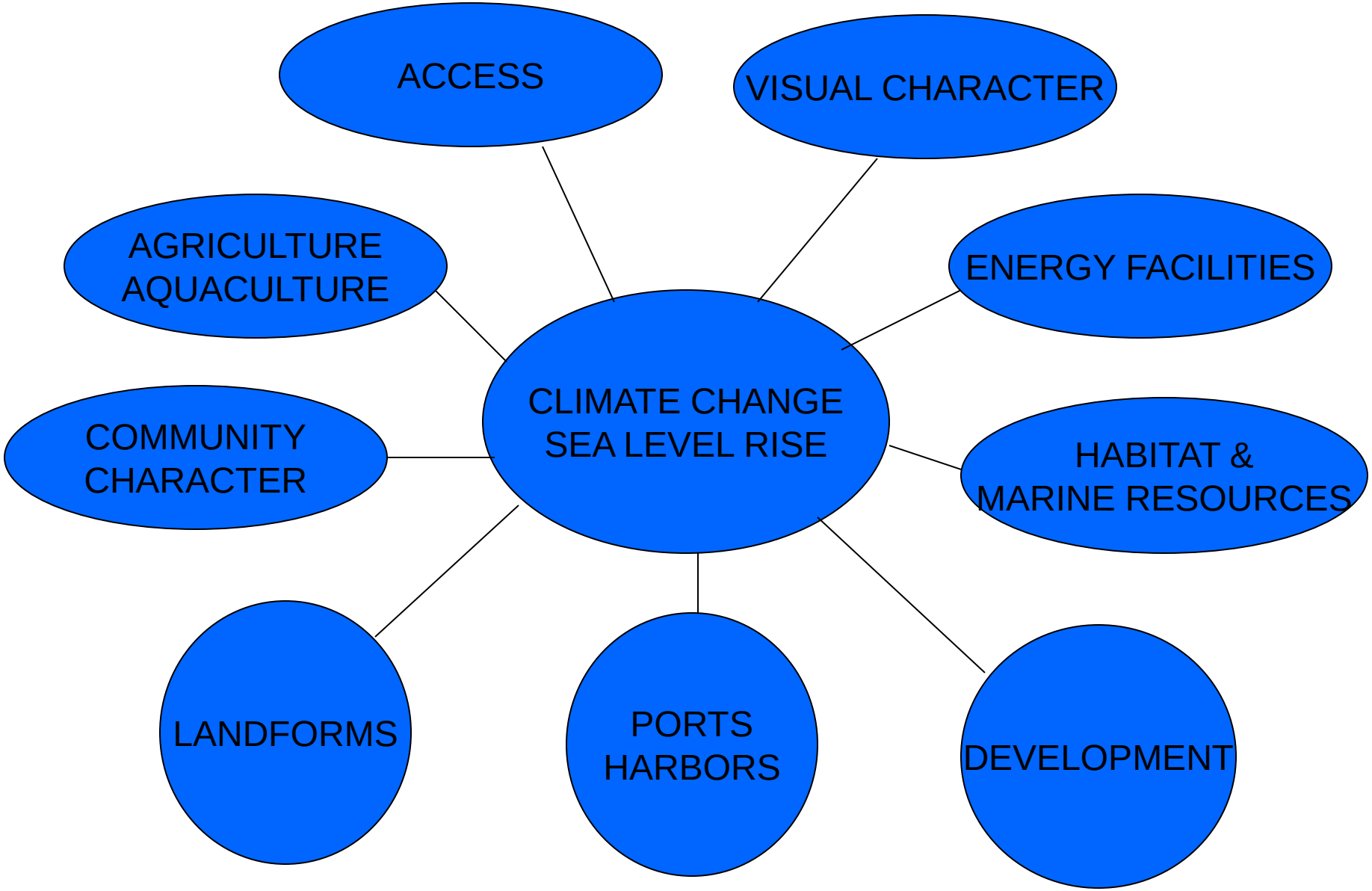
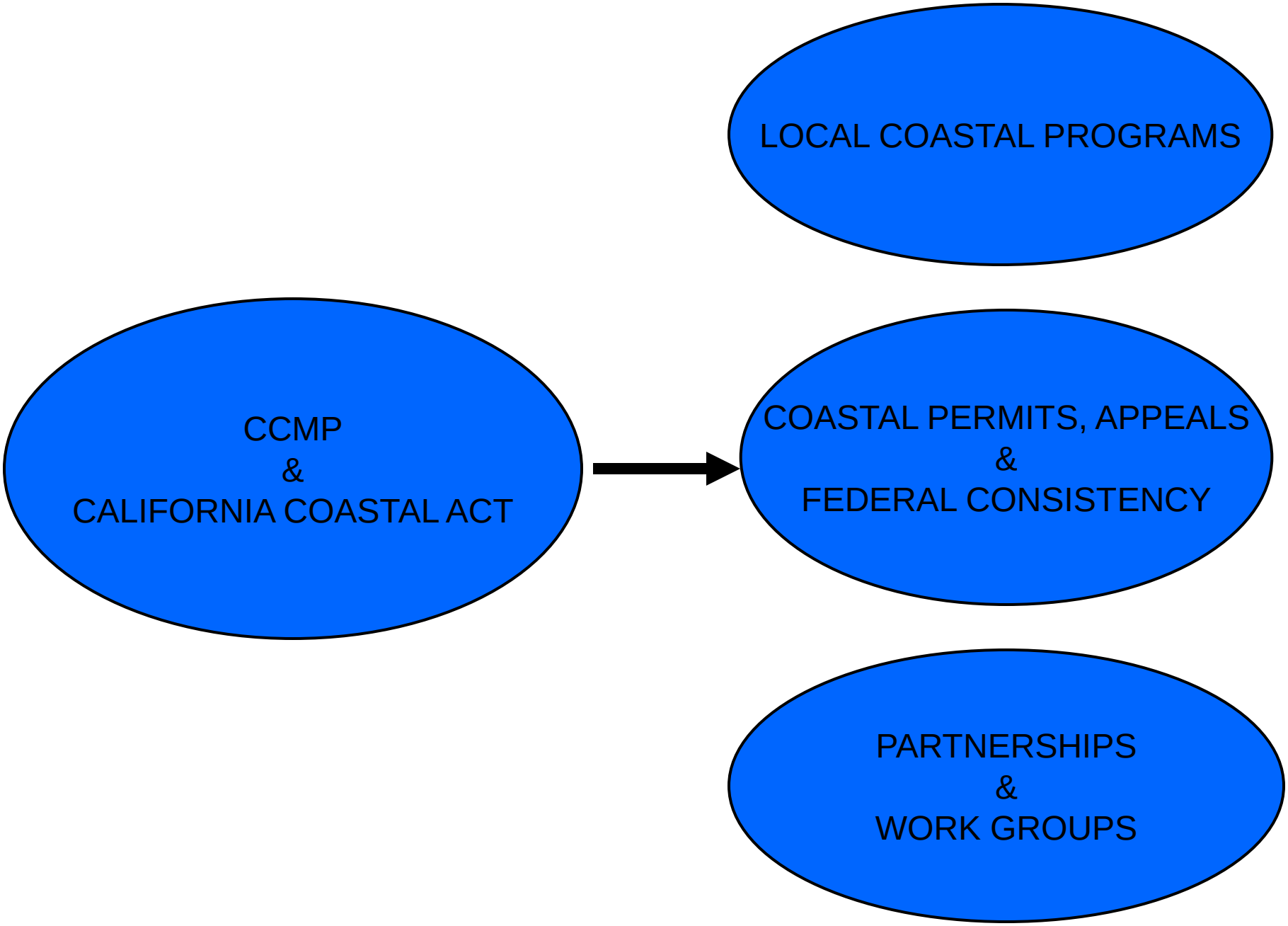
California Coastal Commission: Current Approaches to Addressing Sea Level Rise Through Planning, Permitting and Partnerships

