

Burrows Bay: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name and Existing Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Recommended protection & restoration measures
<p>Burrows Bay – Shoreline Residential</p> <p>Shoreline Designation with Proposed Changes</p> <p>Shoreline Oblique Photo West</p> <p>Shoreline Oblique Photo East</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/ivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/ivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is Moderate to High for jurisdiction</p> <p>Partially exposed shoreline with low bluffs and berms of unconsolidated material with longshore drift present. Moderate wave energy provides for suitable beach spawning substrate.</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are high -</p> <p>The eastern portion of this shoreline is sand lance spawning habitat (Figure 12, Fidalgo Bay Plan 2000 and Salmonscape). Intertidal area supports patchy eelgrass beds. Rating: Water quality and quantity functions are moderate. No significant inputs from stream systems for water quantity function; and no estuarine wetland systems present for water quality functions of sediment, toxicant, nutrient removal.</p> <p>Majority of shoreline provides juvenile salmon habitat.</p>	<p>Ecosystem processes:</p> <p>Rating: Moderate to High Shoreline armoring occurs along the majority of this shoreline, which reduces movement of sediment from low feeder bluffs and berms into intertidal zone.</p> <p>functions at shoreline:</p> <p>Rating: Moderate</p> <p>Sand lance habitat is threatened from armoring of shoreline.</p> <p>Shoreline armoring has removed shoreline vegetation which may affect adjacent juvenile salmonid habitat.</p> <p>Majority of shoreline has moderate to high restoration potential for salmon habitat.</p>	<p>Ecosystem processes:</p> <p>Provide adequate setback/buffer for new structures so that shoreline armoring is not required for protection of structure over life of structure. Several lots along Burrows Bay will probably redevelop, so removal and restoration of shoreline armoring could occur.</p> <p>Shoreline functions:</p> <p>Protect existing sand lance habitat at northwest end of the bay by preventing additional armoring of shoreline. Restore old armored areas when redevelopment of lots occurs.</p> <p>Shoreline Residential 1, provides minimum 75 foot buffer (revegetated) and setback/buffer from OHWM. If not possible due to site constraints variance will be allowed. Cost of buffer area lost under variance will be calculated (based on replacement cost elsewhere in city) and in-lieu fee assessed. Fee will be specifically linked to projects described in restoration plan.</p> <p>Cap and plant existing rip rap to provide marine riparian vegetation in order to protect and restore juvenile salmonid habitat.</p> <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>Residential zone and development standards/regulations will protect existing processes and functions and help to partially restore altered processes and functions.</p>

Burrows Bay Marina: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name & Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Recommended protection & restoration measures
<p>Burrows Bay Marina – Shoreline Residential and Urban</p> <p>Shoreline Designation Map with Proposed Changes Shoreline Oblique Photo</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/rivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/rivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is Low</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are low for the marina portion; high for the beach portion. Salmonscape identifies forage fish spawning areas on the beach adjoining the urban designation.</p> <p>No significant inputs from stream systems for water quantity function; and no estuarine wetland systems present for water quality functions of sediment, toxicant, nutrient removal.</p>	<p>Ecosystem processes:</p> <p>Rating: High This is a highly altered, artificial marina environment, where most shoreline processes have been significantly altered.</p> <p>functions at shoreline:</p> <p>Rating: High in marina, moderate along urban portion.</p> <p>Shoreline armoring has removed shoreline vegetation which may affect adjacent juvenile salmonid habitat. Salmon habitat has a moderate restoration potential</p>	<p>Ecosystem processes and functions:</p> <p>This area is built out. Opportunities for restoration will only occur as residences redevelop. Principal restoration opportunity involves replanting of shoreline vegetation. Shoreline regulations require a 25 ft. setback and planting of a 6 foot native vegetation buffer at waters edge for Shoreline Residential.</p> <p>Forage fish spawning area should be protected along beach area (urban designation)</p> <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>Residential 2 and Urban zone and development standards/regulations will protect existing processes and functions and help to partially restore altered processes and functions.</p>

Shannon Point & Fidalgo Head: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name & Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Recommended protection & restoration measures
<p>Shannon Point and Fidalgo Head – Conservancy and Natural</p> <p>Shoreline Designation Map - No Proposed Changes</p> <p>Shoreline Oblique Photo</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/rivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/rivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is High</p> <p>Open shoreline with rocky shoreline and low bluffs comprised of unconsolidated material to the north with longshore drift present. The drift cell contributes sediment to Ship Harbor beaches along Guemes Channel.</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are High -</p> <p>Fringing kelp beds are present. Majority of shoreline provides juvenile salmon habitat and has a moderate restoration potential. Several areas of forage fish habitat present.</p> <p>Water quality functions are moderate. No significant inputs from stream systems for water quantity function; and no estuarine wetland systems present for water quality functions of sediment, toxicant, nutrient removal.</p>	<p>Ecosystem processes:</p> <p>Rating: Low</p> <p>This is one of the City’s least altered shorelines. Some alteration occurs where existing residential development is present and where a short stretch of Shannon Point is rip-rapped on the west side.</p> <p>functions at shoreline:</p> <p>Rating: Low</p> <p>Shoreline armoring has removed shoreline vegetation which may affect adjacent juvenile salmonid habitat.</p>	<p>Ecosystem processes and functions:</p> <p>The most important measures available are to protect this area with appropriate designations and prevent any future alteration of shoreline processes. For example, the sediment transport from Shannon Point is critical to maintaining sand lance habitat in Ship Harbor.</p> <p>The residential portion of the shoreline between Fidalgo Head and Shannon Point is essentially built out. Development is prohibited along the Natural designation for Fidalgo Head. The Conservancy designation requires a 100’ buffer and setback from OHWM for non-water dependent development. Water dependent development has 0’ setback Opportunities for restoration will only occur as residences redevelop. Scientific, transportation facilities, parking facilities, recreation and signs are permitted. Residential mooring buoys and boat launches are conditional.</p> <p>One key restoration priority is located on the west side of Shannon Point where existing rip-rap should be removed. There is no threat to existing structures in this conservancy designation.</p> <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>Natural and Conservancy designations and development standards/regulations will protect existing processes and functions & recommended restoration will restore ecosystem processes and functions..</p>

Ship Harbor: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name & Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Protection & restoration measures
<p>Ship Harbor Eastward on Guemes Channel – Urban and Residential</p> <p>Shoreline Designation Map with Proposed Changes</p> <p>West End - Shoreline Oblique Photo</p> <p>East End - Shoreline Oblique Photo</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/ivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/ivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is high</p> <p>This shoreline is comprised of sandy material and is an open shoreline that experiences higher energy relative to other shorelines in the City. The sandy beach at the Ship Harbor wetland is a prograding beach. It appears that movement of sediment comes from the west at Shannon Point. East of Ship Harbor the shoreline is bordered by bluffs > 10 meters high that are comprised of unconsolidated materials. These bluffs represent a high potential for supplying sediment to adjacent beaches</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are high. This is a forested marine shoreline. The intertidal zone includes patchy eelgrass, kelp, and macroalgae. In combination with the barrier wetland at Ship Harbor this shoreline, relative to other shoreline areas, has a high potential for habitat functions, including sand lance spawning habitat, (also see Salmonscape) Dungeness crab over wintering habitat and salmonid habitat. High for water quality and quantity functions. This is probably an area of groundwater discharge, due to upland terrace (recharge area)</p>	<p>Ecosystem processes:</p> <p>Alteration Rating: Moderate to High. Shoreline armoring at the base of bluff has altered a number of the shoreline processes. Large shoreline structures are preventing the movement of bluff material into the shoreline environment</p> <p>functions at shoreline:</p> <p>Alteration Rating: High</p> <p>Though majority of the shoreline bluff is vegetated, shoreline armoring at the base of the bluff for an old rail bed has removed shoreline vegetation which may affect adjacent juvenile salmonid habitat</p> <p>Impacts on shoreline sediment processes may restrict extent of sand lance spawning habitat east of Ship Harbor.</p> <p>Majority of shoreline provides juvenile salmon habitat and has a moderate restoration potential.</p> <p>Derelict pilings and slag metal from old cannery present in Ship Harbor wetland.</p>	<p>Ecosystem processes and functions:</p> <p>Residential 3 designation provides for a 150 buffer for the Ship Harbor Wetland. The wetland has a conservation easement given high habitat value (sand lance, Dungeness crab). Residential 3 designation requires a 150 foot buffer and setback from the OHWM, which will protect bluff vegetation.</p> <p>This is a key restoration area (sediment processes from adjoining bluffs) and “in-lieu fees from other areas (e.g. Burrows Bay) will be used to help restore these processes. Includes removing pilings and slag from ship harbor (Restoration #34)</p> <p>City policy calls for installation of a public access path along the top of the existing railroad bed. Restoration measures include “capping” of the shoreline armoring of this rail bed and planting with native vegetation. This will improve some of the biological functions for this shoreline. The City will attempt to restore bluff erosion processes along portions of trail that are presently experiencing slides (by re-routing trail to beach). Vertical access ways will be considered where trail is not continuous.</p> <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>Residential 3 and Urban zone, development standards/regulations and implementation of restoration measures will protect majority of existing processes and functions and help to partially restore altered processes and functions. Sediment processes will not be fully restored.</p>

Lovric's Marina: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name & Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Protection & restoration measures
<p>Lovric's Marina on Guemes Channel – Urban</p> <p>Shoreline Designation Map - No Change</p> <p>Shoreline Oblique Photo</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/ivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/ivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is low to moderate This shoreline is comprised of sandy deposits and is an open shoreline that experiences higher energy relative to other shorelines in the City. The shoreline is bordered by bluffs > 10 meters high that are comprised of unconsolidated materials. These bluffs represent a moderate potential for supplying sediment to adjacent beaches.</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are high.</p> <p>The intertidal zone includes patchy eelgrass, kelp, and macroalgae, and supports salmonid species.</p> <p>High for water quality and quantity functions. This is probably an area of groundwater discharge, due to upland terrace (recharge)</p>	<p>Ecosystem processes:</p> <p>Alteration Rating: High. Extensive fill and armoring in water for marina breakwater has altered shoreline processes. Large shoreline structures are preventing the movement of bluff material into the shoreline environment and affecting littoral processes.</p> <p>functions at shoreline:</p> <p>Alteration Rating: High</p> <p>This is an extensively modified shoreline that has displaced intertidal habitat with fill.</p> <p>Majority of shoreline provides juvenile salmon habitat and has a moderate restoration potential.</p>	<p>Ecosystem processes and functions:</p> <p>Urban designation provides for no setback or buffers for water dependent uses in the marina. Minimum of a 75 foot setback and buffer for non-water dependent uses (e.g. condos); buffers are measured for the OHWM. Uses and activities are limited in buffer (provide link)</p> <p>This is a highly altered environment with little opportunity for restoration or protection except for removing marina. In lieu fees for reduced buffers (see Burrows Bay policy) should be used for restoration of shoreline to west and east where opportunity is higher.</p> <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>Urban zone and development standards/regulations will protect majority of existing processes and functions and help to partially restore altered processes and functions. Sediment processes will not be fully restored.</p>

East of Lovric's Marina: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name & Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Protection & restoration measures
<p>East of Lovric's Marina on Guemes Channel – Residential</p> <p>Shoreline Designation Map with Proposed Changes Shoreline Oblique Photo</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/ivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/ivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is low to moderate This shoreline is comprised of sandy deposits, and is an open shoreline that experiences higher energy relative to other shorelines in the City. The shoreline is bordered by bluffs > 10 meters high that are comprised of unconsolidated materials. These bluffs represent a moderate potential for supplying sediment to adjacent beaches.</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are high.</p> <p>This is a forested marine shoreline. The intertidal zone includes patchy eelgrass, kelp, and macroalgae, and supports salmonid species.</p> <p>High for water quality and quantity functions. This is probably an area of groundwater discharge, due to upland terrace (recharge)</p>	<p>Ecosystem processes:</p> <p>Alteration Rating: Moderate to High. Shoreline armoring at the base of bluff has altered a number of the shoreline processes. The armorin</p> <p>g is reducing the movement of bluff material into the shoreline environment. This shoreline has also been partially filled.</p> <p>functions at shoreline:</p> <p>Alteration Rating: High</p> <p>Vegetation on the bluff has been cut reducing the number of large trees and overhanging vegetation at the shoreline. This may affect functions in the intertidal area including juvenile salmonid habitat. Majority of shoreline provides juvenile salmon habitat and has a moderate restoration potential. Several overwater structures also impact habitat functions (decreased light for macroalgae, increased predation)</p> <p>Impacts on shoreline sediment processes may affect intertidal habitat functions including invertebrate habitat, spawning habitat for marine fish, and substrate for macroalgae.</p>	<p>Ecosystem processes and functions:</p> <p>Residential 1 designation provides for a 75' setback and buffer for residential and 0' setback for water dependent uses. Most of the shoreline residential lots are developed in this reach but restoration potential is high. Restoration could include planting of segments of the bluff with conifers and capping rip rap and replanting. In lieu fee from reduction of buffers on other developing residential lots should be used to restore shoreline processes and functions on this shoreline (see Burrows Bay reach). For example, if not possible to provide 75' buffer due to site constraints variance will be allowed. Cost of buffer area lost under variance will be calculated (based on replacement cost elsewhere in city) and in-lieu fee assessed. Fee will be specifically linked to projects described in restoration plan.</p> <p>Restoration opportunity #30 should be implemented which involves removing a derelict overwater structure Replace treated wood pilings with concrete at Guemes Ferry Terminal (#32) and Anchor Cove Marina (#31) (see oblique).</p> <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>Residential development standards/regulations will protect majority of existing processes and functions and help to partially restore altered processes and functions. Sediment processes will not be fully restored.</p>

Cap Sante North: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name & Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Protection & restoration measures
<p>North Cap Sante and on Guemes Channel – Urban Maritime</p> <p>Shoreline Designation Map</p> <p>Shoreline Oblique Photo</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/rivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/rivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is low</p> <p>This shoreline is comprised of extensive fill and is an open shoreline that experiences higher energy relative to other shorelines in the City.</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are low to moderate</p> <p>The intertidal zone does not appear to support eelgrass or macroalgae. Migration corridor for salmonid species.</p> <p>Low to moderate for water quality and quantity functions.</p>	<p>Ecosystem processes:</p> <p>Alteration Rating: High. Shoreline has been extensively altered through filling which has impacted a number of the shoreline processes.</p> <p>functions at shoreline:</p> <p>Alteration Rating: High</p> <p>This is a highly altered shoreline environment. Potential for restoration of habitat is low, including salmonid habitat</p>	<p>Ecosystem processes and functions:</p> <p>Urban maritime designation provides for a 0' setback for water dependent uses. Non-water dependent provides for a 75' buffer and setback. This area is completely built out.</p> <p>Large scale Restoration potential is low. However, smaller scale restoration is recommended including:</p> <ul style="list-style-type: none"> ➤ Remove unused piers (#28) ➤ Clean up oil seep and contaminated beach sediment on north end of N Avenue (#29) <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>This is an appropriate area for the Urban maritime zone. The zone and development standards/regulations are consistent with existing uses and level of existing alteration to processes and functions.</p>

Cap Sante: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name & Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Protection & restoration measures
<p>Cap Sante – Shoreline Residential 1 and Conservancy</p> <p>Shoreline Designation Map</p> <p>Shoreline Oblique 1Photo</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/ivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/ivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation</p> <p>Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is high</p> <p>This shoreline is comprised of extensive a low rocky shoreline with an abrasion platform and is an open shoreline that experiences higher energy relative to other shorelines in the City.</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are high</p> <p>The intertidal zone supports some scattered areas of macroalgae. Migration corridor for salmonid species.</p> <p>Low to moderate for water quality and quantity functions.</p>	<p>Ecosystem processes:</p> <p>Alteration Rating: Low. Shoreline has not been extensively altered, therefore shoreline processes are relatively intact.</p> <p>functions at shoreline:</p> <p>Alteration Rating: Low</p> <p>This is a relatively intact shoreline environment. Potential for restoration of habitat is low, including salmonid habitat</p>	<p>Ecosystem processes and functions:</p> <p>Due to the rocky shoreline, residences have not installed shoreline armoring, which as left shoreline processes intact. This is also true for Cap Sante park. Therefore, restoration potential is low. Setback buffers in the residential area and the adjacent park designation can help in continuing to protect processes and functions in this area.</p> <p>Shoreline residential designation provides for a 75’ setback (revegetated) from OHWM. If not possible due to site constraints variance will be allowed. Cost of buffer area lost under variance will be calculated (based on replacement cost elsewhere in city) and in-lieu fee assessed. Fee will be specifically linked to projects described in restoration plan.</p> <p>This area is almost built out.</p> <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>This is an appropriate area for Shoreline Residential and Conservancy zones The zones and development standards/regulations are consistent with existing uses and level of existing alteration to processes and functions.</p>

Cap Sante Marina & Industrial Area South: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name & Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Protection & restoration measures
<p>Cap Sante Marina and Marine Industrial Area to the South – Urban and Urban Maritime</p> <p>Shoreline Designation Map</p> <p>Shoreline Oblique Photo</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/rivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/rivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is low</p> <p>This shoreline is comprised of extensive fill and is a partly enclosed shoreline that experiences lower energy relative to other shorelines in the City.</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are moderate</p> <p>Given the lower energy of the intertidal area and shallow, sandy substrate, the intertidal zone supports moderately sized areas of eelgrass vegetation outside and within the marina. Small areas of macroalgae also present. Surf smelt spawning area are located along this reach (see Salmonscape). Also migration corridor for salmonid species.</p> <p>Moderate for water quality and quantity functions.</p>	<p>Ecosystem processes:</p> <p>Alteration Rating: High. Shoreline has been extensively altered through filling which has impacted a number of the shoreline processes.</p> <p>functions at shoreline:</p> <p>Alteration Rating: High</p> <p>This is a highly altered shoreline environment. Potential for restoration of habitat is moderate given the presence of surf smelt spawning areas, eelgrass habitat and salmonid habitat</p>	<p>Ecosystem processes and functions:</p> <p>The Urban and Urban Maritime designations provides for a 0' setback and buffer for water dependent uses and 75' for non-water dependent uses. This area is highly altered and undergoing redevelopment in the urban maritime zones..</p> <p>Restoration potential is moderate for the shoreline given the presence of eelgrass communities and surf smelt spawning areas.</p> <p>This is an area where in-lieu fees could be used to undertake restoration projects 24 (remove treated wood wall in Marina) and 25 (enhance and restore surf smelt spawning beach). See oblique air photo for location of restoration projects.</p> <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>This is an appropriate area for both the Urban and Urban Maritime zones. Given the high degree of alteration and proposed restoration projects, the proposed designation and development standards/regulations should protect existing processes and functions.</p>

North of Weaverling Spit: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name & Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Protection & restoration measures
<p>North of Weaverling Spit – Residential 1</p> <p>Shoreline Designation Map with proposed changes</p> <p>Shoreline Oblique Photo</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/rivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/rivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is high</p> <p>The urban portion of this shoreline is comprised of mixed-fine material with longshore drift moving south towards Weaverling spit. It is a partly enclosed shoreline that experiences lower energy relative to other shorelines in the City.</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are moderate</p> <p>Given the lower energy of the intertidal area and shallow, sandy substrate, the intertidal zone supports moderately sized areas of eelgrass vegetation. Surf smelt spawning area are located along these beaches (see Salmonscape). Also migration corridor for salmonid species.</p> <p>Moderate for water quality and quantity functions.</p>	<p>Ecosystem processes:</p> <p>Alteration Rating: High for urban maritime, moderate for urban designation portion. The urban designation portion has been primarily altered by shoreline armoring. This alteration has impacted a number of the shoreline processes.</p> <p>functions at shoreline:</p> <p>Alteration Rating: Moderate</p> <p>This is a moderately altered shoreline environment. Potential for restoration of habitat is moderate given the presence of surf smelt spawning areas, eelgrass habitat and salmonid habitat</p>	<p>Ecosystem processes and functions:</p> <p>Restoration potential is moderate for the shoreline given the presence of eelgrass communities and surf smelt spawning areas.</p> <p>In-lieu fees should be used to undertake restoration project 18 (remove or reposition armoring to minimize impacts to impacts to intertidal habitat).</p> <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>This is an appropriate area for the Residential 1 designation. Given the high degree of alteration and proposed restoration projects, the proposed designation and development standards/regulations should protect existing processes and functions.</p>

Weaverling Spit: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name & Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Protection & restoration measures
<p>Weaverling Spit - Urban</p> <p>Shoreline Designation Map</p> <p>Shoreline Oblique Photo</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/rivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/rivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is high</p> <p>The urban portion of this shoreline is comprised of sandy beaches which receiving sediment from the north. It is a partly enclosed shoreline that experiences lower energy relative to other shorelines in the City.</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are High</p> <p>Presence of prograding sandy beach, large offshore eelgrass beds, provide high diversity of habitat Year round Surf smelt spawning area and a sand lance spawning area are located along these beaches (see Salmonscape). Also migration corridor for salmonid species.</p> <p>Moderate for water quality and quantity functions.</p>	<p>Ecosystem processes:</p> <p>Alteration Rating: Low for north side. This alteration may impact some shoreline processes. There are areas of fill on the south side (railroad trestle), that may significantly affect shoreline processes by impeding tidal circulation and sediment transport.</p> <p>functions at shoreline:</p> <p>Alteration Rating: Low</p> <p>This shoreline has a low alteration relative to other shoreline areas in the City. Alteration consists of log raft wood debris (mixed in with beach substrate which may affect diversity of intertidal organisms. Potential for protection and restoration of habitat is high given the presence of surf smelt spawning areas, eelgrass habitat and salmonid habitat and fact that this is one of the longest contiguous stretches of high-quality, upper-intertidal sand-gravel beach in the City.</p>	<p>Ecosystem processes and functions:</p> <p>The Urban designation provides for a 0' setback and buffer for water dependent uses and 75' for non-water dependent uses. The upland area are highly altered in the westerly half of the spit.</p> <p>The eastern end of the spit remains relatively free of development. Conservancy shoreline provides for 100' setback and buffer. See variance and in-lieu procedure for Burrows Bay.</p> <p>Protection and restoration potential is very high given the relatively low alteration of processes and high quality habitat. In-lieu fees should be used to undertake restoration project 17 which is to replace the railroad trestle fill with an overwater structure. This would improve tidal circulation and sediment transport for Fidalgo Bay. Project 18 which is to acquire and protect the Weaverling spit beach on the north side should also be undertaken. See oblique air photo for location of restoration project.</p> <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>The western end of the spit is an appropriate area for the Urban zones if 75' setback/buffer is required and protection of beach is achieved though protection easement or acquisition. The eastern end is designated Conservancy to protect existing functions and values.</p>

South Fidalgo Bay: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name & Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Protection & restoration measures
<p>South Fidalgo Bay - Conservancy</p> <p>Shoreline Designation Map</p> <p>Shoreline Oblique Photo</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/rivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/rivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is high</p> <p>The conservancy portion of this shoreline is comprised of fine grained materials which probably originate from the north. It is a enclosed shoreline that experiences lower energy relative to other shorelines in the City.</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are very High</p> <p>Presence extensive mudflats, eelgrass beds, macro-algae, and fringing salt marsh, makes this area is one of the most diverse intertidal areas within the city. Also migration corridor for salmonid species.</p> <p>High for water quality and quantity functions.</p>	<p>Ecosystem processes:</p> <p>Alteration Rating: Moderate for most of shoreline. These alterations may impact some shoreline processes. High for processes altered by Railroad trestle. Trestle significantly restricts tidal circulation in Fidalgo Bay to the south and increases sedimentation.</p> <p>functions at shoreline:</p> <p>Alteration Rating: Low for habitat in the bay; moderate for shoreline.</p> <p>High for railroad trestle</p> <p>Potential for protection and restoration of habitat is high given the biological significance of this area..</p>	<p>Ecosystem processes and functions:</p> <p>Conservancy shoreline provides for 100' setback and buffer. See variance and in-lieu procedure for Burrows Bay.</p> <p>Protection and restoration potential is very high given the high quality habitat. In-lieu fees should be used to undertake restoration project 14, 15 and 16. Highest priority is restoration 17, replacement of railroad trestle, which presently impedes tidal circulation within Fidalgo Bay. See oblique air photo for location of restoration project.</p> <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>This is an appropriate area for the Conservancy zone. Given the significance of this area biologically and the relatively low to moderate overall degree of alteration and proposed restoration projects, the proposed designation and development standards/regulations should protect existing processes and functions.</p>

