover Dam created Lake Mead – the largest reservoir in the United States**
- **Capacity = 28.9 million acre-feet**
- **Provides drinking and irrigation water, hydroelectric power and flood control**

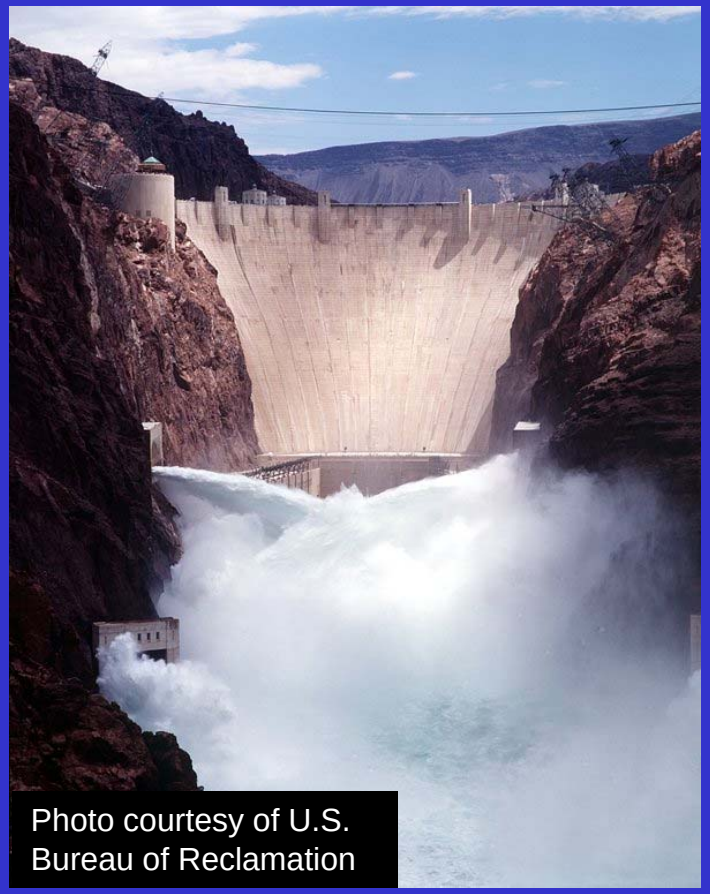

Photo courtesy of U.S. Bureau of Reclamation

Davis Dam – Lake Mohave Reservoir

- **David Dam on the Colorado River was completed in 1950**
- **Davis Dam created Lake Mohave**
- **Capacity = 1.8 million acre-feet**
- **Mexican Treaty of 1944 required that the United States construct a dam for regulating water to Mexico**

Photo courtesy of U.S. Bureau of Reclamation

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Why Collect the Data?

Lakes Mead and Mohave on the Colorado River…

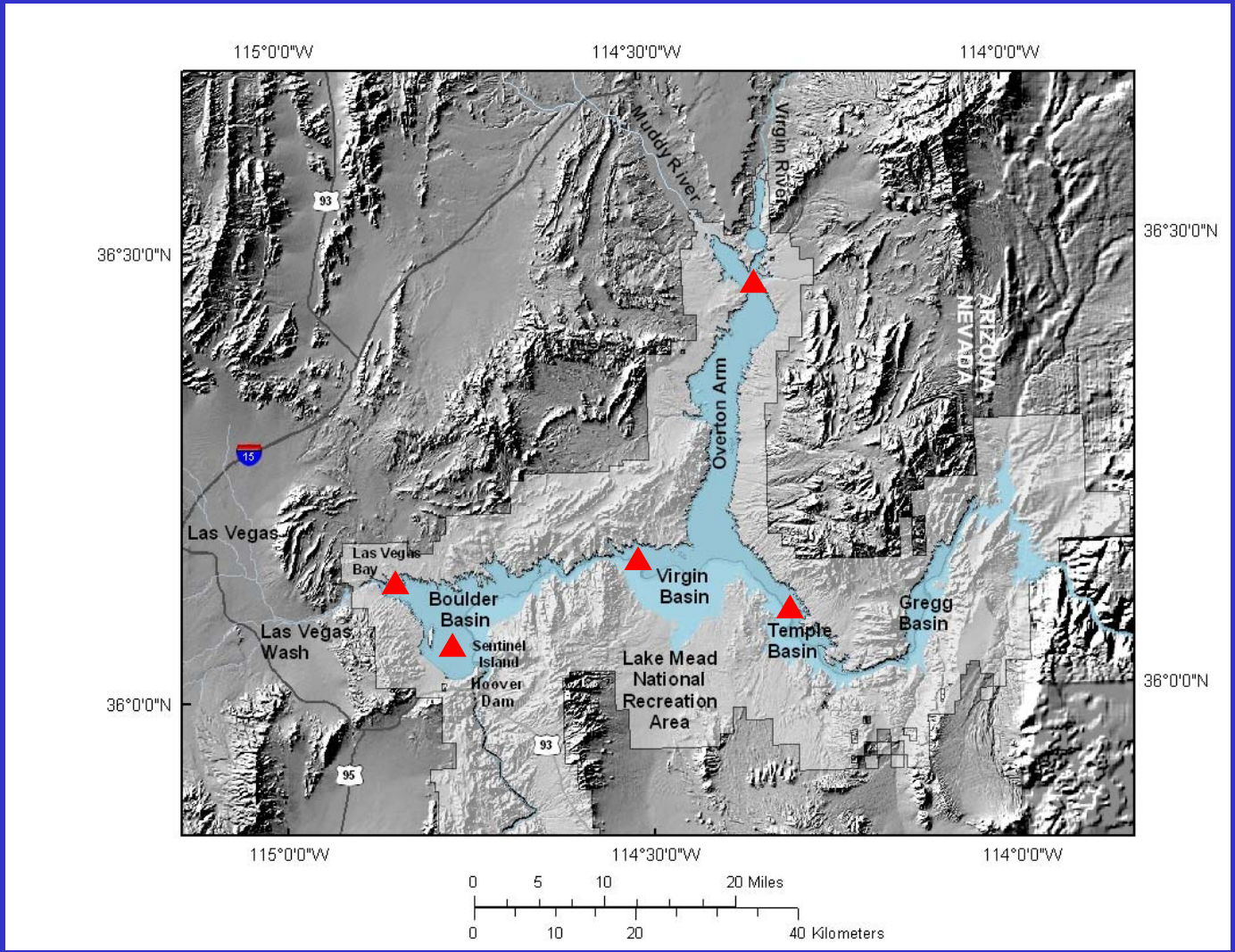
- **are a drinking, industrial, and irrigation water source for over 25 million users.**
- **are a source for tourism (such as recreational watercraft activities and sport fishing).**
- **are critical habitat for the endangered razorback sucker.**
- **support bird populations that include bald and golden eagles and the endangered southwestern willow flycatcher.**

