Narrative for WRIA 2 / San Juan County 3-Year Work Program for 2008

Puget Sound Partnership Questions

How are watershed groups selecting projects for their updates?

- Are projects on the three-year lists those that can be done or those that can be started in three years?

Since WRIA2 has never had a place to track projects, the list has by default become the location to document known projects. There are some exceptions to this such as when a more comprehensive assessment has been completed like the Blueprint by Friends of the San Juans. The Blueprint document is where the entire suite of identified projects is listed. But in general, the current work program is more comprehensive than what can be started or completed in 3 years, especially as funding is not available for all of the work.

Additionally some projects which are really programs are ongoing and thus would extend beyond the 3 year timeframe.

It is anticipated with the implementation of the HWS that the 3 year list will actually become an accurate representation of what can either be started in the next 3 years or can be completed over the 3 year period.

- Are they the projects that are highest priority known at this point?

Again, the WRIA2 list is more comprehensive and has tried to document all identified projects and programs necessary for salmon recovery.

- Are there projects that are left off the list?

At this time, the 3 year plan has tried to document all identified projects and programs. This is especially true for the 2008 list since we expect to use the 3 year work plan to do the initial population of the HWS for WRIA2.

How are watershed groups deciding the costs for the projects?

- Are costs for the whole project, for a portion of the project?

Some projects have more data to support the costs listed than others. Some projects are funded and in the implementation stage and thus their costs are more accurate. Some projects are conceptual and have not had much time spent on determining costs. This is frequently due to sponsors having insufficient capacity to work on those projects beyond conceptual thinking. They typically expend the energy to work on more robust costs estimate when it appears that there will be funding to support the work. It is expected that over time with additional funding or even potential funding opportunities that those projects will progress beyond the conceptual phase.

Summary regarding what has changed from the 2007 plan:

The substantive changes in the plan are:

1. Updates to the status of projects that were on the previous 2007 list, some have received funding and some have been completed.
2. New projects were also added to the list primarily as a result of the stream survey and typing work in progress by Wild Fish Conservancy and KWIAHT.

Overall, there have been changes to some of the projects but most projects in the plan have not changed much primarily due to the limited funding available to support salmon recovery projects – more work to do than money to do it. Many projects are stalled due to lack of funding and some due to lack of local capacity. The need for capacity and non-capital work continues and has had minimal funding in the last year and becomes more critical each year that these programs and resources remain underfunded or unfunded.

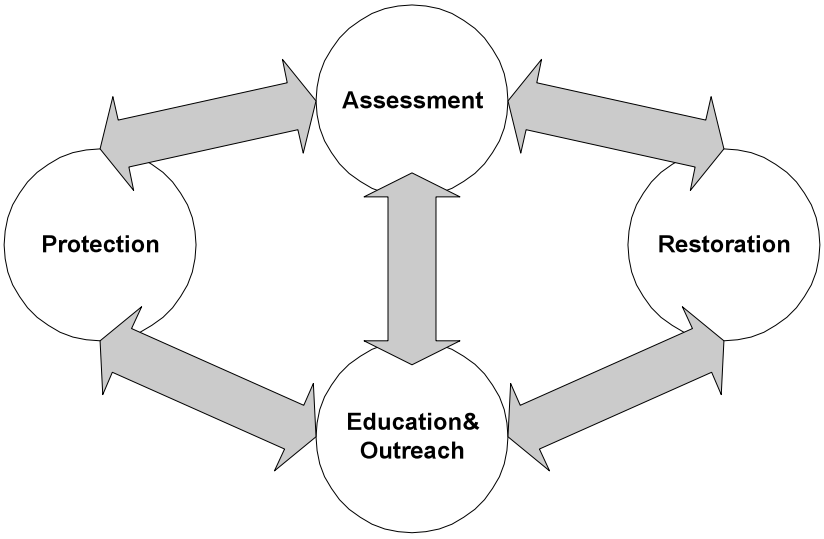
Goals and Objectives

The key 10-year goal of WRIA 2 (San Juan County) is to identify critical habitats and ecosystem interactions in order to develop protection and restoration actions that will be most effective in moving populations of Puget Sound Chinook towards recovery. In San Juan County (WRIA2) protection of high quality nearshore marine habitat is the top salmon recovery goal. The current prioritized action strategy to meet the protection goal is:

1. Assessment Projects – fulfilling critical data gaps via conservation research assessments which will enhance and support protection and identify needs and opportunities for restoration;
2. Protection Projects – includes data sharing, stewardship, acquisition and easements, incentives and education;
3. Restoration Projects – to be based on habitat condition assessments.

The primary placement of assessment strategies is a starting point to enhance protection and identify needs and opportunities for restoration. Assessment includes filling data gaps, monitoring, and conducting research that will in turn support protection and restoration efforts. Assessments ranked first for WRIA2 because - at least for the next several years - better information will significantly enhance the use of existing voluntary and regulatory tools for nearshore habitat protection and restoration.

The following diagram illustrates the intended inter-connections among the three strategic arms and the relationship to the shared outreach and education component.



Prioritization

Projects in the 3 year plan are prioritized based on Tiers. Tier I projects are projects which address the highest priority work such as protection actions or assessments of critical data gaps that will help in future prioritization of protection and restoration actions. Tier II projects are restoration projects. It is anticipated that Tier II restoration projects would become higher priority if/when they are the supported by, or are the result of, assessments which indentify the restoration activity.

Not all projects in the plan have been prioritized. The projects have been prioritized based on what is known at this time. One reason is that there is insufficient salmonid usage data to provide any habitat type or spatial prioritization of areas in San Juan County. Also some projects have not yet been

prioritized for a variety of reasons including insufficient data developed about the project such as scope and costs. This is frequently due to sponsors having insufficient capacity to work on those projects beyond conceptual thinking. It is expected that over time with additional funding or even potential funding opportunities that those projects will progress beyond the conceptual phase.

Overview of Work Plan

San Juan County is experiencing some of the most rapid growth in Washington State with shoreline and nearshore habitats becoming increasingly stressed from residential and urban development and recreational / tourism uses. Past agricultural practices and water withdrawals have degraded the limited freshwater spawning and rearing habitats in the islands. Inputs of water and air pollution from outside of the county may also be affecting nearshore habitat quality. In order to improve actions WRIA2 still needs important information to help prioritize restoration and/or protection activities. While we believe that nearshore waters in San Juan County provide important migration, rearing and feeding habitats for salmonids, we still do not know how the system functions such as when and where salmon are present, particularly for juvenile stages. WRIA2 hosts an as-yet undetermined number of salmon stocks, which most certainly includes ESA-listed stocks, in order to comply with stock-by-stock management, San Juan County needs to know which stocks show up, where, and at what life stage. WRIA2 has anecdotal evidence and some areas have been surveyed but there is not enough information to apply "best available science" (and at times there is no science available) to prioritize protection and restoration efforts.

The issues facing WRIA2 are those of protecting quality habitat and restoring modified or degraded habitat. Much of the shoreline is high quality but pressure from development could change that. Once critical habitats have been identified for salmon and forage fish, protection of these habitats will be a priority. Research projects that will quantify and qualify key habitats include the association of juvenile Chinook in time and place for a variety of available habitats. For example, until 2004 it was not clear that juvenile Chinook occupied the near shore environment of high-energy beaches in San Juan County. Additional habitats and sites need investigating to discern the pattern of habitats that these fish utilize. Juvenile forage fish, a prey for juvenile Chinook, have also been sampled in beach seines. As we sample in different habitats, information for key species in the food web of Chinook salmon will also be acquired. Population structure, species interactions, ocean conditions, habitat quality and quantity are all issues addressed in the proposed non-capital projects.

Initially, summarizing and synthesis of information concerning key issues needs to be compiled. We identify these issues as gaps in knowledge. A series of white papers and map books are proposed for issues such as climate change, historic conditions, pollution sources, oceanography, and input in existing habitat plans, permitting and management.

WRIA2 is seasonally affected by human population increases, both from summer residents and visitors. Two approaches to achieving our 10-year goal must be made: residents and businesses need information and encouragement to develop their property in a "salmon friendly" manner and visitors need information on how their actions will benefit the ecosystem in San Juan County. Educational outreach includes workshops and classroom experiences for residents and information exchange at marinas and ferry terminals for visitors.

Fresh water quantity issues exist due to diversions from historic watersheds, changing the flow into streams that historically had salmon runs. Fish barriers from roads, bridges and culverts exist and are a part of the Capital projects list. Fresh water quality is affected by failing septic systems, wastewater effluent and contaminants. Marine waters are impacted by point and non-point pollution at fuel docks and marinas and from potential oil spills.

