

LITERATURE SEARCH
**PHYSICAL AND COMPATIBILITY ISSUES AFFECTING REGIONAL
SEDIMENT MANAGEMENT AND BEACH NOURISHMENT**

Project Description:

As part of their Coastal Sediment Compatibility and Impact Study, the California Sediment Management Workgroup (CSMW), which includes the Minerals Management Service (MMS) and the Department of Boating and Waterways (DBW), has requested that the California Geological Survey (CGS) research, compile and describe available literature relating to regional sediment management, with a focus on sand compatibility and turbidity issues associated with beach nourishment. Regional sediment management is defined to include the dredging, excavation, transportation and “disposal” of sediment in coastal watersheds and littoral cells. The DBW and MMS are funding the study, and Clifton Davenport, as Project Manager for the California Coastal Sediment Management Master Plan (“Master Plan”), is the primary point of contact.

While the literature review should have a west coast focus, relevant information from sediment management projects elsewhere should also be included. The information gathered will ultimately need to be accessed through the Master Plan’s GIS system, so CGS will need to coordinate with the Master Plan’s GIS Analyst to make sure data needs are being met as part of the project.

Scope of Work:

During the early stages of developing Sediment Master Plan (SMP) tasks, it became apparent that there was a real need to gather information relating to regional sediment management and beach nourishment protocols into one easily-accessed location for use by both technical and non-technical personnel. Some of the need was educational, such as providing coastal processes information for regulators to assist them in their decisions regarding resource protection. Other folks were more in need of an “information resource bank” to assist them in their regional sediment management activities and determine whether permitting concerns were based on best available knowledge. Several themes came up time and again, and this Literature Search was crafted to obtain the type of data

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that seemed pertinent to regulators, reviewers, project proponents and consultants. The information learned will be made available to interested parties through the Sediment Master Plan GIS, so identification of relevant GIS layers as well as pertinent documents would be beneficial to the Program.

For this project, the CSMW is primarily interested in the collection of information on, and assessments regarding the information listed below. The various data needs are grouped in order of descending priority to assist CGS in their data gathering procedure.

- 1) Compile available and known beach nourishment needs along the entire California coast (locations, reasons, severity of need, and consequences); identify critical beaches that would benefit most from beach nourishment, and compile a list of known erosion hot spots. [CH]
- 2) Gather studies that investigate the transport and depositional fate of fine-grained materials associated with natural and anthropogenic turbidity plumes; focus on what's currently known about the densities and duration of "natural" turbidity plumes, and similar information on plumes associated with beach nourishment or other sediment management activities. {JC/CD}
- 3) Compile known and available information on: the types and grain size distribution of sands that have been used for nourishment projects along the important California beaches; observed end results of nourishment projects; the basis for limitations placed on the percentage of allowable finer grained materials in nourishment projects. Include any information gathered on existing grain size distributions at those important beaches. {CH}
- 4) Compile available information which identifies the presence of fine-grained "mud belts", potential sand source areas, sandy and rocky bottom habitats in the offshore vicinity of potential beach nourishment locations. {CH}
- 5) Research any studies assessing the 80/20 coarse-to-fines 'rule-of-thumb' ratio, used by various regulatory agencies to determine whether potential source sands are compatible with a given beach. Identify the origin of the rule-of-thumb and

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- nourishment projects where variances from the rule-of-thumb were allowed, including the basis for such variance(s). {JC/CD}
- 6) Compile known information on Debris Basin locations, contacts, volumes, and cleanout frequencies. Focus efforts outside of Ventura and LA Counties, since debris basins in those counties are already included within the SMP GIS system. {JC/CD}
 - 7) Document known information (i.e., case studies, etc.) regarding the natural seasonal movement of sand from the beach to nearshore and back. {JC/CD}

CGS should use all available sources of data to collect the historical data, including but not necessarily limited to web-based information such as NOAA's Coastal Research Center, CERES and USGS sites, documents prepared for the MMS, sources of information such as those listed in Paul Komar's *Beach Processes and Sedimentation*, Department of Boating and Waterways reports, white papers and regulatory files (USEPA, California Coastal Commission, Regional and State Water Resources/Quality Control Boards).

The project deliverables will consist of:

- A compiled reference list;
- Digital copies of relevant references
- GIS layer(s) appropriate for inclusion in the Master Plan GIS
- A short assessment of relevant references with respect to the concerns listed above; and
- Draft and final reports which present a summary assessment of the major findings of the project as a whole. Draft report will be presented to the Project Manager, who will coordinate reviews.

Schedule:

- Start and finish project by May 1, 2004

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