Why Collect the Data?

The data can be used to evaluate issues related to drinking water and aquatic ecosystem health by…

- **tracking the depth of the thermocline.**
- **defining current baseline water-quality conditions.**
- **providing input and/or calibration data for computer models that simulate lake hydrodynamics.**

Lake Mead Depth-Dependent Water-Quality Monitoring: USGS Historic Station Locations (▲)



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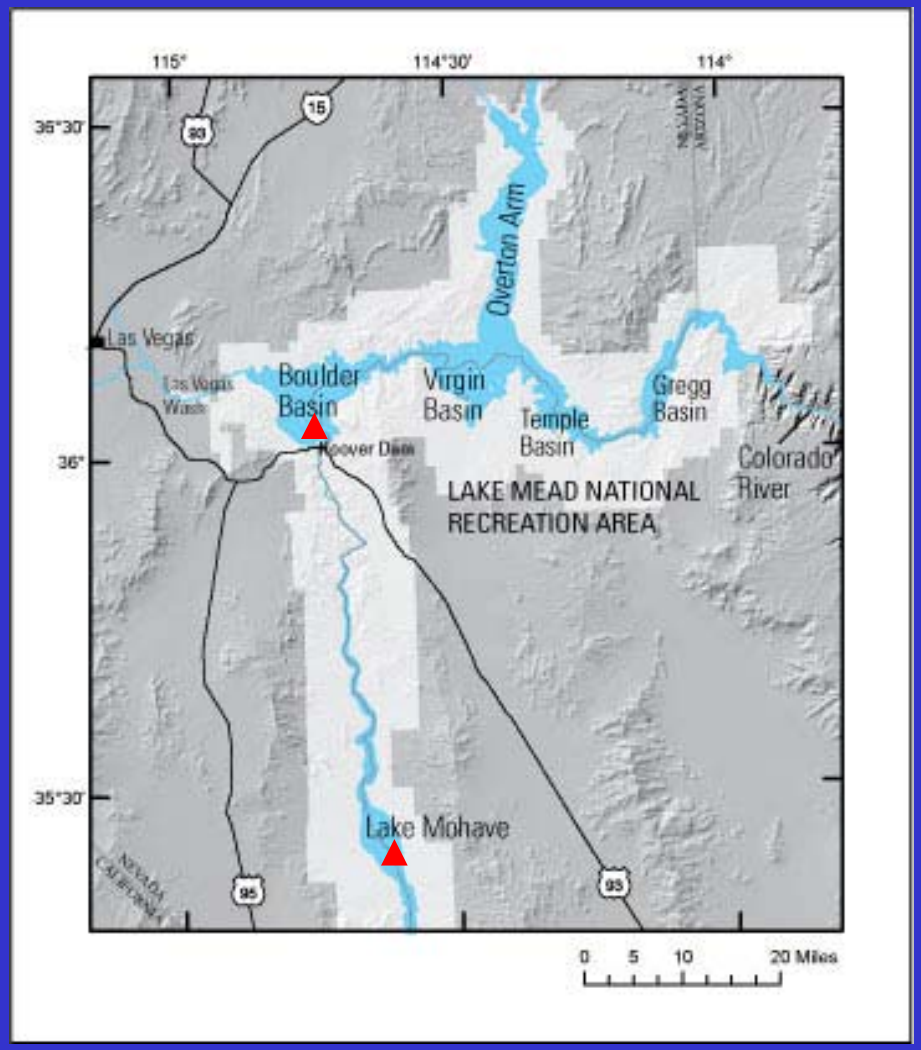
Lake Mead Depth-Dependent Water-Quality Monitoring: USGS Active Station Locations (▲)



