Introduction

The Whidbey Camano Land Trust was awarded grant funding for the South Camano Nearshore Protection Planning Project by the Washington Salmon Recovery Funding Board in December 2007. The goal of the project is to increase information available to help select projects that have high certainty of success and benefit for salmon. Towards that goal, the primary objective of the project is to develop a prioritization and implementation plan outlining protection actions for properties important to maintaining naturally functioning nearshore and watershed processes in the project area. While there are existing federal, state and local regulations that are aimed at protecting water quality and habitat throughout the county, this project is focused on identifying locations where additional formal protection of ecosystem processes and habitats is warranted and landowners are interested and willing to make additional commitments to salmon recovery. This report summarizes the existing physical and biological characteristics of the project area, provides an ecological prioritization of parcels in the project area, and outlines proposed next steps for landowner outreach.

This report covers approximately four and a half miles of the Camano Island shoreline, wrapping around the southern tip of the island from north of Pebble Beach to the southern edge of Tyee Beach, and the uplands that drain to these shoreline areas. There are two coastal drainage areas and one watershed in the project area. There are just over 300 properties in the project area owned by 230 private landowners. There is no county, state, or federal ownership in the project area.

Part of the project area drains to the southern part of Port Susan (eastward) and part of the project area drains to the southern part of Saratoga Passage (westward). There are no named streams in the project area. There are four unnamed streams, one of which drains the single watershed larger than 100 acres in the project area. This watershed drains to Saratoga Passage just northwest of Gull Way. The other three mapped streams drain portions of the two coastal drainage areas that make up the majority of the project area; two on the west side into Saratoga Passage and one on the east side into Port Susan. These streams are seasonal and most water draining from the coastal drainage basins reaches the nearshore via shallow groundwater and beach seeps with some sheet flow during large storm events. There are also five stormwater outfalls within the project area that collect and convey road runoff to the beach.

South Camano's location near the estuaries of both the Stillaguamish and Snohomish Rivers makes this shoreline an active area for migrating juvenile and adult salmon and trout. These rivers support four of the 22 independent Puget Sound Chinook populations and a number of other salmon and trout populations; including populations of steelhead and bull trout which are both federally listed species under the Endangered Species Act. The Camano shoreline bordering Port Susan is a part of the area designated as Geographic Area 1 for WRIA 6 Salmon Recovery. The shoreline bordering Saratoga Passage is a part of Geographic Area 2. The project area contains extensive forested bluffs; areas described as exceptional feeder bluffs; forage fish spawning habitat on sand and gravel beaches; intertidal and subtidal eelgrass and kelp beds; intact big leaf maple forest, and bald eagle habitat.

Data Sources and Prioritization Methodology

Except where noted, the spatial data used for this analysis and in the attached maps was compiled by Whidbey Camano Land Trust in January 2008. The summaries of ownership data is based on December 2008 data provided by the Island County Assessor's office. Where parcel information was not available in the December 2008 database, the Island County online database was consulted. If parcel information was not available from either source, the information from previous version of the parcel database was included in the summary.

In order to develop the prioritization criteria for this project, several previously developed prioritization processes were reviewed. Criteria and results from the Skagit Middle Reach Assessment, the Skagit Bays Blueprint, the Bainbridge Nearshore Assessment, the Ohop Creek Protection Project, and the Blue Mountain Land Trust project were reviewed. An initial assessment of the South Camano Nearshore parcels was made using the Skagit Bays Blueprint nearshore assessment methodology. The Blueprint assessment summarizes nearshore habitat based on nearshore vegetation, amount of driftwood, number and type of shoreline outfalls, shoreline geomorphology, nearshore habitat types, and nearshore land use. While this analysis is useful at providing a relative score for nearshore locations, it did not directly address all of the key components of the WRIA 6 salmon recovery priorities. After the results were reviewed, this analysis was discarded in favor of nearshore and upland criteria written specifically to address the priorities established by the WRIA 6 Salmon Recovery Plan (2005).

The ecological and landscape prioritization criteria were applied in two stages. All parcels that have a minimum of 20% of their area within the South Camano coastal drainage areas and/or watershed were evaluated. Parcels overlapping more than one drainage basin were evaluated in the basin with the majority of that parcel area. All parcels with marine shoreline were evaluated as nearshore parcels. All other parcels were evaluated as upland parcels.

There are six nearshore criteria; three address nearshore ecosystem processes and three address nearshore habitat functions for salmon. There are also six watershed criteria; three address watershed ecosystem process and three address watershed habitat functions for salmon. These ecological criteria are based on the priorities identified in the WRIA 6 Salmon Recovery Plan (2005). Four basic landscape criteria were evaluated for each parcel after the parcels were scored using the ecological criteria. Appendix A lists the ecological and landscape criteria.

The nearshore ecosystem process criteria address the importance of 1) naturally functioning shoreline erosion and sediment transport in creating and maintaining shoreline habitats along the shoreline; 2) naturally functioning tidal hydrology in creating and maintaining habitats from the intertidal to the backshore; and 3) naturally functioning freshwater hydrology in creating areas of lower salinity and upland organic inputs along the nearshore. The criteria for nearshore habitat functions for salmon address the importance of 1) highly productive habitats that provide aquatic and terrestrial invertebrates to the nearshore, providing food for juvenile salmon; 2) sand/gravel beaches and eelgrass beds as spawning habitat for salmon prey (forage fish), particularly sand lance and herring; and 3) habitats that provide shelter for salmon - lower salinity for juvenile salmon going through osmoregulation and vertical structure along the shoreline migration pathways. The maximum score for nearshore ecological criteria is 100.

The watershed ecosystem process criteria address the importance of 1) naturally functioning hydrology, timing and quantity of runoff from the watershed; 2) creating and maintaining natural connections between freshwater habitats; and 3) naturally functioning upland erosion, sediment transport, and sediment retention in the watershed. The criteria for watershed habitat functions for salmon address the importance of 1) spawning habitats; 2) rearing habitats for juvenile salmon; ad 3) contributions of terrestrial insects from intact upland habitats to the juvenile salmon food chain. The maximum score for watershed ecological criteria is 60.

The four landscape criteria address: 1) connectivity between each parcel and existing conservation properties; 2) the geographic area that the parcel is in relative to the prioritized geographic areas in the WRIA 6 Salmon Recovery Plan (2005); 3) the size of the parcel or where there are adjacent parcels owned by one landowner, the size of the property; and 4) the length of salmon habitat on the parcel. The maximum score for the landscape criteria is 40. These criteria were applied to five project areas, including South Camano, during 2008-09.

Camano Point and Southeast Camano Coastal Drainage Area

Habitat Type and Quality

This coastal drainage area covers approximately 336 acres wrapping around the southern end of Camano and up along the east side of the island to the south edge of Tyee Beach. There is one mapped stream in this drainage area which drains a small area of bluff just northeast of Camano Head called The Preserve. Overall water from this area generally enters the nearshore through nearshore seeps from the high bluffs that make up the shoreline of this coastal drainage area. This shoreline includes the Camano Head divergence zone, a short section of the drift cell that carries sediment northwest from the Camano Head divergence zone, and a long stretch of the drift cell that travels north east from Camano Head. Sediment from the eroding bluffs at Camano Head is transported by wind and waves northeast along the Port Susan shoreline and northwest along the Saratoga Passage shoreline. The Camano Head bluffs are critical sources of sediment for the beaches and habitats on both sides of Camano Island. The drift cell on the east side of the island stretches all the way to Triangle Cove. The drift cell on the southwest side of the island begins just south of Gull Way and stretches to Pebble Beach and converges with a drift cell that moves sediment north to south. The bluffs to the northeast of Camano Head are heavily vegetated, providing marine riparian shade, woody debris, and organic inputs to the nearshore. The bluffs to the northwest of Camano Head are a mixture of vegetated and actively eroding bluffs. The nearshore processes in this coastal drainage area are almost all naturally functioning and unimpeded. There is a short section of shoreline armoring on the northeast edge of the coastal drainage area shoreline, the beginning of this armoring coincides with the beginning of the mapped drift cell moving sediments northeast from the divergence zone. This armoring is the southern extent of armoring that extends along a significant portion of the shoreline area between Camano Head and Pebble Beach – interrupting sediment transport on the southeast side of the island and eliminating potential forage fish spawning habitat.

Significant habitat features within the drainage basins include: mature big leaf maple forest and mixed conifer/hardwood forest. Significant habitat features along the shoreline include: forage fish spawning beaches, extensive marine riparian cover, eelgrass beds, kelp beds, mapped herring spawning areas, and actively eroding feeder bluffs. The soils in the basin are a mosaic of sandy loam. On the east side of Camano this coastal drainage area is a narrow band generally less than 1,000 feet wide. In many cases the coastal drainage area boundary is within the nearshore parcel boundary. The area directly above the vegetated bluffs is partially or completely forested. Some parcels have residences under the tree canopy or in open patches at the top of the bluff. The forest community that covers the southeastern half of this drainage area is dominated by big leaf maple with sword fern in the understory. An old landslide area on the southeastern corner of the island is a small distinctive bluff drainage basin. There is a mapped stream draining this basin, but no evidence in the aerial photos that the flow from this drainage creates a distinct channel at the nearshore interface. The big leaf maple forest is relatively rare in Washington and this area of forest is unusual due to its size and habitat quality. On the southwest side of the island the drainage area extends inland 1,000-1,500 feet from the shore. Forest patches are mixed conifer/hardwood communities surrounded by fields and residential development.

WA Department of Ecology – Shoreline Oblique Photos for Camano Head Coastal Drainage Area

2006	2001	1993
060708_07067 thru 060708_07071, 060708_06368 thru 080708_06380	010512-123250 thru 010512-123324, 010512-115450 thru 010512-115624	ISL0713-ISL0715, ISL0536-ISL0545

Ecological & Biological Characteristics

Bald eagles are known to nest in the upland area of the basin

In the nearshore, there are documented spawning sites for summer surf smelt. Herring spawn on the eelgrass meadow off the tip of Camano Head and on scatted eelgrass and boulders along the southeastern side of Camano, one of the few places herring have been documented spawning on rocky substrate in Puget Sound. Kelp beds wrap around the Camano Head shore. Eight salmonid species spawn in the Stillaguamish River: Chinook, coho, chum, pink, sockeye, steelhead, sea-run cutthroat, and bull trout. All of these species will use the shoreline of the coastal drainage area at one point or another. Bull trout from the Snohomish River have been identified foraging along Camano shoreline and have been shown to use this shoreline as a migration route to and from the Skagit River. Puget Sound bull trout are the only population known to forage in salt water habitats.

Fish Resources

There are five documented occurrences of winter surf smelt spawning along the shores of this drainage basin (WDFW forage fish data, 2004). Herring spawning areas are mapped along the eastern shoreline and off the tip of the island. The eastern part of the drainage basin is in Geographic Area 1 and the western part of the drainage basin is in Geographic Area 2 in the WRIA 6 Salmon Recovery Plan. It is expected that fish from all species of Puget Sound salmon use the marine habitats near the south Camano shoreline during outmigration and during their return to their natal rivers. Bull trout are known to use Camano shorelines during migrations between rivers and as foraging habitat.

The extensive bluff forests and the fields in the uplands contribute organic matter and terrestrial insects to the nearshore food web. Terrestrial insects are a significant component of the juvenile salmon diet. The actively eroding bluffs along the shoreline provide sediment to maintain the sand and gravel beaches which are critical as spawning areas for surf smelt and sand lance. Both species are important forage fish species and sand lance is a key food source for large juvenile salmon and adults. The material from the eroding bluffs is carried along the shore in both directions. The forested bluffs contribute woody debris, which creates habitat complexity along the beaches and nearshore. Along the eastern shoreline the forested bluffs provide significant marine riparian shading and cover. Eelgrass and kelp beds create vertical structure in the nearshore providing shelter to many species and organic matter to the nearshore food chain.

Protection of eroding feeder bluffs is a high priority for WRIA 6 salmon recovery since these areas are critical to nearshore sediment transport processes that create and maintain coastal lagoons and forage fish spawning beaches. Protecting marine riparian habitat, eelgrass habitat, kelp beds, and forage fish spawning habitat is also important since these habitats all contribute to maintaining the nearshore food web by providing organic inputs, terrestrial invertebrates, and habitat for key prey species. While protecting upland habitats is given a lower relative priority to nearshore habitats in the WRIA 6 salmon strategy, these habitats do provide important functions for salmon. In addition to providing inputs to the nearshore food web, the high percentage of forest and fields in the basin help to maintain natural runoff patterns compared to more intensively developed areas.

Land Use

The dominant Island County shoreline designation for this area is shoreline residential, including the northeastern shoreline of the drainage basin, the area around Camano Head, and the western shoreline of the basin. Approximately a mile and a half of the basin's eastern shoreline has a rural designation. Rural shorelines are areas of low intensity development, including but not limited to agriculture, large residential lots, and low intensity commercial or recreational uses. Per the Island County Shoreline Master

Program documentation, the purpose of the rural designation is to protect prime farm land as well as other historically rural areas from high intensity commercial, industrial, and residential development. Shorelines designated as shoreline residential areas are ones that have been modified from their natural state by residential unit construction. This designation is used to identify shoreline areas which are currently developed and/or have the potential for residential development at higher density than along rural shorelines. Per the Island County Shoreline Master Program documentation, the purpose of the shoreline residential designation is to allow for the continuation of residential unit construction; this designation identifies areas which are presently developed or have the potential for residential development.

Most of this drainage basin is the Island County rural zone. A small upland area is zoned rural forest. Typical land uses in the rural zone include, but are not limited to, residential dwellings and associated landscaping, accessory structures less than 800 sq. ft., guest cottages, and minor utilities. Agriculture is permitted in this zone under certain specifications, and typically consists of "hobby farms". The minimum lot size in the Rural Zone is 5 acres, with one dwelling permitted per 5-acre parcel. Typical land uses within the rural forest zone are activities needed to support timber harvesting, forest-related corps and recreational activities that can co-exist with the forest production function. The minimum lot size in the rural forest zone is 10 acres, with one dwelling unit permitted per 10 acres.

Most of the parcels in the Camano Head coastal drainage area are less than 1 acre in size, the exception are several large nearshore parcels that wrap around the southern tip of Camano Island. On the east side of Camano, the boundary of the coastal drainage area is generally shoreward of East Camano Drive. Stretches of South Camano Drive are within the drainage area on the south end of the island. The southern section of Eagle Ridge Drive and all of Gull Way and Angel Lane are in the drainage area on the west side of the island.

Summary of Prior Habitat Conservation and Restoration Recommendations & Actions

The Camano Head feeder bluffs were identified in the Shoreform Mapping report (Johannessen et al., 2005) as an important conservation site. Much of the area identified for protection in the Shoreform Mapping report is owned by the Tulalip Tribes.

