

**CALIFORNIA COASTAL COMMISSION**

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**COASTAL DEVELOPMENT PERMIT APPLICATION**

**Application number**.....3-05-026, Santa Cruz Small Craft Harbor October 2005  
**Dredging/Disposal Project**

**Applicant**.....Santa Cruz Port District (Contact: Brian Foss, Port Director)

**Project Location**.....Santa Cruz Small Craft Harbor and Twin Lakes State Beach, City of Santa Cruz (Santa Cruz County)

**Project Description**.....Dredge 10,000 cubic yards of inner-harbor sediment consisting of 50.8% sand and 49.2% silt/clay, with disposal into the nearshore environment in October 2005 only

**File Documents**.....CDP 3-00-034; CDP 3-00-034-A1; CDP 3-00-034-A2; *Santa Cruz Port District Inner Harbor Sampling and Analyses Plan (North Harbor Areas 1, 2, and 3) 2005/2006 Dredging Season (Red Hills Environmental, Inc., April 7, 2005); Results of Sediment Sampling and Analyses, Santa Cruz North Harbor, 2005-2006 Dredging Season (RHE, Inc./ToxScan, August 21, 2005); 2005 Santa Cruz Harbor Dredge Disposal Monitoring Results (Sea Engineering, Inc., June 27, 2005); Santa Cruz Sand Crab (*Emerita analoga*) Tissue Results (Kinnetic Laboratories, Inc., August 8, 2005); Monitoring of Dredged Upper Santa Cruz Harbor Mixed Sand and Mud Sediment Released into the Nearshore Area of Santa Cruz, California (Watt and Greene, December 19, 2002); Arana Gulch Watershed Enhancement Plan (Santa Cruz County Resource Conservation District, June 2002)*

**Staff Recommendation**..... Approval, with conditions

**EXECUTIVE SUMMARY**

In October 2000, the Coastal Commission conditionally approved a five-year permit (CDP 3-00-034) that authorized the dredging of 10,000 cubic yards (CY) of sediment per year from the inner harbor and 350,000 CY of sediment per year from the entrance channel of the Santa Cruz Small Craft Harbor, with disposal into the surfline or the nearshore environment. CDP 3-00-034 was conditioned to require that all dredge materials disposed of into the surfline or the nearshore environment consist of over 80% sand, consistent with a U.S. Environmental Protection Agency "rule of thumb" guideline.



*pm 8/31/05*

In 2001 and 2003, the Commission approved amendments to CDP 3-00-034 (CDP 3-00-034-A1, CDP 3-00-034-A2), which allowed the Port District to conduct "demonstration" projects to allow for the disposal of a maximum of 3,000 CY/year of clean, fine-grain inner harbor sediment (consisting of 48% sand and 52% silt/clay in 2001; between 50% and 80% sand content in 2003) into the nearshore area east of the harbor via the offshore pipeline. The purpose of these demonstration projects was to evaluate the environmental effects of placing clean, fine-grain dredge material into the nearshore littoral zone. The demonstration projects were undertaken in March 2001 (CDP 3-00-034-A1) and February and April 2005 (CDP 3-00-034-A2). Extensive monitoring programs were conducted before, during, and after each of the demonstration projects to ascertain if any fine-grain dredge sediment could be detected on the beaches or the nearshore benthic environment. The results of the data collected during the monitoring programs concluded that the demonstration projects did not significantly change, alter, or impact the beaches or nearshore marine benthic habitats in the study areas.

The Port District now proposes to dredge and dispose of approximately 10,000 CY of sediment from the inner harbor, consisting of 50.8% sand and 49.2% silt and clay, with disposal through the offshore pipeline into the nearshore environment during October 2005 only. CDP 3-00-034-A2 allowed for the disposal of 3,000 CY of inner harbor sediment into the nearshore environment, of which a maximum of 1,500 CY could be composed of silt/clay, with the remaining 1,500 CY consisting of sandy material. The current proposal would increase the allowable amount of silt/clay disposal into the nearshore environment by over three times that allowed under CDP 3-00-034-A2 (49.2% of 10,000 CY, or approximately 4,920 CY of silt/clay). The remaining 5,080 CY of the 10,000 CY of inner harbor material proposed for nearshore disposal is composed of sand. The Port District proposes an extensive monitoring program to evaluate the impacts to the beach or local benthic environment due to fine-grain sediment disposal into the nearshore environment.

The issues raised by this project are as follows:

**Beach Replenishment:** Coastal Act Section 30233(b) requires that dredge material suitable for beach replenishment be transported for such purposes to appropriate beaches. The sediments proposed for dredging average 50.8% sand and 49.2% silt/clay. Typically, regulatory agencies such as the Army Corps of Engineers (ACOE) and the U.S. Environmental Protection Agency (EPA) have required that beach nourishment material be composed of at least 80% sand. The Port District contends that the 80% sand guideline is too restrictive. According to the applicant, the benefits of this project include approximately 5,000 CY of sandy material becoming available for beach replenishment, and transport of silt and clay to the midshelf mudbelt. Results of monitoring programs for the previous demonstration projects showed that the natural oceanographic conditions in the area remove finer sediments to the offshore mudbelt and deposit sandy sediments on local beaches. The EPA states that there is flexibility within the Clean Water Act Guidelines that allows for discharge of finer material for beach nourishment purposes, provided that site-specific information is available to determine any beach nourishment benefits or significant adverse impacts. The project proposal includes a monitoring program that will include onshore and offshore sediment sampling and grain size analysis to determine the impacts of the proposed project to adjacent beaches



and benthic habitats. In addition, Special Condition #3 incorporates the requirements of the Monterey Bay National Marine Sanctuary's (Sanctuary) Research Permit regarding additional beach monitoring to evaluate the impacts of fine-grain sediment disposal into the nearshore environment. As conditioned, the proposed demonstration project is consistent with the dredging and beach replenishment priorities of Coastal Act Section 30233 because it ensures that dredge material suitable for beach replenishment will be placed into the nearshore environment where it will be available for transport to local beaches.

**Water Quality:** The proposed dredging and disposal project is expected to have short-term adverse impacts on water quality, including a temporary increase in turbidity and a decrease in dissolved oxygen levels. However, these impacts should be minor in magnitude and scope given that the amount of dredge material per disposal episode will be relatively small, i.e. 500 to 900 CY (Special Condition #6 limits the amount of daily dredge disposal to 900 CY). Pre-dredge water conditions should recur shortly after each dredging and disposal episode. The project is conditioned to require ACOE, EPA, and Central Coast Regional Water Quality Control Board (RWQCB) review of the biological and chemical test results of the dredge material and approval by these agencies that the material is suitable for unconfined aquatic disposal. As conditioned, the proposed project is consistent with Coastal Act Sections 30231 and 30232 regarding the maintenance of marine water quality.

#### **Biological Resources**

Sediment deposition can smother invertebrates and prevent algal spore settlement. However, oceanographic information about currents in the proposed disposal area indicates that fine-grained sediment will not settle out in the nearshore areas. Dredging causes the disturbance, transport, and destruction of benthic organisms, but the disturbance caused by the proposed project would be limited and temporary. Also, the use of a hydraulic dredge will minimize disturbance and re-suspension of sediments at the dredge site. Several endangered or threatened species are found in the harbor area or just offshore. The underwater disposal of dredge material is not expected to affect the state and federally listed California brown pelican. The planned dredging and disposal will occur outside the upstream and downstream migration seasons of the threatened steelhead trout. The endangered tidewater goby no longer inhabits the watershed area adjacent to the harbor. Additionally, Special Condition #3 requires additional beach and benthic monitoring to determine the impacts of the project on biological resources, consistent with the Sanctuary's Research Permit. As conditioned, the proposed project is consistent with Sections 30230 and 30231 of the Coastal Act regarding protection of species of special importance and maintenance of the biological productivity of coastal waters.

**Public Access/Recreation:** The proposed dredging project will strongly benefit public access and recreation by restoring 38 berths to use and by maintaining adequate water depths in the harbor's navigation channels. In addition, approximately 5,000 CY of the dredge material is composed of sand, which will become available for beach replenishment. The project is conditioned to require that the dredging and disposal activities take place between 6:00 p.m. and 10:00 p.m. to limit potential beach access impacts due to the project. Also, the project is conditioned to require



additional beach monitoring before, during, and after the dredging and disposal activities, consistent with the requirements of Sanctuary's Research Permit to determine if there are any impacts to beach access due to the project. As conditioned, the proposed project will preserve public access and recreational opportunities and is therefore consistent with the public access and recreational policies of the Coastal Act.

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## Exhibits

Exhibit 1 .....	Location Map
Exhibit 2 .....	Dredging/Disposal Map
Exhibit 3 .....	Photographs of Current Conditions in Inner Harbor
Exhibit 4 .....	Sediment Plume Photograph From 1982
Exhibit 5 .....	National Marine Fisheries Service Letter
Exhibit 6 .....	Dredge Monitoring Program Proposal
Exhibit 7 .....	Monterey Bay National Marine Sanctuary Permit Decision Letter
Exhibit 8 .....	Inner Harbor Dredging Amounts From February-April 2005
Exhibit 9 .....	Correspondence Between Kathy Shortley & John Ricker (Environmental Health)
Exhibit 10 .....	Correspondence From Martha Glenn
Exhibit 11 .....	Correspondence From Isabel Gloege



## **I. STAFF RECOMMENDATION ON AMENDMENT**

The staff recommends that the Commission, after public hearing, **approve** the proposed permit subject to the standard and special conditions below. Staff recommends a **YES** vote on the following motion:

***Motion.** I move that the Commission approve Coastal Development Permit Number 3-05-026 pursuant to the staff recommendation.*

***Staff Recommendation of Approval.** Staff recommends a **YES** vote. Passage of this motion will result in approval of the coastal development permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.*

***Resolution to Approve a Coastal Development Permit Amendment.** The Commission hereby approves Coastal Development Permit Number 3-05-026 on the grounds that the development, as conditioned, is in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either: (1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment; or (2) there are no feasible mitigation measures or alternatives that would substantially lessen any significant adverse effects of the development on the environment.*

## **II. CONDITIONS OF APPROVAL**

### **A. Standard Conditions**

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.
3. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
4. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

### **B. Special Conditions**

1. **Dredge Material Suitable for Unconfined Aquatic Disposal.** **PRIOR TO COMMENCEMENT OF DREDGING AND DISPOSAL**, the permittee shall supply evidence that the Army Corps of Engineers, U.S. Environmental Protection Agency, and the Central Coast Regional Water Quality Control Board have reviewed the chemical, biological,



and physical testing results for the 10,000 cubic yards of inner harbor dredge material proposed for disposal into the nearshore environment in October 2005 and have determined that this material is suitable for unconfined aquatic disposal.

2. **Other Agency Requirements. PRIOR TO COMMENCEMENT OF DREDGING AND DISPOSAL OPERATIONS**, the permittee shall submit to the Executive Director for review a copy of a valid permit, letter of permission, or evidence that no permit is necessary from the following agencies: Army Corps of Engineers, U.S. Environmental Protection Agency, Monterey Bay National Marine Sanctuary, Central Coast Regional Water Quality Control Board.
3. **Revised Monitoring Program. PRIOR TO ISSUANCE OF THE AMENDED COASTAL DEVELOPMENT PERMIT**, the permittee shall submit to the Executive Director for review and approval a revised monitoring program that incorporates the requirements of the Monterey Bay National Marine Sanctuary's Research Permit regarding additional beach and benthic surveys to evaluate the impacts of fine-grain sediment disposal into the nearshore environment.
4. **Final Monitoring Report. WITHIN 30 DAYS AFTER RECEIPT OF THE FINAL MONITORING PROGRAM REPORT**, the permittee shall submit to the Executive Director for review a copy of the final monitoring report.
5. **Hours of Operation.** The dredging and disposal operation authorized by this permit shall take place between the hours of 6:00 p.m. and 10:00 p.m. on weekdays in October 2005 only.
6. **Maximum Cubic Yards Allowed Per Dredging Episode.** A maximum of 900 CY of inner harbor dredge material may be disposed of through the offshore pipeline into the nearshore environment per daily dredging episode in October 2005 only.

### **III. Recommended Findings and Declarations**

The Commission finds and declares as follows:

#### **A. Project Background**

##### **1. Site Description**

The Santa Cruz Small Craft Harbor is located in the City of Santa Cruz, at the northern tip of Monterey Bay, and between Twin Lakes and Seabright State Beaches (Exhibit #1). The harbor is a commercial fishing/small craft harbor with berthing facilities for approximately 920 boats. The proposed dredging site is located in the inner harbor (also described as the north harbor), which is located north of the Murray Street Bridge (Exhibit #2). This site is situated at the lower reaches of the Arana Gulch watershed. Arana Creek flows through a culvert at the northern end of the harbor and is discharged into the inner harbor waters. The inner harbor receives sediment primarily from



the Arana Gulch watershed, while the entrance channel receives sediment primarily from littoral drift at the harbor mouth. On average, the harbor receives approximately 1,000 to 15,000 cubic yards (CY) of sediment per year from the Arana Gulch watershed. Much of this sediment collects in the inner harbor and at times (including the present) has rendered this area impassable to boats (Exhibit #3). The Arana Gulch watershed is primarily composed of an erosive, sandy substrate, but also includes a component of silts and clays (pers. comm. Bobbie Haver, Arana Gulch Watershed Alliance).

## **2. Arana Gulch Watershed**

The Arana Gulch watershed drains a 3.5 square mile area between the City and County of Santa Cruz. Arana Gulch has historically sustained steelhead spawning and rearing. Currently, available salmonid habitat in the watershed is poor in quality due to a number of limiting factors, including sedimentation. The Santa Cruz County Resource Conservation District (SCRCD) prepared an *Arana Gulch Watershed Enhancement Plan* (Plan) in 2002. The Plan includes an assessment of current sediment and salmonid fisheries conditions and recommends a series of restoration projects to repair individual sites or constraints in the Arana Gulch watershed. A total of 18 restoration projects are proposed, which are rated from high priority to low priority, and miscellaneous projects. The Plan's objectives are to improve, protect, and increase accessibility to and use of steelhead habitat throughout the Arana Gulch watershed and to reduce erosion and sedimentation throughout the watershed. Currently, the engineering designs for two of the high priority projects are 90% complete and the SCRCD is awaiting feedback from permitting agencies regarding the projects. The purpose of one of these high priority projects, i.e. the Blue Trail Gullies project, is to repair an eroded area and re-stabilize a hillside to reduce sediment input into the watershed, which will ultimately reduce the amount of sediment that makes its way into the inner harbor. In addition, the Steelhead Fish Barrier #6 project includes removal of a culvert to allow for fish passage to upstream reaches of the central branch of Arana Gulch. This project includes the stabilization of stream banks, which will reduce the amount of erosion into the inner harbor. The Blue Trail Gullies project will likely be implemented in 2006, and the Steelhead Fish Barrier project will likely be implemented in late 2005 or 2006 (pers. comm. Bobbie Haver, Arana Gulch Watershed Alliance). An additional high priority project in the Plan involves reduction of concentrated runoff and downstream erosion and gullyng at the City's disc golf course. The California Coastal Conservancy will fund the engineering design and permitting process for this project.

In addition to the above projects, which are part of the *Arana Gulch Watershed Enhancement Plan*, the California Department of Fish & Game has granted a 5-year permit to the Santa Cruz Port District for regular clearance of a sediment basin at Harbor High School. This basin is scheduled to be cleared for the fourth time this year, prior to the start of the rainy season. Regular clearance of this sediment basin reduces sediment inputs into the inner harbor.

## **3. Sediment Transport in Northern Monterey Bay**

The Santa Cruz Small Craft Harbor lies within the Santa Cruz Littoral Cell, which extends from the Golden Gate Bridge in San Francisco, south to the Monterey Bay submarine canyon. The majority





of sediment enters the littoral cell during winter rainstorms from November to March. The San Lorenzo River is a major contributor of sediment to northern Monterey Bay. The River, which is located approximately half a mile west of the Santa Cruz Harbor, discharges an average of 278,000 CY of sediment per year to the Santa Cruz Bight. Exhibit #4 shows the sediment plume that enters the ocean from the San Lorenzo River during periods of high rainfall. Approximately 73% (203,000 CY) of the River's annual discharge is estimated to be silt and clay sediment.

Sediments entering the ocean are sorted by the forces of waves and currents based on differences in grain-size, density, and shape. Sediment in the Santa Cruz Littoral Cell is sorted into two basic categories at a cut-off grain diameter of 180 microns. Sediments larger than 180 microns consist of fine-sand and larger-grained sand; sediments smaller than 180 microns are categorized as fine sediment (silt and clay). The larger, sandy sediments travel in the littoral drift or are deposited on beaches in the Santa Cruz area. Fine clay and silt sediments are transported offshore to the continental shelf, where they are deposited in abundance along a midshelf mudbelt. The mudbelt extends from south of Santa Cruz to north of Half Moon Bay and is up to 30 meters thick on the continental shelf offshore of the San Lorenzo River.<sup>1</sup>

#### **4. Santa Cruz Small Craft Harbor Dredging Permit History**

The Commission granted a five-year permit (CDP 3-00-034) to the Santa Cruz Port District in October 2000, which authorized the dredging of 10,000 CY of sediment per year from the inner harbor and 350,000 CY of sediment per year from the harbor's entrance channel (see Exhibit #2 for location map). CDP 3-00-034 authorized disposal of these sediments into the surfline at Twin Lakes State Beach, or through the offshore pipeline (approximately 70 yards offshore) when hydrogen sulfide from decaying seaweed was present in entrance channel sediments in quantities that would affect beachgoers or adjacent residents if the sediments were placed into the surfline. **(Please note that hydrogen sulfide release into the air does not result from inner harbor dredging, which is the subject of this permit.)** CDP 3-00-034 required that all dredged and disposed sediments consist of at least 80% sand, consistent with Army Corps of Engineers (ACOE) and U.S. Environmental Protection Agency (EPA) guidelines regarding dredging and beach replenishment. The Port District has applied for renewal of its five-year dredging permit. The Commission will likely address this item at its October 2005 hearing.

In February 2001, the Commission approved an amendment (CDP 3-00-034-A1) to the Santa Cruz Port District's five-year dredging and disposal permit. CDP 3-00-034-A1 allowed for the one-time dredging of 3,000 CY of sediment from the inner harbor, with disposal by means of the offshore pipeline during February and/or March 2001. This sediment averaged 42% sand and 58% silts/clays and, after chemical and biological testing, was determined by the ACOE and EPA to be suitable for unconfined aquatic disposal. The Port District had requested the amendment because it contended that the 80% sand determination was too restrictive and precluded the beneficial use of otherwise clean sediments, of which a high percentage constitute sandy material. The Santa Cruz Port District

<sup>1</sup> Sea Engineering, Inc., 2005. *2005 Santa Cruz Harbor Dredge Disposal Monitoring Results*. Santa Cruz, CA. 16 pp. plus Appendix.





had proposed the amendment as a "demonstration" project to determine if clean, fine-grain harbor sediments could be disposed into the nearshore area in a manner beneficial to downcoast beaches and without harm to coastal resources.

According to letters from the EPA dated April 26, 2000 and December 15, 2000, the 80% sand standard is a "rule of thumb" guideline to be applied in situations where more detailed information is lacking. However, "it is not the only appropriate ratio." Regarding the 2001 demonstration project, the April 26, 2000 EPA letter states that the "EPA is pleased that the Harbor's evaluation efforts will provide information that could be used as a basis for documenting that a higher percent of fine grain materials may be discharged for beach nourishment in a manner consistent with the Guidelines." The December 15, 2000 EPA letter states that there is flexibility within the Clean Water Act Guidelines that allows for discharge of finer material for beach nourishment purposes, provided that site-specific information is available to determine any beach nourishment benefits or significant adverse impacts. The EPA felt that the proposed demonstration project could provide the kind of site-specific information necessary for further evaluation. Therefore, the EPA did not object to the proposed demonstration project, provided that the provisions of the monitoring program were enforced and that the results of the monitoring program were made available to the ACOE, the EPA, and other relevant agencies.

The 2001 demonstration project included a monitoring component to determine the effects, if any, of the disposal of fine-grain dredge material into the nearshore environment. At the February 2001 Commission hearing, California Department of Fish & Game personnel strongly suggested that a neutral, nontoxic fluorescent dye be added to the dredge material, prior to disposal, for monitoring purposes. The Commission added this requirement to its approval of CDP 3-00-034-A1. The 3,000 CY of sediment was dredged and disposed of into the nearshore environment in the early evening hours over a three-day period in late March 2001.

The 2001 monitoring program was designed and implemented by scientists from Moss Landing Marine Laboratories to determine if sedimentary changes occurred on the beaches and nearshore benthic habitats in the vicinity of the Santa Cruz Harbor due to the retention of fine-grain dredged sediment. In addition to a comprehensive scientific literature review, a variety of data were collected from February 18, 2001 to April 14, 2001 to monitor the experimental dredging event and the natural processes occurring in the study area. Stream flow data were used to calculate sediment discharge estimates. Oceanographic swell information was downloaded to monitor wave conditions and to calculate littoral drift estimates. Over 300 sediment samples were collected and grain size analyses performed. Over 300 water samples were collected to observe changes in turbidity over time. Two separate geophysical surveys were executed to describe and quantify benthic habitats and sedimentary changes that may have occurred during the monitoring period. The scientists concluded, after complete integration and analyses of all the data types collected during the monitoring period, that the fine-grain material released into the nearshore environment did not significantly change, alter, or impact the beaches or nearshore marine benthic habitats in the study area.

The results of the dye tracking study in 2001 showed that dye was detected at most nearshore and



beach stations at most time intervals. The overall dilution factor of the dye was very high at all stations, indicating that the high wave energy at the dredge material discharge point resulted in a rapid dilution of the discharge plume. This study also noted that dye is a tracer for the movement of water *and not sediment*, and cautioned that the results of the dye study should not be used to determine the movement and persistence of fine-grain dredge particles. In addition, Professor Gary Greene from Moss Landing Marine Laboratories found that the use of fluorescent dye as a tool to determine if fine-grain sediment settles in the nearshore sandy areas is fundamentally flawed, and that the only way to determine if this occurs is to sample bottom sediments. In addition, the Commission's staff biologist agreed with these criticisms regarding use of dye as a sediment tracer and also stated that sediment sampling is the only analysis that will determine if fine-grain dredge sediments adversely impact the beaches or the nearshore subtidal benthic environment.

In August 2003 the Commission approved a second amendment (CDP 3-00-034-A2) to the base dredging permit. CDP 3-00-034-A2 allowed for the yearly nearshore disposal of up to 3,000 CY of inner harbor sediment, consisting of between 50% and 80% sand, for the remaining two years of CDP 3-00-034. Requirements for lab testing of the fine-grain dredge material, according to all criteria prescribed by ACOE and EPA regulations, remained in place. These criteria included testing for 1) metals; 2) pesticides and PCBs; 3) butylins; 4) organotins; 5) total and water soluble sulfides; 6) total solids/water content; 7) total volatile solids; 8) total organic carbon; and 9) grain size distribution. As with the original demonstration project, only "clean" dredge material, i.e., material deemed suitable for unconfined aquatic disposal by the ACOE and the EPA, could be disposed of into the nearshore environment. Unlike CDP 3-00-034-A1, the EPA determined that the dredge material must consist of at least 50% sand to achieve the basic project purpose of beach nourishment.