Over time, we plan to ascertain the effectiveness of existing regulations and the development of a protection package that includes regulatory, voluntary, incentive and educational actions through the San Juan Initiative and other programs. This work plan provides an estimate of funding needed to move Chinook recovery forward in WRIA2 under the Salmon Recovery Plan. Some projects are underway and currently funded; the majority are in need of funding.

Capital Projects

Habitat Capital Projects

San Juan County has over 400 miles of shoreline to evaluate in light of salmon and forage fish habitat. Some sites are not prioritized yet due to lack of site-specific knowledge. All of our protection and restoration targets in WRIA2 would benefit from a countywide synthesis of available information in order to prioritize projects. Some research has been completed for forage fish spawning habitat that can be used to target beaches for removal of bulkheads and other restoration work; however there is insufficient salmonid data to prioritize based on salmonid usage of local habitats, we expect that when the results of the "Big Picture" project become available in the next few years that habitat type and spatial prioritization will become more likely. Protection and restoration projects outlined in the matrix will proceed as rapidly as basic information can be acquired and locations prioritized for action and funding becomes available.

The capital projects are listed in order of general prioritization and sequencing. Additionally, complimentary projects are grouped near each other in the list. Projects II-7 through II-17 are results of the Softshore Blueprint conducted by Friends of the San Juans which included a prioritized list based on forage fish habitat and spawning beaches. The Blueprint did not take into account the limited salmonid data currently available in San Juan County for their prioritization of projects. The current salmonid data set available is limited and does not have many sampling sites, thus there is insufficient salmonid data available to use when prioritizing site specific work in San Juan County. The Blueprint projects are included in the work plan as they were prioritized in the Blueprint results.

Project II-1. Pt Lawrence Road/Cascade Creek Culvert Replacement

This project was funded in the 2007 SRFB round and the work is scheduled to be completed in 2009. The Cascade Creek stream system is one of the three most valuable freshwater salmon habitats in San Juan County. The Mountain Lake/Cascade Creek basin extends from the top of Mt. Constitution through Mountain Lake to Buck Bay. It is approximately five square miles (3,072 acres). Cascade Creek flows from Mountain Lake approximately ¾-mile to a small dam and diversion and then another ¼-mile downstream to a diversion which diverts water over to Cascade Lake. The remaining water flows for two more miles, where it passes through a culvert under the county road into Buck Bay. The lower ¼-mile of Cascade Creek is listed as known natural Coho and Sea Run Cutthroat trout habitat by the state Department of Fish and Wildlife. Chinook have also been found in the lower stream reach. Approximately 240 acres in the watershed are protected by a conservation easement. The upper two-thirds of the watershed, roughly 2117 acres, is located in Moran State Park. This watershed is primarily heavily wooded with old growth forest. The upper portion is in pristine condition and the lower portion of the stream corridor shows very little disturbance from current development. At the mouth of the creek, recent repairs to the culvert under the county road have resulted in flooding of the uplands and a substantial barrier to fish passage. Replacement of the causeway with a bridge will ensure free fish access to about 300 feet of excellent shaded pool-riffle stream habitat. Additionally, the estuarine wetland upstream from the culvert no longer has sea water flow during the high tide in winter due to the high constant unidirectional flow through the smaller and longer temporary repair and significant erosion is now taking place. The permanent repair includes enhanced fish passage and removing the existing culverts and replacing them with a larger culvert or short span bridge. The project will evaluate the best options for what type of structure will be implemented that creates fish passage and enhances the estuary.

Project II-2. Cascade Creek Fish Ladder

In addition to the culvert replacement (Project II-1), there is an opportunity to gain five times the habitat connectivity in Cascade Creek. In the stream a few hundred feet upstream from the causeway, is a rocky chute/waterfall about five meters in total height. The waterfall, which is artificial, was blasted out in the 19th Century to facilitate chuting logs downstream. A fish ladder, rock shelves as "natural" steps", would be built over the waterfall. Installing a ladder will add another 1200 feet of pool-riffle habitat, also nicely shaded with lots of structure. The landowner is very willing to work out a solution as quickly as possible to enhance fish passage on his property.

Project II- 3. Deer Harbor Estuary Habitat Restoration Project

The estuary restoration portion of the project was partially funded in the 2007 SRFB round to address one fish passage barrier and to do some riparian plantings.

This project has been split into two projects:

II-3 a) Deer Harbor Estuary Habitat Restoration is the estuary and creek restoration work.

II-3 b) Deer Harbor Bridge Replacement is the bride replacement work.

The Deer Harbor Estuary is the largest estuary on Orcas Island. Up until the mid 20th Century, the estuary supported a chum and coho salmon run as well as native oyster beds. Beginning in the 1860s, forest clearing and development in the Deer Harbor watershed, manipulation of the tributary streams and, especially, the construction of the Channel Road Bridge altered the freshwater hydrology, vegetation communities, sediment dynamics, and tidal flow patterns in the estuary. These impacts have led to the elimination of shellfish populations in the lagoon, elimination of salmon rearing and spawning habitat in the tributaries, and degradation of salmon feeding habitat in the estuary.

The general goal for restoring estuary habitat functions at the Deer Harbor Estuary is to correct, to the extent practicable, the man-made conditions that have caused the degradation of the estuary's salmon habitat and overall aquatic ecology. Four specific objectives for meeting the general goal were identified:

1. Remove fish passage blockages at the mouths of the tributary creeks
2. Restore natural shading along the shoreline of the lagoon
3. Eliminate on-going accumulation of fine sediment in the lagoon
4. Restore tidal hydraulics and sediment transport in the lagoon

The Deer Harbor Bridge on Channel Road is a timber bridge constructed in 1971, which restricts the natural flow from the Deer Harbor estuary. There is an interest among multiple agencies to restore the 20 acre estuary to its original condition which will require construction of a longer span bridge. San Juan County Public Works has scheduled replacing the bridge in 2011 but the work is contingent on funding for the replacement bridge. The County is willing to speed up the work when funding is available.

Project II-4. Deer Harbor/Kaiser Pool Beach Restoration

This project was funded in the 2007 SRFB round and the work will be completed in 2008.

This derelict concrete community pool is located on an upper intertidal beach area in northeastern Deer Harbor. The concrete pool frame was built into the beach and encompasses the entire upper intertidal and backshore of the beach. The old pool has numerous breaks in the concrete walls and is completely non-functional. Estuarine marsh vegetation covers the adjacent northern shore. Cayou Valley Creek estuary is located north of the site, contributing to the estuarine condition of northern Deer Harbor. It is probable that this creek was historically salmonid bearing, thus increasing the restoration value of this site. The beach in this area was mapped as potential forage fish spawning habitat (if the site were not infringed upon by modifications). Recommendations for enhancement at this site include removing the entire cement pool walls and footings, followed

by backfilling sediment into the old footing areas (minor beach nourishment). Riparian vegetation should be enhanced where damaged by removal work and marsh vegetation should be planted to initiate recreation of estuarine-marsh conditions. The pool and the surrounding 2 parcels, each approximately 1 acre in size, are now owned by the San Juan County Land Bank. The Land Bank is very motivated to have this structure removed and the 200 feet of beach restored as quickly as possible.

Project II-5. Fish Trap Creek re-charge and flow regulation

The primary source of freshwater flowing into the Deer Harbor Estuary (see Project II-3) historically was Fish Trap Creek. This seasonal creek drains roughly three quarters of the land area of the 740-acre watershed. The severe reduction in natural flow rate is primarily due to development activities in the watershed. The loss of stream inflows is negatively affecting the lagoon as is the channel constriction. Fish Trap Creek is blocked by a 5-acre artificial reservoir constructed in 1999 at the headwaters of the Deer Harbor system. Impoundment has reduced Fish Trap Creek to a trickle even in winter and diverted all annual precipitation at the headwaters from Deer Harbor to West Sound. The earth dam of the lake needs to be partly rebuilt and a reliable valve is to be installed so the lake water can be released downstream as needed. The lake may also require some re-alignment so it can act as a large enough reservoir to provide for summer releases. This work would re-charge 3 miles of stream channel and freshen the lagoon. The landowner is willing to resolve the flow issues.