South Camano Watershed

Habitat Type and Quality

This watershed covers approximate 134 acres on the southern end of Camano Island. There is not mapped stream in this watershed and water from the watershed appears to be captured by a stormwater outfall that discharges on the beach just north of the mapped outlet. The nearshore and uplands in the western part of the watershed have been developed, but much of the eastern part of the watershed is relatively undeveloped and covered by a shrub wetland system. Significant habitat features along the shoreline include: eelgrass beds and surf smelt spawning beaches. The shoreline at the mapped outlet of the watershed is altered by a bulkhead and there is a stormwater outfall that conveys water from the watershed just north of the mapped outlet. Significant habitat features in the watershed include: a high quality shrub wetland community surrounded by mixed conifer/hardwood forest.

WA Department of Ecology – Shoreline Oblique Aerial Photos for South Camano Watershed

2006	2001	1993
060708_07066	010512_123246	ISL0713

Ecological & Biological Characteristics

This watershed is used by bald eagles that nest in the upland areas of the adjacent drainage basin. The shrub wetland is an important feature for South Camano wildlife and migrating songbirds. In the nearshore, there is a documented spawning site for winter surf smelt just south of the mouth of the watershed. Eight salmonid species spawn in the Stillaguamish and Snohomish Rivers: Chinook, coho, chum, pink, sockeye, steelhead, sea-run cutthroat, and bull trout. All of these species will use the shoreline of this watershed at one point or another. Eelgrass grows along the shore.

Fish Resources

There is one documented occurrence of winter surf smelt just south of the mouth of the watershed (WDFW forage fish data, 2004). Surf smelt are important prey species for many marine animals. The eelgrass along the nearshore creates vertical structure in the nearshore providing shelter to many species and providing organic matter to the nearshore food chain. The outlet for this watershed is in Geographic Area 2 in the WRIA 6 Salmon Recovery Plan (2005).

Land Use

The Island County shoreline designation at the mouth of the watershed is shoreline residential. Shorelines designated as shoreline residential areas are ones that have been modified from their natural state by residential unit construction. This designation is used to identify shoreline areas which are currently developed and/or have the potential for residential development at higher density than along rural shorelines. Per the Island County Shoreline Master Program documentation, the purpose of the shoreline residential designation is to allow for the continuation of residential unit construction; this designation identifies areas which are presently developed or have the potential for residential development.

This watershed is completely in the Island County rural zone. Typical land uses in the rural zone include, but are not limited to, residential dwellings and associated landscaping, accessory structures less than 800 sq. ft., guest cottages, and minor utilities. Agriculture is permitted in this zone under certain specifications, and typically consists of “hobby farms”. The minimum lot size in the Rural Zone is 5 acres, with one dwelling permitted per 5-acre parcel.

Summary of Prior Habitat Conservation and Restoration Recommendations & Actions

There are no known prior conservation or restoration recommendations for this watershed.

Pebble Beach Coastal Drainage Area

Habitat Type and Quality

This coastal drainage area covers approximate 278 acres that drain to south Saratoga Passage. Significant habitat features along the shoreline include: forage fish spawning beaches, scattered eelgrass beds, and a barrier beach, brackish wetland at Pebble Beach. The wetland at Pebble Beach contains a large amount of driftwood and there is evidence that this wetland is inundated by saltwater at very high tides and during storm events. Significant habitat features within the coastal drainage basins include: three mapped seasonal streams and mixed conifer/hardwood forest in the uplands. The three unnamed, mapped streams all appear to be altered to discharge at the beach through stormwater outfalls, but the two at the southern end of the drainage area flow through forested uplands prior to reaching the nearshore.

WA Department of Ecology – Shoreline Oblique Photos for Pebble Beach Coastal Drainage Area

2006	2001	1993
060708_07058 thru 060708_07066	010512_123156 thru 010512_123246	ISL0709-ISL0712

Ecological & Biological Characteristics

This coastal drainage area includes eagle habitat and contributes freshwater, organic matter and nutrients to Saratoga Passage. In the nearshore, there is a documented spawning site for winter surf smelt near Pebble Beach. Eight salmonid species spawn in the Stillaguamish and Snohomish Rivers: Chinook, coho, chum, pink, sockeye, steelhead, sea-run cutthroat, and bull trout. All of these species will use the shoreline of this watershed at one point or another. Eelgrass grows along the shore.

Fish Resources

There are no reported observations of salmon in the seasonal streams in this coastal drainage area. The forest and fields in the uplands contribute organic matter and terrestrial insects to the nearshore food web. Terrestrial insects are a significant component of the juvenile salmon diet. While protecting upland habitats is given a lower relative priority to nearshore habitats in the WRIA 6 salmon strategy, these habitats do provide important functions for salmon. In addition to providing inputs to the nearshore food web, the high percentage of forest and fields in the basin help to maintain natural runoff patterns compared to more intensively developed areas. The eelgrass beds in the nearshore provide vertical structure for many marine animals. While much of the shoreline of the drainage area has been altered by bulkheads, there is one documented winter sand lance spawning site near Pebble Beach.

Land Use

The Island County shoreline designation along the northern shoreline of the drainage area is rural and the southern two-thirds of the shoreline is shoreline residential. Rural shorelines are areas of low intensity development, including but not limited to agriculture, large residential lots, and low intensity commercial or recreational uses. Per the Island County Shoreline Master Program documentation, the purpose of the rural designation is to protect prime farm land as well as other historically rural areas from high intensity commercial, industrial, and residential development. Shorelines designated as shoreline residential areas are ones that have been modified from their natural state by residential unit construction. This designation is used to identify shoreline areas which are currently developed and/or have the potential for residential development at higher density than along rural shorelines. Per the Island County Shoreline Master Program documentation, the purpose of the shoreline residential designation is to allow for the continuation of residential unit construction; this designation identifies areas which are presently developed or have the potential for residential development.

This coastal drainage area is mostly within the Island County rural zone. A single large parcel in the center of the drainage basin is zoned rural forest. Typical land uses in the rural zone include, but are not limited to, residential dwellings and associated landscaping, accessory structures less than 800 sq. ft., guest cottages, and minor utilities. Agriculture is permitted in this zone under certain specifications, and typically consists of “hobby farms”. The minimum lot size in the Rural Zone is 5 acres, with one dwelling permitted per 5-acre parcel. The primary purpose of the Rural Forest zone is to protect and encourage the long-term productive use of the County’s forestlands. Land has been zoned Rural Forest because of high likelihood that commercial forest management practices can be conducted there in an efficient manner. Typical uses within this zone are activities needed to support timber harvesting, forest-related

crops and recreational activities that can co-exist with the forest production function. The minimum lot size in the Rural Forest zone is 10 acres, with one dwelling unit permitted per 10 acres.

Summary of Prior Habitat Conservation and Restoration Recommendations & Actions

Pebble Beach was identified in the Shoreform Mapping report (Johannessen, et al., 2005) as a potential site for habitat protection as a high quality barrier marsh. This report also identified a bulkhead along the southern shoreline as a potential restoration site. This bulkhead extends well past surrounding bulkheads into the intertidal zone and acts as a barrier to shoreline processes.

Prioritization of South Camano Parcels

Each of the parcels in the South Camano project area was scored using the salmon prioritization criteria (see above methodology section for discussion of criteria). Map 4 shows the distribution of the scores.

The maximum nearshore score was 70. All but two of the nearshore parcels received a score of at least 5 points. There are 77 parcels with scores between 50 and 75. Scores between 50 and 75 are predominantly along the east and south shorelines.

Two upland parcels received a score of 50. These two parcels are in the Pebble Beach coastal drainage area. There were 76 parcels that received a score between 30 and 45 points. These include the wetland parcels, the forested area surrounding the wetland and forested parcels in the Pebble Beach coastal drainage area.

Based on these scores, habitat protection efforts should be prioritized on the large shoreline parcels around Camano Head, nearshore parcels on the southeastern Camano shoreline, shrub wetland parcels in the upland of the South Camano Watershed, the highest ranking upland parcels in the Pebble Beach coastal drainage area, and the large forested parcels.

Recommended Next Steps

It is recommended that direct contact be made with the nine landowners who each own more than 10 acres in the project area. Three of these own the key sections of feeder bluff at Camano Head and the surrounding vegetated bluffs. One of these owns a majority of the upland wetland in the South Camano watershed.

In addition, outreach about conservation opportunities and best management practices is recommended for the following groups:

- Pebble Beach landowners;
- all nearshore landowners on the Port Susan shoreline;
- all landowners who own 5 acres or more that include part of the Camano Head wetland or the forested area surrounding the wetland; and
- all landowners who own 10 acres or more of forest land in the Pebble Beach coastal drainage area.

References

Island County. 2001. Island County Comprehensive Plan Shoreline Management Element. Coupeville, WA.

Island County. 2008. Island County Zoning (17.03) and Shoreline Management (17.05) Code. Coupeville, WA.

Island County Salmon Technical Advisory Group. 2005. Water Resources Inventory Area 6 Multi-Species Salmon Recovery Plan. Coupeville, WA.

Johannessen, Jim, and M. Chase. 2005. Island County Feeder Bluff and Accretion Shoreform Mapping: Final Report. Bellevue, WA.

Whidbey Camano Land Trust – South Camano Conservation Strategies Report – Appendix A
Ecological and Landscape Prioritization Criteria

Nearshore Parcels	Max. Points	Watershed Parcels
Nearshore Ecosystem Processes (50 max)		***Watershed Ecosystem Processes (30 max)***
Sediment Erosion and Transport (30 max) [GIS: NEP_Sed]		*Hydrologic Regime (10 max) [GIS: WEP_Hydro]*
There are no human caused sediment transport interruptions between the parcel and the updrift sediment source; and the parcel has no known alterations on the beach or nearshore upland area that could impact sediment processes	Full points	Parcel with stream channel: There are no instream, riparian, or upland alterations to natural hydrology on the parcel Parcel without stream channel: There are no upland alterations to natural hydrology on the parcel
Parcel is downdrift from an interruption to sediment transport but does not contain structures along the shoreline; and/or there are alterations on the parcel in the nearshore upland area that may have impacts to sediment processes	Half points	Parcel with stream channel: There are no instream or riparian alterations to natural hydrology on the parcel, but there are upland alterations to natural hydrology
Parcels with structures/features on the beach that interrupt naturally occurring nearshore sediment processes	No points	Parcel with stream channel: There are instream or riparian alterations to natural hydrology Parcels without stream channel: There are upland alterations to natural hydrology on the parcel
Tidal Connectivity (10 max) [GIS: NEP_Tidal]		*Freshwater Habitat Complexity (10 max) [GIS: WEP_Cmplx]*
Parcel has naturally functioning tidal exchange (no obstructions due to human alterations to shoreline components (sub-tidal, intertidal, berm, backshore, stream)	Full points	Processes creating and maintaining freshwater habitat complexity are naturally functioning (habitats are not artificially constrained or altered, naturally occurring recruitment of woody debris)
Tidal exchange to one or more shoreline components is obstructed by human alterations; but some regular tidal exchange exists between the backshore and marine environment	Half points	Processes creating and maintaining freshwater habitat complexity have been altered on less than 20% of the parcel and in less than 20% of the stream and connected wetland habitats
Tidal exchange is obstructed by human alterations and there is limited or no tidal exchange between backshore habitats and the marine environment	No points	Processes creating and maintaining freshwater habitat complexity have been altered on more than 20% of the parcel; or the parcel does not contain freshwater habitats
Freshwater Hydrology (10 max) [GIS: NEP_FH]		*Sediment Erosion and Transport (10 max) [GIS: WEP_Sed]*
Freshwater inputs to nearshore are naturally functioning	Full points	There are no known instream, riparian, or upland alterations on the parcel that would interfere with natural watershed sediment processes
Freshwater inputs to nearshore occur onsite, but have been altered (timing and or location)	Half points	There are no instream or riparian alterations on the parcel that would interfere with natural watershed sediment processes; but there are upland alterations that may create impacts to sediment processes
Freshwater inputs to nearshore are significantly altered due to shoreline structures or stormwater drainage structures	No points	There are instream and/or riparian alterations on the parcel that increase instream sediment loads; or The parcel does not contain stream habitats (Coastal Drainage Areas)

Whidbey Camano Land Trust – South Camano Conservation Strategies Report – Appendix A
Ecological and Landscape Prioritization Criteria

Nearshore Parcels	**Max. Points**	**Watershed Parcels**
Nearshore Habitat Functions (50 max)		***Watershed Habitat Functions (30 max)***
Food Production for Juvenile Salmon (20 max) [GIS: NHF_JFood]		*Spawning Habitat (10 max) [GIS: WHF_Spwn]*
Parcel includes one or more of the following habitats: mudflat, fish accessible coastal lagoon, salt marsh, or coastal stream outlet	Full points	Parcel contains spawning habitat on stream reach documented to be used by one or more salmonid species
Parcel contains shoreline adjacent to mudflat, coastal lagoon, or salt marsh habitat; and/or Marine riparian vegetation and upland forest covers at least 60% of parcel (minimum parcel size = 5 acres)	Half points	Parcel contains spawning habitat, but there is no documentation of salmonid spawning in stream reach
All other nearshore parcels	No points	Parcel does not include salmonid spawning habitat
Food Production for Adult Salmon (10 max) [GIS: NHF_AFood]		*Rearing Habitats (10 max) [GIS:WHF_Rear]*
Parcel includes sand and gravel beach with documented sand lance spawning site(s) and/or tidelands mapped as herring spawning sites	Full points	Parcel contains instream and/or connected off-channel rearing habitat along stream reach documented to be used by one or more salmonid species
Parcel includes sand and gravel beaches and/or is adjacent to eelgrass beds; but there is no documented sand lance or herring spawning activity at the site	Half points	Parcel contains instream and/or connected off-channel rearing habitat, but there is no documentation of salmonid utilization of this stream reach
All other nearshore parcels	No points	Parcel does not include salmonid rearing habitat
Shelter for Juvenile Salmon (20 max) [GIS: NHF_Shltr]		*Intact Forest Habitats (10 max) [GIS: WHF_Frst]*
Parcel includes habitat that provides lower salinity refuge	Full points	The parcel contains >80% mature stream riparian and/or upland habitats
Parcel is adjacent to lower salinity habitats or continuous kelp and/or eelgrass beds	Half points	The parcel contains >50% naturally functioning stream riparian and/or upland habitats
All other nearshore parcels	No points	All other watershed parcels

Landscape Context	
Connectivity with Already Protected Habitats (10 max)	*[GIS: connect]*
Parcel already protected or adjacent to conservation lands (=> 5 acres in size)	Full points
Adjacent to conservation lands (=>1 acre and < 5 acres in size)	Half points
Adjacent to conservation lands < 1 acres or parcel not adjacent to conservation lands	No points
WRIA 6 Salmon Recovery Geographic Area (10 max)	*[GIS: GeoArea]*
Geographic Area 1	Full points
Geographic Area 2	Half points
Geographic Area 3	No points
Estimated length of shoreline or stream channel (10 max)	*[GIS: Length]*
=>1.320 feet (quarter mile)	Full points
>250 feet and <1.320 feet	Half points
<250 feet	No points
Size of parcel (or size of combined adjacent parcels owned by single owner)	*[GIS: Size]*
=>10 acres	Full points
=>5 acres and <10 acres	Half points
<5 acres	No points