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Lake Mead Monitoring Station

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Lake Mohave Monitoring Station

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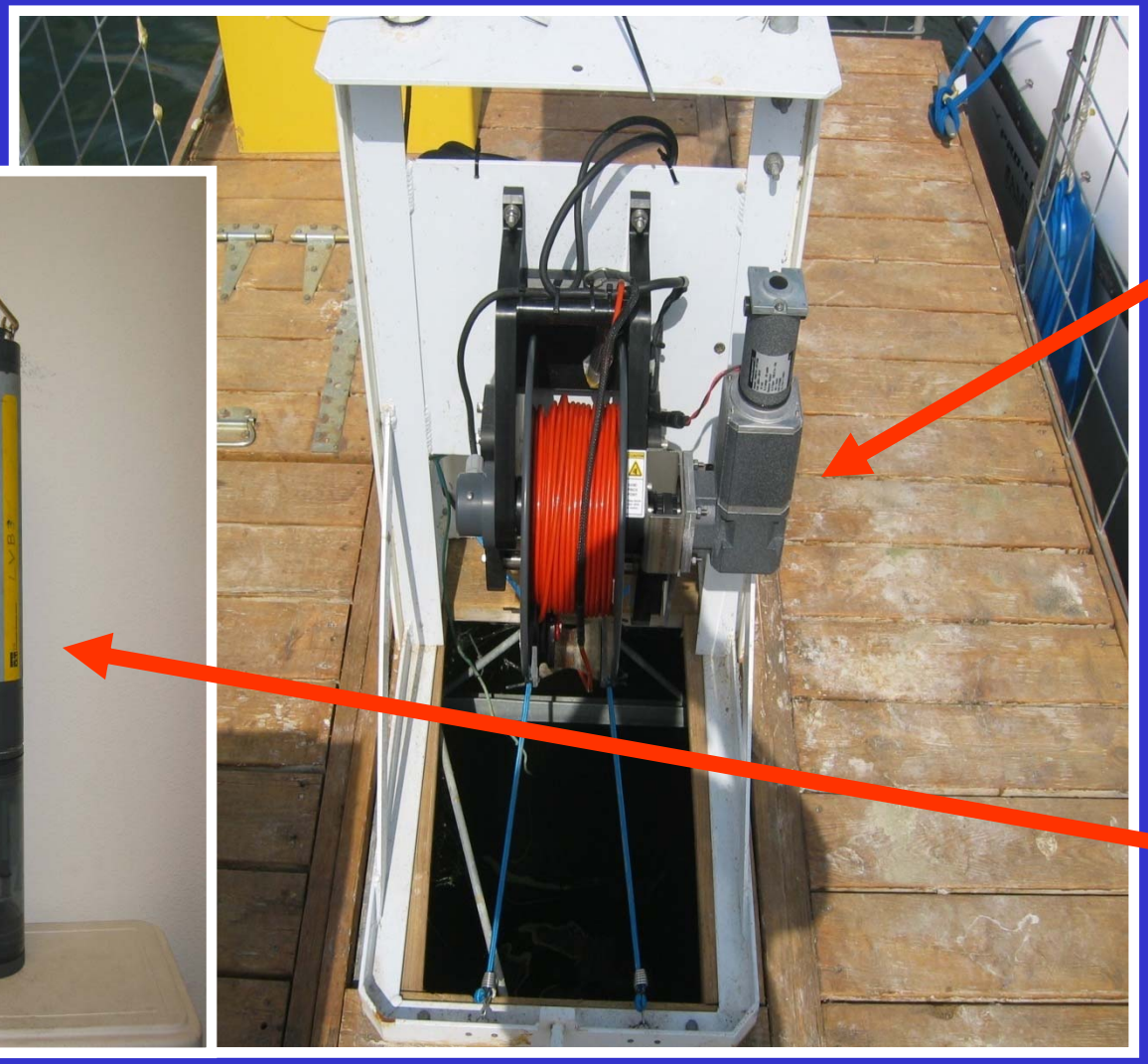
Depth-dependent water-quality data collected at Lakes Mead and Mohave:

- Water Temperature
- Specific Conductance
- Dissolved Oxygen
- pH
- Turbidity
- Depth

Note: 4 profiles every 24 hours. Depth increments are 5 meters at Mead and 2.5 meters at Mohave.

