

Science Panel Coordination Meeting

ATTENDEES: Bill Moellmer Gary Santolo
Theron Miller Jeff DenBleyker
Don Hayes Bill Wuerthele
Theresa Presser Earl Byron
Anne Fairbrother

OTHER ATTENDEES: Nathan Darnall

FROM: CH2M HILL

DATE: September 6, 2007

The following summary is based on the author's notes and recollections of the discussion, and may include details that have not yet been verified. This summary is subject to review and comment by the attendees listed above. Summary will be discussed and approved during the October 11, 2007 Science Panel conference call. Please do not distribute to a wider audience until the summary is approved by the Science Panel.

Approve Meeting Summary from July 31/August 1 Panel Meeting

Jeff DenBleyker indicated that he had only received comments from Bill Moellmer and Nathan Darnall/USFWS. Anne Fairbrother said she had a few comments that she would forward to Jeff. Theresa Presser asked that the table Bill Moellmer created summarizing EC values be included in the meeting summary. Bill said he would forward for inclusion. Jeff asked that any other comments be forwarded to him as soon as possible so that the meeting summary could be posted on the project website.

Update on Lab Analyses and Projects

Jeff summarized progress on each of the projects. Below is a brief summary:

Project 1 – Birds

Mike Conover – He has almost all data and will have everything shortly. He is almost complete with his 2006 California Gull report and is processing his data for overwintering birds and 2007 California Gull study. His draft reports should be complete by the end of September.

John Cavitt – He has almost all data and will have everything shortly. He will finalize his 2006 report and complete a draft report for the 2007 sampling season by the end of September.

Project 2 – Food Chain

Wayne Wurtsbaugh – Final report is complete.

Brad Marden – Has completed draft report on the 2006 season. He is still waiting on some data from the 2007 season. He is planning on submitting an updated report with all 2006 and 2007 data on September 17. This draft will not include all data from ongoing brine shrimp experiments. The Panel asked that a hard copy as well as electronic copy on CD be sent for their review. David Buchwalter and Martin Grosell also asked for a copy for review.

Project 3 – Selenium Loads

Dave Naftz – Dave will provide an updated load estimate by the middle of September. This will include all flow and Se data through June 2007. This will provide a little more than one full year of data.

Project 4 – Selenium Flux

Bill Johnson – Bill will provide updated sedimentation and volatilization flux estimates by the middle of September. They are still waiting on Se and dating results on deep sediment cores. They expect to have a draft report for sedimentation study by October 19. Volatilization experiments will continue through October with a draft report due in November.

Laboratory Analysis/Data Validation

Labs are continuing to receive some samples. Most samples have been analyzed with data validated and sent to the PIs. Goal is to finalize database by the end of September. Only remaining samples are from deep sediment cores and additional brine shrimp experiment, plus ongoing sampling by Dave Naftz for inflows.

Update on Brine Shrimp Se Concentrations

Earl Byron summarized the content of his memorandum “Analysis of GSL Brine Shrimp Selenium Results: Resolving Methods Issues” dated September 4, 2007.

- Earl and Brad Marden await results from the sampling experiment completed by Bill Adams and Brad Marden to evaluate the potential influence of sampling methods on selenium concentrations.
- An evaluation of brine shrimp sample sizes (biomass) and reported concentrations indicates that sample weight may have an impact on results from some of the samples. Earl and Brad will refine this analysis to determine if and which samples should be eliminated.
- Sample preparation methods in 2007 varied slightly from 2006. Brad is completing additional experiments to determine how the differences in methods may have affected results. Brad is analyzing dry and wetted filters as well as completing a side by side comparison of preparation methods. It is thought that any adjustment may actually slightly increase the Se concentrations of 2007 samples.
- Se concentrations in brine shrimp in 2007 average 2.6mg Se/kg dw vs 1.0 mg Se/kg dw in 2006. There may be important temporal variations that need to be addressed.

Discussion of New Threshold Values Memorandum

Harry Ohlendorf prepared and submitted a memorandum entitled “Threshold Values for Selenium in Great Salt Lake: Refined Selections by the Science Panel” and dated August 28, 2007 to the Panel for review. The intent of this memorandum was to summarize the

technical information discussed. Harry will then prepare a 1-2 page white paper summarizing the issue in a manner that the general public will understand. Jeff asked if anyone had comments. Anne thought the memorandum was good but was still quite technical. She will forward comments to Jeff.