Map Labels	First Name	Last Name	Parcel #	IC Key	IC Map #	Acres	IC Zoning
A	ERIC	NEGLER	R33025-231-4270	150561	889	1.16	Rural
A	ERIC	NEGLER	R33025-319-3150	150749	891	5.10	Rural
A	ERIC & VALERIE	NEGLER	S8460-00-01012-0	432160	888	2.65	Rural
A	ERIC	NEGLER	S8460-00-01013-0	432179	888	3.32	Rural
A	ERIC	NEGLER	S8460-00-02001-2	432197	889	5.04	Rural
A		NEGLER		0	0	0.68	Rural
A		NEGLER		0	0	2.95	Rural
A	ERIC	NEGLER TTEE	R33025-213-4030	150543	889	0.94	Rural
A	ERIC	NEGLER TTEE	R33025-223-4150	150552	889	0.80	Rural
B		TULALIP TRIBES OF WASHINGTN	R33025-180-4600	488902	889	7.38	Rural
B		TULALIP TRIBES OF WASHINGTN	R33025-265-4700	488939	889	7.38	Rural
B		TULALIP TRIBES OF WASHINGTN	R33025-315-4700	488920	891	7.38	Rural
B		TULALIP TRIBES OF WASHINGTN	R33025-370-4600	631061	891	7.39	Rural
C	The Preserve	PROPERTY OWNERS	S7780-00-0000A-0	683512	891	32.79	Rural
C	The Preserve	PROPERTY OWNERS		0	0	1.00	Rural
C	The Preserve	PROPERTY OWNERS		0	0	0.22	Rural
D	JAMES	KLEIN	R33024-013-2900	149985	886	5.55	Rural
E	IAN	METZ	R33024-040-2790	150044	886	5.11	Rural
F	K MICHAEL	DUKES	R33024-067-2660	150071	886	5.22	Rural
F	KENNETH	DUKES	R33024-088-2540	150115	886	5.09	Rural
F	KENNETH	DUKES	R33024-114-1770	150124	886	4.78	Rural
F	KENNETH	DUKES	R33024-127-2420	150151	886	5.06	Rural
G	MICHAEL	WILTERMOOD	R33024-157-2380	150188	886	5.12	Rural
H	H. NIXON	CHAPPELL	R33024-167-1610	150197	886	5.77	Rural
H	H. NIXON	CHAPPELL	R33024-185-2260	150222	886	5.18	Rural
I	GEORGE	PEDERSEN TRUSTEE	R33024-205-2100	524748	886	2.53	Rural
I	GEORGE	PEDERSEN TRUSTEE	R33024-215-2050	524739	886	2.53	Rural
J		PAYNE FAM LTD LIABILITY CO	R33024-238-2060	150268	886	5.16	Rural
K	SUN SOOK	KIM	R33024-255-1970	524766	886	2.61	Rural
K	SUN SOOK	KIM	R33024-271-1830	524757	887	2.61	Rural
K	SUN SOOK	KIM	R33024-281-1780	524720	887	2.60	Rural
L	JEAN	MARKHAM	R33024-293-1750	524711	887	2.60	Rural
L	JEAN MARIE	MARKHAM	R33024-311-1660	150320	887	5.22	Rural
M	STEVE	THILBERG	R33024-337-1560	150348	887	5.20	Rural
N	BEATRICE	HENTSCHELL	R33024-446-1040	150446	887	5.14	Rural
O	KIWAN / SOON Y	PAIK	R33024-468-0960	150464	887	5.11	Rural
P		THOMAS D KINSMAN FAMILY TR	R33013-036-0380	147763	868	1.93	Rural
P		THOMAS D KINSMAN FAMILY TR	R33013-047-0360	147772	868	2.62	Rural
P		THOMAS D KINSMAN FAMILY TR	R33013-059-0350	147781	868	1.98	Rural
P		THOMAS D KINSMAN FAMILY TR	R33013-069-0330	147790	868	1.98	Rural
Q	WILLIAM	MEANS	R33014-232-4320	148334	872	6.32	Rural
AA		DAVID AND MELINDA GLADSTONE FOUNDATION	R33023-151-4630	149155	883	10.00	Rural
AA		GLADSTONE		0	883	2.54	Rural
AA		GLADSTONE		0	883	2.54	Rural
AA		GLADSTONE		0	883	5.06	Rural
AA		GLADSTONE		0	883	5.07	Rural
AA	DAVID AND MELINDA	GLADSTONE FOUNDATION	R33026-469-4700	151150	892	37.09	Rural Forest
AA		THE DAVID & MELINDA GLADSTONE FOUNDATION	R33023-018-4620	148986	883	10.00	Rural
AB	GARRISON 1ST FAM LTD PRTNRSHP	% J B GARRISON	R33025-336-0950	602869	888	5.02	Rural
AB	GARRISON 1ST FAM LTD PRTNRSHP	% J B GARRISON	R33025-380-1710	150954	888	5.26	Rural
AB	GARRISON 1ST FAM LTD PRTNRSHP	% J B GARRISON	R33025-390-2260	525293	888	2.67	Rural
AB	GARRISON 1ST FAM LTD PRTNRSHP	% J B GARRISON	R33025-408-2300	525284	890	2.66	Rural
AB	GARRISON 1ST FAM LTD PRTNRSHP	% J B GARRISON	R33025-415-1800	504715	890	2.62	Rural
AB	GARRISON 1ST FAM LTD PRTNRSHP	% J B GARRISON	R33025-427-2320	584237	890	2.62	Rural
AB	GARRISON 1ST FAM LTD PRTNRSHP	% J B GARRISON	R33025-444-2320	584228	890	2.62	Rural
AB	GARRISON 1ST FAM LTD PRTNRSHP	% J B GARRISON	R33025-450-1500	504902	890	2.62	Rural
AB	GARRISON 1ST FAM LTD PRTNRSHP	% J B GARRISON	R33025-450-1800	504895	890	2.62	Rural
AB	GARRISON 1ST FAM LTD PRTNRSHP	% J B GARRISON	R33025-472-2500	584200	890	2.61	Rural
AB	GARRISON 1ST FAM LTD PRTNRSHP	% J B GARRISON	R33025-495-1450	504699	890	2.55	Rural
AC	JOHN	FREITAS	R33025-280-3730	150641	891	1.00	Rural
AC	TOMMY	THOMAS	R33025-318-3700	150730	891	5.06	Rural
AD	ERIK	GLADSJO	R33025-355-3560	150883	891	5.01	Rural
AE	PHILLIP	MORRISON TRUSTEE	R33025-346-3090	150838	891	5.04	Rural
AE	PHILIP	MORRISON TRUSTEE	R33025-386-2840	524695	891	2.66	Rural
AF	GARY	RAYKOVICH	R33025-283-2730	150669	891	2.71	Rural
AF	GARY	RAYKOVICH	R33025-320-2700	503048	891	2.51	Rural
AG	WILLIAM	FUNDEEN ET AL	R33025-360-2240	612769	888	2.95	Rural
AG	WILLIAM	FUNDEEN ET AL	R33025-369-2500	612750	888	2.60	Rural
AH		SHEN	R33025-375-1100	150936	888	5.04	Rural
AI		AITKEN	R33025-355-0520	0	888	10.05	Rural
AJ	RICHARD	COLLINS	R33025-411-0330	802547	890	15.16	Rural

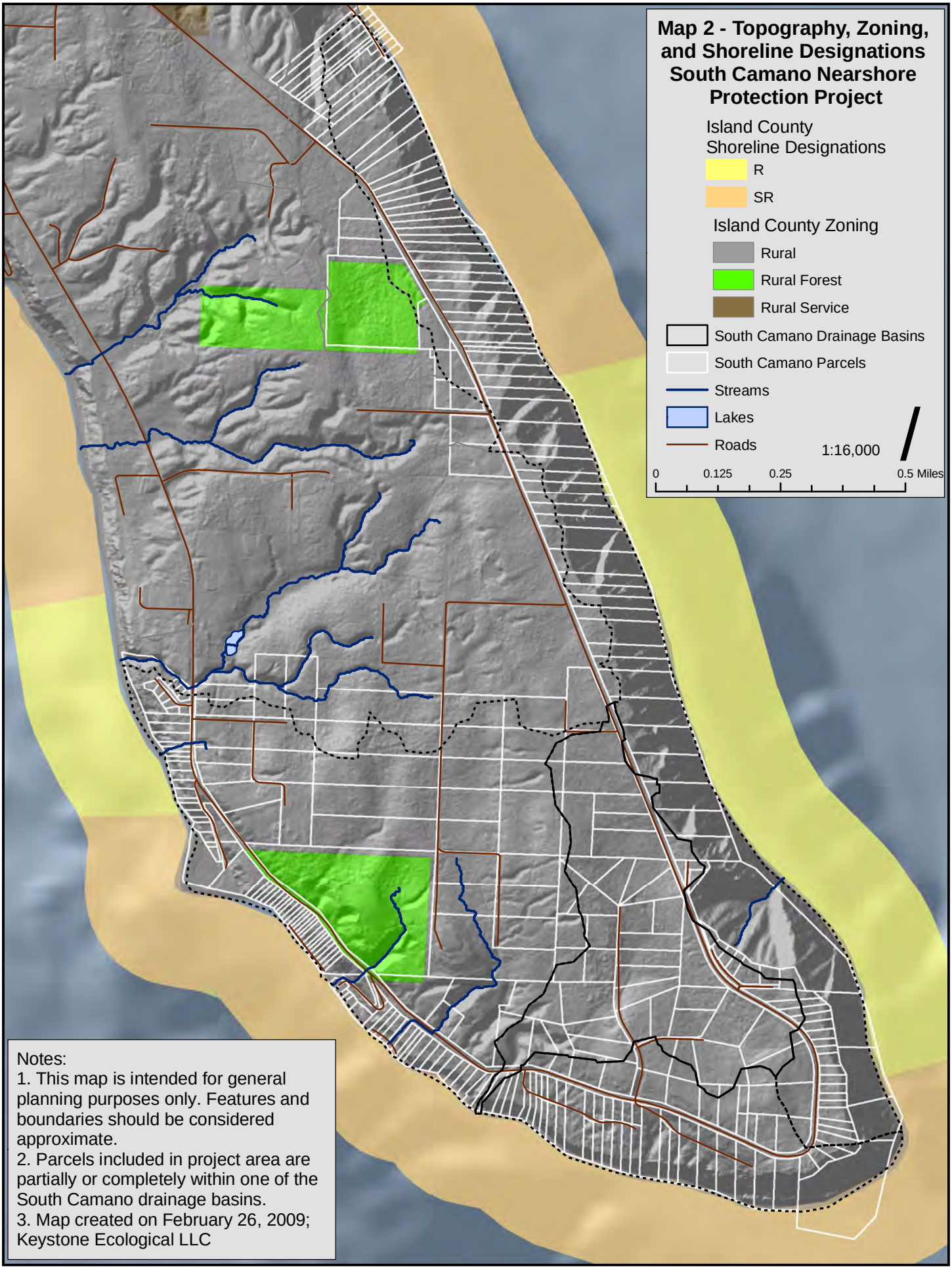
Map Labels	First Name	Last Name	Parcel #	IC Key	IC Map #	Acres	IC Zoning
AK	GARY	SCHOLL	R33025-445-0990	802549	890	5.00	Rural
AL	MARK	OLSSON	R33025-479-1000	802548	890	5.00	Rural
AM	PAUL	EASTER	R33025-478-0320	661509	890	5.04	Rural
AN	LUIS	PERALTA	R33025-511-1000	151123	890	5.00	Rural
AO	CHERYL	GRAHAM	R33025-514-0320	661518	890	5.02	Rural
AP	SCOTT	PRICE	R33025-505-1950	505055	890	2.52	Rural
AP	SCOTT	PRICE	R33025-515-1650	505046	890	2.52	Rural
AQ	JOHN G & JULIE A	DEAN	R33024-016-2090	149994	886	5.11	Rural
AQ	JOHN G & JULIE A	DEAN	R33024-039-2060	150035	886	2.48	Rural
AR	LAWRENCE	HSU	R33024-034-1580	150026	886	5.05	Rural
AS	PATRICIA	KRAKOWKA	R33024-034-1090	150017	886	10.00	Rural
AS	PATRICIA	KRAKOWKA	R33024-083-1090	150080	886	5.00	Rural
AT	GARY	SKALET	R33024-083-1810	150099	886	5.83	Rural
AU	MONIKA	DENASHA	R33024-116-1090	150142	886	5.00	Rural
AV	WILFRED	DELBROUCK	R33024-149-1090	150179	886	5.00	Rural
AW	SEAN C & HEIDI E	DELICH	R33024-149-0430	150160	886	5.00	Rural
AX	RICHARD	BENDER	R33024-116-0430	150133	886	5.00	Rural
AY	PAUL	GUTIERREZ	R33024-084-0430	150106	886	5.00	Rural
AZ	RANNFRID (RANDI)	HODNE	R33024-050-0430	150053	886	5.00	Rural
BA	ALAN	KOBUKE	R33024-017-0430	150008	886	5.00	Rural
BB	FRANK	ROE	R33023-118-4630	149075	883	10.00	Rural
BC	ROBERT	SANDERLIN	R33023-084-4620	149039	883	10.00	Rural
BD	TIMOTHY	JEWELL	R33023-050-4620	149011	883	10.00	Rural
BE	DEAN	ROCKWOOD	R33023-120-3640	149093	883	5.06	Rural
BF	ANDREW	ZIGULIS	R33023-085-3640	149057	883	5.05	Rural
BG	MARK & VICKIE	LAURES	R33023-035-3790	149002	883	5.00	Rural
BH	NAM	CHOI	R33023-075-3000	463171	883	2.56	Rural
BH	NAM	CHOI	R33023-094-3000	463153	883	2.56	Rural
BI	GLENN	JONES	R33014-108-4420	147987	870	2.72	Rural
BI	GLENN	JONES	R33014-129-4390	148067	870	2.25	Rural
BJ	JOHN	DOROTIK	R33014-048-4480	711117	870	21.06	Rural Forest
	MARY	0'FARRELL	S8460-01-00019-0	432428	888	0.69	Rural
	CHRISTINE MARIE MONTANA	ALGER	S8460-01-00028-0	432507	888	0.87	Rural
	JAMES	ANDERSEN	S8460-01-00002-0	432231	892	1.11	Rural
	POVL & ERNA	ANDERSEN LE	R33023-480-5170	149896	885	1.00	Rural
	EARL	BARNARD	R33023-160-2180	529271	882	0.29	Rural
	DONALD	BARNHILL	R33024-524-0840	150534	887	2.25	Rural
	STEPHEN	BARTOK	R33024-389-1300	686350	887	2.58	Rural
	DANIEL	BERGSMA	S7780-00-00001-0	683424	891	0.51	Rural
	THOMAS	BIGELOW	S8460-01-00026-0	432482	888	0.78	Rural
	THOMAS	BIGELOW	S8460-01-00027-0	432491	888	0.88	Rural
	WALTER	BINGAMAN, TRUSTEE	S8460-01-00018-0	432419	888	0.62	Rural
	TERRY	BRIGGMAN	R33013-005-0030	147727	868	0.44	Rural
	TERRY	BRIGGMAN	R33014-023-5120	711126	870	3.00	Rural
	BRUCE	BROWN	R33024-401-1220	150400	887	2.36	Rural
	ROBERT	BROWN	S8460-00-01005-1	463297	888	0.53	Rural
	JAMES	BRUCE	R33023-170-2150	715391	882	4.24	Rural
	JOE	BYERS	R33013-108-0170	147834	868	2.12	Rural
		CADWELL	S8460-00-01005-2	0	888	0.53	Rural
	PATRICIA	CADWELL	S8460-00-01005-3	463313	888	1.00	Rural
	PAUL REED	CALDERON	S7715-00-00009-0	347547	882	0.32	Rural
		CAMANO COLONY WATER SYSTEM	R33023-520-5030	149976	885	0.10	Rural
		CAMANO TYEE GROUP LLC	R33024-416-0410	150428	887	4.33	Rural
	LAWRENCE	CARLSTROM	R33013-003-0500	147718	868	0.90	Rural
	LAWRENCE	CARLSTROM	R33013-008-0470	147736	868	0.90	Rural
	CLAYTON	CARNELL	R33025-378-3950	150945	891	0.94	Rural
	EMMA L COLLIERS	CASE	S8330-00-00032-0	413895	872	2.05	Rural
	LEO GERALD	CLARK	S8460-01-00006-0	432295	892	0.28	Rural
	LEO	CLARK	S8460-01-00010-1	432320	892	0.53	Rural
	MICHAEL	CLAYTON	R33013-026-0410	147754	868	1.93	Rural
	VIRGINIA	CLEIN	R33025-288-2420	150687	888	2.51	Rural
	ALLEN	COLE	S7715-00-00001-0	347486	882	1.05	Rural
	ALLEN	COLE	S7715-00-00003-0	347495	882	0.98	Rural
	TERRI	COLEMAN	R33025-239-4350	150570	889	1.04	Rural
	TERRI	COLEMAN	R33025-250-4330	150589	889	0.08	Rural
	THOMAS	COLLINS	S8460-00-01010-0	432142	888	2.76	Rural
	CRAIG	CORLISS	S8460-01-00009-0	432311	892	0.72	Rural
	LEE	COSSITT	S8460-00-01001-4	431991	888	1.03	Rural
	STEVEN W / SANDRA A	CROSS	S8460-00-01003-3	432035	888	1.03	Rural
	MICHAEL	CURTISS	R33025-320-2450	503039	888	3.02	Rural
	GAIL	DANFORTH	S7715-00-00039-0	347743	883	1.25	Rural
	FREDDIE	DANIEL	R33025-350-1890	150847	888	2.69	Rural