Depth-Dependent Water-Quality Monitoring Station



Winch motor, reel and cable assembly

Water-quality sonde

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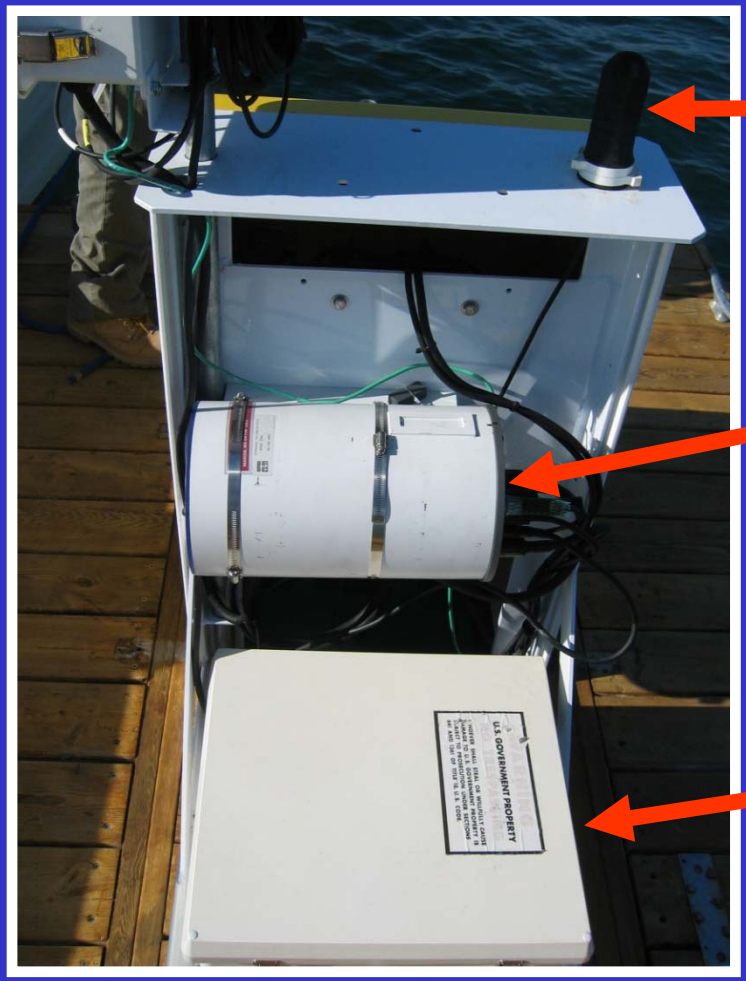
Depth-Dependent Water-Quality Monitoring Station…continued



Modem antenna

Water resistant container for datalogger and modem

Water resistant shelter with a 100 amp hour 12 volt gel cell rechargeable batteries (30 watt solar panel)

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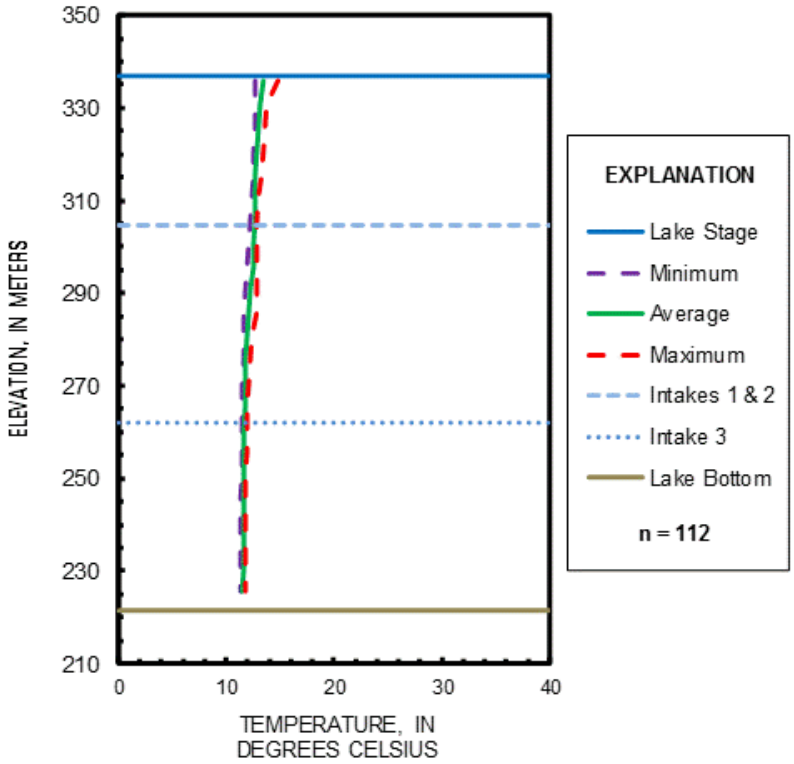
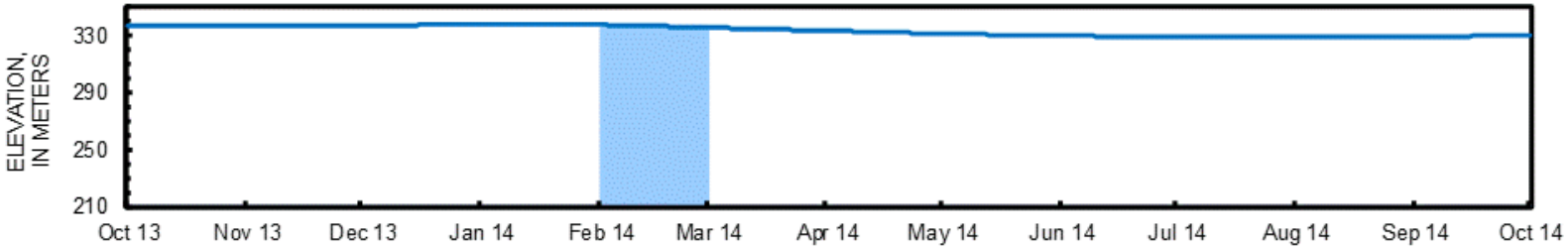
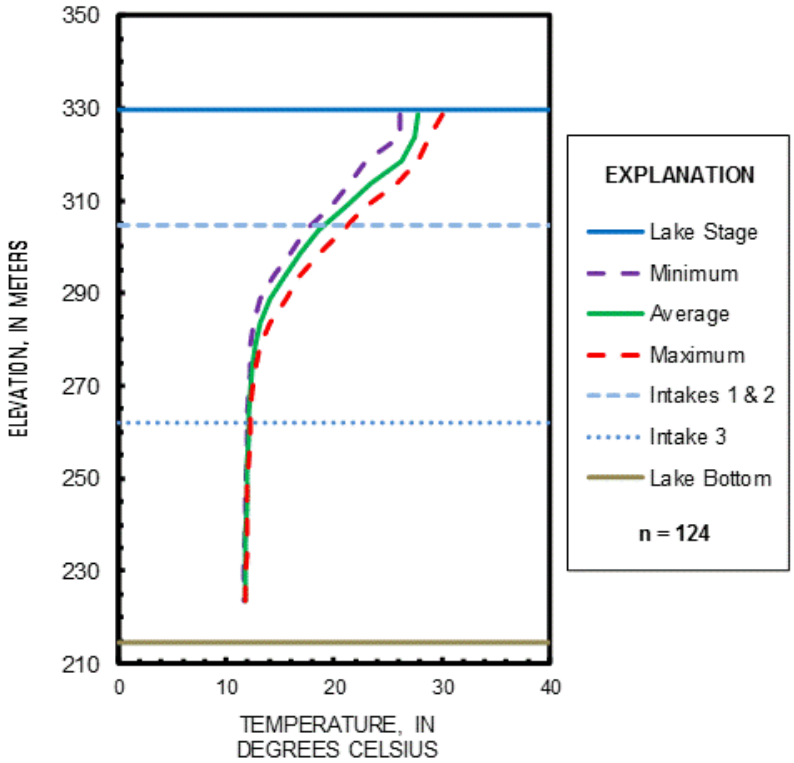
USGS Water-Quality Monitoring Station, Boulder Basin, Lake Mead, AZ-NV: 02-01-14 through 02-28-14

