CSMW Workshop Series
Resource Protection Guideline Development
Related to Coastal Regional Sediment Management

WORKSHOP #7
4 AUGUST 2010
10:00 AM – 3:45 PM
Southern California Coastal Water Research Project (SCCWRP)
Costa Mesa, CA

WORKSHOP OBJECTIVE

"Information exchange and transfer; obtain input on resource protection guideline development considerations relative to impact assessment and monitoring coastal habitats and resources relative to sediment management projects; discuss database and analytical tools that would be useful for tracking and evaluating such projects; review data gaps and recommendations . Review relevant sections of Sections 7 and 8 of draft BIA Document pertaining to monitoring and recommendations."

Note: Agenda and PowerPoint presentation are posted to CSMWs web site (http://www.dbw.ca.gov/csmw/BIA_workshop.aspx).

AGENDA AND DISCUSSION

1. Introductions and Background – Heather Schlosser and Karen Green

- Introductions of those in attendance and calling in/via webinar
- Review of workshop objectives and agenda

1. Background

- Review of Agencies and Individuals Involved in Development of Resource Protection Guidelines
- Sponsor Agencies
  - California Sediment Management Workgroup (CSMW)

  Co-Chairs: USACE and CA Natural Resources
  - Monterey Bay National Marine Sanctuary (NMS)
- Contract Agencies
  - Beach Erosion Authority for Clean Oceans and Nourishment (BEACON)
  - USACE, Los Angeles District (Moffatt & Nichol contract)

- Project Manager/Moderator
  - Science Applications International Corporation

a) CSMW Mission Statement and Goals

- MISSION

  Conserve, restore, and protect California's coastal resources by developing and facilitating regional approaches to managing sediment imbalances.

- GOALS
  1) To reduce shoreline erosion and coastal storm damages;
  2) restore and protect beaches and coastal habitat by restoring natural sediment supply from rivers, impoundments and other sources to the coast; and
  3) optimize the use of sediment from ports, harbors, and other opportunistic sources.

b) Regional Sediment Management (RSM) in California (CA)

- CA Coastline is divided into littoral cells.
- Sand has historically been impounded by Dams.
- Sediment bottom line: The natural sediment supply to the coast has been reduced due to sea cliff armoring (20%), dams and debris basins (Santa Maria River, 68%; Santa Ynez River, 51%; Ventura River, 53%; Santa Clara River, 27%)
- The road to solutions: CSMW is working to identify sediment-related problems due to dams, debris basins, dredging, sand and gravel in-stream mining, coastal structures, lack of project coordination, and inconsistent policies, procedures, and regulations. All operations need an environmentally safe approach.

c) BIA Study & Workshop History

- CSMW held 8 public and 3 technical workshops in 2004 to gauge public's issues of concern related to biological resources in regional sediment management.
- Based on response, CSMW commissioned Biological Impacts Analysis (BIA) study, which is titled "Review of Biological Impacts Associated with Sediment Management and Protection of California Biota."

- The document was reviewed by agencies and scientists over a two-year period with overall favorable response.
- Comments included requests to provide additional guidance relative to protection of coastal resources, which was the impetus of the current effort and workshop series.
- Today's workshop is the last of a seven-part series.

❖ Work Products

- BIA Study: draft report will be finalized early next year based on received review comments and input received during the workshop series.
- Abbreviated User's Guide: will provide condensed version (key topics) and cross-references to BIA report and the developed Resource Protection Guidelines.
- Work Plan: received recommendations or suggestions that would require additional or separate work efforts will be summarized in an action plan.

❖ User's Guide and Resource Protection Guideline Organization

- Primary objective is to provide streamlined version of the BIA document that will be of practical use to variety of end users.
- The document will include overview summaries of sediment management activities, project types, impact issues by project phase, monitoring, and performance evaluation.
- The guide will be habitat-based and presented with a flow path approach (resources, impact issues, protective measures, monitoring considerations).
- Resource Protection Guidelines will include the following types of information: issue statement, guideline description, rationale, references (as applicable), and effectiveness considerations.
- Cross reference tables will be provided that organize guidelines by habitat, species group, impact type, project phase. In addition, a cross reference table will be provided to the BIA document for more detailed discussions of relevant topics.