Project II-6. Pickett Springs Salt Marsh

One acre of salt marsh will be re-created where currently there are two fresh water farm ponds impounded by perched culverts. The dig-out of the current ponds and ditches will bring the tidal prism far up the stream and re-align a couple of ineffective culverts. The project will improve fish passage and access to prey resources and rearing habitat in 500 feet of stream. Some work is progressing on this project but additional funding is necessary to move it to completion.

Project II-7. Barlow Bay Rd, and MacKaye Harbor Rd-, Lopez Island

Note: Was formally named Barlow Bay Rd, the MacKaye Harbor road project has has also been added.

Barlow Bay Rd

This segment of modified shore protects Barlow Bay Rd. The shoreline modification is comprised of 2-3.5 ft riprap intended to curb erosion along Barlow Bay Rd. However, there were no signs of active erosion occurring along the beach. As a result, removing this 173 ft stretch of riprap from the intertidal and upper beach could enhance over 4,315 sq ft of beach habitat. The western most portion of Barlow Bay is a sheltered corner of an already low wave exposure shore. The beach faces directly north, but being located in the southern corner of MacKaye Bay, the beach is protected by southwest Lopez Island. A minor tombolo to the west, and a bedrock prominence to the north, further protects this shore from wave attack. Several species of algae are found along this beach including Fucus spc., Ulva spc. and Enteromorpha spc. Overhanging riparian vegetation is found landward of the modification, offering shade to approximately 70% of the uppermost beach. Historically an extensive wetland, likely salt marsh, was located landward of the beach. The beach actually appears to have been a spit that extended west to a tidal inlet. The inlet and wetlands are now mostly filled and the remaining wetland areas are hydrologically controlled by tide gates. Removal of the riprap adjacent to Barlow Bay Rd should be the highest priority restoration action as this site does not appear to require shore protection along most of its length for erosion control. The site is in a very low wave energy environment and there is a buffer of variable width between the rock and the road allowing for rehabilitation of the valuable spawning habitat that the rock is infringing upon. Following rock removal, the beach would be nourished to restore upper beach sediment suitable for forage fish spawning and

reduce erosion potential.

MacKaye Harbor Rd

Two sections of modified shore (comprised of loose rock revetment), found in the central and eastern portions of the bay, provide minimal function and could easily be removed. This would help reestablish dune and marsh vegetation found in the upper intertidal and backshore. Additionally, removing derelict piers, piles and debris from the intertidal would require minimal cost and effort, while providing considerable benefit. Restoration of the natural hydrology of the Barlow Bay coastal wetlands presents a great opportunity to enhance the ecological value of the bay. At least two major tide gates restrict flow and prohibit marine water from flowing into the backshore wetlands. It is likely that prior to installation of these tide gates an extensive tidal wetland complex was found landward of the modern beach. Freshwater wetlands have also likely been reduced by filling, draining and other hydrologic control. This large scale restoration would require a feasibility study to define the exact restoration potential of the area. Relocation of the MacKaye Harbor Rd. to a more landward location would prevent the road from infringing on the beach any further. It would also avoid the need for additional protection of the road, which will likely experience repeated overtopping and/or inundation based on anticipated sea level rise projections. Relocating the road could provide room for natural shoreline translation (an implication of sea level rise), without the loss of habitat. These projects would improve 1,283 feet of shoreline habitat and almost 12,000 square feet of intertidal habitat.

Project II-8. Smugglers Cove Rd, Shaw Is.

This project was funded in the 2007 SRFB round and the work is scheduled to be completed in 2009. The modification consists of a low elevation rock revetment along road edge. The structure protects Smuggler's Cove Rd. This beach faces east and similar to other Blind Bay sites, has low erosion potential due to limited wave energy. The beach is swash is found in the middle of drift cell. The sediment source for the cell is glacial till, which occurs at the cell origin and over most of the length of the cell. A small stream appears to drain through the north-central portion of this site. WDFW has documented forage fish spawning along the southern half of this beach. Adjacent noback shorelines possess a narrow band of driftwood. Riparian vegetation is patchy, and found both north and south of the road revetment. Removing the 241 ft of riprap overlying this beach could recover approximately 1,685 sq ft of forage fish spawning habitat. Rock prominences located at either end of the beach minimize large losses of sediment from the beach system, making this shore well suited for beach nourishment. The area around the small stream could be enhanced and provides additional restoration opportunities. Due to the very close proximity of the road and the intertidal, the most obvious and viable long-term restoration action at this site is to setback Smuggler's Cove Rd. This would allow for full restoration of the beach profile (including the berm and backshore) and enhancement of forage fish spawning areas. It would also allow for marine riparian enhancement adjacent to the shore, which could have numerous positive effects on the beach. Beach nourishment could be used to reestablish the beach and backshore profile and augment potential spawning habitat.

Project II-9. Shoreline Restoration – armoring removal - multiple sites.

These projects have been combined due to timing of landowner willingness to proceed.

West Shoal Bay, Lopez Island

This residential property spans across two adjacent lots in southwestern Shoal Bay. The modified area extends approximately 69 ft alongshore and is in very poor condition. It appears that boulders were dumped from the bank crest down the bank face to curb toe erosion. The lack of careful and targeted rock placement and presence of additional rock on the slope has caused the rock to migrate water ward (down to mid-tide level) during high tides, resulting in the burial of the natural intertidal beach. It is unlikely that the modification is providing much erosion control in its poor state, and is clearly degrading beach habitat. The beach has been documented as

valuable forage fish spawning habitat. Removing this shore modification would recover approximately 1,665 sq ft of intertidal area. This shore segment was determined to have low to moderate erosion potential and the homes located atop the bluff are setback approximately 75 ft from the bluff crest. Scattered riparian vegetation is found along south-central Shoal Bay, however the western and eastern shores have more heavily forested uplands with ample overhanging riparian vegetation. The beach enhancement action at this site is to simply remove the rock that is currently covering the intertidal beach, and to the extent possible, from the backshore area. Because the rock debris is scattered over only 69 ft this should not require considerable effort or funding, however alternative erosion control for the upland property and managing the rock removal from the beach will require additional consideration. This project would improve 69 feet of shoreline habitat and 1,665 square feet of intertidal habitat.

Jasper Bay, Lopez Island (Previously was Project II-10)

Jasper Bay is a small pocket beach located on the southeast shore in Lopez Sound. A single property owner owns the uplands, though the tidelands are apparently held by DNR. The beach has potential forage fish spawning habitat, overhanging riparian vegetation across most of the shore, and small stream mouth with mature conifers surrounding the stream. An approximately 150 ft long rock revetment covers the upper intertidal and backshore area. This structure was judged to be generally unnecessary for erosion control. The revetment contained several places were small boats were stored and the end of a rough track from the uplands. The revetment is recommended for removal along with beach nourishment if any structures were to remain. This project would improve 149 feet of shoreline habitat and 2,385 square feet of intertidal habitat.

Aleck Bay-S, Lopez Island (previously was Project II-11)

This site scored quite well for habitat values, and moderately well for bulkhead removal feasibility. However, this project should not be pursued for bulkhead removal. The apparently recent construction of the wooden soldier pile bulkhead and small setback distance of the house, make homeowner willingness highly unlikely. There are however, additional opportunities to enhance this beach, including removing the concrete pier footings on the beach, restoring the hydrologic connectivity of the large marsh to the marine environment and removing the large bulkhead and reconfiguring the community beach access at the eastern end of the site, which extends well into the intertidal. This project would improve 166 feet of shoreline habitat and 1,821 square feet of intertidal habitat.

Project II-12. Lopez Shoal Bay lagoon tide gate

This project was funded in the 2007 SRFB round and the work is scheduled to be completed in 2009. Removal of the large cement tide gate located within the tide channel waterward of the lagoon in the eastern corner of the bay should be of high priority. The tide gates do not appear to be functional, and the tide channel is scoured out on either side of the cement walls. The structure appears to constrict flow and impede fish passage through the channel at lower water due to its artificially high concrete base in addition to other impacts. WDFW has mapped the lagoon wetland system and the Shoal and Swift's Bays estuarine system as priority habitat and species areas, as these areas are used by several species. Additionally the lagoon is located within a conservation area. Additional study of the tide channel hydraulics and morphology should be conducted prior to initiating structure removal.

Project II-13. Lopez east Shoal Bay –spit

Removal of cement platform and relict bulkhead and beach nourishment will improve 65 feet of shoreline habitat and 1234 square feet of intertidal habitat.

Project II-14. Lopez Island- Aleck Bay- north
Redesigning the community beach access by removal of cement wall and rockery and replacing with stairs along with revegetation and beach nourishment will improve 65 feet of shoreline habitat and 645 square feet of intertidal habitat.

