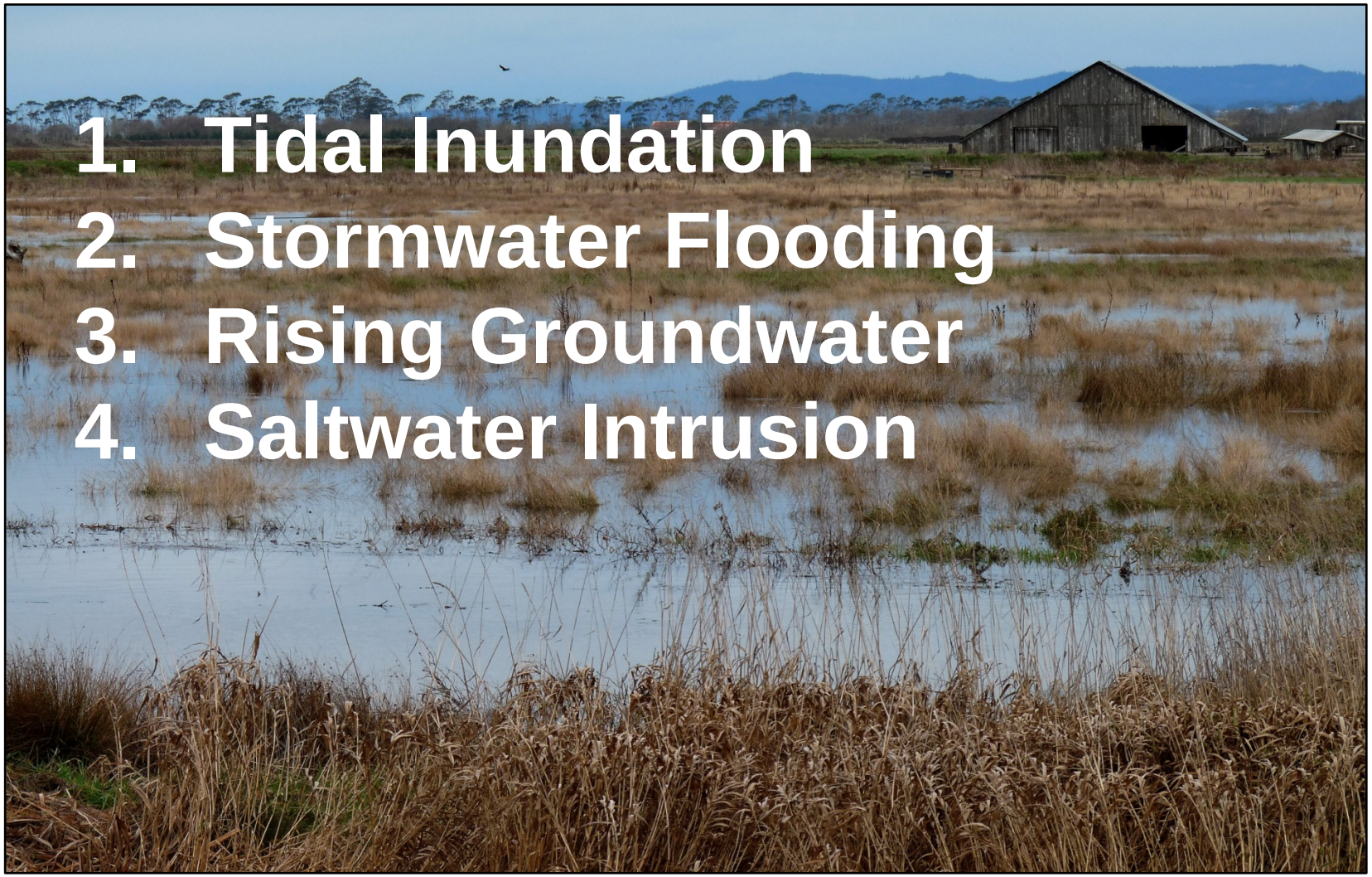
SEA LEVEL RISE IMPACTS
to
Humboldt Bay's Agricultural Lands

SEA LEVEL RISE IMPACTS



Cascadia GeoSciences

Tectonic land level changes and their contribution to sea-level rise, Humboldt Bay region, Northern California

2017 Final Report

FWS Agreement # 81331BJ244

Award # F11AC01092

http://hbv.cascadiageo.org

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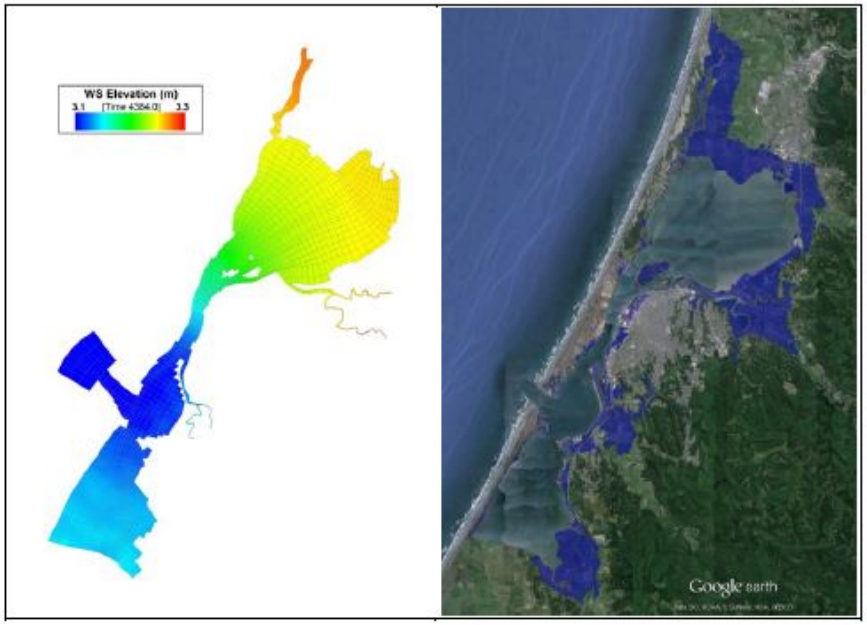
1. Cascadia GeoSciences
2. Humboldt State University
3. Northern Hydrology and Engineering
4. Pacific Watershed Associates
5. New Mexico State University
6. University of Oregon
7. US Fish and Wildlife Service
8. Stillwater Sciences
9. California Sea Grant
10. US Forest Service

Humboldt Bay: Sea Level Rise, Hydrodynamic Modeling, and Inundation Vulnerability Mapping

Prepared for

State Coastal Conservancy, and

Coastal Ecosystems Institute of Northern California



Final Report

April 2015

Prepared by

Northern Hydrology & Engineering

Northern Hydrology & Engineering

Humboldt Bay Sea Level Rise Adaptation Planning Project

Funded by

State Coastal Conservancy

- **Shoreline Inventory, Mapping and Sea Level Rise Vulnerability Assessment; 2013**
- **Sea Level Rise, Hydrodynamic Modeling, and Inundation Vulnerability Mapping; 2015**
- **Humboldt Bay Vulnerability Assessment and Adaptation Planning: Working Group and Agricultural Lands Assessment; 2015**

Humboldt Bay Sea Level Rise Adaptation Planning Project

April 2014 Inundation Maps: Zip file download

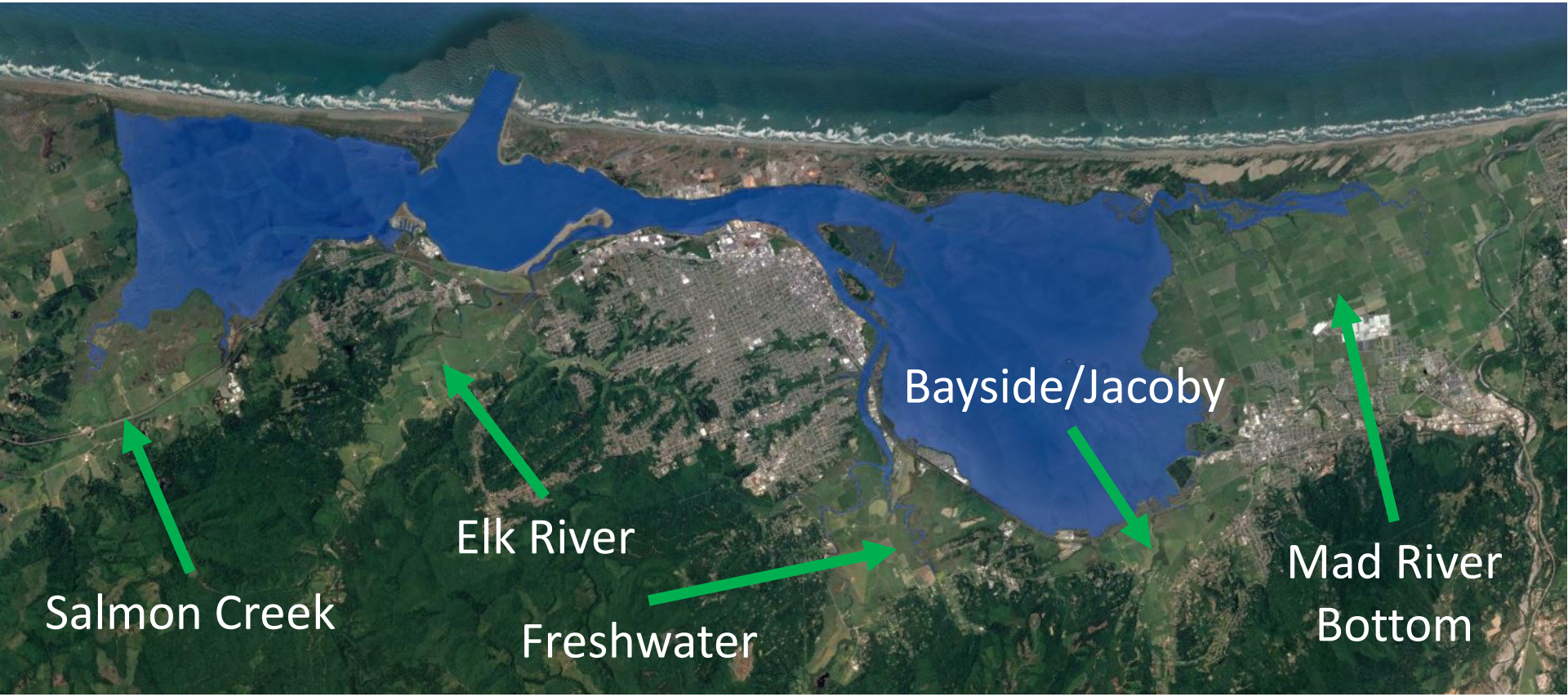
Contents

Humboldt Bay LCP Updates
Sea Level Rise
Vulnerability Assessments and Adaptation Planning