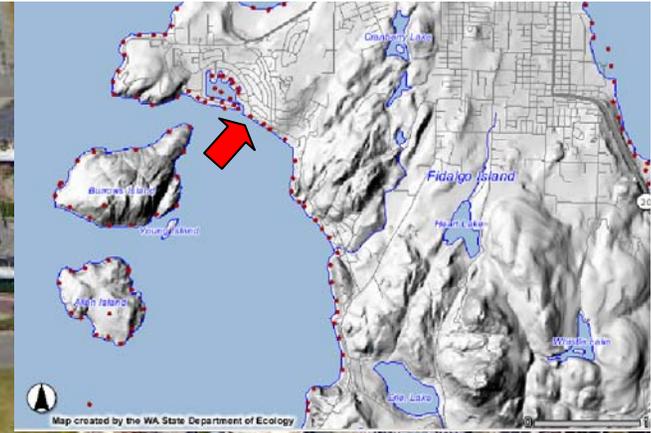
Padilla Bay: City of Anacortes SMP –Summary of Inventory/Characterization Analysis and SMP Designations and Regulations

Reach Name & Shoreline Designation	Potential Ecosystem process and associated shoreline function	Assessment of processes & functions	Level of alteration to processes & functions	Protection & restoration measures
<p>Southwest Padilla Bay - Conservancy</p> <p>Shoreline Designation Map</p> <p>Shoreline Oblique Photo</p>	<p>Ecosystem process: water movement (tidal and wave energy); sediment movement (inputs, longshore transport, deposition and loss); shoreline erosion; and movement of woody debris; organic inputs from shoreline;</p> <p>Shoreline functions: Water quantity – discharge from streams/ivers and groundwater at shoreline Water quality - temperature regulation (i.e. marine riparian vegetation, groundwater discharge at shoreline, freshwater inputs from streams/ivers); nutrient removal (denitrification), sediment retention (e.g. deposition in estuaries and intertidal mudflats), toxicant removal & temperature regulation Habitat: shoreline, intertidal, estuarine, subtidal habitats. Habitat structure and complexity for marine plants, macroalgae, diatoms, marine invertebrates, fishes, birds, mammals and anadromous fish species and terrestrial plants and animals.</p>	<p>Ecosystem processes :</p> <p>Rating: Potential is high</p> <p>The intertidal portion of this shoreline is comprised of fine grained materials (tideflats). The upland portion of the shoreline is comprised of unconsolidated material less than 10 meters high. It is an enclosed shoreline that experiences lower energy relative to other shorelines in the City. Data on shoreline processes for this shoreline segment are not presently available.</p> <p>Shoreline functions</p> <p>Rating: Habitat functions are very High</p> <p>Presence of extensive mudflats, eelgrass beds, macro-algae, and fringing salt marsh, makes this area is one of the most diverse intertidal areas within the city. The shoreline is documented as potential spawning habitat for forage fish. Also migration corridor for salmonid species.</p> <p>High for water quality and quantity functions.</p>	<p>Ecosystem processes:</p> <p>Alteration Rating: High for most of shoreline. This is a former mill site which extensively altered the upland portion of the shoreline as well as filling and altering portions of the shoreline. These alterations may impact many of the shoreline processes. In particular, the existing fill and armoring for the shoreline road extends into the intertidal area and significantly restricts tidal circulation.</p> <p>functions at shoreline:</p> <p>Alteration Rating: Low for habitat in the bay; moderate for shoreline.</p> <p>Potential for protection and restoration of habitat is high given the biological significance of this area. Restoration potential for salmonid habitat is lower.</p>	<p>Ecosystem processes and functions:</p> <p>Conservancy shoreline provides for 100' setback and buffer and restricts uses to those that are compatible with adjacent significant habitat resources. Any reduction in buffer and setback shall use variance and in-lieu procedure (see Burrows Bay).</p> <p>The former mill site is subject to a clean up order and plan per the Dept of Ecology. Protection and restoration potential is very high given the relatively intact condition of the adjoining marine and intertidal habitat in Padilla Bay. In-lieu fees in combination with clean-up funds should be used to restore intertidal and shoreline habitat, including former tidal marsh habitat.</p> <p>This should also include consideration of removal of all or a portion of the fill and rip-rap for the shoreline road immediately to the north of the former mill site.</p> <p>Consistency of Environment Designation with assessment of processes and functions and degree of alteration.</p> <p>This is an appropriate area for the Conservancy zone. Given the significance of this area biologically and the relatively low to moderate overall degree of alteration and proposed restoration projects, the proposed designation and development standards/regulations should protect existing processes and functions.</p>

Burrows Bay - Anacortes



Burrows Bay – West End



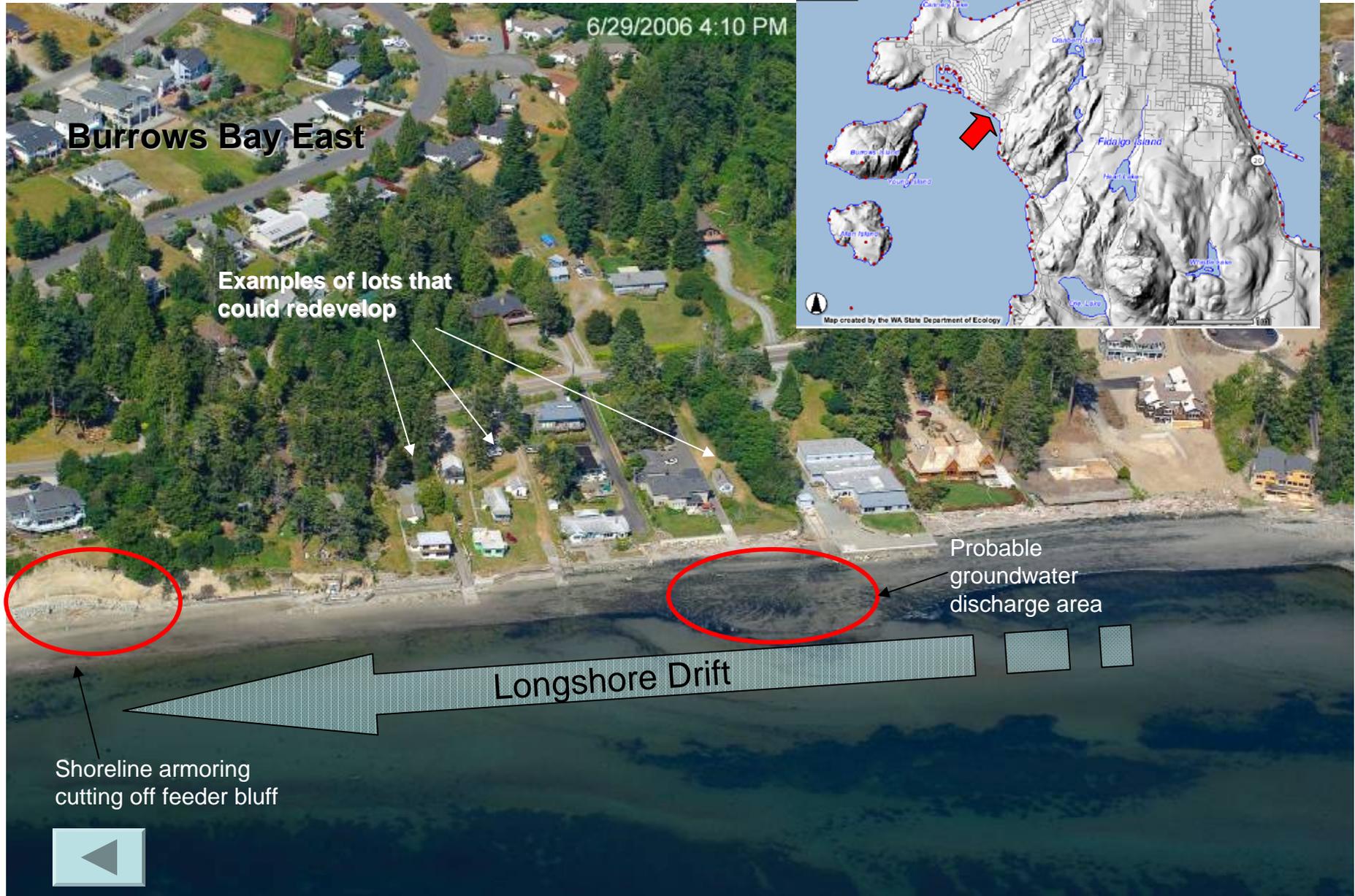
Unconsolidated deposits
along entire shoreline –
source of beach sediment

Sand Lance Spawning Habitat

Longshore Drift

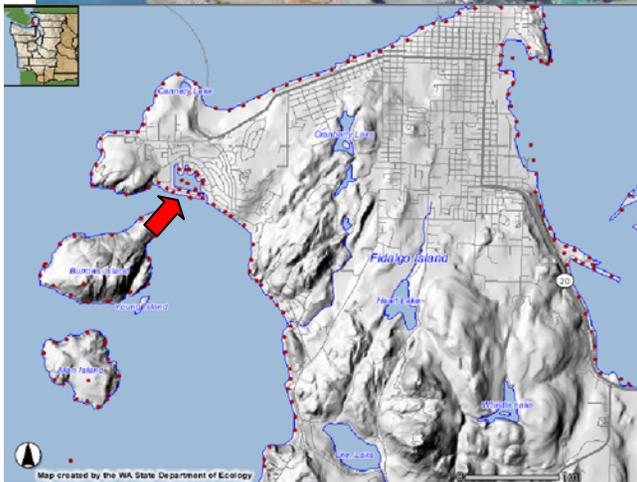
Moderate wave
energy





6/29/2006 4:08 PM

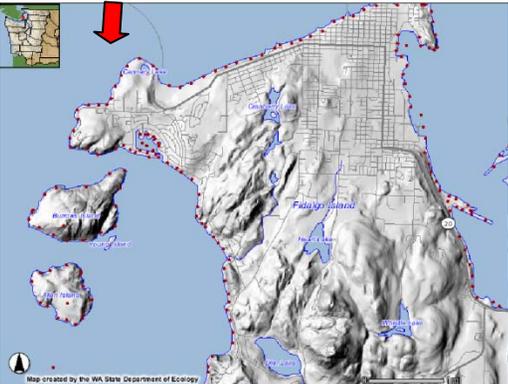
**Shoreline
Residential II**



Urban



Shannon Point & Fidalgo Head



Fidalgo Head — Natural designation on south side

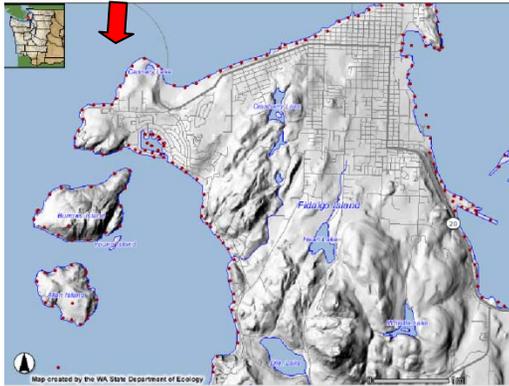
Restoration opportunity — remove rip-rap

Longshore Drift

Longshore Drift

Conservancy





Shannon Point

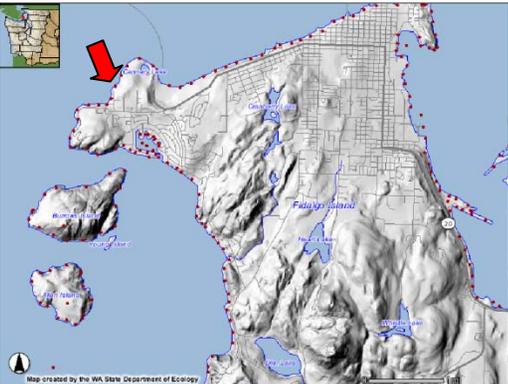


Important area for movement of sediment towards beaches at Ship Harbor

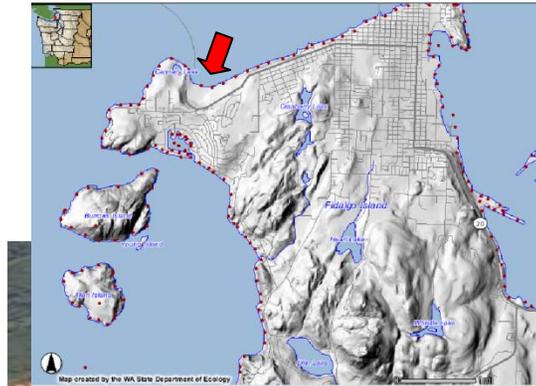


Conservancy Designation

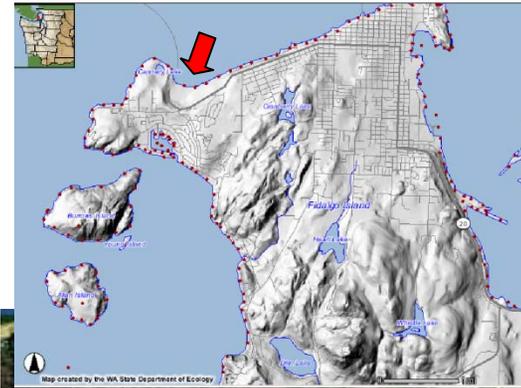
Shannon Point



Ship Harbor Wetland



Ship Harbor Wetland



150' buffer on wetland –
wetland has conservation
easement

Prograding Beach –
Sand Lance Habitat

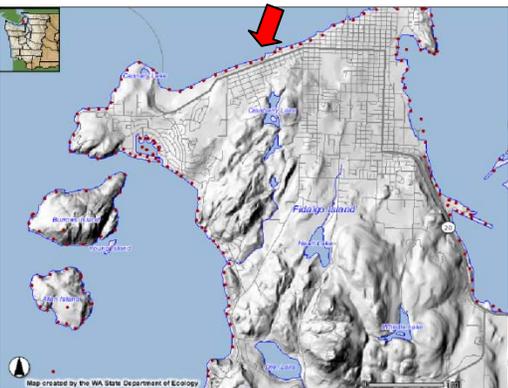
Restoration # 34

Longshore Drift



© 2010 Corporation
courtesy of L

East of Ship Harbor



Heavily armored shoreline – sediment processes altered

Shoreline Residential 3

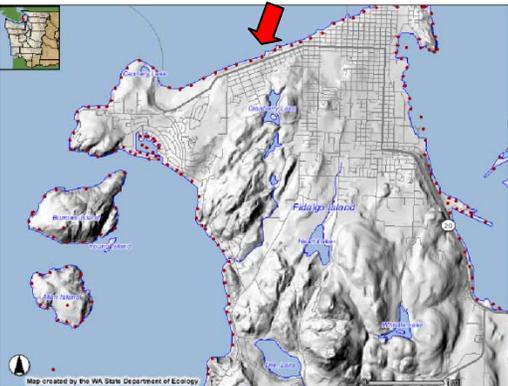
Biological functions high – kelp, patchy eelgrass, salmon habitat.

Latitude: 48.7982 °N
Longitude: 122.5398 °W
Altitude: 229 feet

200 yds

© 2008 Microsoft Corporation. © 2008 INRTEQ
© 2008 Image courtesy of USGS. © 2008 Microsoft International Corp.

East of Ship Harbor



Potential development

Potential development

Proposed trail on top of RR bed

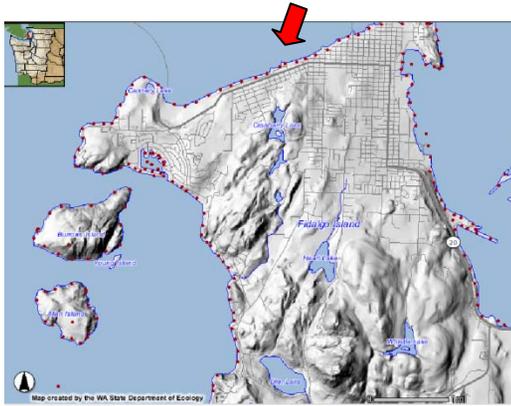
Development encroaching on bluff

Biological functions high – kelp, patchy eelgrass, salmon habitat.

Heavily armored shoreline – sediment processes altered

High Restoration Potential

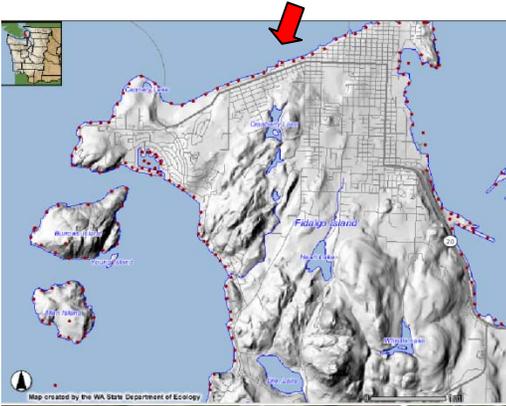
Lovric's Marina



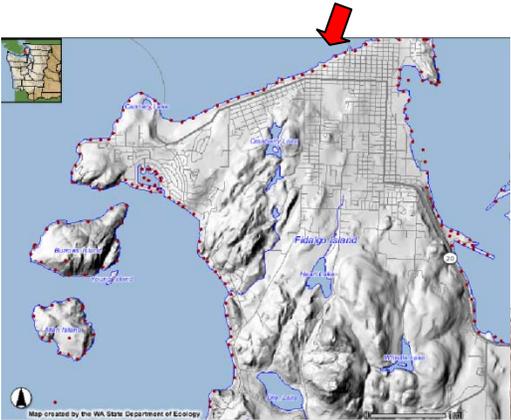
Residential 1

Lovric's Marina -
Urban

Lovric's Marina



Lovric's Marina and East



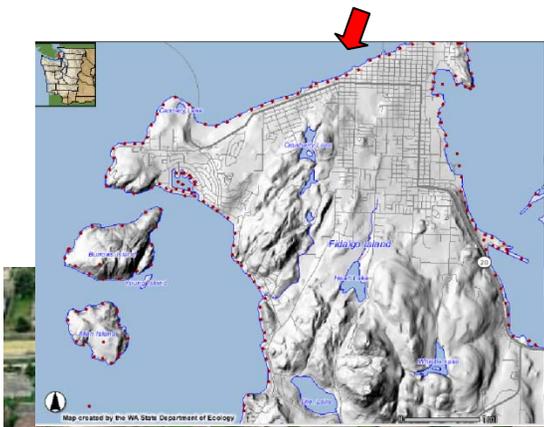
Restoration Opportunity #32

Restoration Opportunity #31

Residential 1 - 75' setback and buffer



East of Lovric's Marina



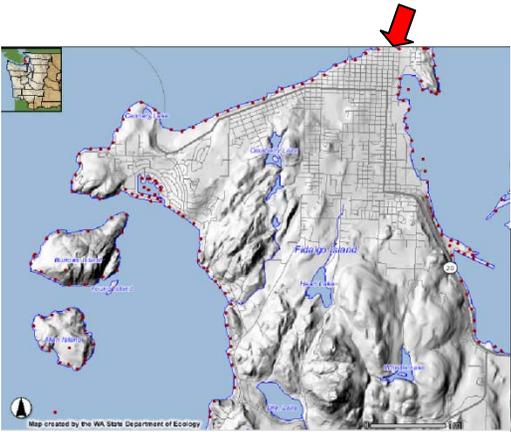
Vegetation on bluff has been cut

Shoreline armoring affecting sediment processes

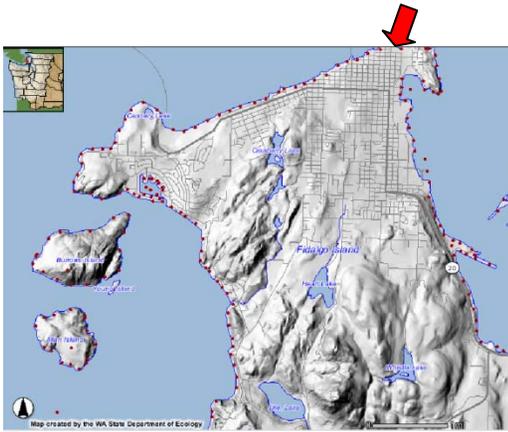
Restoration # 30 – remove structure

Patchy eelgrass and macroalgae

Cap Sante North



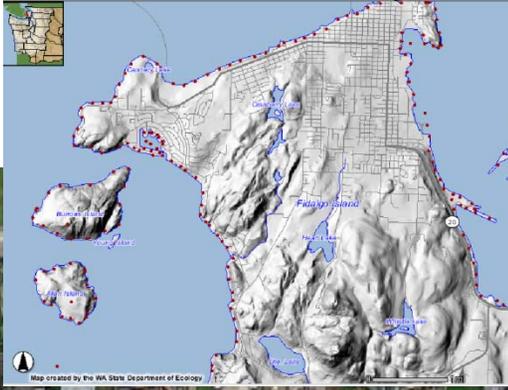
Cap Sante North



Highly altered shoreline

Urban Maritime

Cap Sante North



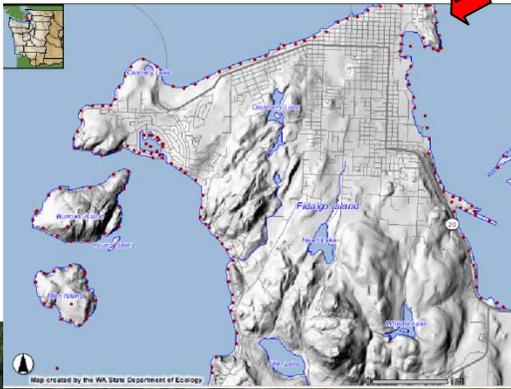
Cap Sante



Conservancy

Shoreline Residential 1

Cap Sante

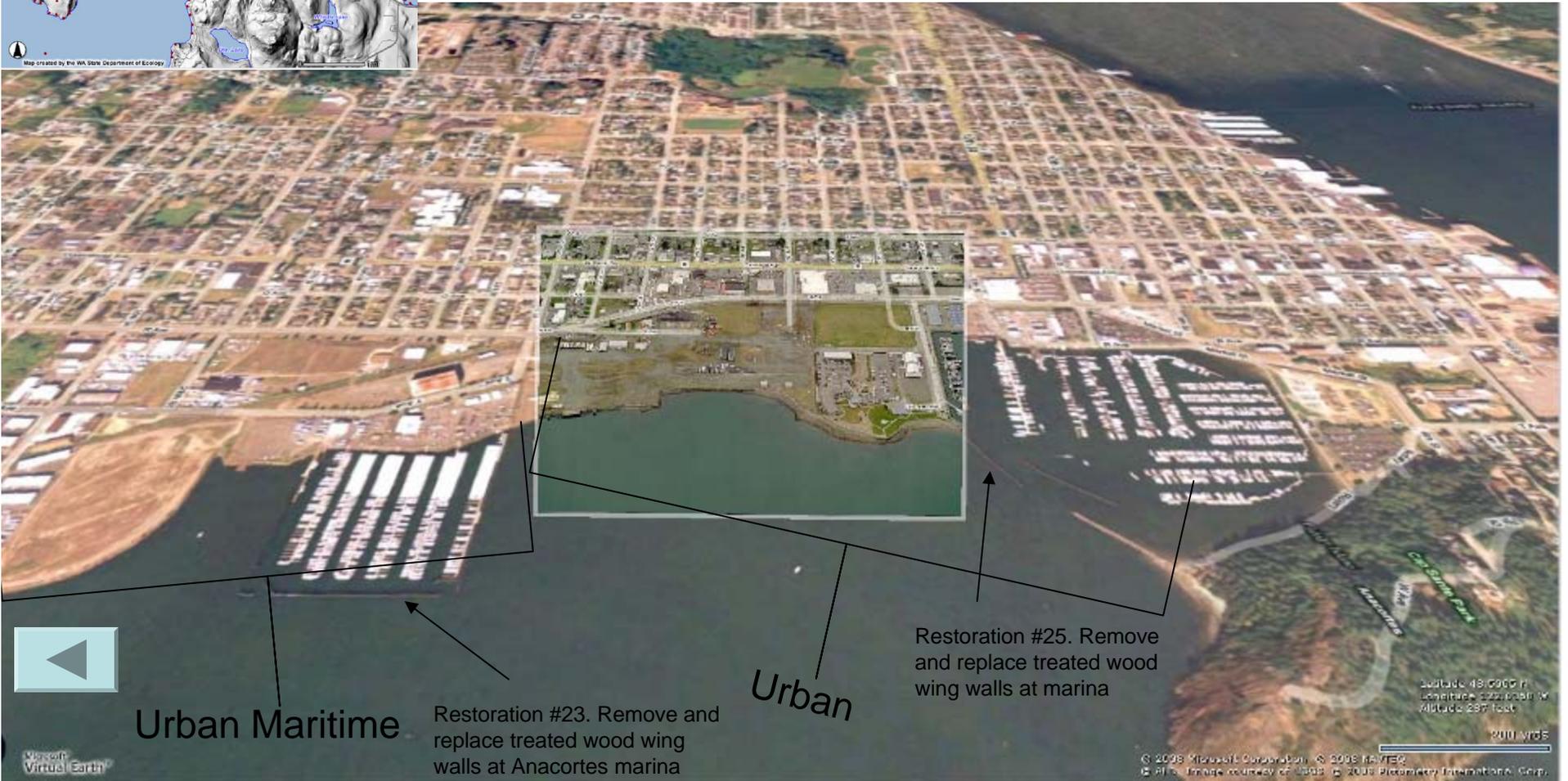
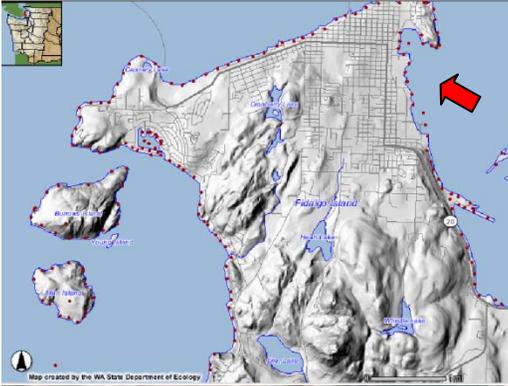