The Commission conditioned its approval of CDP 3-00-034-A2 to require the submission of a monitoring program to determine if sedimentary changes occurred along the beaches and nearshore benthic habitats in the vicinity of the Santa Cruz Harbor due to retention of fine-grain material. In 2004, all dredged and disposed inner harbor sediments consisted of at least 80% sand and thus were allowed under the base permit (CDP 3-00-034) and were not subject to monitoring requirements. In February and April 2005, 7,050 CY of material was dredged from the inner harbor and disposed of into the nearshore environment. Of this amount, 4,300 CY consisted of an average of 85% sand and 15% silt/clay, disposal of which was allowed under the base permit. A total of 2,750 CY of this inner harbor material consisted of an average of 71% sand and 29% clay/silt and was subject to a monitoring program required under CDP 3-00-034-A2. Results of the monitoring program (which was undertaken from February 10<sup>th</sup> to April 22<sup>nd</sup>) demonstrated that the discharge of fine-grain material did not cause any detectable changes in mean grain-size or silt and clay percentages beyond the range of normal winter background conditions. For the reasons discussed above, the Commission did not require use of fluorescent dye as part of the monitoring program required for this amendment.

## **5. Project Description**

The applicant proposes to dredge approximately 10,000 CY of sediment from approximately 3.5



acres of the inner harbor area, with disposal through the offshore pipeline into the nearshore environment just east of the harbor jetty. The material would be removed using either a 16-inch cutter-head hydraulic dredge or an 8-inch cutter-head hydraulic dredge, which would be connected to the 16-inch unit for pumping via an existing 16-inch pipeline to the discharge point. The purpose of this project is to determine if a larger quantity of clean harbor sediments consisting of between 50% and 80% sand can be disposed of into the nearshore environment in a manner beneficial to downcoast beaches and without harm to coastal resources.

The inner harbor sediment proposed for dredging and disposal has been tested for its physical, chemical and biological properties. The results of these tests are undergoing evaluation by an interagency group, including ACOE and EPA, as to the sediment's suitability for unconfined aquatic disposal and for beach nourishment. The overall physical composition of the sediment is approximately 50.8% sand and 49.2% silt and clay.

To protect endangered salmonids, dredging will be conducted during the month of October 2005, when there is a low likelihood of juvenile salmonids being present in the harbor (juveniles may be present in Arana Gulch in October), and when adult salmonids are not migrating through the harbor to Arana Gulch (pers. comm. Jonathan Ambrose, National Marine Fisheries Service; see also Exhibit #5). Dredging and disposal episodes are proposed to take place three to four times weekly during the weekday evening hours between 4:00 p.m. and 10:00 p.m. to avoid conflicts with recreational activities as much as possible. Approximately 500-900 CY of sediments will be dredged and disposed into the nearshore environment during each episode.

According to the applicant, the project provides the following benefits: 1) the project will result in approximately 5,000 CY of sand for beach replenishment (this sediment would be lost to the beach if disposal was required at an upland dump site or a site farther offshore); 2) silt and clay sediments will be transported by natural processes to the ocean's mudbelt and will not settle onshore; 3) dredging and disposal during October, when salmonids are not present in the harbor, will allow evening dredging and disposal activities when recreational use of the beach and ocean are lower than during the daytime hours, and; 4) the proposed project (which includes a monitoring program) will advance the science of sediment transport and management, which could be beneficial on a regional, west coast, or national level.

The proposed disposal site for the dredge materials is located approximately 70 yards offshore of Twin Lakes State Beach (Exhibit #2). Disposal of dredge material has historically occurred offshore of Twin Lakes State Beach and has contributed to a beach replenishment program for downcoast beaches.

## **6. Proposed October 2005 Monitoring Program**

The proposed monitoring program calls for data to be collected on local beaches and offshore areas in three phases, as follows: 1) prior to dredging to establish a baseline of existing conditions; 2) while dredging is occurring, to monitor any potential impacts due to the fine-grained sediments, and;



3) post dredging, to document the return to preexisting conditions. The 2005 monitoring program data will be incorporated into the 2001 Geographic Information System (GIS) database, which will provide the capability to catalog, visualize, analyze, and compare this geospatial data over time.

The proposed monitoring program includes sediment sampling on local beaches and offshore areas, as well as water quality monitoring for a variety of constituents, sediment plume tracking throughout the monitoring period (including the tracking of sediment plumes from the San Lorenzo River point source). A diver will be used to visually observe critical habitats identified in the 2001 dredge monitoring program prior to dredging/disposal, during dredging/disposal, and after dredging/disposal. A variety of high-tech methods will be used, including a Nortek Aquadopp acoustic Doppler current profiler, which will be deployed on the seafloor for the entirety of the monitoring program, the purpose of which is to continuously log current speed and direction vertically through the water column. In addition, multibeam bathymetry/backscatter imagery and seafloor habitat identification analysis in GIS will be used to describe in detail the variety of habitats offshore in the Santa Cruz Bight. All of the above will result in an expansion of the current knowledge base of sediment transport in the Santa Cruz Bight over time, which is essential to successfully manage potential future fine-grained dredging and disposal operations.

Please see Exhibit #6 for the complete dredging/disposal monitoring proposal.

### **III. COASTAL ACT ISSUES**

#### **A. Land Use Priorities**

Coastal-dependent and coastal-related development are among the highest priority Coastal Act uses.

The Coastal Act defines coastal-dependent and coastal-related as follows:

**§ 30101:** *"Coastal-dependent development or use" means any development or use which requires a site on, or adjacent to, the sea to be able to function at all.*

**§ 30101.3:** *"Coastal-related development" means any use that is dependent on a coastal-dependent development or use.*

Coastal Act § 30001.5 states in part:

*The Legislature further finds and declares that the basic goals of the state for the coastal zone are to:*

*(a) Protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources....*

*(c) Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners.*



*(d) Assure priority for coastal-dependent and coastal-related development over other development on the coast...*

**Coastal Act Sections 30234, 30234.5 and 30255** also provide:

*§ 30234: Facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible, upgraded. Existing commercial fishing and recreational boating harbor space shall not be reduced unless the demand for those facilities no longer exists or adequate substitute space has been provided. Proposed recreational boating facilities shall, where feasible, be designed and located in such a fashion as not to interfere with the needs of the commercial fishing industry.*

*§ 30234.5: The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.*

*§ 30255: Coastal-dependent developments shall have priority over other developments on or near the shoreline. Except as provided elsewhere in this division, coastal-dependent developments shall not be sited in a wetland. When appropriate, coastal-related developments should be accommodated within reasonable proximity to the coastal-dependent uses they support.*

The Santa Cruz Small Craft Harbor is one of only six harbors located along the Central Coast, and is the primary recreational port in Monterey Bay. The Santa Cruz Port District maintains approximately 920 berths and dory ties within the Harbor, which are used by a variety of recreational and commercial boats.

Section 30234 of the Coastal Act provides that facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible, upgraded. Section 30234.5 states that the economic, commercial, and recreational importance of fishing activities shall be recognized and protected. Commercial and recreational boating and fishing are coastal-dependent priority uses that cannot function without sufficient harbor depths. Hence, the maintenance of adequate berthing and navigational depths in the harbor is essential and must be considered a high priority under the Coastal Act. As shown in the photographs attached as Exhibit #3, portions of the inner harbor are filled with sediment that washed down from Arana Gulch during the storms of the winter of 2004-2005, rendering 38 slips unusable and causing damage to harbor infrastructure. The proposed dredging project and disposal project will remove the sediment from this area, which will allow these slips to be used again. Thus, the proposed project not only supports coastal-dependent uses but also is essential to such uses and therefore has a priority under the Coastal Act. Accordingly, the Commission finds that the proposed dredging project supports high-priority coastal uses that are consistent with the land use priorities of Coastal Act Sections 30001.5, 30234, 30234.5, and 30255.



## **B. Marine Resources & Environmentally Sensitive Habitats**

### **1. Beach Replenishment**

Coastal Act Section 30233 details the conditions under which dredging may be permitted and states:

**§ 30233:** (a) *The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following: (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities. (2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps. (3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland. (4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities. (5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines. (6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas. (7) Restoration purposes. (8) Nature study, aquaculture, or similar resource dependent activities.*

*(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. **Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems. [emphasis added.]***

*(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.*





The 10,000 CY of sediment proposed for dredging and disposal averages 50.8% sand and 49.2% silt/clay. This material would not normally qualify as beach nourishment material because it is less than 80% sand. As noted previously, the policy of the ACOE and the EPA is that lacking sound information regarding the impacts of fine-grained material on the aquatic environment, beach replenishment material should be approximately 80% sand or compatible with the receiving beach. The receiving beach at Santa Cruz is over 90% sand.

The Port District contends that the 80% sand guideline is too restrictive and precludes the beneficial use of otherwise clean sediments. According to the applicant, the benefits of this project include sandy beach replenishment and transport of silt and clay to the ocean mudbelt. The Port District would like a chance to demonstrate that this material is suitable for nearshore disposal without causing harm to coastal resources or downcoast beaches. The Port District feels this disposal may be beneficial to beaches due to the approximately 5,000 CY of sand that will become available for beach replenishment. The other options for disposal of this material, including SF-14 in Monterey Bay (a federally approved offshore disposal site) or upland disposal at a landfill, would permanently remove 5,000 CY of sand from the Santa Cruz littoral cell and its associated beaches.

According to letters from the EPA dated April 26, 2000 and December 15, 2000, the 80% sand standard is a "rule of thumb" guideline to be applied in situations where more detailed information is lacking. However, "it is not the only appropriate ratio." The April 26, 2000 EPA letter states that the "EPA is pleased that the Harbor's evaluation efforts will provide information that could be used as a basis for documenting that a higher percent of fine grain materials may be discharged for beach nourishment in a manner consistent with the Guidelines." The December 15, 2000 EPA letter states that there is flexibility within the Clean Water Act Guidelines that allows for discharge of finer material for beach nourishment purposes, provided that site-specific information is available to determine any beach nourishment benefits or significant adverse impacts. The results of the monitoring programs for the previous demonstration projects provided site-specific information regarding the impacts (or lack thereof) of disposal of fine-grain material into the nearshore environment. The proposed project involves an increase in the amount of less-than-80%-sand inner harbor sediment that will be released into the nearshore environment compared to that approved under CDP 3-00-034-A2 (the current proposal would allow up to 5,000 CY of fine-grain material to be discharged into the nearshore environment; CDP 3-00-034-A2 allowed for disposal of up to 1,500 CY of fine grain material). The proposed monitoring program will evaluate the impacts to benthic habitats from disposal of this larger quantity of fine grain sediment. The EPA does not object to the proposed project, provided that the provisions of the monitoring program are enforced and that the results of the monitoring program are made available to the ACOE, the EPA, and other relevant agencies.

A concern regarding the disposal of predominantly fine-grained sediment into the nearshore environment is that it may take residence in the nearshore area. However, the monitoring report for the demonstration project undertaken in February through April 2005 states that sediments entering the coastal ocean are sorted by the forces of waves and currents based on differences in grain size, density, and shape. Sediments larger than 180 microns (roughly fine sand and larger) travel in the





littoral drift and are deposited on beaches in the Santa Cruz Littoral Cell. Sediments finer than 180 microns either bypass the inner continental shelf in a plume from the San Lorenzo River (see Exhibit #4 for a photograph of plume), or are winnowed from the seafloor shortly after deposition by wave or current processes. Fine-grain sediments are transported offshore to the continental shelf, where they have been deposited in abundance along a midshelf mudbelt.

The project proposal includes a monitoring program to be performed by scientists from Sea Engineering, Inc., which will use the same basic structure as the 2001 monitoring program. Sediment samples will be collected in three phases on local beaches and offshore before dredging (to establish a baseline of existing conditions), during dredging (to monitor any potential immediate impacts), and after dredging (to document a return to preexisting conditions) (Exhibit #6). This monitoring program will include onshore and offshore sediment sampling and grain size analysis. The Port District is anticipating that the results of this monitoring program will demonstrate that the 10,000 CY of sediment, consisting of approximately 50% sand and 50% silt/clay, is suitable for nearshore disposal and will not cause harm to coastal resources. The findings of the previous monitoring program were relevant to a smaller amount and different composition of inner harbor dredge material than the proposed project and are not necessarily applicable to the dredging and disposal of 10,000 CY of sediment, consisting of approximately 50% sand. The proposed monitoring program will demonstrate if this larger volume has impacts to benthic sediments and adjacent beaches. Also, Special Condition #3 requires additional beach and benthic sampling consistent with the requirements of a one-year Research Permit that will likely be granted by the Sanctuary to the Port District for the proposed project (see Exhibit #7).

In conclusion, the dredging and disposal of 10,000 CY of sediment consisting of approximately half sand and half silt/clay into the nearshore pipeline during October 2005 should not have a negative impact on sand composition at Twin Lakes State Beach, given the natural oceanographic conditions that remove finer sediments to the offshore mudbelt and deposit sandy sediments on local beaches. Also, approximately 5,000 CY of sand will become available for beach replenishment, consistent with Coastal Act Section 30233(b) which states that dredge material suitable for beach replenishment should be transported for such purposes to appropriate beaches. In addition, sediment sampling and analysis of grain size will be performed before, during, and after the proposed dredging project, yielding additional important information regarding the sediment dynamics at this particular location. Special Condition #3 requires additional beach and benthic sampling to be done pursuant to the requirements of the Sanctuary. Special Condition #4 requires that the final monitoring report be submitted to the Executive Director for review. As conditioned, the proposed demonstration project is consistent with the dredging and beach replenishment priorities of Coastal Act Section 30233.

## **2. Water Quality**

Coastal Act Sections 30231 and 30232 state:

**§ 30231:** *The biological productivity and the quality of coastal waters, [...] appropriate to*



*maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment,...*

**§ 30232:** *Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.*

The inner harbor sediment proposed for dredging and disposal has undergone physical, biological, and chemical testing according to the most current ACOE and EPA testing methods and procedures. All reviewing and permitting agencies have copies of the completed test results. All dredge materials must meet RWQCB and EPA Clean Water Act beach disposal standards. Only dredge material that is deemed suitable for aquatic disposal may be disposed of into the nearshore environment. The ACOE, EPA, and RWQCB have yet to review the results of the chemical and biological testing to determine if the dredge material is suitable for unconfined aquatic disposal. Special Condition #1 requires that prior to initiation of dredging and disposal, the Port District shall supply evidence that the ACOE, EPA, and RWQCB have reviewed all test results and determined that the dredge material is suitable for unconfined aquatic disposal. **If the dredge material is not deemed "suitable for unconfined aquatic disposal" by these agencies, the proposed project will not be allowed to proceed.** Special Condition #2 requires evidence of valid permits or letters of permission from the ACOE, EPA, Sanctuary, and RWQCB before dredging and disposal operations may commence.

Anticipated water quality impacts of dredging and disposal occur through variables such as dissolved oxygen (DO), pH, salinity, total suspended solids (TSS), and turbidity. Turbidity near the dredging and disposal sites would increase because of additional TSS in the water column. DO levels in the water column would decrease during disposal events due to increased turbidity. Long-term changes in turbidity and dissolved oxygen can have an adverse effect on kelp beds. Kelp beds are found offshore of the proposed disposal area. Although increased turbidity and decreased dissolved oxygen levels are expected to occur as a result of dredge disposal, the pre-dredge-operation ambient water quality condition should return shortly after each dredging episode. This is supported by the findings of the Moss Landing Marine Laboratories study on the impacts of the demonstration-dredging project in 2001. A strong turbidity signature was not identified in the water samples taken during the demonstrating dredging event, nor was any odor or discoloration observed. In fact, the level of turbidity was found to be higher in water samples collected the day before the demonstration-dredging event began, due to intense rainstorms and flooding at that time. The highest turbidity values were located near the areas where runoff continued to occur by the mouth of the San Lorenzo River and Schwann Lagoon. The monitoring proposal includes collection of water samples to analyze turbidity, temperature, pH, dissolved oxygen, and salinity. In addition, sediment plumes will be tracked as they occur over time during the monitoring period, including those that appear to be from the San Lorenzo River point source located approximately one-half mile upcoast. Finally, the dredging and disposal activities will take place throughout the month of October, with a relatively small amount of material (500 to 900 CY) being dredged and disposed of into the nearshore



environment during each episode, half of which will consist of sandy material. To ensure that potential water quality impacts associated with greater daily amounts of dredge disposal are avoided, Special Condition #6 limits the maximum amount of daily inner harbor dredge disposal in October 2005 to 900 CY per day.

In summary, the proposed dredging and disposal project is expected to have short-term adverse impacts on water quality, including a temporary increase in turbidity and a decrease in dissolved oxygen levels. However, these impacts should be minor in magnitude and scope given that the amount of dredge material per disposal episode will be relatively small, i.e. 500 CY to a maximum of 900 CY as required by Special Condition #6. Pre-dredge water conditions should recur shortly after each dredging and disposal episode. Special Condition #1 requires ACOE, EPA, and RWQCB review of the biological and chemical test results of the dredge material and approval by these agencies that the material is suitable for unconfined aquatic disposal. Special Condition #4 requires that the final monitoring report be submitted to the Executive Director for review. As conditioned, the proposed project is consistent with Coastal Act Sections 30231 and 30232 regarding the maintenance of marine water quality.

### **3. Biological Resources**

*§ 30230: Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

*§ 30231: The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

The Santa Cruz Small Craft Harbor is connected to the Monterey Bay National Marine Sanctuary (Sanctuary). The Sanctuary encompasses over 5,300 square miles of protected marine waters and includes a diverse complex of marine habitats including deep sea, open ocean, kelp forests, sandy beaches, rocky seashore, estuaries and sloughs. These habitats support a variety of marine life including more than 345 species of fish, 94 species of seabirds, 26 species of marine mammals, 450 species of algae and one of the world's most diverse invertebrate populations.

Beginning in 1962, the Santa Cruz Small Craft Harbor was developed in a coastal estuary known formerly as Woods Lagoon that formed at the base of the Arana Gulch watershed. Water originating



from the Arana Gulch watershed drains into the harbor through four 72-inch culverts that extend beneath the inner harbor parking area (see Exhibit 3, pg. 1). Except for the coastal salt marsh and brackish marsh habitat areas of Arana Gulch to the north, the harbor is now essentially a manmade environment that is devoid of the natural estuarine habitat that once prevailed. The harbor is surrounded entirely by urban development. Thus, for the most part, the tidal waters of the harbor are an enclave that is surrounded by urban harbor development consisting of floating docks, riprap, roads and parking lots, boats, and various buildings. Nonetheless, some marine mammals, fish and seabirds make use of the urban aquatic and terrestrial environments provided in the Harbor.

Generally, the greatest potential for adverse environmental effects from dredged material discharge lies in the benthic environment. In this case, the subject benthic environment includes ocean bottom flora and fauna of the inner harbor area and also the sandy subtidal and intertidal areas off Twin Lakes State Beach. Under the proposed project, dredge material would be pumped approximately 70 yards offshore of Twin Lakes State Beach (Exhibit #2). The amount of this material (10,000 CY, consisting of 50.8% sand and 49.2% silt/clay) is miniscule when compared to the average 278,000 CY of sediment per year the San Lorenzo River releases into the ocean approximately half-a-mile from the harbor, of which approximately 203,000 CY (or 73%) is estimated to be silt and clay sediment.

Sediment deposition can smother invertebrates and prevent algal spore settlement; fine-grain materials could have impacts on certain benthic communities. In 2001, scientists from Moss Landing Marine Laboratories (MLML) conducted a review of the benthic habitat in the vicinity of the proposed dredge disposal. This review included four research dives to examine habitat, substrate conditions, and species present. The results of this review indicate that during the fall and winter when natural sand deposition is greatest, algae were less present. In addition, from February 18 to April 14, 2001 scientists from MLML conducted a monitoring program to determine if sedimentary changes occurred in the beaches and nearshore benthic habitats as a result of the demonstration-dredging project approved under CDP 3-00-034-A1. As stated above, the results showed that there was no significant impact to beaches or nearshore marine benthic habitats.

Scientists also conducted a monitoring program in 2005 to evaluate the impacts, if any, of dredging and disposal of clean fine-grain material in the winter and early spring of 2005, as allowed under CDP 3-00-034-A2. The design of the 2005 monitoring program used the same basic structure as the 2001 monitoring program, i.e. a three phase approach over time to: 1) establish a baseline of existing sedimentary conditions before dredging and disposal began; 2) monitor any potential immediate impacts during dredging and disposal, and; 3) document the sedimentary conditions after harbor dredging was completed. The monitoring program found that the silt and clay released from the harbor into the nearshore environment did not cause any detectable changes in mean grain size or silt and clay percentage beyond the range of normal winter background conditions. Although the results of this monitoring program acknowledge that no scientific study has directly documented a sediment transport pathway or a rate of silt and clay transport from the San Lorenzo River across the inner continental shelf directly to the midshelf mudbelt, a variety of published scientific research regarding sediment transport in the northern Monterey Bay independently comes to the same conclusion: silt



and clay released from local sources are eventually deposited along the midshelf mudbelt.

For the 2005 demonstration dredging project (CDP 3-00-034-A2), the Central Coast Regional Water Quality Control (RWQCB) Board required that the Port District conduct a study on the sand crab, *Emerita analoga*, to determine if there were any cumulative effects to this species due to the dredging and disposal of fine-grain inner harbor sediments into the nearshore environment. *E. analoga* is a dominant member of the sandy beach invertebrate community along much of the California coastline. This species is a suspension feeder that uses its plumose second antennae to sieve particles from the water. Populations of *E. analoga* have been used as bio-indicators in a number of studies because this species is known to bio-accumulate metals and hydrocarbons.<sup>2</sup> *Emerita analoga* were collected from four sites, including three sites along Twin Lakes State Beach and one from a reference sample several miles downcoast at Capitola Beach. Samples were collected both pre- and post-dredging and disposal. In addition, sample results were compared to the results from *E. analoga* tissue samples analyzed from Santa Cruz Main Beach and Scotts Creek Beach by the California Department of Fish & Game (CDFG) in 2000 and 2001. Whole tissue analyses were performed for trace metals and percent solids, as well as analyses for polychlorinated biphenyl congeners (PCBs), organochlorine pesticides, polycyclic aromatic hydrocarbons (PAHs), percent lipids, and percent solids. In summary, analytical results for metals, organochlorine pesticides, PCBs and PAHs were generally similar between pre- and post-dredge sand crab tissues samples, i.e., there were low concentrations of contaminants in the sand crabs collected before dredging and disposal took place, and there was no increase in these low concentrations of pollutants in sand crabs collected post dredging and disposal. Furthermore, these results were comparable to, or had less concentration of contaminants, than the results from tissue samples analyzed by CDFG in 2000 and 2001. The results satisfied staff at the RWQCB that the disposal of fine-grain material into the nearshore environment in 2005 did not result in any significant bio-accumulation of pollutants in *E. analoga*. RWQCB staff is not requiring the Port District to conduct a similar study for the currently proposed dredging and disposal project.

Impacts to biological resources are anticipated to be similar as those associated with previously permitted annual dredge episodes. The primary impact to biological resources resulting from dredging occurs through the disturbance, transport, and destruction of benthic organisms on and in the material to be dredged. However, re-colonization by these organisms would occur over time. While, dredge material disposal may induce turbidity and cause stress on planktonic larvae and filter feeder organisms (e.g., worms and shellfish), such stress would be temporary. The proposed monitoring program will determine whether the increase in the amount of sediment dredged and disposed of into the nearshore environment (10,000 CY total as compared to 3,000 CY total permitted in the previous demonstration projects) has any impacts to the beach or the benthic environment. In addition, Special Condition #3 requires additional beach and benthic monitoring to determine any impacts of the project to wildlife, consistent with the requirements of the Sanctuary's Research Permit.

