

**-Final -
CRCIP AMT Quarterly Meeting Notes
January 9, 2013**

The CRCIP Adaptive Management Team held its quarterly scheduled meeting from 9:30 am – 3:30 pm on January 9, 2013 at the Robert Duncan Plaza. The following AMT members, technical support personnel, and invited guests participated in person:

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| Jessica Stokke, USACE | Shyam Nair, E2 | Steve Bartell, Cardno |
| Greg Smith, USACE | Ben Meyer, NMFS | ENTRIX |
| Antonio Baptista, OHSU | Kathy Roberts, FWS | Charles Seaton, OHSU |
| Noah Adams, USGS | John Plumb, USGS | Toby Kock, USGS |
| Dan Bottom, NOAA* | Gretchen Smith USACE | |

*participated via teleconference

The following topics were addressed by the AMT participants during the January 2013 quarterly meeting:

2012 AMT Meeting Notes

Revised meeting notes for the January and April 2012 AMT meetings were provided to the AMT members prior to the October 2012 meeting. However, the October meeting was cancelled. The revised notes for January and April 2012 were accepted as final at the January 2013 meeting.

The draft meeting notes for the July 2012 AMT meeting were also accepted as final at the January 2013 meeting.

The finalized meeting notes for the 2012 AMT quarterly meetings will be posted to the E2 CRCIP web site.

O&M and Project Mitigation Update

Jessica Stokke reported that Columbia River flows in 2012 were similar to high flows in 2011. As a result, problems with shoaling encountered in 2011 continued in 2012. Flow data suggest that flows of 380-400 thousand cfs and greater produce significant shoaling in the Columbia River. Shoaling was widespread in 2012 and particularly a problem in the middle portion of the river. Approximately 6.8 million cubic yards were dredged during calendar 2012. Eighty-five percent of the material dredged was placed in in-water sites, while the remaining 15% was placed on shoreline or upland locations. The corresponding disposal of dredged material in 2011 was 90% in-water and 10% on shoreline or upland sites.

Jessica Stokke circulated photographs that showed the results of mitigation activities continuing at Chumbley, Cottonwood, and Webb sites. Plant protectors have been removed from Chumbley. The summer 2012 photograph of Chumbley showed that the planted vegetation has become well-established. The photograph of Cottonwood Island illustrated the extent of planting that has occurred and results of fall 2012 mowing and application of herbicide around the new plantings. A fall 2012 photograph of Webb Island showed waterfowl using the wetland area and results of the late fall maintenance mowing.

Kathy Roberts provided an update concerning the relocation of Columbia River white tail deer. There is a plan to move 50 deer from the Julia Butler Hansen Refuge to the Ridgefield Refuge and 15 to Cottonwood Island from Puget Island. The moves have been prompted in part by flooding on the refuge and are scheduled to begin around January 22. These activities will be supported by funds provided by the USACE in accordance with the 2003 Final Supplemental Environmental Impact Statement (FSEIS).

AEM Workbook 4th Quarter Review for 2012

The relevant components of the CRCIP AEM Workbook were discussed at the January 2013 quarterly meeting.

MA-1 CORIE Analyses

The available data for the January 2013 AMT meeting reflect the previous and current status of the CORIE (CMOP) stations required for the MA-1 analyses. The following data were available for analysis prior to the January meeting:

- cbnc3: no data
- grays: temperature and salinity (October through December 2012)
- tansy: temperature and salinity (October through December 2012)
- woody: temperature (October through December 2012)
- dsdma: temperature and salinity (October through November 2012)

Temperature

Daily median water temperature values calculated for the tansy station for October - December 2012 were generally within the 20th and 80th percentile decision criteria. Temperatures were slightly higher (< 1 C) than the 95th percentile decision criteria during the first week of November, but subsequently returned to mid-range values for all but the last few days of November. Daily median values for December were within the decision criteria values.

Daily median values of water temperature computed for the grays station generally within the 20th-80th decision criteria for most of October through December 2012. However,

daily values in the early weeks of each month were slightly elevated and exceeded the 5th percentile decisions criteria.

Shyam Nair (E2) reminded the AMT that deviations of daily values from the monthly criteria, particularly at the beginning and end of the months were somewhat of an artifact of the mismatch in scales in making the comparisons. The monthly criteria change as step-functions, while the daily median values describe a more continuous time series of temperatures. The corresponding comparisons of computed monthly average temperatures demonstrated that the October – December values were within the 20th-80th decision criteria for both tansy and grays. The only exception was the grays values for December, which was between the 80th and 95th percentile criteria.