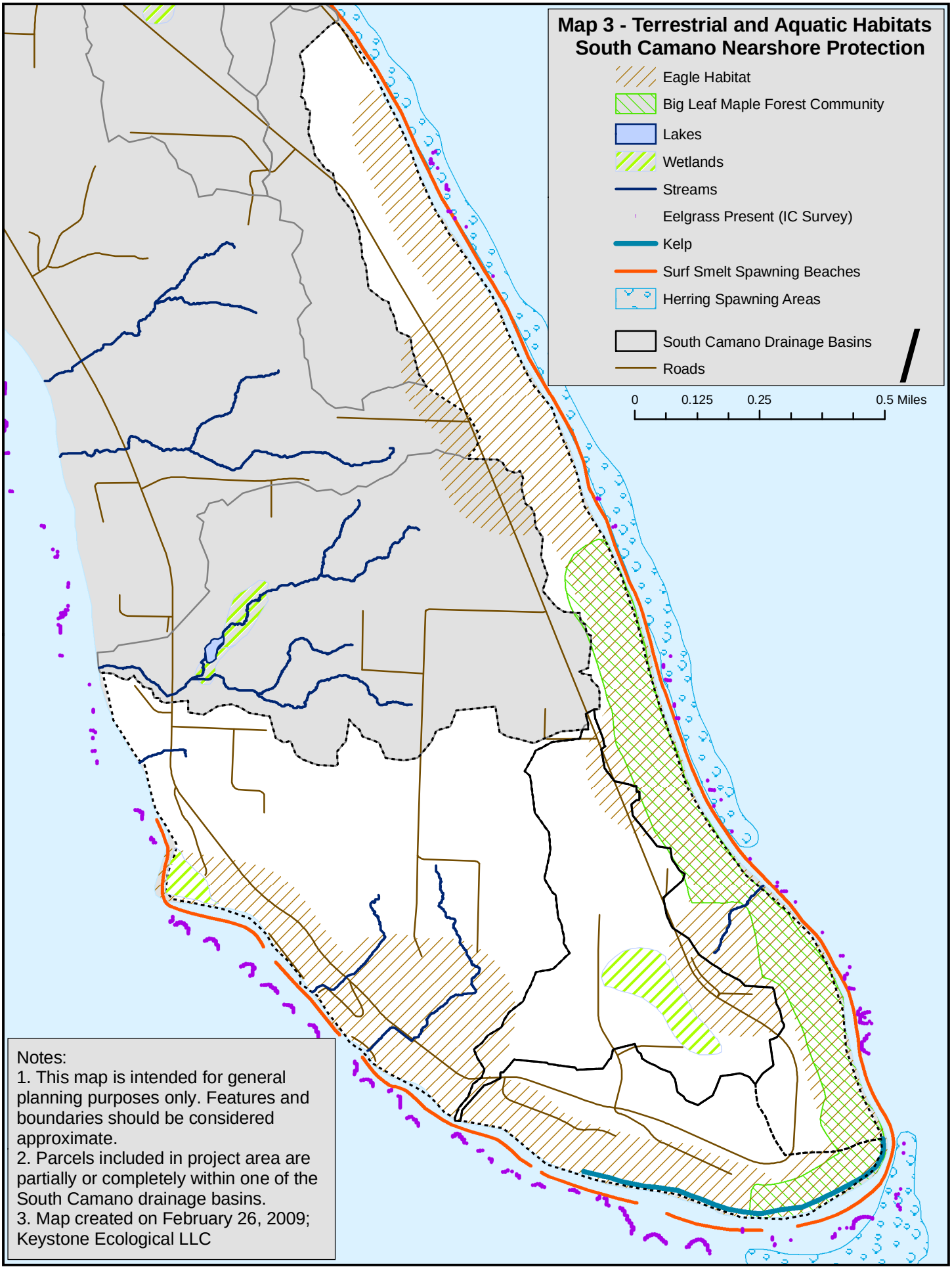
Map Labels	First Name	Last Name	Parcel #	IC Key	IC Map #	Acres	IC Zoning
	RICHARD	DENNY	S8460-00-01003-4	432044	888	0.98	Rural
	LEONARD	DULANEY	R33023-150-2570	149146	882	0.27	Rural
	CHERYL	DURHAM	S8330-00-00037-1	413966	872	0.18	Rural
	BRENT A / JILL M	DUSKIN	S8330-00-00033-0	413902	872	2.02	Rural
	DAVID	DUSKIN	S8330-00-00034-0	413911	872	1.97	Rural
	JOHN SCOTT	EATON	S7715-00-00052-0	347789	892	0.21	Rural
	JENNIFER	EDEN	R33024-366-1420	150375	887	2.59	Rural
	GERALD	ESTES	S8460-01-00010-2	432339	892	0.52	Rural
	FRED	FALKANGER	S7715-00-00050-0	347770	892	0.21	Rural
	RICHARD M / MICHELLE	FARAGE	S7715-00-00015-0	347609	882	0.41	Rural
	WILLIAM F / JODY BETH	FAY	R33014-218-4630	148281	870	1.67	Rural
	RUSLAN	FILIPPOV	R33014-151-4960	148129	870	1.69	Rural
	ALAN	FORTUNE	R33023-120-3000	149084	883	4.92	Rural
	WALTER H / DONNA L	FOUNTAINE	R33025-295-2050	503020	888	2.75	Rural
	GARY MARTIN	FOWLER	S8460-01-00022-0	432446	888	0.66	Rural
	JEAN	FRALEY	R33025-330-1900	150794	888	2.70	Rural
	ANNE	FREITAS	R33025-270-4280	150605	891	1.06	Rural
	ARTHUR	FULLER	S8460-01-00032-1	723051	888	0.38	Rural
	DELWIN	FURNAS	S7715-00-00057-0	347814	892	0.25	Rural
	DELWIN G / M JOANN	FURNAS	S7715-00-00058-0	347823	892	0.27	Rural
	DEBBIE LEE	GALUSKA	R33025-279-3350	150632	891	0.92	Rural
	DEBBIE LEE	GALUSKA	S8460-00-0000B-2	431955	889	2.28	Rural
	DEBBIE LEE	GALUSKA	S8460-00-02001-1	432188	889	0.56	Rural
	TOM R & LORI J	GARGAN	S8460-00-01003-1	432017	888	0.70	Rural
	JOSEPH C / BARBARA A	GARNETT	S7780-00-00009-0	683503	891	1.17	Rural
	JOSEPH	GARRISON	S8460-00-01007-3	630785	888	0.56	Rural
	JOSEPH	GARRISON TRUSTEE	S8460-01-00004-2	432268	892	0.24	Rural
	KAMAL	GHETMIRI	R33025-279-3000	150614	891	1.94	Rural
	DAVE	GIBBONS	R33025-392-3700	150981	891	1.73	Rural
	GARY	GOEBEL	R33014-187-4800	148245	870	1.67	Rural
	LAWRENCE	GOGENOLA	S7715-00-00044-0	347752	892	0.62	Rural
	LAWRENCE	GOGENOLA	S7715-00-00046-0	608685	892	0.52	Rural
	ESTER	GOLDEN	R33025-300-1700	503011	888	2.50	Rural
	MICHAEL	GRANESE	S8330-00-00039-0	413993	872	2.21	Rural
	STEPHEN	HALL	R33024-427-1120	150437	887	2.57	Rural
	ROBERT A	HALL	S8460-01-00015-0	432393	892	0.89	Rural
	LAURA	HAROLDSON JTWROS	S8460-01-00030-1	466105	888	0.33	Rural
	SALLY	HARRINGTON	R33024-506-0160	150507	887	1.47	Rural
	H A	HEALY ***	S7715-00-00048-0	347761	892	0.27	Rural
	CHARLES EMMET	HEGLAND	R33025-332-1250	515375	888	2.50	Rural
	DAVID	HEISER	S8330-00-00037-2	413975	872	1.10	Rural
	CHRISTY	HEITER	S8460-01-00011-0	432348	892	0.67	Rural
	MICHAEL	HERTEL	S7715-00-00017-0	347627	882	0.45	Rural
	STEPHEN	HOLMES	S7715-00-00020-0	347645	882	0.35	Rural
	BERNARD	HYDE	S8460-01-00017-0	432400	892	0.68	Rural
	ROGER	HYPPA	S7715-00-00005-0	347510	882	0.88	Rural
	SALLY	JACKSON	R33025-512-2200	588974	890	2.52	Rural
	CHRISTOPHER	JEAN	S7780-00-00007-0	683488	891	1.28	Rural
	FRITZ E / MARIJANE	JOHNSEN	R33014-276-4540	148398	872	3.25	Rural
	JOHN FREDERICK	JOHNSON	S8460-01-00005-2	432286	892	0.15	Rural
	ORAN	JONES	R33014-232-3830	148325	870	1.38	Rural
	ORAN	JONES	R33014-248-4050	148352	870	2.02	Rural
	ORAN	JONES	R33014-254-4000	148361	870	2.02	Rural
	DARRYL	JONES	R33025-315-4250	150721	891	0.61	Rural
	DARRYL	JONES	R33025-353-4120	150856	891	0.67	Rural
	ERVIN	JONES	S8460-00-01002-0	432008	888	2.78	Rural
	BARBARA	JUKANOVICH	R33014-168-4900	148174	870	1.76	Rural
	RANDY	KEITH	R33013-074-0310	147807	868	2.12	Rural
	KEITH R	KENNEDY	R33024-055-2020	150062	886	2.46	Rural
	MARY	KENNEDY	S8330-00-00036-1	413939	872	0.94	Rural
	MARY	KENNEDY	S8330-00-00036-2	413948	872	0.72	Rural
	MARY	KENNEDY	S8330-00-00036-3	413957	872	0.18	Rural
	W VICTOR	KEPLER	S7715-00-00065-0	347878	892	0.35	Rural
	TAE	KIM	R33014-126-5080	148049	870	1.60	Rural
		KIM	S8460-00-01008-0	432124	888	3.09	Rural
	FRANK H C	KIM ET AL	R33025-337-4180	150810	891	0.42	Rural
	FRANK H C	KIM TRUSTEE	R33025-362-4080	150909	891	0.80	Rural
	FRANK H C	KIM TRUSTEE	R33025-370-4020	577977	891	0.80	Rural
	LISA MAREE	KIRKPATRICK	R33014-154-4290	148138	870	2.50	Rural
	YUJI	KOBAYASHI	S8460-00-01007-2	630776	888	1.11	Rural
	JAMES J / MICHELE M	KOCI	S8330-00-00035-0	413920	872	1.90	Rural
	TERRY	KOLLER	S8330-00-00037-3	413984	872	3.19	Rural

