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Swinomish Indian Tribal Community

A Federally Recognized Indian Tribe Organized Pursuant to 25 U.S.C. § 476
11404 Moorage Way
LaConner, Washington 98257-0817

May 8, 2013

TO: Mary Mahaffy
510 Desmond Drive SE Ste 102
Lacey, WA 98503

RE: midterm report for "Correlation and Climate Sensitivity of Human Health and Environmental Indicators in the Salish Sea project"

Dear Ms. Mahaffy:

Please find enclosed our mid-term report. If you have any questions or comments, please address them to Jamie; her contact information is below.

We are enjoying working on this project and we believe that the results will be extremely useful for coastal Tribal communities grappling with climate change impacts now and in the future.

Thank you.

Sincerely,

Jamie Donatuto
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La Conner, WA 98257
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Mid-term report for the “Correlation and Climate Sensitivity of Human Health and Environmental Indicators in the Salish Sea” project

Our work to date is described below by the Task number, as described in our project narrative.

Task 1: Finalize project partnership with BC FN

We have created a formal project partnership with the Tsleil Waututh First Nation.

Task 2: Compile existing data on environmental indicators for the two project communities.

We split this task into two parts—one for Swinomish and one for Tsleil Waututh. This split was made because formalizing the partnership took several months and we wanted to initiate work at Swinomish while waiting for the agreement with Tsleil Waututh to be finalized.

For Swinomish, the two environmental indicators we have chosen to examine for this study are shellfish beds and shoreline armoring. Access to shellfish beds is a universal concern for Puget Sound Tribes and British Columbia First Nations. To date, we have started gathering data on environmental conditions that affect the Swinomish Tribes’ ability to harvest shellfish on their reservation tidelands. The Swinomish people have relied on their tideland resources for cultural and spiritual sustenance. Today, the Swinomish people are eating less seafood from these tidelands than they used to, in large part due to restricted access, diminished habitat, and anthropogenic contaminants. Rural development along the west shore of the Reservation (the primary shellfish harvesting area) has privatization of beach access areas, and portions of the Reservation’s beaches have a history of long-term harvest closures due to bacterial contamination. Shoreline armoring (our second indicator) along the west shore of the Reservation has the potential to further limit access to primary shellfish harvesting beaches, pinch out tideland area for shellfish growth, and change the sediment composition of the beaches. With the predicted change in sea-level over the next hundred years (a rise of nearly three feet above present in the Puget Sound region), shoreline armoring meant to protect built property could further impact the natural ability of shellfish to migrate landward and the Swinomish people’s ability to access these cultural resources. Analysis of climate impacts to these environmental indicators will focus on the central portion of the west shore of the Swinomish Reservation at Lone Tree Point—the most popular shellfish harvesting area.

Maps and models of inundation impacts to shellfish habitat and shellfish harvest area associated with sea-level rise have been generated for 2050 and 2100. These output scenarios are mapped ArcGIS layers that utilize (1) new high-resolution digital elevation models produced by Dr. Grossman as part of an EPA-funded project on Puget Sound Coastal Resilience, (2) sea-level rise scenarios published by the National Academy of Sciences (2012), and (3) recent survey results of the intertidal distribution of two species of shellfish as part of Swinomish shellfish surveys (Appendix I). Maps depicting the change in mean lower low water level (a proxy for shellfish access without wading/diving) from 2012 to 2050 and 2100 illustrate how area of access for shellfish harvest will be reduced between 20-30% due to the interplay between rising water level and topography (steeper middle-upper beach-face). In addition, the maps show how the placement of shoreline armoring will exacerbate access and could alter habitat conditions for shellfish, by eliminating landward shellfish migration and increase reflected wave energy that leads to increased bed

scour, redistribution of sediments important to shellfish growth and recruitment, and turbidity. The scenarios and indicators will be evaluated by Swinomish for their importance to community health.

For Tsleil Waututh, one of the environmental indicators is shellfish; we are working with them to choose a second environmental indicator. We had originally anticipated that both environmental indicators would be the same for each community; however, Tsleil Waututh is in the process of prioritizing which indicator they would like to assess in conjunction with beach armoring. We respect each community's unique circumstances and priorities and will await their decision, which is scheduled to be given at a face-to-face meeting and project personnel working session on May 8th, 2013.

Task 3: Gather and assess community health data.