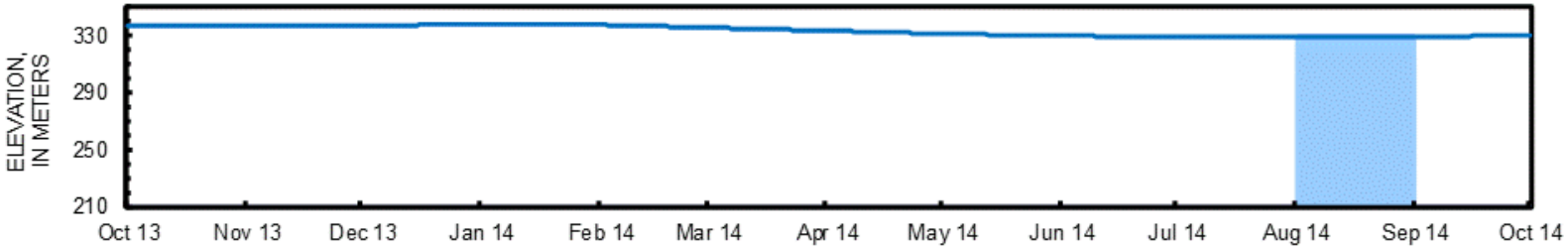




Note — Lake Stage and Bottom are Approximations – Provisional Data (Subject to Review/Revision)

USGS Water-Quality Monitoring Station, Boulder Basin, Lake Mead, AZ-NV: 08-01-14 through 08-31-14