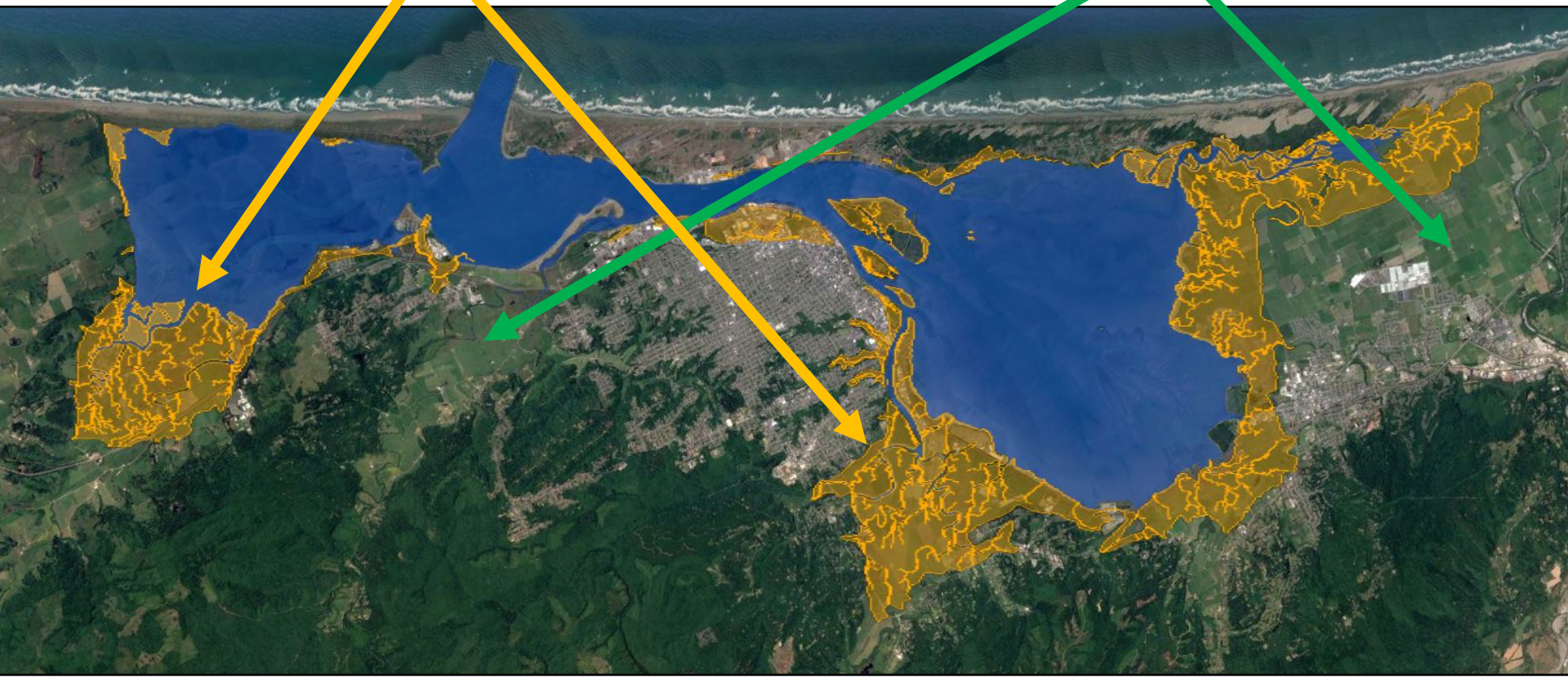
- **City of Eureka, Funding by OPC**
- **City of Arcata, Funding by CCC**
- **Humboldt County, Funding by CCC**

Caltrans District 1 Climate Change Pilot Study:
Arcata Bay Sea Level Rise Vulnerability Assessment and Adaptation Planning