Conservancy

Shoreline Residential 1



Cap Sante Marina



Urban Maritime

Restoration #23. Remove and replace treated wood wing walls at Anacortes marina

Urban

Restoration #25. Remove and replace treated wood wing walls at marina



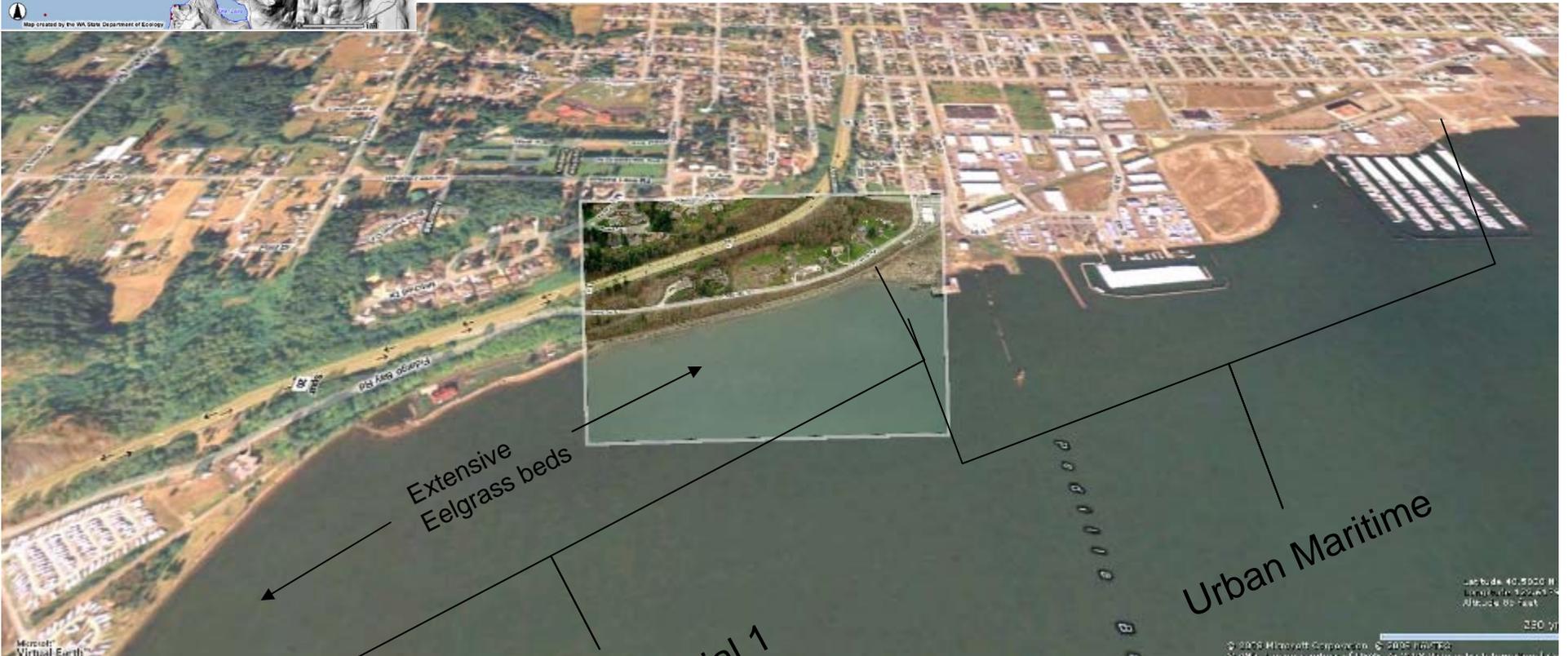
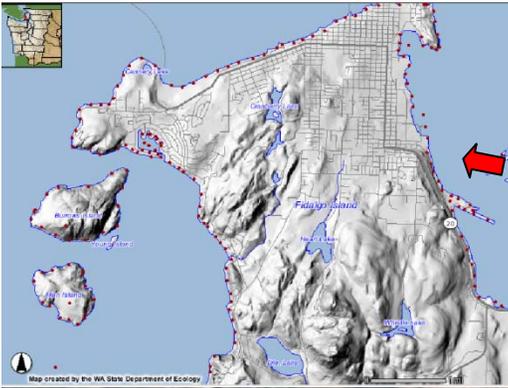
Microsoft
Virtual Earth

© 2008 Microsoft Corporation. © 2008 NAVTEQ
Latitude: 48.0965 N
Longitude: 122.0280 W
Altitude: 287 feet
200 YDS

Cap Sante Marina South



North of Weaverling Spit





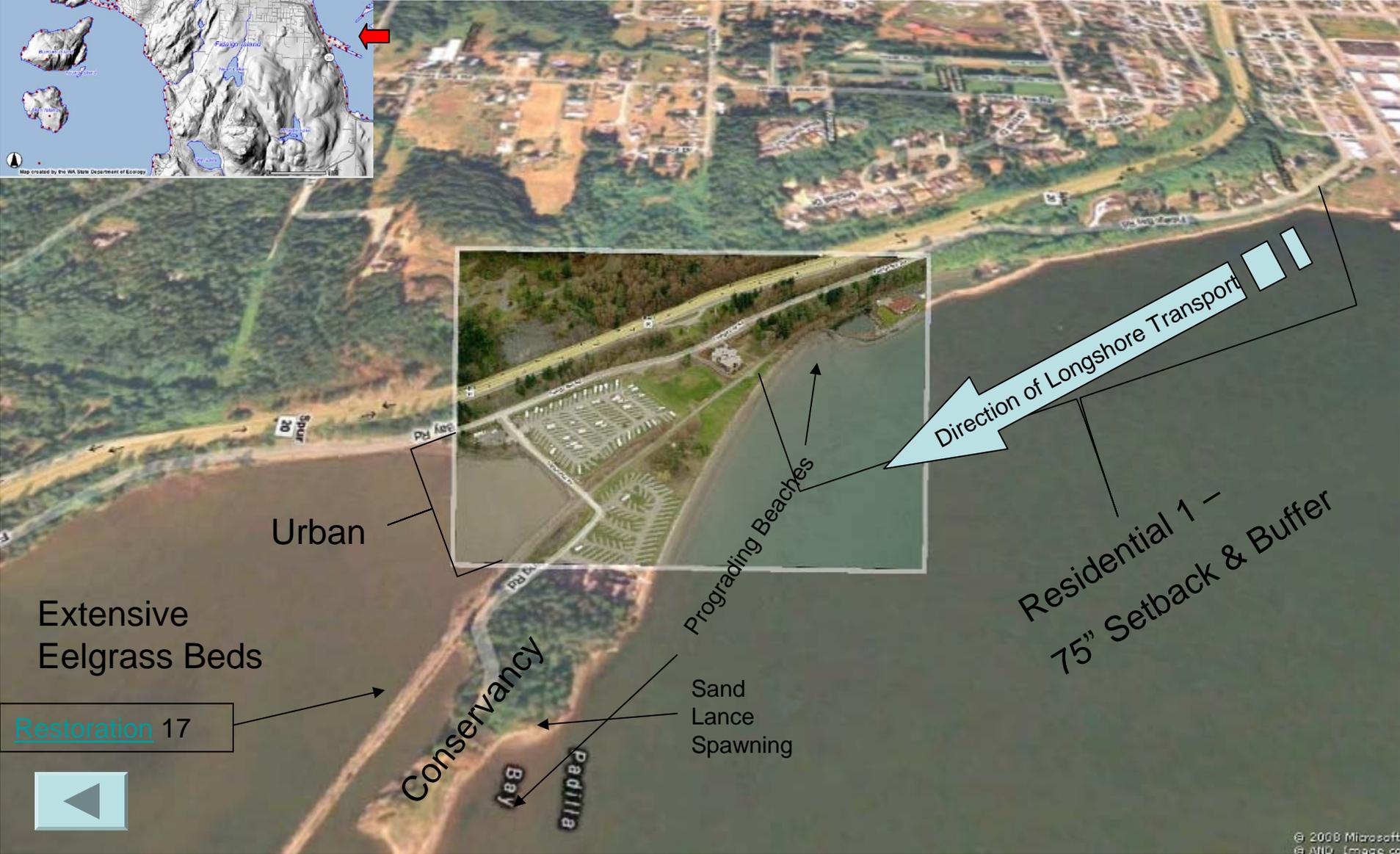
Hide labels

Restoration 18 – reposition rip-rap along beach to expand spawning area

Smelt spawning beaches along entire urban designation

Direction of Longshore Transport

Weaverling Spit



Weaverling Spit



Weaverling Spit



Restoration 18 – acquire
beach – year round surf
smelt spawning area

Restoration # 20 –
remove pond and
restore shoreline

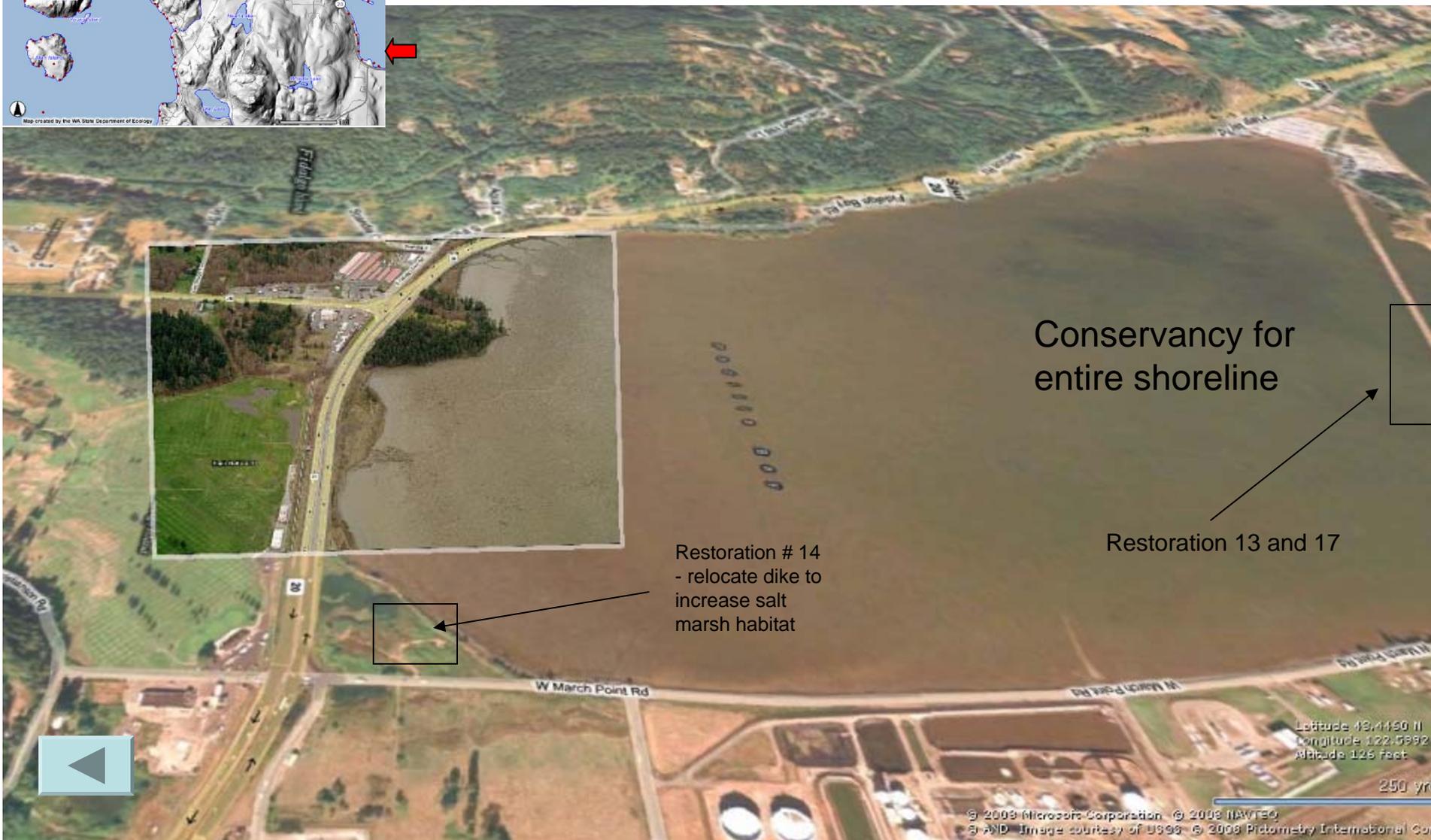
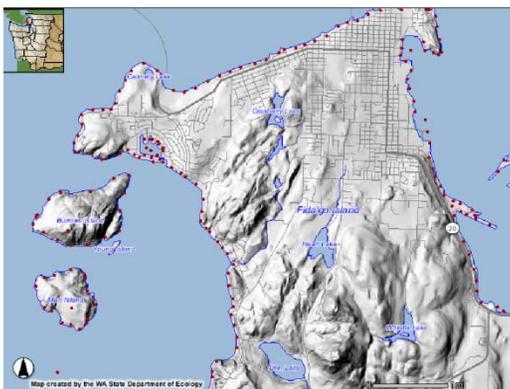
Weaverling Spit



Restoration # 20 –
remove pond and
restore shoreline

Restoration 18 – acquire
beach – year round surf
smelt spawning area

Fidalgo Bay



Conservancy for entire shoreline

Restoration 13 and 17

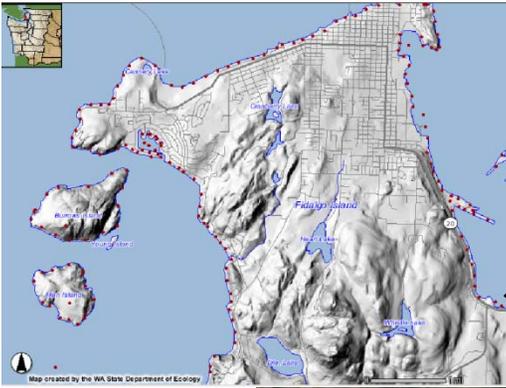
Restoration # 14
- relocate dike to
increase salt
marsh habitat

Latitude 48.4490 N
Longitude 122.5992 W
Altitude 126 Feet

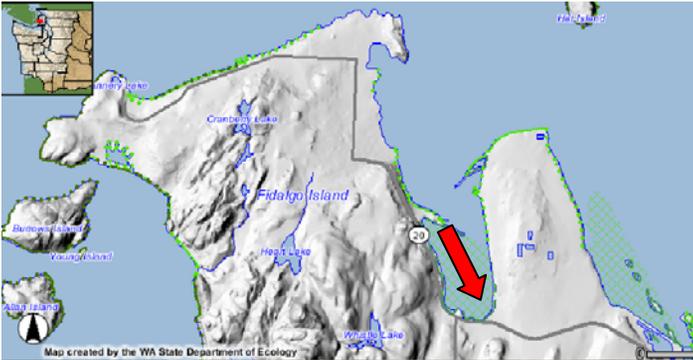
250 yrd

© 2008 Microsoft Corporation. © 2008 NAVTEQ.
© AND Image courtesy of USGS. © 2008 Pictometry International Corp.

Fidalgo Bay – South End



Fidalgo Bay



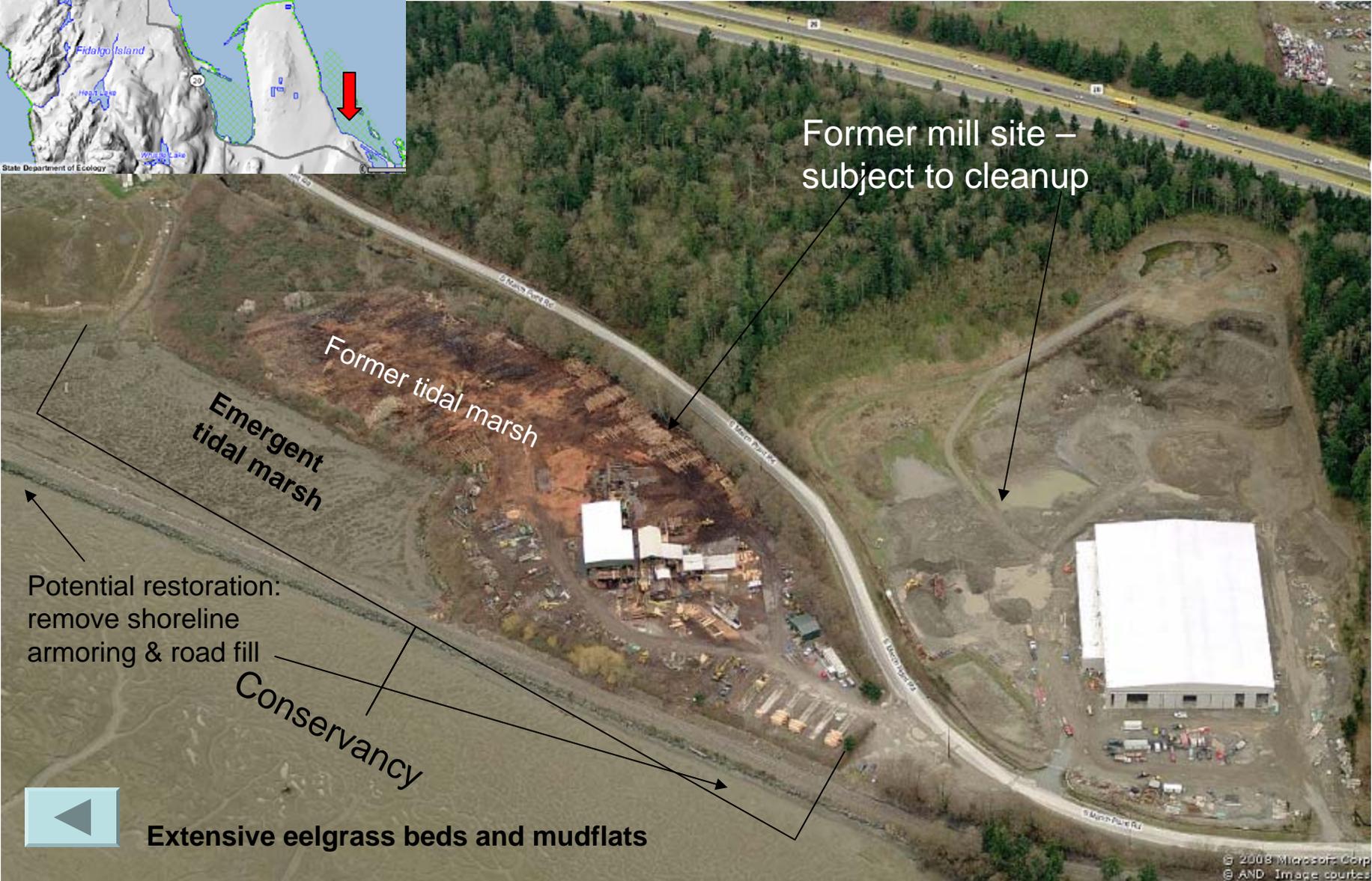
Remove dike to allow tidal inundation and restoration of salt marsh habitat towards intersection