Project II-15. San Juan Turn Point Marsh
Removal of intertidal rockery in front of salt marsh will reconnect the system and will improve 191 feet of shoreline habitat and 3433 square feet of intertidal habitat.

Project II-16. Turn Point Western Properties, Turn Point Beach and Wetland Restoration
NOTE: This project has been removed for now.
Removal of rock wall, beach nourishment and revegetation and installation of protective daylight culvert will reconnect a freshwater to saltwater system and improve approximately 47 feet of shoreline habitat.

Project II-17. Blakely Island- n. Thatcher bay
Removal of creosote piles and dolphins that are relict and nonfunctioning along with removal of concrete, steel and boulder debris scattered through out the intertidal will improve approximately 100 feet of shoreline habitat and about 500 square feet of intertidal habitat.

Thatcher Bay Nearshore Restoration
A mill operating on the beach from the late 1800s until the 1950s used the beach and nearshore areas of the bay to dispose of sawdust waste. Due to limited tidal action within the bay, the wood waste persists on the beach and in the adjacent nearshore areas. Historic salmon foraging and rearing habitat as well as forage fish spawning grounds have been eliminated in the deposition areas. Beach spawning has been lost where gravels have been buried under the waste; the accumulation of wood waste and products of their decomposition in the intertidal and subtidal regions of the southern reach of Thatcher Bay severely limits the growth of eelgrass in these regions. A regional effort is underway to restore areas degraded by human activity in the Greater Puget Sound. In keeping with this objective SFEG conducted a feasibility study to determine the most efficient and cost effective method of restoring the nearshore region of Thatcher Bay impacted by historic milling activity. The focus of the study was to: (1) characterize the areal extent and depth of wood waste deposited in the nearshore that remains even though the mill has been closed since 1942 and (2) assess the potential impact of this waste on intertidal and lower subtidal biota. The next phase, directed by the findings, is to implement a restoration program within a single season which will then be monitored by the Friday Harbor Laboratories, University of Washington.

Neck Point Coastal Marsh Reclamation
This project was funded in the 2007 SRFB round and the work is scheduled to be completed in 2009. The project goal is to increase access to nearshore habitats for foraging juvenile salmonids, increase the availability of insect prey and to reconnect a coastal marsh to pre-construction conditions of 1950. The site is on Shaw Island and is a target for restoration of coastal habitat due to alterations made during the development of the Neck Point Coves community. The objective for restoring habitat at the Community Dock Site is to restore the original tidal connection and drainage pattern in the marsh behind the dock causeway. Restoration of these landscape processes would likely result in more output of insects and other invertebrates on which salmon feed from the marsh to the bay.

Derelict Gear Removal
This project was funded in the 2007 SRFB round and the work is scheduled to be completed in 2009.

The project will implement 25 days of derelict fishing net removal in salmon migration corridors in San Juan County. Approximately 37.5 acres of derelict fishing net will be removed, thereby eliminating a cause of direct salmon mortality and restoring marine habitat processes to approximately 28 acres of marine habitat. Derelict fishing nets have been documented to kill salmon during migration. One removed net contained 150 dead salmon. Derelict fishing nets have been observed to inhibit the trophic energy exchange processes of marine habitat by covering habitat, impeding access to habitat, collecting fine sediment, and scouring surfaces of algae, plant, and sessile organisms. The Northwest Straits Intiative has removed over 500 derelict fishing nets from Puget Sound since 2002 and has documented the deadly effects of this gear on over 55 marine species, inlcuding Chinook, sockeye, and chum salmon, bull trout, sea lions, harbor porpoise, harbor seals, otters, cormorants, grebes, gulls, mergansers, rockfish, lingcod, shark, octopus, and crab. There are at least 65 nets currently derelict in salmon migration corridors of San Juan County.

Garrison Creek Watershed Restoration (Phase 11 a)
Garrison Creek Watershed Restoration (Phase 11 b)
These restoration proejcts will restore connectivity for native fish passage. This restoration project was identified by the Wild Fish Conservancy stream typing project. It will involve 14-16 landowners and the entire watershed above the tidal prism. The first phase for design and engineering funding will be sought. The second stage is dependent on community-association approval of the recommended design. This stream has at least two quite distinct cutthroat populations, one sea-run, the other land-locked.

West Beach Culvert Replacements
The goal of this project is to restore connectivity for native fish passage and were identified by the Wild Fish Conservancy stream typing project. It will involve 4 landowners and the entire watershed including the estuary. The first phase for design and engineering funding will be sought. The second phase is dependent on how much the county determines it needs to rebuild a road culvert. The cutthroat population here was once fished recreationally (until the 1970s) but is now teetering on extinction.

Judd Cove Acquistion and Restoration
This acquisition of a 6 acre parcel with 2 acres of tidelands is adjacent to the San Juan County Land Bank's Judd Cove Preserve. This site has rolling meadows, forested shoreline, rocky outcroppings, and a 13 foot waterfall that tumbles year round into the estuary. The property includes approximately half of the cove's tidelands with high quality habitat for harbor seals, river otters, mink, bald and golden eagles, many shorebirds and waterfowl, native shellfish, herring, and Chinook and summer chum salmon. Public ownership of this property will enable a partnership with the DNR to remove the creosote pilings and dock associated with the log storage and transport facility. Retiring this light industrial use and removal of this over water structure is a critical first step to enabling a full recovery of the cove's natural habitat functions. If the Land Bank fails to acquire this property, this important restoration opportunity will be missed and the property will most certainly be sold to a private owner.

Non-Capital Projects

Harvest Management support
San Juan County has not been directly involved in harvest management. Some participation is being sought to enhance the communication and activities in and around the San Juan waters.

Future Habitat Project Development
Project I-1. Big Picture Project – renamed to WRIA 2 Habitat Based Assessment of Juvenile Salmon
This project was funded in the 2007 SRFB round and will conduct a habitat based assessment of juvenile salmon in WRIA2 and will provide habitat classification and map fish utilization over 3 years. The project also includes genetic stock analysis. More specifically the project will identify the different habitat

types throughout the area and break into geomorphologic types, sample representative sites for fish, sample throughout the year, and obtain samples for genetic analysis. The project addresses a major data gap, providing information regarding salmonid use of estuarine and nearshore habitats. This data gap is supported in the WRIA2 local recovery plan. The project results will provide data to create a context / framework for prioritizing nearshore protection and restoration actions. For example, in WRIA2 it may highlight a section(s) of southern Lopez Island as an area where salmonids are found and thus we will look at the state of the shoreline and adjacent upland areas in those areas to determine what new or additional protection, acquisition and/or restoration work is needed. With over 408 miles of shoreline in SJC, we need to have some idea of where the fish are to start concentrating our salmon recovery efforts in those areas that the fish are actually utilizing. Note: Original project from 2007 plan was for 5 North Puget Sound nearshore areas but due to funding the project was scaled back and the scope is only for WRIA2

Project I-3. Nearshore Acquisitions / Easements

The San Juan County Land Bank (funded by 1% of real estate property sales taxes) and the San Juan Preservation Trust (501c3 private donations) work together to acquire property of ecological significance. No specific funds are designated in the matrix for property acquisition or easements. These organizations would appreciate help in determining a prioritization schema which would include salmonid usage information when evaluating opportunities. The lack of local salmonid usage data is a limitation to creating any spatial prioritization of nearshore properties of specific interest for protection, acquisition or conservation easements. It is anticipated that the results of the Big Picture project would also address this prioritization need.

Habitat protection

Spatially Explicit Shoreline Development San Juan County's shoreline regulations.

The project completed a spatially explicit analysis of major shoreline permit activity in San Juan County from 1972 through 2005. The *Shoreline Permit Analysis* provides a baseline for a detailed retrospective analysis of shoreline land use activity and future planning processes. In addition, project results can be used to further our understanding of the relationship between shoreline development and nearshore habitat condition. Results are currently being applied to ongoing planning processes including the San Juan County Ecosystem-Based Initiative, the San Juan County Critical Areas Ordinance update and implementation planning for the San Juan County Marine Stewardship Area.

