

Santa Cruz Littoral Cell Coastal RSM Plan

Log of Comments Received

Record of Comments Received to date:

This document is a record of all comments received during the RSM Plan development process (beginning January 2014). *Prepared by Brad Damitz, MBNMS. Last updated 6/18/2014.*

Note: This record includes a synthesis of comments received to date including input received at: Public Workshops, Stakeholder Advisory Group meetings, individual meetings with stakeholders, and comments submitted by email or written comment forms.

- There are a couple of planning projects along the SM County coastline currently in progress.
 - a. County and CalTrans jointly performing a sand study at surfer's beach in El Granada and in developing a stabilization plan at the "at risk" highway location. Sheet piling and rock slope protection are being contemplated.
 - b. On April 22nd there will be a presentation by California Regional Water Quality Control Board on Sediment Source Analysis for the Pescadero/Butano watersheds at the RCD's HMB office.
- San Mateo County is currently working on developing some short-term approaches to address erosion and retreat of the bluff just south of the Pillar Point Harbor breakwater at Surfer Beach. Our focus is to support the regional bike trail and highway from being undermined by ongoing erosion from wave action, surface runoff and pedestrian use. I have looked and considered a number of preliminary options from RSP, to retaining wall for the short term and relocation of the highway along with a component of managed retreat as a possible long-term approach. At this point we are working to develop a cooperative agreement with the county for this site and do not have a scoped project."
- There is a draft agreement between CALTRANS and the County to construct a 150' sheet pile wall as well as improve about 400' of the coastal trail (not sure how or where), and create better beach access with stairs leading from the trail to the beach. Really trying to construct before the winter storms hit. Admits a bit optimistic but they are shooting for it given that one good storm could take out part of the highway."

Santa Cruz Littoral Cell Coastal RSM Plan

Log of Comments Received

- Glad to see Elkhorn Slough on the map and hope it stays as a priority. We have a lot of studies and modeling that has been done on the slough. Let me know if any of this would be useful.
- The California seafloor-mapping program is putting together a series of offshore geology maps and they are currently working on the Santa Cruz sheet. These maps have updated data on offshore sediment thickness which could be useful for potential nourishment sources and sediment budget studies.
- It would be useful to encourage a review/update (USACE) of the Griggs et al. sediment budgets. The numbers are probably at least a decade old and new data should be available (include SC harbor dredging numbers).
- The USGS historical shoreline positions for CA are being updated using recent lidar data and should be available in the next several months.
- Some moderate storms in Feb (large but not extreme waves and high tides but not king tides) flooded many roads and parking areas in Seacliff, Rio Del Mar, Capitola, and Corcoran Lagoon in SC. Under SLR this could be expected to be a more regular occurrence.
- Refer to the Existing Conditions Report (Feb. 2014), particularly Chapter 5 Natural Hazards and Shoreline Erosion, sections 5.4 Shoreline Hazards, 5.3 Flood Hazards, and 5.2 Geologic and Seismic Hazards.
- As you probably know, San Mateo County will be organizing a sea level rise working group shortly, regarding SLR adaptive responses in/by the County, its various local jurisdictions, and others. This will naturally apply to both coastal and bay shorelines. Don't know yet how you and colleagues see the littoral cell effort relating to this San Mateo initiative and vice versa, but there should clearly be a close link one way or another.
- Thanks for a good meeting yesterday. I want to follow up and let you know about a few things that Santa Cruz County has been working on that might help with the development of the sediment management plan. You might already be aware of some of these.
 - Coordinating on a sea level rise / coastal vulnerability analysis