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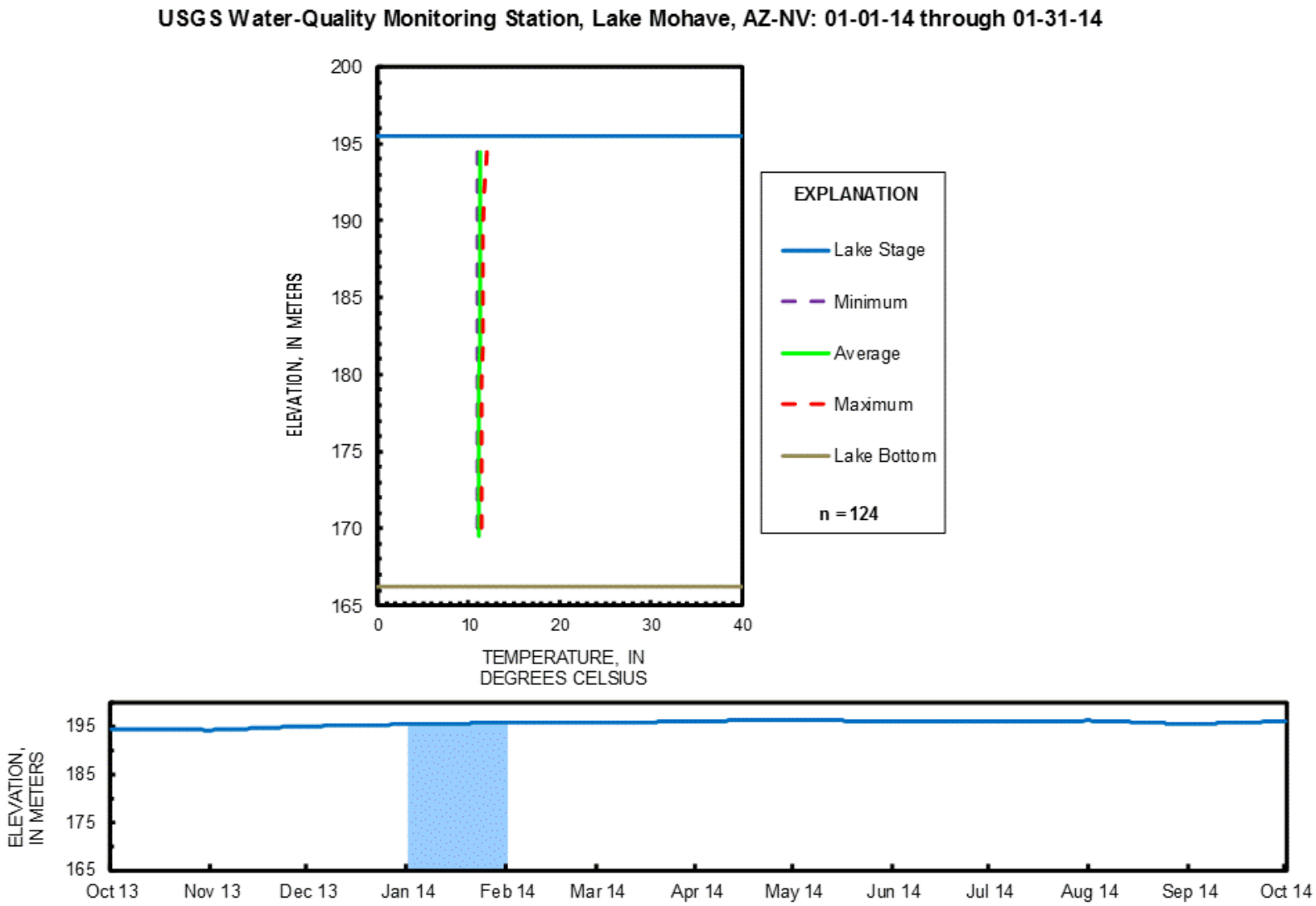

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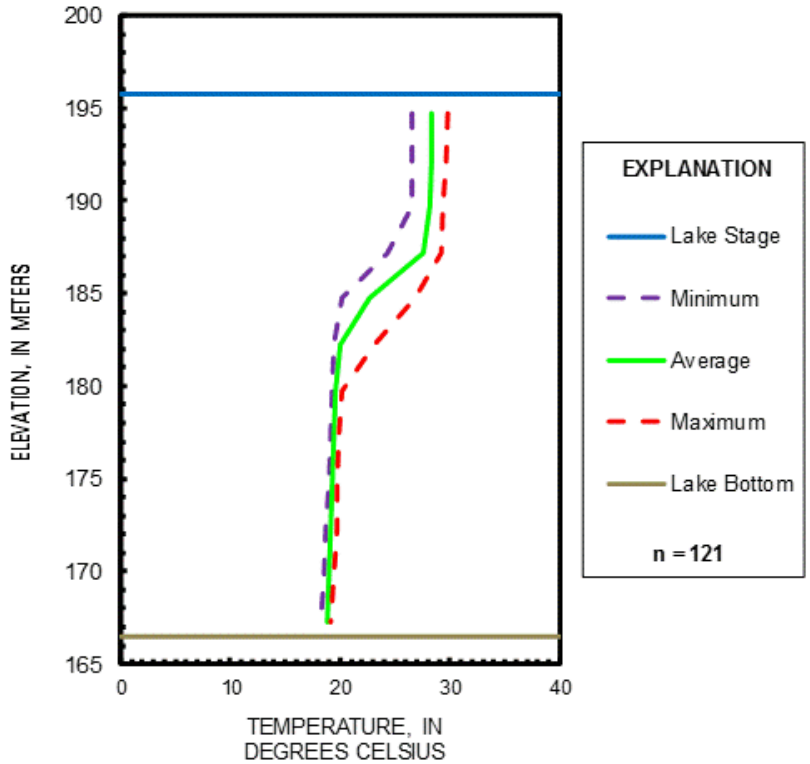
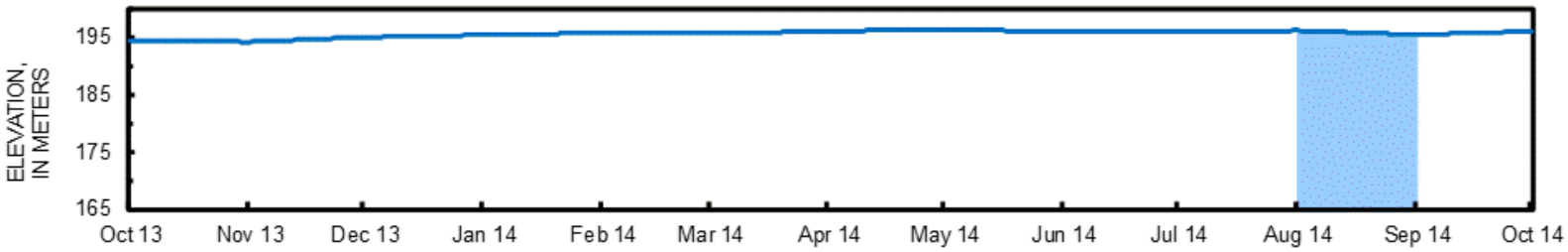
USGS Water-Quality Monitoring Station, Lake Mohave, AZ-NV: 08-01-14 through 08-31-14