Swinomish has chosen to employ six *Indigenous Health Indicators*, which are listed below in Table 1 and further defined in Table 2. These six indicators are a result of a literature review, interviews, and on-going discussions with Swinomish tribal leaders and experts on the aspects of non-physiological community health unique to indigenous people that are key to overall health, yet are most often considered "intangible," and therefore, glossed over or left out of indigenous health assessments (Donatuto *et al* 2011; Satterfield *et al* 2013).

Dr. Donatuto and Tsleil Waututh representatives are set to discuss how the *Indigenous Health Indicators* will be tailored and employed during the Tsleil Waututh small-group workshop at a face-to-face meeting on May 8th, 2013.

Task 4: Cross-walk community health and environmental indicators.

The Swinomish small-group workshop is set for Friday May 10rd, 2013. We anticipate 12-20 tribal community members to participate. Invitations have been sent out to community members, posted in the monthly newsletter and circulated verbally with elders and others who prefer oral invitations. The agenda is listed here:

- 10:00 Welcome and opening prayer, self-intro of participants
- 10:15 Intro to meeting purpose, scenarios & indicators
- 10:30 Distribute / review health indicators; current status exercise
- 11:00 Climate change descriptions and potential impacts (slides)
- 11:30 Review health indicators' impacts after potential climate change impacts
- 12:00 Weighting exercise of priority indicators,
- 12:30 Lunch (traditional)
- 1:00 Discussion of initial results; comments
- 2:00 Thanks & Close

We expect that the Tsleil Wauthuth focus group will occur in June or July, depending on the number of other community gatherings and commitments that are scheduled during these months and will mirror the Swinomish group in question style and format.

Task 5 (Develop climate sensitivity influence diagram) and Task 6 (Reporting of Results) are set to begin after the Swinomish focus group and continue until the end of the project.

Table 1: Indigenous Health Indicators

Community Connection: Community members are actively participating in community functions and helping each other, particularly in connection with the harvest, preparation, and storage of natural resources.
Natural Resources Security: Local natural resources (water, land, plants and animals) are abundant and accessible so that they can support a healthy ecosystem(s) and healthy human community. The community equitably shares these natural resources.
Cultural Use: The community is able to carry forth their cultural traditions in a respectful and fulfilling way using the local natural resources.
Education: Knowledge, values and beliefs are actively passed on from elders to youth.
Self-determination: Communities develop and enact their own healing, development and restoration programs.
Well-being: Community members maintain their connection to their homeland, confident that their health and the health of the next seven generations are not at risk due to contaminated natural resources.

Table 2. Indigenous Health Indicator descriptions

Health Indicator	Health Indictor Descriptions
Community Connection	<p>Relations – the community depends on and values each other, much like an extended family</p> <p>Work – community members have a job or role that they and other community members respect; active participation in the community</p> <p>Trust– community members are familiar with the natural resources and their harvest and preparation techniques; it is assumed that they are “safe”</p>
Natural Resources Security	<p>Abundance – natural resources, including the elements (e.g., water) are abundant and healthy</p> <p>Access – all resource use areas (i.e., Usual and Accustomed areas in WA) are allowed to be harvested (not privatized or closed)</p> <p>Sharing – ensuring that everyone in the community receives traditional foods and other natural resources such as plant medicines, especially Elders</p>
Cultural Use	<p>Gatherings and Ceremonies – community assemblies able to follow appropriate customs (e.g., can obtain specific natural resources if needed such as cedar, certain foods, etc.)</p> <p>Respect - ability to enact proper rituals, prayers and thoughtful intentions, thankful and appreciative of other life and sacrifices</p>

	<p>made, conferring respect of/to the natural resources</p> <p>Fulfill Cultural/ Spiritual Needs – able to provide needed resources in order to satisfy spiritual/ cultural needs, e.g., consume foods and medicines in order to satisfy Spirit's "hunger"</p>
Education	<p>The Teachings – knowledge, values and beliefs important to the community</p> <p>Elders – the knowledge keepers who pass on the knowledge are valued and respected</p> <p>Youth – the future; they receive and respect the knowledge</p>
Self-Determination	<p>Healing – the availability of and access to healing opportunities such as traditional medicines, language programs and other culturally integral community health systems</p> <p>Development – the ability for a community to determine and enact their own, chosen community enrichment activities in their homelands without detriment from externally imposed loss of resources</p> <p>Restoration – the ability for a community to determine and enact their own, chosen environmental or habitat restoration programs</p>
Well-being	<p>Connection to Nature – engaging in traditional resource-based activities and outdoor physical activity; continued reminder/ connection to ancestors and homeland</p> <p>Confidence – confidence in quality of information about resource safety and that uncertainties and unknowns are minimal (i.e., with analyses, standards/ thresholds, chemical potency/ effects, and/ or assessment methods)</p> <p>Resilience – culture isn't stagnant, it adapts (e.g., people hunt with guns and use motorboats today but that doesn't discount the significance of harvesting). Ability to move within homeland to voluntarily adapt to changes, temporal or permanent. That the natural resources important to the community will be there for the next seven generations.</p>