2. Assessing Impacts of Sediment Management Projects

a) <u>Direct Impacts</u>

- Examples
  - Sediment Addition, Removal

- Equipment Operation (Crush, Damage, Entrain)
- Accidental Spills

b) <u>Indirect Impacts</u>

- Examples:
  - Turbidity, Sedimentation
  - Sediment Properties
  - Forage Reductions
  - Disturbance (Noise, Lights, Activity)

c) <u>Cumulative Impacts</u>

- Some examples:
  - Delayed effects
  - Compounding – multiple sources interacting to yield a greater than impact than those associated with project
  - Nibbling – combination of effects that take effect slowly – can be slowly degrading a resource
- This considers all activities of project in combination with other past, present, and reasonably foreseeable future projects within relevant project area.

➢ Comments or Questions:

- Does this also consider recreation. *Response:* If beach nourishment, then impact analysis should consider potential to enhance beach habitat. Existing biological resources such as shorebirds may be influenced by physical beach conditions and human activity. Understanding existing conditions and potential for project to change conditions should be considered with impact analysis.

d) <u>Impacts, Significance Criteria, and Impact Thresholds</u>

- Issues:
  1) Inconsistent significance criteria and thresholds of significance among reviewed CEQA or NEPA documents pertaining to sediment management (beach nourishment, maintenance dredging with beneficial reuse).
  2) Data Gaps – inconsistent monitoring or limited monitoring.
- Categories of Significance Criteria
  1) Sensitive Species
  2) EFH
  3) Native species and wildlife,

4) Others

- Thresholds of Significance – benefit of adopting standardized quantitative or qualitative thresholds – promotes consistency and helps to streamline the permitting process

  1) Reviewed several CEQA, NEPA, or CEQA/NEPA documents assessing Sediment Management projects (e.g., dredging, beach nourishment) – shows the variety of language used in various environmental documents.
  2) There are a few counties (e.g. Santa Barbara and San Diego) that have standardized thresholds.
  3) Adopted significance criteria and thresholds developed for terrestrial projects – language has some relevance but also limitations for marine environment applications.
  4) Would it be helpful to review come up with a standardized list of significance criteria and thresholds? Standardize how projects are assessed?
  5) Impact Factors on a Project Scale – looked at impacts to benthic or hard bottom habitat grouped by volume of project. Adverse impacts reported for some projects on East or Gulf Coasts – associated with silt loading or sediment inundation of reefs.

  - Comments or Questions:
    - Can the levels of impacts (adverse vs significance) be highlighted? This would help to judge the level of impact….
    - Adverse Impact – According to NMFS almost any in-water activity can cause an adverse impact – nature of impact and duration are key factors.
    - The problem with using numerical percentage significance threshold for biological species is the need to understand that level in context with natural variability; need sufficient data to back-up a number.
    - Significance levels are call of the lead agencies and may be difficult to get consensus on standardized thresholds.
    - Would be helpful if there was more guidance on terms such as degradation and what levels of impacts warrant mitigation.
    - Would help to add marine examples for each of the criteria.
    - If you are going to have criteria, helpful to know when you have “crossed the line.”
    - Perhaps the thresholds can’t be standardized for all of California, perhaps it can be done for regions or counties…..

- Robert Smith (USACE) – Greater consistency would be helpful, but would depend on the particular law – would help to have a chart that contrasts the various laws, language, and significance definitions.

- Sensitive Species – Threatened and Endangered - Potential to affect individuals, habitat and populations.
  - Comments or Questions:
    - If T&E species or critical impact, informally consult to determine if formal consultation needed.
    - Potential for impact generally requires mitigation – may be included in project description or permit.
      - "May affect" will trigger formal consultation and specific conservation measures.

- Essential Fish Habitat
  1) If it is "wet", it is EFH – project site can affect EFH even if it is not directly "touching" the EFH.
  2) NOAA has EFH guidance, which they are in the process of updating.