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<sup>2</sup> Dugan, J.E., G. Ichikawa and M. Stephenson. 2004. *Monitoring of Coastal Contaminants Using Sand Crabs*. Prepared for Central Coast Regional Water Quality Control Board. 35 pp.



The removal of sediment from dredge areas could have short-term, adverse impacts on fish and fish habitats by temporarily increasing the total suspended sediments in the water column and possibly decreasing dissolved oxygen levels during dredge operations. However, as proposed, dredging will be conducted using a hydraulic dredge, which removes and transports dredged material as liquid slurry, thereby minimizing disturbance and re-suspension of sediments at the dredge site. This will minimize adverse environmental impacts to marine and wildlife habitats and water circulation during dredging, consistent with Coastal Act requirements.

Several endangered or threatened species are found in the harbor area or just offshore. According to correspondence from the California Department of Fish and Game, the state and federally listed California brown pelican has been documented at the offshore disposal site. The underwater disposal of dredge material is not expected to create excessive vibration, noise, or surface turbulence that would affect birds in the area.

Steelhead trout (*Oncorhynchus mykiss*) is a federally and state listed threatened species. Arana Gulch has supported steelhead passage. The Port District has completed an informal consultation with National Marine Fisheries Service (NMFS), which concluded that the proposed project is not likely to adversely affect threatened salmonids (see Exhibit #5). According to staff at NMFS, juvenile salmonids may be present in Arana Gulch in October, but there is a low likelihood of juveniles being present in the harbor during the month of October (pers. comm. Jonathan Ambrose). Adult salmonids migrate through the harbor to Arana Gulch from November to May, with the majority of the migration taking place from December through March. Thus, no adult salmonids will be migrating through the harbor in October, when the proposed dredging and disposal will take place. In addition, NMFS staff has noted that the current conditions in the inner harbor, i.e. large amounts of sediment deposition that has rendered at least 38 slips unusable, are detrimental to the migration of salmonids that will begin to take place in November. Removal of 10,000 CY of sediment in the inner harbor will restore water flow to this area, which will allow salmonids to migrate through the inner harbor to Arana Gulch.

The tidewater goby (*Eucyclogobius newberryi*) is a federally listed endangered species and is state listed as a species of special concern. Tidewater gobies were known to occur in Woods Lagoon in 1984, but there have been no recent sightings. Past sampling and existing conditions in Arana Gulch indicate that the tidewater goby no longer inhabits Arana Gulch and that habitat for the species is lacking. The inner harbor salinity level is in excess of what could support the tidewater goby.

In summary, the disposal of 10,000 CY of sediment, consisting of 50.8% sand and 49.2% silt/clay into the nearshore environment during October 2005 should have little or no discernible effect on benthic organisms, fish, planktonic larvae, or filter-feeding organisms. The project includes a monitoring component to evaluate the potential impacts of the project on local beaches and offshore benthic areas. Also, the activities permitted under the proposed amendment should not create any disturbance that would have an adverse effect on the California brown pelican. In addition, Special Condition #3 requires additional beach and benthic monitoring consistent with the requirements of the Sanctuary's Research Permit to evaluate any effects from the fine-grain sediment disposal on wildlife. Also, the proposed dredging and disposal project will take place during October 2005 only,





when salmonids are not present in harbor waters. Furthermore, the tidewater goby appears to no longer inhabit the Arana Gulch area. Thus, the proposed project is consistent with Sections 30230 and 30231 of the Coastal Act regarding protection of species of special importance and maintenance of the biological productivity of coastal waters.

#### **4. Public Access/Recreation**

Coastal Act § 30604(c) requires that every coastal development permit issued for new development between the nearest public road and the sea "shall include a specific finding that the development is in conformity with the public access and recreation policies of [Coastal Act] Chapter 3." The proposed project is located seaward of the first through public road.

Coastal Act Sections 30210 through 30214 and 30220 through 30224 specifically protect public access and recreation. In particular:

*§ 30210: In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

*§ 30211: Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

*§ 30212 (a): Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects....*

*§ 30213: Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.*

*§ 30214 (a): The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case....*

*§ 30221: Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.*

*§ 30224: Increased recreational boating use of coastal waters shall be encouraged, in accordance with this division, [...] providing harbors of refuge, and by providing for new boating facilities in natural harbors, new protected water areas, and in areas dredged from dry land.*





In addition, **Coastal Act § 30240 (b)** requires that development not interfere with recreational areas:

*(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

The Santa Cruz Small Craft Harbor provides public access and recreational opportunities of regional and statewide significance. These include boat launching, berthing for commercial vessels and recreational boats, boat repair areas, marine-related retail/commercial businesses, sailing programs, yacht club and boat sales. The proposed dredging project will strongly benefit public access and recreation by restoring 38 berths to use and by maintaining adequate water depths in the harbor's navigation channels. In addition, approximately 5,000 CY of the dredge material is composed of sand, which will become available for beach replenishment.

The Port District has proposed to conduct dredging/disposal operations from 4:00 p.m. to 10:00 p.m. during weekdays in October 2005 only. In October, sunset takes place between 6:00 p.m. and 7:00 p.m. daily. Thus, the dredging activities may impact public access and recreational use of the area if these activities begin at 4:00 p.m. Special Condition #5 requires that dredging and disposal activities occur between 6:00 p.m. and 10:00 p.m. With this condition, the disposal will occur during evening and nighttime hours and, because of the quick dispersal rates expected, should not affect daytime recreational use at Twin Lakes State Beach.

Commission staff has received information from several local residents stating that clay balls had been observed on the beach near the dredge disposal site during the month of March 2005 (see Exhibits 9, & 10 pp. 2-3). As discussed above, approximately 7,050 CY of sediment was dredged from the inner harbor between February 15, 2005 and April 7, 2005 and disposed of through the offshore pipeline (see Exhibit #8). Of this, the majority of the sediment dredged (4,300 CY) consisted of approximately 85% sand (3,655 CY) and 15% silt/clay (645 CY). Given that this material was greater than 80% sand, the dredging and disposal of this material did not fall under CDP 3-00-034-A2, but instead was allowed under the base permit and is consistent with the EPA's 80% "rule of thumb" guideline. The dredging and disposal of this sandy material took place over a ten-day period between February 17<sup>th</sup> and February 28<sup>th</sup>. In addition, a total of 2,750 CY of material, consisting of an average of 71% sand and 29% silt/clay (allowed under CDP 3-00-034-A2) was also disposed of through the offshore pipeline. A total of 750 CY of this material (consisting of 555 CY of sand and 195 CY of silt/clay) was disposed of through the offshore pipeline on the first two days of dredging, i.e. February 15<sup>th</sup> and 16<sup>th</sup>, many weeks before clay balls were reported being seen on the beach. Furthermore, the remaining 2,000 CY of this less-than-80% material (consisting of 1,392 CY of sand and 608 CY of silt/clay) was disposed of into the nearshore environment on April 7, 2005, well after clay balls were reported being seen on the beach. Also, the monitoring program included stream flow velocities from USGS station #11161000. Before inner harbor dredging commenced, the San Lorenzo River stream flow velocity was lower than at any other time in the monitoring period and was also considerably less than the 50-year average. When inner harbor dredging commenced on February 15<sup>th</sup>, a series of storms caused stream flow to increase in three



successively higher velocity spikes on February 16<sup>th</sup>, 18<sup>th</sup>, and 21<sup>st</sup>. The highest spike in stream flow velocity occurred on March 22<sup>nd</sup>, well after all February inner harbor dredging had been completed (no inner harbor dredging/disposal took place in March 2005). The San Lorenzo River stream flow continued to be greater than the 50-year average for most of the remaining days in the monitoring period (until April 22<sup>nd</sup>). As discussed above, the San Lorenzo River discharges an average of 278,000 CY of sediment per year to the Santa Cruz Bight, approximately one-half mile west of the Santa Cruz Harbor (see Exhibit #4 for example of sediment plume from River). Approximately 73% of the River's annual discharge (i.e. approximately 203,000 CY) is estimated to be silt and clay, with only 27% consisting of sand. Although it is not possible to determine with certainty the origin of the clay balls on the beach in March, given all the above, it is likely that the clay balls originated from the tens of thousands of cubic yards of fine-grain material that were released by the San Lorenzo River into the ocean in the month of March, and not from the inner harbor. Also, consolidated clay balls have an extremely low sand content; fines from the inner harbor are not consolidated enough to form clay balls (pers. comm.. George Tate, Sea Engineering, Inc.). In addition, the clay balls were analyzed by the Santa Cruz County Environmental Health Department, who found that the clay balls showed low concentrations of metals, consistent with normal background conditions (see Exhibit 9, pg. 3). The Environmental Health Department's conclusion was that the clay balls did not pose any significant health hazard or environmental threat. In conclusion, the clay balls are episodic and intermittent and pose no threat to the beach or beachgoers. They rank with other natural material found on the beach such as seaweed, driftwood, jellyfish, etc. The clay balls degrade and disappear over a relatively quick timeframe. There is no conclusive evidence that the clay balls found on the beach in March 2005 resulted from inner harbor dredging operations.

As discussed above, the proposed project includes a monitoring component that includes beach monitoring. The Sanctuary is requiring additional beach monitoring as part of its Research Permit. The additional beach monitoring would be performed by a qualified monitoring group, such as the Sanctuary's BeachCOMBERS, or other appropriate organization, to evaluate the impacts of the fine-grain sediment disposal on adjacent beaches. Special Condition #3 incorporates these additional monitoring requirements into this permit. The Port District is undertaking the current project in the hope that the results will demonstrate the appropriateness of this disposal method for clean, fine-grain (50% to 79% sand) inner harbor sediments over the long-term. If the monitoring program finds that impacts to beach access occur due to the proposed project, these findings will need to be addressed by the Commission in future permit requests from the Port District.

The project will protect boating and beach recreational opportunities, consistent with Coastal Act Sections 30210, 30213, 30220, 30224, 30234 and 30234.5. The project also provides approximately 5,000 cubic yards of sandy material that will become available for beach nourishment, with associated positive impacts on beach access and public recreation. Also, Special Condition #5 requires that the dredging and disposal activities take place between 6:00 p.m. and 10:00 p.m. to limit potential beach access impacts due to the project. Finally, Special Condition #3 requires additional beach monitoring consistent with the requirements of Sanctuary's Research Permit. As conditioned, the proposed project will preserve public access and recreational opportunities and is therefore consistent with the above-cited public access and recreational policies of the Coastal Act.

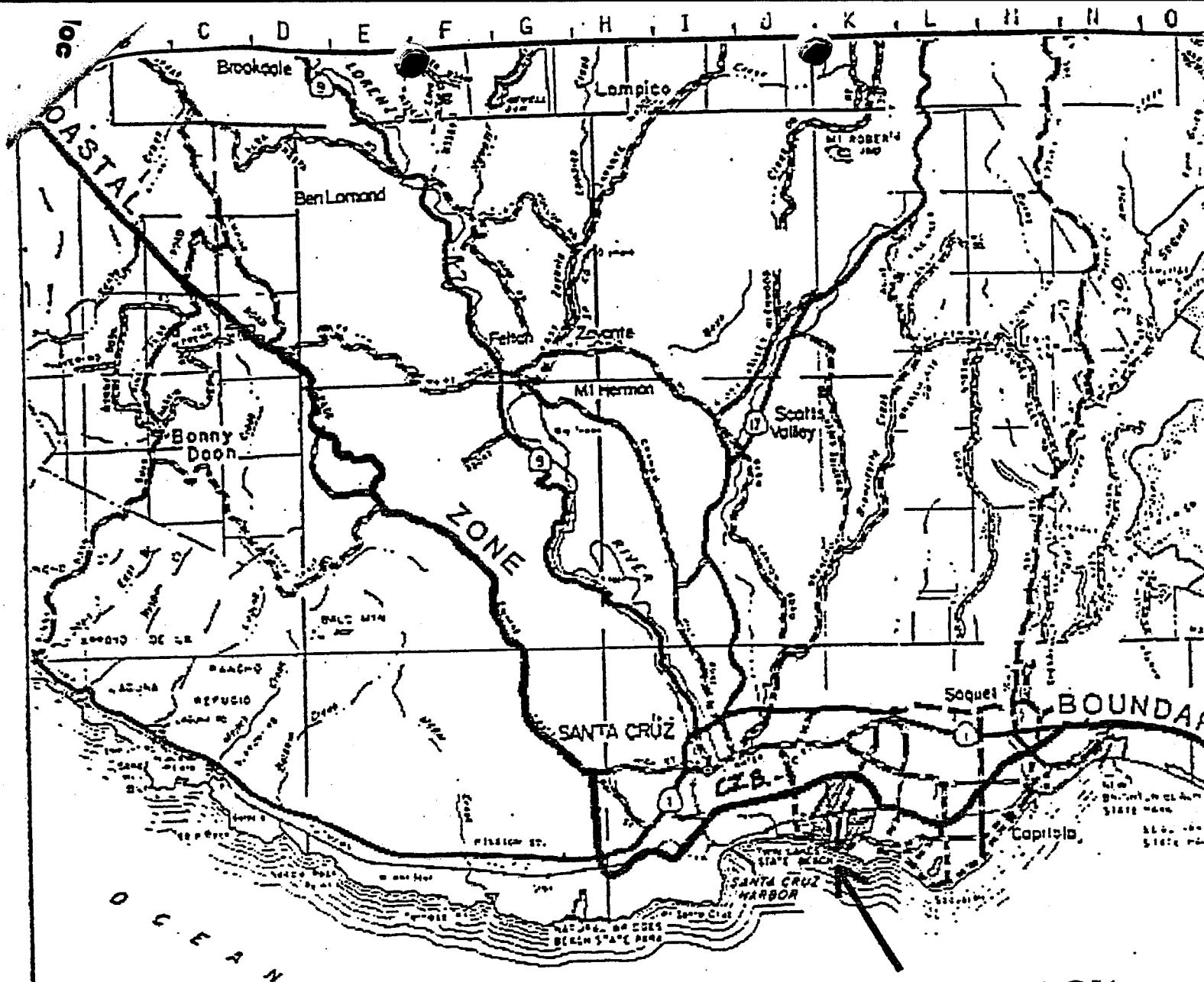


#### **IV. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)**

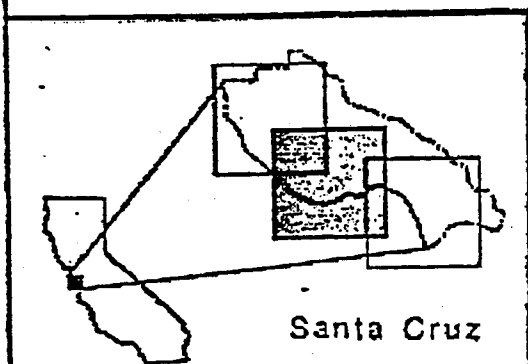
Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment. The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary for Resources as being the functional equivalent of environmental review under CEQA. Accordingly, the Commission finds that as conditioned the proposed project will not have significant adverse effects on the environment within the meaning of CEQA; that there are no feasible alternatives which would significantly reduce any potential adverse effects; and, accordingly, the proposal, as conditioned, is in conformance with CEQA requirements.







**Project Site**



California Coastal Commission

## LOCATION MAP



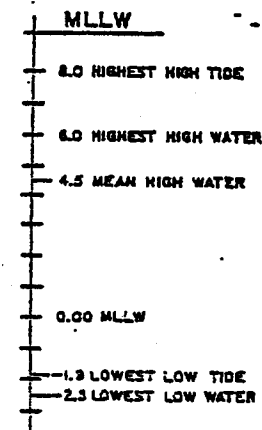
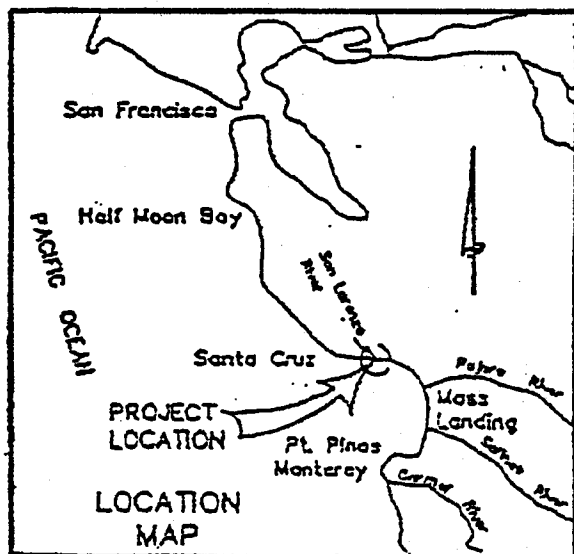
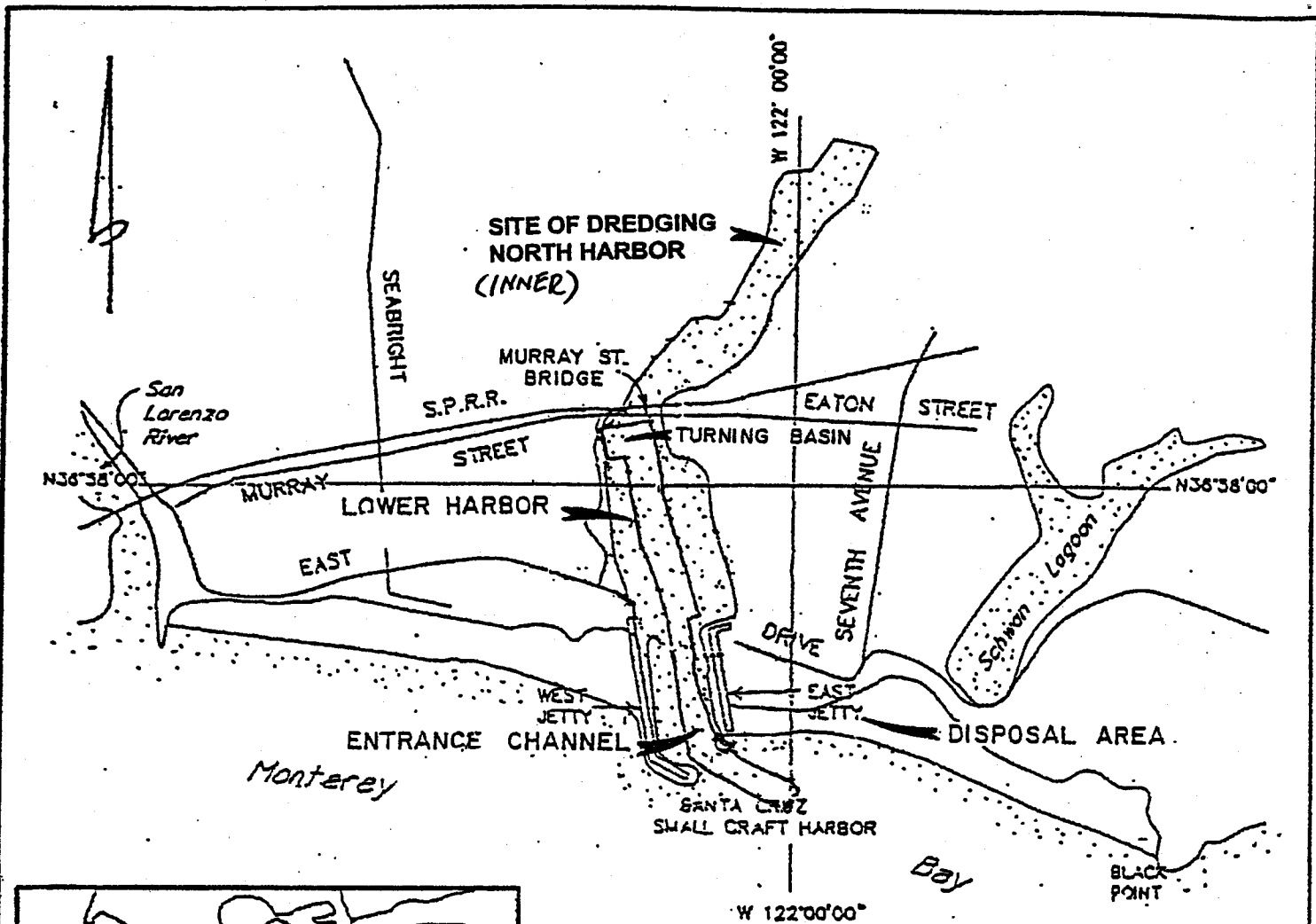
County of Santa Cruz

EXHIBIT NO. 1

APPLICATION NO.

3-05-026

Pg 1 of 1



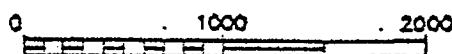
DATUM = MLLW

**PURPOSE:**

Demonstration II Dredging Project  
October 2005  
Dredging of 10,000 CY of sediment  
from north harbor.