Project I – 2. Ecosystem Based San Juan Initiative

The San Juan Initiative (SJI) seeks effective protection of the San Juan Islands by evaluating how successful our volunteer, incentive, regulatory and education programs are in securing the vitality of our natural resources for future generations. Led by a broad constituency of volunteer community leaders and regional resource managers, the San Juan Initiative is a pilot project for the entire Puget Sound.
The regional recovery plan supports projects like the San Juan Initiative which is referenced in Chapter 6 of the Puget Sound Salmon Recovery Plan. The SJI is scheduled to make recommendations regarding their findings by December 2008. As this is a pilot project it is expected that many pieces of this work will influence future protection actions both for the county and potentially at the Puget Sound regional level. It is also anticipated that this pilot will be a model for this work which may be replicated in other watersheds.

CAO Update

The Lead Entity actively participates in ongoing multiple regulatory and policy activities in the county. The CAO update for San Juan County is in progress this year and is scheduled to be completed in late 2008 or 2009. The Lead Entity Coordinator is participating in reviewing documents and providing input at the Citizens CAO Update Committee meetings.

Synthesis/Analysis of Data Gaps

During the development of the 3-year salmon recovery plan for WRIA2 in 2006, over sixteen major areas were identified where significant data gaps exist that hinder the progress of salmon recovery for managing and restoring marine habitat important to salmonids in San Juan County. This list was compiled in 2006 and prioritized in 2007. Analysis and synthesis of the best available science for issues such as permitting reverse osmosis systems, affects of mari-culture net pens in marine waters, identification of sensitive areas at risk from oil spills, and habitat issues around proposed electric power turbines (tidal energy) are currently lacking. This analysis would provide the county guidance on these types of projects being proposed in local waters. The current funding supported the completion of two white papers on tidal energy and oil spill prevention and response. The tidal energy white paper became a priority since there are currently proposals to implement tidal energy projects in the waters of the San Juans. The oil spill white paper became a priority due to the completion of the Marine Stewardship Area Plan since reducing the risk of large oil spills in San Juan County waters is an early implementation action identified as a top strategy in the plan. Additional funding is needed to address the remaining list of data and research gaps and additional white papers.

Salmon Recovery Coordination/Implementation

Each year more is asked of the Lead Entity Coordinators throughout the state yet the base funding from WDFW to support salary, travel, supplies and office expenses has not increased since 1999 although the Lead Entity role has expanded significantly. Since 2006 San Juan County has increased their funding portion to ensure a full-time Lead Entity Coordinator position to pursue and coordinate salmon related activities and grant programs. There are currently 20 governmental and non-governmental partners involved in conservation, education, research, planning and managing the marine resources in San Juan County. The Lead Entity Coordinator is becoming a clearing-house of ideas, information and actions along with the primary point of contact for any and all habitat related projects in the county. The Lead Entity Coordinator is necessary to promote collaboration, eliminate redundancy and focus on priorities among the many partner organizations.

The Lead Entity program wish list includes having a fully funded position that is not at risk during county budget crises, and could use additional support to increase local capacity through some part time help such as a Department Assistant to provide general administrative support and/or to provide support for contracting, grant billing, reporting and new grant development.

Additionally, there is strong local support and recommendation for coordination of the orca recovery plan and the local and regional salmon recovery plans.

Watershed Plan Implementation

The lack of comprehensive mapping of wetlands and streams is a large gap in the county. Since so many of these features are seasonal and unregulated, they are not only unprotected, but not appreciated, by landowners and policy decision-makers for their important functions.

San Juan County's watershed plan is outdated and uses a definition of watershed out of alignment with fisheries biology. An updated watershed plan with funding and staffing resources for implementation and monitoring is needed. Many excellent actions from the watershed plan are still relevant but have not been implemented. A local issue for implementation of the watershed plan is that no County department recognizes that water quantity and quality for other than human consumption is part of the work that should be performed, in other words there is currently no "ownership" for the non-human consumption water resources in the county.

Due to limited resources available in San Juan County, all groups recognize the need to avoid any duplication of work. In general, an organic process has arisen where groups meet on a regular basis

jointly or one-on-one to discuss programs and to coordinate activities, outreach and education initiatives. The primary intent is to avoid duplication, leverage each other's work and also identify and attempt to resolve gaps. An informal Water Group named the "Water Table" meets regularly to attempt to address these issues. The groups that participate as part of the "Water Table" are a combination of county organizations and local non-profits. San Juan County has a very active and effective Marine Resources Committee (MRC) and also has a Water Resources Management Committee, both of which are formal advisory committees to the County Council. The San Juan County Lead Entity is also part of the MRC and the MRC acts as the salmon recovery Citizens Advisory Group (CAG) for the Lead Entity. Additionally, the San Juan Ecosystem Based Initiative (SJI) is in progress and seeks to evaluate the effectiveness of protection efforts in San Juan County. Many local organizations participate in the Policy Group for the SJI. Many non-profit organizations provide programs and research that benefit the county such as Friends of the San Juans, the San Juan Nature Institute and KWIAHT. There are also good working relationships with the San Juans Conservation District and the University of Washington – Friday Harbor labs and their research and programs. Most all of these organizations participate in the "Water Table" meetings. The participation of these groups is critical to ongoing successful coordination of activities in the county.

Outreach and Education

Outreach and education is needed to provide guidance to private citizens and governments that will lead to conservation and preservation of Chinook salmon, forage fish and their critical habitats. Technical assistance is aimed at managers to keep them knowledgeable about research findings and habitat issues. Public education is aimed at all age groups of county residents. School children will learn the importance of marine habitats and there will be workshops for landowners to acquaint them with "best management practices" of their property for salmon and forage fish. The "Salmon in the Schools" program is aimed at 4th grade students where they spend a semester learning about Chinook salmon and rearing juveniles for release.

The Lead Entity will interact with county managers to keep them abreast of new information. A web site has been developed but still needs additional work to provide information for anyone with questions regarding the stewardship, conservation and preservation of habitats that are critical to salmon. Educational outreach has several vectors: scientists in the classroom, salmon in the schools program, adult education by the San Juan Nature Institute and lecture series at Camp Orkila. The Beach Watchers program began in 2006 and will focus on ecosystem awareness for visitors to San Juan County.

Increased awareness of managers and citizens of proactive methods they can take as part of the San Juan County Marine Stewardship Area (MSA) is a key component of the outreach work in WRIA2 and is being spearheaded by the MRC. An understanding of the links between watersheds, land use, and nearshore habitats will be emphasized. Tools will be provided for landowners to better manage their property for enhancing salmon and forage fish habitat.

The Lead Entity, the MRC, the SJI, and the Sr Planner working on the CAO Update combined their resources to hire in 2008 a part time Education & Outreach Coordinator for 2 years to help with much needed public outreach and education and message coordination. These 4 programs with the guidance of the Outreach Coordinator have developed an ongoing electronic newsletter titled "Stewardship Connections" to help highlight local marine issues, actions and events.

Watershed landowner education

The lack of comprehensive mapping of wetlands and streams is a large gap in the county. Since so many of these features are seasonal and unregulated, they are not only unprotected, but not appreciated, by landowners and policy decision-makers for their important functions. This project will attempt to start addressing with the public and landowners in some targeted watersheds the importance of the freshwater

system, streams and wetlands in San Juan County. The San Juan Nature Institute will collate existing natural history and SJC department information on the False Bay and Westsound watersheds and present to landowners via both info packets (written and maps) and speakers during an initial round of workshops. Sustainable practices will be incorporated and emphasized. A watershed tour (including all stakeholders) will be coordinated for both areas which will focus on wetlands, riparian areas, native plant species, and the potential for salmon restoration. A second round of workshops will be coordinated, including a section on maximizing native plant species and preserving critical habitat areas, and landowners interested in restoration work will be coached and incorporated into future restoration funding requests. The existing "watershed groups" in both areas will be supported, expanded, and given a restoration focus.

Instream Flow Protection

KWIAHT and Wild Fish Conservancy (WFC) along with SJC Health Department and DOE are working to monitor some of the streams in SJC. Currently there is no real "owner" for flow issues and monitoring in the county.

KWIAHT and WFC is cooperating with both WA Ecology and Washington Water Trust to protect water quantity on Cascade Creek. Long-term monitoring of the creek is expected to be handed off to SJC WSU Beach Watchers in 2009. Additionally a program of water-supply easements or covenants on the other streams where flows are threatened is needed and could be a collaboration with the SJC Land Bank and SJC Preservation Trust.

Habitat Project Monitoring

Forage fish habitats, such as eelgrass and beaches, in San Juan County are experiencing declines in quality and quantity. Basic research into the reasons for declines and plans for restoration are necessary before the importance of near shore habitats can be evaluated, protected or restored. Water quality and quantity need to be measured, monitored and restored.