HUMBOLDT BAY'S AGRICULTURAL LANDS

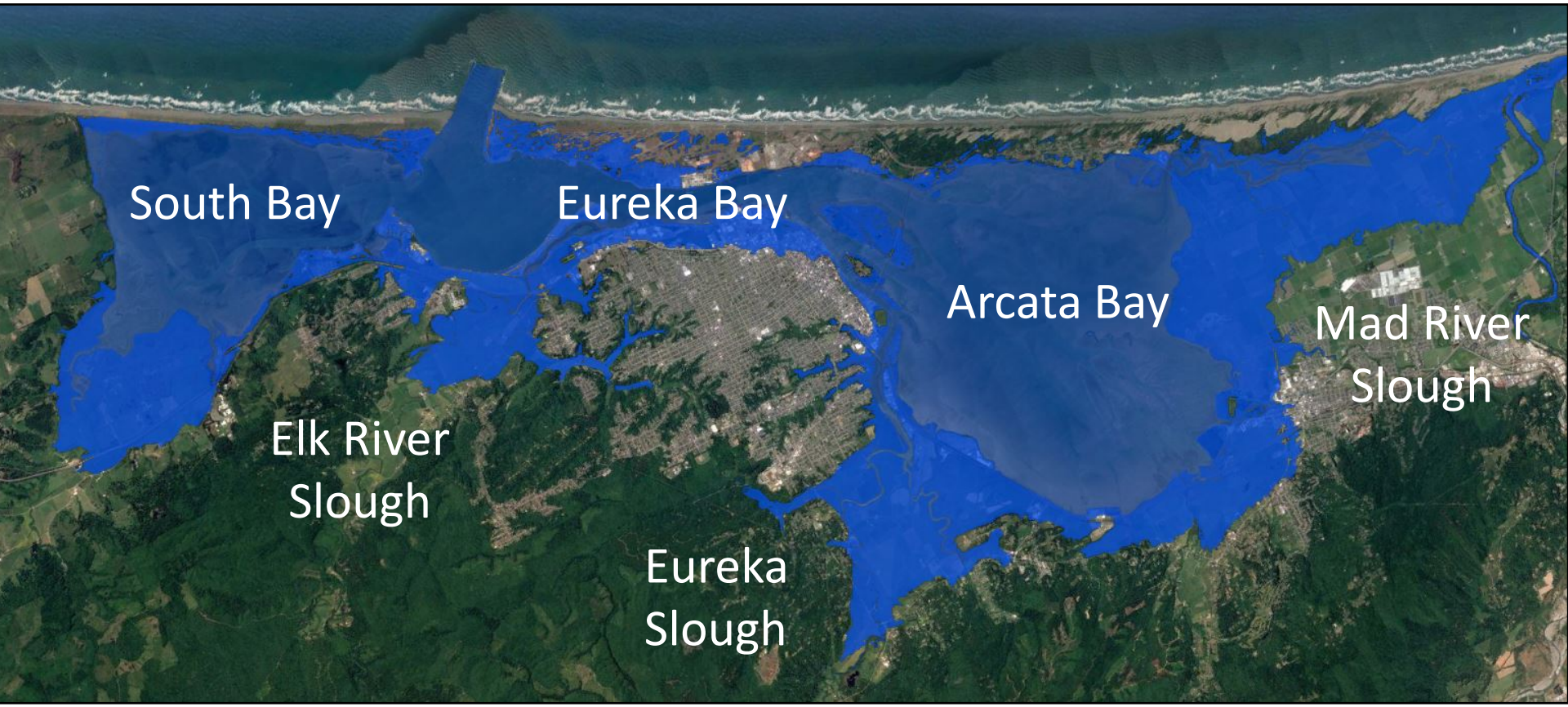


HUMBOLDT BAY'S AGRICULTURAL LANDS



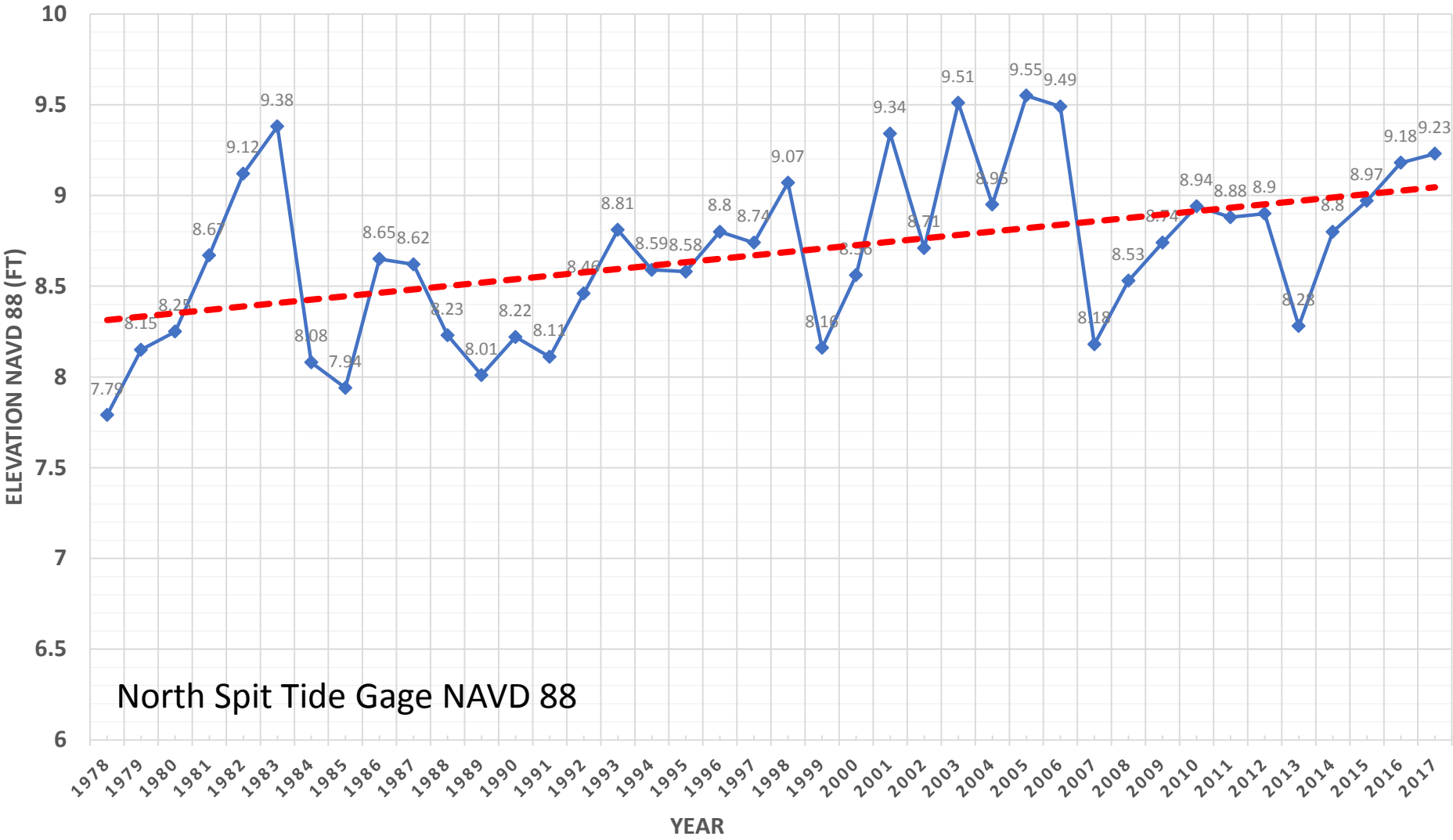
HUMBOLDT BAY-HYDROLOGIC UNITS

2.0 Meters (6.6') of Sea Level Rise ~ 14 feet NAVD88



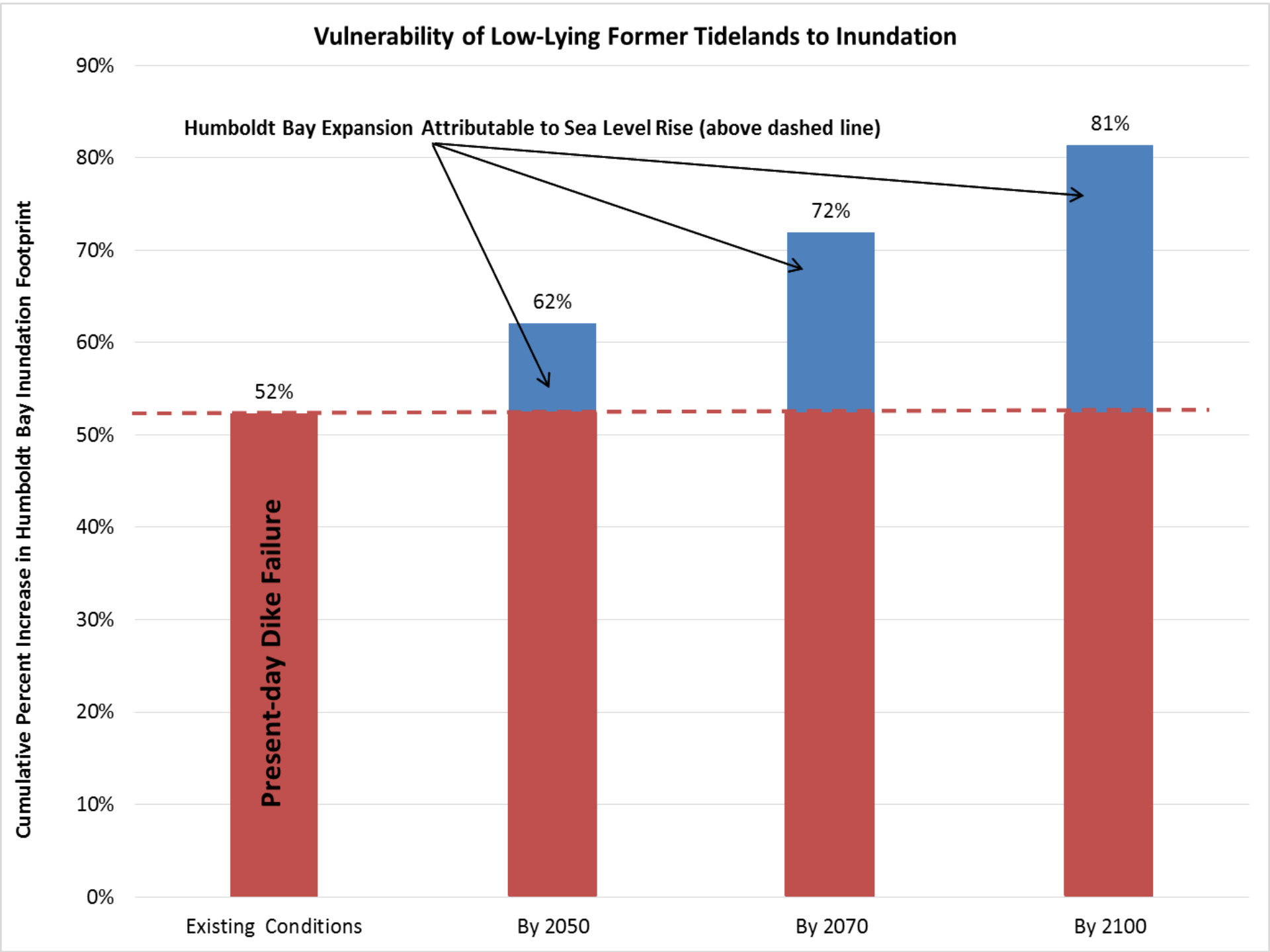
SEA LEVEL RISE IMPACTS

HUMBOLDT BAY
Annual Maximum Tides

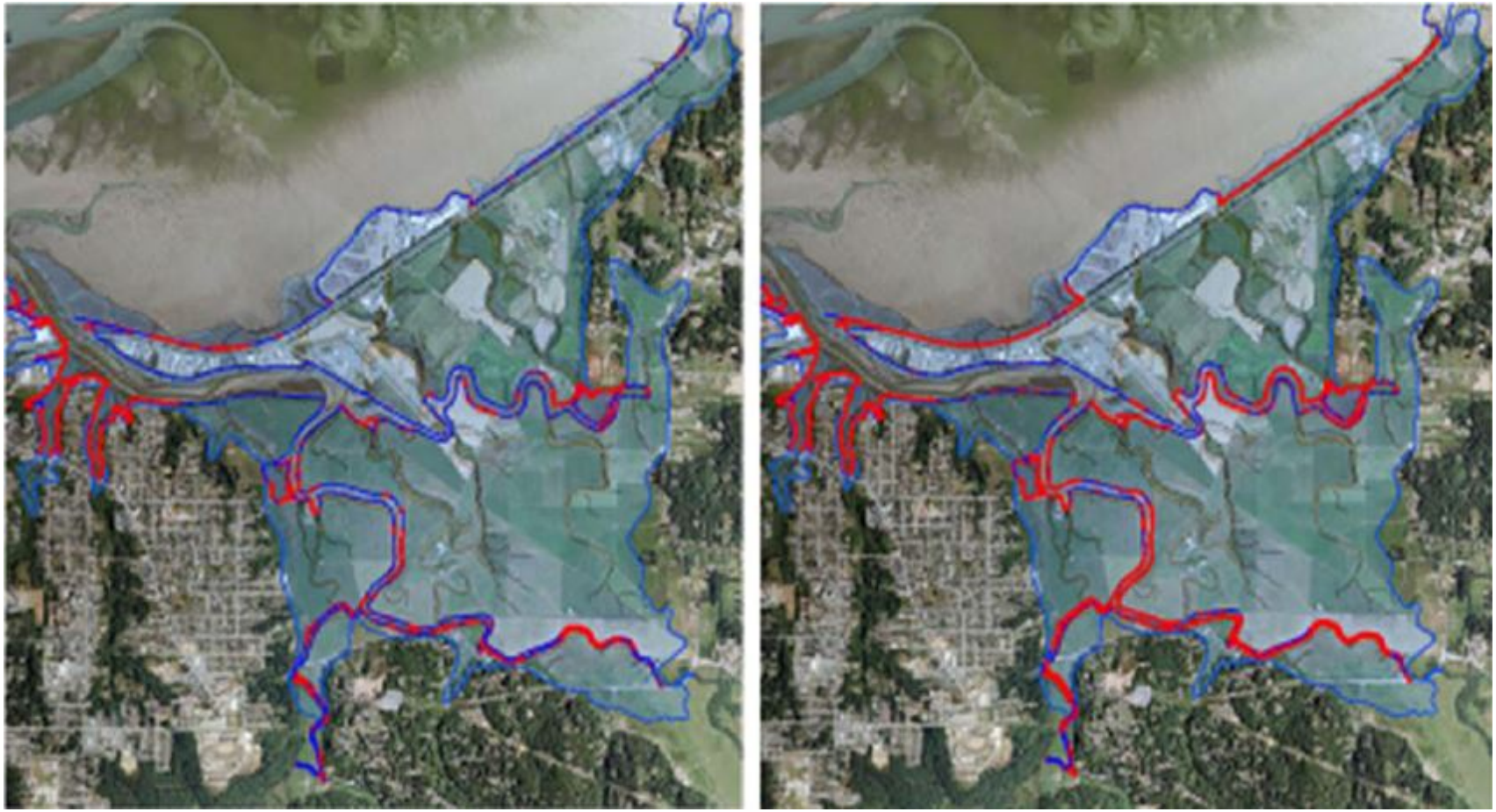


TIDAL INUNDATION

DIKED SHORELINE


Vulnerability of Low-Lying Former Tidelands to Inundation
Cumulative Percent Increase in Humboldt Bay Inundation Footprint
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Humboldt Bay Expansion Attributable to Sea Level Rise (above dashed line)
52%
62%
72%
81%
Present-day Dike Failure
Existing Conditions
By 2050
By 2070
By 2100