DATUM: MLLW

**VICINITY MAP**



SANTA CRUZ PORT DISTRICT  
135 5th AVENUE  
SANTA CRUZ, CA. 95062

**EXHIBIT NO. 2**

**APPLICATION NO.**

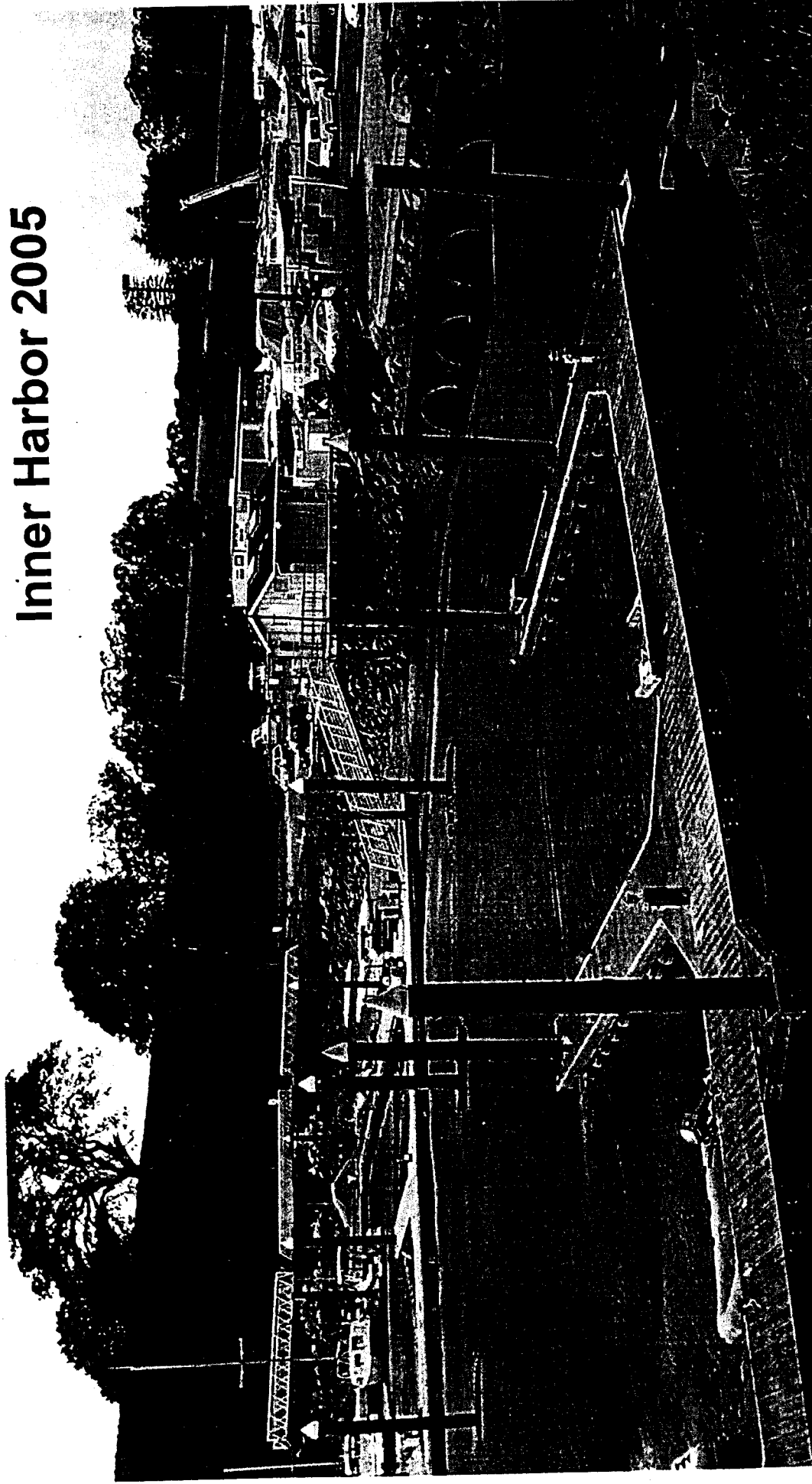
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Pg 1 of 1

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RT

# Inner Harbor 2005



3-05-026

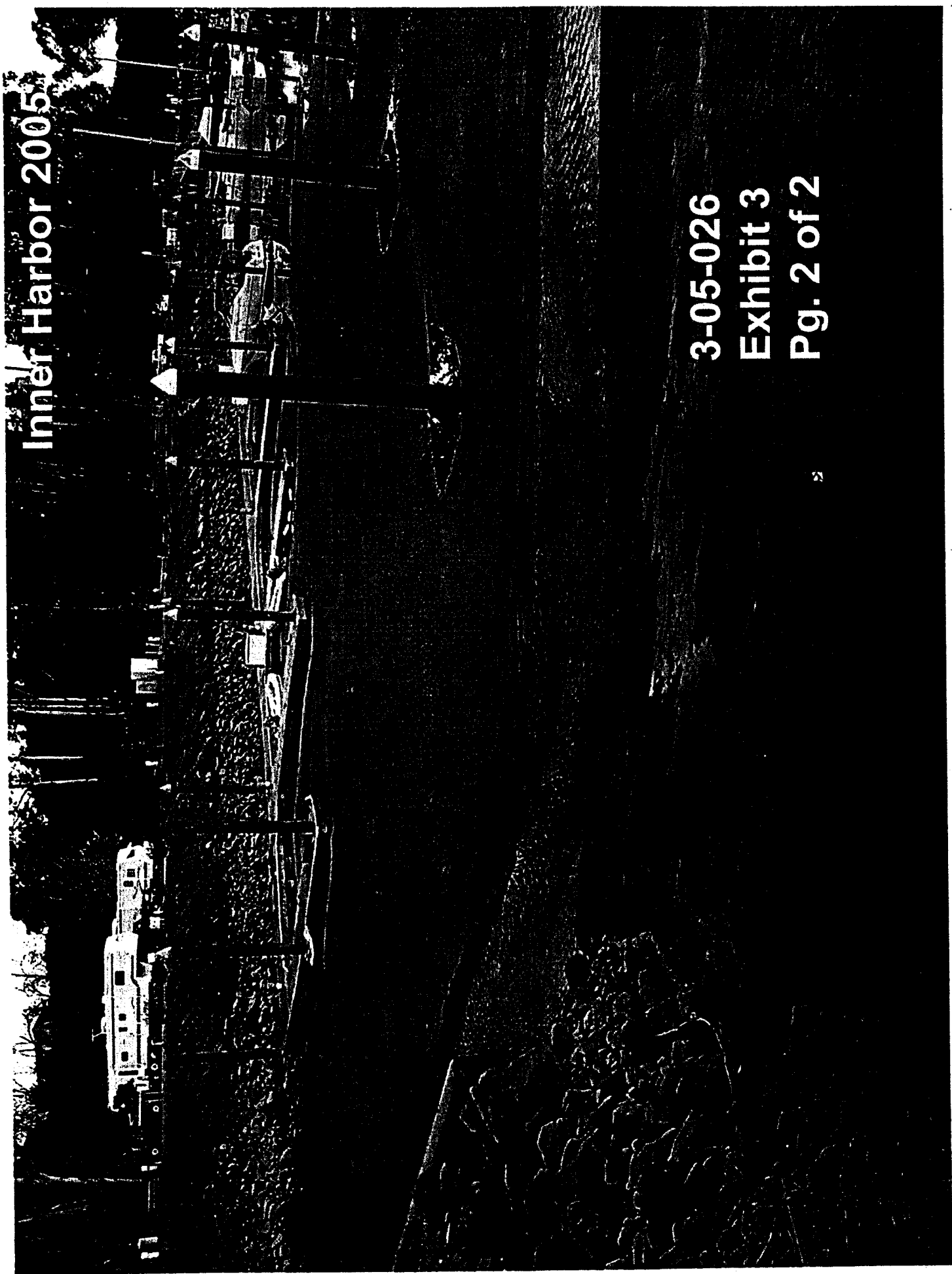
Exhibit 3

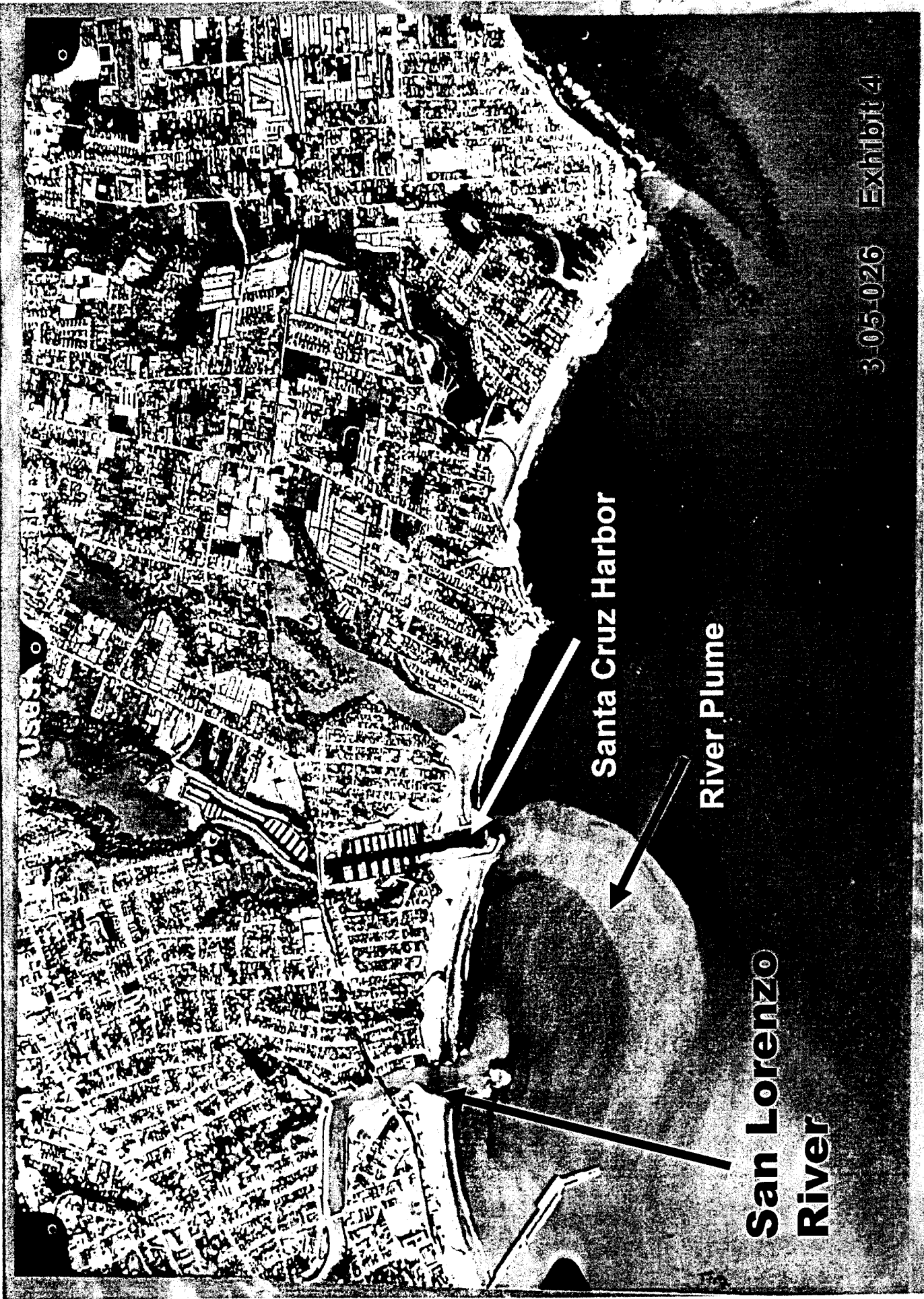
Pg. 1 of 2



Inner Harbor 2005

3-05-026  
Exhibit 3  
Pg. 2 of 2





3-05-026 Exhibit 4

**San Lorenzo  
River**

**Santa Cruz Harbor**

**River Plume**

1982 100 YEAR STORM. DAY 7

**RECEIVED**

JUL 19 2005

CALIFORNIA  
COASTAL COMMISSION  
CENTRAL COAST AREA

UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Southwest Region  
777 Sonoma Ave., Room 32b  
Santa Rosa, CA 95404-6528

January 12, 2005

In Response Reply To:

1514225WR01SR288:JMA

Lieutenant Colonel Feir  
Department of the Army  
U.S. Army Corps of Engineers  
333 Market Street  
San Francisco, California 94105

Dear Colonel Feir:

This letter acknowledges the National Marine Fisheries Service's (NOAA Fisheries) December 17, 2004, receipt of your December 14, 2004, letter (File Number 25179S) requesting reinitiation of section 7 consultation pursuant to the Federal Endangered Species Act (ESA) of 1973, as amended. The reinitiation request concerns the possible effects of the U.S. Army Corps of Engineers (Corps) authorizing the Santa Cruz Port District (District) to modify their dredge operation plan, under Corps Nationwide Permit 35, Maintenance Dredging of Existing Basins pursuant to section 10 of the Rivers and Harbors Act of 1899, to threatened Central California Coast (CCC) Evolutionarily Significant Unit (ESU) steelhead (*Oncorhynchus mykiss*) and designated CCC ESU coho salmon critical habitat. Modifications to the dredge operation plan concerns use of the District's larger 16-inch dredge "Seabright" to conduct maintenance dredging in the inner portion of Santa Cruz Harbor for January and February (daylight hours), 2005; and October 1 - October 31, 2005, during evening hours. Santa Cruz Harbor is located within the City of Santa Cruz, Santa Cruz County, California.

The project site is also located within an area identified as Essential Fish Habitat (EFH) for various life stages of CCC ESU coho salmon Federally-managed under the Pacific Coast Salmon Fishery Management Plan. NOAA Fisheries has evaluated the proposed project for potential adverse effects to EFH pursuant to section 305(b)(2) of the Magnuson-Stevens Fisheries Act. For more information on EFH, see our website at <http://swr.nmfs.noaa.gov>.

NOAA Fisheries' initial consultation regarding maintenance dredging was concluded on January 19, 2001. A Corps reinitiation of consultation request regarding operating windows was concluded on October 7, 2002. In both prior concurrence letters<sup>1</sup>, specific take avoidance and

<sup>1</sup> Take avoidance measures from our January 19, 2001, letter were referenced in your December 14, 2004, letter, however, take avoidance measures from our October 7, 2002, letter were not referenced. A copy of our October 7, 2002, letter is included as an enclosure (Enclosure 1) to ensure all necessary take avoidance and minimization measures proposed by the District are included as permit conditions from the Corps to the District.

EXHIBIT NO. 5
APPLICATION NO.
3-05-026
pg 1 of 2



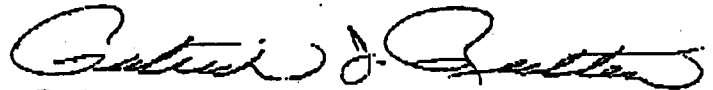
-2-

minimization measures proposed by the District, through the Corps, to NOAA Fisheries, were outlined as rationale for determining the proposed actions may affect but would not adversely affect CCC ESU steelhead or adversely modify CCC ESU coho salmon critical habitat.

Available information indicates Santa Cruz Harbor supports populations of CCC ESU steelhead and is designated as CCC ESU coho salmon critical habitat. Based on the information available, I conclude this project may affect but is not likely to adversely affect threatened CCC ESU steelhead or adversely modify CCC ESU coho salmon critical habitat, or EFH. This concludes informal consultation for the project in accordance with 50 C.F.R. Section 402.14(b)(1). However, if new information becomes available indicating steelhead may be adversely affected by the project in a manner not previously considered or project plans change, reinitiation of consultation will be required.

If you have question or comments regarding this letter, please contact Mr. Jonathan Ambrose of my staff at (707) 575-6091 or via email at [jonathan.ambrose@noaa.gov](mailto:jonathan.ambrose@noaa.gov).

Sincerely,



Rodney R. McLani  
Regional Administrator

Enclosure

cc: Jim Lecky - NMFS  
Clyde Davis - Corps, with enclosure  
Brian Foss - Santa Cruz Harbor District, Santa Cruz, with enclosure

EXHIBIT NO. 5
APPLICATION NO.
3-05-026
pg 2 of 2

## Introduction

In March of 2001 the Santa Cruz Harbor conducted an experimental dredging event to remove fine-grained, non-contaminated sediment composed of approximately 60% mud (silt and clay) and 40% sand from the upper harbor and dispose of it into the surf-zone at Twin Lakes Beach. This experimental dredging event challenged the Environmental Protection Agency's (EPA) "80/20 guideline", which states that dredged (non-contaminated) sediment released into the surf-zone should contain at least 80% sand. A monitoring program was conducted during the experimental dredging to ascertain if any dredged sediment could be detected on the beaches or nearshore environments in the harbor vicinity (Watt & Greene, 2003; Watt, 2003). The data collected during the 2001 monitoring program concluded that the beach and offshore sedimentary conditions near the Santa Cruz Harbor were not altered or impacted to any significant degree by the deposition of dredged sediment or from any other nearby sediment sources such as the San Lorenzo River.

The results from the 2001 monitoring program have led to a similar fine-grained dredging event to be conducted between November and March of the 2004-2005 winter season. A location in the upper Santa Cruz Harbor identified as "Area 2" (Figure 1) has been selected for dredging by the Santa Cruz Port District. This location is composed of non-toxic sediment that is ~ 50% mud and 50% sand (Sullivan and Krcik, 2003). Deposition of sediment in Area 2 has filled in harbor boat slips and poses a threat to navigation. The harbor district will dredge 3000 yd<sup>3</sup> (~2300 m<sup>3</sup>) of sediment during the day from Area 2 and dispose of the material approximately 50 meters offshore Twin Lakes Beach. Sea Engineering, Inc. (SEI) submit this proposal to perform a new monitoring program which builds upon the results of the 2001 MLML monitoring effort and offers new scientific methods that will increase the ability to predict and track sediment transport in the harbor vicinity. This new monitoring program is designed to determine if the fine-grained sediment dredged from the upper harbor will alter or impact the existing sedimentary conditions of the beaches or nearshore habitats adjacent to the Santa Cruz Harbor.

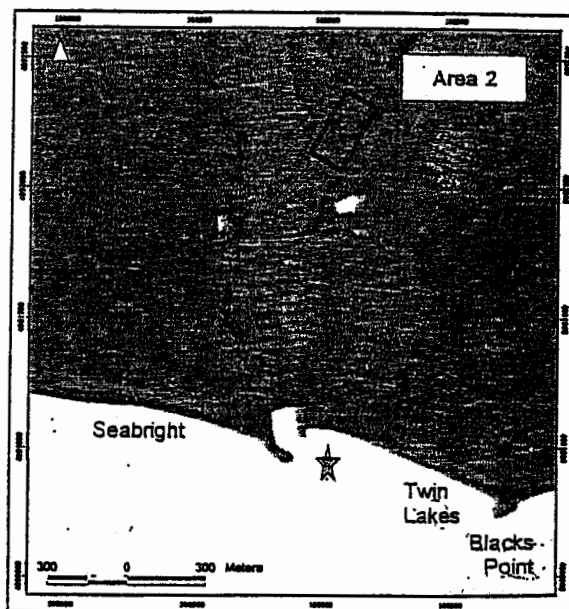


Figure 1. Aerial view of the Santa Cruz Harbor showing the approximate location of Area 2 in red, the pipeline outfall location as a yellow star, in relation to local beaches.

2004-2005 Monitoring Program - applies to October 2005 Inner harbor dredging project (3-05-026)

To our knowledge, the Santa Cruz Port District is not obligated by any permitting agency to provide a third-party monitoring program for this dredging operation and is doing so in good faith to provide scientific information to concerned members of the local community and permitting agencies. As a result, the dredge disposal monitoring program proposed here is designed to be flexible enough to offer a variety of cost options while maintaining a high degree of scientific integrity, without

compromising the project goal: determining if beach and offshore sedimentary conditions near the Santa Cruz Harbor are altered or impacted by the deposition of dredged sediment.

The design of the 2004-2005 dredge disposal monitoring program builds on the same basic structure and is an improvement of the 2001 monitoring program. Data will be collected in three phases on local beaches and offshore, prior to dredging to establish a baseline of existing conditions, while dredging is occurring to monitor any potential immediate impacts the fine-grained dredge sediments may have, and post-dredging to document a return to pre-existing conditions. The 2004-2005 monitoring program data will be incorporated into a Geographic Information System (GIS) database and integrated with the GIS database developed in the 2001 program. GIS databases provide a powerful tool for cataloging, visualizing, analyzing, and comparing geospatial scientific data overtime. To periodically add to the Santa Cruz Harbor GIS database library provides a "trail" of geographically located scientific evidence over time that can be used for planning future dredging operations and as justification for future dredging events.

In addition to the scientific methods used in the 2001 dredge monitoring program, new methods are proposed for the 2004-2005 dredge monitoring program that will provide an increased understanding of sediment transport in the Santa Cruz Bight. Understanding sediment transport dynamics in the harbor vicinity is essential to harbor dredging practices and other coastal oceanographic challenges facing the harbor (such as alternate offshore pipeline placements for entrance dredging). The following paragraphs explain each scientific methodology to be used in the monitoring program and the benefit that collecting these data will have in managing future water-quality and sediment management challenges.

#### Sediment sampling

Sediment sampling over time provides direct, quantitative evidence of grain-size changes which may occur. Therefore this data set is critical to the success of this dredge monitoring project. These data are also useful as "ground truth", or physical evidence of seafloor substrate when classifying seafloor imagery into habitats (described below). We propose to collect eight (8) sediment samples on local beaches and thirteen (13) sediment samples offshore in three sets over time (22 total for each event): before, during and after the fine-grained dredging event (Figure 2).

#### Water-quality monitoring

Water-quality constituents including turbidity, temperature, pH, dissolved oxygen, and salinity will be recorded at each offshore sample station along a depth profile, concurrently with offshore sediment sampling (see Figure 2). In addition, sediment plumes will be tracked as they occur over time during the monitoring period, including those that appear to be from the up coast San Lorenzo River point source. Harbor dredging plumes will be differentiated from river sedimentary plumes by identifying changing gradients in water-quality constituents. For example, a high turbidity plume that is of lower salinity than the surrounding sea water is most likely derived from a freshwater source such as the San Lorenzo River (Figure 3). These data will provide direct evidence of fine-grained sediment transport in the water column, therefore is critical to the success of this dredge monitoring project.



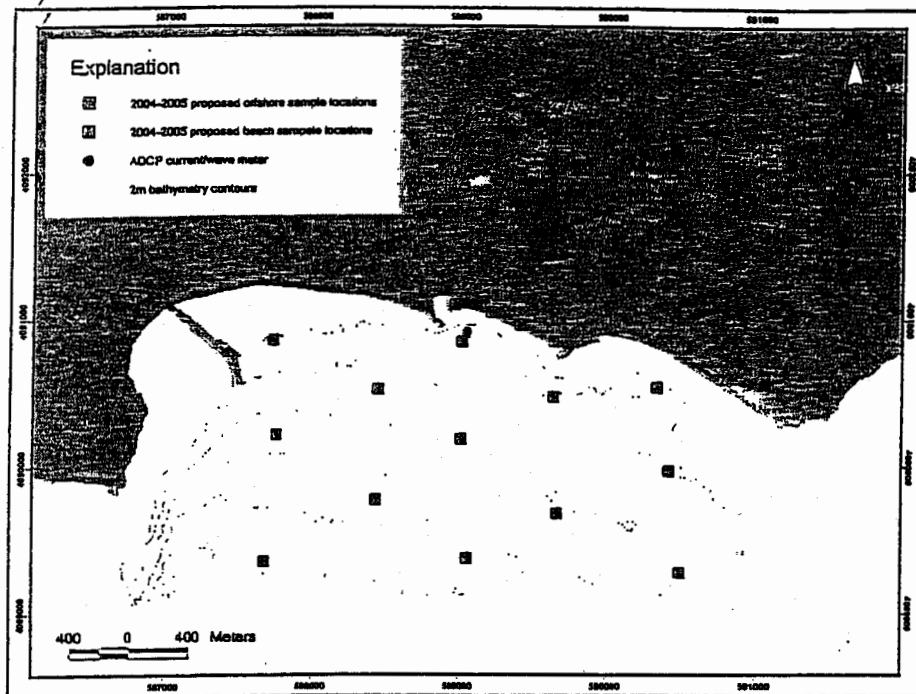


Figure 2. Proposed sediment sample locations on and offshore for the 2004-2005 monitoring program were chosen based on the results of the 2001 monitoring program. The red dot indicates where a Nortek Aquadopp current profiler would be deployed near the outfall pipeline. Water-quality data will be collected along a depth profile at all offshore sample stations and in other locations when potential plumes are identified and tracked.

#### Observational Diving

A diver will be used to visually observe critical habitats identified in the 2001 dredge monitoring program prior to dredging, during dredging, and after dredging. The diver will visually inspect the dredge outfall location while dredging is taking place to observe sediment transport and deposition of the fine-grained upper harbor sediment which will help fine tune water-quality and habitat mapping efforts (Figure 4).

#### Current Meter

A Nortek Aquadopp acoustic doppler current profiler will be deployed on the seafloor as near as practical to the experimental dredging outfall offshore of Twin Lakes Beach for the entirety of the monitoring program (see Figure 1). This instrument continuously logs current speed and direction vertically through the water column and can be augmented to simultaneously collect wave height and wave period. This data set is essential to the success of this monitoring project because the data describes the magnitude and direction of the forces that transport sediment in littoral zone. In addition, these data will be useful in producing an accurate current/wave-driven sediment transport model proposed below.

There may also be an opportunity to deploy a Nortek Aquadopp current profiler for evaluation purposes free of charge from NortekUSA via West Coast representative Chris Malzone.