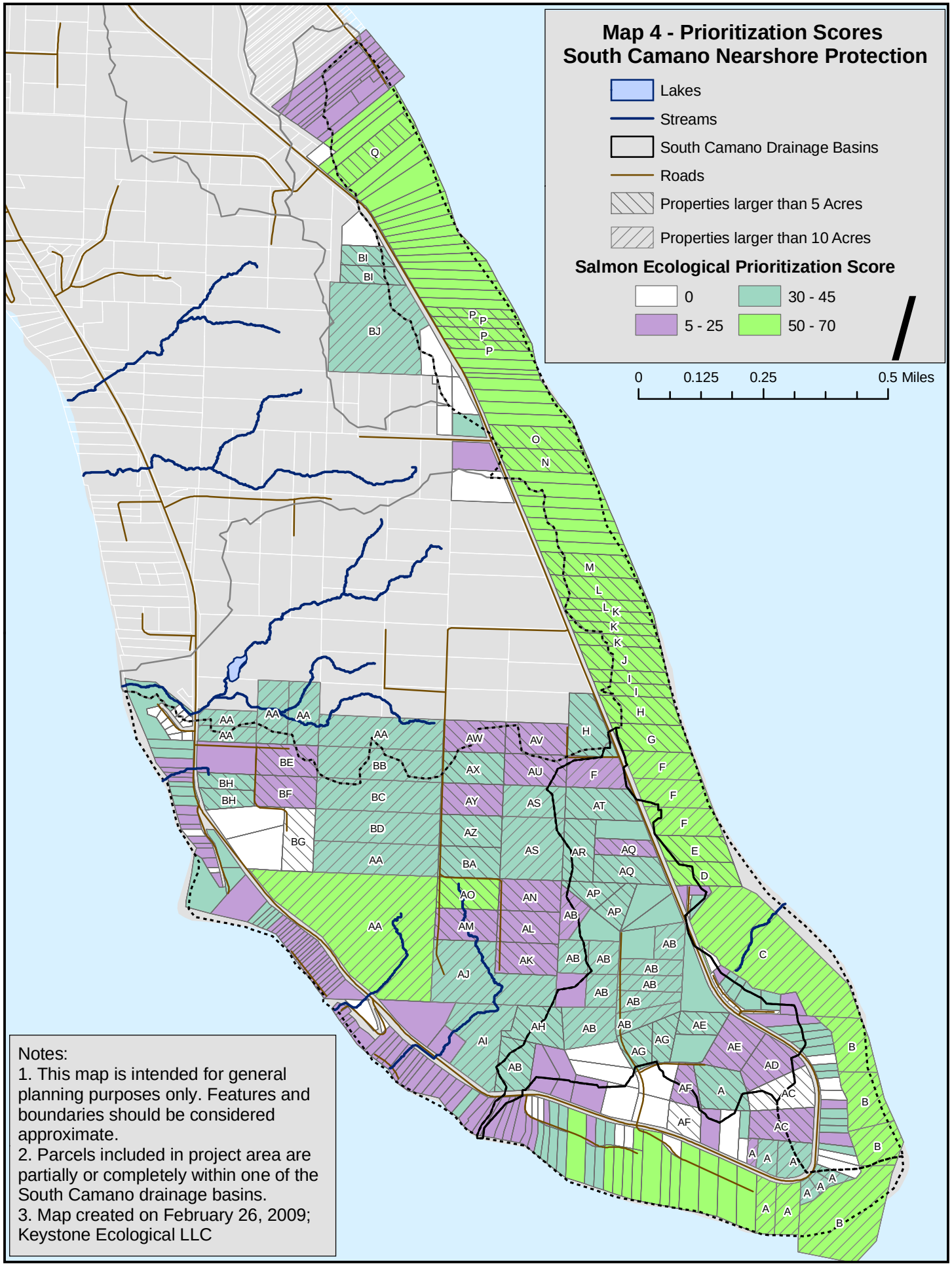
Map Labels	First Name	Last Name	Parcel #	IC Key	IC Map #	Acres	IC Zoning
	KERRY & LORRI	KONKLER	S8460-01-00012-0	432357	892	0.62	Rural
	KENNETH	KROM	R33025-480-1700	504706	890	2.55	Rural
	DAVID B & JANET A ALLEN & ROBT	L & ELIZABETH ANDREWS	S7715-00-00019-0	347636	882	0.25	Rural
	HEIDE	LANG	R33025-500-2400	588965	890	2.52	Rural
		LAWS RETREAT LLC	S8460-01-00025-0	432473	888	1.26	Rural
	YOON YI	LEE	R33013-088-0270	147816	868	2.12	Rural
	YOON YI	LEE	R33013-098-0210	147825	868	2.12	Rural
	BERNICE	LINDBERG	S8460-01-00005-1	432277	892	0.14	Rural
	CHARLES	LINDSEY	R33025-328-1500	602878	888	2.50	Rural
	ZUEN-YU	LING	R33025-360-2740	524702	891	2.65	Rural
	CARL	LOMBARDI	S8460-01-00007-0	432302	892	0.76	Rural
	RONALD	LUNSFORD	R33025-327-4220	150767	891	0.95	Rural
	MARGIT	MAC GREGOR	S8460-00-01007-1	630767	888	1.25	Rural
	SUSAN	MAGAN	S8460-01-00032-2	432561	888	0.69	Rural
	CAROL	MAGELSSEN	S8460-01-00024-0	432464	888	0.79	Rural
	CAROL	MAGELSSEN	S8460-01-00024-0	432464	888	0.79	Rural
	STEVEN	MALMSTEAD	R33023-155-2280	149173	882	0.28	Rural
	MICHEAL	MCALLISTER	R33024-487-0800	150482	887	2.59	Rural
	THOMAS	MCANALLY	S7715-00-00032-0	347725	883	1.18	Rural
	JOHN	MCDOWELL	R33023-509-5170	149967	885	1.20	Rural
	VERNON	MCDOWELL	S7715-00-00007-0	347529	882	0.38	Rural
	VERNON	MCDOWELL	S7715-00-00008-0	347538	882	0.32	Rural
	JAMES	MCKENNA	S7715-00-00026-0	347681	883	0.23	Rural
	CANDACE	MCKENNA	S8460-00-01005-4	463386	888	1.17	Rural
	EGBERT	MERSEREAU III	S8460-01-00031-2	432543	888	0.55	Rural
	KATHERINE R	MEYERS ET AL	S7715-00-00068-0	347903	892	0.34	Rural
	KIRBY	MITCHELL	R33023-052-3240	149020	883	4.85	Rural
	THOMAS	MITCHELL	R33023-133-2430	728902	882	0.23	Rural
	CHRISTINA	MOATS	S8460-00-01009-0	432133	888	2.87	Rural
	RICHARD	MORAN	R33025-280-4260	150650	891	0.52	Rural
	RICHARD	MORAN	R33025-287-4260	150678	891	0.52	Rural
	ROBERT	MULHALL JR	S8460-01-00031-1	432534	888	0.36	Rural
	GARRY	MYALL	R33024-377-1330	686369	887	2.58	Rural
	ARTHUR	MYERS JR	R33014-159-4930	148147	870	1.69	Rural
		NATIONAL CITY BANK	S7780-00-00003-0	683442	891	0.49	Rural
	IVAN	NELSON	R33026-375-5110	151141	892	4.66	Rural
	RAND	NILSSON	R33023-140-2370	610618	882	0.31	Rural
	RAND	NILSSON	R33023-148-2330	149137	882	0.27	Rural
	LINDA	OLMSTEAD	R33023-154-2510	149164	882	0.25	Rural
		PARK DRIVE ASSOCIATES	S7715-00-00011-0	347565	882	0.62	Rural
	LAWRENCE	PAULSON	R33025-415-1500	505331	890	2.62	Rural
	MICHAEL W	PECK SR	S8460-01-00014-1	432375	892	0.46	Rural
	GEORG	PEDERSEN TRUSTEE	S7780-00-00005-0	683460	891	0.51	Rural
	DAVID	PETERSON	R33023-134-2570	149128	882	0.26	Rural
	BRUCE	PETERSON	S7715-00-00067-0	347896	892	0.35	Rural
	ADAM PETRIE & JENNA	PETRIE	S7715-00-0000A-0	347468	892	3.31	Rural
	BICH	PHAN	R33025-384-3880	150963	891	1.14	Rural
	KATHERINE	PHILLIPY	S8460-01-00029-1	463420	888	0.33	Rural
	PAULA ANN	PHIPPS	R33025-468-2180	584193	890	2.60	Rural
	ROLLIE	POULTER	S7715-00-00014-0	347592	882	0.62	Rural
	ROLLIE	POULTER	S7715-00-00014-0	347592	882	0.62	Rural
	WAYNE	QUICK	R33024-448-0310	150455	887	2.80	Rural
	JOSEPH	REXACH	S8460-01-00014-2	432384	892	0.46	Rural
		RIDDLE FAMILY LLC	R33014-142-4980	148085	870	1.68	Rural
	BARBARA	RIFFLE	S8460-00-01004-3	432071	888	0.54	Rural
	BRITT	ROBERSON	R33024-480-0230	150473	887	1.52	Rural
		ROBERT AND IRENE LIVING TRUSTEE	S7715-00-00029-0	347716	892	0.26	Rural
	DAVID	RODEN	S7780-00-00002-0	683433	891	0.57	Rural
	JAMES	SABLE	R33023-160-2460	149191	882	0.25	Rural
	LAWRENCE	SALTARELLI	R33024-352-1470	150357	887	2.59	Rural
	LAUREL	SAVOLA	R33014-200-4730	596322	870	3.34	Rural
	PAUL	SAWYER	S8460-01-00021-0	801827	888	0.61	Rural
	DUANE	SCHAAF	R33024-512-0680	150525	887	2.38	Rural
	MICHAEL	SCHEER	R33014-224-4510	148290	870	2.95	Rural
	DELMAR	SCHWAB	S8460-01-00013-0	432366	892	0.67	Rural
	DALE G	SCHWARZMILLER	S7715-00-00053-0	347798	892	0.26	Rural
	HERBERT	SCHWARZMILLER	S7715-00-00054-0	347805	892	0.28	Rural
	HG , EF , DO	SCHWARZMILLER	S7715-00-00069-2	347921	892	1.18	Rural
	KENNETH	SHANK	R33024-414-1170	150419	887	3.22	Rural
	XIAOPING	SHEN	R33014-134-5020	148076	870	2.04	Rural
	MICHAEL F / LINDA S	SITKO	S8460-00-01006-0	432106	888	2.98	Rural
	THOMAS	SMITH	R33024-500-0750	150491	887	2.50	Rural

Map Labels	First Name	Last Name	Parcel #	IC Key	IC Map #	Acres	IC Zoning
	CYNTHIA	SMITH	S7715-00-00060-0	347832	892	0.42	Rural
	PATRICIA	SMITH	S7715-00-00061-0	347841	892	0.35	Rural
	ANN	SPECKMAN	S8460-01-00030-2	466098	888	0.53	Rural
	PAULA	STAFFORD	S8460-00-01004-2	432062	888	1.08	Rural
	RICHARD	STEELE	S8460-00-01011-0	432151	888	2.77	Rural
	MCDONALD	SULLIVAN	R33013-016-0430	147745	868	1.80	Rural
		SUN MOUNTAIN CONST	R33025-344-4160	150829	891	0.42	Rural
	JACK C	SWARTZ	S7715-00-00066-0	347887	892	0.35	Rural
	SAM	TAY TRUSTEE	S7780-00-00004-0	683451	891	0.45	Rural
	SAM	TAY TRUSTEE	S7780-00-00006-0	683479	891	0.60	Rural
	SAM	TAY TRUSTEE	S7780-00-00008-0	683497	891	0.90	Rural
	DAVID	TEBBENKAM	S7715-00-00064-0	347869	892	0.35	Rural
	DAVID	TEBBENKAMP	S7715-00-00063-0	347850	892	0.26	Rural
	CHRIS	TERRY	R33025-354-0190	150865	888	1.97	Rural
	NAOMI	UCHIYAMA	S8460-01-00029-2	463448	888	0.53	Rural
	VIRGINIA	VANAJA	S8460-01-00023-0	432455	888	0.87	Rural
	DONALD W	WALSH JR	S8460-00-01004-4	432080	888	1.15	Rural
		WATKINS HOLDINGS LLC	S7715-00-00028-0	347707	882	0.11	Rural
		WEICHERT RELOCATION RESOURCES INC	R33014-177-4860	148209	870	1.67	Rural
	AMARYLLIS D	WHITMARSH	S7715-00-0000B-0	347477	892	3.56	Rural
	AMARYLLIS D	WHITMARSH	S7715-00-00024-0	347672	882	0.35	Rural
		WILKES GARY WATER CORP	S8460-01-00003-0	432240	892	0.32	Rural
		WILKES-PEBBLE PARKING ASSOCIATION	S8460-01-00004-1	432259	892	0.18	Rural
	JAMES	WILLIAMS	R33025-258-4320	150598	889	0.78	Rural
	ROBIN JON	WILSON	S8460-00-01001-1	431964	888	0.62	Rural
	ROBIN JON	WILSON	S8460-00-01001-3	431982	888	0.61	Rural
	RALPH	WINTER	R33013-119-0150	147843	868	2.12	Rural
	STEVEN C & LYNN S	WOLF	R33023-022-3380	148995	883	4.85	Rural
	WARREN	WONG	S8460-00-01001-2	431973	888	0.92	Rural
	ANDERS	WORSLEY	R33025-296-4260	150696	891	0.67	Rural
	ANDERS	WORSLEY	R33025-305-4260	150712	891	0.64	Rural
	RICHARD	ZELDENRUST	S8460-01-00020-0	432437	888	0.59	Rural
		ZENTNER	R33025-521-2640	588983	890	0.07	Rural
			S8460-00-01003-2	0	888	0.65	Rural
			S8460-00-01004-1	0	888	0.57	Rural


Map 1 - 2006 Aerial Photo
South Camano Nearshore Protection
South Camano Drainage Basins
Parcel Boundaries
0
0.125
0.25
0.5 Miles
1:16,000
Notes:
1. This map is intended for general planning purposes only. Features and boundaries should be considered approximate.
2. Aerial Photo Source: National Agriculture Imagery Program, 2006
3. Parcels included in project area are partially or completely within one of the South Camano drainage basins.
4. Map created on February 26, 2009; Keystone Ecological LLC


Map 2 - Topography, Zoning, and Shoreline Designations South Camano Nearshore Protection Project
Island County Shoreline Designations
R
SR
Island County Zoning
Rural
Rural Forest
Rural Service
South Camano Drainage Basins
South Camano Parcels
Streams
Lakes
Roads
1:16,000
0
0.125
0.25
0.5 Miles
Notes:
1. This map is intended for general planning purposes only. Features and boundaries should be considered approximate.
2. Parcels included in project area are partially or completely within one of the South Camano drainage basins.
3. Map created on February 26, 2009; Keystone Ecological LLC


Map 3 - Terrestrial and Aquatic Habitats
South Camano Nearshore Protection
Eagle Habitat
Big Leaf Maple Forest Community
Lakes
Wetlands
Streams
Eelgrass Present (IC Survey)
Kelp
Surf Smelt Spawning Beaches
Herring Spawning Areas
South Camano Drainage Basins
Roads
0
0.125
0.25
0.5 Miles
Notes:
1. This map is intended for general planning purposes only. Features and boundaries should be considered approximate.
2. Parcels included in project area are partially or completely within one of the South Camano drainage basins.
3. Map created on February 26, 2009; Keystone Ecological LLC


Map 4 - Prioritization Scores
South Camano Nearshore Protection
Lakes
Streams
South Camano Drainage Basins
Roads
Properties larger than 5 Acres
Properties larger than 10 Acres
Salmon Ecological Prioritization Score
0
30 - 45
5 - 25
50 - 70
0
0.125
0.25
0.5 Miles
Notes:
1. This map is intended for general planning purposes only. Features and boundaries should be considered approximate.
2. Parcels included in project area are partially or completely within one of the South Camano drainage basins.
3. Map created on February 26, 2009; Keystone Ecological LLC

South Camano Natural Heritage Survey Report

Prepared by Rex Crawford

Natural Heritage Program

Washington Department of Natural Resources

May 14, 2010

Prepared for the Whidbey Camano Land Trust

Introduction

The Whidbey Camano Land Trust contracted with the Washington Natural Heritage Program (WNHP) to: (1) delineate and inventory the current status of the bigleaf maple-red alder/swordfern-fringecup (*Acer macrophyllum – Alnus rubra / Polystichum munitum – Tellima grandiflora)* forest community occurrence in the WNHP information system, and (2) evaluate the wetlands and larger undeveloped tracts occurring on more than 1,000 acres of land on the southern tip of Camano Island. This report describes the location, ecological integrity and conservation needs of areas surveyed.