SHORELINE OVERTOPPING
2.0 Feet vs 3.0 Feet of SLR

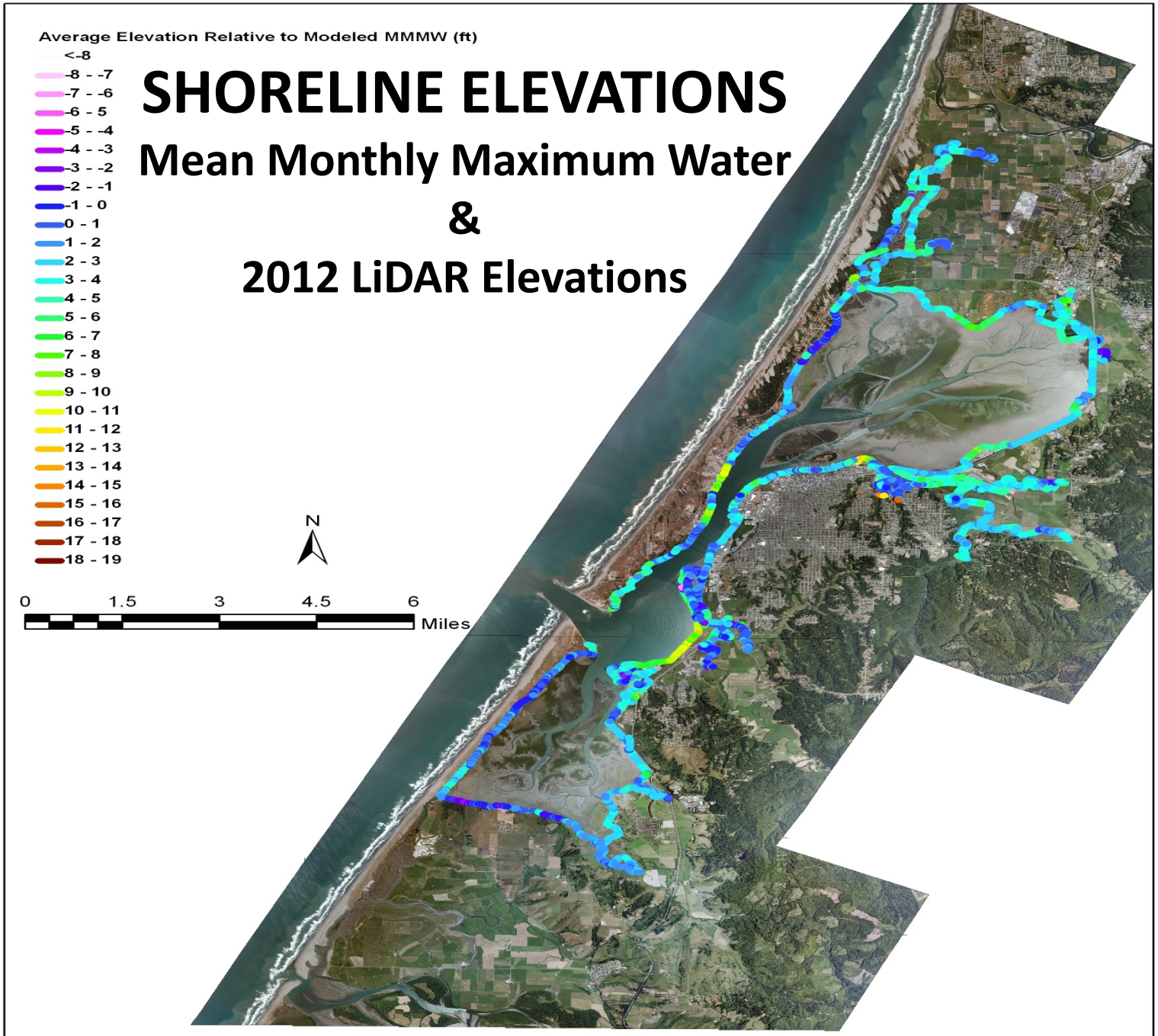


SHORELINE ELEVATIONS

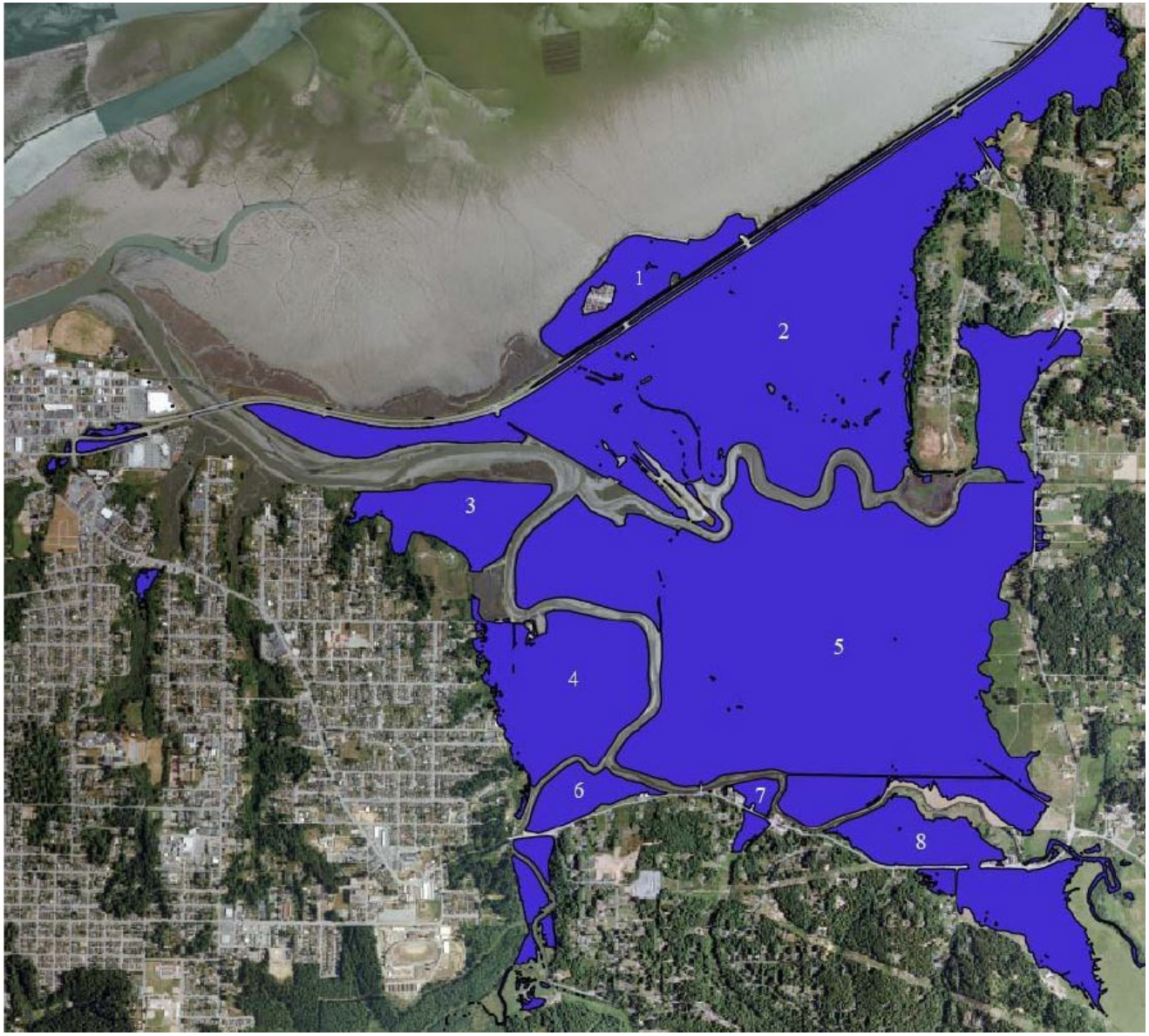
Mean Monthly Maximum Water

&

2012 LiDAR Elevations



27 HYDROLOGIC SUB-UNITS

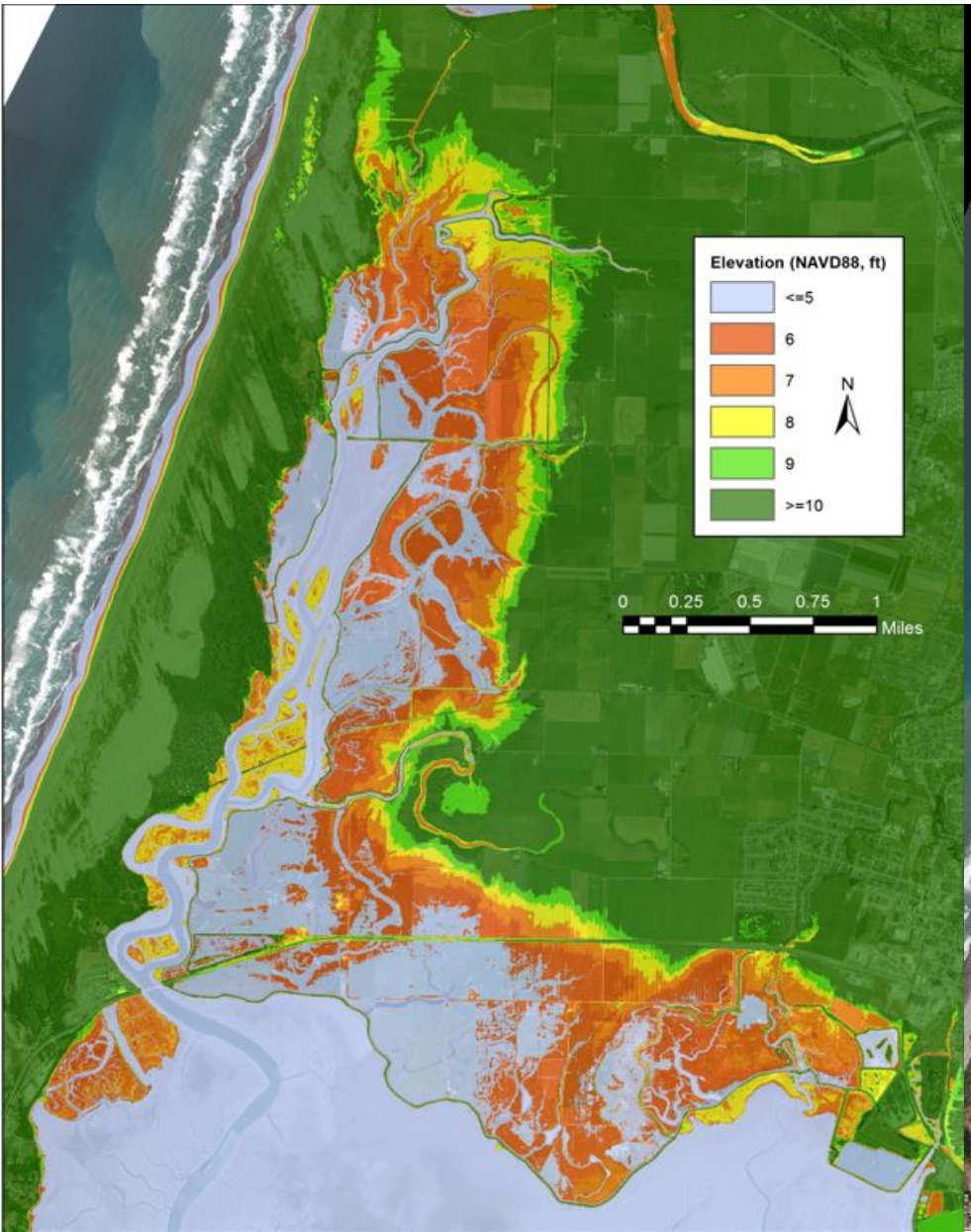


SHORELINE VULNERABILITY

FORMER TIDE LANDS