The availability of data from the woody station permitted the development of normalized water temperature plots for 2012. The plots were constructed for the tansy and grays stations. Inspection of the normalized temperature plots for 2012 did not suggest any outlier points in comparison with the clusters of points defined by the pre-construction data for either station.

Analysis of the post-Project construction CORIE data available through 2012 continues to suggest that the channel improvements did not have any measurable impact on water temperatures recorded at the MA-1 stations.

Salinity

The October - December 2012 salinity values computed using data available for the tansy station were generally between the 20th-80th or 5th-20th percentile decision criteria. Several daily median values were less than the 95th percentile values for late November and early December.

Daily median values calculated for salinity data available from October -December 2012 for the grays station were mainly distributed between the 5th and 20th percentile decision criteria or less than the 5th percentile value. These comparatively low salinity values at the grays station through December are consistent with the high Columbia River flows observed in December 2012.

Comparisons of calculated monthly average salinities with the decision criteria showed that the tansy values were within the 20th-80th percentile criteria for October and November. The December mean salinity (3.6 psu) was within the 5th-20th percentile criteria. The corresponding comparisons for the grays station showed the October mean (2.9 psu) to be within the 5th-20th percentile criteria. The November value was between the 5th-20th percentile values, while the December value (0.1 psu) was slightly less than the 5th percentile decision criteria (0.3 psu).

The availability of data for the dsdma station during October-December permitted the construction of normalized salinity plots for the individual CORIE stations in 2012. The

resulting plots did not suggest any deviation in the normalized values for October-December for either the tansy or the grays stations.

The post-Project construction CORIE data available through 2012 continue to suggest that the channel improvements did not result in any significant saltwater intrusions at the MA-1 stations.

Depth

Depth data were available for the grays station through December 2012. Daily median depths were well within the previously established AMT decision criteria. The monthly average values calculated for July through December were within the corresponding 20th and 80th percentile decision values.

Extended Time-Series Plots

Shyam Nair (E2) continued the multi-year time series plots of temperature, salinity, and depth for the MA-1 CORIE stations. These plots were updated based on data available through December 2012 and presented at the January 2013 meeting.

The results of the 4th quarter 2012 MA-1 analysis will be posted in the MA-1 folder of the AEM Workbook on the E2 CRCIP web site.

MA-2 Construction and Disposal of Dredged Materials

MA-2 has been completed as a component of the CRCIP AEM Program. Volumes and placement of dredged materials are now reported in accordance with regular annual O&M procedures.

MA-3 Crossline Surveys

The results of the 2012 MA-3 cross channel surveys were presented at the January 2013 AMT meeting. Surveys were performed at the designated MA-3 locations:

- CRM 98-101: Morgan Bar – April 2, 2012
- CRM 84-87: St. Helens Bar – May 16, 2012
- CRM 73-76: Kalama Bar – May 8, 2012
- CRM 70-73: Upper Dobelbower – April 18, 2012
- CRM 45-48: Westport Bar – April 24, 2012
- CRM 41-44: Wauna/Driscoll – April 24, 2012

Based on comparisons with the depth “envelopes” estimated from pre-construction surveys, the results of the 2012 post-construction surveys indicated erosion exceedances

on the Washington side of the navigation channel at Morgan Bar (CRM 99.5), Kalama (CRM 75.5), and Westport (CRM 46.0). Erosion exceedances on the Oregon side of the channel were observed at Westport (CRM 46.0, 45.5).

The 2012 survey results showed accretion exceedances on the Washington side of the navigation channel at Upper Dobelbower (CRM 72.5) and Westport (CRM 45.5). Accretion exceedances were measured on the Oregon side of the channel at St. Helens (CRM 86.0, 85.5), Westport (CRM 45.5), and Wauna/Driscoll (CRM 41.5).

The high water event in 2011 occurred between the 2011 and 2012 post-construction surveys, which may have contributed to the exceedances. The AMT will monitor surveys again in 2013.

MA-4 Habitat Analyses

The analysis of habitat in relation to the AM requirements for MA-4 continued at the January 2013 meeting with a presentation of proposed modeling activities by Drs. Antonio Baptista and Dan Bottom. (See separate MA-4 agenda item below.)

MA-5 Sediment Contaminants

MA-5 was not on the agenda for the January 2013 AMT meeting. No new information for MA-5 was presented.

MA-6 Fish Stranding

The evaluation by the AMT in meeting the AEM requirements for MA-6 continued at the January 2013 meeting with an update on the USGS peer review of the Pearson fish stranding model. (See separate discussion of progress below).