  - Comments or Questions:
    - There are agreements between USACE and NMFS that adopt certain guidelines that if conditions are met, then a full consultation is not required. *Follow up Note:* Robert agreed to provide copy to Karen.
    - NMFS in San Francisco – using EFH consultation to look at the chemical properties of dredged sediments.
    - NMFS generally consider all fish in the EFH rather than just following the Fishery Management Plans.
    - Has research been conducted to look at effects on fisheries due to sediment management? *Response:* There have been quite a few studies on beach nourishment and dredging, but not the ultimate analysis of effects on fisheries.

- Native Habitats and Resources
  - Comments or Questions:
    - EPA/USACE – must consider whether significant degradation occurs – can consider mitigation efforts in the impact
    - Do not recommend numerical numbers on the percentage of impact to a population; on past projects this has been challenged; CEQA lawyers

have emphasized that you would need to have very specific and definite numbers in order to present numerical criteria for populations.

- What does “substantial” mean?
- Diversity of hard bottom areas is tricky because of difficultly of recording everything when conducting field survey. Indicators have been used to more cost effectively survey hard bottom habitats.
- Soft bottom – samples can be taken and counts done.
- Limiting reproductive capacity – what does this mean? *Response:* Potential to affect breeding, nesting, spawning, recruitment.
- Burial of greater than 10% of a shoreline for >1 year – this language ambiguous – what defines shoreline length and how do you know if this is significant?
- Substantial loss of habitat or population for greater than 5 or 10 years.
  - Should consider natural variability relative to definition of “substantial” impact.
  - Sandy beach invertebrates generally should recover within the same year or the following year depending on when the project is implemented. Nearshore soft bottom invertebrates may take longer to recover; generally 2 to 3 years for sandy sediments.
  - 5 years seems more supportable than 10 years. El Nino and Pacific Decadal Oscillation disturbances occur on frequency of every 7 to 10 years.
- Is there information available on natural variation? *Response:* Some, associated with published studies and ongoing larger-scale monitoring efforts.
- Using the term “long-term” rather than a set amount of time allows for flexibility based on the species and/or habitat.

- Water Quality
  - Typically not as difficult to evaluate as biology.
  - 401 Water Quality certification focused on protection of all beneficial uses – provides overall protection for biological resources. However, violations may occur that do not necessarily signal potential for significant biological impact.

➢ Comments or Questions:

- Elevated turbidity may occur due to rip currents, waves, storms, watershed flows. Important to monitor ambient conditions at location with same type of influences as project.

- Sandy Habitats and Resources
  - Comments or Questions:
    - Lists considerations for impact as well as significance thresholds.
    - Diversity and abundance is measurable, but would require monitoring.
    - Perhaps focus on duration of recovery. Note: Recruitment is seasonal – therefore, recovery may be influenced by season – when project is implemented.
    - Should a temporal criteria be added – so that if you have an impact in sensitive season, that is considered an impact (such as operating during grunion spawning season).

- Rocky Habitats and Resources
  - Comments or Questions:
    - Easier to measure indicators than diversity.
    - Feather boa kelp – this may be an annual opportunistic species in the nearshore – colonizing newly exposed hard bottom - may be subject to high natural variability. Should consider this if using indicators to assess habitat quality.
    - Indicator monitoring considerations – count individuals until the number gets too high, then switch to percent coverage.

- Vegetated Habitats
  - Comments or Questions:
    - Has numerical criteria for surfgrass been determined through studies? *Response:* how much "burial" the blades can withstand without significant impact has not been well documented. Seasonal burial or inundation of surfgrass documented and variability in extent of inshore edge of surfgrass common; however, duration of sedimentation relative to impact not well understood. There was leaf clipping experiment that examined survival with different blade lengths.
    - Sediment transport models useful for predicting project-related changes in sand level along beach profiles, which have been used to assess the potential for increased sand inundation of reefs or surfgrass. Models are calibrated to the best available data. These are not precise predictions, but may give indication of risk.
    - Data Gaps exist relative to "correct" threshold numbers for burial or aerial extent of change relative to natural variability.