Bigleaf maple-Red alder/Swordfern-Fringecup forest association

Methods

The assessment area included 1040 acres at the southern end of Camano Island (Figure 1). Parcels surveyed were selected to represent 1) the extent of the bigleaf maple-red alder/swordfern-fringecup occurrence, 2) the wetland complex near Camano Head, and 3) the forest diversity as illustrated on 2009 high-resolution imagery. The larger blocks of forest without residential development and clearings were targeted for survey. The bigleaf maple-red alder/swordfern-fringecup occurrence was originally surveyed by WNHP in 1994. This assessment project re-evaluated that occurrence by re-tracing the original survey route and remotely inspecting changes in and around the occurrence using road reconnaissance, LIDAR, and recent imagery. Within each survey location, notes were taken on general stand characteristics, indicators of stand disturbance, and presence of exotic plants. A series of plots were sujectively located to represent stand conditions along the parcel survey routes. A species list and cover estimates were recorded in each plot. Field inventory was conducted by Dr. Rex Crawford, WNHP ecologist, during May 4 -7, 2010.

Figure 1. Assessment area on southern end of Camano Island, Island County.

Results

Camano Island is bound by Skagit Bay on the north, Saratoga Passage to the west and southwest, Possession Sound to the south, and Port Susan on the east. It is approximately 15 miles long and varies between 1 and 7 miles in width. Camano Island consists of rolling upland hills and plains, gentle ridges, and steep coastal bluffs. A low ridge runs north to south along its length. Camano Island is composed of unconsolidated glacial and interglacial sedimentary deposits that overlie bedrock. Bedrock is only exposed at the low tidal zone at Rocky Point on the north end of the island. The south end of the island is called Camano Head and sports steep forests and exposed substrate on its bluffs. Camano Head is the reported location of "the great slide" that in 1825 destroyed a village at Camano Head and its resulting wave inundated another village on Gedney Island, 2.5 miles to the south (http://coastsalishmap.org/Village_Descriptions_Snohomish-Everett.htm).

European settlers established farming communities and began harvesting timber on Camano Island around 1860 (Prasse 2006). Settlement activity began later on the south end of Camano Island in the early 1900s. Most of the assessment area has been logged with the exception of the east-facing bluff that supports the big leaf maple-red alder/swordfern-fringecup occurrence.

The 1940 air photograph in Figure 2 indicates that much of the assessment area was covered by shrubs or low deciduous trees. Scattered conifers (dark spots) are located near the bluff edge at

Allen Point. The bluff with the bigleaf maple-red alder/swordfern-fringecup occurrence stands in contrast. Established roads are apparent on the photograph on the west side of Camano Island to just south of Pebble Beach spit and barely to the assessment area on the east side. Faint temporary roads are discernable across much the majority of assessment area.

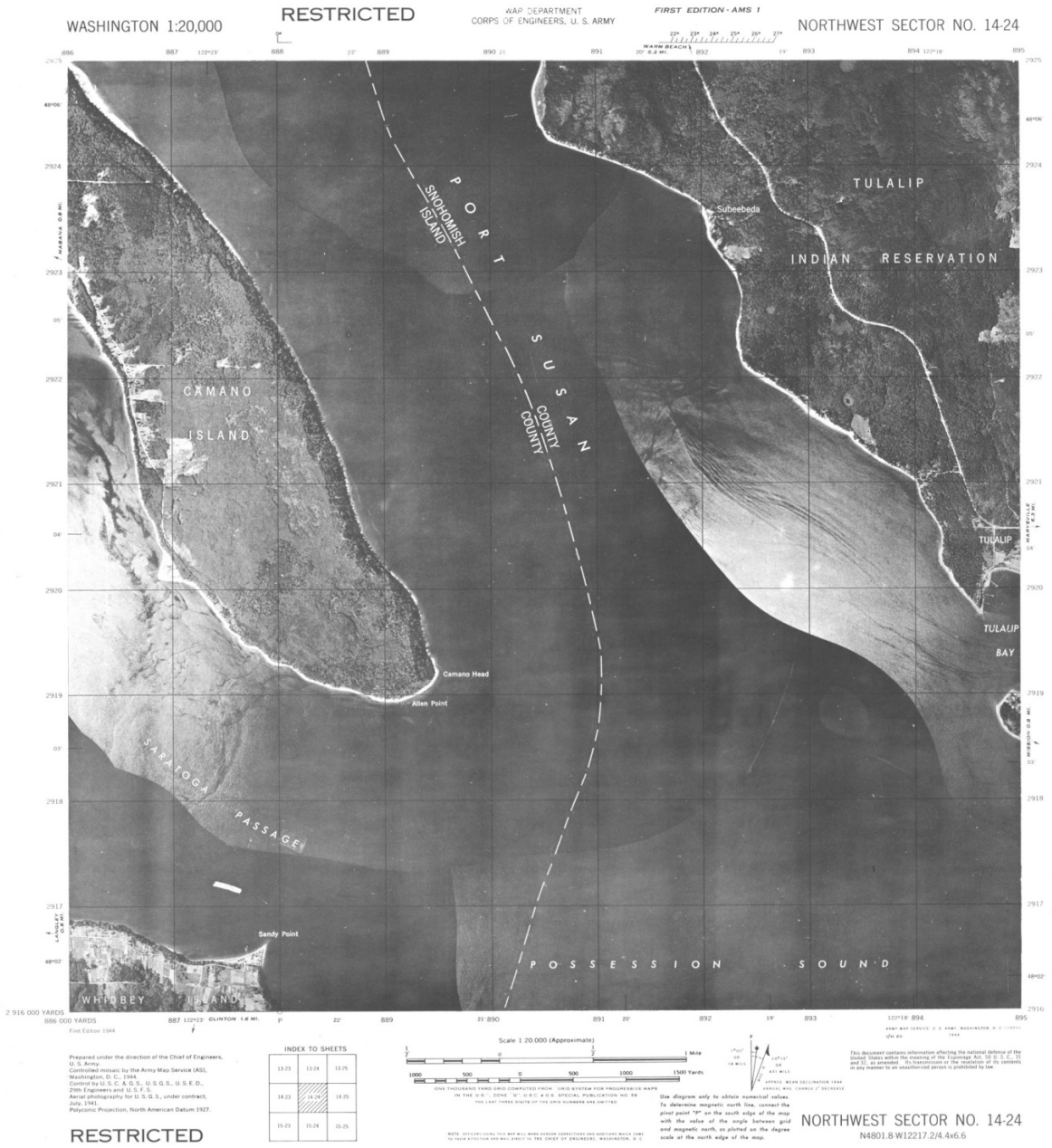


Figure 2. 1940 aerial photography of south Camano Island illustrating dominance of deciduous vegetation and lack of residential development in the assessment area.

The upland plateau environment of the assessment area supports forested ecological systems, primarily the North Pacific Mesic-Wet Douglas-fir - Western Hemlock Maritime Forest (NatureServe 2007). This forest system is a significant component of the lowland and low montane forests of western Washington. This forest is best represented on moist sites or in areas with high precipitation, long frost-free periods, and low fire frequencies. In a natural condition forest canopies are dominated by Douglas-fir (*Pseudotsuga menziesii),* western hemlock (*Tsuga heterophylla),* and/or western redcedar (*Thuja plicata)*. Grand fir (*Abies grandis)* often can be codominant. Bigleaf maple and red alder (the latter primarily where there has been historic logging disturbance) are commonly found as canopy or subcanopy codominants, especially at lower elevations. In a natural landscape, small patches can be dominated by these same broadleaf trees for several decades after a severe fire. Swordfern (*Polystichum munitum),* salmonberry (*Rubus spectabilis*), and devils club (*Oplopanax horridus*) typify the poor to well-developed understory layers. Salal (*Gaultheria shallon),* Oregongrape (*Mahonia nervosa),* red huckleberry (*Vaccinium parviflorium)* and evergreen huckleberry (*Vaccinium ovatum)* are often present but are generally not as abundant as the aforementioned indicators. Late seral stands typically have an abundance of large coniferous trees, a multi-layered canopy structure, large snags, and many large logs on the ground. Early seral stands typically have smaller trees, single-storied canopies, and may be dominated by conifers, broadleaf trees, or both. Snags and downed large woody debris are common in most seral stands. Young stands may lack western hemlock or western redcedar, especially in the Puget Lowland. Western hemlock is generally the dominant regenerating tree species. Mosses are often a major ground cover. Lichens are abundant in the canopy of old stands.

Inventory, road reconnaissance and air photography interpretation indicates that the upland forests of the assessment area are dominated by bigleaf maple and red alder with significant patches of Douglas-fir or grand fir trees. Western hemlock and western redcedar are sporadic; they are more common in the northeastern corner of the area. Generally, these forests have few characteristics of the original forests. Large stumps with springboard notches are scattered throughout, usually with charcoal. Snags and downed large woody debris is missing. Tree trunk diameters rarely exceed 24 inches and the upper canopy trees are typically 10-12 inches in diameter. The understory varies in dominance among a few species. Salmonberry, swordfern, and red huckleberry are most frequent and the former two species often with high cover. Stinging nettle (*Urtica dioeca*) increases in abundance in areas with ground disturbance, particularly on wetter sites. Salal and Oregongrape are patchy in distribution often found with oceanspray (*Holodiscus discolor*) on drier locations. Holly (*Ilex aquilfolium*) is the most common exotic species encountered in the forests away from trails and roads.

Residential development dominates the current land use in the assessment area as illustrated in Figure 3. Cleared forest land with buildings, roads or other development occupies approximately 15% (168 acres). Clearing coverage increased from 74 acres on 1990 imagery (Figure 4).

Figure 3. 2009 imagery of assessment area illustrating the landscape pattern of residential land clearing and roads.

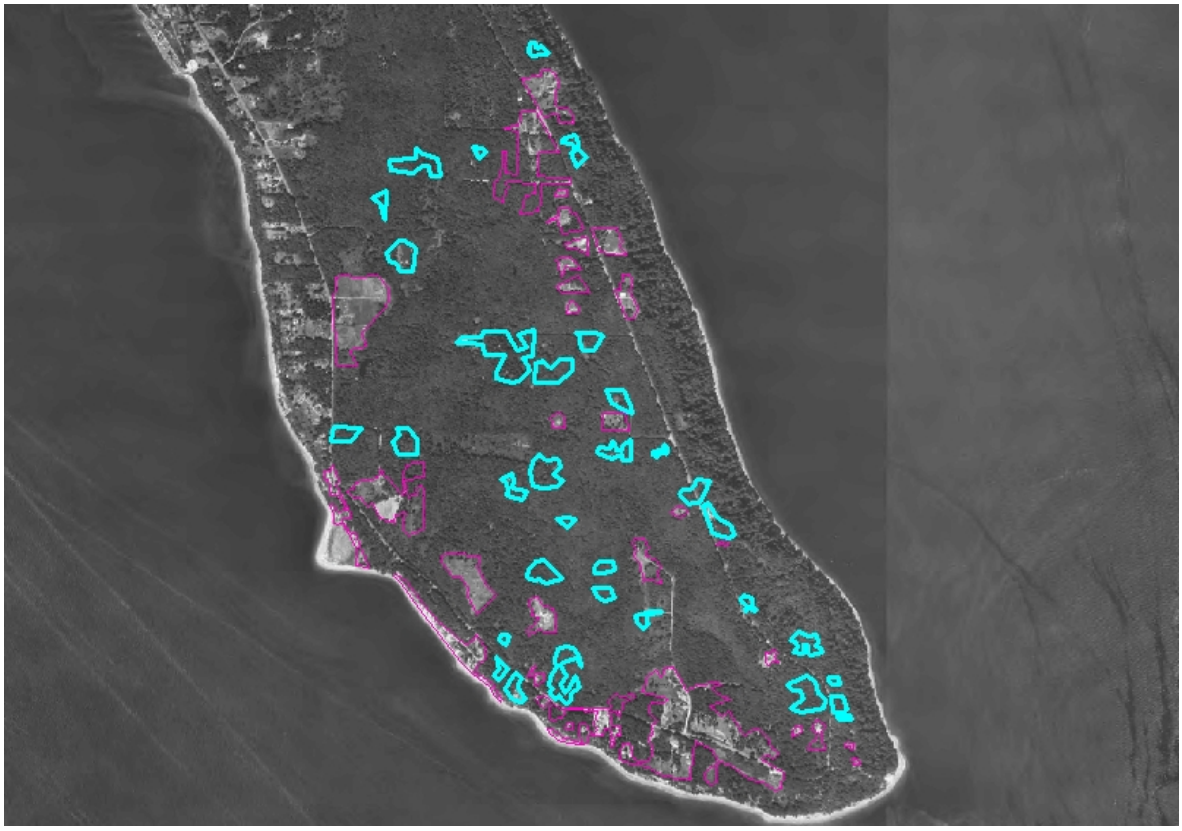


Figure 4. Polygons displayed on 1990 imagery represent locations and approximate boundaries of residential clearings on 2009 imagery. Blue polygons are 2009 clearings absent on or greatly expanded from their location on 1990 imagery.

The wetland survey area (Figure 5) is depicted by the Washington Department of Natural Resources GIS soil layer. That area represents an altered North Pacific Shrub Swamp or North Pacific Hardwood-Conifer Swamp ecological system (Nature Serve 2007). North Pacific Shrub Swamp ecological systems occur throughout western Washington and include tall, deciduous broadleaf shrublands that are located in depressions, around lakes or ponds, or river terraces where water tables fluctuate seasonally, in areas that receive nutrient-rich waters. Willows (*Salix* spp.), hardhack (*Spiraea douglasii*), Pacific crabapple (*Malus fusca)*, red-osier dogwood (*Cornus sericea)*, and alders (*Alnus* spp.) are the major dominants. It may occur in mosaics with marshes or forested swamp ecological systems and, on average, is wetter than forested swamps and drier than marshes. North Pacific Hardwood-Conifer Swamp ecological systems can be dominated by a variety of coniferous or hardwood trees tolerant of poorly drained environments with slowly moving or stagnant surface water (such as western hemlock, western redcedar, Sitka spruce (*Picea sitchensis*), red alder and paper birch (*Betula papyifera*) in the lowlands). Trees can be less abundant than the shrub understory, which can exceed 50%.

Figure 5. Tanwax wetland soil type polygons from Washington State Department of Natural Resources GIS Soils layer.