SURFACE ELEVATIONS

Potential Tidal Inundation MMMW Today



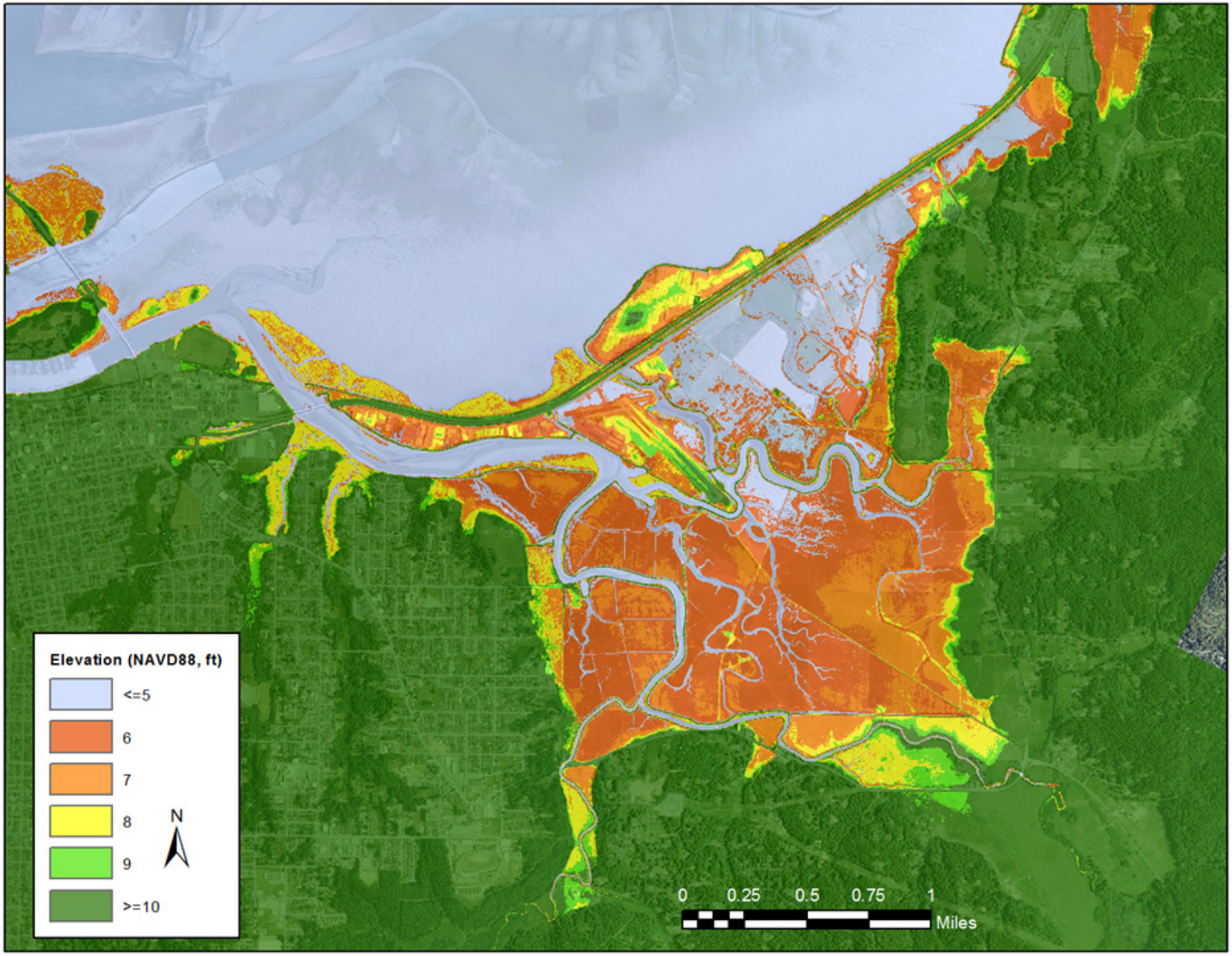
HUMBOLDT BAY

2.0 Meters (6.6’) of Sea Level Rise ~ 14 feet NAVD88

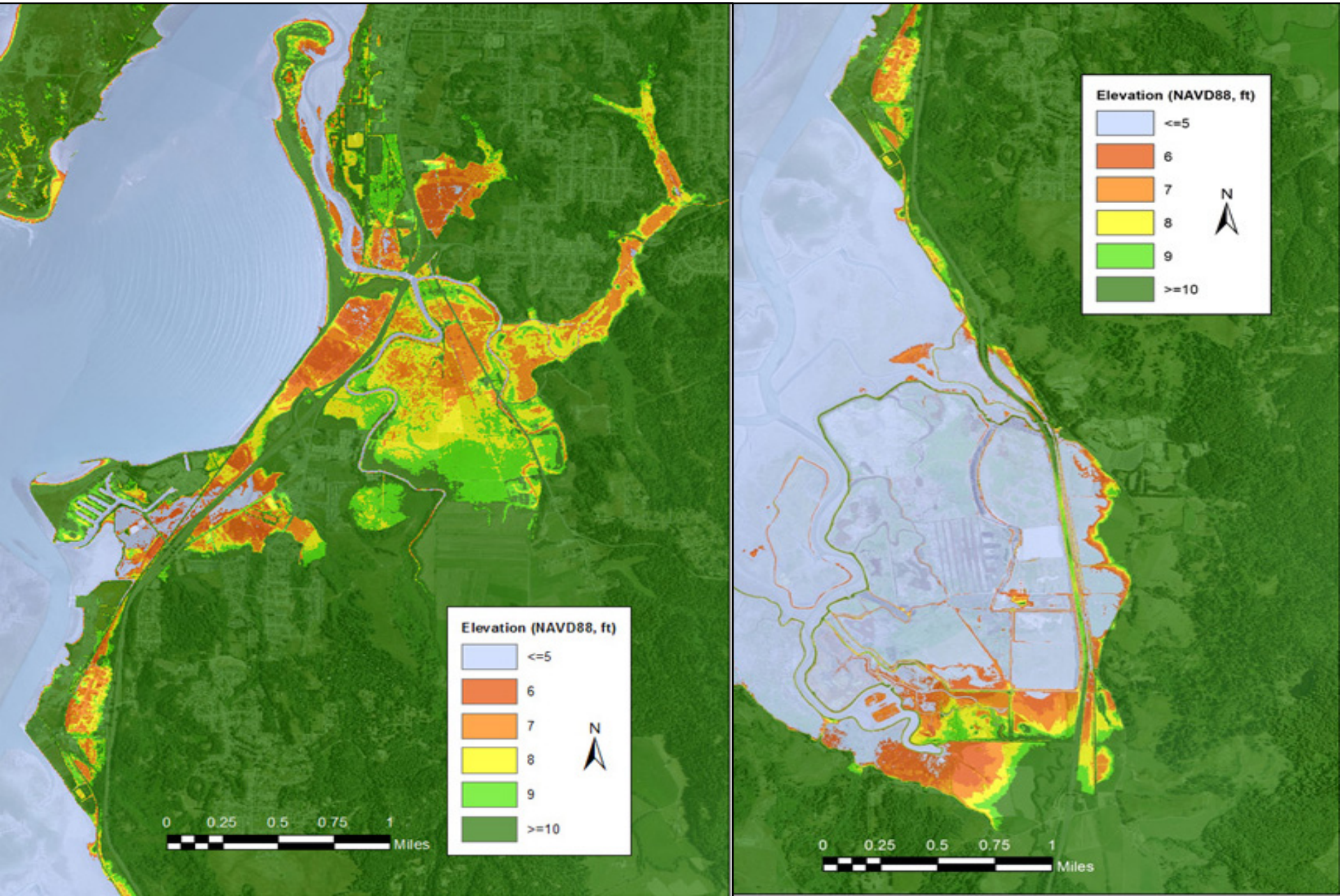
SEA LEVEL RISE IMPACTS

DRAINAGE CAPACITY

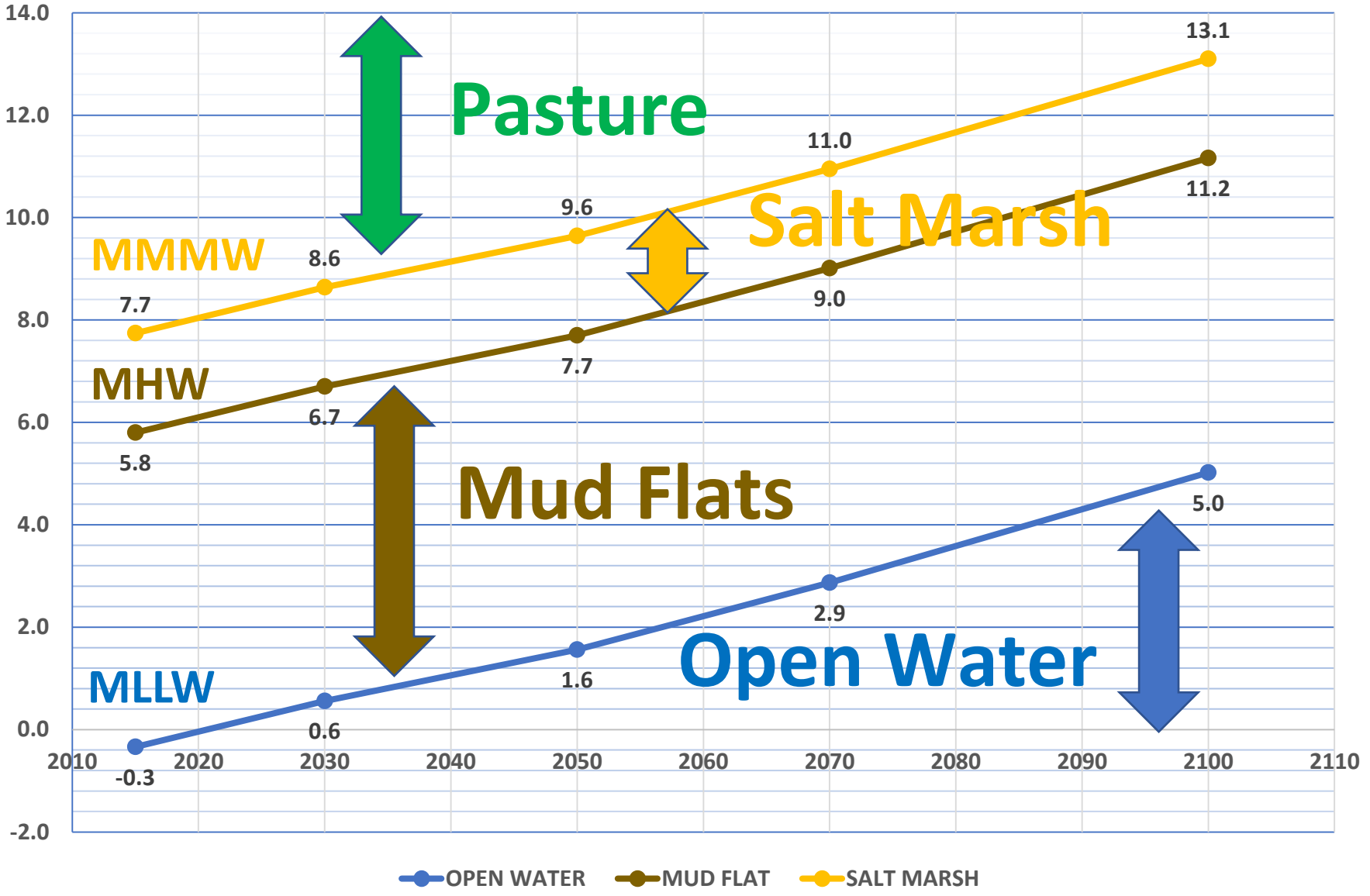
DRAINAGE, FLOODING, AND SURFACE ELEVATION