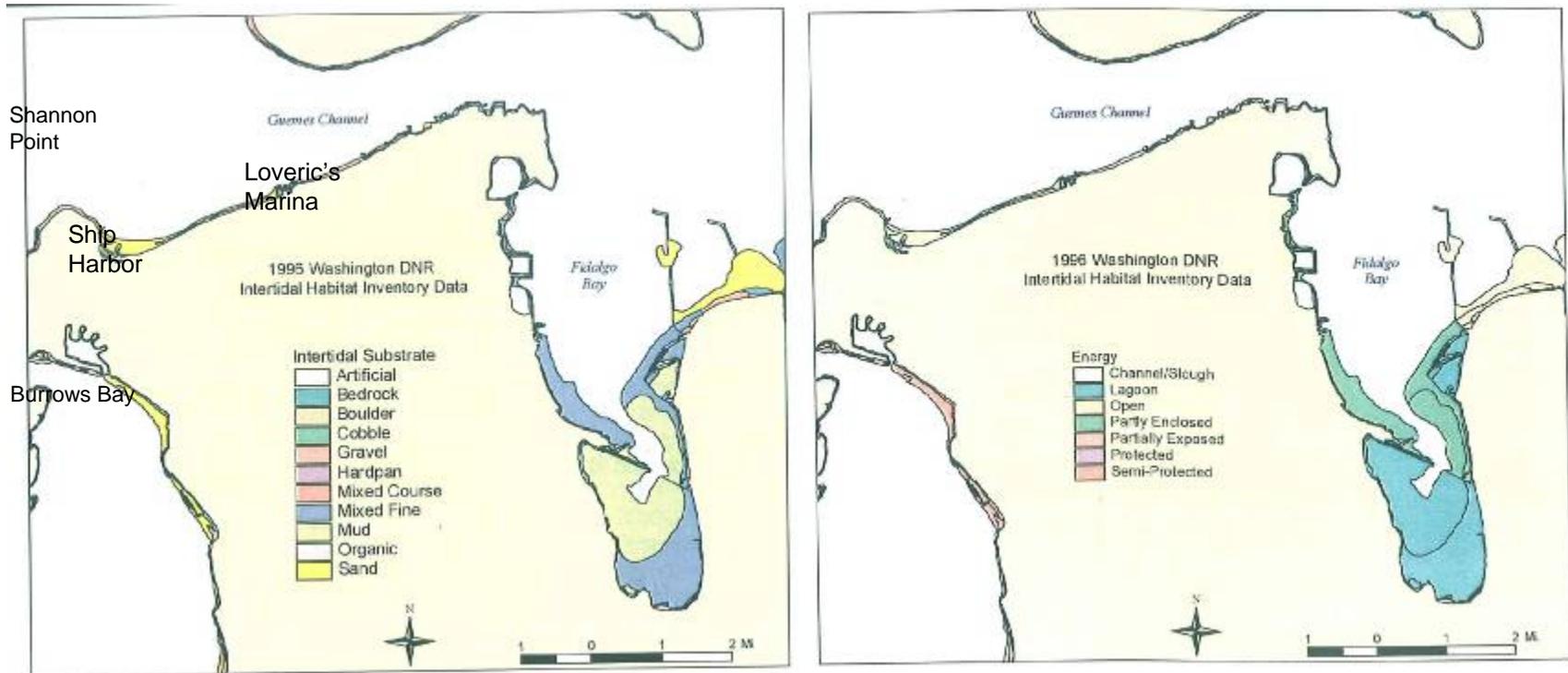
Southwest Padilla Bay



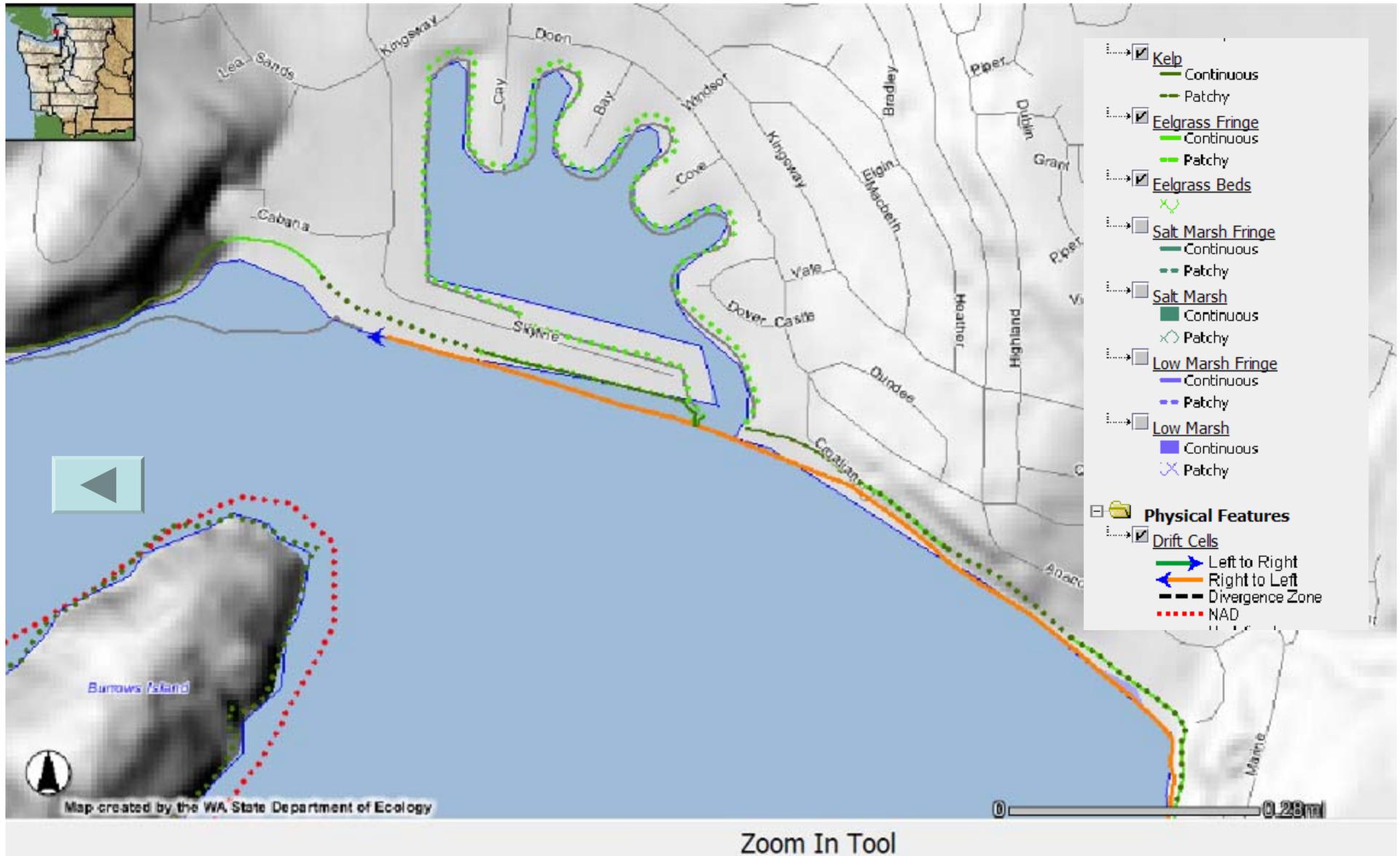
Southwest Padilla Bay



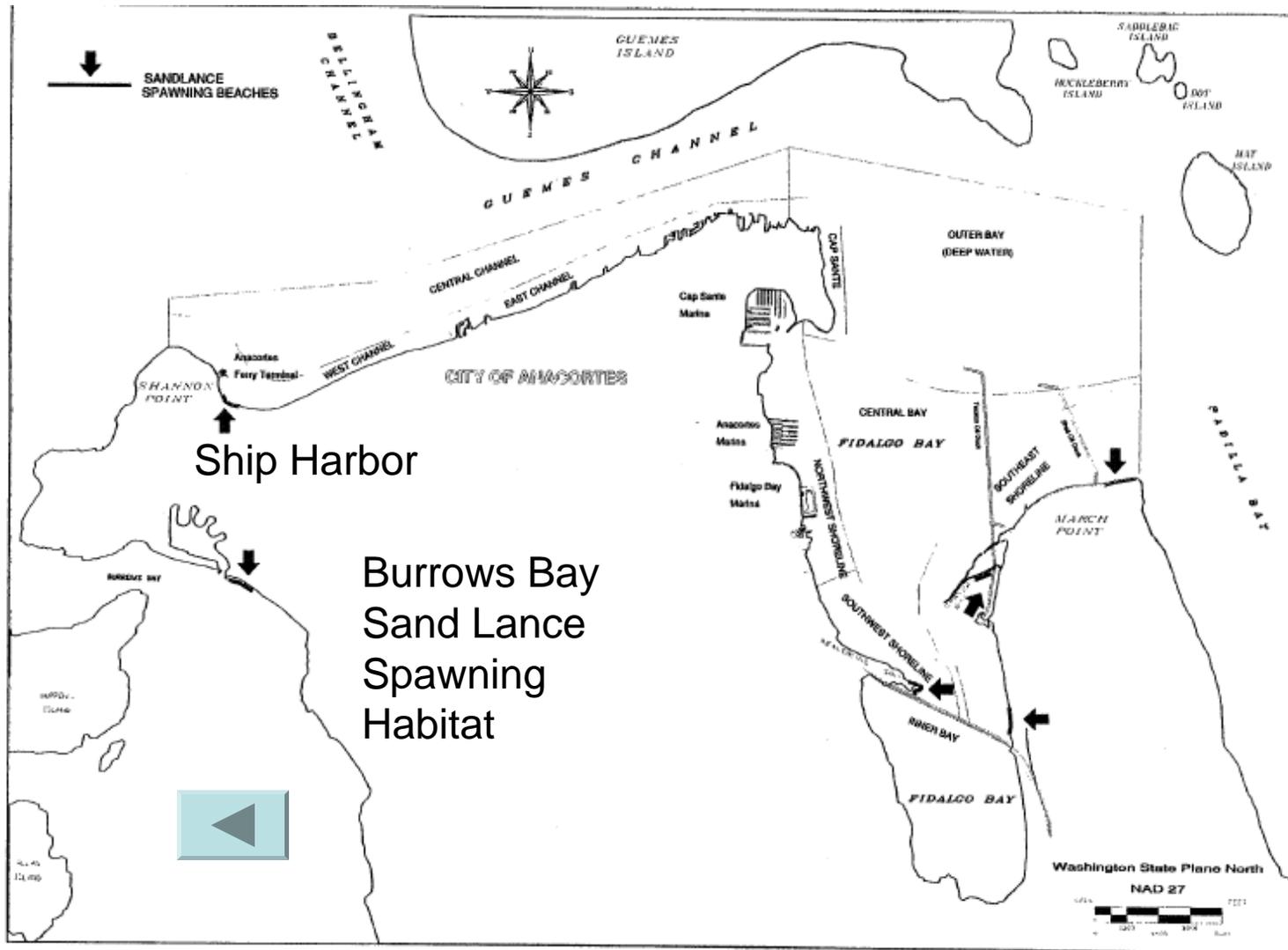
Shoreline Processes



Coastal Atlas - Processes & functions

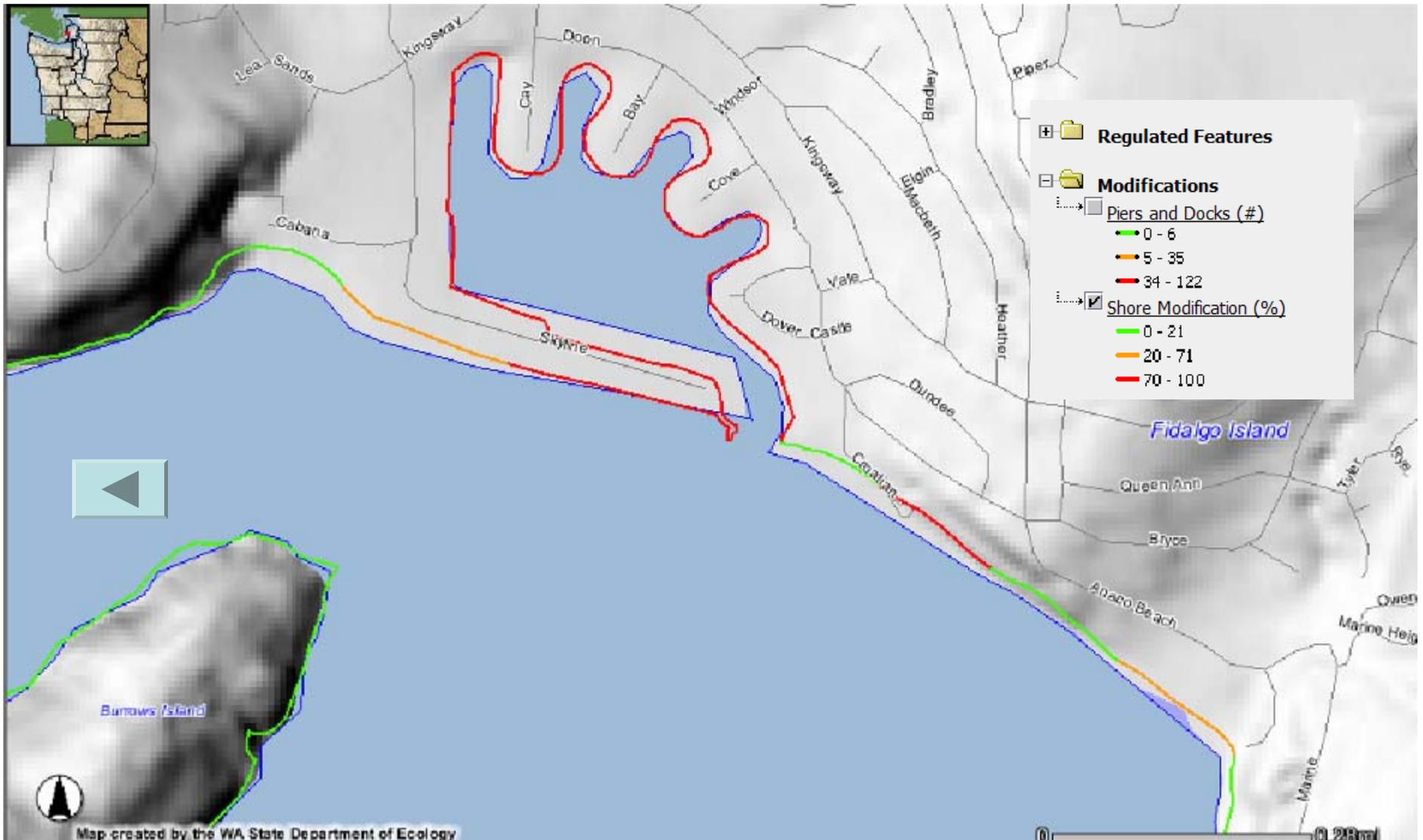


- Kelp**
 - Continuous
 - Patchy
- Elgrass Fringe**
 - Continuous
 - Patchy
- Elgrass Beds**
 - Patchy
- Salt Marsh Fringe**
 - Continuous
 - Patchy
- Salt Marsh**
 - Continuous
 - Patchy
- Low Marsh Fringe**
 - Continuous
 - Patchy
- Low Marsh**
 - Continuous
 - Patchy
- Physical Features**
 - Drift Cells**
 - Left to Right
 - Right to Left
 - Divergence Zone
 - NAD