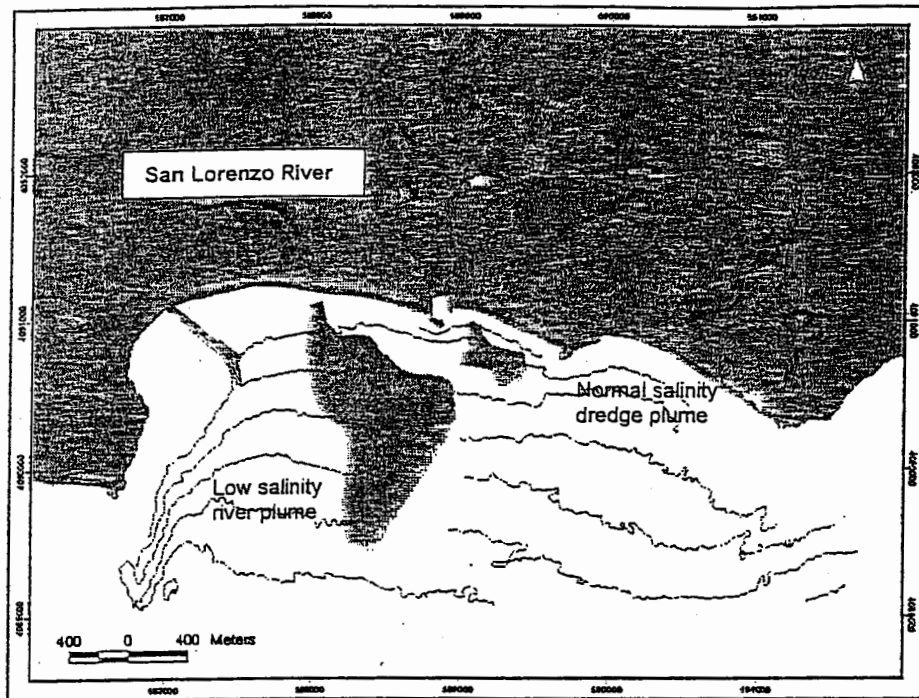


Figure 3. Basic illustration of plume differentiation using salinity. A plume generated from the freshwater San Lorenzo River would be of lower salinity than the surrounding seawater. A potential plume generated from harbor dredging would share the same salinity as the surrounding seawater allowing us to differentiate between the two plumes and identify mixing zones between

#### Multibeam bathymetry/backscatter imagery and seafloor habitat identification analysis in GIS

Detailed bathymetry and textural backscatter imagery provide the necessary framework over which all other data sets can be synthesized, integrated and analyzed. The multibeam bathymetry surveys and seafloor characterizations produced in the 2001 monitoring program were the first to describe in detail the variety of habitats offshore in the Santa Cruz Bight (Watt & Greene, 2003; Watt, 2003). The GIS analysis and comparison of the seafloor characterizations clearly illustrated sedimentary shifts in sand-grade material which are expected in a high-energy coastal system such as the Santa Cruz Bight. We highly recommend collecting multibeam bathymetry because of the unparalleled detail the data provides for mapping seafloor habitat types and changing sedimentary conditions over time (Figure 5). A comparison of the proposed 2004-2005 datasets will be made with the 2001 dredge monitoring program results, elucidating changes which have occurred in the Santa Cruz Bight naturally over time, further validating the results of the 2001 monitoring program and the natural sedimentary conditions in this region.

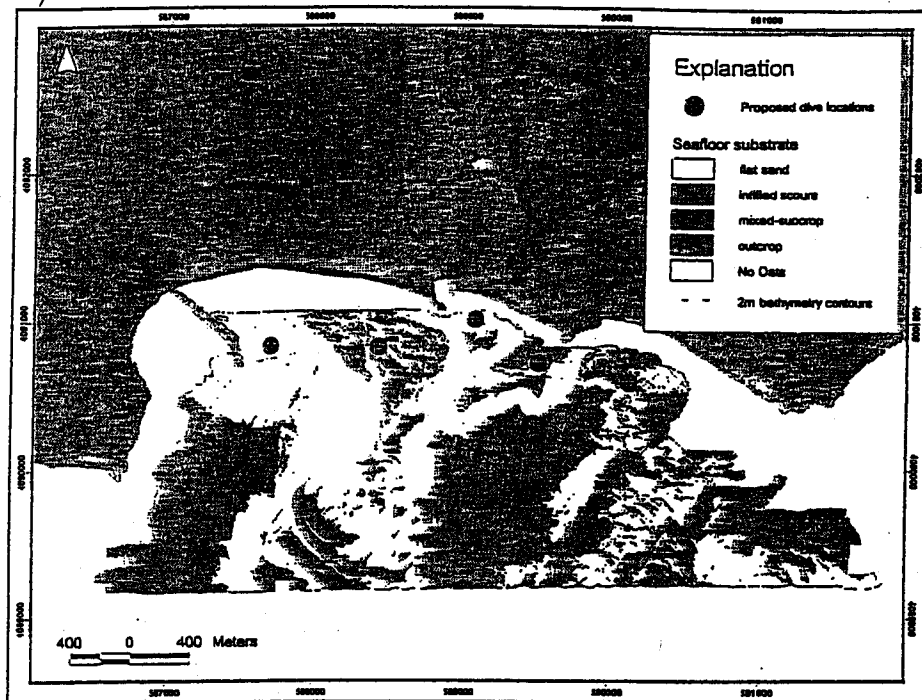


Figure 4. Proposed dive locations (in red) are chosen based on preliminary dives completed before the 2001 monitoring program from Goldberg et al 2002) (included in Watt & Greene, 2003) and the seafloor habitat characterization of the 2001 monitoring program (Watt & Greene, 2003; Watt, 2003). Dive locations are subject to change.

#### Preliminary wave-driven sediment transport modeling

Understanding sediment transport dynamics near the harbor under a variety of conditions is a critical component to managing dredging operations. The development of a site-specific sediment transport model will provide a powerful tool for managing the ongoing fine-grained dredging and disposal operations and help meet current and future coastal oceanographic goals.

The model will:

- Calculate numerical solutions for sediment transport direction, magnitude and fate of naturally occurring and dredged sediment of multiple grain-sizes
- Model changes in sediment transport patterns due to changing season, extreme El Nino events, large summer south swells, periods of intense river sediment input into the nearshore, and dredging/disposal operations
- Incorporate multiple sediment sources into the model such as the up coast San Lorenzo River
- Evaluate the effects of alternative offshore pipeline placement(s)
- Analyze past wave climates that have caused sedimentation or created other adverse impacts

- Incorporate modeling results into the GIS database produced during the 2001 dredging demonstration project (Watt, 2003; Watt & Greene, 2003)

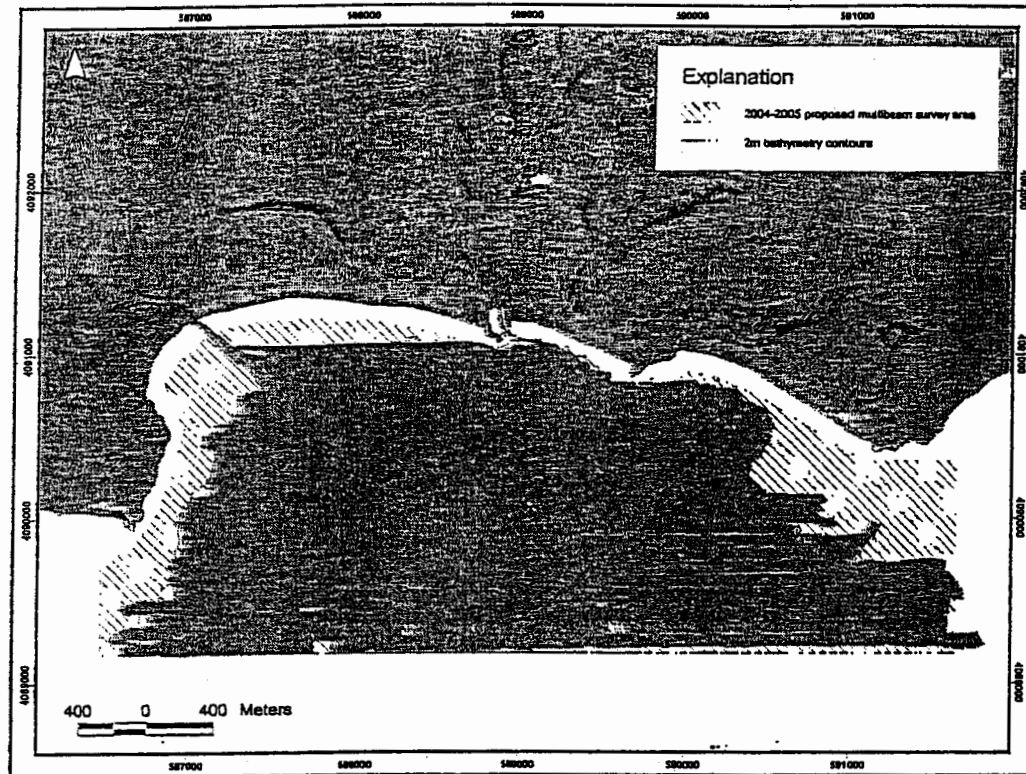


Figure 5. Proposed area of for two multibeam surveys to be conducted before and after dredging takes place are based on the multibeam surveys conducted in the 2001 monitoring program, shown in gray-scale below the proposed survey in blue.

## Conclusions

The Santa Cruz Harbor faces a variety of recurring sediment and water-quality issues related to harbor dredging and disposal, which in the past, has raised red flags for local stakeholders. The dredge monitoring program described above is designed to accurately and quantitatively determine the direction and magnitude of sediment transport, and identify where sediment may have eroded or deposited in the harbor vicinity. The monitoring program will track and map sediment plumes either derived from the dredge outfall or from the San Lorenzo River. These data will add to and be compared with the GIS database developed in the 2001 monitoring program, expanding the current knowledge base of sediment transport in the Santa Cruz Bight over time which is essential to successfully manage harbor sediments.

*Literature Cited*

- Sullivan, M., Krcik, S.E., 2003. *Sediment Sampling and Analysis Plan for the Inner Harbor*, RRM Engineering and Contract Firm, prepared for the Santa Cruz Port District.
- Watt, S.G., 2003. *Monitoring harbor dredging and sedimentary changes to coastal environments of the Santa Cruz Bight, California*. Masters Thesis, Moss Landing Marine Laboratories, through Cal State University Monterey Bay, 101 pp.
- Watt, S.G., and Greene, H.G., 2002. *Monitoring dredged upper Santa Cruz harbor mixed sand and mud sediment released into the nearshore area of Santa Cruz, California*. Technical report prepared for the Santa Cruz Port District and the California Department of Boating and Waterways.



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE

Monterey Bay National Marine Sanctuary  
299 Foam Street  
Monterey, California 93940

August 30, 2005

Brian Foss, Director  
Santa Cruz Port District  
135 Fifth Avenue  
Santa Cruz, California 95062

SUBJECT: 2005 Demonstration Project, Potential Future Disposal of Fine-Grained Material, and Proposed Expansion of Existing Dredge Disposal Area within the MBNMS

Dear Mr. Foss: *Brian*

The Monterey Bay National Marine Sanctuary is in receipt of your application dated June 6, 2005 to conduct a Demonstration Project for the purpose of determining whether disposal of fine-grained sediments offshore of the Twin Lakes State Beach area has any adverse effect on beach and offshore sedimentary conditions. This proposal would allow the Santa Cruz Harbor to dispose of 10,000 cubic yards or less of inner-harbor material comprised of dredged sediments equaling approximately 50%-79% sand. This composition is typically defined as "fine-grained material"; in addition to the low volume of sand, it includes silts and clays. The percentage of fine-grained material is higher than the EPA's informal internal guideline of 80% sand: 20% fine-grained material which they use in the absence of site-specific information about the impacts of disposal at a given site.

As stated in your proposal, the Santa Cruz Harbor faces a variety of recurring sediment and water quality issues related to harbor dredging and disposal, which in the past has raised concerns for local stakeholders. The monitoring program for dredge disposal described in this 2005 Demonstration Project is designed to determine the direction and magnitude of sediment transport. The results of this study will be compared with the 2001-monitoring program to evaluate impacts of this larger volume of fine-grained materials. It will also expand the current knowledge of sediment transport in the Santa Cruz area in an effort to better understand and manage harbor sediments.

In June 2005, the Harbor also submitted a proposal to expand the existing dredge disposal area to allow dredge disposal operations in the offshore area of Twin Lakes State Beach for a greater amount of time than has been possible in the past. Reasons for this include, but are not limited to, stipulations by the Monterey Bay Unified Air Pollution Control Board that the Harbor reduce the amount of hydrogen sulfide emissions emanating from decomposing kelp, by disposing the dredged sediments offshore rather than on the beach.



## Past MBNMS Policy / Permit Decisions Related to Fine-grained Disposal

In September 1997, based on a recommendation from the MBNMS, the National Marine Sanctuary Program recognized the surf zone area off Twin Lakes State Beach as a legal disposal site for clean sandy material which complies with Clean Water Act (CWA) Section 404 (b)(1) guidelines from the entrance channel of the Santa Cruz Harbor (Harbor). This disposal site consists only of the surf zone area off the Twin Lakes State Beach as indicated in Army Corps of Engineers Permit No. 15300S64 (1984) and as defined in USACE permit no. 21056S64 (February 27, 1995).

In December 2000, the MBNMS further clarified the September 1997 decision to allow the disposal of 3,000 cubic yards annually of dredged material comprised of fine sediments (40% sand, 60% other grain size) from the inner harbor to be suitable for placement in the offshore subtidal disposal area of Twin Lakes State Beach. This activity was allowed not as a demonstration project, as was proposed at the time, but rather because the activity was permitted and used prior to sanctuary designation in 1992. A monitoring study conducted on this volume of disposal indicated no significant impacts on grain-size distribution and deposition patterns in nearshore or offshore areas.

### 2005 Proposal to Dispose Fine-grained Material

As allowed by the CWA Section 404 (b)(1) guidelines, the Harbor is currently proposing to conduct a 2005 Demonstration Project to test if the disposal of an increased volume of fine-grained sediments offshore of the Twin Lakes State Beach area has an adverse effect on beach and offshore sedimentary conditions. At this time the Santa Cruz Harbor is seeking permission from the MBNMS to conduct this 2005 Demonstration Project by disposing of the fine-grained sediment offshore of Twin Lakes State Beach.

The MBNMS is considering issuing a Research Permit for a period of one-year to the Harbor to conduct disposal activities and an intensive monitoring program on the effects of the disposal.

#### Monitoring Program

The *monitoring program* proposed by the Harbor for the 2005 Demonstration Project is designed to determine the direction and magnitude of sediment transport and proposes the following monitoring measures: sediment sampling, water quality monitoring, observational diving, currents, multibeam bathymetry and seafloor habitat identification, and wave-driven sediment transport modeling and magnitude of sediment transport.

★ In addition, the MBNMS will require that the monitoring program include an analysis to determine the impacts to local beaches. Regular beach surveys would be conducted by a qualified monitoring group, such as the MBNMS BeachCOMBERS, or other appropriate organization, to evaluate potential effects (e.g., distressed wildlife or clay balls washing up on the beach) resultant from the fine-grain sediment disposal.

The MBNMS may recommend that the offshore disposal occur in the evening to reduce potential conflicts with users, such as surfers, kayakers, swimmers, or the beach-going public.

### **Expansion of the Dredge Disposal Area**

The Harbor is also seeking to expand the dredge disposal area at Twin Lakes State Beach. In order to increase the offshore dredge disposal capability, the Harbor proposes to expand the existing dredge disposal area to the east, west, and south. The Harbor has indicated that although it will be able to meet all its dredging needs for the 2005-06 season within the current disposal rectangle, it is interested in making this boundary adjustment for future years. As with the disposal of increased volumes of fine-grained material, the MBNMS cannot authorize an expansion of this disposal area until a complete environmental analysis is conducted.

### Monitoring

X The MBNMS believes it is best for the Harbor to conduct an expanded monitoring program as part of the 2005 fine-grained material study, to also address questions related to the proposed expansion area. This could include benthic sampling in the vicinity of the jetty and further offshore, to characterize the disposal location, while also gathering information on habitat and conducting sediment transport models for the disposal area.

### **Requirements for Future Review**

If the MBNMS approves a one-year research permit for the 2005 Demonstration Project, we will be willing to review a long term proposal in the future to expand the current MBNMS-imposed limits on the Harbor's offshore disposal of fine-grained sediments. Of course, our consideration of such a request is predicated upon the monitoring for the 2005 Demonstration Project showing little or no long-term adverse environmental effects. The process for such a consideration must follow the steps below.

### National Environmental Policy Act

Since a long-term request to increase fine-grained sediment disposal is substantially divergent from what was envisioned in the Environmental Impact Statement at the time of sanctuary designation in 1992, the Harbor would need to fund an environmental contractor to conduct a thorough environmental analysis to determine if this action has any significant long-term adverse effect on Sanctuary resources. Ideally this contractor would report directly to the MBNMS.

The MBNMS will not be able to authorize any future disposal of fine-grained material, (beyond the 3,000 cys/year allowed in December 2000) at this location until the results of the 2005 Demonstration Project have been summarized and the supplemental NEPA analysis completed.

The supplemental NEPA analysis will also need to evaluate the impacts from an expanded dredge disposal site at Twin Lakes State Beach. This will give the Harbor time to evaluate monitoring data and propose a stable project description for the offshore disposal site.



#### Economic Analysis of SF-14

The supplemental NEPA analysis must also include a feasibility study of the need for and future use (by Santa Cruz or other local harbors) of the EPA federally designated SF-14 dredged disposal site. The site was last used in 1981 and none of the harbors have proposed its use since the sanctuary was designated in 1992. As we further refine, and possibly permit, offshore dredge disposal sites to meet local harbor needs, Santa Cruz in particular, it is reasonable to evaluate the long-term need for SF-14.

Should it be determined that this site is unlikely to receive future dredged disposal, due to economic infeasibilities associated with the high cost of barging material, then the MBNMS will discuss with the EPA and the USACE future decommissioning of the SF-14 dredge disposal site.

#### Public Review

As required by NEPA, the public shall have an opportunity to review the NEPA analysis and make comments on the document. The Harbor, in conjunction with the other agencies, should host one or more public workshop(s) to obtain feedback from stakeholders on the proposal and NEPA analysis. The MBNMS will work directly with you to host this workshop and to gather input from interested parties on your proposal.

#### Future MBNMS Action

Of course, I cannot commit at this time to a future permit decision since the environmental review will not be conducted for at least a year. Our hope is to find a comprehensive long-term, stable regulatory and permit action to solve your offshore dredge disposal needs while ensuring sanctuary resources are adequately protected. However, if the MBNMS must modify regulatory documents to affect any solution in the future, the time necessary to provide the Harbor a final decision could be extended.

We appreciate the Santa Cruz Harbor District's effort to work with us on a solution to solve the complex issue of dredge disposal at this location. Your participation in the Management Plan Review process, especially on the Harbors and Dredge Disposal Action Plan workgroup, was beneficial to all parties. I believe the steps outlined here will allow the Harbor to continue its operations in the coming year while providing critical information needed to evaluate impacts prior to decisions about proposed future modifications. Please provide any feedback on the basic concepts outlined in this letter by September 12, 2005.

Sincerely,



William J. Douros  
Superintendent

cc: C. Davis, USACE  
B. Ross, EPA  
S. Craig, CCC  
P. VonLangen, RWQCB  
E. Kendig, MBUAPCD

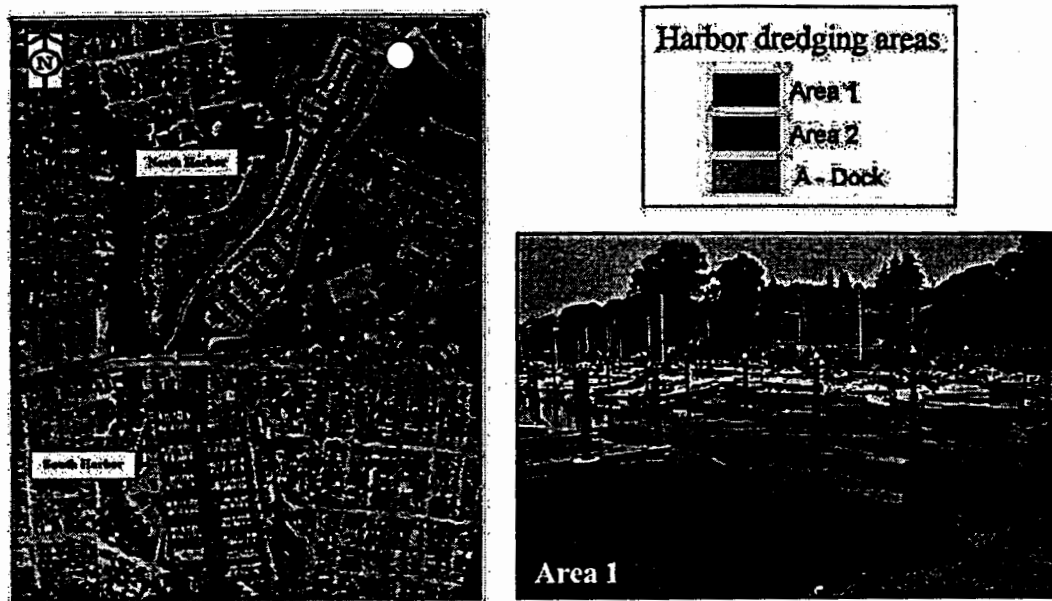


Figure 4. The overview photograph of the Santa Cruz Harbor (left) shows the extents of 2005 dredging Areas 1, 2, and A-Dock. The photograph at right was taken from the northeast corner of Area 1 (from the white dot in the harbor overview photo), illustrating the magnitude of this ongoing sediment accumulation problem (image courtesy of Friends of the Harbor Group website).

Date	Location	TOTAL		Sand composition		Silt and clay composition	
		CY	m <sup>3</sup>	CY	m <sup>3</sup>	CY	m <sup>3</sup>
2/15	Area 2	450	344	333 74%	254	117 26%	90
2/16	Area 2	300	229	222 74%	170	78 26%	60
2/17	Area 1	500	382	428 85%	327	73 15%	55
2/18	Area 1	600	459	513	392	87	67
2/19	Area 1	500	382	428	327	73	55
2/20	Area 1	500	382	428	327	73	55
2/21	Area 1	450	344	385	294	65	50
2/22	Area 1	200	153	171	131	29	22
2/23	Area 1	500	382	428	327	73	55
2/24	Area 1	400	306	342	261	58	44
2/25	Area 1	150	115	128	98	22	17
2/28	Area 1	500	382	428	327	73	55
4/7	A-dock	2000	1531	1392 70%	1066	608 30%	465
Totals		7050	5392	5623	4300	1428	1091

Table 1. An estimated 7050 cubic yards (5392 m<sup>3</sup>) of sediment were removed from Areas 1, 2, and A-Dock in the harbor between February 15 and April 7. Based on the most recent grain-size data provided in RRM Inc. (2004), the harbor sediments were composed of 79.8% sand and 20.2% silt and clay.

