


9-30-2009

## Limnological Assistance for the Lake Mead National Recreation Area in Meeting the Challenge of the Water 2025 Initiative: Quarterly Report, Period Ending September 30, 2009

Margaret N. Rees

*University of Nevada, Las Vegas, [peg.rees@unlv.edu](mailto:peg.rees@unlv.edu)*

Follow this and additional works at: [https://digitalscholarship.unlv.edu/pli\\_lake\\_mead\\_limnology](https://digitalscholarship.unlv.edu/pli_lake_mead_limnology)

 Part of the [Desert Ecology Commons](#), [Environmental Health and Protection Commons](#), [Environmental Monitoring Commons](#), [Fresh Water Studies Commons](#), [Natural Resources and Conservation Commons](#), and the [Terrestrial and Aquatic Ecology Commons](#)

---

### Repository Citation

Rees, M. N. (2009). Limnological Assistance for the Lake Mead National Recreation Area in Meeting the Challenge of the Water 2025 Initiative: Quarterly Report, Period Ending September 30, 2009. 1-6.

Available at: [https://digitalscholarship.unlv.edu/pli\\_lake\\_mead\\_limnology/8](https://digitalscholarship.unlv.edu/pli_lake_mead_limnology/8)

This Report is protected by copyright and/or related rights. It has been brought to you by Digital Scholarship@UNLV with permission from the rights-holder(s). You are free to use this Report in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself.

This Report has been accepted for inclusion in Limnological Studies by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact [digitalscholarship@unlv.edu](mailto:digitalscholarship@unlv.edu).



**Quarterly Report  
University of Nevada, Las Vegas  
Period Ending September 30, 2009**

**Cooperative Agreement Number H8R07060001  
Task Agreement Number J8R07070010**

**Limnological Assistance for the Lake Mead National Recreation Area in  
Meeting the Challenge of the Water 2025 Initiative**

**Executive Summary**

The project final report is on schedule for submission on November 30, 2009 with delivery of the compendium binder shortly thereafter. This report reflects specific progress made between July 1 and September 30, 2009.

Project 1

Two advisory team meetings were attended this year; technical input was provided as appropriate; and summaries were prepared and delivered to Kent Turner. The SCOP Selenium Management Plan has been reviewed with two reports provided.

Project 2

Whitepapers on the carp die-off due to Koi Herpes Virus (KHV) and on lead-base paint use on launch ramps were finalized and delivered to Mr. Turner.

Project 3

The Interagency Monitoring Action Plan (I-MAP) for Quagga Mussels has been approved for implementation.

Project 5

Seven articles based on presentations at the Lake Mead Science Symposium have been approved by the technical committee for submission to *Lake and Reservoir Management*; these manuscripts have been entered into the journal's peer review process.

Project 6

Progress has been made on the *Ecological Monitoring and Research Plan for Lakes Mead and Mohave*. Key monitoring and research questions have been collected in the categories of "Sediments," "Limnology

and Water Quality,” “Fish and Aquatic Biota,” and “Riparian Resources.” Background content on existing programs has been drafted and a draft map of all monitoring sites in Lake Mead has been created.

## **Project 1 Technical Assistance to LAME with Interagency Monitoring Program**

---

***C.2(a) Continue to attend and participate in technical advisory committees related to planning and implementation of monitoring programs on Lakes Mead and Mohave (SCOP, Lake Mead Water Quality Forum, Las Vegas Wash Coordination Committee). Provide a summary of each meeting attended noting important technical issues and challenges.***

The meetings listed below were attended during this quarter. Summaries were prepared and delivered to Kent Turner via e-mail by David Wong (UNLV). These summaries may not be posted on the Internet or otherwise distributed electronically because they do not represent formal minutes for these meetings. However, copies are maintained by and available at PLI.

7/15/2009      Lake Mead Water Quality Forum

8/24/2009      SCOP/Boulder Basin Adaptive Management Program Meeting:  
WATER QUALITY OBJECTIVES and MONITORING AND MODELING

***C.2(b) Continue to provide technical input into the development of these monitoring programs. Submit technical reports to LAME staff for review and input prior to submission to committees.***

Technical input is on-going through meeting attendance and participation [see C.2(a) above] and as described throughout project 1 activities, below.

***C.2(c) Review updated modeling data from ELCOM/CAEDYM/PLUMES. Provide management and monitoring recommendations to NPS in an annual report.***

An ELCOM/CAEDYM/PLUMES report is expected to be delivered to NPS Lake Mead NRA in mid October. This report is under development by FlowScience Inc. through a contract with the NPS and Southern Nevada Water Authority. Dr. Gerstenberger has been in communication with Dr. Tom Piechota (UNLV Office of the Urban Sustainability Initiative) to assess his availability for the review of the forthcoming report and provide suggestions/recommendations. Due to the close timing of the report delivery with the project end date, Dr. Piechota may not be available. Dr. Gerstenberger has identified other qualified individuals who could also review the report in time for the November 30 end date of this project.