We have no changes to report in the grant goals or timelines. Although a significant amount of time was required to establish a memorandum of understanding between the two participating indigenous governments, in part due to being on opposite sides of an international border, we feel that the negotiations were necessary and beneficial for both groups. Based on the initial MOU with Tsleil Waututh, the Swinomish plan to continue the research partnership into the future with additional projects. As a project team, we believe that we are on target in accomplishing our Tasks and reaching our project goals within the project timeline.

Appendix I

Potential Shellfish Harvesting Area

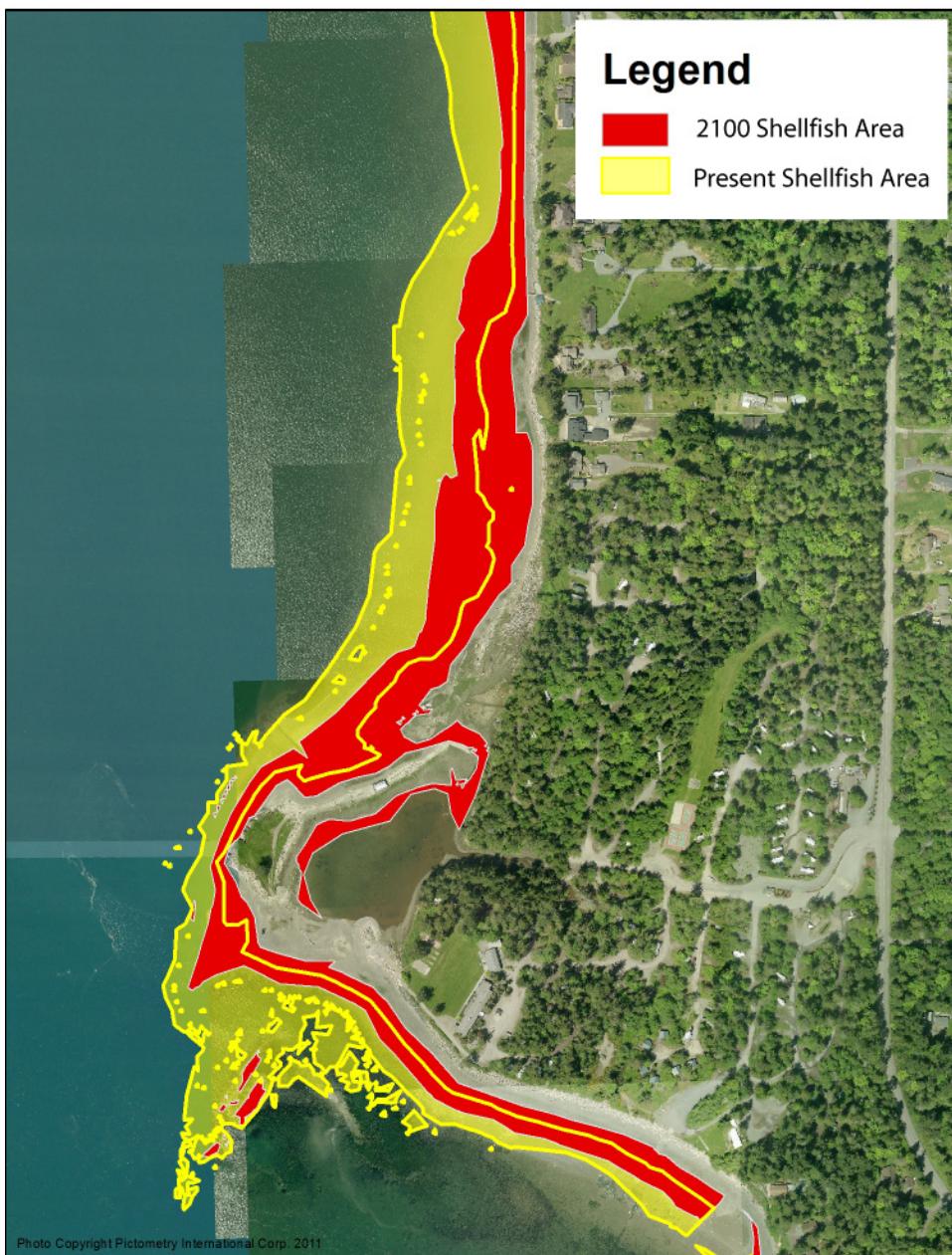


Figure 1. Potential shellfish harvesting area available under present (2012) and future (2100) sea-level position at Lone Tree Point, Swinomish Reservation.