Santa Cruz Littoral Cell Coastal RSM Plan

Log of Comments Received

- Work with a group called Natural Capital to assess coastal vulnerability as it relates to water planning. I've attached the results of that effort; feel free to get in touch if you would like more information.
 - The County recently finished up the LiDAR data layer, which has incredible resolution. You may want that if you don't have it already, though you'd have to come by with a hard drive to get it as it's a huge file.
 - The County's fisheries resource planner and has done a lot of work on lagoons and is currently involved with a project on Scott Creek. It seemed to me from yesterday's meeting that beach nourishment was a focus of the plan. But, as others mentioned, lagoons are critically important to a number of T/E species, and sediment management could potentially have an impact on lagoon function.
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- Sediment Sources: San Lorenzo River. Historically this river was mined of sand for many years but was stopped by an environmental group Friends of the River. We are currently involved with the Corps on a flood control project under construction. This project started in the 1960's and is still going on. One of the last thing to deal with is looking at the flood carrying capacity of the project over a 50 year life and including sea level rise. In a perfect world this river would be dredged and the material would be placed on the beach. Because of all of the regulatory agencies that would have to agree and permit and agree on a beach nourishment project this alternative is a difficult goal to achieve. We are actually evaluating alternatives to dredging including raising the levees to provide the flood protection without the expense of annual dredging. The regulatory requirements are discouraging a potential beach nourishment supply.
 - One of the problems we are dealing with this the sediment buildup on the upstream side of the Santa Cruz Harbor has widen the annual sand berm that develops across the San Lorenzo River Mouth. During the summer, the berm cannot legally be breached and causes water to backup behind the berm, floods basements, the water breaks out parallel to the boardwalk subdividing the beach and creating operational and safety issues for our life guards to protect the users of the beach. Unfortunately, this sand berm is routinely illegally breached, creating high velocity water racing to the bay, creating an unsafe condition.
 - I am curious how much sand is lost to the Canyon each year? Is there a way to capture this material and is there a better use of this material?
 - We have seen from the placements of structures the amount of material that flows in the cell. Is that a constant flow in the entire cell. If so in an ideal world, if you wanted wider beaches, you would create a series of groins, starting close to the

Santa Cruz Littoral Cell Coastal RSM Plan

Log of Comments Received

canyon let it fill up, build the next one, let it fill up and continue. It seems the order I you construct these are critical so there is not a negative impact down stream.

- Is it possible to move the Sand mining operation closer to the canyon? So there impacts are minimized on the downstream system.
- Fort Ord is not a normal situation in Santa Cruz, since the cost of property is so high and very few people own enough property along the coast that allowing the erosion to just occur and allow bluffs to retreat. Most people and cities are in the mode of protecting property and since erosion events are periodic not longterm averages, so a lot of the armoring is done under emergency protection projects. These types of events are episodic and may not occur for 10 years and are looked at a successful. Unfortunately these solutions are very localized and our reactive, but with limited resources available, there is not funding for the ultimate solution.
- I have worked at Ano Nuevo for about 7 years, over that short time, we have seen significant loss of sand from the dune fields. There has also been quite a bit of erosion along the shore between Ano Nuevo Island and the mainland as well as of the island itself. At the same time, vegetation, primarily willow, continues to encroach and stabilize the area. We believe this is due, at least in part, to the impact of neighboring agricultural irrigation to raise the water table. Because the dune field and associated beaches are a primary rookery for the Northern Elephant Seal, we have wondered if the loss of the habitat will have a negative impact on the productivity of the Ano Nuevo colony. While my experience is anecdotal, others have worked at Ano Nuevo longer than I and have seen even more dramatic changes.
- At Moss Landing Harbor I can tell you that there is erosion occurring at the federal entrance channel between and under the jetties; some or all of this may be from the lengthening of the Monterey Canyon which you can probably see is heading straight for the Harbor entrance.
- As for threatened infrastructure, aside from the jetties there is no infrastructure at the Moss Landing Harbor on the ocean side. North of the north jetty is State Parks and their parking lot is eroding but not on the ocean side; south of the south jetty there are buildings along the beach belonging mostly to MBARI. They do not appear to be at risk from coastal erosion at this time, but you may wish to contact someone at MBARI for specifics. Further south and ironically, currently under