DRAINAGE, FLOODING, AND SURFACE ELEVATION

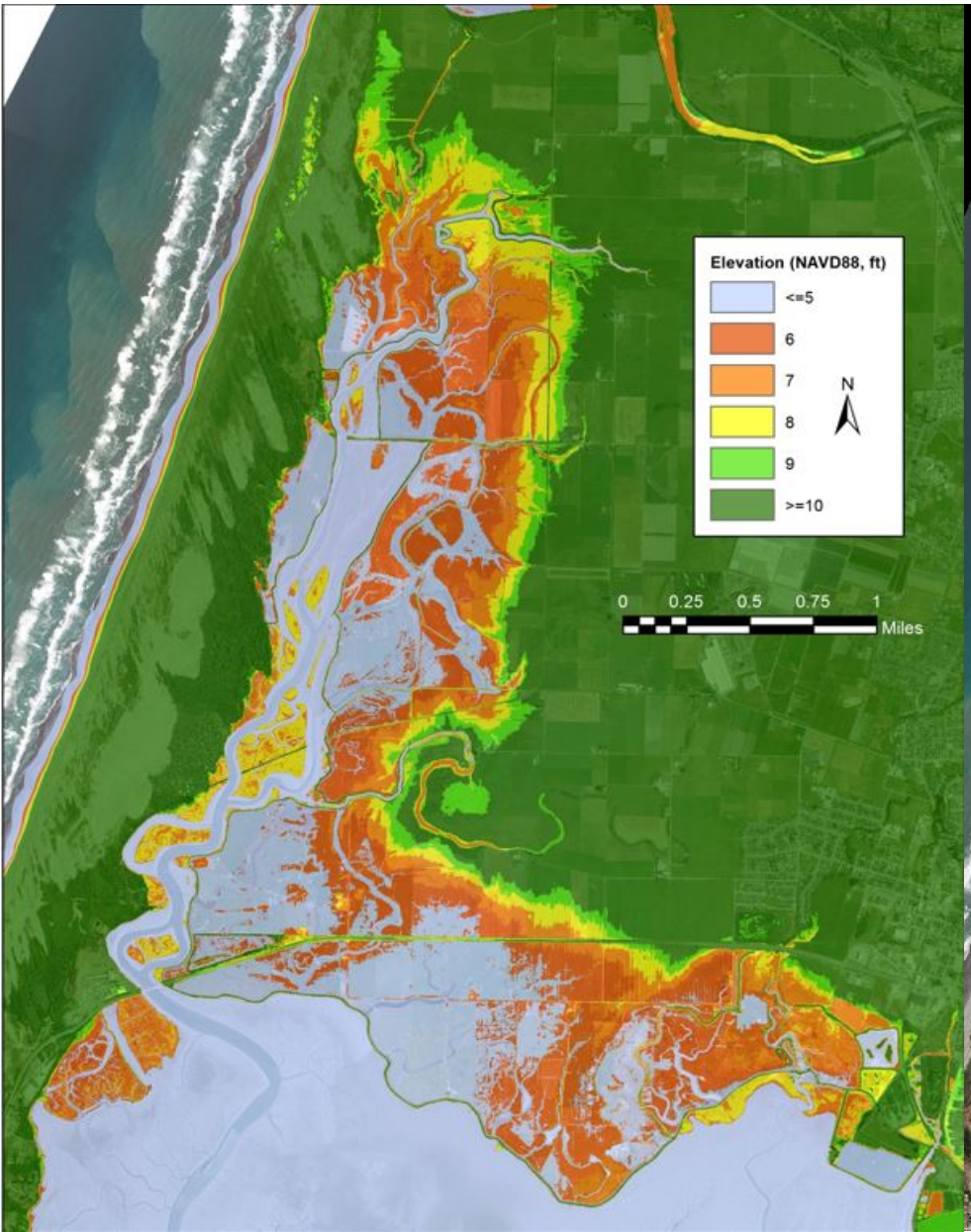


TIDAL DATUMS - BAY HABITATS

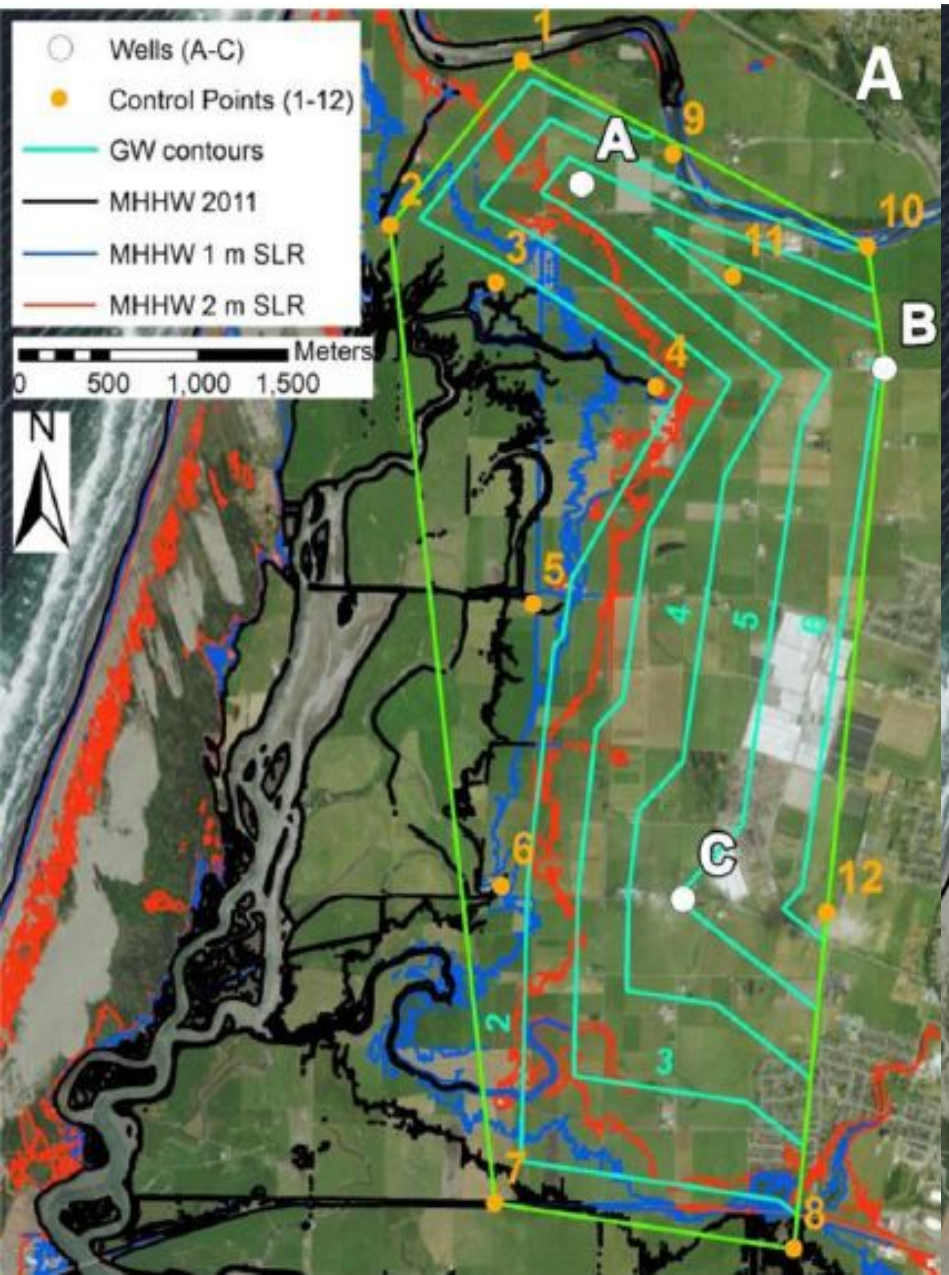


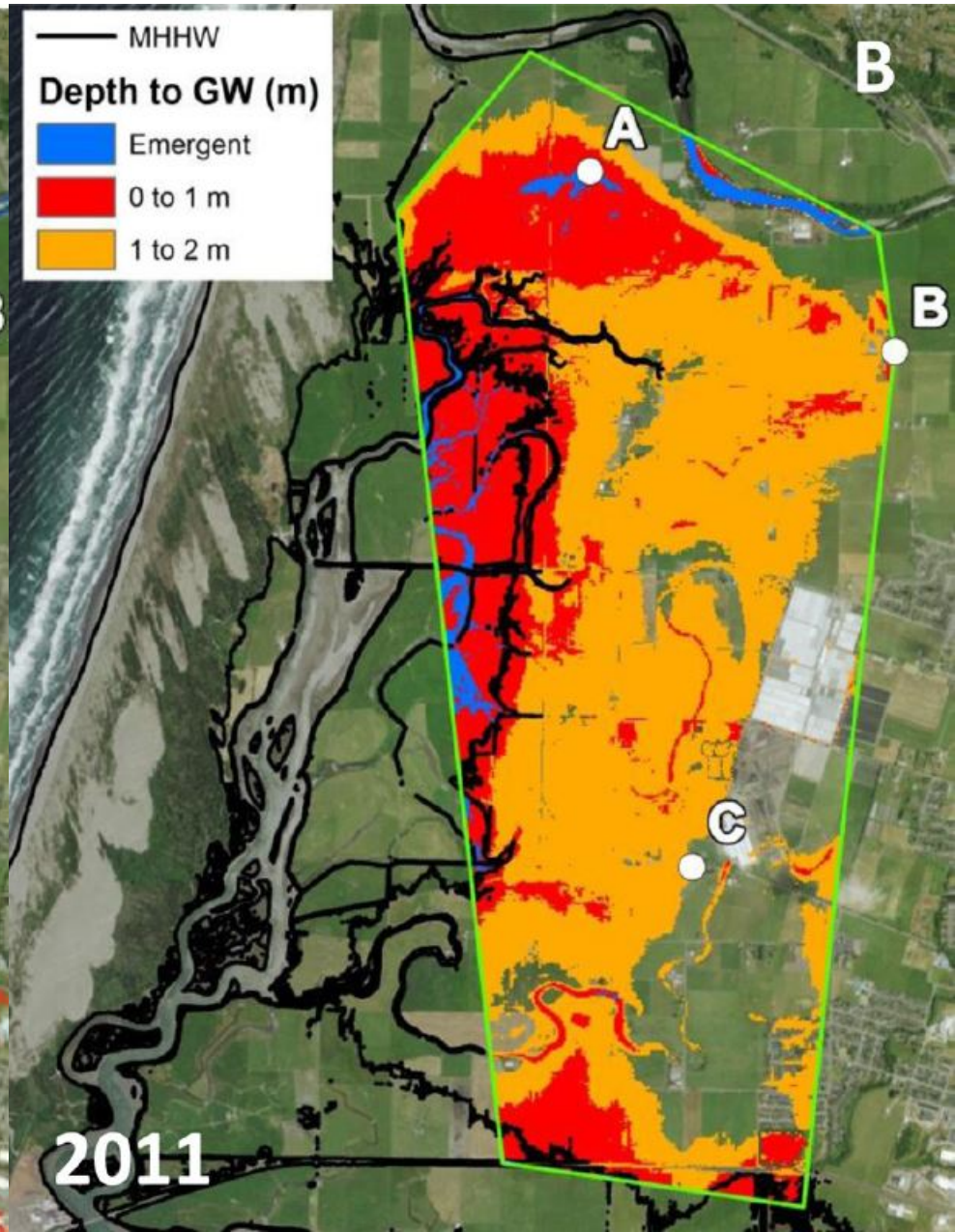
SURFACE ELEVATIONS

Potential Tidal Inundation MMMW Today