**Susan Craig**

---

**From:** Kathy Shortley [kathy.shortley@sbcglobal.net]

**Sent:** Sunday, April 17, 2005 12:26 PM

**To:** John Ricker

**Cc:** Rbriggs@waterboards.ca.gov; cadair@waterboards.ca.gov; scraig@coastal.ca.gov; Bob Kennedy; Denise Holbert; Mardi Wormhoudt; lkingeco2@aol.com; scpd@santacruzharbor.org; Chris Adair; Dierdre Hall; Ed Kendig; Ed Mazzarella; Surfrider Santa Cruz; Brian Ross; Clyde Davis; Jim Littlefield; Sierra Club

**Subject:** Re: Santa Cruz Harbor Dredging - Clay Balls Found

John,

I totally agree that these clayballs are "accumulations of fine sediments," silt and clay. We can't do much about controlling the fine sediments from the San Lorenzo River; however, the fine sediments and clayballs from the Upper Harbor (Arana Gulch and Woods Lagoon) can be controlled by depositing this material further offshore in deeper water. Again, the point is they should never show up on a Santa Cruz beach, and most of the Santa Cruz Harbor regulatory permits require that they don't.

As to the public health concern from the release of hydrogen sulfide associated with the dredge disposal, this is a definite concern and I appreciate that your agency is involved. I understand that the majority of the complaints made to the Monterey Bay Unified Air Pollution Control District over the last several years were in regard to "health effects."

As Ed Kendig states "keeping the discharge pipe in a sufficient depth of water totally solves the hydrogen sulfide problem."

If your agency and the permitting agencies can simply get together and jointly require the discharge of all dredge materials from the Santa Cruz Harbor be deposited further offshore in deeper water, all nuisances and health concerns will most likely be eliminated. The Harbor is simply trying to follow the permits in place. If you give them clear direction, they can properly prepare for the next dredging season. We all enjoy the benefits of the Harbor, and this action should be mutually beneficial to all, including the Harbor over the long haul.

Thank you very much for your efforts and concerns regarding this matter. Please, it is not necessary to respond to this email. I just learned my father passed away this morning so will be leaving town for a week or so.

Sincerely,  
Kathy Shortley

*John Ricker <ENV012@co.santa-cruz.ca.us> wrote:*

Kathy, there is obviously a difference between clayballs and excrement. There is nothing to suggest that the clayballs are anything other than accumulations of fine sediment from the San Lorenzo River, Arana Gulch, or Woods lagoon

We are concerned about demonstrated public health and environmental threats and are encouraging the harbor and regulatory agencies to minimize the potential for release of hydrogen sulfide and to continue to monitor sediment quality in areas proposed to be dredged

prior to dredging.  
John  
John Ricker  
Wireless Remote Location  
831-566-3610

-----Original Message-----

From: Kathy Shortley  
To: John Ricker  
CC: Roger Briggs ; Chris Adair ; Susan Craig ; Bob Kennedy ; Denise Holbert ; Mardi Wormhoudt ; Lance King (E-mail) ; Brian Foss (E-mail)  
Sent: Thu Apr 14 19:08:15 2005  
Subject: RE: Santa Cruz Harbor Dredging - Clay Balls Found

John,

Thank you for your assurance that the many clay balls deposited on the beach by the harbor dredging operation do not pose any "health hazard or environmental threat." However, I fail to understand what the metals you measured have to do with the many other liabilities and potential hazards that could be offered by their presence.

Each winter that the upper harbor dredge material is deposited in the near shore surf zone, hundreds of clay balls show up on the sandy beach shortly thereafter. This year the upper harbor dredging took place during the month of February. Throughout the month of March more than the usual number of clay like balls littered the sandy beach. They predominantly ranged from the size of raisins to golf balls and several dozens were retrieved by neighbors and others that were fist size or larger.

In addition to the clay balls, we also occasionally find small mounds of animal excrement on the beach as well but of course no where near as many as the clay balls. I would suppose an analysis for these five metals in the excrement samples might even be lower than the clay balls. But I would be hesitant to project a safety label for them based solely on those data. Nor would I think it acceptable for people to handle them, or babies to eat them.

We have public restrooms and refuse containers for people, and laws to enforce their use. Most dog owners carry and use plastic bags as a courtesy to the public. Why is it John, that the Harbor District is allowed to so discourteously dump thousands of cubic yards of stinky, harbor waste, clayballs and all, on one of Santa Cruz's most prized assets, year after year, trampling the laws and safety measures of every regulatory agency in its path?

It appears to me that the local agencies are way too complacent. Who cares about the cadmium

or copper content of the clay balls? The point is that they should never show up on a Santa Cruz beach and the regulatory agencies should provide measures to assure that they don't. Perhaps, disposal further offshore.

-Kathy Shortley

John Ricker wrote:

Kathy,

We analyzed the clayballs that were brought in for representative heavy metals (results below). The results show lower concentrations of metals than were found in previous analyses of upper harbor sediment and do not indicate any significant health hazard or environmental threat. Given that the metals concentrations are consistent with normal background conditions, we would also not expect to see any unusual concentration of other contaminants. We will not be doing any further analyses of the clayballs.

John Ricker

Land Use and Water Resources Program Coordinator

Santa Cruz County Environmental Health Services

831-454-2750

Fax: 831-454-3128

Analyses of Clayballs reportedly collected on March 30, 2005 from the Harbor Beach and submitted to Environmental Health by concerned citizens:

Test results are in mg/kg and are an average of three separate samples

Element Result Range

cadmium 0.5 0.4-0.7

chromium 33.2 31.0-35.2

copper 17.6 15.0-22.1

lead 6.1 4.9-7.1

zinc 82.8 69.1-101.7

August 26, 2005

RECEIVED

AUG 29 2005

Ms. Susan Craig  
California Coastal Commission  
Central Coast District Office  
Santa Cruz, CA 95060

CALIFORNIA  
COASTAL COMMISSION  
CENTRAL COAST AREA

Re: Santa Cruz Harbor-Dredge Disposal Demonstration Application for Permit

Dear Ms. Craig,

I do not know if you will be adding this demonstration project to the staff report for the 5-year permit or separately, so this pertains to both.

The Santa Cruz Port District (Port District) is now proposing to conduct yet another demonstration project to remove even more material less than 50% sand (approximately 10,000 cy of sediment) from the North Harbor, in hopes to clear the way to be able to drain/dump the majority of the North Harbor sludge into the Monterey Bay Marine Sanctuary on an ongoing basis in the future.

Another concern is the Army Corps use of "mean levels" averaging of toxins and grain size. An independent review of the Army Corps data by Richard Greene of the Delaware Division of Natural Resources and Environmental Control disputes the use of mean levels of toxins as being scientifically improper. He states "by using a mean level of toxins, which averages out the levels of the toxins throughout the dredge site, the Corps takes the emphasis off the areas that are most toxic." Up until the most recent demonstration study, it was noted in various governmental documentation that the sand content in the North Harbor is composed primarily of 40% sand. In a letter from the California Regional Water Quality Control Board to the Santa Cruz Port District in 1991, **the North Harbor/Upper Harbor sediment is composed of only 27% sand** and, oddly enough, indicates that the Port District was dumping large quantities of North Harbor material (20,000 cy sediment) into the Sanctuary prior to 1992 (see Exhibit A). Was this activity authorized? It certainly appears that the Port District is using the mean levels averaging tool to bring the sand content to 40%, because nothing has happened to make the sand content change from 27% to 40% since 1991.

Thus, I AM OPPOSED to the dredge disposal demonstration project for the following reasons:

1. The Santa Cruz Harbor has other practicable alternatives to dispose of this material. These alternatives may be more expensive but will totally eliminate the human health risks. The federal guideline, 40 CFR § 230.10 (restrictions on discharge), requires that the least environmentally damaging practicable alternative be used for meeting the project purpose. The following are reasonable alternatives:
  - a. An offshore dumpsite off of Moss Landing (SF-14) and is in very close proximity to the Santa Cruz Harbor; or
  - b. Truck it to a nearby landfill, which I believe is already approved.

2. In the Army Corps Public Notice Number 29506S, dated July 22, 2005, the statements regarding grain size are INCORRECT and MISLEADING. "In March of 2001 the Port District conducted a demonstration project using 3,000 cy of sediment containing 50% sand" (pg. 1, paragraph 2); and "Previous grain-size analysis of North Harbor sediments suggests that the overall composition will prove to be predominantly sand at about 65% (Pg. 2, paragraph 3)."

The above-referenced numbers appear to be unrealistic according to the following documentation:

- a. Letter from California Regional Water Quality Control Board to the Santa Cruz Port District, regarding Sediment Sample Results (North – Inner Harbor), Order No. 88-68, date Dec. 19, 1991.

"The results show the proposed dredge material to be about 83 percent silt and clay" and consists of only 27% sand. (Exhibit A)

- b. US Army Corps of Engineers, Public Notice, Number 24392S, dated December 13, 2000.

"A grain-size analysis of the sediments (12,000 cubic yards (cys) of sediment from approximately 2.4 acres of the North Harbor) indicates that the composition is...41.8% sand." (Exhibit B)

- c. Report by Moss Landing Marine Laboratories, Monitoring of Dredged Upper Santa Cruz Harbor Mixed Sand and Mud Sediment Released into the Nearshore Area of Santa Cruz, California, dated Dec. 19, 2002.

"The upper harbor sediment was composed of ~60% silt and clay (or mud) and 40% sand." (Sullivan & Krcik, 1999) (Exhibit C)

- d. Santa Cruz County Grand Jury Report, Review of the Santa Cruz Port District, 2001-2002, Response: Santa Cruz Harbor District, Paragraph 9 (North Harbor).

"The sediment deposited in the North Harbor is far different from the sand that is dredged from the channel entrance in South Harbor, and must be treated differently. The North Harbor's sediment consists of only 40% sand..." (Exhibit D)

3. In the Army Corps Public Notice Number 29506S, dated July 22, 2005, the statement regarding "silt and clay fractions" not coming to shore is INCORRECT. The statement by applicant, Port Director, Mr. Brian Foss, on page 2, paragraph 5b, stated "Silt and clay fractions will be transported by natural processes to the ocean and will not settle near shore..." Port Director, Mr. Brian Foss, was made aware of silt and clay fractions coming ashore in the following documentation:

- Notice of Violation—Santa Cruz Harbor Dredge—401 Certification, California Regional Water Quality Control Board, dated March 11, 2004.

"3. CLAY BALLS ON THE BEACH: Regional Board staff has received complaints that clay balls have washed up on to the beach during the discharge of back harbor sediments. Clay balls have reportedly been collected and sent to a laboratory for



analysis by concerned citizens. The 401 Certification was drafted with the understanding that fine sediments would disperse offshore and not wash up on the beach. This is an area of concern in regards to possible impacts to beneficial uses of water in the nearshore zone." (Exhibit E)

I, and a dozen of other citizens, have observed the silt and clay coming onshore each year when the Upper Harbor is dredged. **(This does not occur at any other time of the year.)**

After the 2001 demonstration project, clay balls were collected and hand-delivered to the California Coastal Commission Office in Santa Cruz.

During the 2004, In violation of several permits, the Santa Cruz Port District pumped sediment from the Upper Harbor into the entrance channel for several days and was issued a violation from the California Regional Water Quality Control Board (see Exhibit E). They then pumped the sediment from the same location of the entrance channel onto the beach. Clay balls were collected from the dredge disposal site on the beach and sent to the California Regional Water Quality Control Board.

(See Exhibit F - photographs of clay balls at the disposal site. Also included are photographs of **children playing and eating the clay balls at the disposal site.**)

After the 2005 demonstration project, clay balls were collected and sent to the California Regional Water Quality Control Board.

4. Location of Discharge Pipe in Relationship to the Harbor Entrance Channel.

The location of the dredge pipe for the Upper Harbor discharge is too close to shore and the entrance channel, which allows dredge material to come to shore and re-enter the entrance channel according to following documentation:

- US Army Corps of Engineers, San Francisco District, Reconnaissance Report, Santa Cruz Harbor Shoaling General Investigation Study, Figure 2.3 (Exhibit G)
- Photograph documenting the location of the Upper Harbor discharge pipe, which is approximately 20-30 feet from the east jetty and **within 50 feet of the entrance channel**. This is too close to the shore, east Jetty, and entrance channel of the Santa Cruz Harbor. (Exhibit H)

The location shown in the above-referenced photograph is outside the "disposal area" zone (west of 5<sup>th</sup> avenue), and violates the California Regional Water Quality Control Board, as well as the Army Corps permit guidelines.

In addition, the County of Santa Cruz conducted some tests from the "supposedly clean" entrance channel and found levels of arsenic and lead that "Exceed human health objective," and significant levels of chromium, copper, zinc and tributyltin (See Exhibit I). This is another reason to suspect that the North Harbor material re-entered the main entrance channel during the demonstration project.

**Therefore, the California Coastal Commission should reinstate their requirement for annual physical and chemical testing of Harbor entrance sediments.**

5. Dredging and disposal during October Impacts Beneficial Uses

The months of September and October are the best beach weather days of the year. We call it "Indian Summer" weather. It is warm and the water is calm. So, even if they dispose the dredging spoils at night, it most likely will not dissipate, as it might in winter storm waves. In addition, criteria for the tests performed on the harbor sediment are specifically designed for "deep ocean disposal" and the protection of marine life; **No test criteria exists for the protection of humans during "nearshore disposal,"** and it is also an impact due to the added duration of time of the dredging season. This is a very popular beach, and is used all year round. Increasing the dredging season from October to May (7months) is unreasonable. Seven months viewing the ugly Dredge, spewing diesel fumes, 8 hours a day 5 days a week; looking at and dodging the noisy tractor racing across the beach, which also spews diesel fumes; smelling the obnoxious hydrogen sulfide odor when the pipe(s) is not submerged deep enough underwater; and having to navigate and climb over the pipes just to get to the beach and/or a swimming area—Not to mention the "visusal impact" of the onshore disposal program. (See Exhibit J, photos showing the negative impact of the black dredge sludge in the recreational areas (water and beach).

In closing, the Santa Cruz Harbor, which we all love and enjoy, can benefit by a better long-range plan. It is not my intent to unduly burden the Santa Cruz Port District, but to encourage your agency to find a sound solution to protect the environment and human health. This goal will be best accomplished by putting the dredge pipe much farther offshore, with continued monitoring and testing. Your agency has the authority to stop the pollution of our magnificent Sanctuary, and I am holding you accountable for its future.

Sincerely,



Martha Glenn  
2621 East Cliff Drive  
Santa Cruz, CA 95062

cc: Richard Damon, Esq.

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD —  
CENTRAL COAST REGION**

81 FIGUERA STREET, SUITE 200  
SAN LUIS OBISPO, CA 93401-5414  
(805) 549-3147

**Exhibit A**

December 19, 1991

Mr. Stephen Scheiblaue  
Santa Cruz Port District  
135 5th Avenue  
Santa Cruz, CA 95062

Dear Mr. Scheiblaue:

**SANTA CRUZ PORT DISTRICT SEDIMENT SAMPLE RESULTS, ORDER NO. 88-68**

Your November 27, 1991 letter transmitted the inner harbor sediment sample results. The results show the proposed dredge material to be about ~~80~~ percent silt and clay and the concentrations of heavy metals and organics in the sediment appear to be acceptable for surf zone disposal.

You proposed to dredge about 20,000 cubic yards of sediment from the inner harbor from December 1, 1991, through the end of March 1992. Dredging will be conducted at night or during severe bad weather to be sure there will be no conflict with ocean users. A small dredge will be used for dredging the inner harbor. The small dredge will dilute the sediment with about five parts of seawater. The mixture will then be pumped to a larger dredge for boosting and further dilute it with four parts of seawater. Although this material is not suitable for beach enhancement, it may be disposed in the surf zone where it will be further diluted and rapidly dispersed.

Your request to extend dredging of the inner harbor to March 31, 1992, is approved provided weather conditions exist such that there is low beach usage. Waste Discharge Requirements Order No. 88-68 specifies that beach disposal of inner harbor dredge material may only take place between December 1, and February 28, but not during unseasonably warm weather. Extension of dredging beyond February 28, is allowed since you will be dredging intermittently and only during night or during severe bad weather so as not to disrupt ocean users.

Please direct questions to A. John Mijares (805) 549-3696 or Jay Cano (805) 549-3699 from 8:00 to 10:00 a.m. and from 1:00 to 5:00 p.m. Tuesday through Friday.

Sincerely,

*William R. Leonard*  
WILLIAM R. LEONARD  
Executive Officer

AJM/Scheiblaue.ltr  
js



US Army Corps  
of Engineers

SAN FRANCISCO DISTRICT

**EXHIBIT B**

# PUBLIC NOTICE

NUMBER: 24392S

DATE: November 13, 2000

RESPONSE REQUIRED BY: December 13, 2000

Regulatory Branch  
333 Market Street  
San Francisco, CA 94105-2197

PERMIT MANAGER: Rob Lawrence

PHONE: (415)977-8447

e-mail: rlawrence@spd.usace.army.mil

**1. INTRODUCTION:** Mr. Brian Foss, Santa Cruz Port District (Port District), 135 5th Avenue, Santa Cruz, California, 95062, has applied for a Department of the Army permit to conduct a dredged material disposal demonstration project at the Santa Cruz Harbor (Harbor) in Santa Cruz, Santa Cruz County, California. The purpose of the project is to determine if clean, fine-grained harbor sediments can be disposed into the near-shore area at Santa Cruz in a manner beneficial to the down-coast beaches and without harm to coastal resources. This application is being processed pursuant to the provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). The Corps of Engineers is currently processing a Port District application for regular maintenance dredging of the Harbor.

**2. PROJECT DESCRIPTION:** As shown in the attached drawings, the applicant has proposed removing approximately 12,000 cubic yards (cys) of sediment from approximately 2.4 acres of the North Harbor area and disposing it in the near-shore area just east of the harbor jetty. The design depth in the North Harbor dredge area would be from -8 feet Mean Lower Low Water (MLLW) in the berth areas to -10 feet MLLW in the channel areas, plus a two-foot allowance for overdepth dredging. The sediments have been tested and found (by an interagency group) to be suitable for unconfined aquatic disposal. A grain-size analysis of the sediments indicate that the composition is 58.2% fines (29.5% clay and 28.7% silt) and 41.8% sand. This material would not normally qualify as beach nourishment material because it is less than 80%

sand. At present, the policy of the Corps of Engineers (and the U.S. Environmental Protection Agency) is that, lacking sound information regarding the impacts of fine-grained material on the aquatic environment, beach replenishment material should be approximately 80% sand or compatible with the receiving beach. The receiving beach at Santa Cruz is over 90% sand.

The Port District contends that the 80% sand guidance is too restrictive and precludes the beneficial use of otherwise clean sediments.

The Port District has already begun to study the issue. In September of 1999, the Port District and the State of California Department of Boating and Waterways sponsored a Sediment Transport Analysis study of the 25 square mile area adjacent to the Santa Cruz Harbor. According to the applicant, the study (conducted by Patrick McLaren Ph.D., Physical Geology, of GeoSea Consulting [Canada] Ltd.) concluded that fine-grained sediments (silts and clays) do not, and will not, remain in the near-shore Santa Cruz area.

Assuming that the Port District's regular maintenance dredge permit will be issued by the Corps of Engineers, the applicant proposes the following project protocol, which apply only to the demonstration project:

1. Dredging of the inner harbor sediments will be no deeper than the design and overdredge depths allowed by the maintenance permit.

**MONITORING OF  
DREDGED UPPER SANTA CRUZ HARBOR  
MIXED SAND AND MUD SEDIMENT RELEASED INTO THE  
NEARSHORE AREA OF SANTA CRUZ, CALIFORNIA**



**Report prepared by;**

**Steve G. Watt and H.G. Greene  
Center for Habitat Studies  
Moss Landing Marine Laboratories  
(831) 771-4140  
December 19, 2002**

## 1. Introduction

On March 28, 29, and 30 2001 the Santa Cruz Small Craft Harbor was permitted to release approximately 3,000 yd<sup>3</sup> (2,300 m<sup>3</sup>) in 500-700 yd<sup>3</sup> increments (approximately 380-540m<sup>3</sup>) of mixed sand, silt and clay sediment into the surf-zone. ~~The material was excavated near J-Dock in the upper Santa Cruz Harbor and released approximately 70 yards (64 m) from the shore of Twin Lakes Beach (Figure 1) near the east jetty.~~ The mud-rich sediment was dispersed between the hours of 7:00 pm to 12:00 am.

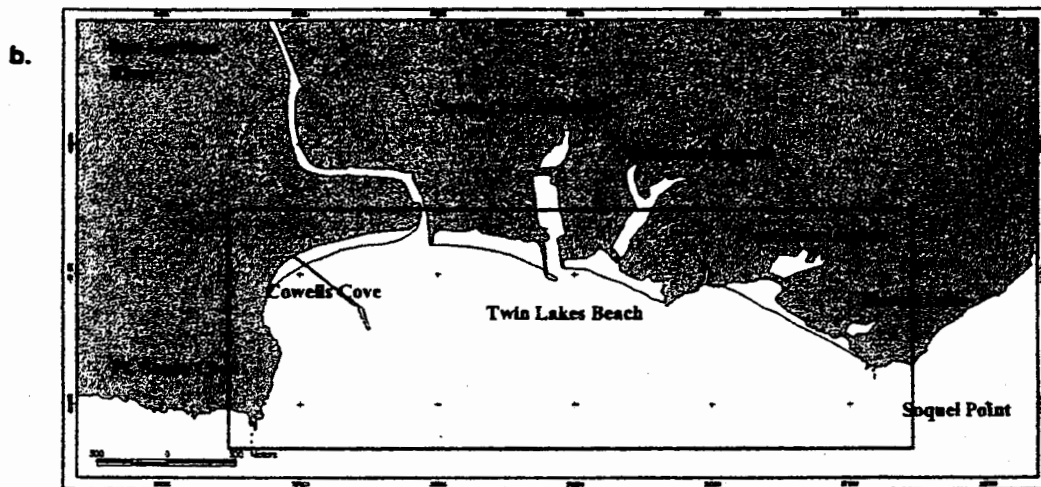
~~The upper harbor sediment was composed of ~60% silt and clay (or mud) and 40% sand (Sullivan & Krcik, 1999).~~ The high concentration of mud present in the material is not allowed for surf-zone disposal according to EPA Region IX standards for grain-size (Foss, 1999). The concern is that the fine-grained material may be retained in the beach and nearshore benthic habitats and change the existing natural environment that was present before the experimental dredging event.

The primary goal of the monitoring period was to determine if sedimentary changes occurred in the beach and nearshore benthic marine habitats near the Santa Cruz Harbor due to the retention of fine-grained mud that was released during the experimental dredging event. Sedimentary changes were anticipated that may include, but not limited to, the degradation of the quality of sand on the neighboring beaches, burial of the nearshore marine benthic habitats, and alteration of the natural transport of coastal sediment.