Source: Figure 12, Revised Final Integrated Fidalgo Bay-Wide Plan and EIS

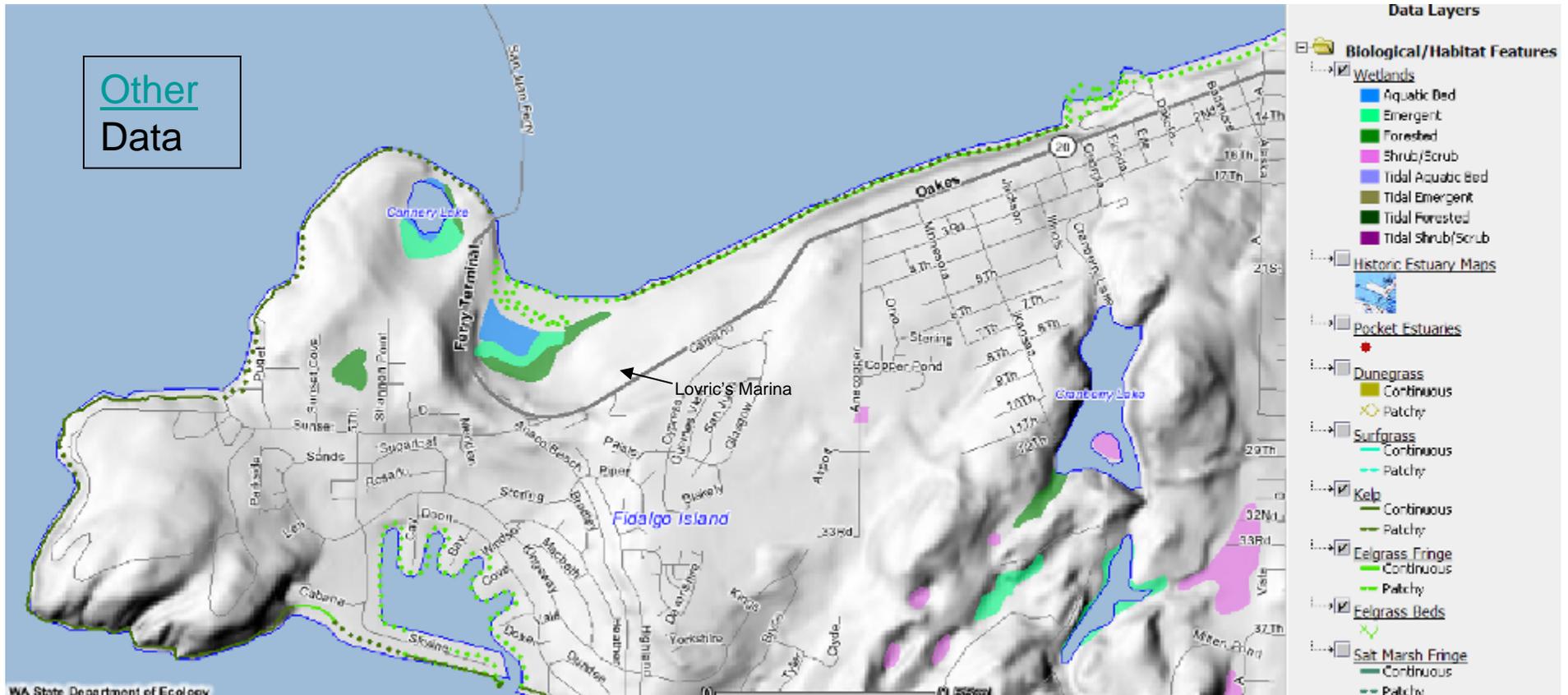
Coastal Atlas - Processes & functions



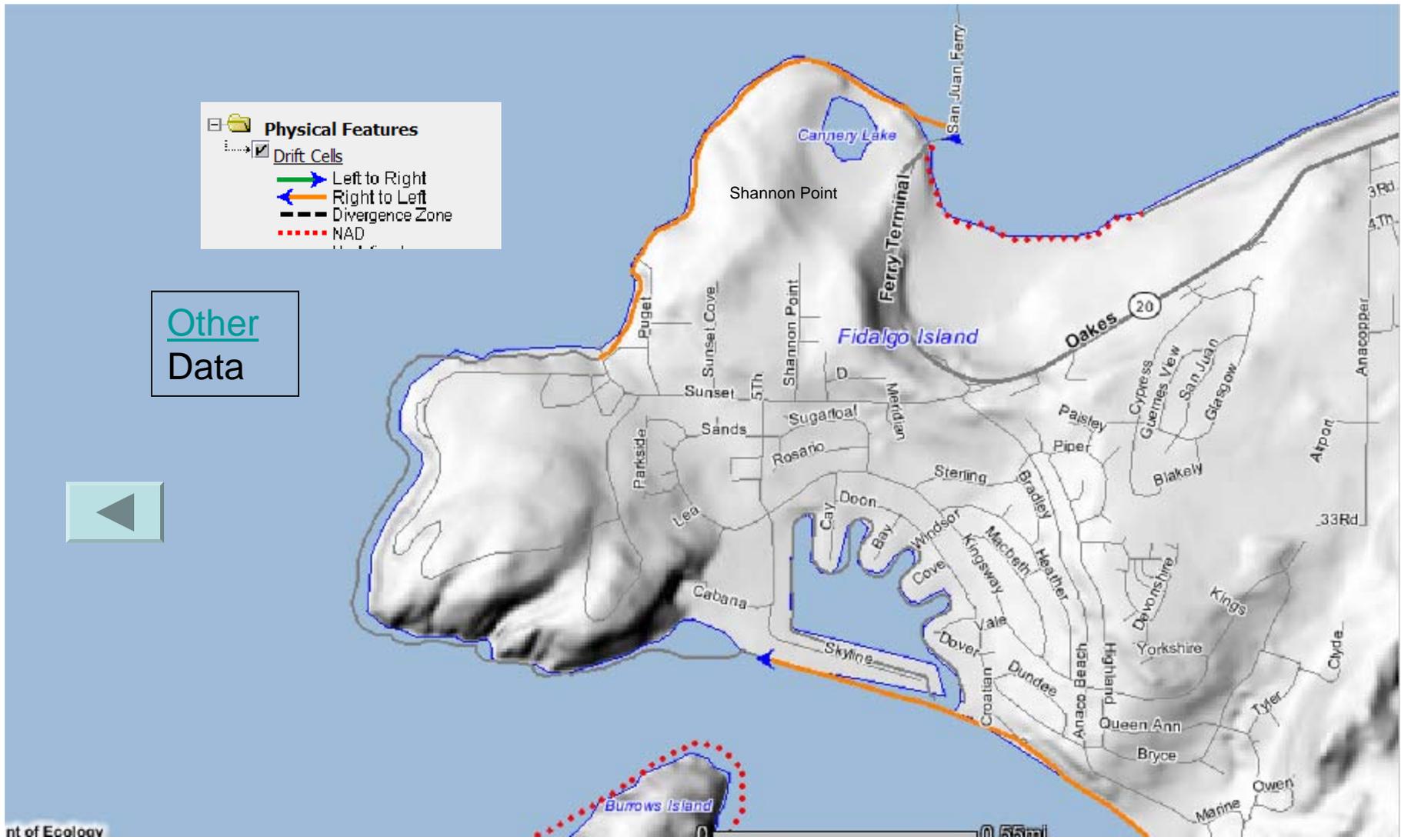
Coastal Atlas - Processes & functions



Coastal Atlas - Processes & functions



Coastal Atlas - Processes & functions



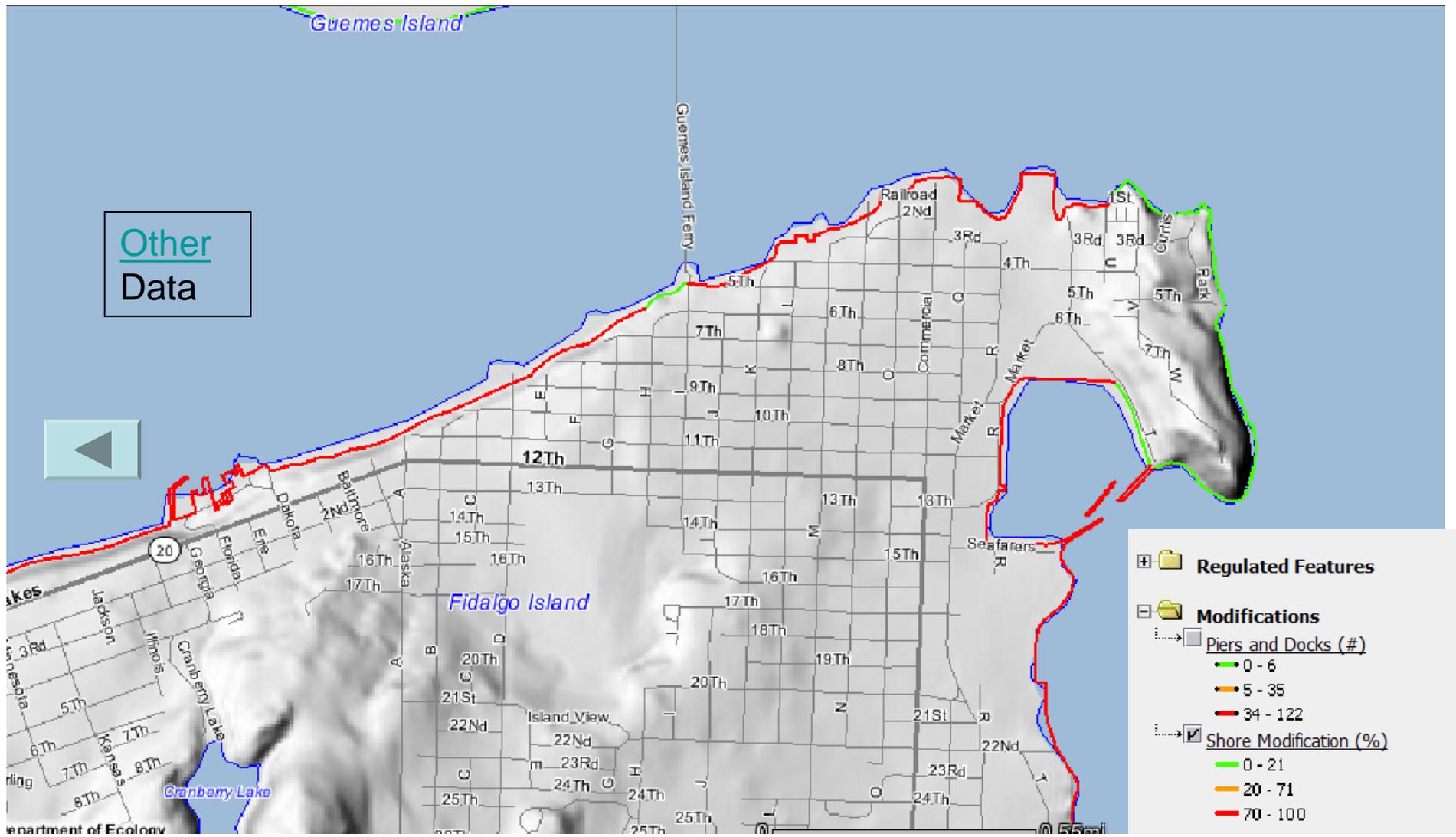
Coastal Atlas - Processes & functions



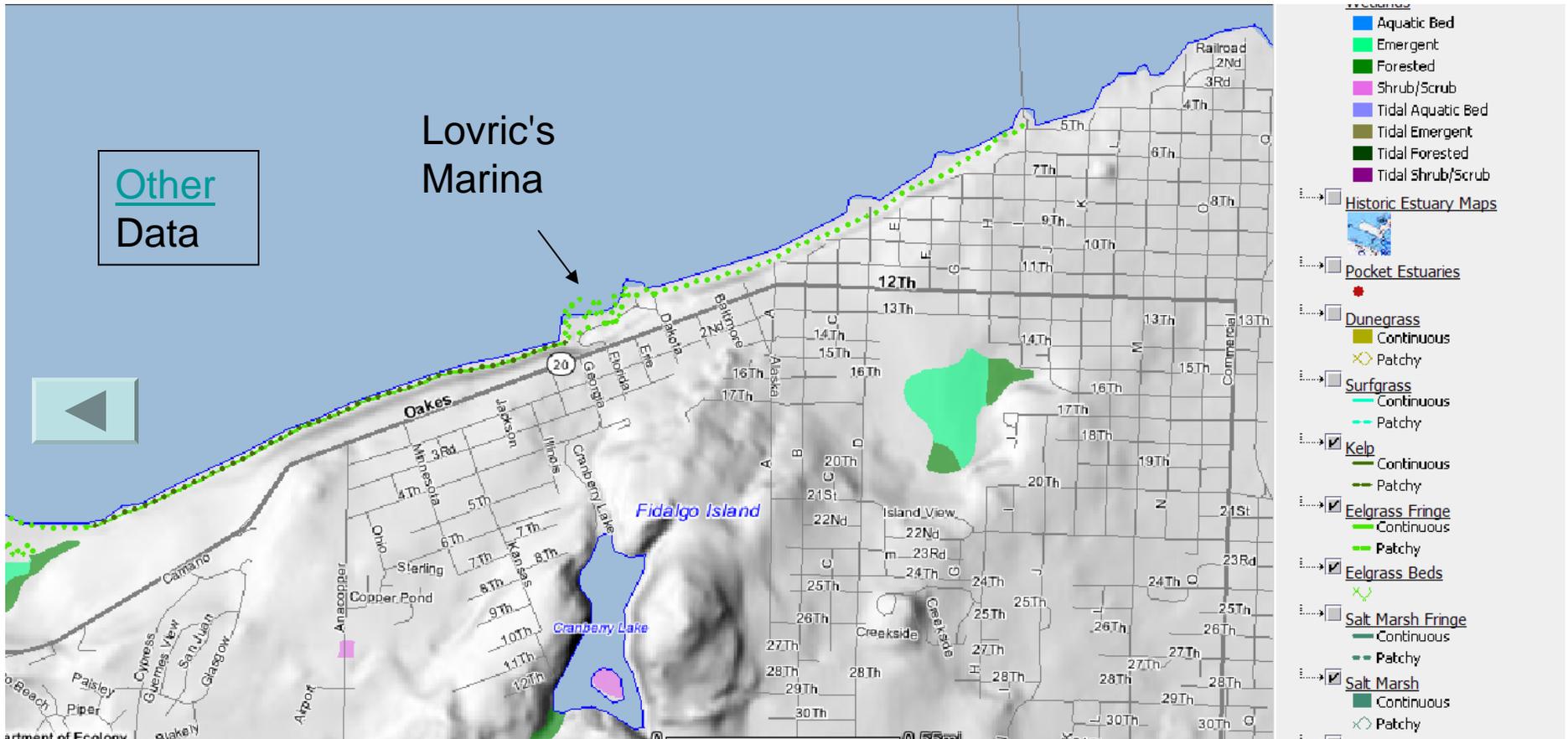
Coastal Atlas - Processes & functions



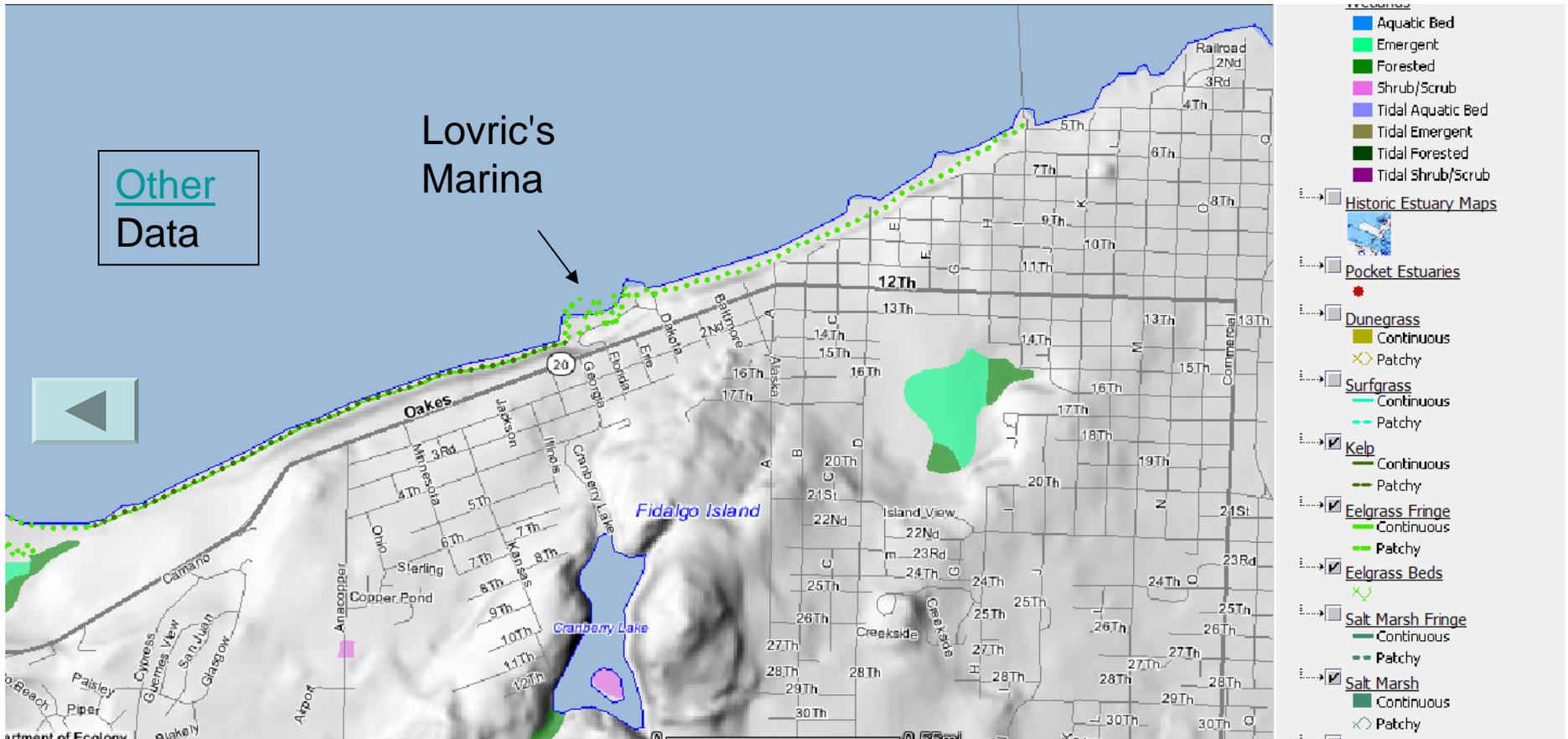
Coastal Atlas - Processes & functions



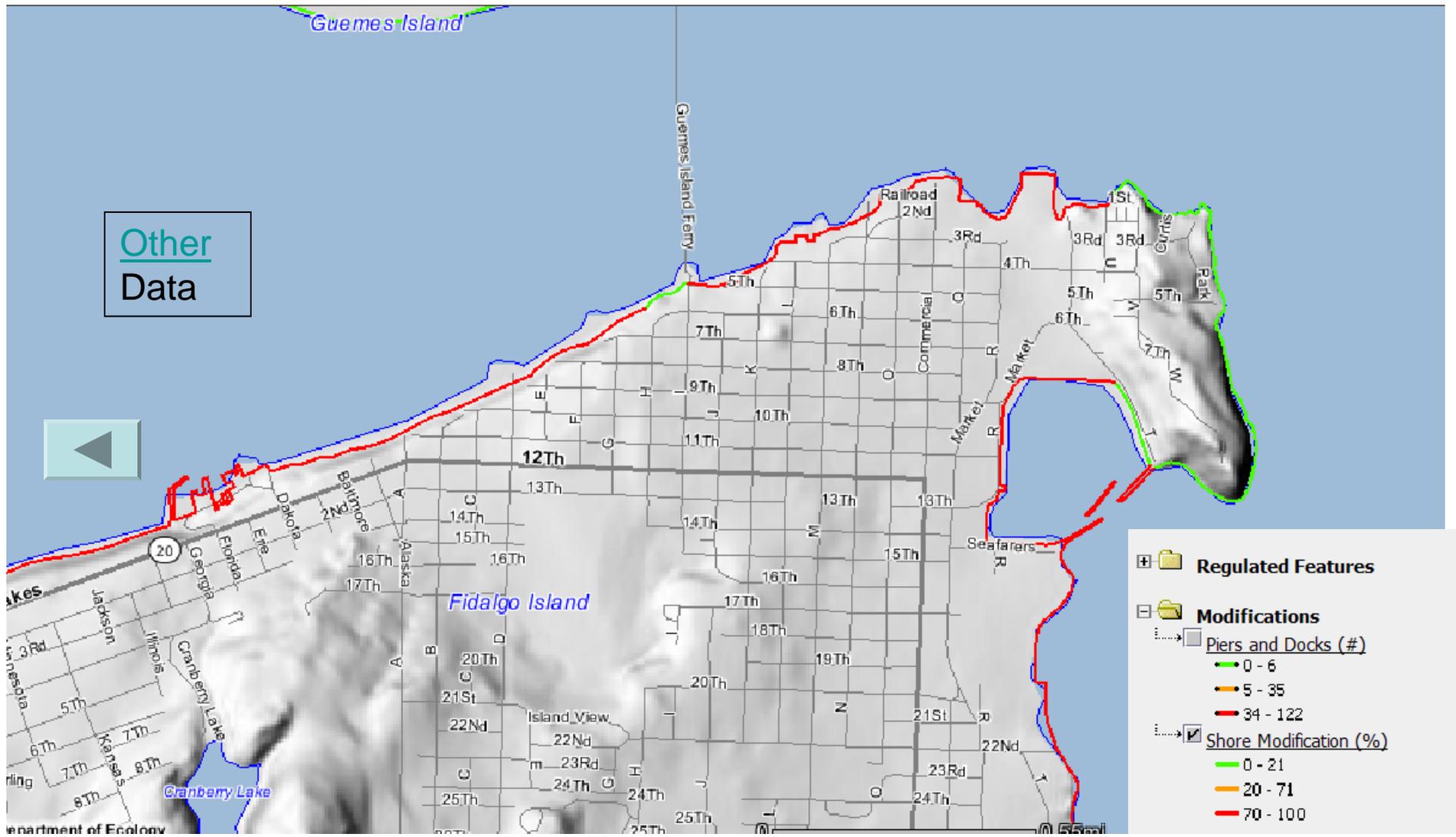