Western Coastal Program Managers Meeting
January 5, 2011

Michelle Jesperson, Federal Programs Manager


ACCESS
VISUAL CHARACTER
AGRICULTURE
AQUACULTURE
ENERGY FACILITIES
CLIMATE CHANGE
SEA LEVEL RISE
COMMUNITY
CHARACTER
HABITAT &
MARINE RESOURCES
LANDFORMS
PORTS
HARBORS
DEVELOPMENT


LOCAL COASTAL PROGRAMS
CCMP
&
CALIFORNIA COASTAL ACT
COASTAL PERMITS, APPEALS
&
FEDERAL CONSISTENCY
PARTNERSHIPS
&
WORK GROUPS

LCPs and Sea Level Rise

SUGGESTED MODIFICATIONS:
Santa Barbara County LCP Amendments
(http://documents.coastal.ca.gov/reports/2010/11/Th6b-s-11-2010.pdf)

- Coastal hazards analysis must consider sea level rise
- Use of best available scientific information for coastal hazards
- At a minimum, sea level rise scenarios shall assume:

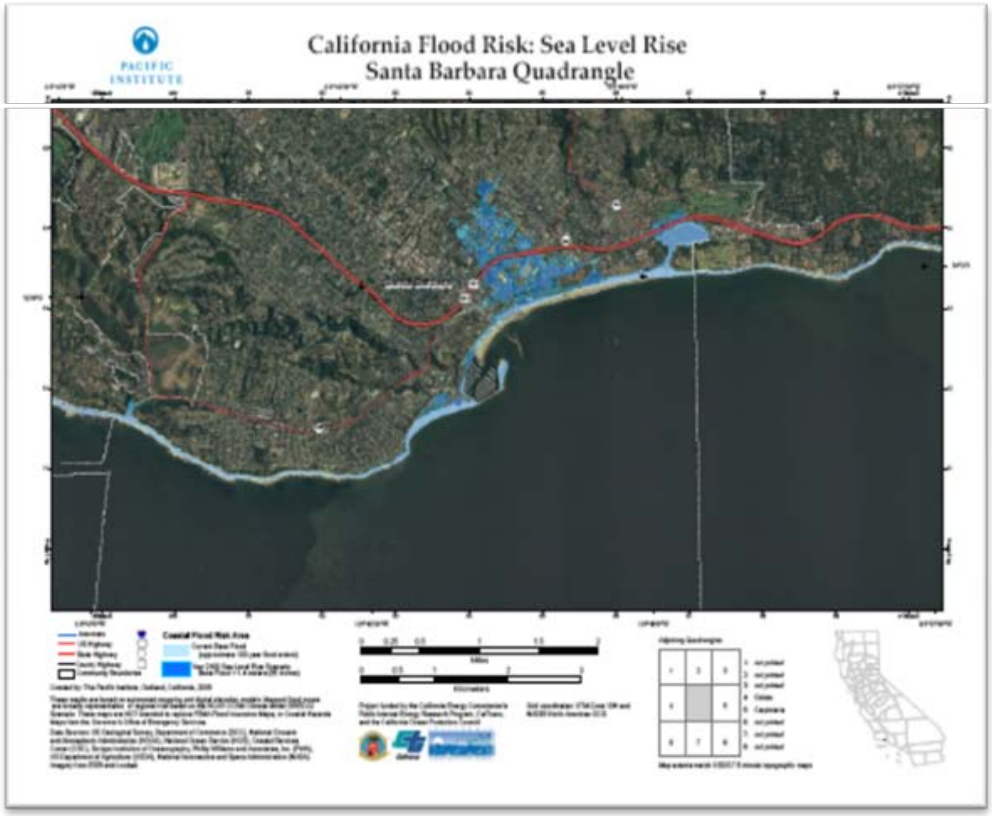
- 16 inches (1.3 feet; 0.4 meters) by 2050
- 55 inches (4.6 feet; 1.4 meters) by 2100

(NOTE: To date, the County has not yet accepted these suggested modifications)

Community of Carpenteria and Salt Marsh

Photo courtesy of California Coastal Records Project, Copyright © 2002 – 2010 Kenneth & Gabrielle Adelman