- If you are monitoring to determine if there is a significant impact that would trigger mitigation, there may be need for a percentage-based threshold; however, a 10% change may be too low and within natural variability.
- It would be helpful to review mitigation triggers with agencies. Likely would still need to determine on a project by project basis.

- Wildlife Movement
  - Comments or Questions:
    - Consider impeding migration or spawning (e.g. grunion, salmonids) to trigger significance.
    - If there are marine mammals on the beach, then you need to stay away until they have moved.
    - If snowy plover are foraging, avoid disturbance.
    - Minimize constructed scarps.
      - Scarps can be present in both the summer and winter, but they are generally more prevalent in the winter due to storms.
      - Beach Nourishment projects may have a scarp after construction that will diminish during equilibration.
      - Presence of scarps have the potential to affect wildlife (e.g., grunion spawning).
      - Projects on East coast include measures to reduce scarps if beach used by turtles for nesting.
      - Project at Newport knocks down natural scarps.
      - May be more or less of concern depending on project schedule.

- Commercial Fisheries
  - Comments or Questions:
    - Fishermen have complained about dredges and barges cutting corners and going into fishing areas.
    - Need to stress navigation pathways and Notice to Mariners.
    - Loss or damages to traps is socio-economic issue, not biological resource protection concern.

3. Monitoring Sediment Management Projects

a) Project Phases

- Pre-construction – identification and verification of constraints.
- Construction – Compliance with water quality certification requirements and sensitive species monitoring, if applicable.
- Post-Construction – impact verification and/or performance evaluation.

b) Monitoring Objectives, Methodology and Performance Evaluation

- Water Quality Monitoring
  - Monitoring requirements are inconsistent
    - Measurement Locations
    - Methods
    - Criteria

➢ Comments or Questions:

- The Ocean Disposal Manual and Inland Testing Manual may be good references to consult. Note: Yes, except BIA report starts with assumption that material has tested clean – no sediment testing or monitoring included relative to chemistry or toxicity.
- Location of turbidity should be considered – surfzone may be less of concern because naturally turbid.
- If monitoring turbidity relative to percentage of ambient, location where ambient is collected should have similar characteristics (influences) as project area so that ambient reflects condition without project (e.g., if project area under influence of rip currents – ambient also collected in area with rip currents).
- What criteria do you use to resume construction operations if they have been shut down due to turbidity? Would be helpful to include guidance on restarting project if halted due to non compliance.
  - The issue is usually short dumping – dumping before they reach disposal sites.
- Methods to reduce turbidity during beach nourishment include temporary dikes on the beach and slowly let out water from the containment area – which allows more sediment to fall out of the water before it is released

from the area. Moonlight Beach – didn't build a dike, but disposed in a berm and pushed it onto the beach.

- Truck project – easier to slow down production rate if turbidity (e.g., reduce rate of delivery to beach) – not tied to high costs of dredging (start-stop of project very expensive for dredging projects).
- Just seeing a visible plume does not mean it is an environmental concern – it depends on concentration, duration, and resources present. Duration is important when considering thresholds.
- Time of year also may be relevant – kelp or seagrasses with annual cycles may be more vulnerable early in their season than after growth period.
- Perhaps consider tiered approach to monitoring depending on duration of project and whether sensitive resources are present. Do standard turbidity monitoring. If out of compliance, additional monitoring specific to resource of concern (e.g., irradiance if near vegetated habitat).
- There can be issues if a sensitive resource isn't expected to be present, but then shows up. For example, if least tern forage in project area but consultation wasn't done prior.
- What is authority for halting project based on the presence of grunion given that it is not a listed endangered or threatened species? What is the regulation?
- Is there data on influence of beach nourishment on grunion spawning in southern CA?
  - Would it be possible to relate to data collected with Grunion Greeter program.
  - suggest include grunion monitoring pre- and post-project to see if the various beach nourishment projects have affected (positive or negative) the species.
  - Should trade off between short-term impacts versus longer-term benefits be considered (e.g., enhanced beach habitat)?

o Strand and Dune Vegetation

➢ Comments or Questions:

Wrack removal – regulated as a Section 10 activity (USACE) if it is below the Mean High Tide Line

- Removal is sometimes an issue with NMFS because of flies, which are considered a valuable resource to birds and other animals. Wrack is also a good source of organic material to the beach.
- Wrack is less valuable if buried.