***C.2(e) Participate in the completion and review of the Selenium Management Plan. Provide recommendations.***

The following reports related to selenium have been delivered to Mr. Turner this quarter and will be included in the project compendium binder.

- A Review of Selenium Fate and Toxicity Relative to the Las Vegas Wash by Joanna Kramer and Shawn Gerstenberger

- Review and Recommendations on Las Vegas Wash (LVW) Selenium Management Plan by David Wong

---

## **Project 2 Science Support for Water 2025 Interagency Monitoring & Research Initiatives**

---

The following reports were delivered to Mr. Turner electronically; they will be included in the compendium binder:

- Carp Die-Off at Lake Mohave in Late Spring 2009 by David Wong, Ph.D.
- Environmental Lead Hazard Investigation Report by Shawn Gerstenberger Ph.D.

The topics covered in these reports were not directly related to Water 2025 Interagency Monitoring and Research Initiatives, but were emerging issues of immediate and serious concern to interagency program participants.

---

## **Project 3 Technical Assistance related to Quagga Mussel and other nuisance species**

---

### ***E.2(b) Provide assistance in planning, implementation, data review, and reporting to the quagga mussel population monitoring and assessment program (Year 2).***

As reported previously, this task has been the major focus of Shawn Gerstenberger (UNLV, Project PI) and David Wong (UNLV) over the course of Year 2 and continuing through this quarter.

### ***E.1(f) Prepare a report: Long-term Quagga Mussel monitoring and research needs for Lakes Mead and Mohave (Year 1).***

This is a component of *Suggested Standard Methods for Interagency Long-Term Quagga Mussel Monitoring in Lake Mead* discussed in part E.1 (e) and E.2 (b) above.

### ***E.2(e) Organize and conduct the second annual meeting of the Quagga Mussel science advisory committee. Prepare a report: Recommendations from the committee.***

Dr. Gerstenberger continues to assist Mr. Turner in the facilitation of the multi-agency, interdisciplinary meetings listed below. Summaries of these meetings, documented by Dr. Miller, have been e-mailed to meeting participants, supplied at subsequent meetings, and posted to GroveSite. PowerPoint presentations delivered at each of the Interagency Quagga Mussel Meetings have been archived at PLI and provided on CD to meeting participants upon request.

Meetings took place this quarter as follows:

8/20/2009 Interagency Quagga Mussel Meeting

Attendees of these meetings have represented the Arizona Game and Fish Department; City of Henderson; City of Havasu City; Clark County Water Reclamation District; Clean Water Coalition; Lake Las Vegas Resort; Las Vegas Valley Water District; Los Angeles Metropolitan Water District; National Park Service; Nevada Division of Environmental Protection; Southern Nevada Water Authority; University of Nevada, Las Vegas; University of Nevada, Reno; U.S. Bureau of Reclamation; U.S. Fish and Wildlife Service; and U.S. Geological Survey.

### Other Accomplishments related to Project 3

Dr. Wong worked collaboratively with two other agencies to develop the following presentation, which he presented at the Nevada Public Health Association Conference in Reno, NV (September 21-22).

Bacteria and Cyanobacteria in Lake Mead: Do Quagga Mussels Affect Them?

David Wong<sup>1</sup>, Shawn Gerstenberger<sup>1</sup>, Scott Schiefer<sup>2</sup>, Craig Palmer<sup>3</sup>, Peggy Roefer<sup>4</sup>, Todd Tietjen<sup>4</sup>

- <sup>1</sup>. Department of Environmental and Occupational Health, University of Nevada Las Vegas  
4505 Maryland Parkway Box 453064 Las Vegas, NV, 89154-3064
- <sup>2</sup>. Environmental Division, City of Las Vegas, 6005 East Vegas Valley Drive, Las Vegas, NV,  
89142
- <sup>3</sup>. Harry Reid Center for Environmental Studies, University of Nevada Las Vegas  
4505 Maryland Parkway Box 454009 Las Vegas, NV, 89154-3064
- <sup>4</sup>. Southern Nevada Water Authority, 1299 Burkholder Boulevard, Henderson, NV, 89015

### Project 5 Lake Mead Science Symposium

---

#### ***G.2(c) Prepare, publish, and distribute symposium proceedings to participants and agency and university libraries.***

Dr. Miller has coordinated the internal technical review of invited manuscripts through correspondence with authors; Lake Mead Science Symposium technical committee members, including Mr. Turner and journal associate editors Chris Holdren, Ph.D. (U.S. Bureau of Reclamation) and Todd Tietjen, Ph.D. (Southern Nevada Water Authority); and Ken Wagner, *Lake and Reservoir Management* Editor in Chief. Seven manuscripts have been reviewed and approved by the technical committee, and have been subsequently delivered to Ken Wagner. All expected papers are listed in the table below. Submission is pending for manuscripts marked with asterisks; manuscripts not marked with an asterisk are the seven that have been approved and entered into the journal's peer-review process.