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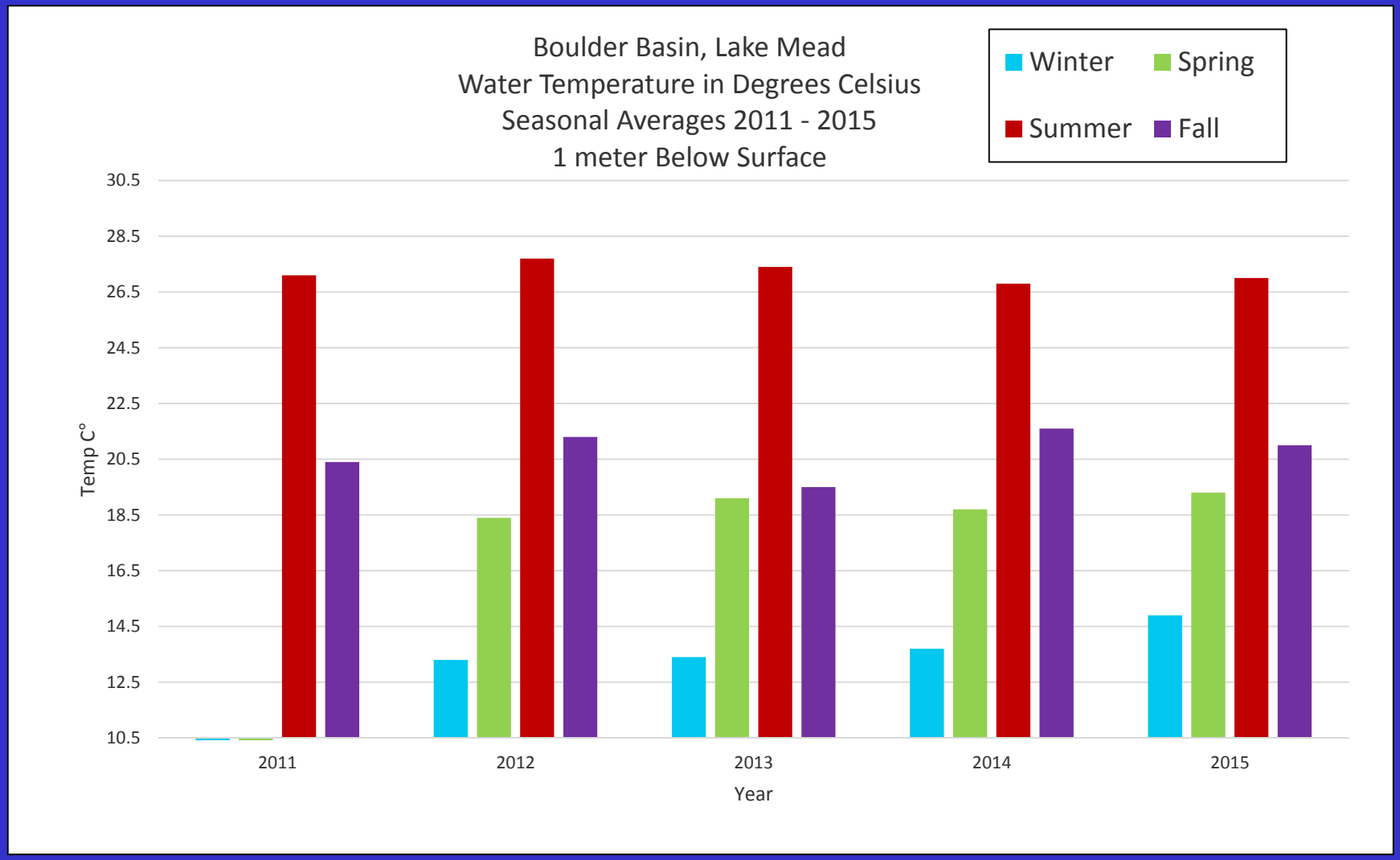
Lake Mead Monitoring Station



Provisional Data (Subject to Review/Revision)