Shoreline Armoring - Lone Tree Point

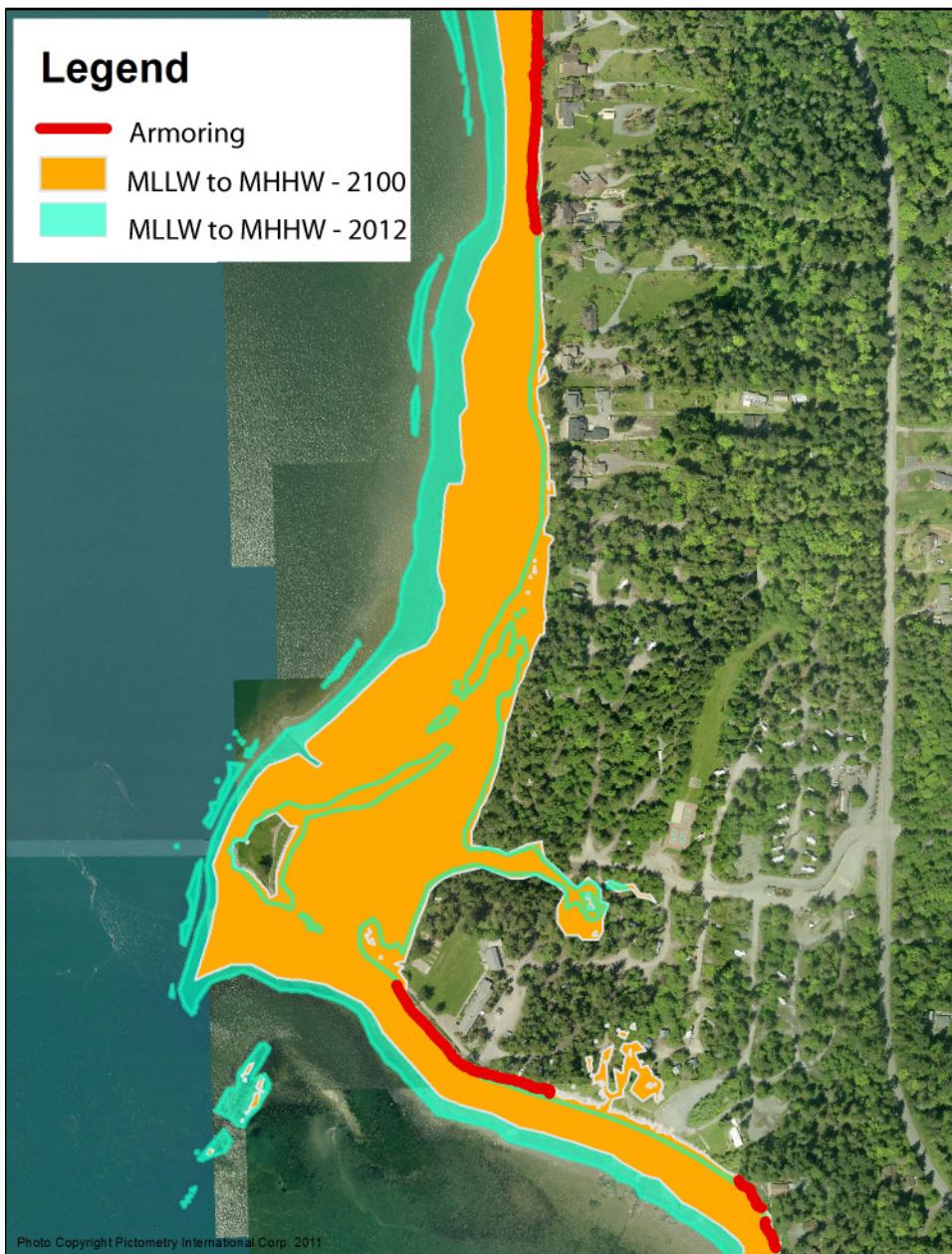


Figure 2. Position of shoreline armoring (red lines) relative to present (blue area) and 2100 (orange area) tidal range (Mean Lower Low Water (MLLW) to Mean Higher High Water (MHHW)) that will restrict landward migration of beachface and shellfish area at Lone Tree Point, Swinomish Reservation.