Santa Cruz Littoral Cell Coastal RSM Plan

Log of Comments Received

construction is the San Jose State University (Moss Landing Marine Labs) building next to the MBARI building. Those are the only buildings on the seaward side of Moss Landing Harbor. Again, thank you for the information and for the invitation;

- Pescadero Watershed is certainly a priority for the County due to significant sediment deposition problems in the Marsh and subsequent flooding in the Town of Pescadero, and there are opportunities due to the County's significant property ownership. Here is a link to County Parks Sediment Assessment of the Pescadero Park Complex done by PWA under a CA Department of Fish and Game grant in 2002. San Mateo County Parks is a willing property owner to receive funding to solve historical sediment problems.
<http://parks.smcgov.org/sites/parks.smcgov.org/files/documents/files/Sediment%20Assessment%20for%20Pescadero%20Parks%20Complex%20-%20Final.pdf>
- In terms of sediment sources in the Pescadero Watershed the Monterey Bay National Marine Sanctuary Sediment Assessment identified Pescadero Park complex as a major sediment source in that particular watershed due to historical logging roads constructed prior to the County acquiring. PWA was involved in that report as a sub to ESA.
<http://montereybay.noaa.gov/resourcepro/reports/sedrep/pescadero.pdf>
- The County also does not maintain any of the creek mouths, these are all State Parks properties (e.g. San Gregorio, Wadell Creek, etc.).
- There are several unique fossil localities between Pillar Point and Moss Landing that could be affected by projects designed to halt or slow coastal erosion. I'll make a brief list of the localities, starting from Pillar Point and heading south. A more detailed description can be given later if you're interested.
 - Purisima Formation, Moss Beach/Fitzgerald Marine Preserve (this might be just outside the defined area). Sparse vertebrate invertebrate fossils exposed in wave cut platform and base of cliff. This is a historically important invertebrate fossil locality.

Santa Cruz Littoral Cell Coastal RSM Plan

Log of Comments Received

- Purisima Formation, Miramontes Point. Sparse vertebrates and invertebrates occur within the cliff, wave cut platform, and boulders in the vicinity of the Ritz Carlton Hotel.
- Purisima Formation, Purisima Creek. Sparse vertebrates and invertebrates occur within the cliffs north and south of the mouth of Purisima Creek. No public access - this is the one locality I've never had a chance to visit personally. This is a historically important invertebrate fossil locality.
- Purisima Formation, Mussel Rock and Tunitas Beach. Sparse vertebrates and invertebrates occur within the cliffs north and south of the mouth of Tunitas Creek.
- Purisima Formation, Pomponio, Pescadero, and San Gregorio State Beaches. The entire section of cliffs between San Gregorio creek and the northern parking lot at Pescadero State Beach is a continuous, richly fossiliferous outcrop of the Purisima Formation. A diverse assemblage of marine mammals, sharks, birds, bony fish, mollusks, and crustaceans has been recovered here (mostly through my own fieldwork). New fossils are continually eroding out of the cliffs here, and this continues to be an important locality for collecting fossil vertebrates. This is the type locality of the extinct baleen whale *Balaenoptera bertae*.
- Purisima Formation, Ano Nuevo State Park. Cliffs of the Purisima Formation on the north side of the park near Green Oaks Creek, and cliffs on the south side of the point continuing southeast past Finney and Elliot Creeks. Sparse vertebrates and abundant fossil invertebrates occur within the cliffs. This is a historically important invertebrate fossil locality.
- Purisima Formation, Westcliff Drive, Santa Cruz. Exposures of the Purisima Formation between the foot of Merced Avenue and Almar Avenue. Abundant vertebrate fossils, including fur seals, walruses, dolphins, baleen whales, sea cows, sharks, birds, and bony fish. This is another important vertebrate fossil locality.
- Purisima Formation, Point Santa Cruz. These cliff exposures have yielded some sparse fossil vertebrates, including the type specimen of the fossil walrus *Dusignathus santacruzensis*. This is a historically important fossil vertebrate locality.