The south Camano wetland has components of the natural ecological system vegetation described above. The open, patchy tree overstory is primarily bigleaf maple and red alder. Sitka and Pacific willow (*Salix sitchensis* and *S. lasiandra),* hardhack, and Pacific crabapple (*Malus fusca)* are shrubs prominent in much of the area along with salmonberry. The ground cover varies with microtopography, with plants typical of upland forests on convex sites and downed logs (salal, Oregongrape or oceanspray) and wetland species in concave sites. Concave sites often had water or saturated soil and wetland species such as water-parsley (*Oenanthe sarmentosa),* skunk cabbage (*Lysichiton americanus),* ladyfern *(Athyrium filix-femina),* and slough sedge *(Carex obnupta).* Old western redcedar stumps (evidenced by charcoal), indication of old temporary road crossings, some more recent stumps, and minor land clearings were encountered during surveys. Reed canarygrass (*Phalaris arundinacea*), an aggressive wetland exotic species, was present throughout wetlands but was not observed as a dominant during survey. Other exotics observed include English ivy (*Hedera helix*) and Himalayan blackberry (*Rubus discolor*). Disturbance increaser species such as stinging nettle and cleavers bedstraw (*Galium aparine*) are frequent in the wetland complex.

Hardhack shrub swamp with western redcedar snags.

Re-evaluation of the bluff supporting the bigleaf maple-red alder/swordfern-fringecup forest occurrence revealed little change in the forest since 1994 (Figure 6). Bigleaf maple is the most important tree on the bluff although overtopping old-growth Douglas-fir is more obvious on the upper portions of the bluff. Western hemlock and western redcedar occur in relatively small amounts. Red alder joins the canopy in moist slides and can be the major tree on newer slides. The associated understory on newer slides contains stinging nettle, oceanspray, salmonberry, and herbaceous plants goldenrod (*Solidago canadensis*) and thistle (*Cirsium* spp.). Overall, an abundance of sword fern characterizes the understory with a presence of fringecup. A compositionally variable shrub layer is usually present that can include oceanspray, salmonberry, red elderberry (*Sambucus rasemosa),* thimbleberry (*Rubus parvifolia*), and trailing blackberry (*Rubus ursinus).* Larger convex areas between slides have more Douglas-fir with Pacific madrone (*Arbutus menziesii*) in the canopy with salal and Oregongrape in the understory. Evidence of very recent natural slope failures and slides was apparent in isolated areas along the bluff. Bulkheads are absent along the shoreline. Residential clearings immediately along the plateau above the bluff have increased in size and number since the 1994 inventory. Residential clearings are estimated to cover 3 acres on 1990 photography and more than 11 acres in 2009 (Figure 6).

Figure 6. Location of the WNHP Bigleaf maple-Red alder/Swordfern-Fringecup forest association occurrence (green polygon) as mapped in 1994, here displayed on 2009 imagery.

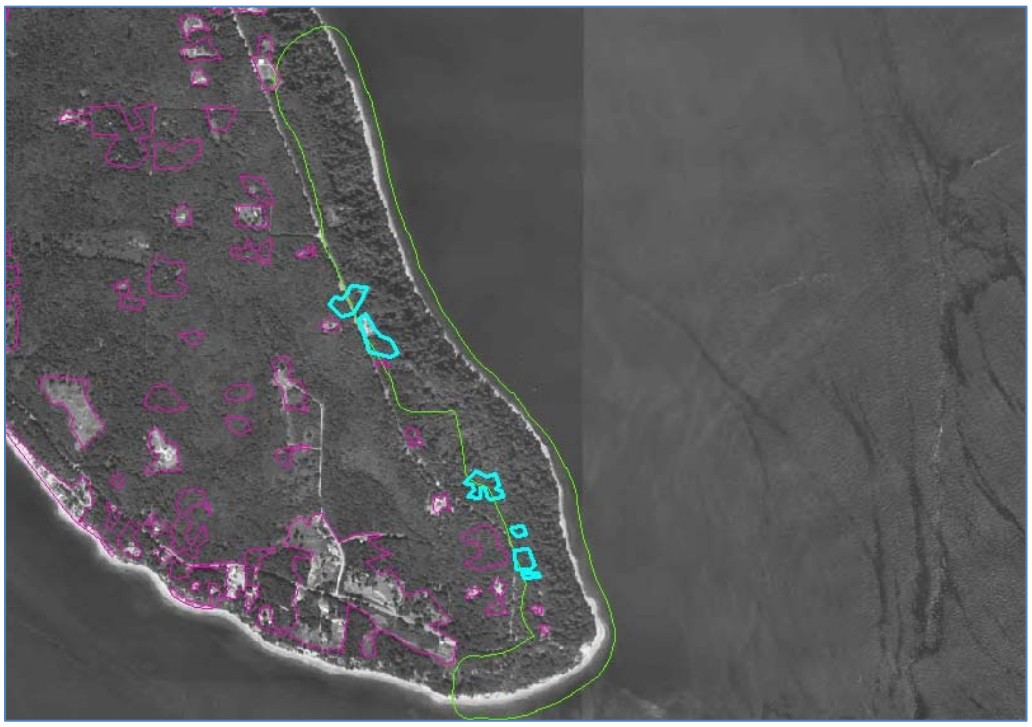


Figure 7. Locations of new residential clearing (blue polygons) immediately adjacent to the Bigleaf maple-Red alder/Swordfern-Fringecup forest association occurrence (green polygon) displayed on 1990 imagery.

Conclusion

Inventory and new high resolution imagery provided information to up-date the delineation of the bigleaf maple-red alder/swordfern-fringecup forest association occurrence in the WNHP information system. Figure 8 displays the new recognized extent of the forest association. The occurrence now extends farther north and southwest along the bluff to include the continuous forest cover on steep bluffs. The newly added portions of the areas are more influenced by human activities than the majority of the occurrence. The occurrence a more precisely defined boundary along its transition to the plateau above and more clearly differentiates a previously logged and altered drainage from the occurrence.

Figure 8. Newly delineated the Bigleaf maple-Red alder/Swordfern-Fringecup forest association (yellow polygon) from the 1994 green polygon.

The ecological integrity of the occurrence is basically unchanged although increased clearing and development has increased the site's vulnerability to changes in slope failure frequency, slope erosion, introduction of exotic plants and the appearance of other influences from upslope.

The bigleaf maple-red alder/swordfern-fringecup forest association is in natural condition and is still considered a rare entity (globally vulnerable to extirpation and imperiled in Washington). The Camano Head occurrence discussed here is one of the largest (108 acres) and among the highest ecological integrity in the state. Its conservation value remains high.

The wetland, although altered from its natural range of variability due to primarily timber harvesting activities and changes in its surrounding watershed, provides habitat for wildlife and a suite of wetland plants not common on Camano Island. It is relatively large block of unfragmented habitat (40-50 acres) connecting the bluff forest to other large, unfragmented blocks of habitat in the assessment area. Approximately 300 acres of unfragmented forest habitat winds through the center of the assessment area. That unfragmented forest block provides wildlife habitat and protection of watersheds. Retaining these areas as an unfragmented block will allow them to maintain and develop stand characteristics, and thus, more functions of natural ecological systems.

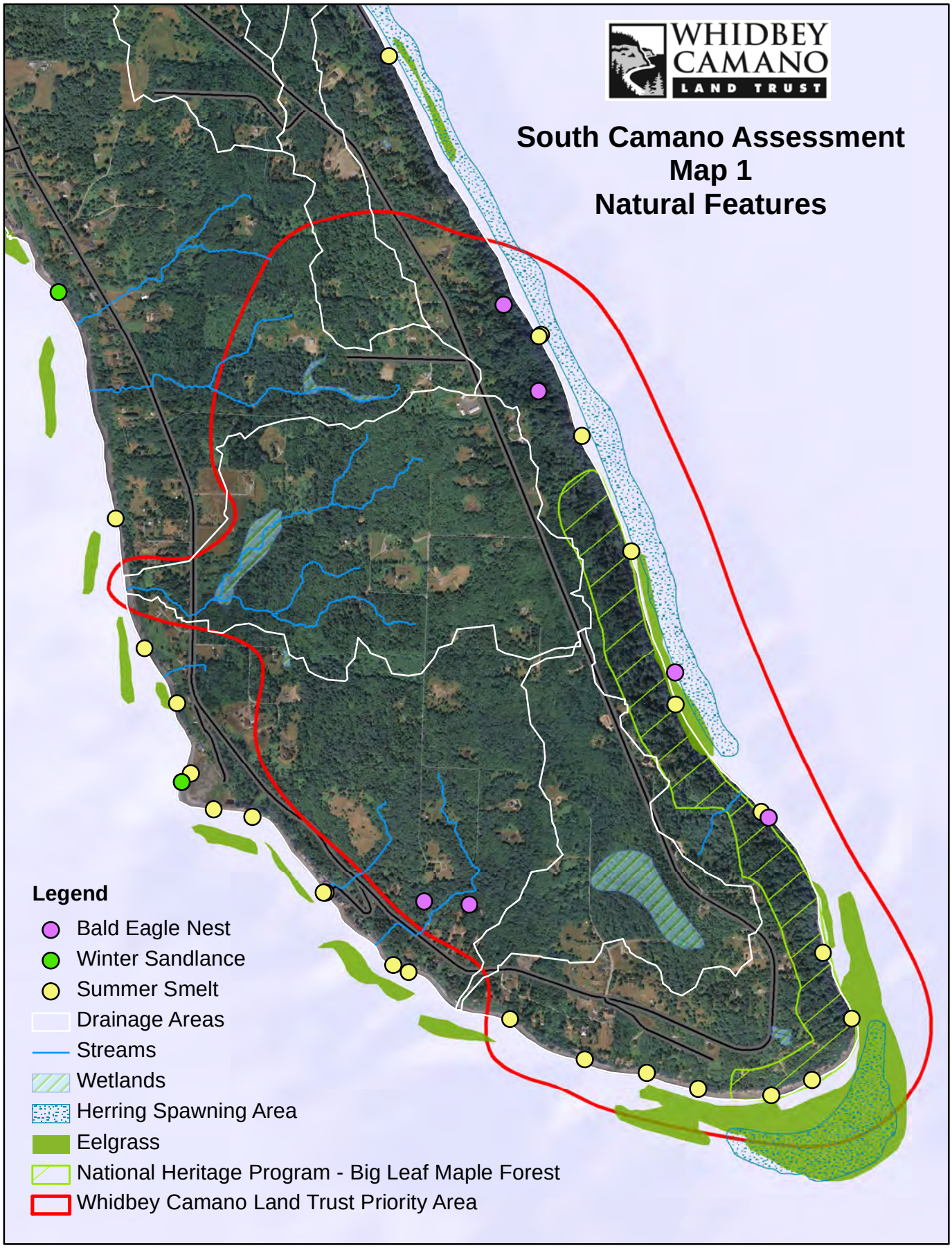
Citations

NatureServe Explorer. 2007. Descriptions of Ecological Systems for the State of Washington. Data current as of October 06, 2007. NatureServe, Arlington, VA.

Prasse, K. 2006. Images of America Camano Island. Stanwood Area Historical Society. Acadia Publishing.

	most DF>12"	,forest wetland, charcoal on stumps; no snag or	herbaceou	3 stumps<24"DF 2<18,3<12,7<6,5>6"; RA	wetland several 10-12" dbh WRC snags very old LWD	snags off plot	south parcel no stumps in plots largest conifer GF	1<24 4<12 1<6 DF2<121<6WH 3<6"BLM nosnags	trees 818"dbh 1 stump disturbed ground no snags or	4 stumps no snags or LWD	old harsevt or pasture, butterfly bush stack of	CARDEW grasses wet area surrounded by ACMA/UR	northparcel flat rolling old roads for sub div? little	mid upper slople between slides			
water			10		20												
plots	14rc10	12rc10	15rc10	03rc10	01rc10	02rc10	04rc10	06rc10	08rc10	09rc10	05rc10	07rc10	10rc10	13rc10	94cc026	94cc023	94cc025
ASSOCIATION	PSME-(TSH	ALRU/RUSI	RUSP/OES/	PSME-(TSH	ALRU/RUSI	ALRU/SPD(	ACMA/POI	PSME-(TSH	PSME-(TSH	PSME-(TSHE)/POMU-DREX			TSHE-(PSM	PSME-ACMA/HODI-POMU			
Abies grandis				2			8	10		20			10				
Acer macrophyllum	10	20		2			70	20	30	50			60		50	50	13
Alnus rubra	10	80		30	60	30	2		40	30					13	13	70
Pseudotsuga menziesii	70	2		70			8	60	20	30					13	30	20
Thuja plicata		10				3	2						20		3		
Tsuga heterophylla	1	5				3		30	30				20				3
Taxus brevifolia															3		
Corylus cornata																	3
Gaultheria shallon		0.1		40	20	20							5			8	1
Holodiscus discolor	1			10			30								8	60	13
Ilex aquifolium	0.1			2		1		5									1
Hedera helix					5												
Loniceria ciliosa				5													
Mahonia nervosa	3	0.1		10			5	20					1			3	8
Philadelphus lewisii															1		
Pyrus malus					20	10											
Rhamnus purshiana																	
Ribes lacustre																	1
Ribes sanguineous																3	
Rosa gymnocarpa				5			5									13	
Rubus leucodermis															3	1	1
Rubus spectabilis	20	60	20	20	70	10		10	30	20			10		30	1	8
Rubus parviflorus															3	8	
Rubus ursinus	20			10		2		20							1	3	8
Salix lasiandra																	
Salix sitchensis		0.1			10												
Sambucus racemosa	5		0.1	2						5					20	3	3
Spiraea douglasii					8	60											
Vaccium parvifolium	1	0.1		8	5	10		5		10			2		1		13
Cardamine pratensis?							5										
Circaea alpina							8			30							
Galium aparine &trifolium	2			2			5		10	10					1	3	
Lactuca muralis	2				10											1	
Lystichiton americanus			10		2												
Montia siberica	2						5		30							3	1
Oenanthe sarmentosa			60		30												
Osmorhiza							5										
Ranunculus sp.															1	1	
Stellaria crispa															1		
Tellima grandflora															8	8	
Trientalis latifolia				5				5								1	1
Urtica dioeca	10		2	2	2		20		60	80					20		3
Vicia americana																	1
Vinca minor													2				
Carex deweyana			5					2							1		

Carex obnupta?			20												
Melica subulata				5			2								1
Pharlis arundinacea	1	1	10												
Trisetum cernum													1		
Bromus vulgaris													1	3	1
Festuca subulata													1	1	1
Luzula parvifolia													3		
Cinna latifolia													1		
Athryium filix-femina			3		5	5									
Blechnum spicant		0.1													
Dryopteris expansa			5	2	2	2				2		5	8		13
Gymnocarpium dryopteris						2									
Polystichum munitum	10	20		30	2		50	60	30	30		70	40	40	60
Pteridium aquilifolium														1	3
Polypodium glycyrrhiza														1	1