Multi-Agency Fish Stranding Workshop Summary

Jessica Stokke provided a summary of the latest multi-agency (e.g., USACE, NOAA, USGS, others) fish stranding workshop that was hosted on December 5, 2012 by NOAA. An initial meeting was held in summer 2012 by the Port of Vancouver. The workshop included general discussion of factors that contribute to fish stranding and questions as to the overall magnitude of the stranding problem. Validation of a GIS model for identifying stranding locations, particularly in relation to timing of stranding, flow regimes, and affected species, was selected as the first priority. A subgroup will develop a strawman study design for field validation.

The workshop also explored the potential for a demonstration project (i.e., Barlow Point). The emphasis of such a demonstration project would focus on measures possibly undertaken to reduce or avoid stranding. The demonstration project would examine available management actions (e.g., wave attenuation, beach reshaping) for reducing stranding and monitoring. However, there are many unknowns as to magnitude and cause, which could result in actions that unintentionally alter habitat such that fish no longer use a site. Overall, the group was not supportive of moving forward with a demonstration project before learning information from the field validation study.

The workshop participants plan to meet again in March 2013. Meeting notes prepared by Jeff Fisher, who is leading the effort for NOAA, will be uploaded to the MA-6 section of the electronic AEM Workbook on the E2 CRCIP web site.

MA-4 Discussion of Overall Modeling Approach and Results to Date

Dr. Antonio Baptista presented the work completed and upcoming related to his modeling approach to characterize possible changes in juvenile salmonid habitat in association with channel deepening. (Dr. Dan Bottom, Co-Principal Investigator participated by telephone). Baptista described revisions to the physical circulation model developed for the Lower Columbia River and estuary. The revisions were made subsequent to the earlier simulations of habitat opportunity produced by Baptista and Bottom. The revised model will be used to simulate juvenile salmonid habitat opportunity using pre- and post-CRCIP bathymetry. The present bathymetry data show the most significant changes from pre-Project bathymetry in the North Channel (located far away from the Federal navigation channel) and an area near Tongue Point. These somewhat curious results will be further evaluated to determine their accuracy. The results of these pre- and post-Project simulations will be analyzed to quantify differences in habitat opportunity.

Ongoing modeling activity includes recalibration of the revised circulation model to data obtained from the CMOP monitoring program and skill assessment of model performance. Pre-construction and post-construction bathymetry data are also being developed and evaluated for use in the MA-4 analysis. Baptista indicate that initial first year simulations will be available by the end of March. Read-ahead materials will be provided to the AMT prior to the April 2013 AMT meeting.

Additional efforts are underway to revise and refine habitat requirements (e.g., depth, temperature, salinity, velocity) for different ESUs. Where possible, specifications of habitat requirements for different size classes (e.g., 40, 60, 80 mm) of individual salmonids will be developed. Results of the circulation model will be compared with the requirements of the different ESUs to determine possible changes in habitat opportunity. Impacts from sea level rise and other known factors will be evaluated to help determine if habitat opportunity changes are associated with channel deepening.

Dr. Baptista's presentation will be uploaded to the E2 CRCIP web site and placed in the MA-4 component of the electronic AEM Workbook.

MA-6 Progress Report on Peer Review of Pearson Fish Stranding Model

The peer review of Dr. Walter Pearson's statistical model and analysis of post-construction fish stranding is being conducted by Toby Kock, John Plumb, and Noah Adams (USGS – Cook, WA). The co-investigators provided a progress report on their review to date. Given the current status of the review in progress, the investigators stated that, based on the 2004-2005 data, the Pearson (2011) analysis is well-written, organized, transparent, and scientifically sound. The reviewers recognize that limitations and uncertainty in the data represent important components in estimating fish stranding probabilities. For example, many of the data used in the Pearson analysis were collected on a single day; additionally, many of the data values were collected during the period of rising tides. Collinearities and strong correlations among the underlying data can introduce instability in estimated parameters of the statistical model. The reviewers indicated that other model formulations might provide additional insights concerning stranding, but understood that other models would likely require more data. Based on the review so far, it seems apparent that any future studies should focus on expanding the LCR wake stranding data set.

The USGS investigators will present another progress report on the peer review at the April 2013 AMT meeting.

The January 2013 USGS presentation that described the peer review progress to date will be uploaded to the MA-6 portion of the electronic AEM Workbook located at the E2 CRCIP web site.

April 2013 Agenda Items

The following were identified as items for the April 11, 2013 AMT meeting:

- Continued participation of Drs. Baptista and Bottom in MA-4 modeling discussions
- Further progress reporting on the USGS external peer review of Dr. Pearson's MA-6 analysis of fish stranding
- Report on outcomes of the March 2013 multi-agency fish stranding workshop

The January 2013 AMT meeting adjourned at 3:30 pm PST.