Santa Cruz Littoral Cell Coastal RSM Plan

Log of Comments Received

- Purisima Formation, Opal Cliffs. Cliff exposures between Soquel Point and the Capitola Pier. These exposures (cliff and wave cut platform) have yielded an enormous collection of fossil marine mammals, including type specimens of a fossil dolphin (*Parapontoporia wilsoni*) and a fossil baleen whale (*Herpetocetus bramblei*). Other marine vertebrates (sharks, birds, bony fish) are also common, and this is an important invertebrate fossil locality.
- Purisima Formation, cliffs between Capitola beach and Seacliff State Beach. These cliffs have yielded one of the most important invertebrate fossil assemblages from Northern California, in addition to abundant fossil vertebrates, including whales, dolphins, fur seals, walruses, birds, sharks, and bony fish. This is one of the most historically important invertebrate fossil localities in Northern California.
- We need to define what constitutes a Beach Erosion Concern Area (BECA)? The presentation keeps emphasizing BECA's – but they are mostly looking at infrastructure threats. There are areas eroding that may not be of a concern. What are the criteria for identifying something as critical or a BECA? Need to determine the criteria to prevent everything from being considered a BECA or critical area. Recommend including biological impacts as well in the criteria for BECA listing.
- We need to correct the Waddell Bluffs BECA description to include the current Caltrans sediment management activities at the site. Currently, Caltrans places sediment that is captured by the fencing into the nearshore, per an agreement with the Monterey Bay National Marine Sanctuary (?). Caltrans also
- An important biological impact consideration is possible source areas (areas where sand is built up, sand mining). Need to look at both source and receiving areas.
- The plan should consider the range of sediment budgets, rather than precise numbers. During wet times, there is much more sediment coming down the rivers than during dry years. During long years of drought there is not getting much sediment on beaches. This is especially important in a river-dominated sediment supply. Episodic events are very

Santa Cruz Littoral Cell Coastal RSM Plan

Log of Comments Received

important – average year is not representative of what we are dealing with. Some things are event-oriented. Often, there is not funding to do a coastal solution, so projects revert to less ideal projects (e.g., rock). When dealing with average sediment budgets, short term average means nothing in the geological world. Dealing with a variety of things that can change – trying to predict the future is going to be difficult.

- USACE is working on sediment transport budget in San Lorenzo River – this may be useful.
 - *Sand is being deposited between Hwy 1 and Water Street Bridge (approx 2,000 cy/yr) and causing channel capacity issues.*
 - *USACE will model sediment transport for 3 (dry, normal, wet) discharge scenarios. Work is scheduled for late spring/early summer 2014, and could be incorporated into the CRSMP.*
- What about harvesting sand from the canyon? It should be considered. A study was sanctioned by USACE to look at viability of collecting sand from the canyon and reusing it in other areas in Monterey Bay, recommending areas where it can be used. It recommends areas north of the Moss Landing jetty / reservoir area. However, there are opposing arguments that: harvesting sand from near the canyon head may reduce erosion of the canyon from mobilized sand slurries, or perhaps the sand provides some cover/protection from further erosion of the canyon head by wave action. The report is available on CSMW website. There may be people who want to invest in harvest sand from the canyon and getting sand closer to the areas which need it. But, the canyon is eroding pretty heavily – almost to the point of the breakwater.
- Is the plan looking at the potential of wave energy to protect against erosion (wave energy infrastructure)?