#### **Aquatic Biota and Fisheries**

Kegerries, R.	Lake Mead Razorback Sucker Recruitment: An Informative Anomaly Regarding Continued, Natural, Wild Razorback Sucker Recruitment Despite Non-native Fish Presence
St. Amand, A. et al.	Response of the Algal Community in Boulder Basin, Lake Mead to the Introduction of Quagga Mussels and Reduced Water Levels
Umek, J. et al.	* The Contemporary Food Web Structure of Two Bays in Lake Mead

#### **Emerging Issues**

Beaver, J. et al.	Characterization of the Phytoplankton Communities in the Basins of Lake Mead -- Do Quagga Mussels Influence Cyanobacteria Biovolume?
Wittmann, M. et al.	Lake Mead Zoobenthos: Changes in Composition, Distribution, and Composition over Time with Emphasis on the Ecology of Adult Quagga Mussel

Mueting, S. et al.	The Development of a Suitable Substrate Sampling Device for Monitoring Quagga Mussels ( <i>Dreissena bugensis</i> ) in Lake Mead, Nevada
Wong, D. et al.	Potential Ecological Consequences of Invasion of the Quagga Mussel into Lake Mead

### Environmental Contaminants

Kramer, J. et al.	Mercury Concentrations in Muscle Tissue from Sportfish in Lake Mead, Nevada
Trenholm, R. et al.	* Occurrence of Pharmaceuticals, Personal Care Products, and Potential Endocrine Disrupting Compounds in Lake Mead, NV

### Limnology and Water Quality

Ryan, R. and Zhou, X.	* TDS and Selenium Projections in the Las Vegas Wash post Implementation of the Systems Conveyance and Operation Program (SCOP)
Tietjen, T.	* Long Term Patterns in the Diversity and Composition of Phytoplankton in Las Vegas Bay, Lake Mead

### Lake Management

Holdren, C.	* Nutrient Budgets for Lake Mead
-------------	----------------------------------

## Project 6 Ecological Monitoring Plan for Lakes Mead and Mohave

Dr. Miller and Mr. Turner have continued effort on developing the *Ecological Monitoring and Research Plan for Lakes Mead and Mohave*. A series of objectives and plan categories for meeting the objectives have been defined, as reported previously. The first major interagency task has been to identify for each category, fundamental questions that could be best answered by monitoring and those best answered by research. At the 08/25/2009 meeting, monitoring and research questions were captured for the categories “Limnology and Water Quality” and “Sediment.” Following this meeting, draft “Fish and Aquatic Biota” questions were provided by Erik Orsak (U.S. Fish and Wildlife Service); “Riparian Resources” questions were provided by Josh Hoines (NPS Lake Mead NRA Partner), Alice Newton (UNLV Lake Mead NRA), and Scott Abella (UNLV); and “Bird” questions drafted by Dr. Miller are under review by Jef Jaeger (UNLV) and Ross Haley (NPS Lake Mead NRA). These key questions have been compiled and will undergo additional review and refinement. Mr. Orsak, Ms. Newton, and Dr. Abella have also provided background information relevant to their respective categories.

Dr. Miller has also worked with Peggy Roefer (Southern Nevada Water Authority) and Dr. Holdren (USBR) to identify key monitoring activities on Lake Mead, summarize them, and identify their locations. This is an important effort that will document in one place, the efforts of multiple agencies completing monitoring activities for different purposes. Geospatial Position System (GPS) coordinates have been provided to Mark Sappington (NPS Lake Mead NRA) with which he has created a draft map of all monitoring sites on Lake Mead. In the upcoming months, this material will be refined and added to in consultation with Mr. Turner for completion of the first phase of the Plan, which will be delivered as part of the project compendium binder.

***Other accomplishments related to Project 6***

**Interagency Water 2025 Meetings**

During Year 2, Drs. Palmer and Gerstenberger assisted Mr. Turner in the facilitation of the meeting(s) listed below.

08/25/2009 – Interagency “Water 2025” Meeting

This meeting entailed work on the *Ecological Monitoring Plan for Lakes Mead and Mohave*, which was documented by Dr. Miller; the resulting draft document was e-mailed to Mr. Turner and meeting participants.

Attendees of these multi-agency meetings have represented the Clean Water Coalition; Desert Research Institute, National Park Service; Southern Nevada Water Authority; University of Nevada, Las Vegas; University of Nevada, Reno; US Bureau of Reclamation; U.S. Fish and Wildlife Service; and U.S. Geological Survey.

Submitted by:



\_\_\_\_\_  
Margaret N. Rees, Project Administrator

\_\_\_\_\_  
10/01/2009

Date