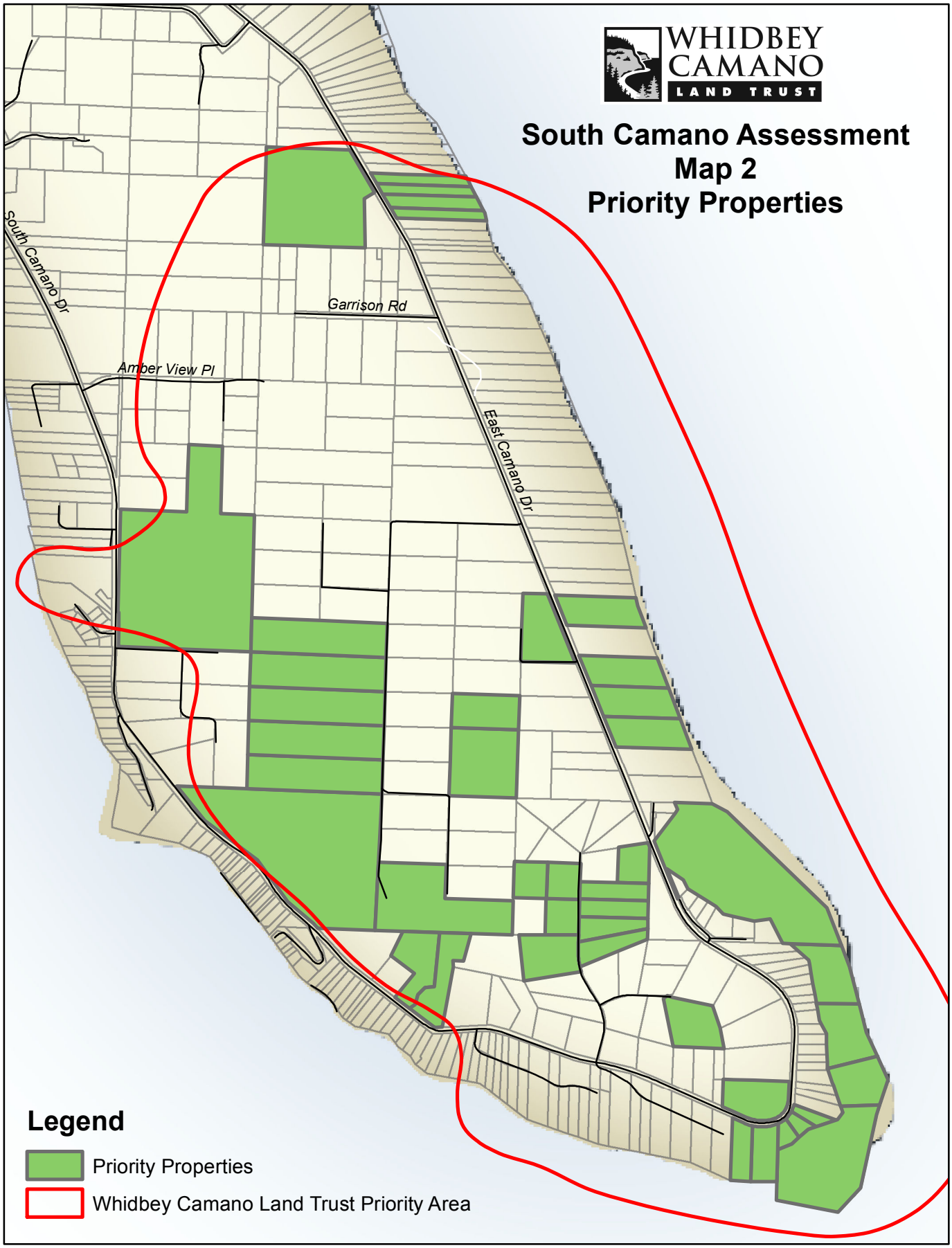


N W E S

Property boundaries are taken from Island County GIS tax parcel maps. These boundaries are approximate and may not match on-the-ground fencelines or actual survey markers.

1,500 750 0 1,500

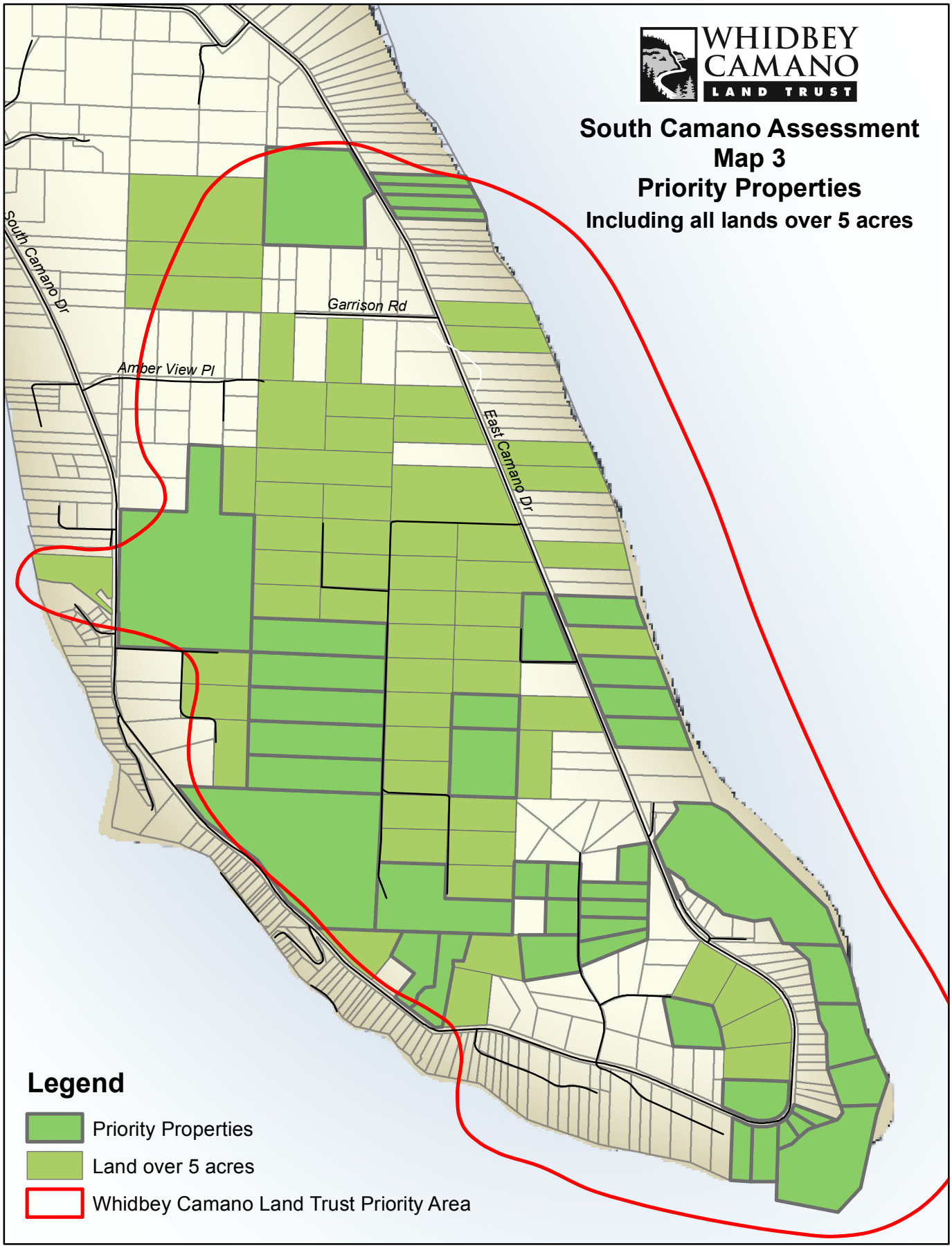
Feet



Property boundaries are taken from Island County GIS tax parcel maps. These boundaries are approximate and may not match on-the-ground fencelines or actual survey markers.

1,200 600 0 1,200

Feet



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1,200 600 0 1,200

Feet

PROJECT PROSPECTUS: S. Camano –Conservation Easement

Project Selection Committee Recommendation: Accept donation of 20 acre conservation easement.

RECOMMENDED ACTION: Authorize the Land Protection Specialist to work with the landowner to develop and complete the donation of the conservation easement. Authorize the President to sign the conservation easement once it has been reviewed and approved by our legal counsel and executive director.

Approving this action means WCLT will be responsible for monitoring the conservation easement.

PROPERTY INFORMATION:

A. Ownership: S. Camano – Camano head landowner

Location/Size: 20 acres located the southern tip of Camano Island.

Site Description: The property is located at the southernmost tip of Camano Island. It is a combination of upland forests and wetlands and shoreline bluff habitat. The property is in nine tax parcels. Five of the tax parcels are on the south (shoreline) side of Camano Drive and include steep bank bluff and approximately 400 feet of shoreline. Three parcels are on the inland side of Camano Drive; these parcels are forested and include some wetlands. One additional parcel, which is not directly adjacent to the others, lies further inland.

The forested portions of the property are characterized by predominantly Spruce and Big Leaf Maple, with an understory of salmonberry, woodfern, swordfern, and Oregon grape.

The forested bluff is dominated by mature Big Leaf Maple and some mixed conifer species. Portions of the bluff are actively eroding.

Much of the surrounding land is privately held in parcels varying from three to eight acres in size. They are a mix of developed and undeveloped lots. Notably, the Tulalip Tribes owns 30 acres of adjacent land, which includes over 2,000 feet of shoreline.

Situation: The landowners are interested in conserving their property. They currently reside in San Jose, CA. They have plans to retire to the Pacific Northwest. In 1997, they acquired the first tax parcel on South Camano and have continued to purchase surrounding properties as they have become available. They wish to purchase one or two additional parcels to connect the isolated inland parcel with the remainder of their ownership. They are dedicated to conserving the forest and wetlands on the property and would like to ensure that it is not subdivided and developed in the future. They have plans to build a small retirement home on the property and have already received Island County approval for the location, which is quite close to the bluff edge.

Goals: Protect important upland forest and wetland habitat. Protect nearshore ecological processes which provide salmon benefit.

B. Consistency with Draft LPP: *This project is consistent with the Draft Land Protection Priority Plan, as indicated below.*

(1) Focus Areas: The property falls within the South Camano priority area, *a high protection priority area,* identified on the Land Trust's priority areas map.

- ✓ **Wildlife Habitat:** The property was assessed as part as the South Camano Nearshore Protection Planning project funded by the WA State Salmon Recovery Funding Board. In the resulting South Camano Nearshore Conservation Strategies Report, produced by Keystone Ecological, the shoreline parcels ranked as top tier, highest priority for protection and the inland parcels ranked in the second tier. Patches of brown algae, eelgrass, and kelp line the shoreline and provide habitat for hardshell clams, Dungeness crab, shrimp, and goeducks. The shoreline adjacent to the property is a documented surf smelt and herring spawning area. These forage fish species are key prey species for adult salmon. Eight salmonid species, Chinook, coho, chum, pink, sockeye, steelhead, sea-run cutthroat, and bull trout, use the nearshore area at the south end of Camano at one point or another during their life cycle.

  The forested area provides additional habitat for birds, including three documented Bald Eagle nests within one half mile of the property, and small mammals.

- ✓ **Coastal Features:** The property includes 400 feet of shoreline on two of the tax parcels. Three other parcels do not extend all the way to the shoreline, but do include the eroding feeder bluff.

- ✓ **Wetlands and Streams**: The four parcels inland parcels of the subject property include wetlands, which provide a freshwater source to the nearshore area.

(2) Primary Contributing Features:

- ✓ **Rare Native Species**: Protection of the property provides significant benefit to salmon using the Camano nearshore area, including Chinook and coho which are listed as Federally Threatened and State Species of Concern. Bald Eagle nesting near the property are listed as Federal Concern and State Sensitive. The landowner has indicated that a Bald Eagle nest is located on the property; however, the nest has not been documented. This stretch of shoreline, as well as the upland area, includes a Big Leaf Maple-red alder-fringecup element occurrence in the State of Washington Natural Heritage Plan. The property is at the edges of this element occurrence, but does include some of this rare forest type and provides a buffer.

- ✓ **Scenic Vista**: Protecting the property from development will maintain the corridor on Camano Drive around the southern tip of Camano, which provides scenic forest views and filtered views of the Puget Sound.

- ✓ **Aquifer Recharge**: The wetlands on the property serve to recharge the aquifer and provide freshwater to the Camano nearshore area.

(3) Project Characteristics:

- ✓ **Significant Ecological Value**: The southern tip of Camano is a shoreline divergence zone. Natural erosion of the high bluffs provides sand and gravel for beaches to the northwest and northeast through longshore drift. Maintaining this natural erosion pattern is identified in a 2005 assessment of Island County shoreforms as a priority for conservation. Additionally, protection of eroding feeding bluffs is a high priority in the WRIA 6 (Island County) Salmon Recovery Plan.

  The bluff vegetation is mapped as a rare forest community – Big Leaf Maple/swordfern/fringecup. The bluff and upland forest provide organic matter and terrestrial insects to the nearshore food web and marine riparian shading along the beach. The riparian shading on the beach helps to provide good forage fish spawning habitat by keeping the developing eggs cool during the summer months. This, in turn, is highly beneficial to salmon species using the nearshore area for feeding.

  In the South Camano Nearshore Conservation Strategies Report, Keystone Ecological recommending conservation of properties held by "all nearshore landowners" and "all landowners who own 5 acres or more that include part of the Camano Head wetland or the forested area surrounding the wetland."

- ✓ **Leverage:** The landowners will be donating the conservation easement to WCLT. Further, successful completion of the project may open the door for properties identified as important in our South Camano Assessment.

- ✓ **Threat:** The property is currently in nine separate tax parcels. While development of the property is not imminent, acquisition of the conservation easement will ensure that the property is protected beyond the lifetime of the current owner.

- ✓ **Stewardship**: Stewardship of the property will be limited to managing, monitoring, and enforcing the conservation easement. Invasive species are not currently a problem on the property. Staff will seek a donation from the landowners for stewardship expenses.

- ✓ **Multiple Objectives**: This project will meet multiple objectives including protection of a high priority area, wildlife habitat, wetlands and streams, coastal habitat, and aquifer recharge.

- ✓ **Geographic Distribution**: The property is located on southern tip of Camano, a location at which the Land Trust has not undertaken any protection activities.

- ✓ **Support**: The project will be well supported by WCLT members and neighbors. The Salmon Recovery Grant, which funded the assessment, received strong support from Tulalip Tribes, Island County, and the Island County Salmon Technical Advisory Group (including representatives from Skagit Systems Cooperative, Wild Fish Conservancy, and Friends of Camano Island Parks).

(4) <u>Public Use</u>:

- ✓ **Educational or scientific value:** The landowners are open to allowing the property to be available for further scientific study and educational opportunities. On going study of salmon use of the nearshore will continue.

- ✓ **Public access:** The landowners currently allow neighbors to walk through and enjoy the property and will continue to do so.