Update on Project 5 – Brine Shrimp Kinetics

Jeff asked Martin Grosell to provide a summary of progress to date and describe his proposal to eliminate objective # 6 in his workplan in favor of exposing algae to an additional selenium concentration of 1ug/L. This concentration is more representative of concentrations in the Great Salt Lake.

Martin provided a review of each objective and results to date. Below is a brief summary. Further detail may be found in his Progress Report 1 dated July 17, 2007.

1. *Determine influence of salinity on selenium uptake and feeding rates of brine shrimp*

Increasing salinity reduces Se accumulation from water and decreased the feeding rate of brine shrimp. A salinity of 100 ppt (instead of 160 ppt) was selected for all subsequent experiments.

2. *Determine Se uptake rates in brine shrimp from dissolved Se in artificial GSL water (uptake kinetics)*

Experiments were performed for 24-hr exposure. The “knee” was identified to be between 10 and 20 ug/L at which Se uptake deviates from the bioaccumulation pattern seen at lower concentrations.

3. *Determine dietary Se intake and subsequent Se assimilation efficiency*

Algae were exposed to three concentrations of dissolved Se in artificial GSL water. A triphasic pattern of accumulation of Se in algae was observed with algae reaching steady state after 20 days of culturing. Algae were harvested after 20 days and fed to brine shrimp for a 1-hour feeding. Ingested and assimilated Se levels show an apparent slight exponential increase with increasing dietary Se concentrations. Assimilation efficiencies ranged from 75-85%. Theresa asked that some of the figures in Martin’s progress report be adjusted so units are comparable.

4. *Determine Se elimination rates from brine shrimp*

Martin is currently completing these experiments but is observing what appears to be classic exponential decay. Initial estimates indicate 75-85% depuration from diet.

5. *Model Se accumulation in brine shrimp*

Martin indicated that the results from his experiments should yield a model that will be very useful for the Panel. Bill Moellmer and others agreed and stated they are eagerly anticipating the results.

6. *Determine the “knee” of dissolved Se accumulation rate curve for higher concentrations*

Martin proposed that this objective be eliminated. The results from objective #2 clearly identified the “knee” to be between 10 and 20 ug/L and he did not see any

reason to explore higher concentrations. Funds intended for this effort could be diverted to adding an additional algae exposure of 1ug/L that is more representative of GSL conditions. David Buchwalter agreed. The Panel concurred. Martin requested an additional \$1500. Jeff was directed to proceed with an amendment for Martin to modify his scope and provide additional monies.

Results from USGS/LET lab comparison of avian blood samples

Gary Santolo summarized the results contained in his memorandum "Laboratory Comparison of Composite Eared Grebe Blood Samples for Se and Hg" dated August 28, 2007. The comparison of results yielded excellent results, well within expected tolerances. The Panel agreed that these results, in combination with other evaluations completed to date, indicate that the blood results from the GSL are valid.

The Panel discussed some of the apparent spatial differences in the comparison datasets. Results from near Antelope Island appear to be much lower than from near Hat Island. Results also indicate that there are elevated Hg levels along with the elevated Se levels. Gary reiterated that these are composite samples. Mike Conover is currently evaluating the results from individual birds. Nathan Darnall indicated that the USFWS eared grebe mercury study is still being finalized but initial results did not indicate spatial variation. They did not collect blood samples or analyze for Se.

Theresa thanked DWQ and the Panel for exploring the apparent elevated Se blood concentrations.

Project Schedule

Jeff summarized the schedule for the remaining components of the project:

October 11, 2007	Next Panel conference call
October 19, 2007	Draft reports expected from sedimentation study and Project 5
November 1, 2007	CH2M HILL submits draft model and report
November 8, 2007	Panel conference call
November 19, 2007	Draft report expected from volatilization study
November 28-30, 2007	Panel meeting in Salt Lake City, joint meeting on 11/30
December 18, 2007	Panel conference call - NOTE NEW CALL - WILL THIS WORK?
January 11, 2008	CH2M HILL submits final model and report
February 8, 2008	Individual Panel members submit recommendations for standard
February 20-22, 2008	Panel meeting in Salt Lake City, joint meeting on 2/22, Make Recommendation to Steering Committee
February 27, 2008	Steering Committee/Stakeholders meeting
February 28, 2008	Steering Committee meeting Make Recommendation to Water Quality Board

Jeff stated that the Panel will have CH2M HILL's synthesis report and model to review in November. The three remaining draft reports will also be available for review in that time. Data from these reports will be integrated into the model during December. The Panel may need to decide what to include.