Lake Mead National Recreation Area Water-Quality Monitoring

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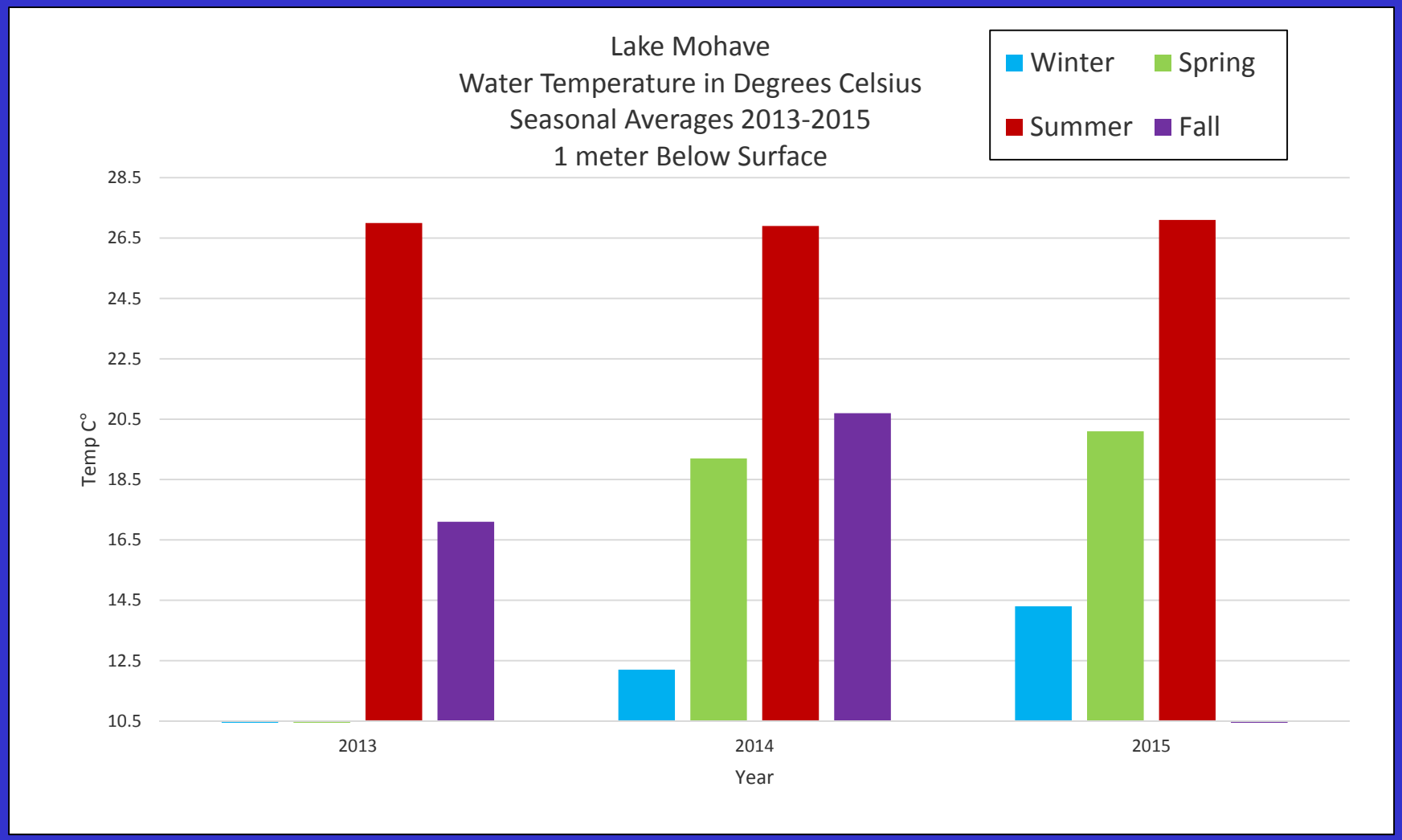
Lake Mohave Monitoring Station



Provisional Data (Subject to Review/Revision)

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Online Data

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Nevada Water Science Center

Water–Quality Monitoring at Lake Mead National Recreation Area, Arizona and Nevada

Near-Real-Time and Quality Assured Data

Additional Information

Project Bibliography

Lake Mead Water Quality Home Page

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Nevada Water Science Center Home Page

Boulder Basin

Current Data

Current Profile Data: Graphs | Table

Current Meteorological Data: Graphs | Table

Historic Quality-Assured Data

Water Year 2011 | | Water Year 2012 | | Water Year 2013 | | Water Year 2014

Note: These data should be considered PROVISIONAL and are subject to revision until formal USGS publication.

Data Collection

Location: Latitude 36° 02' 46"; Longitude 114° 44' 30"

Current profile frequency: 6 hours

Collection began: May 2011

http://nevada.usgs.gov/water/lmqw/data_mohave.htm

USGS Reports

Evaluating lake stratification and temporal trends by using near-continuous water-quality data from automated profiling systems for water years 2005–09, Lake Mead, Arizona and Nevada

(http://pubs.usgs.gov/sir/2012/5080)

Physical and chemical water-quality data from automatic profiling systems, Boulder Basin, Lake Mead, Arizona and Nevada, water years 2001–04

(http://pubs.water.usgs.gov/of20061284)

Questions?

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