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Executive Summary

Continuation of Project 1
- The research effort titled *Growth of adult quagga mussels within Las Vegas Wash/Las Vegas Bay* is ongoing.

Continuation Project 2
- Additional content was contributed to the future NPS-funded U.S. Geological Survey Circular ‘state-of-the-science’ report for Lakes Mead and Mohave. UNLV performed a new co-editing and coordinating task related to this product as the major focus of this quarter’s effort; the master version of this report is on schedule for delivery to the editorial team during the first week of October 2012.

Modification Activities:

Extended Short-term Continued Limnological Assistance
- Quagga Mussel Objectives:
  - Most juvenile/adult quagga mussel samples were collected in late September 2012; the remaining will be collected during October 2012 with analyses scheduled for Quarter 4.
- Information Management and Distribution:
  - As noted above (cont. of Project 2), major effort related to information management and distribution was contributed through a new co-editing task for the NPS-funded U.S. Geological Survey Circular Report.
  - Meeting facilitation - The Interagency Quagga Mussel Meeting was held on 08/15/2012; the next meeting is scheduled for 12/05/2012.
  - New content for web pages describing the Lake Mead Ecosystem Monitoring Workgroup (LaMEM) has been delivered.
  - The Lake Mead Ecosystem Monitoring (LaMEM) Workgroup Meeting was held on 08/23/2012; the next meeting is scheduled for 12/05/2012 (following the Quagga Mussel Meeting).
  - The suggested structure -- with which to organize and integrate files into the existing structure within an NPS Lake Mead NRA Resource Management Division shared drive (T:) -- was finalized and all associated materials (or links to documents) were delivered.

Small-scale Avian Mercury Analyses
This project was initiated in earnest during June 2012; field collections occurred through July 2012 and analyses are ongoing.

Project 1 (Continuation) Technical Assistance Related to Quagga Mussels

C.1(c) Research Project: Growth of adult quagga mussels within Las Vegas Wash/Las Vegas Bay

As described previously, this research project was conducted by Scott Rainville (UNLV) as master’s thesis work under the direction of Shawn L. Gerstenberger (UNLV) and Wai Hing (David) Wong (UNLV). Sampling for this project was completed April 2011. A comprehensive analysis on the distribution of quagga mussels in Las Vegas Bay and how mussels are potentially affected by environmental variables such as temperature, oxygen, nutrients, sediment composition along Las Vegas Bay is underway by S. Rainville. Completion is anticipated by late 2012.

Project 2 (Continuation) Technical Assistance Related to Ecological Monitoring of Lakes Mead and Mohave

C.2(e) Technical Assistance to Lake Mead NRA with other Monitoring Programs

An NPS-funded U.S. Geological Survey (USGS) Circular report titled “A Synthesis of Aquatic Science for Management of Lakes Mead and Mohave” is currently under development. As of 09/31/2012, the Circular report features seven chapters, which collectively have been contributed to by 25 co-authors. Figures and images total more than 100. The Word-version of the document exceeds 300 pages. The following sections were co-authored and have undergone revisions by the project team as part of this task (note that chapter names have been renamed/reorganized since previous reporting):

- Chapter 1: Introduction and Summary of Findings
- Chapter 3: Hydrology and Management of Lakes Mead and Mohave within the Colorado River Basin
- Chapter 4: Lake Water Quality
- Chapter 5: Wildlife and Biological Resources
- Chapter 6: Threats and Stressors to the Health of the Lake Mead Aquatic Ecosystem

A new section within Chapter 4 (Inset Box: Nutrients and Algae) was prepared during this quarter by D. Wong and Douglas D. Drury (Clark County Water Reclamation District).

Significant assistance was requested of Jennell M. Miller (UNLV) to join the publication’s existing USGS/NPS editorial team, which includes Mr. Kent Turner (NPS/ATR). This task involved providing substantive edits (followed by review and approval by chapter authors) for assigned chapters; required rewrites were based on peer review comments, agency review, informational research, and consultation with chapter authors. Detailed documentation was kept and provided regarding how the comments of the three peer reviewers were addressed. In addition, J. Miller was assigned to serve temporarily as manager of the master document during this quarter. In this role, and for all chapters, she integrated the following: post-peer-review revisions submitted by agency staff and chapter authors; comments provided by USGS copy and reference editors; and additional text such as the Foreword and Glossary, to which she also contributed. She obtained and organized figure files, photos, and permissions, and drafted captions for
some of these contributions requiring communication and correspondence with a variety of providers. Some of this post-peer-review effort also required development of new substantive edits and informational research in some sections. It is important to note that final responsibility and decision-making rests with the lead editor in consultation with K. Turner; therefore, the overall task involved daily communications with the USGS lead editor and regular conferencing with the editorial team. The draft master file for this document is on schedule for delivery by J. Miller to the lead editor during the first week in October 2012. Following delivery, the document will undergo USGS management review and Department of the Interior review, both of which may necessitate further revisions and assistance to bring this effort to completion. Simultaneous with the management review, USGS document design is underway.