The ten-year goal is to understand the importance of nearshore habitats to Chinook populations. Basic gaps in habitat use of pocket estuaries, macro-algae, kelp, high and low energy beaches, and eelgrass exist. Food webs, resident times and population structure should be investigated to better understand the relationship of Chinook to the habitats and ecosystems in WRIA 2.

Some basic assessment research has been funded; nearshore salmon presence near stream mouths and high-energy beaches, eelgrass habitat assessment, assessment of kelp bed extent, and limited stream habitat surveys. This work needs to continue beyond the few years of available data because of the effects of inter-annual variability and climate change. Other projects are proposed that will investigate additional habitats such as open water, pocket estuary, drift kelp and salt marsh. Best available science will be used to manage and steward the habitats and ecosystems in WRIA 2.

MSA Monitoring Plan

The Marine Resources Committee (MRC) is designing a monitoring program through their Marine Stewardship Area (MSA) planning. The MSA Plan has Pacific Salmon as a target and the Lead Entity is actively involved in the Science Subcommittee who is developing this monitoring program. Additionally, the Lead Entity Coordinator is participating in ongoing meetings with other local organizations who are pursuing various monitoring efforts.

Hydrologic Modeling and Estuarine Wetland Data

Watershed Modeling

The watershed modeling project generated watershed maps for the San Juan Archipelago at a variety of scales or basin resolution levels. The project enables San Juan County to use the model for any island within the county and to run the model at any sensitivity level necessary to address the need at the time.

Coastal Wetland Delineation

The Coastal Wetland Delineation project converted paper based aerial photographs from 1983 that had been marked up and annotated to delineate significant coastal wetlands to a georeferenced GIS map layers with attributes reflecting the annotation of the paper based maps. Comparing the data generated in this project highlighted several areas where there are substantial differences in the size or shape of the wetland when compared to current data. Field survey work is necessary to determine if the differences are due to errors induced by the various mapping methods, other than normal variability, and important enough to warrant particular management measures.

Contaminant monitoring in freshwater and nearshore salmonid habitats

This project seeks to identify and reduce contaminant inputs. This project originally combined elements of a SRFB proposal with the Conservation District's monthly monitoring of basic water parameters in several county streams (nitrates and coliforms) originally as a Centennial Fund project but is no longer funded. The intent of the work is to make a clearer link regarding impacts to salmonids from contaminants such as pesticides, herbicides, and pharmaceuticals

Juvenile salmon use of nearshore and terrestrial prey

This project is sampling with beach seines and collecting and analyzing gut contents. This is a trophic (prey-base) monitoring on Lopez and Waldron using local citizens and is an excellent example of a highly effective and accurate Citizen Science program and is likely to continue for many years through the engagement of local citizens. Interest from citizens on Orcas appears likely to also emerge.

Identification of juvenile salmon habitat

This project is proposed as a tagging and/or acoustic study to track timing and residency in preferred habitats. The SRFB process does not support this type of work so finding funding continues to be a struggle.

Stock Monitoring Support

The ten-year goal is to understand the importance of nearshore habitats to Chinook populations. There is evidence that spawning of salmonids may be occurring in the freshwater systems in WRIA2. Additionally, juvenile Chinook are found both at nearshore beaches and in open water. An inventory of all habitats used by Chinook and the timing and extent of this use needs to be investigated. All 22 Puget Sound Chinook populations utilize the San Juans at some stage of their life cycle. Stock identification would aid in identifying and prioritizing sites used by Puget Sound Chinook. Interactions of wild Chinook population with hatchery and mari-culture should be investigated. There is one small hatchery in the San Juans run by Long Live the Kings (LLTK). The Glenwood Springs hatchery is located on Orcas Island. LLTK are tagging all of their fish and it would be beneficial to better understand how these local hatchery fish are utilizing WRIA2.

Stream habitat surveys/watertype assessment

This project will complete a survey of potential salmonid stream habitats in San Juan County and identify stream-specific threats to preserving stream flows and temperatures within the range that is consistent with salmonid survival and make recommendations to landowners and county government for in-stream

flow rules, habitat restoration and protection priorities, and actions needed to perpetuate native cutthroat stocks in WRIA2.

Discrete population segments - salmon

The project will identify priority habitats for ESA listed species. Genetic analysis will be performed on the Chinook collected by the Big Picture project, but we still won't have this type of data on ESA-listed coho, steelhead or summer chum salmon.

Discrete population segments coastal cutthroat

The project will identify the range and effective size of genetically isolated endemic cutthroat populations. The Westslope cutthroat are ESA-listed, and coastal cutthroat are a step away. Due to the recent stream typing work, the team has thus far identified 8 geographically isolated cutthroat populations and the project will determine their effective sizes and whether there is any gene flow between them, or with mainland populations. This would be the next step towards establishing WRIA2 as an ESU for cutthroat.

A conceptual model of the local salmon recovery strategy for San Juan County follows. The model was developed as a mechanism to provide a brief overview of the local salmon recovery strategy for WRIA 2.