Coastal Atlas - Processes & functions



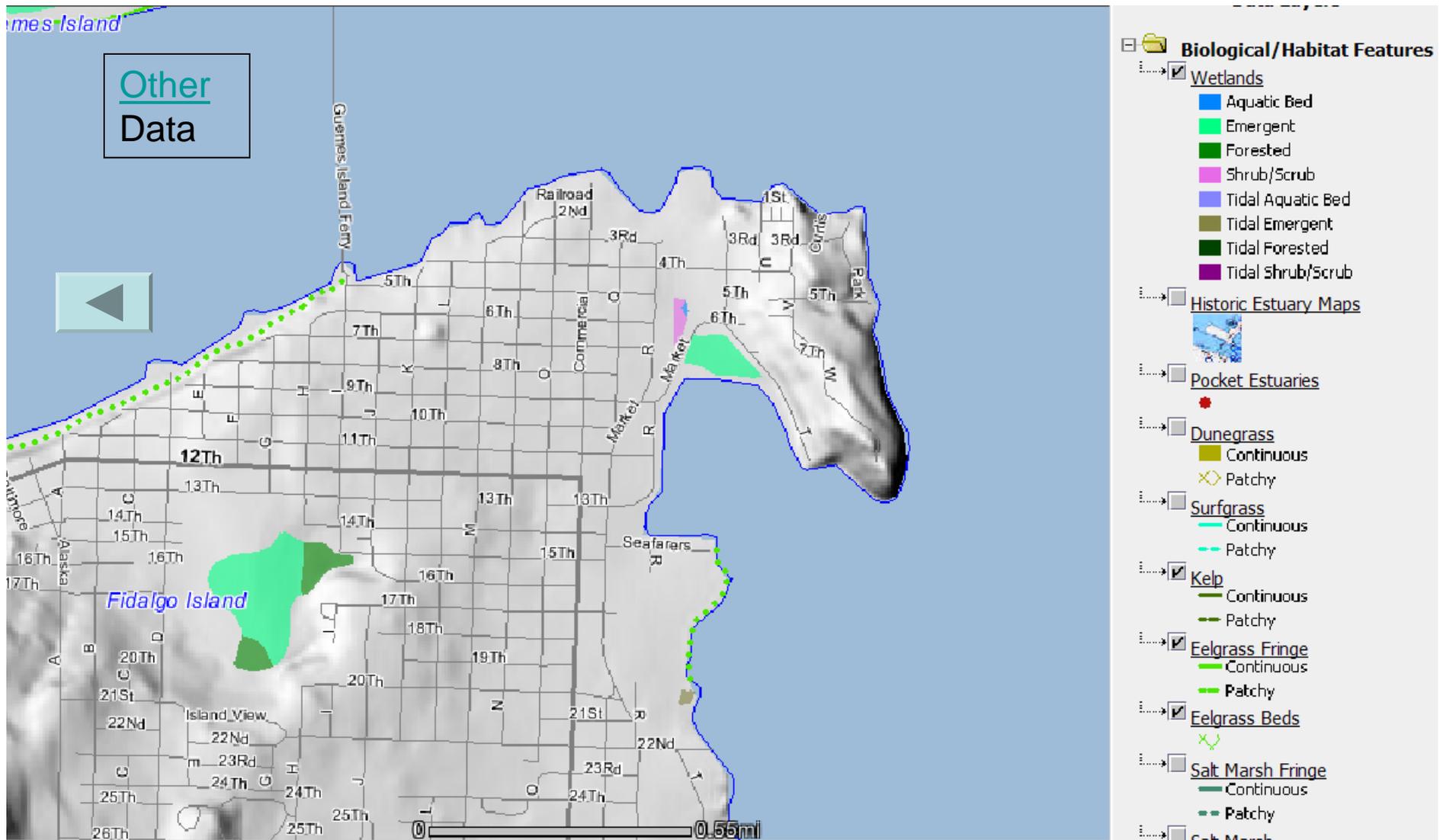
Coastal Atlas - Processes & functions



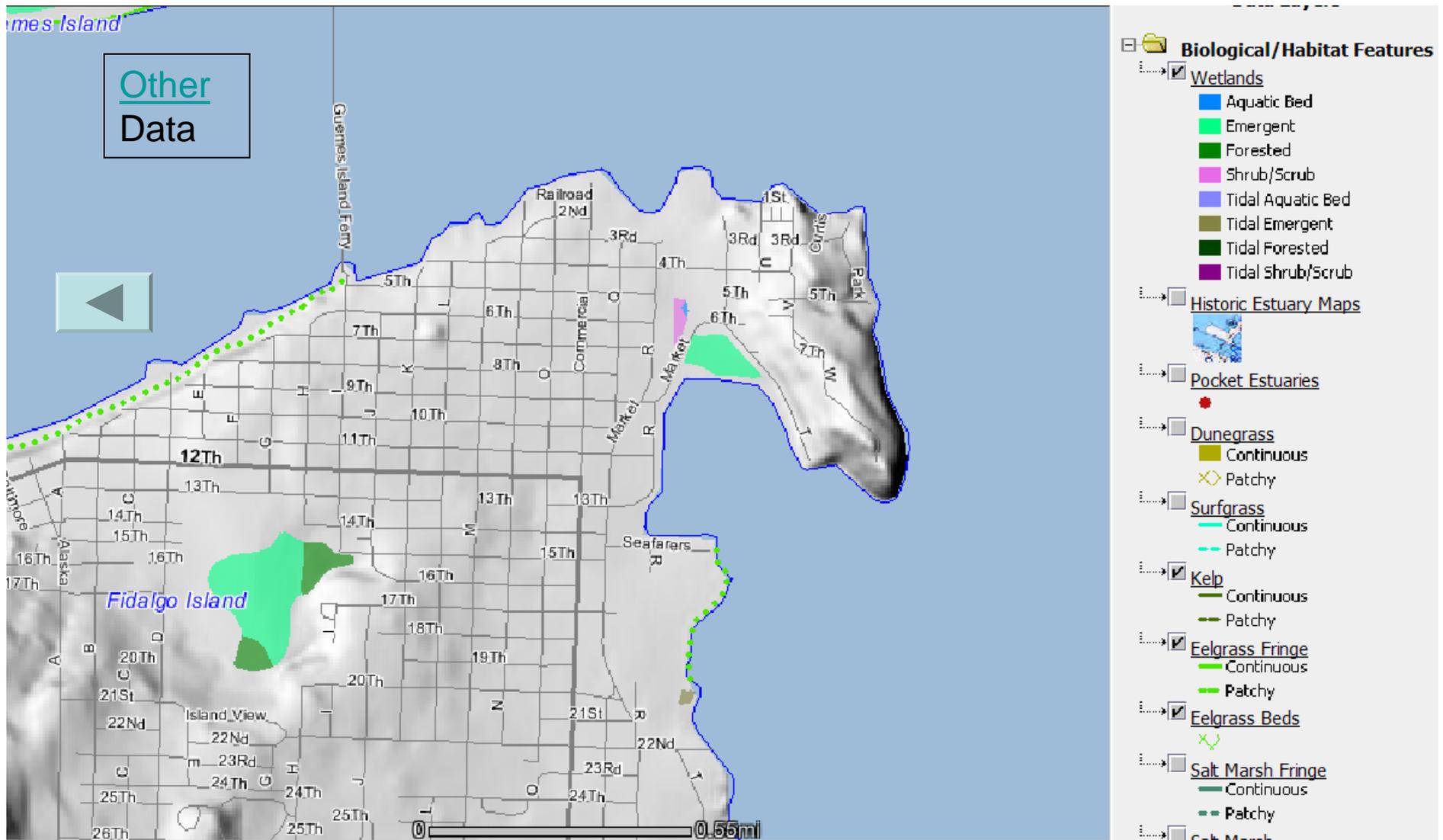
Coastal Atlas - Processes & functions



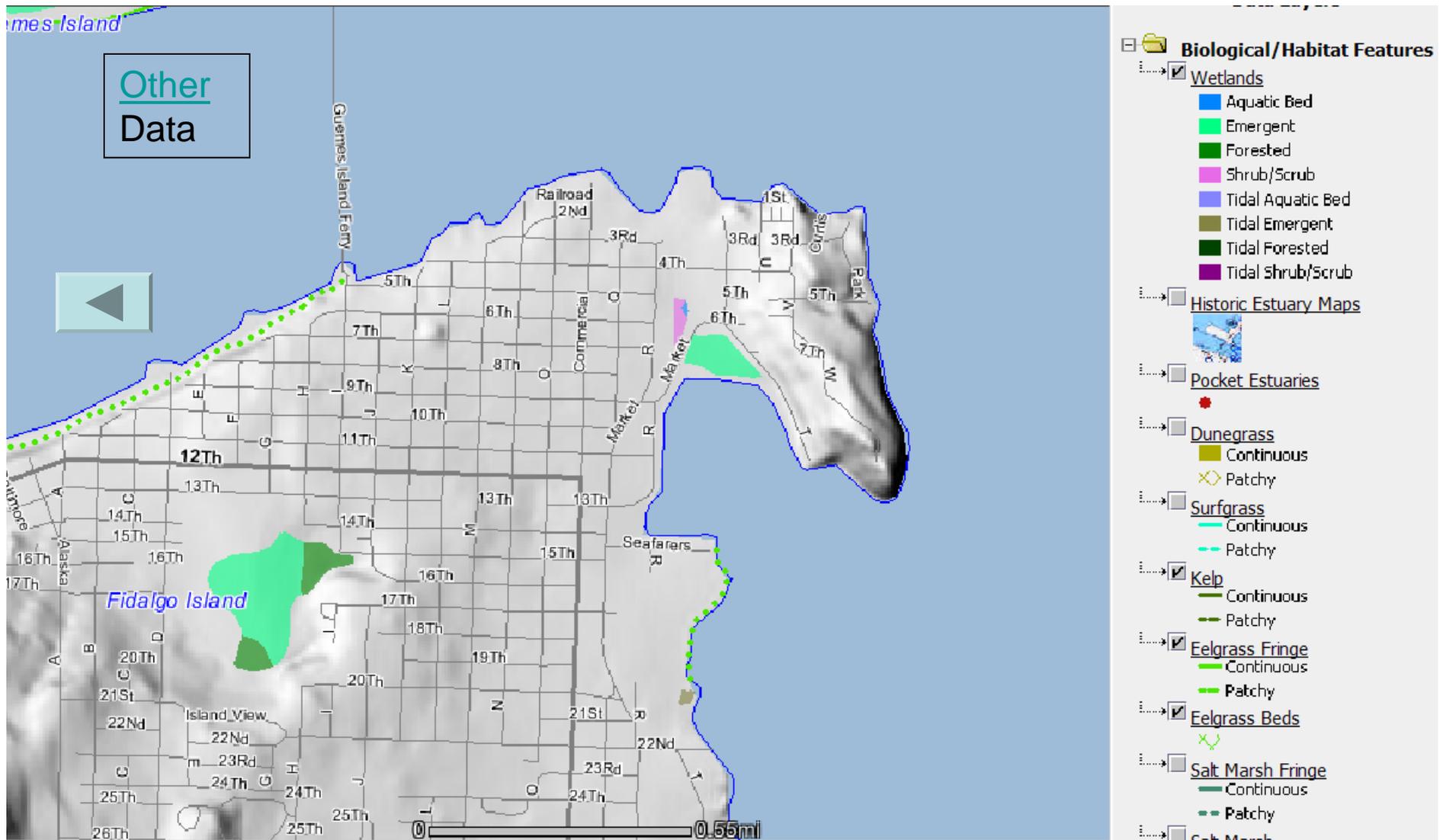
Coastal Atlas - Processes & functions



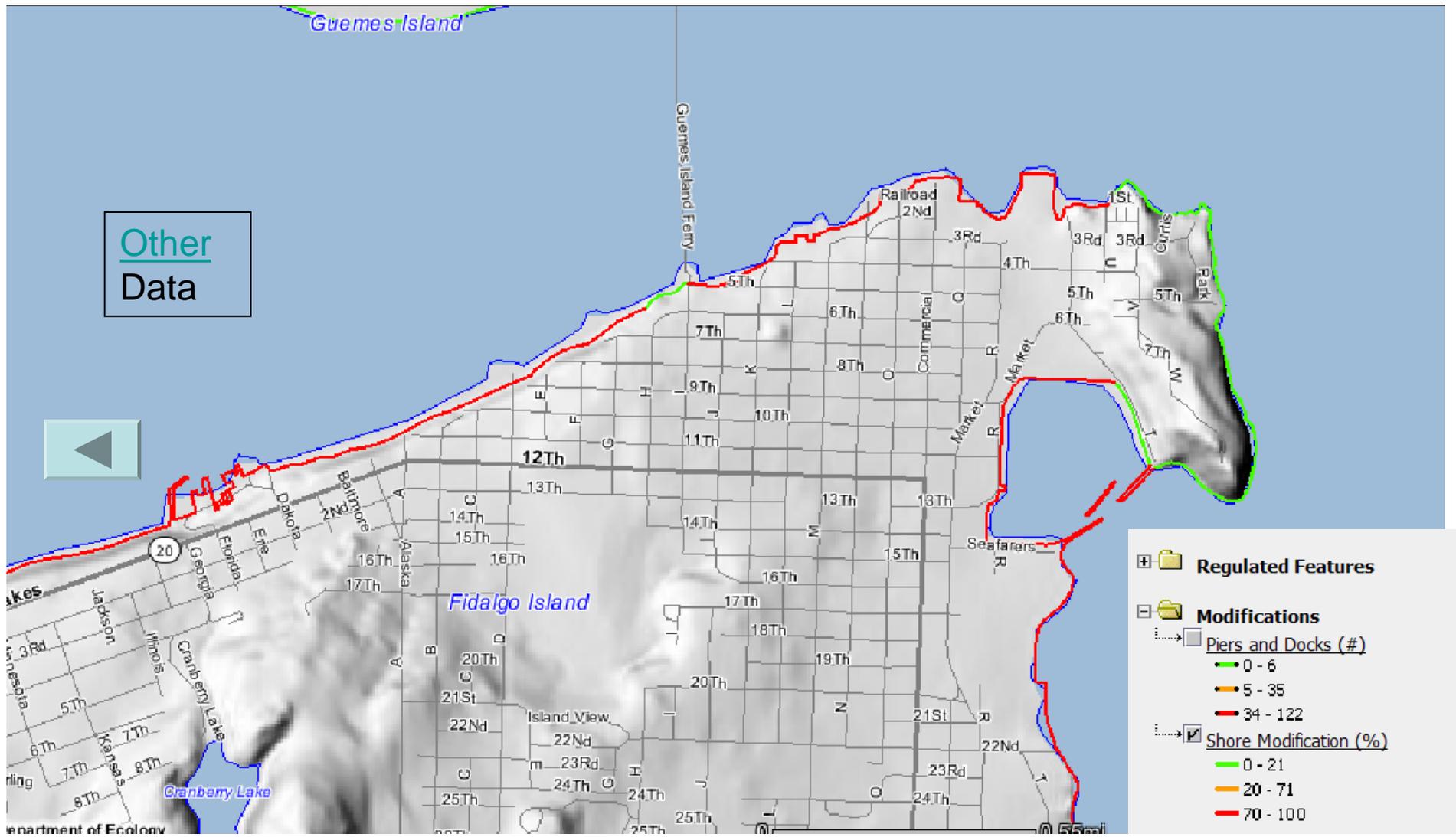
Coastal Atlas - Processes & functions



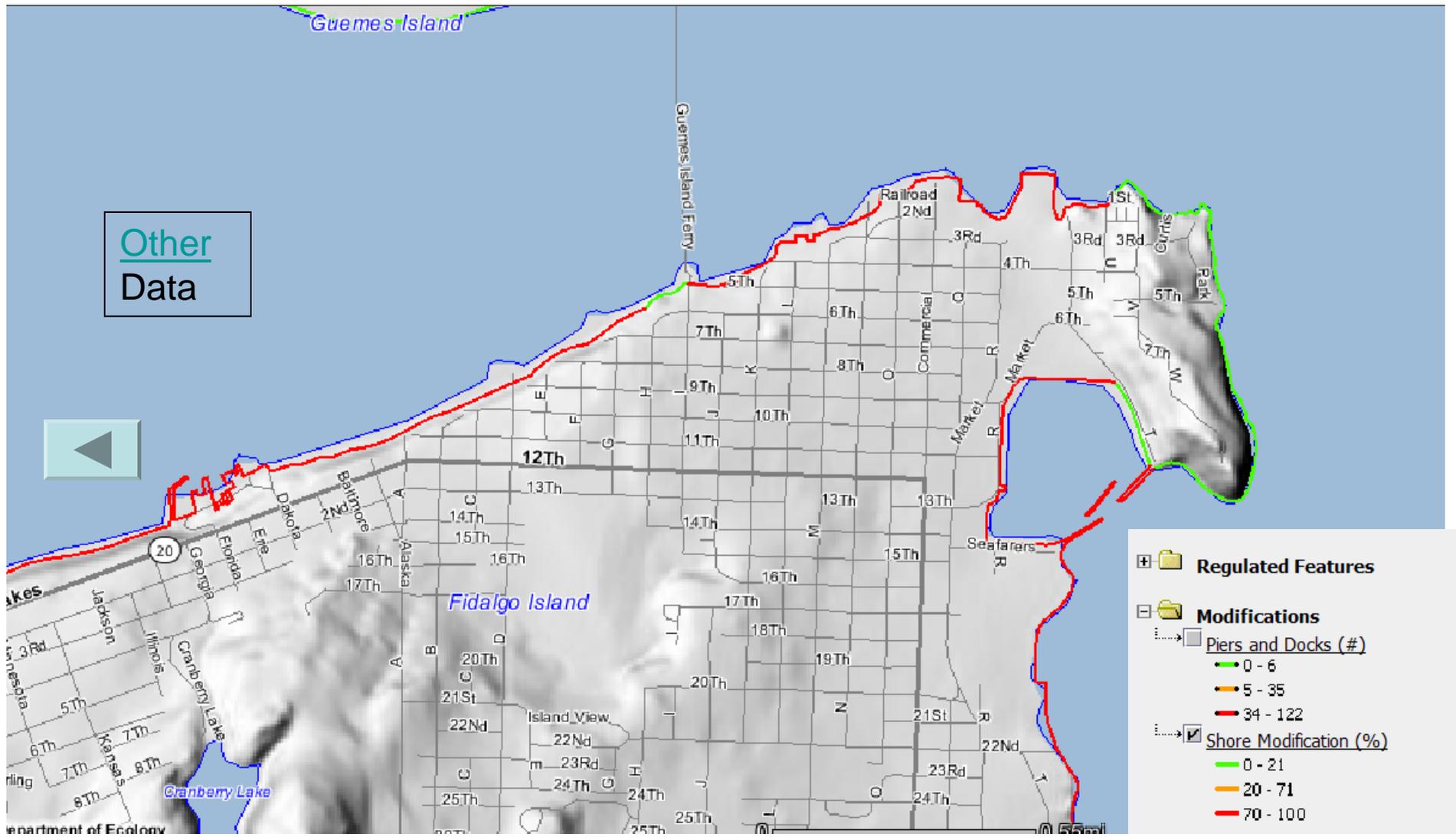
Coastal Atlas - Processes & functions



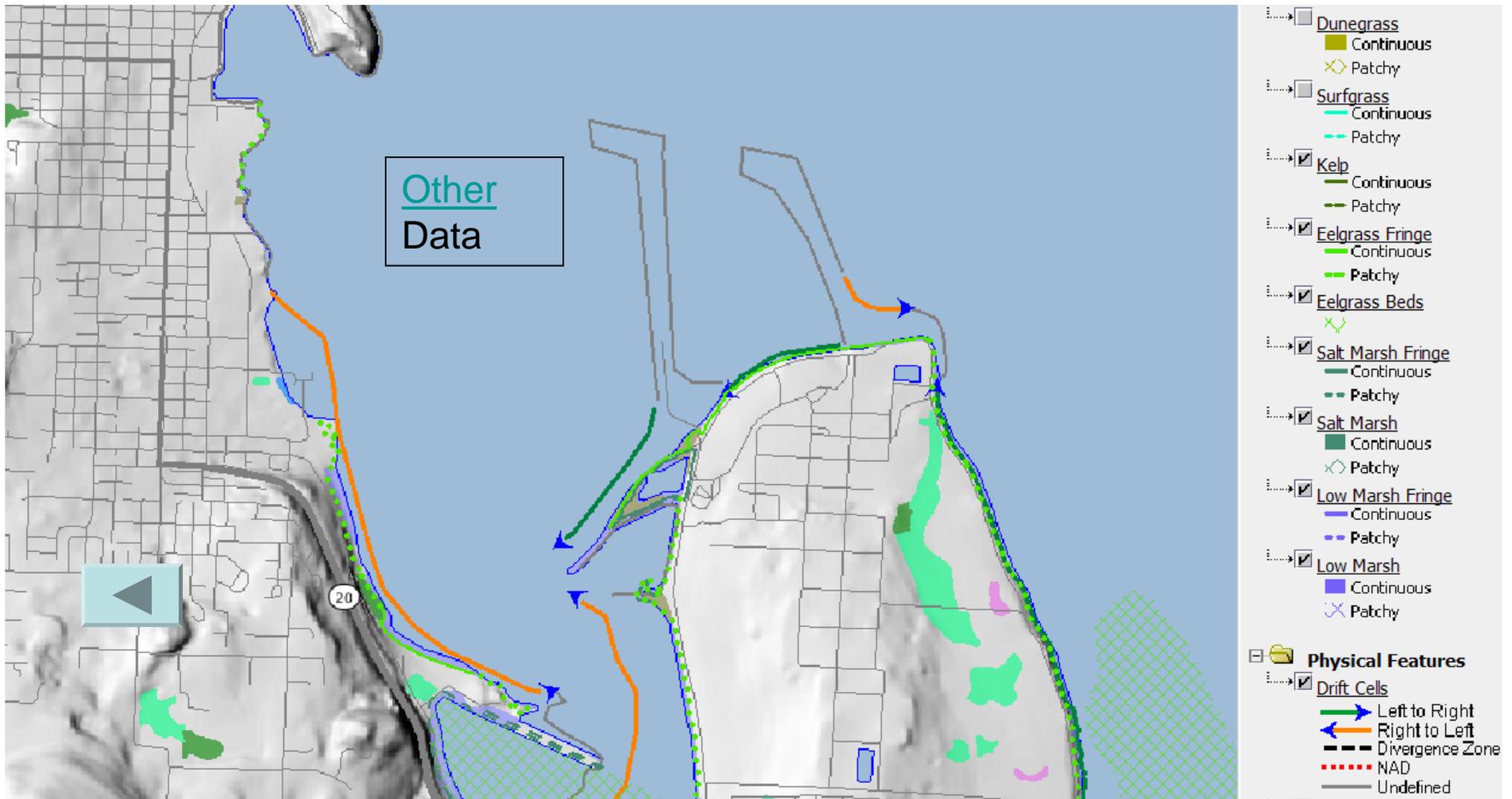
Coastal Atlas - Processes & functions



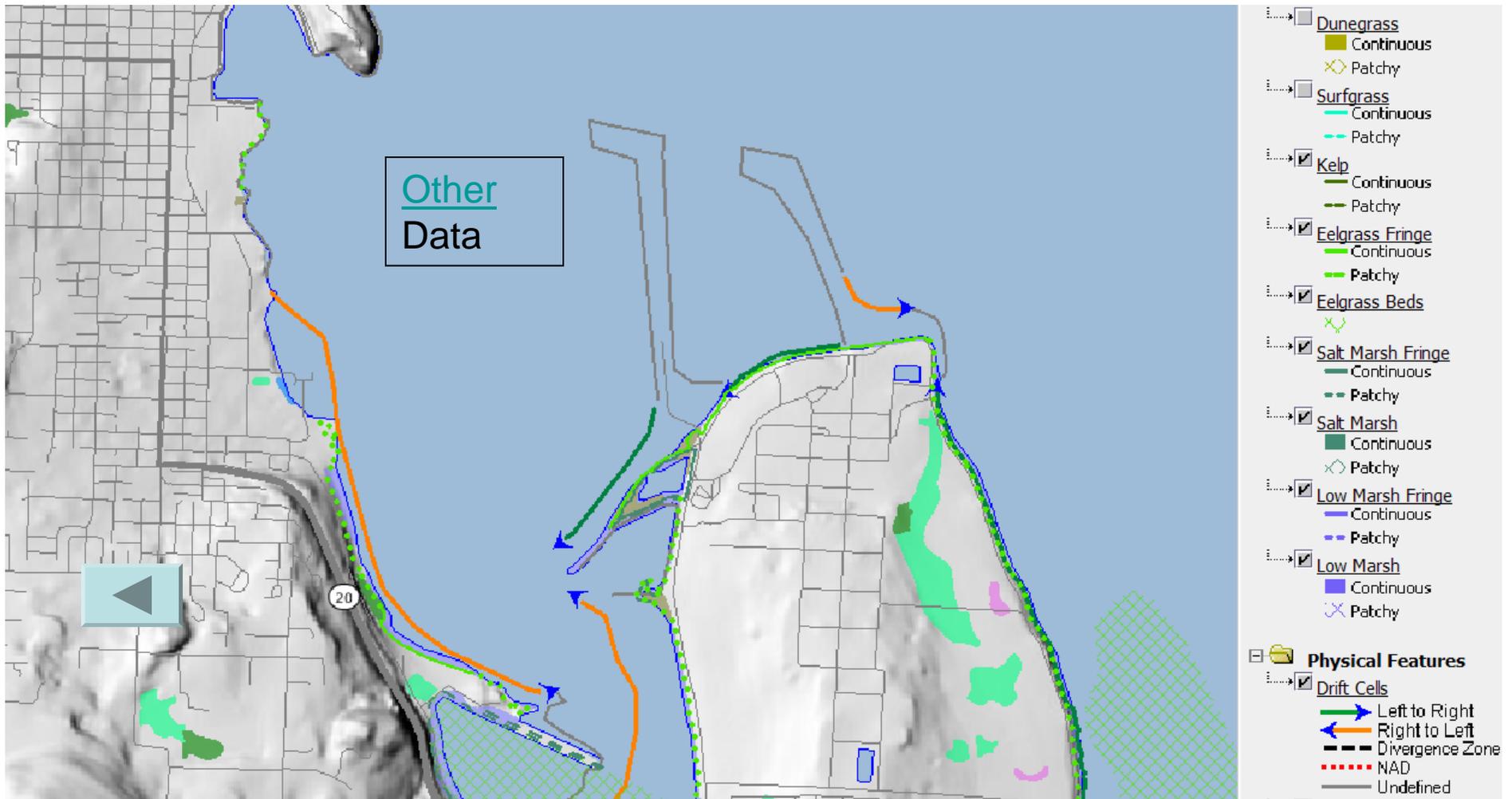
Coastal Atlas - Processes & functions