Santa Cruz Littoral Cell Coastal RSM Plan

Log of Comments Received

- For soft engineering solutions – need to know transport rates. Put sediment on beach – how long does it last (10 years – good use of \$\$; 2 years – not so good). If moving away from hard engineering solutions.
- New Brighton Beach area can have a series of groins that wouldn't cause down coast problems. There is a strong littoral drift there.
- If you look at Santa Cruz County up to Año Nuevo, there is not much sand, mostly rocks/mud. North of Año Nuevo is not as subject to erosion. A large portion of sediment that comes to beach (about 95%) is from rivers.
- Another option is to consider gravel and cobble to reduce erosion on the beach – build up a cobble beach instead of using a revetment. This is occurring in other areas (in the Pacific Northwest).
- Some watersheds are impaired by excess sediment. This information may help refine numbers in sediment budget. Future studies could include ways to reduce human-induced increase sediment. Typically this is finer grained sediment; but overall there is an increase sediment quantity.
- Cal State Water Mapping Project (USGS/CSUMB – Moss Landing). Maps show potential offshore sand resources.
- Offshore sand resources. There is video of the seafloor in this area. Seafloor base with sediment grain size. Wave modeling for all California waters could be used to model inshore areas. Seabed characterization is all available online (USGS Seabed database).
- COSMOS – looking to bring this up into Central California – can add in erosion hotspots in the future.
- Do something! Enough studies and reports.

Santa Cruz Littoral Cell Coastal RSM Plan

Log of Comments Received

- Need state legislation to completely ban building in any area which might be threatened by erosion in the next 100 years.
- There is an excess of sediment in every creek within the littoral cell.
- Miramar Road is having major erosion issues and has not received adequate attention.
- The Surfer's Point managed retreat project in Ventura was very successful. This type of management option should be considered for the Santa Cruz RSM Plan,
- Pescadero Lagoon: Highway 1 largely restricts exchange between Pescadero Lagoon and the open coast. It is suggested that the team look into the recent work of the Pescadero Lagoon Science Panel. This panel was "formed in early 2013 to evaluate the physical and biological characteristics of the Pescadero lagoon and marsh ecosystem and to consider recommendations regarding future management actions there. Specifically, the panel is charged with reviewing existing literature and data related to the Pescadero system and similar coastal estuarine systems. From this literature and data review, they will draw conclusions about how the Pescadero marsh and lagoon ecosystem is functioning."
(http://www.parks.ca.gov/?page_id=27304).
- Scott Creek Beach: The current configuration of the Highway 1 Bridge at the mouth of Scott Creek has constricted the natural movement of the estuary mouth and presents a barrier to passage of several listed fish species. Caltrans is planning to replace this bridge, and is currently in the process of evaluating several bridge replacement alternatives. A contractor (ESA-PWA) is preparing an evaluation of current conditions at the site in support of this effort, and there are a number of proposals to restore a more natural connection between the estuary and ocean.
- San Lorenzo River: There was been significant urban development in the San Lorenzo River floodplain, and the river has been channelized to minimize flood risk. The mouth of the river is also subject to closure in summer months when excess sediment (which accumulates due to location of Santa Cruz Harbor west jetty) blocks the river from flowing to the ocean. This blockage causes water to back up and flood nearby basements and other infrastructure. Bypassing the sand that has

Santa Cruz Littoral Cell Coastal RSM Plan

Log of Comments Received

accumulated west (updrift) of Santa Cruz Harbor to Twin Lakes State Beach should alleviate the closure of the San Lorenzo River mouth and reduce beach erosion downdrift of the harbor.

- Twin Lakes Beach: This beach (and others downdrift) are eroding due to a sediment deficit induced by the presence of the Santa Cruz Harbor jetties. Ross and Ivano mentioned that the Ocean Protection Council was funding a infrastructure vulnerability study for the area,
- There is a general lack of understanding regarding sediment sources and transport in the Pescadero Lagoon region, and there are questions about the nature of the established littoral cell boundaries. Ivano also noted that there is interest in learning how the Pescadero area marshes will respond to sea level rise. Will the marshes and adjacent beaches have sufficient space to migrate inland? Will infrastructure (e.g., Highway 1) impede the inland migration of marshes? Note that Griggs et al. (2005, p 255) discusses this issue as well.