San Juan County 2008 three-year Watershed Implementation Work Program

Project Name	Priority tier of project	Project Description	Likely Sponsor	Total Cost of first three years	Local share or other funding	Proposed SRFB (or grant) share	Source of other funds/ Partners	Limiting Factors	Habitat Type	Activity Type	Primary Species Benefiting	Secondary Species Benefiting	2007 Year 1 Scope	2007 Year 1 Cost	2008 Year 1 Scope	2008 Year 1 Cost	2009 Year 2 Scope	2009 Year 2 Cost	2010 Year 3 Scope	2010 Year 3 Cost	Likely End Date
Capital Projects																					
Habitat																					
Restoration																					
Pt Lawrence Road/Cascade Creek Culvert Replacement	II - 1	Culvert replacement to	San Juan County	$480,000	$225,000	$255,000	GP, San Juan County Road	Loss of Habitat (7)	Nearshore Embayments	Fish passage?	Chinook	Coho	obtained grant	$16,000	Study, Final Design	$150,000	construction	$450,000	restoration monitoring if	$5,000	2014
Cascade Creek Fish Ladder	II - 2	Create natural "steps" over	Wild Fish Conservancy	$250,000	$0	$250,000	GP, KWIAHT, Landowner,	Loss of Habitat (7)	Instream	Fish passage	Chinook	Coho									
Deer Harbor Estuary Habitat Restoration Project	II - 3 a)	Restoration of the shoreline	People for Puget Sound,	$172,571	$146,671	25,900	GP, REED,NRCS,	Loss of Habitat (2,7)	Nearshore Embayments	Fish passage?	Chinook	Cutthroat	Planning, fund raising,		Design and permitting		Construction of grade		Stewardship and adaptive		2010
Deer Harbor Bridge Replacement	II - 3 b)	Replacement of the Channel Road	San Juan County, People	$1,864,000	0	$141,000	ESRP, ERM Foundation	Loss of habitat (2)	Nearshore Embayments	Nearshore	Chinook	Cutthroat	Planning, fund raising,		public outreach,		complete designs,		Permitting		2013
Deer Harbor/Kaiser Pool Beach Restoration	II - 4	Remove derelict concrete pool from	SJC Land Bank	$34,936	$22,115	$12,821	GP, NOAA CRP, NFWF CSF,	Loss of habitat (2)	Nearshore Beaches	Nearshore	Chinook	Chum	Permitting, final funding		work completed						completed 2008
Fish Trap Creek re-charge and flow regulation	II - 5	Partly rebuild earth dam and install	Wild Fish Conservancy,	$275,000	$75,000	$200,000	Ducks Unlimited,	Stream Flow (6)	Nearshore Embayments	Instream Flow	Chinook	Cutthroat							Design	$75,000	2012
Pickett Springs Salt Marsh	II - 6	Re-creation of a salt marsh where	People for Puget Sound	$225,000	$0	$125,000	GP, WDFW LIP, SJPT,	Loss of Habitat (2,7)	Nearshore Embayments	Fish passage?	Chinook	Chum	Ongoing work on funding		permits, potential		complete construction,				2010
Barlow Bay Rd, and Mackaye Harbor Road region, Lopez Is.	II - 7	Restoration feasibility analysis	Public Works, Friends of the	$50,000		community salmon funding	san juan county public	Loss of Habitat (2)	Nearshore Beaches	Nearshore	Chinook	Chum									
Smugglers Cove Rd, Shaw Is.	II - 8	Remove derelict intertidal rock,	Friends of the San Juans	$125,000	$90,000	$36,000	SRFB funds secured, SJC	Loss of Habitat (2)	Nearshore Beaches	Nearshore	Chinook	Chum	survey, restoration		restoration implementatio						
Shoreline Restoration - armoring removal - multiple sites	II - 9	Removal of unnecessary	Friends of the San Juans (or	TBD			private landowners	Loss of Habitat (2)	Nearshore Beaches	Nearshore	Chinook	Chum									
Lopez Shoal Bay Lagoon tide gate	II - 12	Remove tide gate and restore tidal	Friends of the San Juans	$100,000	$50,000	$50,000	Community salmon fund	Fish Passage (2,7)	Nearshore Embayments	Fish passage?	Chinook	Bull Trout	07/08-survey,		restoration implementatio						
Lopez east Shoal Bay -spit	II - 13	Remove cement platform and	Friends of the San Juans	$15,000			USFWS and RFF funding	Loss of Habitat (2)	Nearshore Beaches	Nearshore	Chinook	Chum	07- survey and								
Lopez Island- Aleck Bay- north	II - 14	Redesign community beach	Friends of the San Juans	$50,000			NFWF CSF, landowner	Loss of Habitat (2)	Nearshore Beaches	Nearshore	Chinook	Chum									
San Juan Turn Point Marsh	II - 15	Remove intertidal rockery in front of	Friends of the San Juans	$55,000	$25,000	$25,000	USFWS funds secured. Some	Loss of Habitat (2)	Nearshore Beaches	Nearshore	Chinook	Chum	survey and design,	$15,000	restoration implementatio	$40,000					
Blakely Island- n. Thatcher Bay	II - 17	Remove creosote piles and dolphins,	Friends of the San Juans	$15,000			landowner, some match	Water Quality	Nearshore Embayments	Nearshore	Chinook	Bull Trout	will be implemented	$5,000	restoration implementatio	$10,000					
Thatcher Bay Nearshore Restoration	II	Beach and nearshore	Skagit FEG	$350,000	tbd	tbd	SRFB, SJPT, Blakely Island	Loss of habitat (2)	Nearshore Embayments	Nearshore	Chinook	Bull Trout	Obtain Permits and	$350,000	UW/FHL Monitoring		UW/FHL Monitoring				
Neck Point coastal marsh reclamation	II	reconnect a coastal marsh for improved	Northwest Marine	$54,000	$46,000 grant 07 1801	$8,000	Beachwatchers	Loss of Habitat (2)	Nearshore Embayments	Nearshore	Chinook	Chum	scope completed		design/permit ting	$12,000	restoration	$42,000			2012
Derelict Gear Removal	II	Restore benthic habitat for	NW Straits Initiative	$300,000	$85,525	$15,100	SRFB	Predation/Competition/Dis	Marine	Marine	Chinook	Coho	video survey/remov	$0	video survey/remov	$100,000	removal of derelict gear	$100,000	removal of derelict gear	$100,000	25K/yr
Garrison Creek Watershed Restoration (Phase II a)	II	Fence livestock and remove invasives	Wild Fish Conservancy;	$40,000	$30,000	$10,000	Land Owner Match (likely)	Water Quality (3,5,6,7)	Upland	Water Quality	Coho	Cutthroat					Livestock fencing;	$30,000			2009
Garrison Creek Watershed Restoration (Phase II b)	II	Culvert replacement/retrofi	Wild Fish Conservancy;	$350,000	$275,000			Reduced Habitat	Instream	Fish passage?	Coho	Cutthroat							Restoration Implementati	$300,000	2015
West Beach Culvert Replacements	II	Replace two culverts on the	Wild Fish Conservancy;	$400,000	$150,000	$250,000	San Juan County	Fish Passage (5,7)	Instream	Fish passage	Coho	Cutthroat					West Beach Culvert	50,000	West Beach Culvert	$325,000	2014
Creosote log/piling removal	II	Remove creosote logs - Water Quality	WA DNR	$100,000	$0	$100,000	SJC MRC, Salmon Affect,	Water Quality (2)	Nearshore Embayments	Nearshore	Chinook	Bull Trout	Completed removal from	$10,000	removal of creosote	$30,000	removal of creosote	$30,000	removal of creosote	$30,000	on going
Riparian Restoration of forage fish beaches (vegetation)	II	Improve quality of spawning beaches	Friends of the San Juans	$10,000		$10,000	Ducks Unlimited	Loss of Habitat (2)	Riparian	Riparian	Chinook	Chum	ID sites	$2,000	plantings	$2,000	plantings	$3,000	monitor	$2,000	2010
Other Culvert/ Bridge Replacements (Victorian and Crow Valleys, Buck Bay)	II	removal of fish barriers	SJC Public works	$500,000		$500,000		Reduced Access to	Instream	Fish passage	Coho	Cutthroat	design	$50,000	replace	$150,000	replace	$150,000	replace	$150,000	2010
coastal lagoon/estuary restoration (Fossil Bay, Odlin park)	II	restore connectivity,	Friends of the San Juans	$150,000	$100,000		SJC CD, KWIAHT	Loss of Habitat (2)	Nearshore Embayments	Nearshore	Chinook	Chum	feasibility, design, we	$25,000	design	$50,000	design	$50,000	restoration	unknown	2012
Beach Clean-up of debris	II	increase spawning habitat	FSJ	$5,000	$0			Reduced Access to	Nearshore Beaches	Nearshore	Chinook	Chum	clean-up	$1,000	clean-up	$1,000	clean-up	$1,000	clean-up	$1,000	on going
Acquisition for future restoration																					
Judd Cove acquisition and restoration	II	Acquire ~6 acre parcel (incl ~ 2	SJC Land Bank	$500,000		$500,000	TPL, DNR, RCO-WWRP	Loss of Habitat,	Nearshore Embayments	Nearshore	Chinook	Chum	TPL complete due diligence		Grant writing to fund		Work Complete.				2009
Total Capital Need				**$6,470,507**	**$1,274,311**	**$2,513,821**								**$474,000**		**$545,000**		**$906,000**		**$988,000**	
Non-Capital Programs																					
Harvest Management Support																					
forage fish population structure		Protection of discrete population	NMFS genetics lab	$30,000							Chinook	Bull Trout	project/collaboration	$0	collect tissue samples	$5,000	collect tissue samples	$5,000	genetic analysis	$20,000	
Section 7 consultation on salmon harvest management plan relative to		may affect harvest management plan	Tribes, WDFW, NOAA								Chinook										
Future Habitat Project Development																					
WRIA2 Habitat Based Assessment of Juvenile Salmon (Big Picutre Project)	I - 1	Mapping fish utilization of	Skagit River Systems Coop	$766,706	$115,881	$650,825			Marine	Marine	Chinook	Bull Trout	gical habitat classifications	$225,000	Fish sampling	$125,000	Fish sampling	$125,000	sampling, genetic	$225,000	2010
Nearshore Habitat Protection (Acquistions/Easements)	I - 3	long term protection of	SJPT, SJC Land Bank, FSJ				Friends of the San Juans,		Nearshore Beaches	Nearshore	Chinook	Bull Trout									
SJC nearshore enhancement and restoration	II	Improve county infrastructure to	Friends of the San Juans				SJC		Nearshore Embayments	Nearshore	Chinook	Bull Trout	for feasibility studies,		needed for designs,		needed for implementatio				