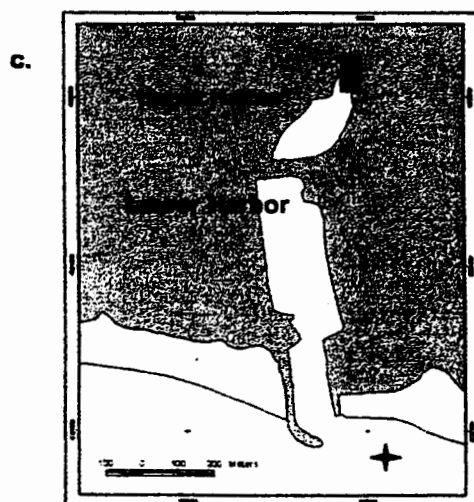
Our approach was to monitor the habitats that stand the greatest chance of being impacted by the experimental dredging event rather than focus on tracking the dispersal of the mixed sand and mud sediment as it enters the surf-zone. This study focuses on the sandy beaches from Point Santa Cruz eastward to Soquel Point and the nearshore benthic habitats between Point Santa Cruz and Soquel Point out to ~20 meters water depth. To ascertain whether habitats had changed over the course of the monitoring period, a clear baseline of information about the sedimentary grain size distribution of the beaches and offshore habitats within the study area was established before any upper harbor sediment was deposited into the surf-zone. This includes monitoring the natural processes in the study area



a. Red box denotes location of the study area within the Monterey Bay, California



b. Red box indicates the approximate boundary of the beaches and offshore regions of the study area. Major geographic points, rivers, beaches, lagoons, and the Santa Cruz Harbor are shown. Yellow areas indicate approximate area of beaches.



c. Area of upper harbor that was dredged (■) with location of dredge outfall (★) offshore of Twin Lakes Beach.

Figure 1. Location of mixed sediment dredging experiment in Santa Cruz, CA



**EXHIBIT D**

**Santa Cruz County Grand Jury Report  
for 2002-2003**

701 Ocean Street, Room 318-I  
Santa Cruz, CA 95060  
(831) 454-2099

[grandjury@co.santa-cruz.ca.us](mailto:grandjury@co.santa-cruz.ca.us)

---

**Corrections to the 2001-2002  
Response Report**

In the Response Report to the 2001-2002 Santa Cruz County Grand Jury Final Report, several of the Santa Cruz Port District's responses were left out and some of the responses were inappropriately placed. Below are the corrections to these errors. The Grand Jury apologizes to the Santa Cruz Port District for these errors.

**Review of the Santa Cruz Port District**

**2001-2002 Grand Jury Report – Page 7-11**

**Findings**

1. The jury visited the harbor three times during the course of this review:
  - A. Santa Cruz Yacht Harbor is a popular tourist destination.
  - B. Members of the Jury observed during these visits that the harbor area appears to be well maintained.

**Response: Santa Cruz Port District AGREES**

- C. Public Port District meetings are held on the fourth Tuesday of every month starting at 7:30 p.m. Public meetings are usually held at the Harbor Public Meeting Room, 365-A Lake Avenue, Santa Cruz. Members of the Grand Jury attended one of these meetings and observed that the meetings appear to be run in an orderly and professional manner.

**Response: Santa Cruz Port District AGREES**

*Port Commission meetings have been changed to 7:00 PM on the fourth Tuesday of each month.*

- D. The District is responsible for many ongoing maintenance projects as well as long term improvements to the harbor.
- E. Revenues are generated from almost every aspect of the harbor operation. Launch fees, parking fees, slip fees, guest docking, RV parking, rent on retail space, boat storage all generate the money needed for daily operations and long term improvements. The District is also very active in obtaining grant money whenever possible.

**Response: Santa Cruz Port District AGREES**

2. Businesses are located throughout the harbor area:

- A. The Harbor Business Association Member Directory is located on the Internet through the Port District site: [http://www.santacruzharbor.org/visitor/bus\\_dir.html](http://www.santacruzharbor.org/visitor/bus_dir.html).
- B. Retail shops must apply to the District for a lease. Upon approval, the District issues a lease for a determined amount of time. This is normally five years with the option to renew.

**Response: Santa Cruz Port District AGREES**

*Lease terms range from month-to-month, to 40+ years. Access to all multi-year leases originates with a public bid process.*

- C. The Harbor Patrol presence also adds to security and there is very little crime in the area. This fact also enhances the good business climate.
- D. There are many popular restaurants in the harbor attracting many locals as well as tourists to the harbor area.
- E. The closeness to the harbor and to the beach sometimes creates parking problems for visitors to the harbor and to the local restaurants. Parking within the harbor area is in high demand during the summer months.
- F. Other than minor complaints concerning restroom maintenance and dock repair, members of the Grand Jury found that the District has done an excellent job in making the harbor a favorable place for local merchants as well as their customers and other visitors.

**Response: Santa Cruz Port District AGREES**

- 3. Although there are about 1200 boat slips in the harbor, there are about the same number of boat owners waiting for slips. The District charges boat owners an annual fee to be placed on a waiting list. The waiting period for a slip in the South Harbor may be as much as 9-10 years. In the North Harbor the wait for a slip is much less, about 3-6 years. The District tries to ensure that existing boat owners are, in fact, actually using the harbor and not merely parking a boat in a slip. The District has established a rule that a slip renter must take his boat out at least ten times per year or risk losing his place in the harbor. Slips are not transferable with the sale of a boat. When a boat is sold the new owner is given time to look for a new place to berth his boat. In the past, slips were transferred with the boat. This practice led to abuse of the slip rental policy. There are currently about 87 people who live on their boats in the harbor. The harbor provides non-metered electricity to these people and to the all other boat owners at a set rate of \$35.00 per month. Some boat owners who use small amounts of electricity would prefer metered electricity for a more equitable charge.

**Response: Santa Cruz Port District PARTIALLY AGREES**

*There are approximately 900 wet slips and approximately 300 dry storage spaces within the harbor. The waiting period for a south harbor slip ranges from 6-19 years.*

- 4. Because the harbor is such a large area with many facilities, there are many ongoing capital improvements planned by the District. Recently a new lighthouse was constructed to mark the entrance to the harbor. This was done with private funds at no cost to taxpayers. Charles Walton donated the initial \$60,000 to get this project started. Walton, a Los Gatos resident who is a semi-retired electronics businessman and fisherman, made the donation in honor of his late brother, Derek Walton, who served in the Merchant Marines. This new Lighthouse is known as the Walton Lighthouse and officially as the Santa Cruz Harbor Light.

**Response: Santa Cruz Port District AGREES**

*A total of \$416,000 was donated to the lighthouse – Mr. And Mr. Walton donated a total of \$94,000.*

5. Another project recently completed is the Joseph G. Townsend Maritime Plaza. The plaza is located just outside of the Crow's Nest Restaurant. This project was made possible through grants from the Economic Development Administration and the Federal Transportation Enhancement Act. Additionally, many private donors also helped to fund this project. Joseph G. Townsend has been a Port District Commissioner for the last 25 years. His leadership of the District has been instrumental in making the harbor what it is today. State Senator Bruce McPherson, Supervisors Mardi Wormhoudt and Jan Beautz, and Mayor Tim Fitzmaurice of the City of Santa Cruz dedicated the plaza in his honor on September 7, 2001.

**Response: Santa Cruz Port District AGREES**

6. Apart from the above mentioned projects are long range plans for replacing the deteriorating seawall near Aldo's Restaurant, increasing the number of visitor slips and general improvements to the North Harbor.

**Response: Santa Cruz Port District AGREES**

7. The District has recently installed an oil reclamation facility to protect the quality of the harbor's water.

**Response: Santa Cruz Port District AGREES**

8. Much planning goes into all capital improvements and the District appears to be very diligent in finding funding before the projects are undertaken.

**Response: Santa Cruz Port District AGREES**

9. Santa Cruz Harbor is dredged generally between November and April annually. This dredging operation is the most expensive daily operation at the harbor. The harbor owns and maintains the dredging vessel. Geographically, the mouth of the harbor is located in an area where sand is constantly building up. In order to ensure that the harbor is navigable, the entrance must be constantly dredged. Dredging removes the sand from the mouth of the South Harbor. The sand is then deposited through a dredge discharge line, into the inter-tidal zone in the bay where it drifts down the coast, and helps to replenish the sand to all beaches east of the harbor. Dredging of the North Harbor is a much different operation. The North Harbor drains Arana Gulch and much of the surrounding area. The sediment deposited in the North Harbor is far different from the sand that is dredge from the channel entrance in South Harbor, and must be treated differently. The North Harbor's sediment consists of only 40% sand and 60% silt. Although this sediment does not contain chemical pollutants, it does contain much organic material and silt. Instead of dredging this material it is removed by a clamshell bucket, deposited in the parking lot and left to drain. The material is then removed by dump trucks and deposited in a landfill site in Seaside. This is a costly operation.

**Response: Santa Cruz Port District AGREES**

*Removing sand from the entrance channel by hydraulic dredging costs approximately \$4/cubic yard. Removing material shoaling the north harbor by clamshell bucket and transported upland to a landfill costs approximately \$80/cubic yard.*

10. The Port District would like to be able to take the sediment dredged from North Harbor and deposit it further out in the Monterey Bay. Because of environmental concerns and possible pollution of the Monterey Bay Wildlife Sanctuary, this method has not yet been approved. The District contracted with Moss Landing Marine Lab for a demonstration project to support its position that this sediment poses no threat to the Bay. The preliminary report of this project, issued in March of 2002, supports the Port District's position that the sediment is not a threat to

the Bay. Approval for depositing the sediment in the bay would result in a substantial savings of at least \$325,000 per year to the Port District, based on 5000 cubic yards of sediment, which is the average annual amount of sediment dredged. Before proceeding with depositing this dredged material in the Monterey Bay, the District needs to receive approval from a number of agencies. The District must demonstrate to the Army Corp of Engineers that they are in compliance with section 404 of the Federal Clean Water Act and compliant with EPA standards. Next the District will need a permits from the Coastal Commission, the California State Water Quality Control Board in San Luis Obispo and the Monterey Bay National Marine Wildlife Sanctuary.

**Response: Santa Cruz Port District AGREES**

11. Santa Cruz Harbor is home to a commercial fishing fleet. Santa Cruz Harbor is primarily a salmon fishery. There is also a small crabbing operation along with albacore, halibut, and rockfish fisheries. Foreign imports of fish from South America and domestic farming compete directly with local fisheries. There are, however, enough local markets such as restaurants and fresh fish retail markets in the area to minimally sustain local fishing. The last several years have been abundant for salmon. Salmon season runs May through September, albacore usually from September through December.

**Response: Santa Cruz Port District AGREES**

12. There is a local fish buyer located in the harbor at the "S" and "T" docks. Having a local buyer in the harbor ensures that the fisherman have an available market for their catch. The Port District has recently upgraded the District-owned facility leased by the resident fish buyer. The facility has been upgraded to include a new ice-making machine that is capable of providing all the ice that is needed to run the facility.

**Response: Santa Cruz Port District AGREES**

13. It is essential to the fishing fleet that the mouth of the harbor remains open all year. The commercial fishermen welcome the dredging program. The Santa Cruz Local Fisherman's Association maintains a very good relationship with the Port District. Both the Santa Cruz Harbor and the Fisherman's Association are members of Alliance of Communities for Sustainable Fisheries. This Alliance is an organization that seeks to preserve currently threatened fisheries and fishing communities. They work closely with the Monterey Bay Wildlife Preserve in order to achieve this end. The Alliance can be found on the Internet at: <http://www.nfcc-fisheries.org/monterey/index.shtml>.

**Response: Santa Cruz Port District AGREES**

**Recommendations**

3. The Port District should continue to pursue investigating the less expensive alternative disposal of the North Harbor sediment, while addressing environmental concerns.

**Response: Santa Cruz Port District AGREES**

*We completely agree with the Grand Jury's statement. The north harbor sedimentation problem is the largest financial threat to the Port District. 5,000 to 20,000 cubic yards of material come into the harbor each year from Arana Gulch. We are addressing this problem in three major ways:*

*A. Arana Gulch Watershed Alliance: The Port District was a founding member of the Arana Gulch Watershed Alliance (AGWA), which has been in existence for 6 years. It has made tremendous progress. Its members include watershed stakeholders, including the County and City of Santa Cruz, the Port District and various landowners. AGWA's executive director, Roberta Haver, in*

coordination with consultant engineers and hydrologists, has just completed the Arana Gulch Watershed Enhancement Plan. This document sets forth a 20-year plan for fixing specific problems; general restoration; erosion control and steelhead habitat enhancement.

In addition to the AGWA program, the Arana Gulch watershed is also the subject of a recently completed Corps of Engineers' reconnaissance study. The Section 905B report was favorable in going forward to the feasibility stage of a watershed restoration and management plan in coordination with the harbor and AGWA (Corps' project #PWI- 014755.Arana Gulch).

**B. Sediment Basins:** Establishment of sediment basins above the harbor to catch silt, sand and clay before it enters the harbor. AGWA is very involved in this and the sediment basins are part of the comprehensive restoration plan.

**C. Dredging:** The Port District has put tremendous effort into identifying the most cost effective method of dredging the harbor. The Port District is working with all regulatory agencies to ensure it has an affordable way to dispose of this clean material.

4. The Port District should consider offering an optional plan for metered electricity.

**Response: Santa Cruz Port District AGREES**

The Port District has considered, and will continue to review in the future, the cost benefits associated with metering the harbor's slips. Up to this point, the District has been reluctant to add the high cost of installing meters to the cost of the electricity. There has not been much disagreement with the current electricity assessment from most users. The current approach is to monitor and charge for electricity use. These fall into several categories:

**A.** Electricity is provided for slip licensees as part of their basic slip rent if electricity is used only intermittently (they are not plugged in when they are not on their boat).

**B.** A second category is for slip licensees who are also liveaboards. Liveaboard fees include a flat rate charge for electricity.

**C.** The third category is for slip licensees who, although not liveaboards, leave their boats plugged in when they are not aboard. These slip licensees are charged a flat rate for electricity use each month. Additionally, a higher flat rate is charged for those who use a higher wattage of electricity.



# California Regional Water Quality Control Board

## Central Coast Region



Terry Tamminen  
Secretary for  
Environmental  
Protection

Internet Address: <http://www.swrcb.ca.gov/rwqcb3>  
895 Aerovista Place, Suite 101, San Luis Obispo, California 93401  
Phone (805) 549-3147 • FAX (805) 543-0397

Arnold Schwarzenegger  
Governor

# EXHIBIT E

March 11, 2004

Mr. Brian Foss  
Santa Cruz Port District  
135 5<sup>th</sup> Avenue  
Santa Cruz, CA 95062

Date	3/17/04	# of pages	3
From	Bill Arkfeld		
Co.	RWQCB		
Phone #	805-542-4627		
Fax #			

Dear Mr. Foss:

### NOTICE OF VIOLATION-SANTA CRUZ HARBOR DREDGE - 401 CERTIFICATION

Regional Water Quality Control Board staff has reviewed the recent dredging of the Santa Cruz Harbor. The following are areas of concern or violations of the March 7, 2001 "Technically Conditioned Water Quality Certification for the Santa Cruz Harbor Annual Dredging Maintenance 360,000 Cubic Yards" (Attached).

1. **DISCHARGE TO THE HARBOR:** On January 28 and 29, 2004 we understand that about 200 cubic yards of material dredged from the back harbor was discharged to another area in the harbor. This second area was then dredged and discharged to the Ocean. Your Section 401 Water Quality Certification does not allow dredged material to be discharged to the harbor. This temporary discharge of dredged material to the harbor is a violation of your 401 Certification. Because the back harbor sediments are known to contain trace amounts of pesticides, poly aromatic hydrocarbons, and other contaminants, this discharge may have caused a condition of pollution in the Harbor. You have responded to this violation in your February 4 and February 27, 2004 letters (Attached).

2. **OCEAN DISCHARGE TO THE LITTORAL ZONE:** The 401 Certification restricts the discharge of dredge material to the following:

*"6. All dredge material shall be discharged into the littoral zone, approximately 300 yards east of the jetty... at a location between 5<sup>th</sup> and 7<sup>th</sup> Avenue."*

We understand that the dredged material has been discharged much closer to the Harbor due to weather conditions and logistical constraints. This issue is addressed in your February 4, 2004 letter (Attached). However, the discharge of dredged material in a manner not described in the District's Section 401 Water Quality Certification is a violation. An updated "Report of Waste Discharge" must be submitted in order to discharge as described in the February 4, 2004 letter.

3. **CLAY BALLS ON THE BEACH:** Regional Board staff has received complaints that clay balls have washed up on to the beach during the discharge of back harbor sediments. Clay balls have reportedly been collected and sent to a laboratory for analysis by concerned citizens. The 401 Certification was drafted with the understanding that fine sediments would disperse offshore and not wash up on the beach. This is an area of concern in regards to possible impacts to beneficial uses of water in the near shore zone. You are requested to monitor for clay balls on

California Environmental Protection Agency



Recycled Paper



March 10, 2004

the beach during and shortly after dredging operations. If fine sediments are discovered on the beach that can be attributed to the dredging operation, this occurrence must be reported immediately to this office and dredging must stop until such time as the situation can be remedied.

4. **HYDROGEN SULFIDE:** We have received complaints regarding airborne hydrogen sulfide. As you know, the Monterey Bay Unified Air Pollution Control District has taken a lead role with this issue. However, these incidents appear to be nuisances related to a discharge regulated by the Regional Board. You are required to submit an explanation of how future hydrogen sulfide discharges will be prevented during dredging operations.
5. **ACCEPTABLE LEVELS OF CHEMICAL CONSTITUENTS:** The US Environmental Protection Agency's February 24, 2004 letter (Attached) addresses concerns raised by the Surf Rider Foundation about appropriateness of discharging dredged sediments to the Ocean. Regional Board staff relies on the USEPA to oversee sediment disposal to the Ocean. Regional Board staff has also reviewed past monitoring data for harbor sediments and summarized our findings in the attached Executive Officers Report for the March 19, 2004 Board Meeting. At this time, the testing of the harbor sediments has been performed in compliance with the requirements of the 401 Certification.

You are required to submit an updated "Report of Waste Discharge" (ROWD) for the harbor dredging project. The ROWD should consider all the comments above as well as concerns of the community and other agencies. The forms can be found at <http://www.swrcb.ca.gov/rwqcb3/Applications/index.htm> or you can request copies from Regional board staff. Please submit the revised ROWD by May 15, 2004.

This information is required pursuant to California Water Code Section 13267 to determine compliance with permit requirements. Evidence that supports requesting this information includes the January 28 and 29 discharge of fine sediments to the inner harbor at Santa Cruz. Failure to address our questions/comments and submit a revised ROWD by the date prescribed above may result in formal enforcement action pursuant to California Water Code Section 13268.

*Any person affected by this action of the Regional Board may petition the State Water Resources Control Board (State Board) to review the action in accordance with California Water Code Section 13320, and Title 23, California code of Regulations, Section 2050. The petition must be received by the State Board, Office of Chief Counsel, within 30 days of the date of this letter. Copies of the law and regulations applicable to filing petitions will be provided upon request.*

Thank you for your prompt attention to this request. If you have any questions, please contact William Arkfeld (805) 542-4627 or Chris Adair at (805) 549-3761.

Sincerely,

*Chris Adair*

for  
Roger W. Briggs  
Executive Officer

Attachments

California Environmental Protection Agency



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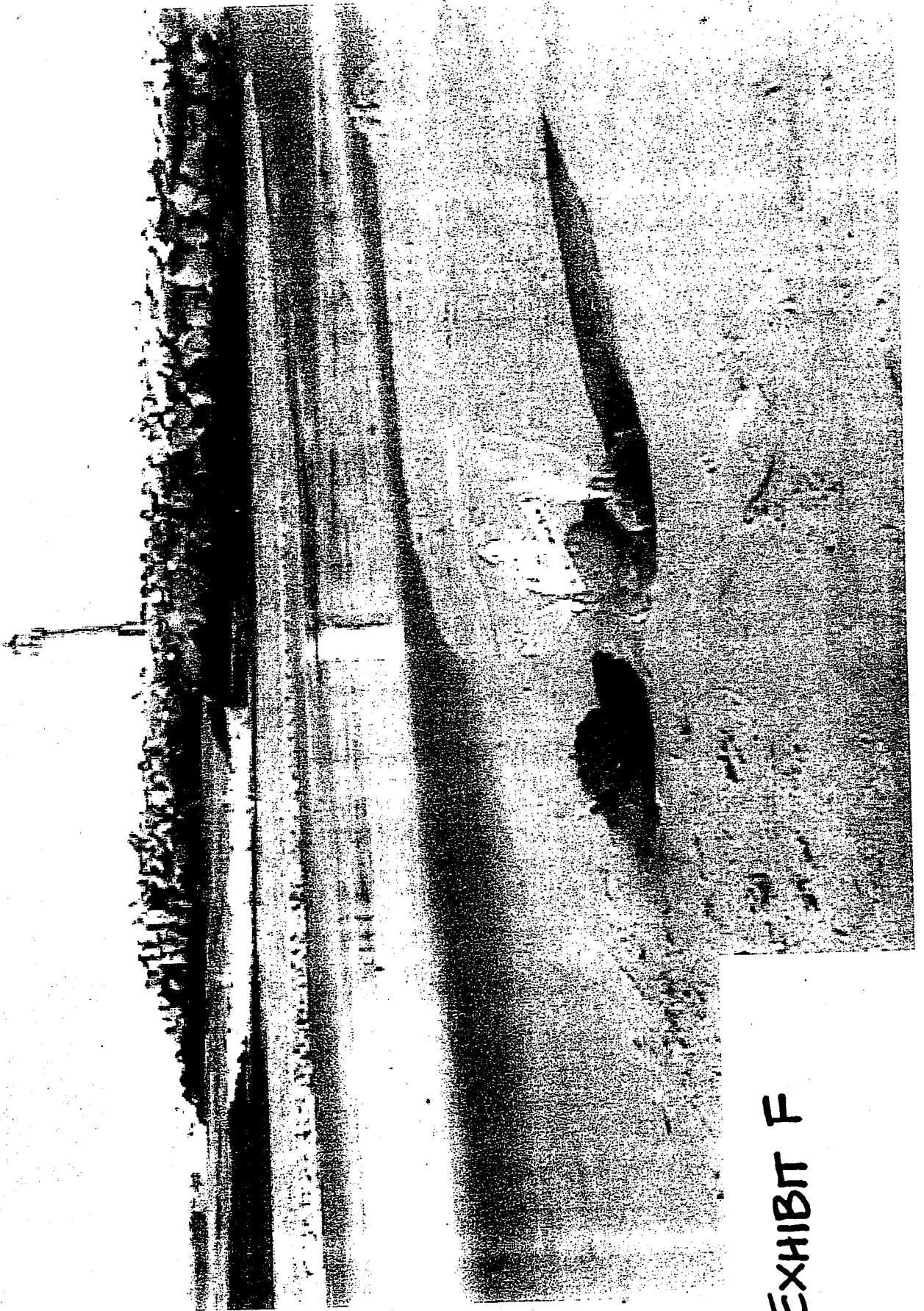