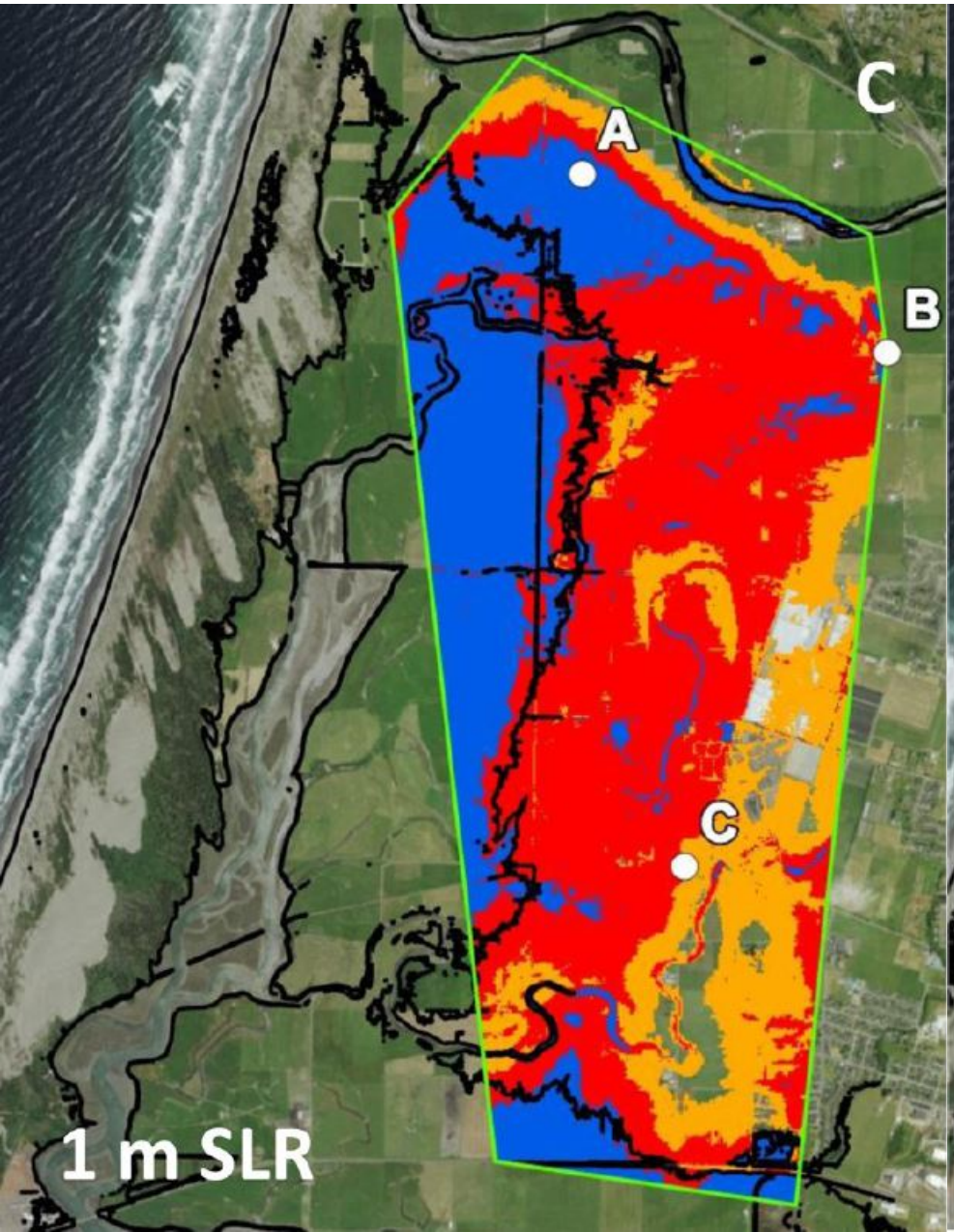


GROUND WATER 2011

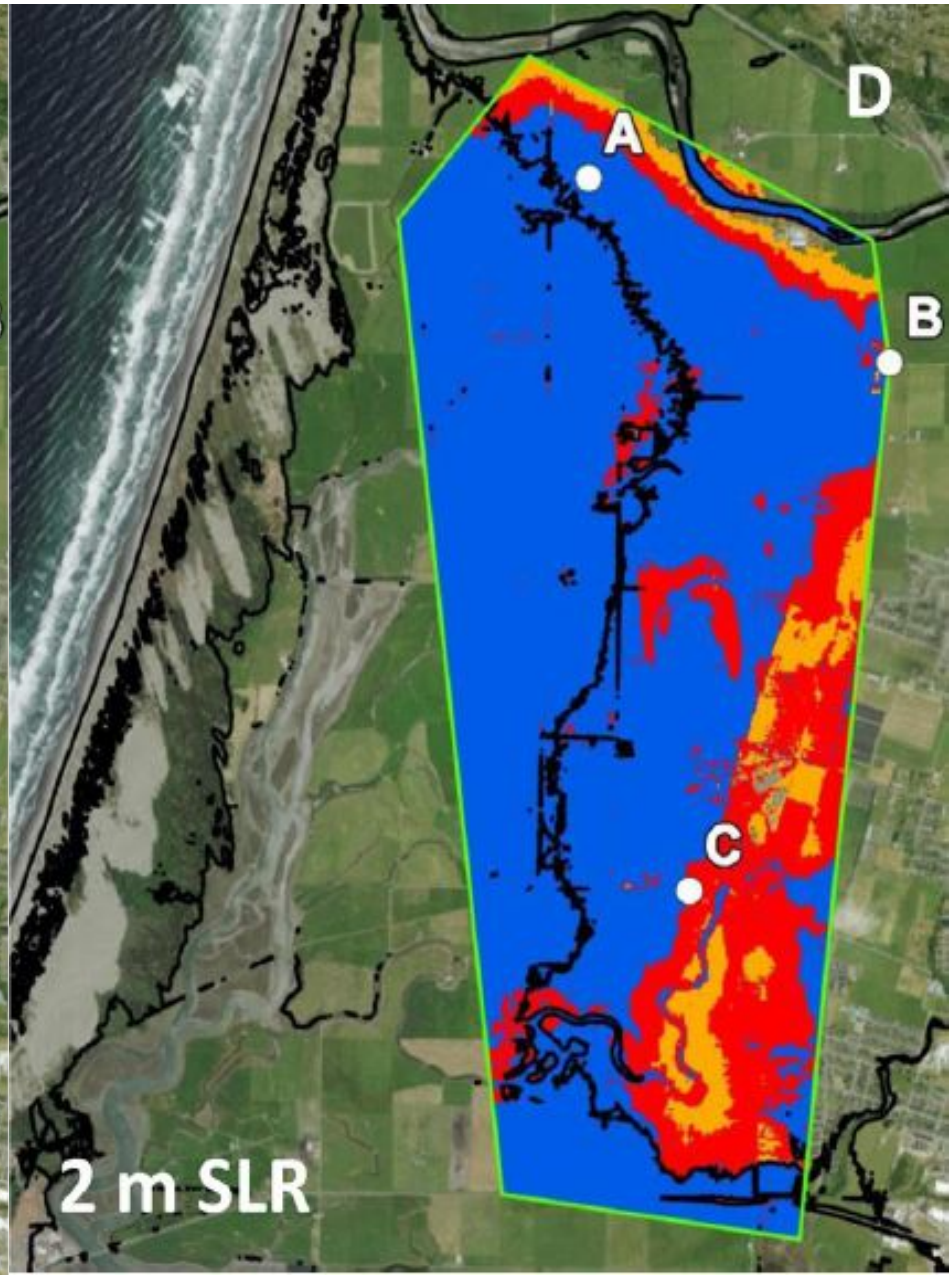




GROUND WATER 1.0 M SLR

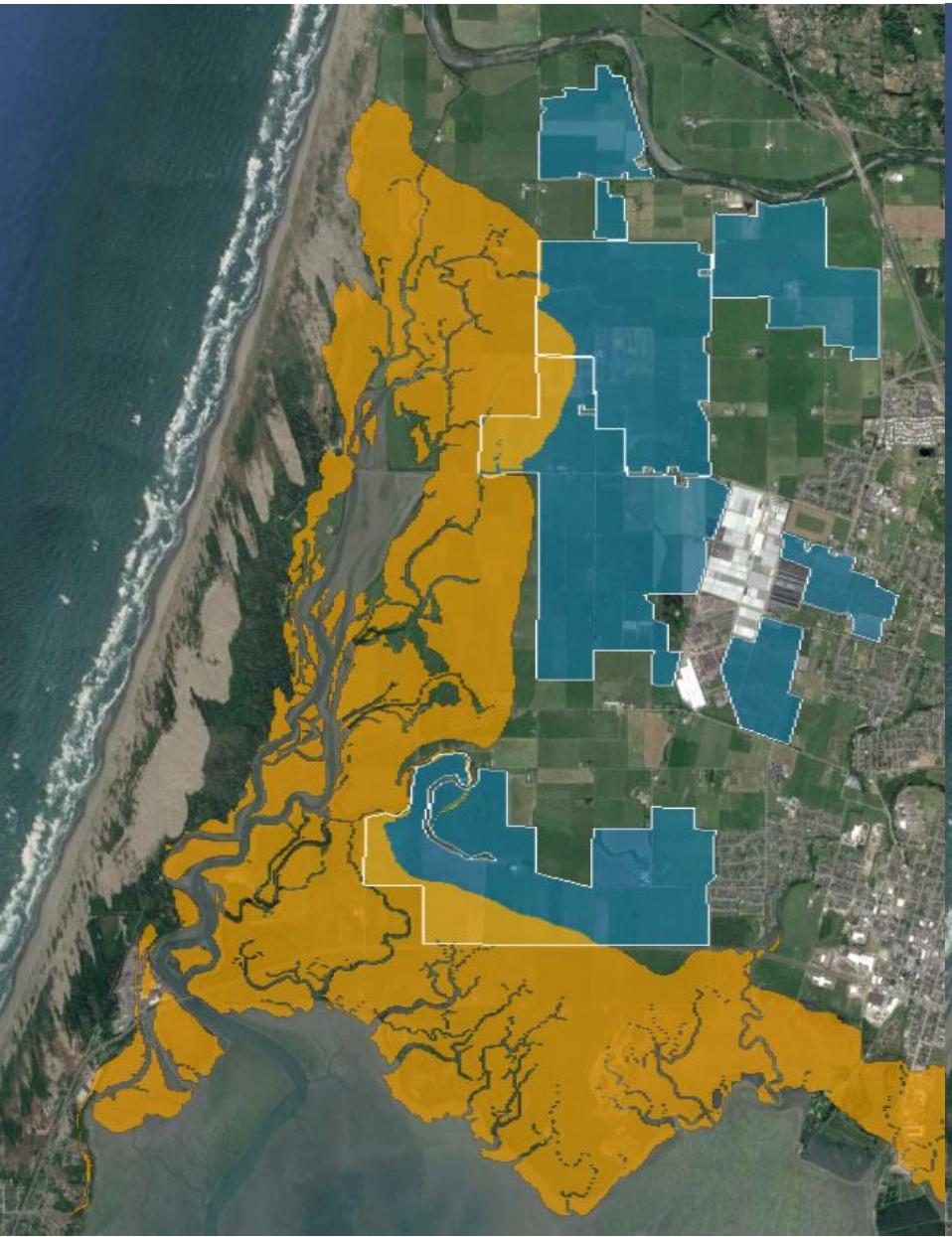


GROUND WATER 2.0 M SLR

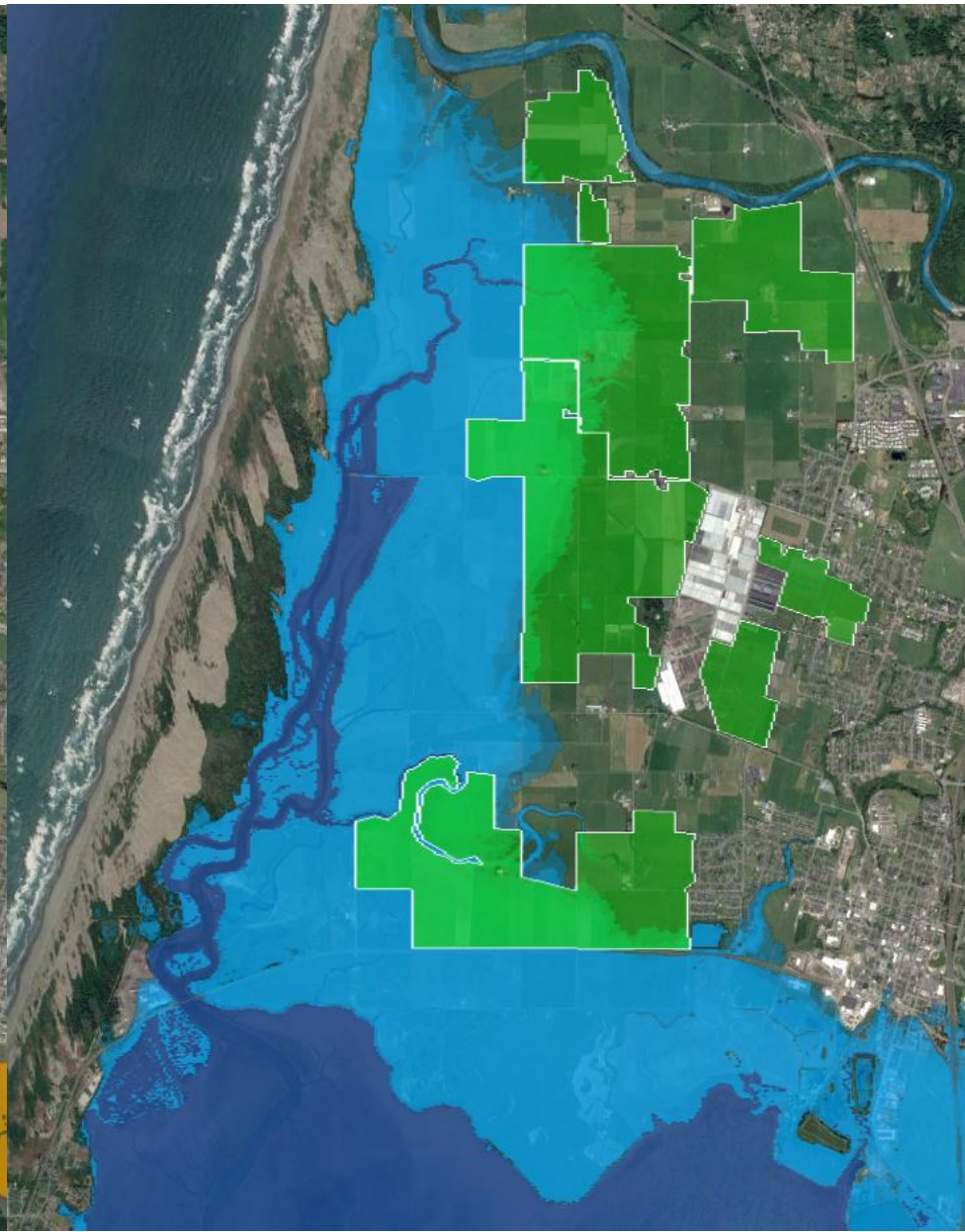


SEA LEVEL RISE IMPACTS