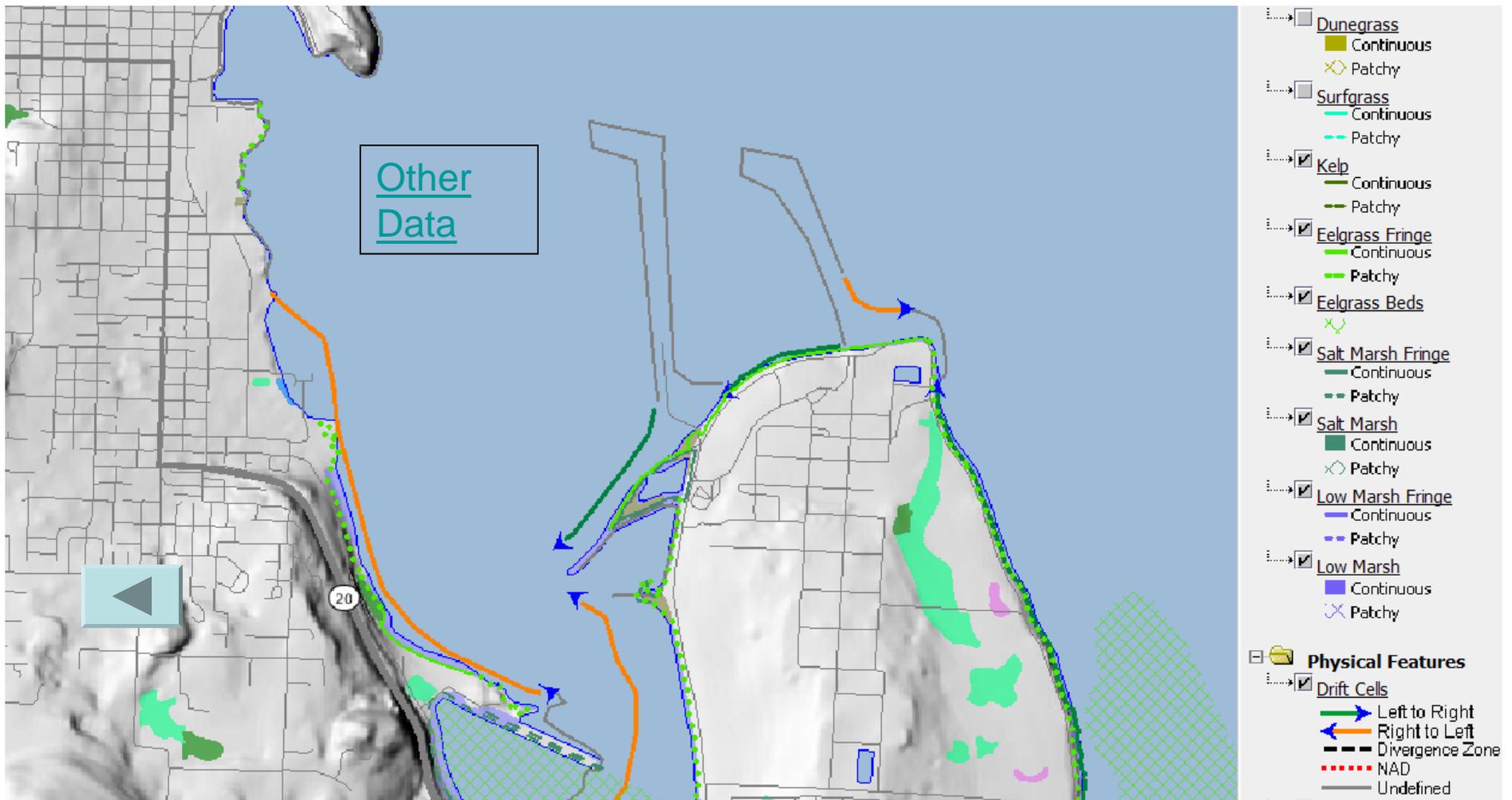
Coastal Atlas - Processes & functions



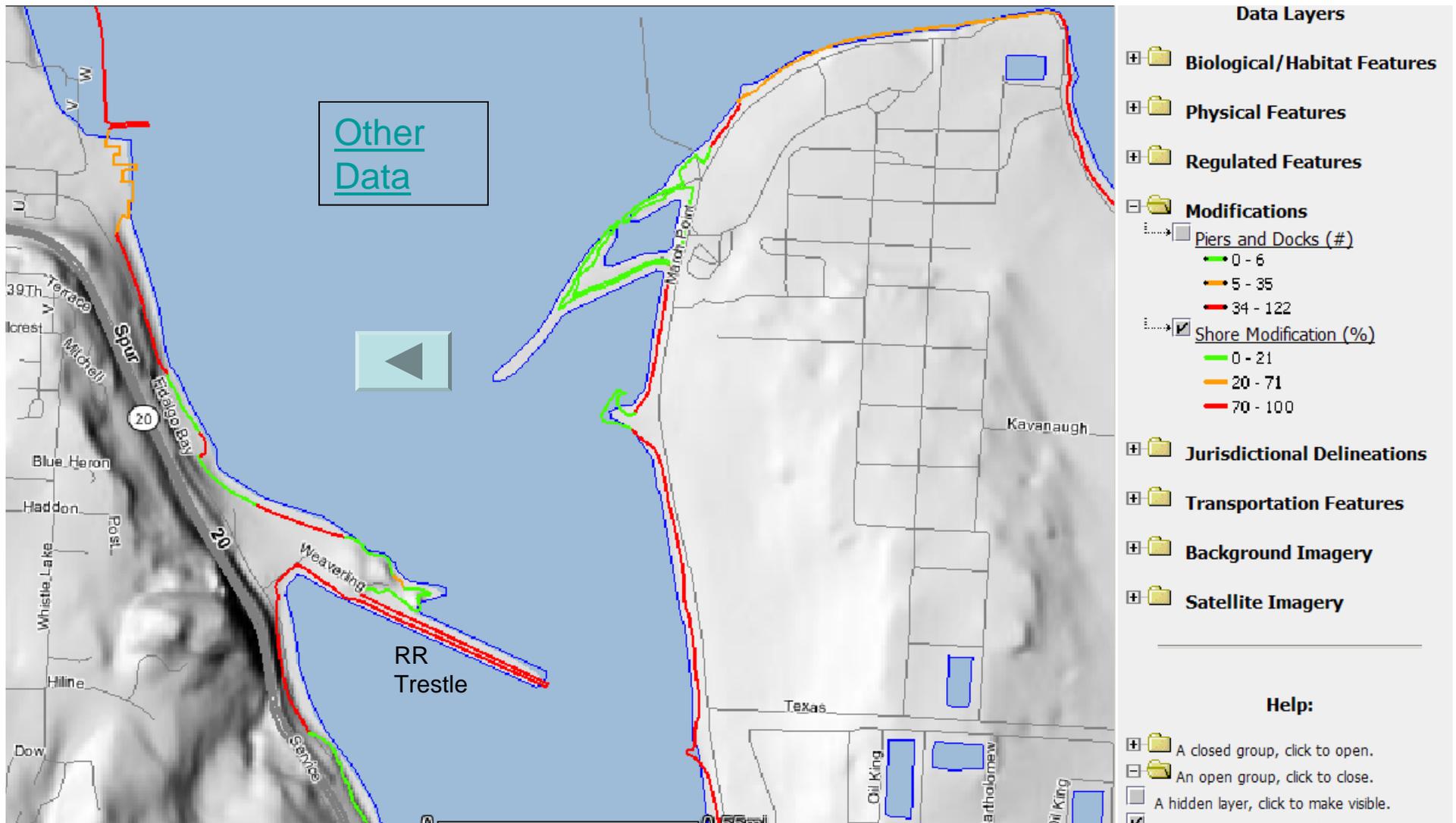
Coastal Atlas - Processes & functions



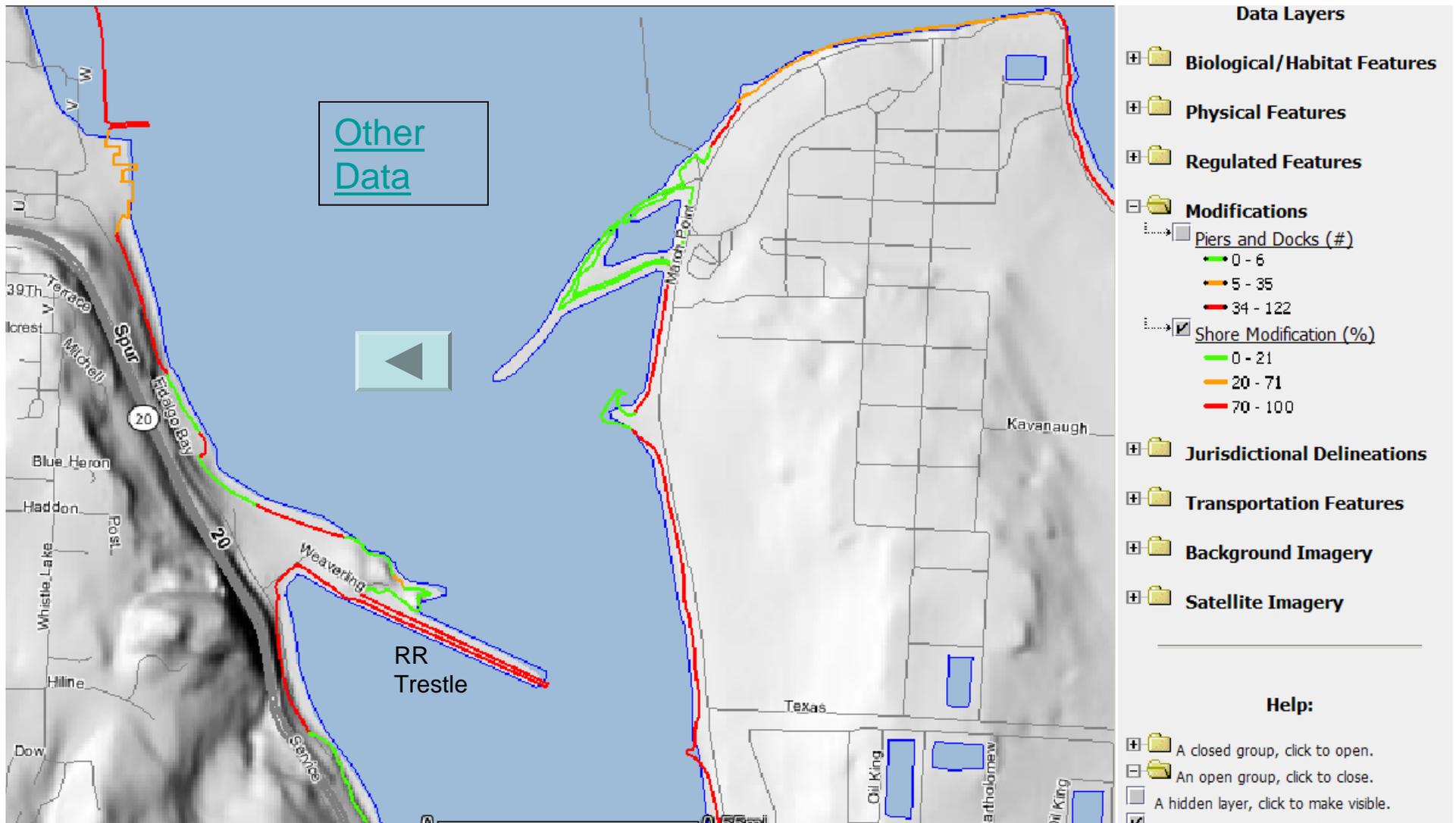
Coastal Atlas - Processes & functions



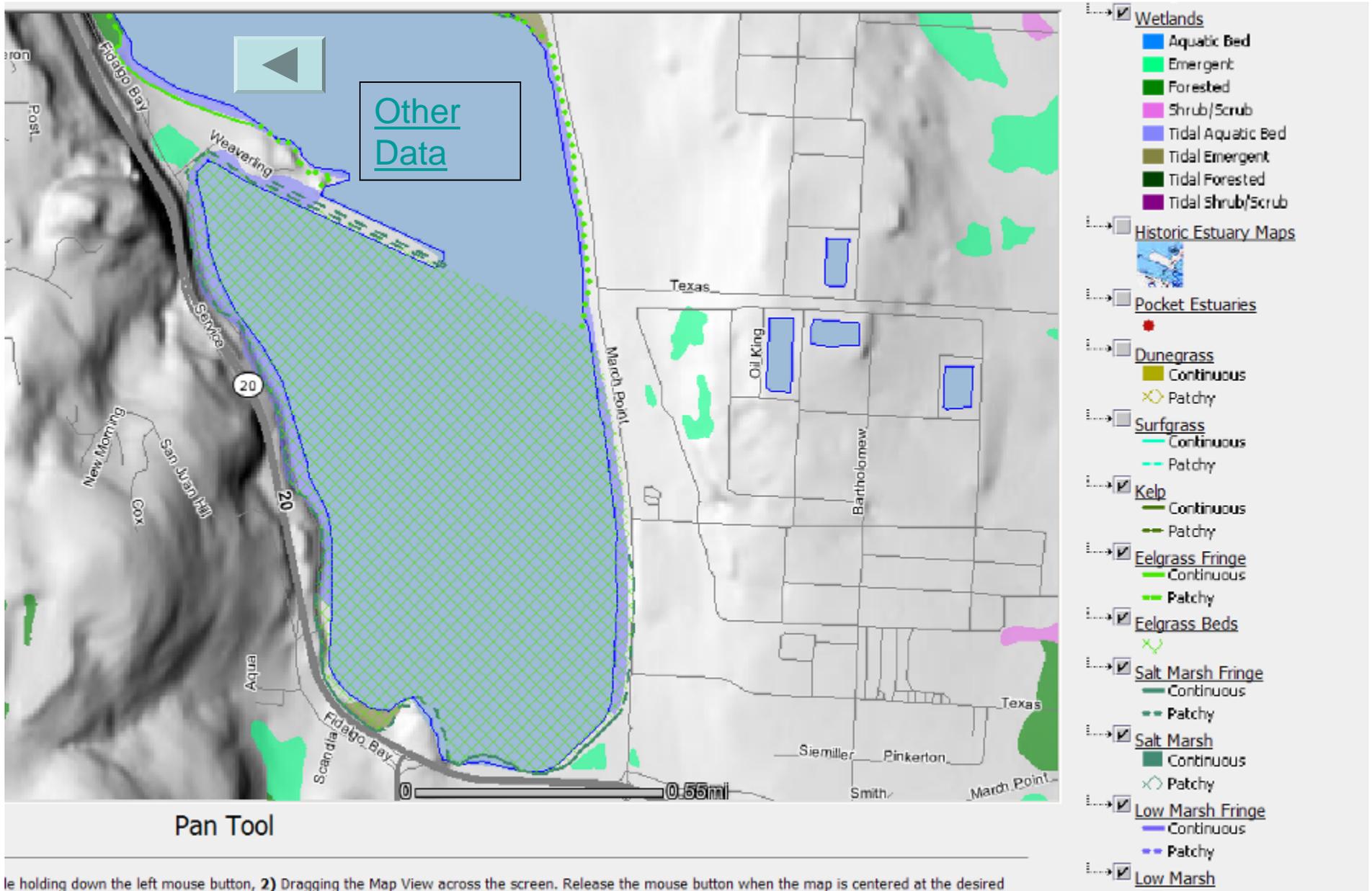
Coastal Atlas - Processes & functions



Coastal Atlas - Processes & functions

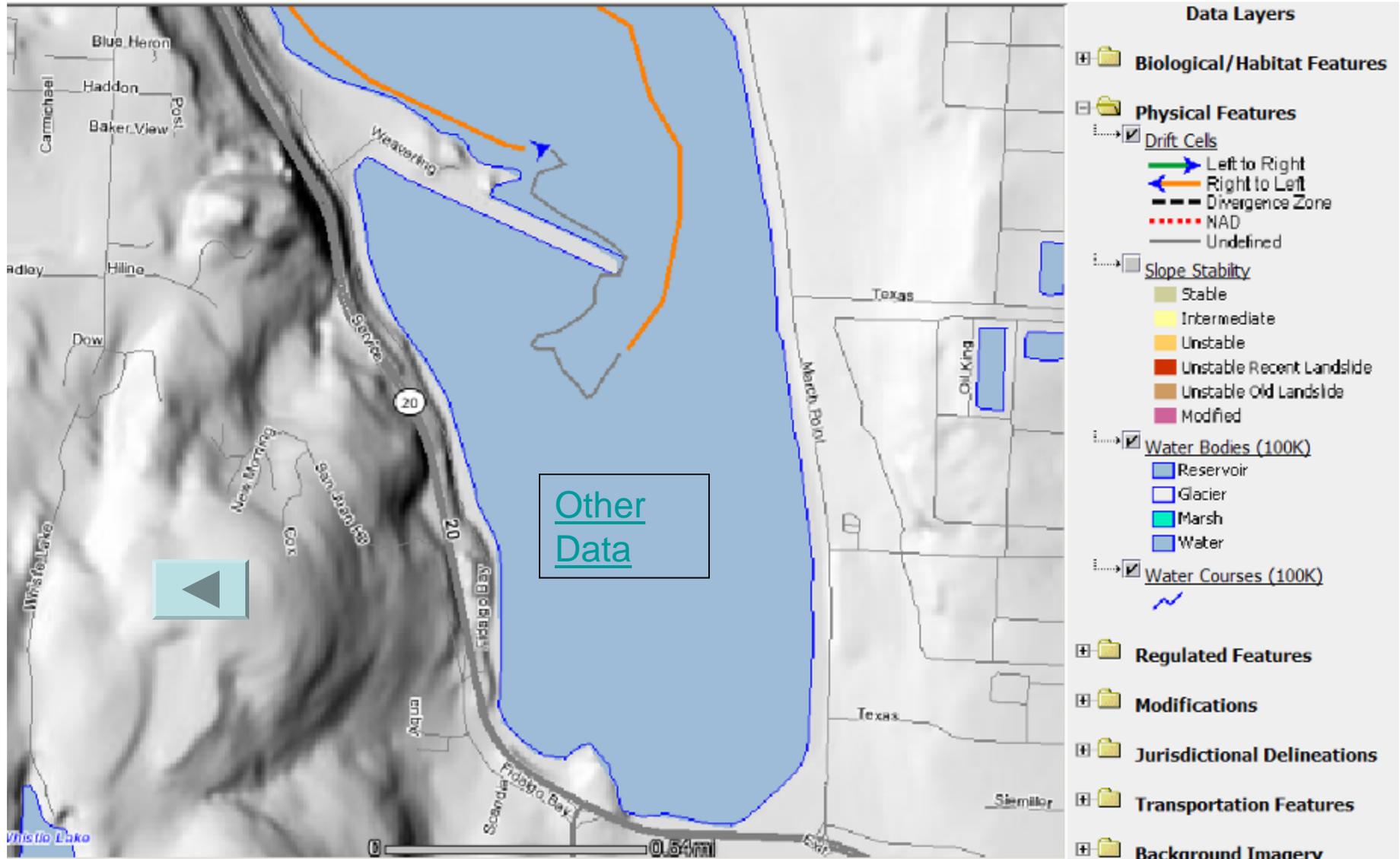


Coastal Atlas - Processes & functions

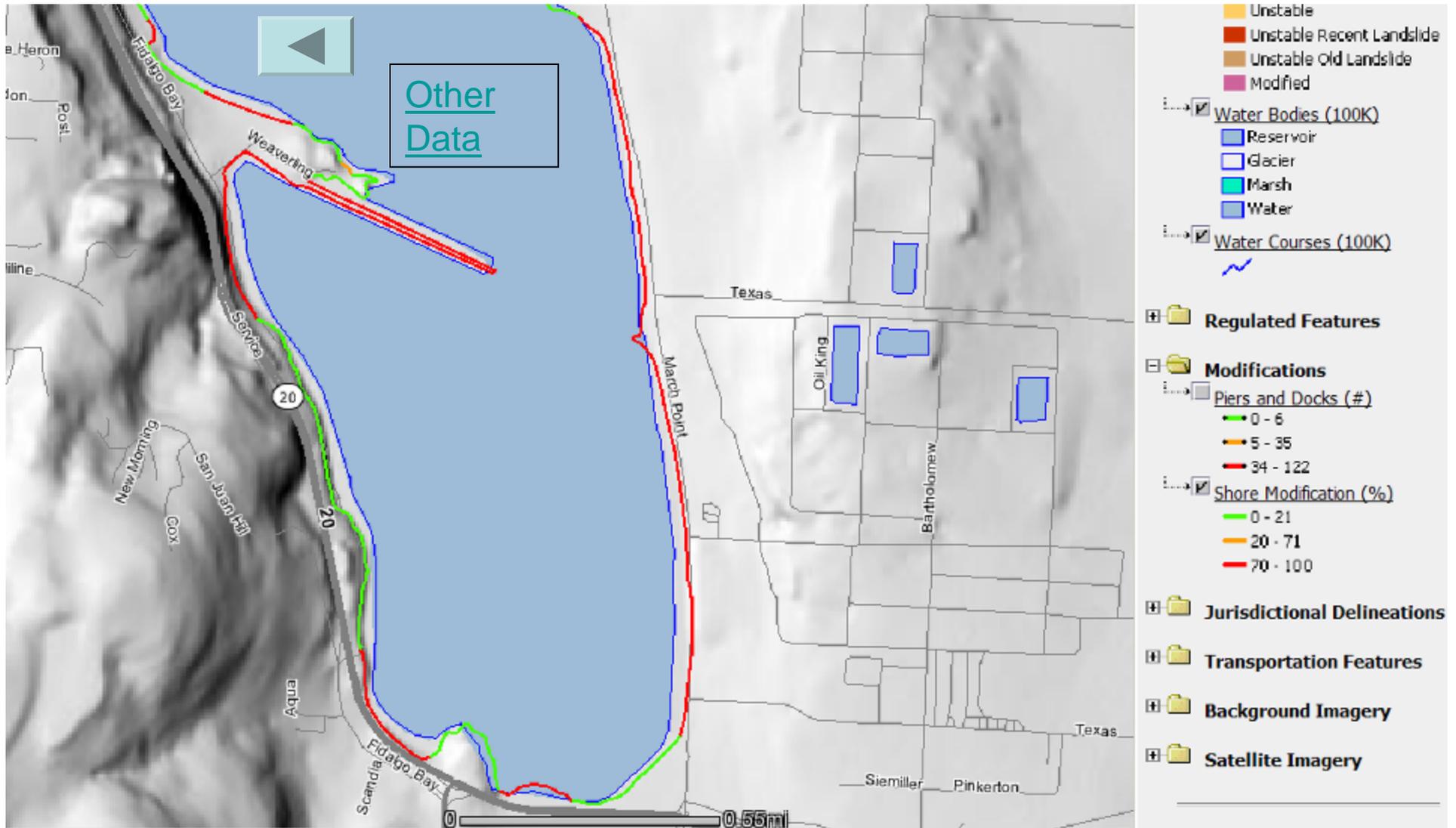


1) Holding down the left mouse button, 2) Dragging the Map View across the screen. Release the mouse button when the map is centered at the desired