EXHIBIT F



EXHIBIT F

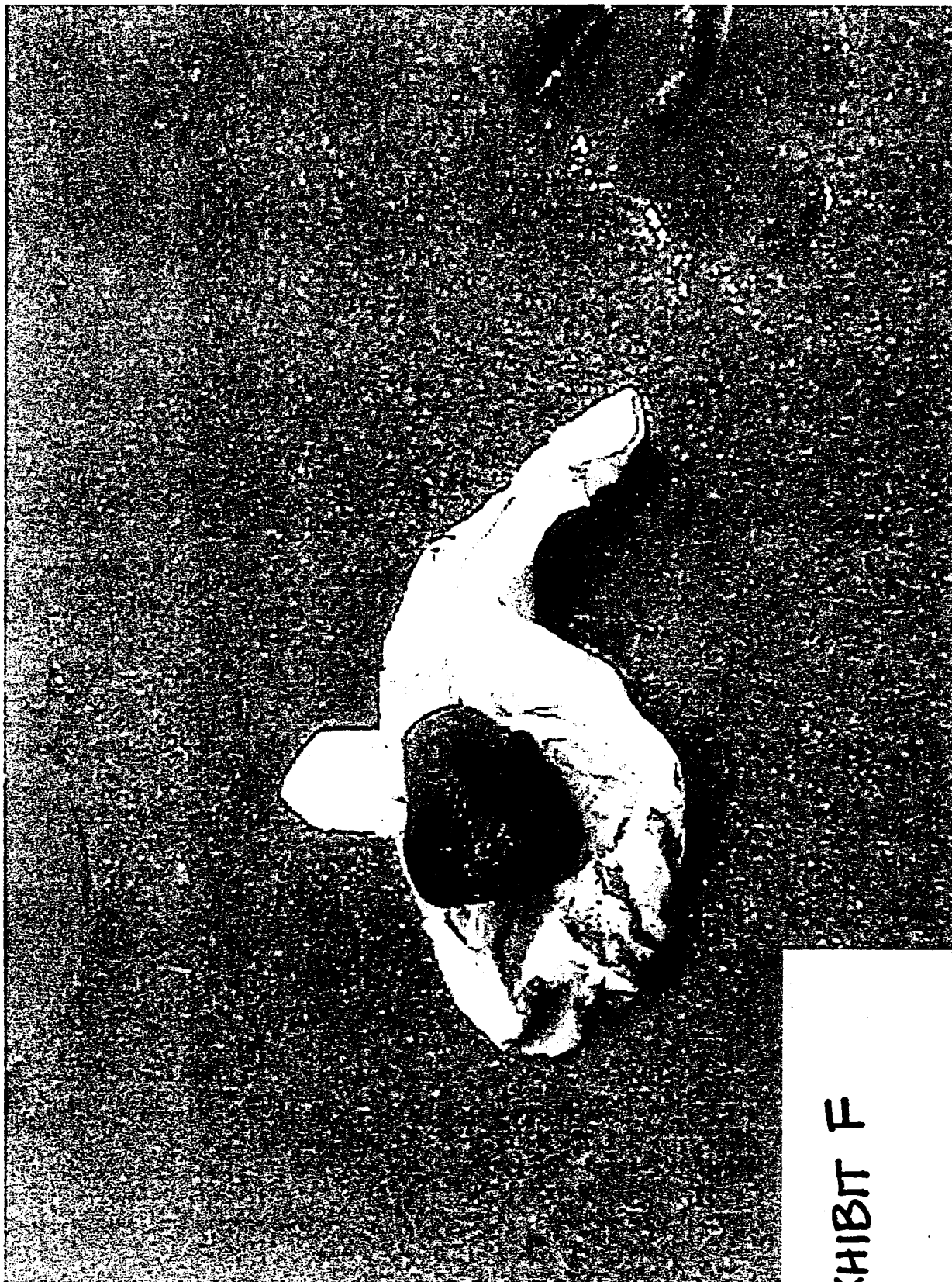


EXHIBIT F



EXHIBIT F

EXHIBIT F





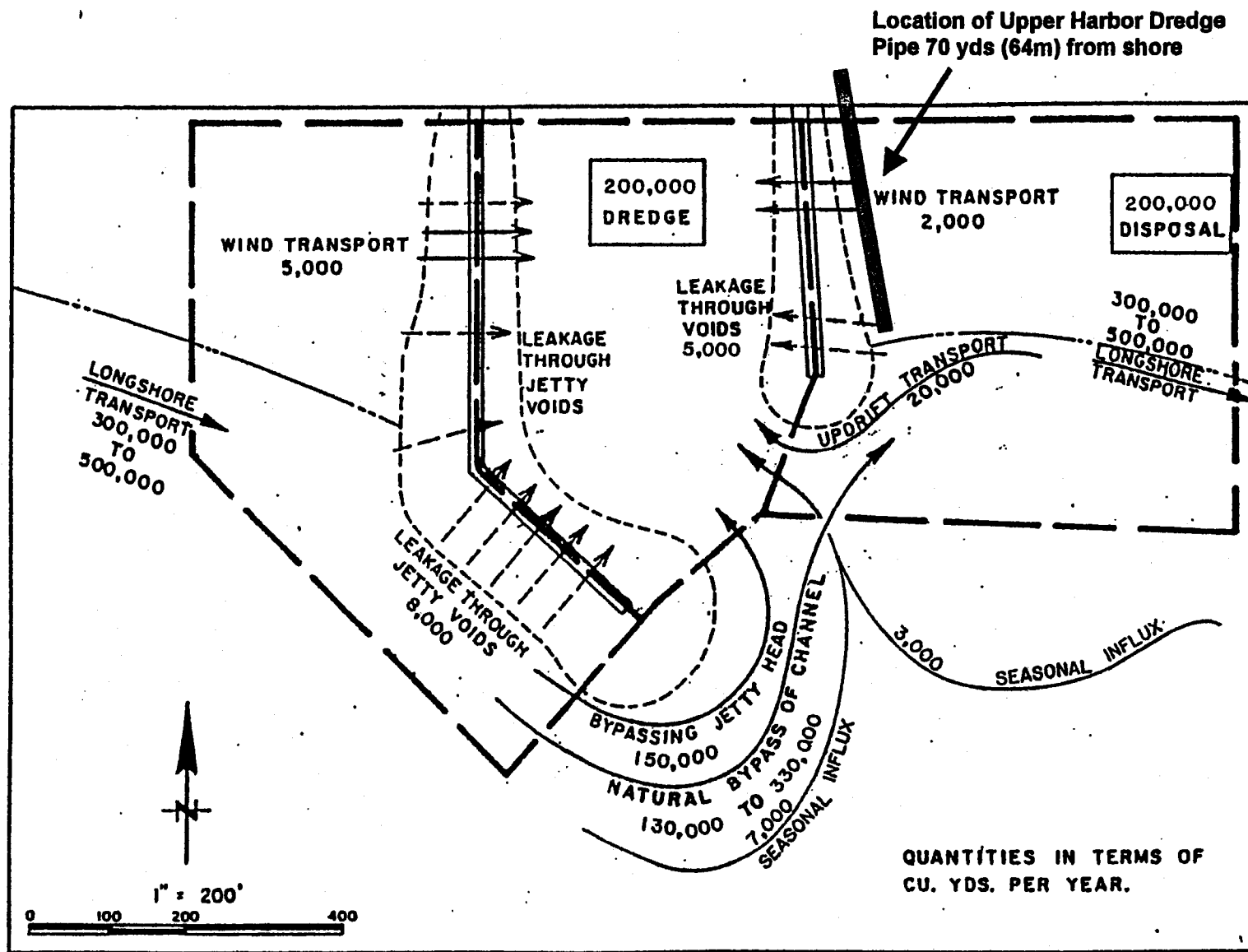


EXHIBIT F



EXHIBIT F





**SEDIMENT BUDGET  
SANTA CRUZ HARBOR ENTRANCE**

**FIGURE 2.3**

EXHIBIT H

3-15-05  
Picture taken



# EXHIBIT I

## Water and Sediment Data for Santa Cruz Harbor and Vicinity Santa Cruz County Environmental Health Services

Constituent	EPA Reg 9 Prelim. Remediation Goals: Residential Soil / Drinking Water	Reference	Sand	Reference, water	Beach sand at Discharge A	Beach sand at Discharge B	Sand, discharge site, one week later	Dredge Discharge First Sample	Dredge Discharge Second Sample	Channel Sediment	Area 2	Area 3	San Lorenzo River Sediment, Felton	Moran Lake Sediment	CCLEAN data, Monterey Bay sediment, 8 stations, 5 miles out.
		Seabright Beach		Seabright Beach	Twin Lakes Beach	Twin Lakes Beach	Twin Lakes Beach	Twin Lakes Beach	Twin Lakes Beach	SS-1 to SS-4	X dock area	Lower Harbor Composite			
Date	2002	Sep-03	Apr. 27-04	Apr. 27-04	Apr. 27-04	Apr. 27-04	May 3-04	Apr. 27-04	Apr. 27-04	Oct-00	Sep-03	Sep-03	12/3/90	2003	2001
Sand/Gravel %		96	99.5		99.4	99.4	99.2			86	50	70			
Sulfides	--	0.3									1160	39		54-887	
TOC %		0.15	0.15	0.00012	<0.10	0.15	0.12		0.001	0.54	1.9	0.63			0.61-0.95
arsenic ug/kg dry wt.	22000	3780	2450		<2530	2580	2700			3900	3200	3400	--		
arsenic ug/l	50->10			42				35	67						
cadmium ug/kg dry wt.	37000	359	<364		<379	<381	<384			<300	480	540	1,690		
cadmium ug/l	5			<1.0				1.2	3.8						
chromium ug/kg dry wt.	210,000	24000	13200		8700	8250	11400			22000	14000	13000	12,000	11,700-	
chromium ug/l	100			8.9				8.6	54					18,200	
copper ug/kg dry wt.	3,100,000	4370	<6070		<6310	<6290	<6400			8300	22000	10000	4,300	2,730-	
copper ug/l	1300			5.1				7.5	52					14,000	
lead ug/kg dry wt.	150,000	4330	<6070		<6310	<6290	<6400			5000	6800	7100	12,000	1,890-	
lead ug/l	15			5.2				2.5	19					20,600	
mercury ug/kg dry wt.	23,000	<20								<20	<50	<50	200	<20-55.2	
mercury ug/l	2														
nickel ug/kg dry wt.	1,600,000	7930								9200	10000	10000	--		
nickel ug/l	730														
seelenium ug/kg dry wt.	390,000	341								<100	297	294	--		
seelenium ug/l	50														
silver ug/kg dry wt.	390,000	<200								<200	<200	<200	800		
silver ug/l	100														
zinc ug/kg dry wt.	23,000,000	28400	9430		8580	9000	8770			27000	31000	65000	36,000		
zinc ug/l	5,000			<5.0				6.2	110						
total butyltins ug/kg dry wt.	18,000	<1.0	5.8		4.4	<1.27	<1.28			4.2	48.1	10.4			
total butyltins ug/l	11			<0.002				0.00376	<0.002						
total PAHs ug/kg dry wt.	58,000	<10.0	<12.1		<12.6	<12.6	<12.8			<14	1820	383		940-2,770	69-149
total PAHs ug/l	6.2			<5.0				<5.0	<5.0						
total chlordanes ug/kg dry wt.	1,600	<1.4	<0.61		<0.63	<0.63	<0.64			<1.4	3.2	<1.4		34-88	0.06-0.19
total chlordanes ug/l	0.19			<0.02				<0.02	<0.02						
total DDTs ug/kg dry wt.	1,700	<1.4	<0.61		<0.63	<0.63	<0.64			<1.4	6.3	<1.4			4.6-9.1
total DDTs ug/l	0.2			<0.02				<0.02	<0.02						
total PCBs ug/kg dry wt.		<14	<0.5		<0.5		<0.5	<0.5	<0.5	<14	<14	<14			0.3-1.0
total PCBs ug/l	0.5			<0.5		<0.5									
Blue-Significantly higher than background levels															
Red-Exceed human health objective															
CCLEAN data, Oct. 2001															
Analyte range of 8															

EXHIBIT I

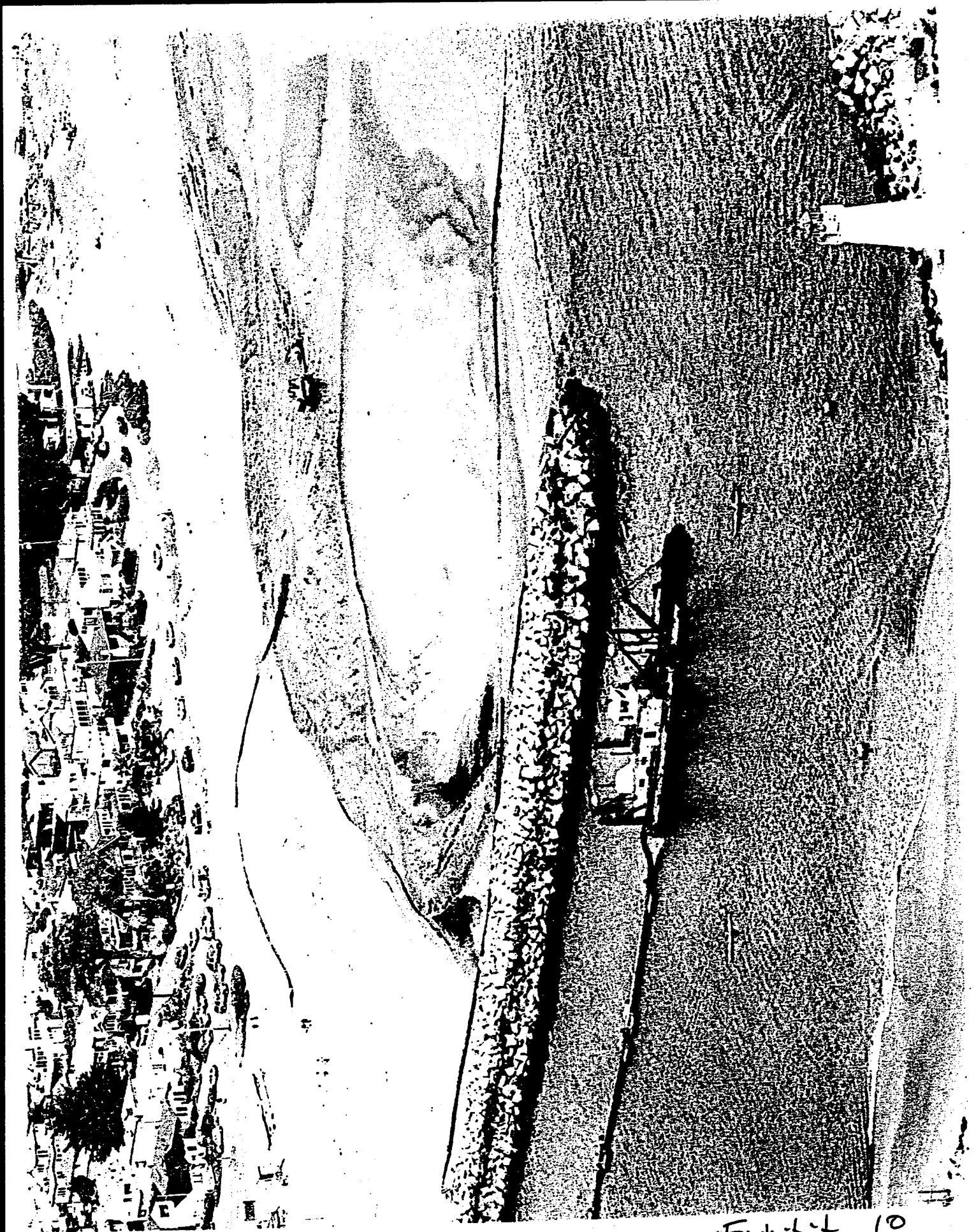


Exhibit 10  
Pg 27

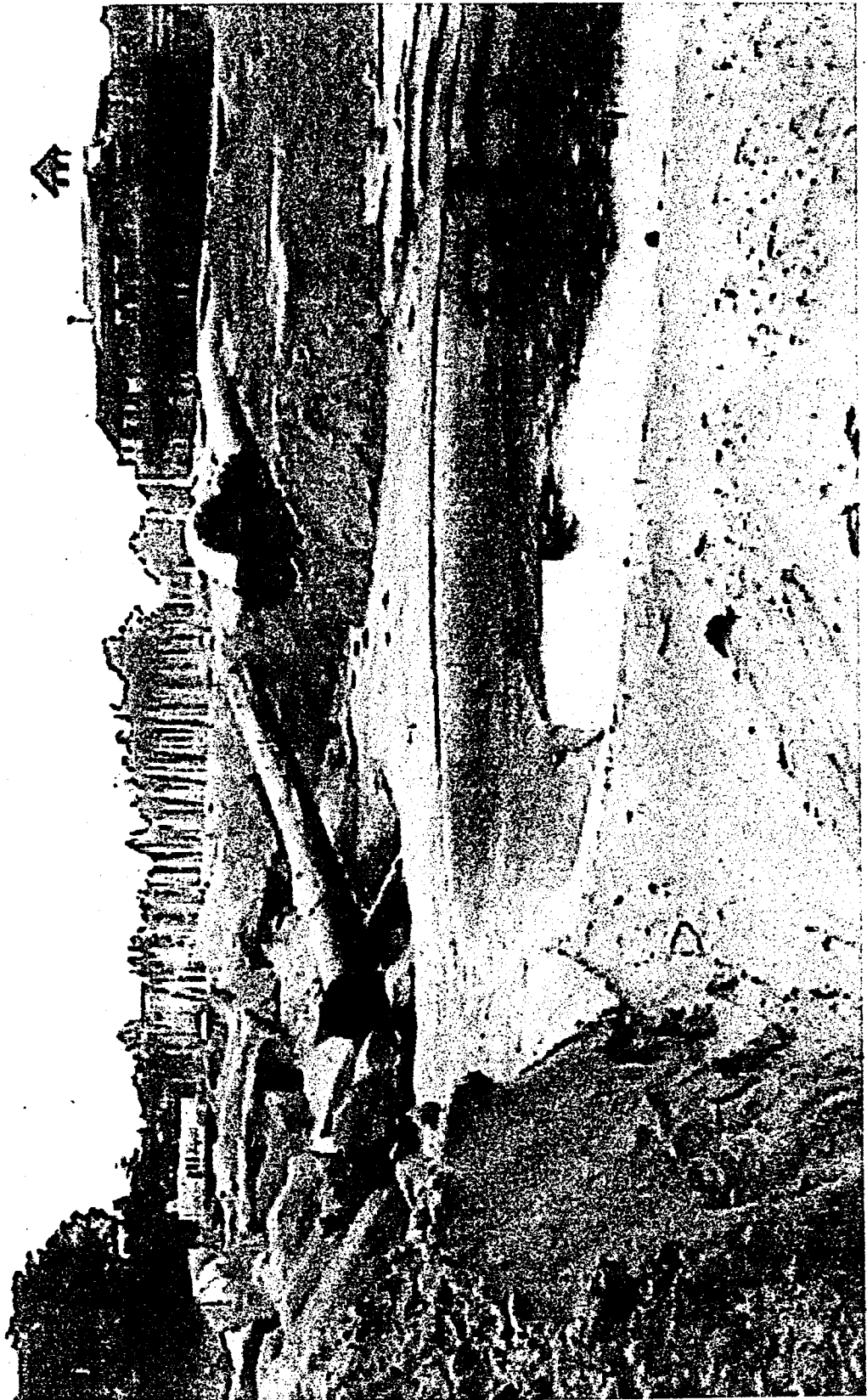




DREDGE PIPE

Exhibit  
10  
PX 29





2/20/2004

Exhibit 10  
pg 30





11-18-04  
picture taken

# EXHIBIT J



pg 32

3-05-026 (Santa Cruz Inner Harbor, Brading)

August 27, 2005

Ms. Susan Craig  
California Coastal Commission  
Central Coast District Office  
Santa Cruz, CA 95060

Re: Santa Cruz Harbor-Dredge Disposal Demonstration Application for Permit

Dear Susan:

Below are some question and some general comments that I have on the proposal by the Santa Cruz Port District to dispose of 10,000 cubic yards of sediment having between 50 and 80 % sand in the near-shore area at Santa Cruz.

1. There is a significant discrepancy in the data submitted by the Port District in the various reports and applications, regarding the characterization of the dredge material sediment in the North Harbor. Reports state the North Harbor sediment as having "less than 50 % fines", or between 50 and 80 %, and as low as 21 % and 27%. The clays and other fines content as well as the content of the full spectrum of contaminants adsorbed or otherwise associated with the clays is not well understood. The sediments deposited in the North Harbor are however those originated in the watershed above Arana Gulch which encompasses a very diverse land use, of very low sand contents, and its impacts aquatic organisms is very limited, and completely ignored in respect to human health and recreation on and near the beach.
2. The Dredge Disposal Demonstration is not justifiable.
  - What additional scientific information is expected to be gained by this effort which duplicates earlier demonstrations conducted earlier? The only difference is the larger scale.
  - How will information obtained in this demonstration be used to resolve the sediment control in the surface runoff in the Arana Gulch watershed?
  - Why does the demonstration project not address the identified lack of data pertaining to impacts on human health identified in the previous efforts?
  - Why take the human and aquatic environmental risk of using North Harbor sediments containing 50 % of clays and other fines (where surface runoff contaminants are adsorbed) to replenish the beach when it amounts to only 2 % or less of the total material available for beach replenishment?

The only obvious reason to permit the disposal of "a volume of sediment equivalent to the quantity generated by the Arana Gulch" is to enable disposal. Please explain what additional scientific information is expected to be gained by this effort which duplicates earlier demonstrations in a larger scale. Previous studies were limited to the effects on benthic organisms. The human health impacts of the disposal on water contact and ingestion on beach users, and other recreational exposures were not investigated. Why does the demonstration project, not address the identified lack of data pertaining to impacts on human health and on recreation identified in the previous costly efforts?

In its current form, the proposal only results in the partial solution of the sediment disposal problem that the Santa Cruz Harbor unquestionably has, rather than augmenting to the scientific knowledge of the impacts that surface runoff sediment from a multi-use watershed has on the public health. The disposal purpose is insufficient to justify the cost of the demonstration project because the Port District has alternative viable disposal sites clearly identified in its already approved 10-year permit -- upland disposal of North Harbor sediment containing less than 80% sand in a landfill or disposal off-shore in deep water at SF-14.

The issue of beach replenishment does not justify the demonstration project either. Of the total 10,000 cy of sediment, with a 50 % sand content, only 5,000 cy of sand would be available for beach replenishment. These 5,000 cy represents 1.5 to 2 % of the permitted 350,000 cy of at least 80 % sand material available from dredging the Entrance Harbor. Why take the human and aquatic environmental risk of using North Harbor sediments containing 50 % of clays and other fines (where surface runoff contaminants are adsorbed) to replenish the beach when it amounts to 2 % or less of the total material available for beach replenishment? The benefit of using the North Harbor material for beach replenishment is not justified. Would it be more acceptable to increase the permitted 350,000 cy by 10,000 cy? This would save the cost of the demonstration project, avoid waivers and deviations from existing permits, and more importantly, it would avoid disposing of the material of questionable quality in waters of the US.

3. The issue of wave energy in the month of October (as opposed to the winter months) is not addressed in the application.

The subject demonstration is proposed to be conducted in October (appropriately based on protecting salmonides). However, the Santa Cruz Port District has previously maintained that dredging and disposal of material from the North Harbor containing less than 80% sand should be done in winter months (i.e., times of high wave energy) to ensure that fine grain materials are carried off-shore.

4. The criteria for selection of location and depth of the disposal pipe.

My recommendation is for the Santa Cruz Port District, who unquestionably has a significant problem of disposal of runoff sediment in the North Harbor, to withdraw this application and not conduct any more costly demonstration projects that only partially resolve their immediate disposal issues, and redirect their efforts and corresponding avoided costs to aggressive participation in the permanent resolution of the prevention of sediments from entering the harbor. The long term solution, which would include all governing agencies, would be of great benefit and value in protecting both the overall environment, and specifically aquatic and human health.

In the interim, until the long term solution is found, the Santa Cruz Port District would use the currently authorized disposal sites or use offshore discharge by placing the dredge pipe much farther offshore, and at a greater depth for all the sediment collected in the entire North Harbor area. This would reduce both identified and still unidentified environmental impacts.

Thank you,

Isabel S. Gloege, P.E.  
13109 Regan Lane  
Saratoga, CA 95070