Former Tidelands Irrigated Lands

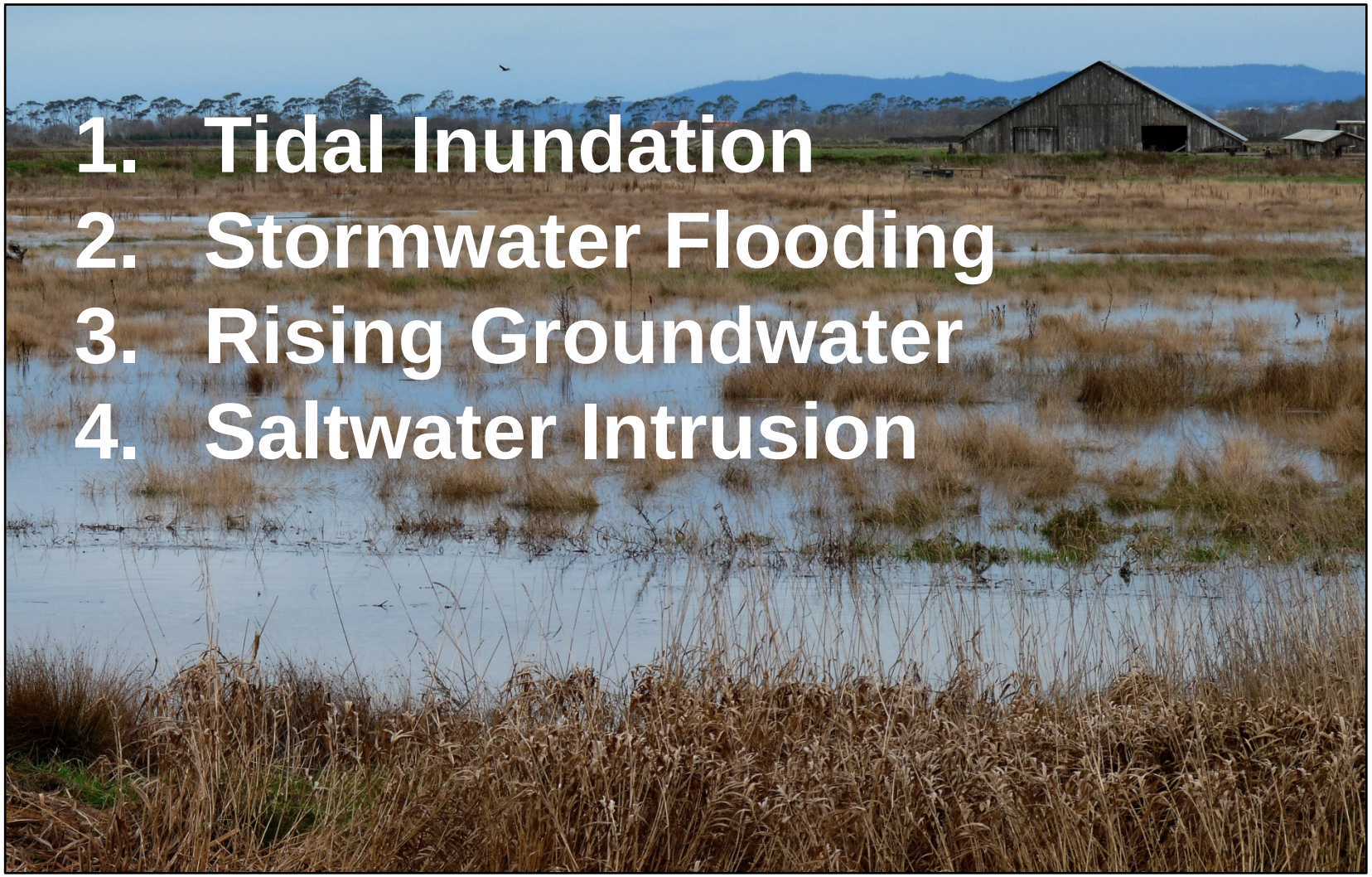


Tidal Inundation 6’ Irrigated Lands



DIKED LANDS ARE MOST VULNERABLE TO SEA LEVEL RISE

SEA LEVEL RISE IMPACTS



WHAT CAN BE DONE TO ADAPT TO SEA LEVEL RISE IMPACTS AND WHO WILL DO IT??