**Modification: Extended Short-term Continued Limnological Assistance**

1. Quagga Mussel Objectives

Juvenile/adult quagga mussel samples from hard and soft substrates were collected by NPS during September 2012 according to methods for PONAR and dive collections described within the Interagency Monitoring Action Plan (I-MAP) for Quagga Mussels. Hard substrate samples were collected on 9/19/2012 and 9/27/2012; soft substrate samples were collected on 9/25/2012 and 9/26/2012. Samples were collected from two transects on Lake Mead and two on Lake Mohave as described within the "Interagency Quagga Mussel Minimal Monitoring Program" document. Soft substrate samples remain to be collected from Lake Mohave, which is scheduled to occur next quarter on 10/03/2012 and 10/04/2012. Analyses for all samples will occur during the upcoming quarter.

2. Information Management and Distribution Objectives

The bulk of project effort by J. Miller in **Project 2** [see C.2(E), above] this quarter also relates directly to the objective of Information Management and Distribution. Significant assistance was provided toward the completion of the document titled “A Synthesis of Aquatic Science for Management of Lakes Mead and Mohave.” This report’s development is led by USGS through funding by NPS; it features work carried out as part of the “Water 2025” program (and other research). The peer-reviewed and agency reviewed manuscript is intended for publication in the USGS Circular Series, and as such, it summarizes and synthesizes information in a tone balanced for an intended audience comprised of the public, non-core professionals, and core professionals. It is will be distributed in hard copy and online. For more details, see **Project 2** [see C.2(E), above].

**2-A** The quarterly Interagency Quagga Mussel Meeting took place on 08/15/2011. The meeting was facilitated by S. Gerstenberger (UNLV) with documentation carried out by J. Miller. Agendas were distributed prior to the meeting and CDs containing the 5/17/2012 PowerPoint files were provided. Four agency updates were presented along with five topic presentations and a brief I-MAP update. Extensive meeting notes were taken, presented to speakers for approval, and distributed following the meeting. Presentation files were archived. Related activities included inviting and coordinating presenters, updating the list-serve developed for this group with new members and sending out informational e-mails at the request of members. The next meeting is scheduled for 12/05/2012. Arrangements have been made for future coordination and documentation of this group to be carried out by the Southern Nevada Water Authority (SNWA). J. Miller will transfer the list-serve addresses to Ms. Peggy Roefer (SNWA) during the next quarter and include the most current list in the project compendium.

**2-B** For this task, content and updates for new web pages describing the Lake Mead Ecosystem Monitoring Workgroup (LaMEM) have been created and submitted (as described in previous
The material is posted at [http://ndep.nv.gov/forum/ecosystem.htm](http://ndep.nv.gov/forum/ecosystem.htm). Nevada Division of Environmental Protection provides hosting and web page design.

2-C The Lake Mead Ecosystem Monitoring (LaMEM) Workgroup Meeting took place on 08/23/2012. The meeting featured presentations from a variety of agencies. The next meeting is scheduled to take place on 12/05/2012 following the Interagency Quagga Mussel meeting. Meeting management, documentation, and coordination activities were similar to those described in 2-A, above, with the exception that the meeting is chaired by K. Turner.

2-D During previous quarters, J. Miller reviewed the new NPS Lake Mead NRA Resource Management Division’s T:drive organization, which had been established by Mr. Gordon Olson (NPS Chief of Resources) based on a digital data repository and tools for data summary for Shenandoah National Park. In consultation with K. Turner, J. Miller prepared a sub-structure for the T: Drive into which to organize and integrate “Water 2025” products and associated materials. This quarter, the draft structure was re-presented to G. Olson, revised, and finalized (as a living structure that can be further refined). On 09/19/2012, J. Miller and K. Turner presented the structure and the “Water 2025” product files (and online links) to be organized within it to two project associates funded by NPS and employed through “American Conservation Experience (ACE),” who will complete this activity. Other NPS staff in attendance who provided recommendations were Jessie Rinella and Mark Sappington. To date, no materials other than those associated with “Water 2025” have been provided to the UNLV project team for organizing or archiving purposes.

2-E A meeting is scheduled with K. Turner for 10/16/2012 for J. Miller to assist in compiling a close-out report for the Round-6-funded (Southern Nevada Agency Partnership) “Water 2025” program and draft a close-out report.

**Modification: Small-scale Mercury Analyses Project**

This project is being carried out by Joseph Barnes (UNLV) under the direction of S. Gerstenberger. J. Barnes has completed the following effort on this project through this quarter:

- collected prey remains at 10 peregrine falcon and two prairie falcon territories, which required technical rock climbing/rappelling and usually only one site could be visited per day;
- identified prey remains to species whenever possible for all peregrine and prairie falcon territories for a total of 36 independent collections with 412 individual prey items identified;
- compiled and provided the appropriate summaries of my banding/sampling activities to Nevada Department of Wildlife and Arizona Game and Fish Department;
- conducted an extensive literature review of avian/raptor mercury and general environmental contamination studies; and
- preliminary effort for lab analyses (obtaining supplies and establishing protocol).

During the next quarter, J. Barnes intends to collect a subsample of prey remains for mercury analysis by species; run laboratory tests; conduct analyses; and complete the final project report.

Submitted by:

[Signature]

09/31/2012