- Contractors would normally just bury the wrack for beach nourishment; it should be possible to instruct that it instead be pushed out of the way.
- Address as a Best Management Practice rather than a requirement to salvage and replace wrack.

- Invertebrates
  - Comments or Questions:
    - Some species are sensitive to changes in grain size, others have broader tolerances.
    - Sediment compatibility between source and receiver sites should lessen invertebrate recovery times because invertebrate recovery based on immigration and recruitment.
    - Sediment characteristics also may indirectly influence shorebirds – either related to prey base or ability to acquire prey (e.g., coarse shell hash documented to impede shorebird foraging after beach nourishment project on East coast).
    - What is the grain size that is either too fine or too coarse relative to resource protection? Data Gap – not well understood.
    - Sediment compatibility – projects evaluated either just looking at the area of placement, or looking at the entire beach envelope (from +10' to -30').
    - What is the scientific basis of the 10% rule of matching sediment within 10% of the grain size envelope of the natural beach?
    - Should consider existing conditions. If beach erosive, then invertebrate development likely less and sediment compatibility may be less of issue. If finer-grained beach (e.g., dissipative beach), invertebrate community may be more developed – may not be best choice for nourishment and sediment compatibility may be more of an issue relative to recovery.
    - Diversity of communities increases as you move offshore.
      - Typical sampling is to take a 10cmx10cm sample and put it through a sieve
    - What happens if invertebrate function has been negatively affected post-construction? How soon should you do the post-construction testing? This is not currently required, but you should look at the season in which construction occurs. Need to make sure you monitor after the species would naturally be present.

- September – March would be the best time to do beach nourishment to minimize recovery time (e.g., outside peak recruitment periods).
- Would it be better for invertebrates to place sediment in the nearshore and avoid the dry beach? *Response:* No, invertebrates also occur in the nearshore.
- Does placement in the nearshore also nourish the beach. *Response:* Depends on water depth. Few hopper dredges with shallow enough draft to discharge in littoral zone. Other techniques may be used for nearshore placement such as cutterhead or pumping slurry from shore.
  - Lower Santa Ana River Dredging in 1992 is a good example of nearshore placement that shows movement of sediment onshore.
  - Taking sediment from inland and creating slurry has some issues of concern with contractors because it requires double handling.
- What about placement of material with higher fines?
  - Trying to mimic natural processes such as placing during the wet season has some logistical issues, such as timing does not coincide with when most construction projects are scheduled, and conducting projects during storm season difficult. Stockpiling may help address some of timing issue if location is available.
  - Finer material – placement in surf zone or nearshore favored by EPA/USACE.
  - Opportunistic programs – finer sediment – consider strategy of placing near river during winter season.
  - Placement at river mouths to mimic watershed inputs have been considered, but may have issues if material contributes to shoaling.
  - >50% fines – not considered beneficial by EPA and subject to placement at Ocean Dredge Material Disposal site if chemistry passes.
- Depth of closure – clarify terminology. *Response:* engineering term – profile flattens out relatively low change.
- Could SANDAG II place sand on the beach in some areas and in the nearshore in other areas and compare the performance of the various placement areas? *Response by C. Webb:* too late for SANDAG RBSP II – perhaps for quality of life Regional Sediment Management Plan – every 50 years.

o Rocky Reef/Kelp Beds
- Need to reword “near bottom light levels” criteria.
- Is there a good data set on the location of kelp beds and how often are they mapped? *Response:* There is good data – Kelp beds are mapped every year or two.

- Any place that has historically had kelp beds is a potential area for kelp in the future.
- Establish vessel corridors to avoid kelp beds.

4. Recommendations and Tools

a) Data Gaps and Recommendations

- Adequate buffers to sensitive habitats and/or species
  - Turbidity for relevant water quality data.
  - Post project sedimentation risk in areas with sensitive nearshore reefs and vegetated habitats.