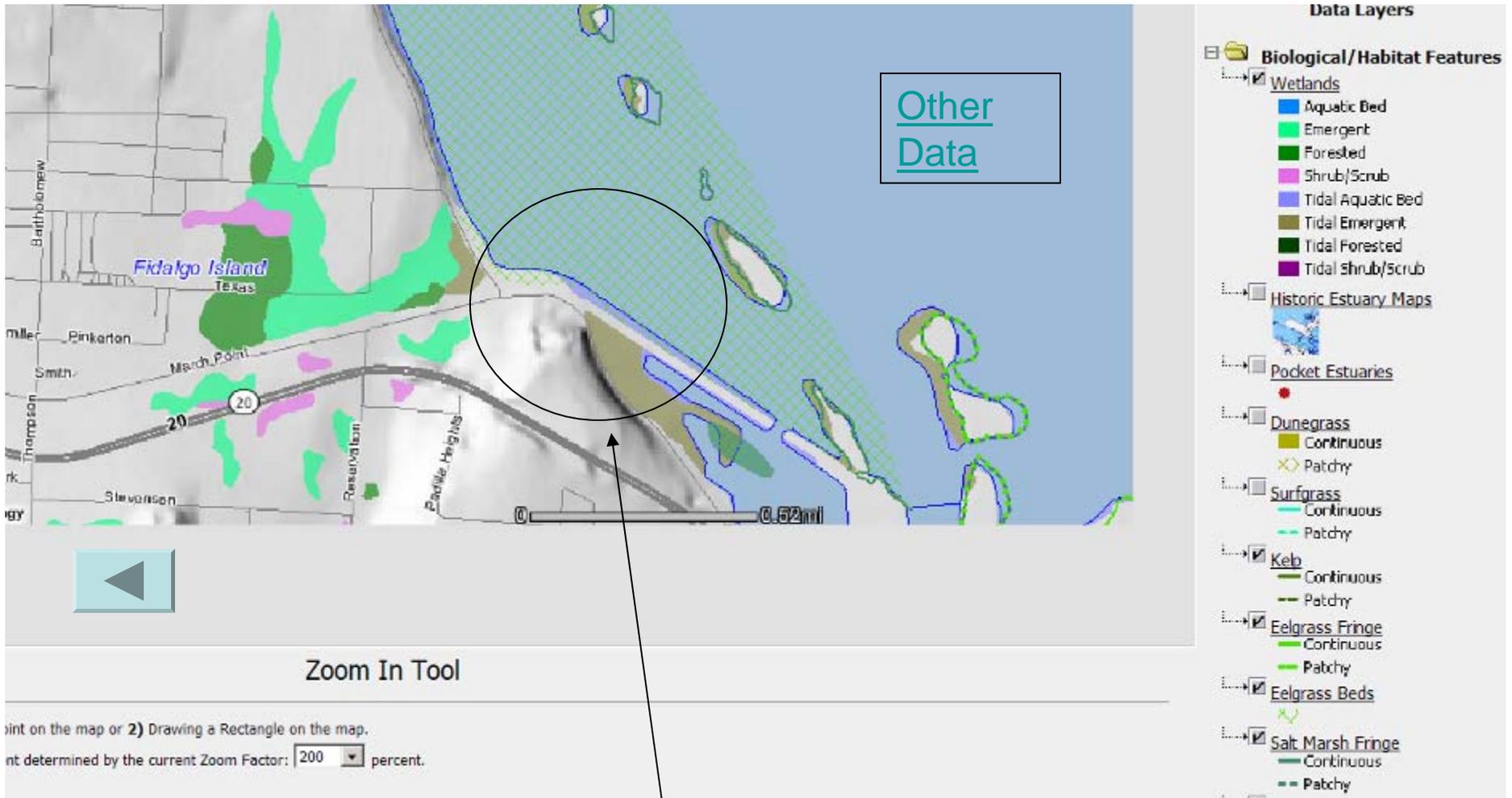
Coastal Atlas - Processes & functions



Coastal Atlas - Processes & functions

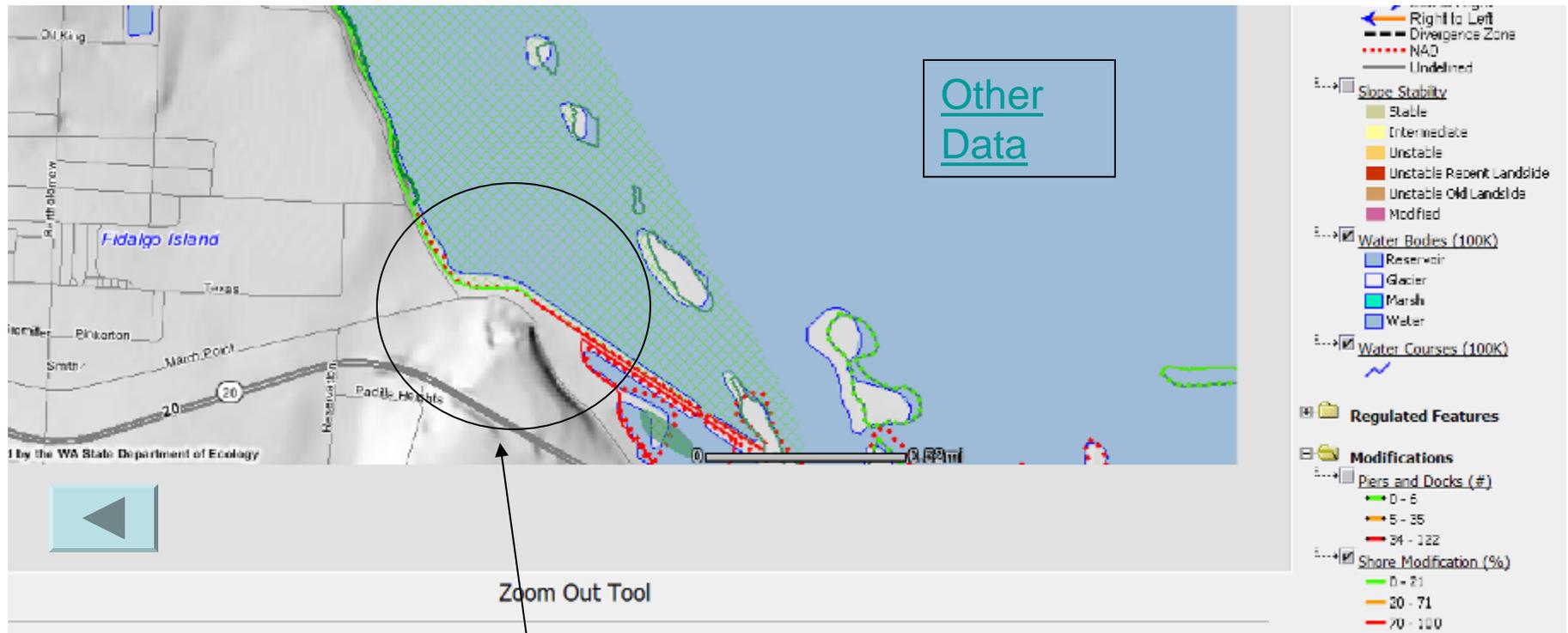


Coastal Atlas - Processes & functions

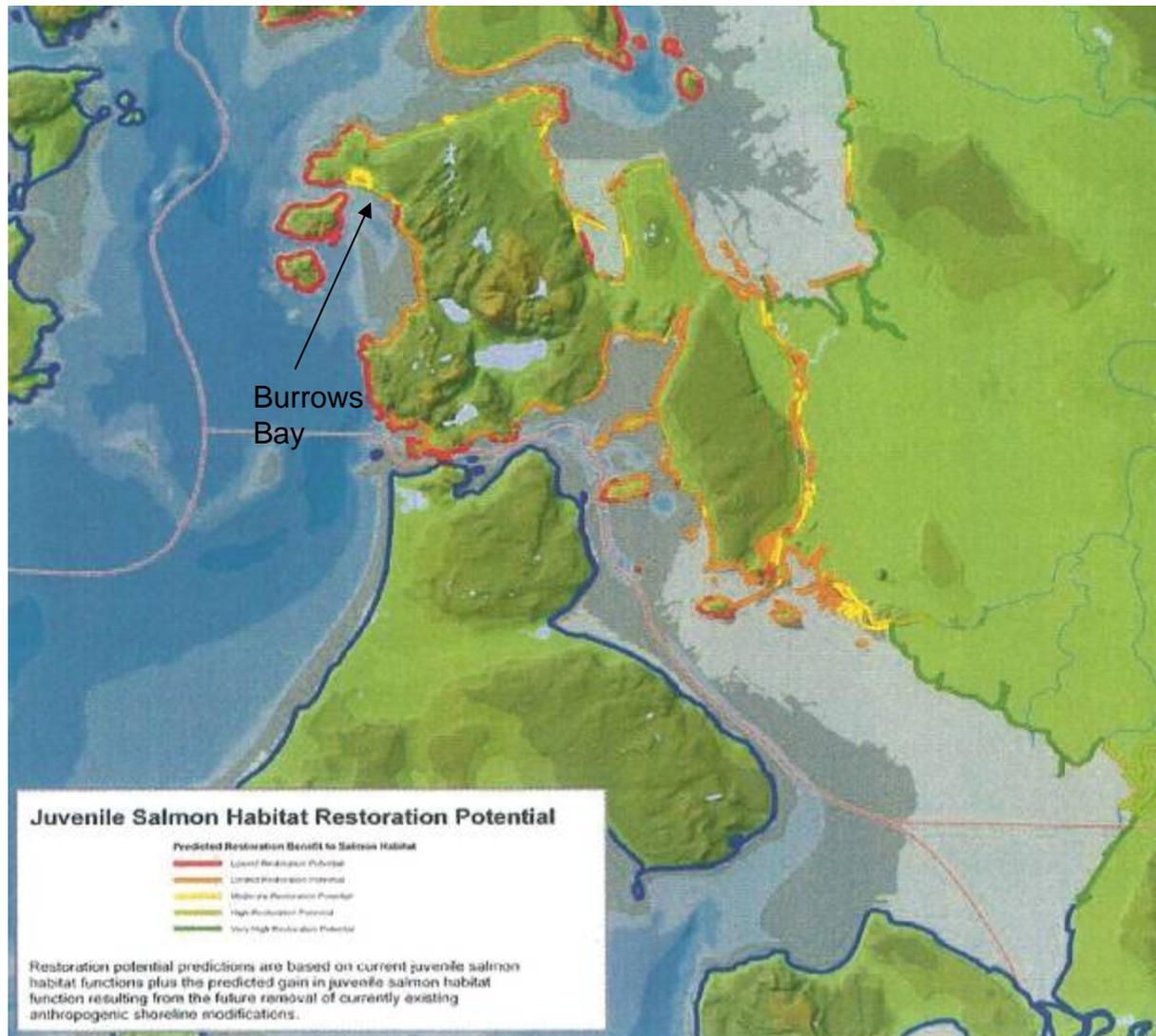


SW Padilla Bay – City Limits

Coastal Atlas - Processes & functions



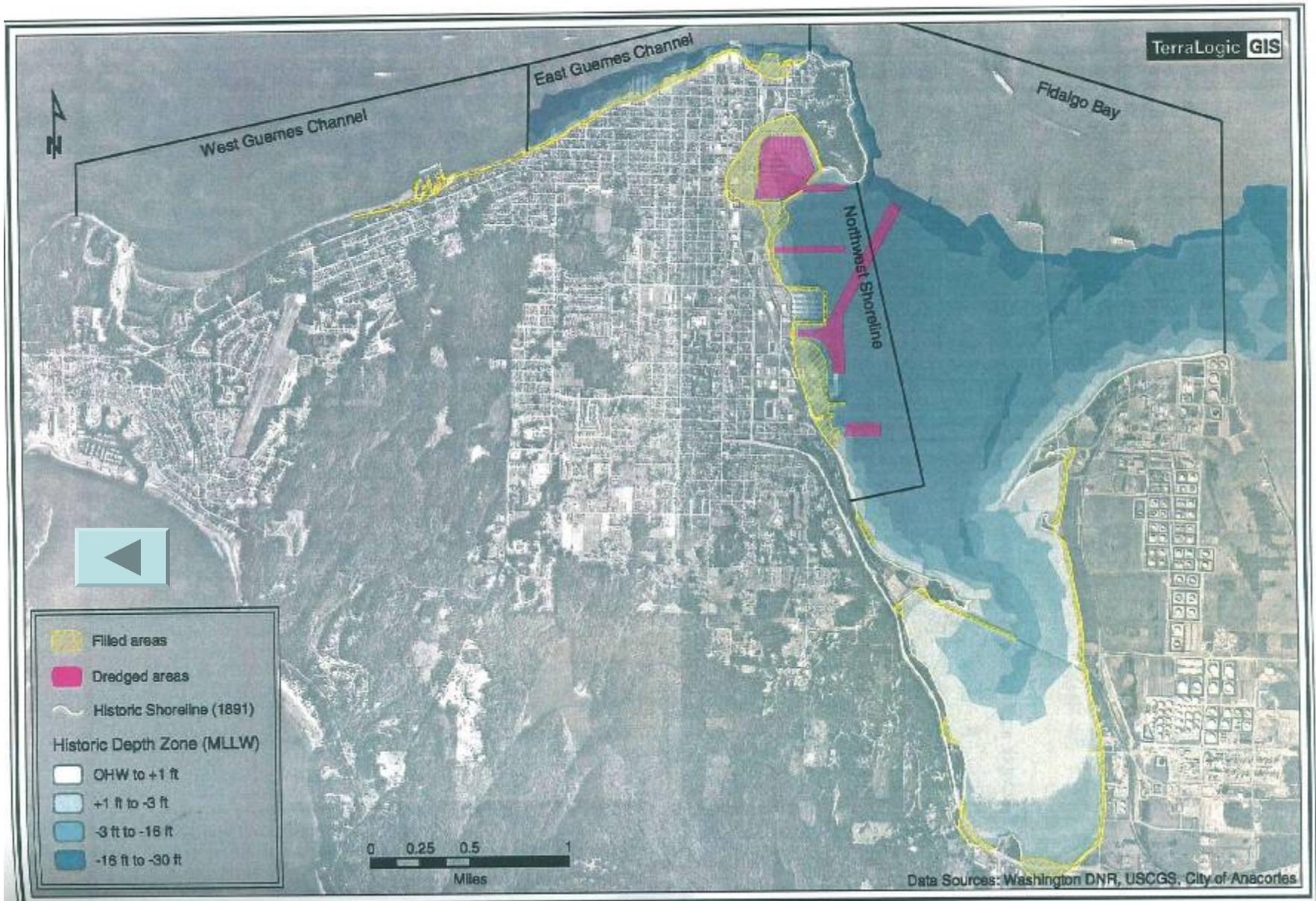
SW Padilla Bay – City Limits



**Map 8. NWS Nearshore
Habitat Inventory**

Source: Anchor
Environmental

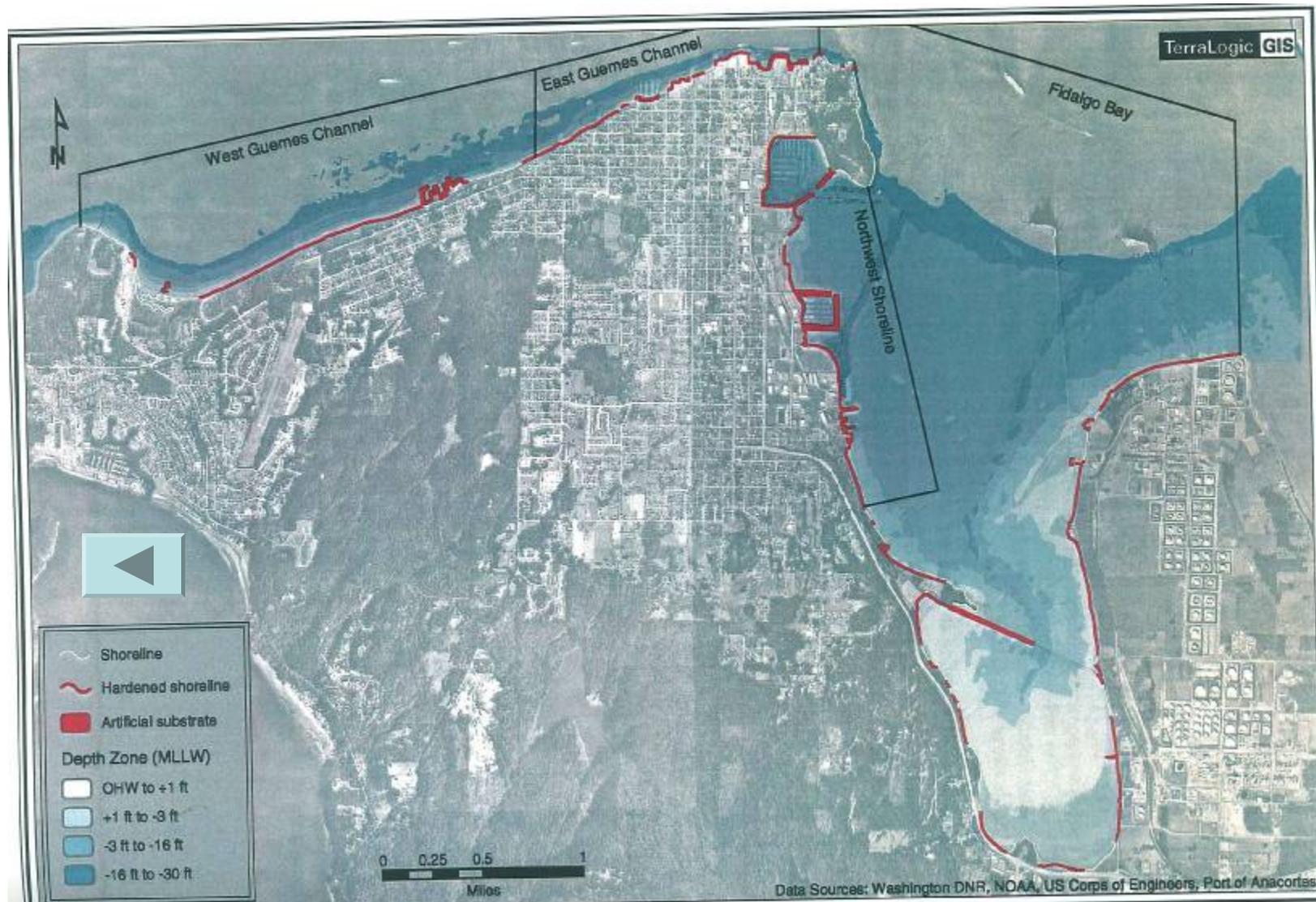
Areas of Shoreline Fill Since 1891



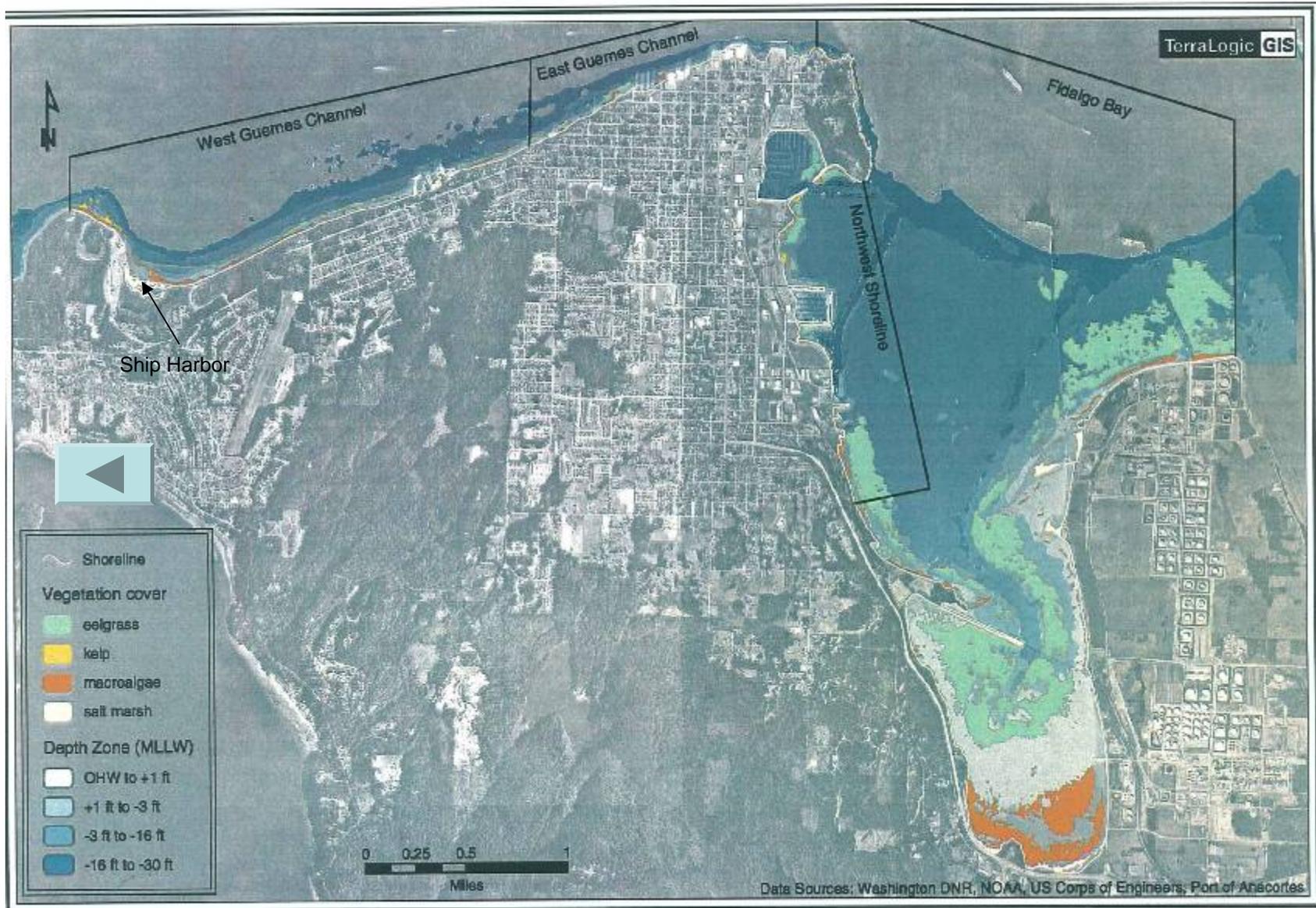
Overwater Structures



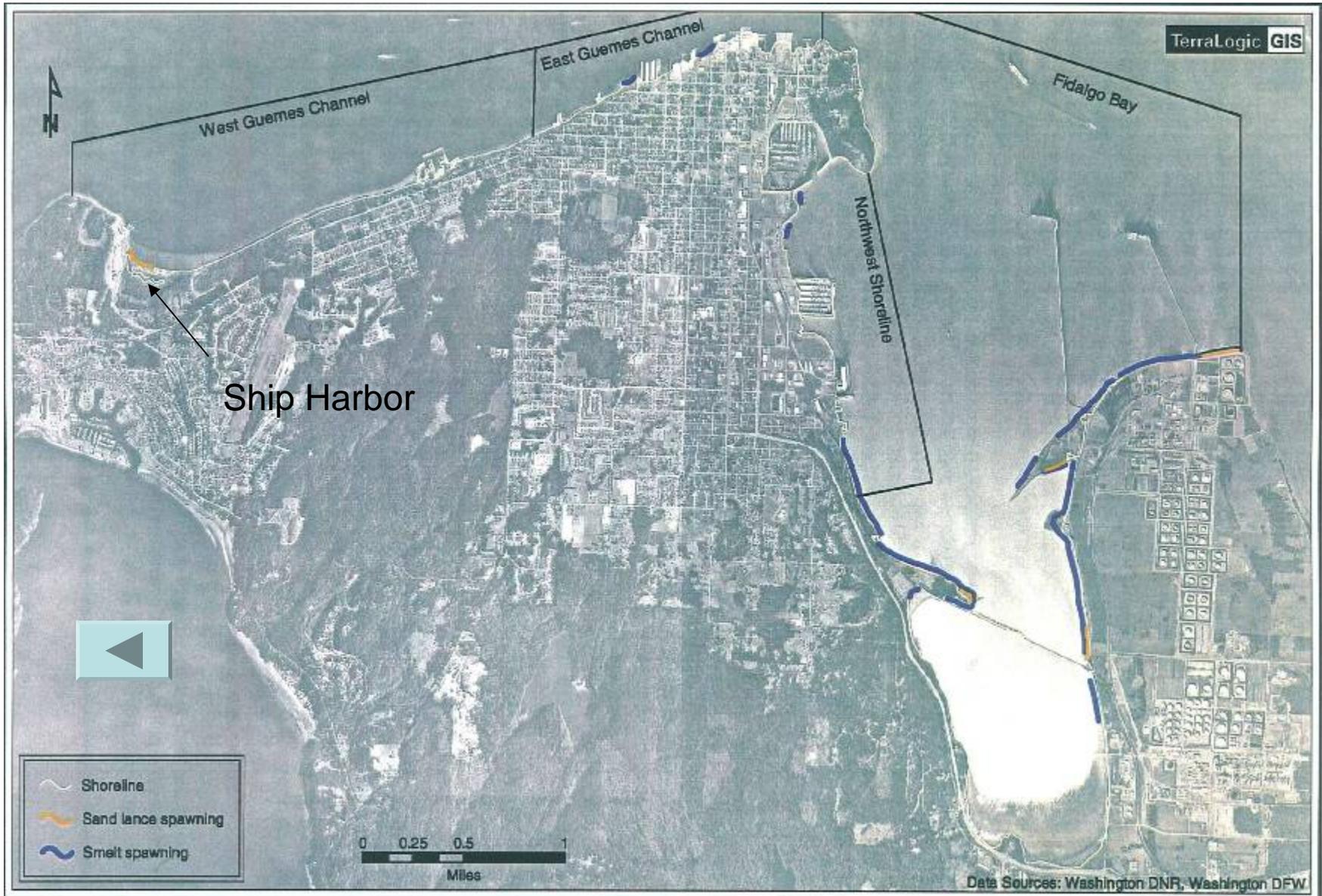
Shoreline Armoring



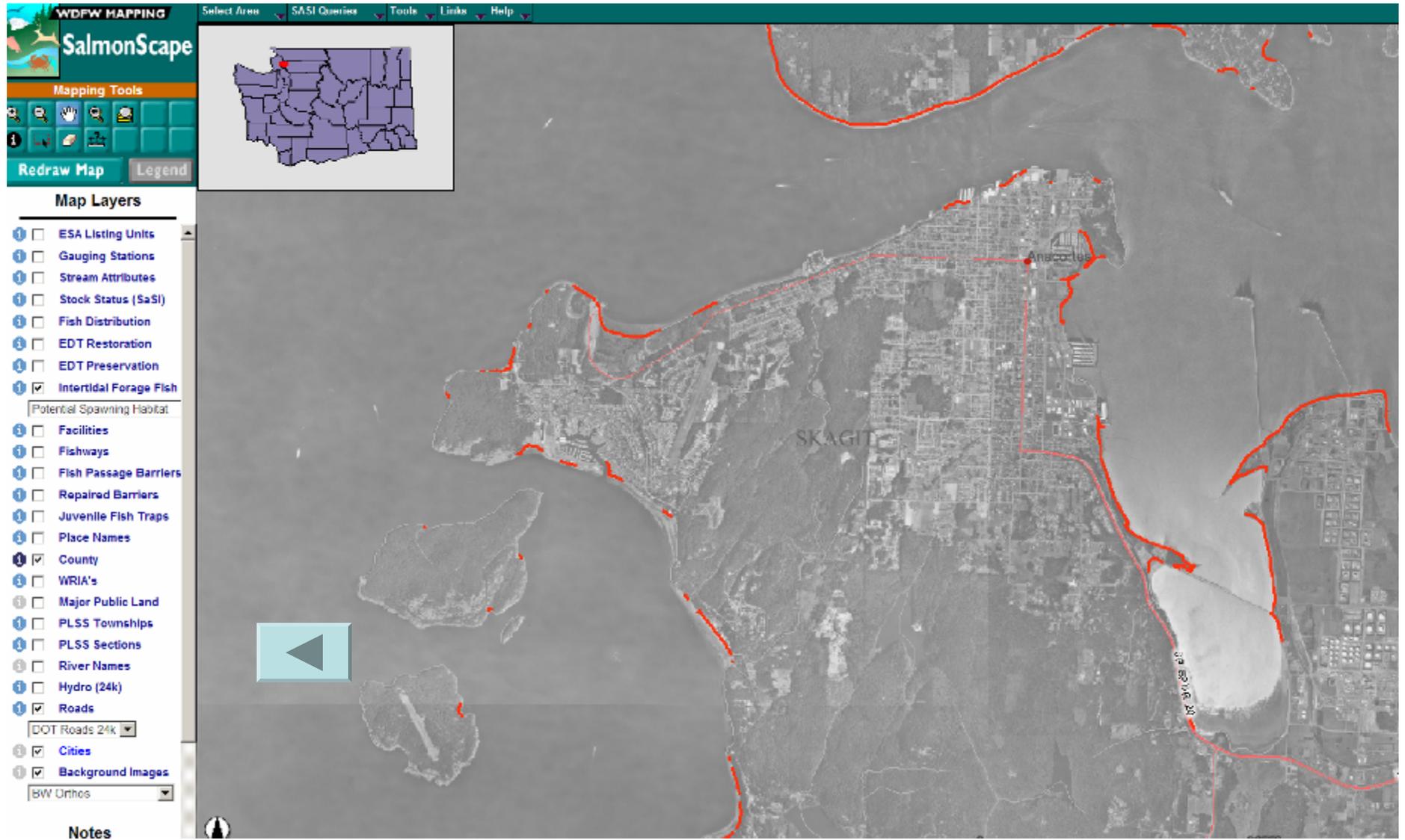
Marine Vegetation



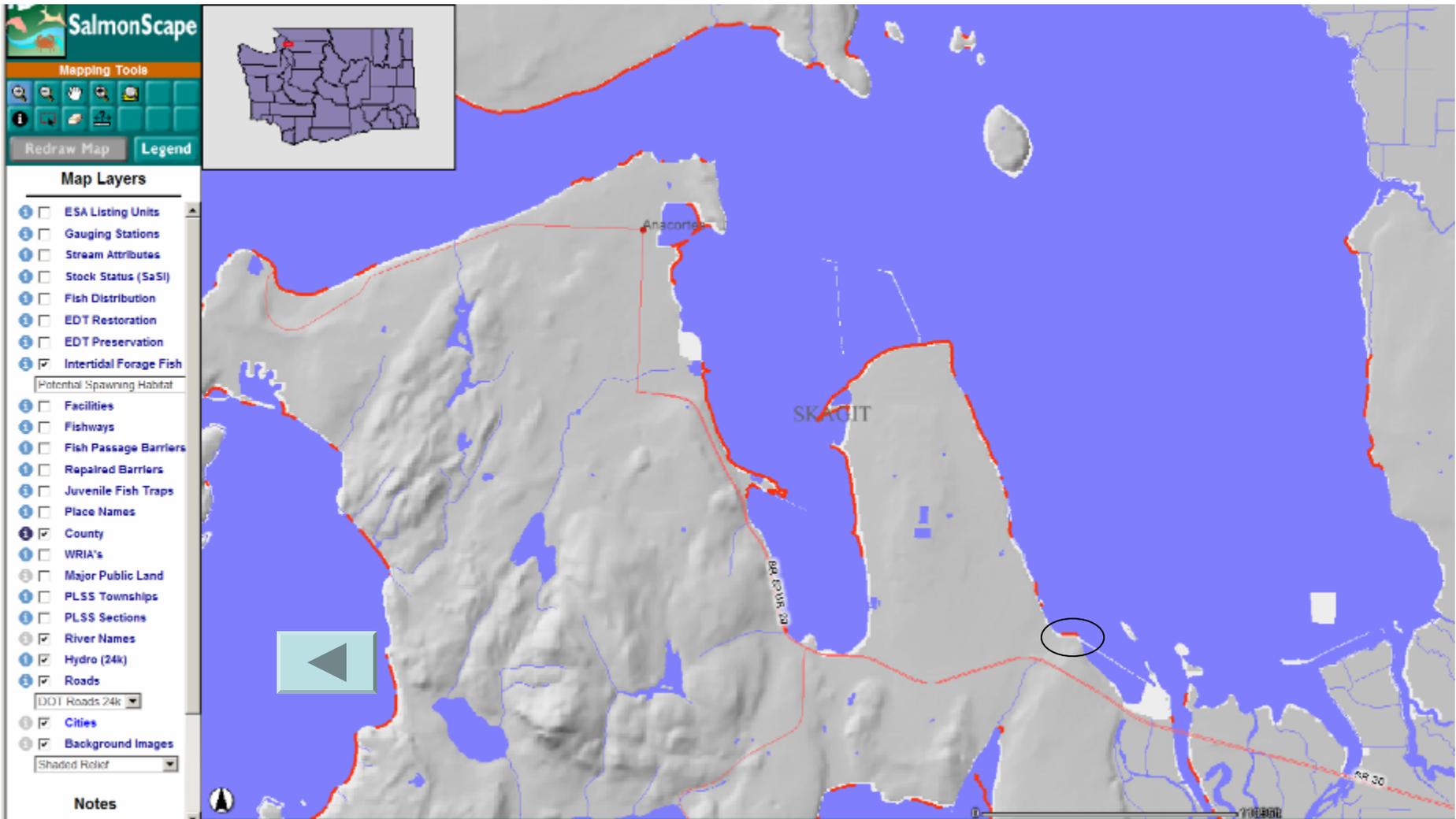
Surf Smelt & Sand Lance Spawning



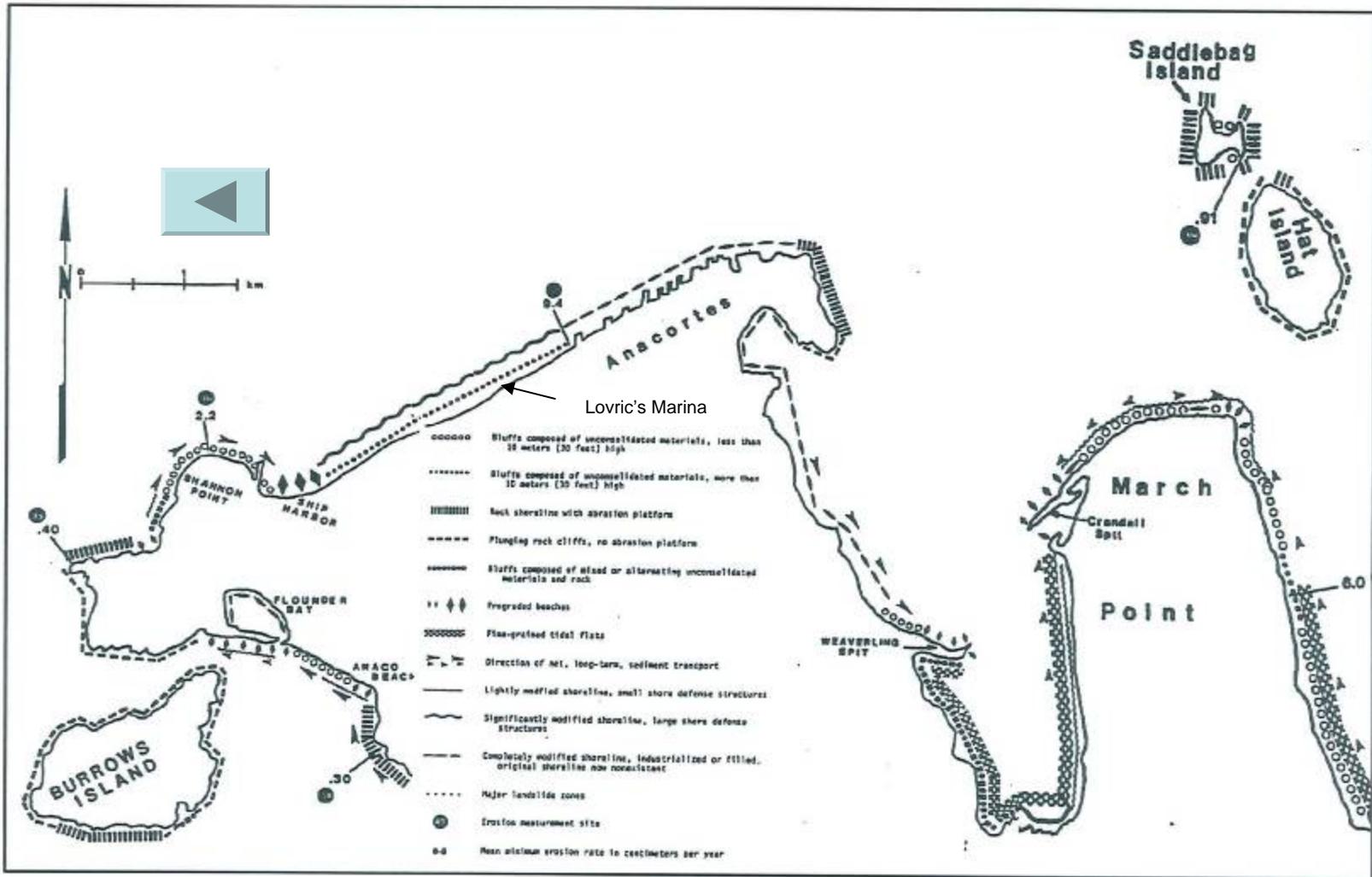
Forage Fish Spawning Habitat



Forage Fish Spawning Habitat



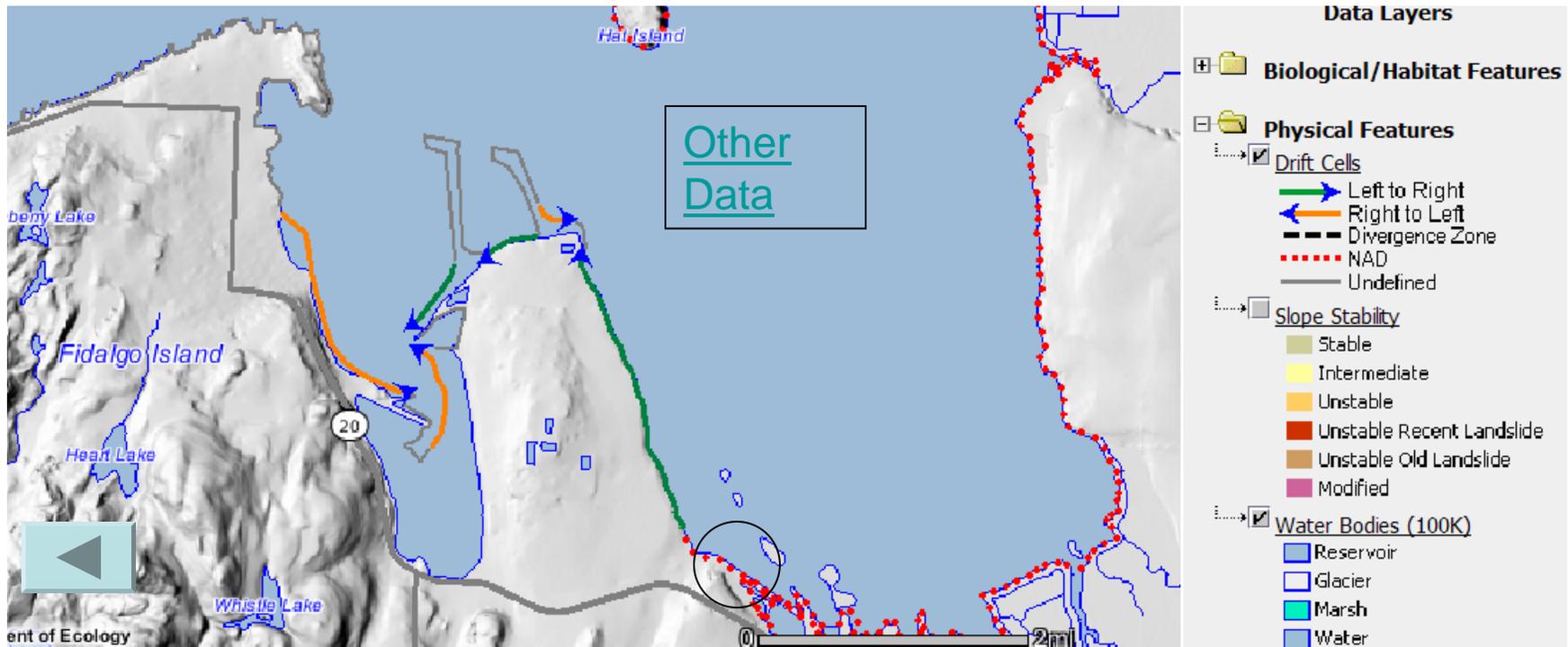
Shoreline Processes



Source: Revised Final Integrated Fidalgo Bay-Wide Plan and EIS

Shoreline Atlas

Shoreline Processes



Shoreline Atlas

Shoreline Processes