LCPs and Sea Level Rise



Expected inundation areas in Santa Barbara from rising sea level

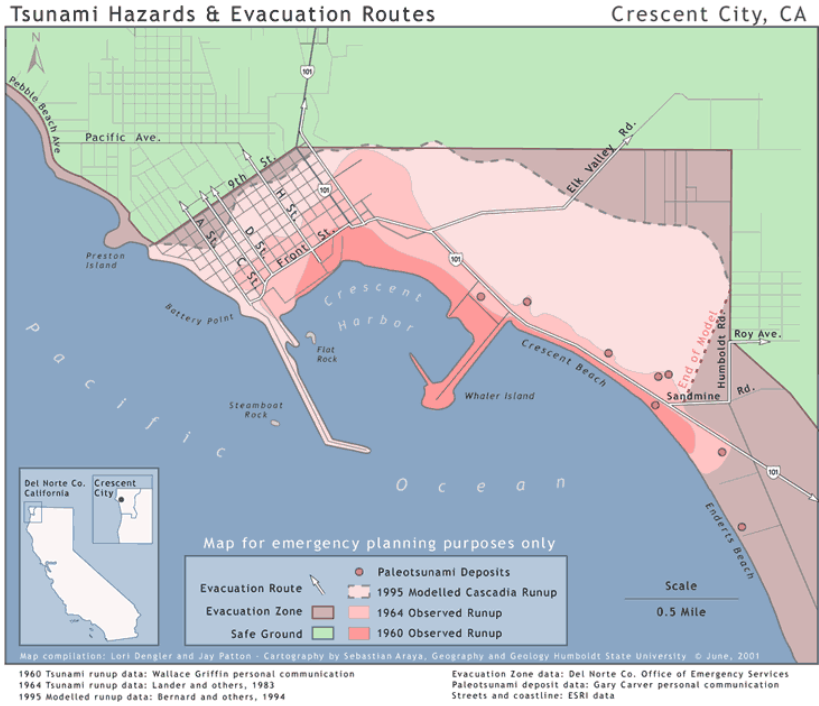
Source: Heberger et al (2009)

LCPs and Sea Level Rise

SUGGESTED MODIFICATIONS:
Crescent City LCP Amendment
(http://documents.coastal.ca.gov/reports/2009/6/F4a-6-2009.pdf)

- New residential subdivisions in tsunami inundation hazard areas shall be designed and sited with one foot of freeboard above the maximum credible run-up elevation **taking into account sea level rates of three to six feet per century**.

- For tsunami resilient design purposes, **a minimum sea level rise rate of 3 feet per century** shall be used when combined with a maximum credible tsunami condition**.**



Permits and Sea Level Rise

A structure should be safe from erosion, flooding and wave run-up over its design life

BEACH LEVEL BUILDING EVALUATION FACTORS

- Erosion for 75 or 100 years (life of structure)
- Seasonal Beach Changes
- Water levels at high tide
- Sea level rise for 75 or 100 years
- Wave run-up from 100-year storm event

Permits and Sea Level Rise

NEW BLUFFTOP BUILDING FACTORS

Incorporate Building Setbacks that include:

- Slope Stability with a Factor of Safety greater than or equal to 1.5
- Erosion for 75 or 100 years, based upon projected future sea level for maximum long-term erosion rate in region

Coastal erosion rates will increase greatly with accelerated sea level rise

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Permits and Sea Level Rise

NEW SHORE PROTECTION

Considering Sea Level Rise in Design of Shore Protection

Limiting time span of permit to 20 or 25 years to allow re-examination of project for new conditions, such as changes to anticipate sea level

Project Example:

Pleasure Point, County of Santa Cruz, CA

Photo courtesy of California Coastal Records Project, Copyright © 2002 – 2010 Kenneth & Gabrielle Adelman