- Project volume relationships to environmental constraints
  - How much is too much?
  - Goleta – sand stays on the beach until there are storms with large waves – during those events, there are usually multiple sources of sediment (watershed inputs, sand movement) – it then becomes very difficult to pinpoint impacts to a beach nourishment project.
  - Have we seen a beach nourishment project that buries a resource and it stays buried? Not in CA, but this situation has occurred on the East Coast.
  - Word of caution of including monitoring results from East and Gulf Coasts because the coastal environment in CA is much different.
  - How do we advance resource protection without creating monitoring programs that are so expensive? Coordinate with other monitoring programs (e.g., MLPA, PISCO, MARINe, universities).

- Effectiveness of protective measures
  - There may be information lacking of alterations that were done in the field that changed construction practices based on site conditions. These changes need to be documented in a report. A feedback loop from the biological monitor into a project report.
  - Regulatory – improved project files – SAP to monitoring, lessons learned.

- Significance thresholds
  - Standardize monitoring requirements.
  - Coordinate with universities so there is more applied research.

- Ecosystem Benefits
  - State law – requires state funded projects to be economically justified.
  - Federal projects also require economic justification (Ecosystem Benefits in the Benefits-Costs Formulation).
  - Determine how to include or improve inclusion of ecosystem benefits in economic formulas.

b) <u>Database and GIS Tools</u>

- Regional Sensitive Biological Resources
  - MLPA
  - Coastal Conservancy
  - CSMW

- Regional Cumulative Projects

- Sediment Management Project Monitoring
  - Coordinate with Surface Water Ambient Monitoring Program (SWAMP).
  - Separate database would be useful, examples of types of data to include:
    - project specifics
    - dredge volumes
    - Caulerpa status
    - placement locations
    - resources of concern
    - mitigation measures
    - monitoring results

  - CDFG has a database called Project Tracking used for CEQA/NEPA projects – by region – this may be a good resource to tap into. Employee inputs information regarding project, mitigation, notes. *Follow up Note:* Loni agreed to provide copy of example entry or data fields for the database for review. Also check with NOAA, Loni indicated that she believes that NMFS does similar thing.
  - Navigation & Coastal Data Base – USACE LA & SF offices -

    Used to track maintenance O& M - beach nourishment – as built, volume, placement locations.

c) **Models**

- Validate performance of sediment transport models.
- Gain better understanding of model assumptions relative to local conditions.
- Tailor for CA local conditions perhaps on regional or littoral cell basis.
- Increase robustness of model predictions of sediment movement and project-related changes in sand level relative to historical beach profiles.
  - Models can be calibrated for certain wave conditions.
  - Compare pre-project prediction with post-project reality.
  - Impacts to surfgrass, reefs – may need site specific models rather than regional models.

WORKSHOP ATTENDEES

Name	Organization	Phone	E-mail
Karen Green	SAIC	858-826-4939	Karen.D.Green@saic.com
Heather Schlosser	USACE – Los Angeles	213-452-3810	Heather.R.Schlosser@usace.army.mil
Clif Davenport	CA Geological Survey	707-576-2986	Clif.Davenport@conservation.CA.gov
Jim Haussener	CMANC	925-828-6215	jim@cmanc.com
Lawrence Honma	Merkel and Assoc.	858-560-5465	lhonma@merkelinc.com
Noel Davis	Chambers	949-261-5414	ndavis@chambersgroupinc.com
Robert Smith	USACE	760-602-4831	Robert.R.Smith@usace.army.mil
Jorine Campopiano	USEPA	213-244-1808	Campopiano.jorine@epa.gov
Loni Adams	CDFG	858-627-3985	LAdams@dfg.ca.gov
Chris Webb	Moffatt & Nichol	562-426-9551	cwebb@moffattnichol.com
Nick Buhbe	Nautilus	858-587-7333	nick@nautilusenvironmental.com
Valerie Carrillo	RWQCB, LA Region	213- 576-6759	vcarrillo@waterboards.ca.gov