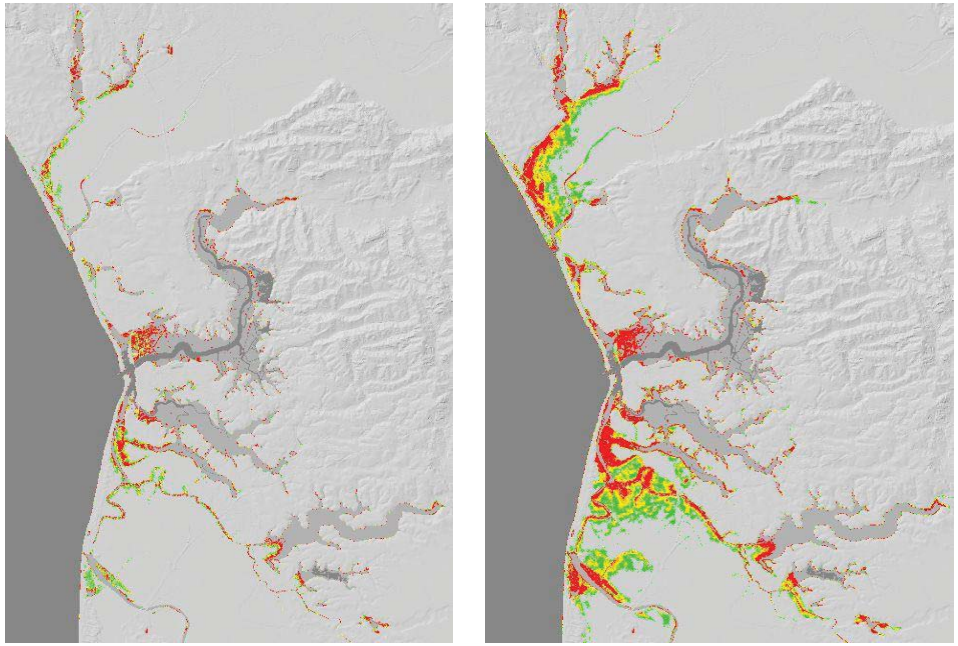
Permits and Sea Level Rise

Road
Relocation

Wetlands and Sea Level Rise

Wetland Restoration

- Maintain, restore or enhance ecosystem function
- Maintain or modify relative sea level conditions through management of water level and sediment additions

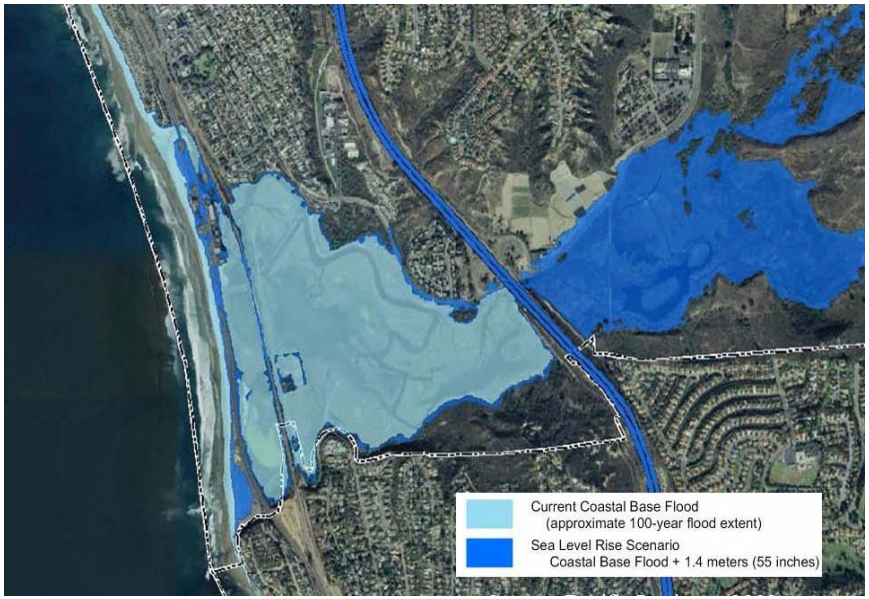


Elkhorn Slough in 2050 and 2100, for different sea level rise scenarios. Red shows areas inundated under a low rise, orange for medium rise and green for maximum rise of 1 meter after 100 years.

From Van Dyke and Watson, *Technical Overview: Tidal Marshes and Sea Level Rise in Elkhron Slough*.

Wetlands and Sea Level Rise

San Elijo Lagoon Restoration Project



Year 2100 Scenario Under 100-Year Flood and High Tide Conditions

Source: Moffatt- Nichol Engineers, San Elijo Lagoon Restoration Project, *Draft Report Sea Level Rise Analysis*, prepared for the San Elijo Lagoon Conservancy; Preliminary modeling by Richard Gersberg, UCSD, as part of: "*Global Climate Change: Sea-Level Rise, Critical Coastal Habitats, & Coastal Water Quality in the San Diego Region*"

Project Objectives:

1. Incorporate sea-level rise projections in their planning and engineering;
2. Physical restoration of lagoon estuarine hydrologic functions;
3. Biological restoration of habitat and species within the lagoon; and
4. Management and maintenance to ensure long-term viability of the restoration efforts

Partnership Efforts

- Climate Action Team's Coast and Ocean Resources Work Group (CO-CAT)
- Coastal Sediment Management Workgroup
- Regional Efforts

Next Steps

- Policy guidance on sea level rise for staff and applicants
- Produce a web-based guidance document, “Climate Change and the California Coastal Act – A Guide to Addressing Coastal Act Issues”
- Regional Workshops
- New Coastal Fellow for 2011- 2013

QUESTIONS?

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