Forage fish habitat restoration	II	Work with public and private	Friends of the San Juans				SJC, CGS		Nearshore Embayments	Nearshore	Chinook	Bull Trout	for feasibility studies,		needed for designs,		needed for implementatio				
eelgrass habitat enhancement	I	inventory mooring buoys, implement	Friends of the San Juans	$100,000			SRFB, CSF, ...		Nearshore Embayments	Nearshore	Chinook	Bull Trout	buoy inventory 09	$50,000	relocation and redesign	$50,000					
SJC Inventory and Restoration Prioritization of County Nearshore	I	Take existing County GIS map of	SJCPW				SJC, CGS, FSJ		Nearshore Beaches	Nearshore	Chinook	Bull Trout	consultant or SJCD to		needed for designs,		needed for implementatio		needed for implementatio		
Garrison Creek Watershed Restoration (Phase I)	II	Feasibility Study - Reconstruct	Wild Fish Conservancy;	$250,000	40,000	$210,000	Landowner Match (Likely)		Upland	Water Quality	Cutthroat	Coho					feasibility plans and	$125,000	construction designs, and	$125,000	2010
Habitat Protection																					
Spatially explicit shoreline permit and policy analysis	I		FSJ	$20,000	$10,000	$0	EPA/DOE grant, Russell Family	Loss of Habitat (2)	completed in 2007												
Ecosystem Based San Juan Initiative	I - 2	Evaluation of existing regulatory,	Shared Strategy	$500,000	$220,000	$30,000	SJC						development of Leadership	$220,000	report / recommendati	$280,000					2008
CAO Update	I	Participate in CAO Update process	FSJ, MRC, LE				FSJ, MRC, LE														2008
Synthesis / Analysis of Data Gaps	I	White papers on 16 topic areas and	SJC	$48,500	$16,000		EPA/DOE grant						data gaps, completed 2	$16,000	white paper completed	$2,500	white papers completed	15,000	white papers completed	15000	2008
Nearshore Habitat Protection and Enhancement	I	Permit and Plan Review and	FSJ, SJPT, LB, SJC, MRC,					Loss of Habitat (2)	Nearshore Beaches												
Nearshore work windows- HPA input	I	Add county requirements for	MRC, WDFW					Loss of Habitat (2)	Nearshore Beaches				of juvenile salmon use of								
Incorporate drainage basin planning in Comp Plan/ordinance	I	Assist county planning process	SJC					Stream Flow (6)													
Management through Best Available Science	I	Improve Management plans	LB, SJPT, SJC, TNC, FSJ, SJC																		ongoing
Watershed Plan Implementation & Coordination																					
WRIA 2 Salmon Recovery Plan - Salmon recovery		Actions to protect and restore	LE	$350,000	$90,000	$0	WDFW, SJC, PSP						implementatio n	$80,000	implementatio n	$80,000	implementatio n	$95,000	implementatio n	$95,000	ongoing
water quality and watershed coordination group (Water Table)			SJ CD				CD, SJC, FHL, FSJ, LE, MRC,	Water Quality, Stream Flow					existing plans, id								
watershed characterization		Understand veg cover, impervious	Tina and sloc wish list					Riparian Areas and													
Outreach & Education																					
Watershed landowner education		info about their watershed, including importance of wetlands & native veg; recruit landowners	SJNI	$49,990	$25,000	0	Landowners, watershed group members, nurseries, students, CD, WSU , Labs,										collate info on both watersheds for landowner packets, workshops	$25,000	workshops with demo restoration & future restoration project ID	$24,990	
Water in San Juan County Realtor Workshop			FSJ	$6,000			1,200 realtors association						San Juan Island								
Salmon-in-the-schools		Juvenile salmon ecology	SJNI, LLTK	$1,000									planning	$500	implementatio n	$500	implementatio n	not determined	implementatio n	not determined	ongoing
Outdoor Classroom		Juvenile salmon ecology	SJNI, FHL, Whale	$1,000									planning	$500	implementatio n	$500	implementatio n	not determined	implementatio n	not determined	ongoing
Education & Outreach Coordinator		Coordinates outreach messages,	MRC, LE, SJI, SJC	$60,000	$40,000	$0	WDFW, NWSC, SJI, PSP							$20,000		$20,000		$20,000		$20,000	ongoing
WRIA 2 Salmon Recovery Website		Public outreach	LE	$500	$500		SJC														ongoing
MSA Plan Outreach		Education and outreach to public	MRC	$45,000	$45,000		SJC, NWSC, TNC, LE						outreach meetings,	$22,500	outreach meetings,	$22,500					
Shoreline Stewardship Guide for landowners		Update guide, mail to all shoreline	FSJ				SRFB, charlotte martin, pie						complete in 2007								
Coordinate educational resources to include salmon and forage fish habitat		Coordinated education on the	LE										outreach/coor dination	$5,000	integrated plan	$10,000		not determined		not determined	ongoing
Boater Education		Marine Stewardship	Whale museum, MRC	$3,000									stewardship coloring book	$3,000				not determined		not determined	
Oil Spill Education		Improve water quality	IOSA, NPS, schools, SJC										planning	not determined	workshop	not determined	workshop	not determined	workshop	not determined	
Marine Ecosystems Signage		Public Outreach	MRC grant	$5,000									planning	$1,000	implementatio n	$2,000	implementatio n	$2,000			
Landowner conservation motivation		Encourage salmon friendly actions on	SJC, LB, SJPT, FSJ (open																		ongoing
LID Education		LID techniques decrease	SJC CD	$2,000									planning	$1,000	implementatio n	$1,000	maintenance	not determined	maintenance	not determined	ongoing
Smart / green building program education		Best building practices	FSJ/SJC	$5,000									scope	$2,000	workshop	$3,000					ongoing
Instream Flow Protection																					
Model and restore stream flows	II	Determine sources and fates of water	KWIAHT	$50,000		(partly secured) $50,000	Wild Fish Conservancy,	Stream Flow (6)	Instream	Instream Flow			monthly data gathering	$10,000	monthly data gathering	$15,000	gathering, data analysis	$25,000	landowners and county on	$50,000	ongoing
Secure instream flows for fish and wildlife	I	Acquire water rights as needed to	SJC, Wild Fish Conservancy	$120,000	(partly secured) $120,000		DOE, Wa Water Trust, WDFW,	Stream Flow (6)	Instream	Instream Flow			monthly data gathering	$10,000	monthly data gathering	$10,000	and regulation	$100,000	and regulation	$60,000	ongoing
Habitat Project Monitoring																					
Assessment and Protection of Kelp	I	Map bull kelp habitat in sjc,	FSJ, DNR	$200,000	$50,000	$149,500	DNR match	Loss of Habitat (2)	Marine	Marine	Chinook	Bull Trout	secured - project								
MSA Monitoring Plan	I	MRC is designing a monitoring program	MRC		$25,000	$0	LE, PSP	Loss of Habitat (2)	Marine	Marine	Chinook	Bull Trout			design	$11,000	implementatio n	14,000	ongoing monitoring	tbd	ongoing
Hydrologic Modeling and Estuarine Wetland Data	I		SJC	$12,000	$10,000		EPA/DOE grant	Loss of Habitat,	Nearshore Embayments	Nearshore	Chinook	Bull Trout		$12,000	completed						
Juvenile salmon use of nearshore and terrestrial prey	I	Sample with beach seines, collect and	KWIAHT	$180,000	$105,000	$75,000	NFWF, PSC	Loss of Habitat (2)	Nearshore Embayments	Nearshore	Chinook	Bull Trout	pilot study Waldron	$45,000	north and south county	$55,000	baseline analysis	$40,000	sustainable monitoring	$40,000	ongoing

identification of juvenile salmon habitat	I	Timing and residency in	KWIAHT	$80,000	$40,000	$40,000	Army Corps, NWSC, WDFW	Loss of Habitat (2)	Marine	Marine	Chinook	Bull Trout			design and test methods	$10,000	salmon movements in	$35,000	salmon movements in	$35,000	2011
Contaminant monitoring in freshwater and nearshore habitats	I	Identify and reduce contaminant inputs	KWIAHT	$100,000	$35,000		EPA, DOE, SJNI	Water Quality (5)	Nearshore Beaches	Water Quality	Chinook	Bull Trout	pilot study of metals	$20,000	pesticides, herbicides	$15,000	baselines, train citizens	$50,000	contaminants, train citizens	$50,000	ongoing
Assessment of Eelgrass Loss	I	Ongoing research into eelgrass	UW, DNR, USGS, FSJ	$30,000			DNR, UGSG in kind match,	Loss of Habitat (2)	Nearshore Embayments	Nearshore	Chinook	Bull Trout	project-westcott bay	$15,000	needed to support	$15,000	restoration or protection	tbd			
class one beach inventory	I	Complete mapping and quality	MRC, CGS	$65,000	$15,000		SJC MRC	Loss of Habitat (2)	Nearshore Beaches	Nearshore	Chinook	Bull Trout	Bauer's work on class 1	$15,000	mapping of accretion	$50,000					
water column properties	I	Water quality monitoring	FHL, UW, Ecology, FSJ					Water Quality (5)	Marine	Water Quality	Chinook	Bull Trout	wq program started	10,000/year?							
salmon habitat protection blueprint	I	Spatial prioritization of	FSJ, PT, LB	$75,000	$11,000	$64,000	charlotte martin match	Loss of Habitat (2)			Chinook	Bull Trout	complete in 2007		n: funding needed to		n: funding needed to				
Friday Harbor wastewater	I	Improved water quality for	Town of Friday Harbor					Water Quality (5)	Nearshore Beaches	Nearshore	Chinook	Bull Trout	evaluation		analysis		clean-up action		clean-up action		
Spartina Control of the few invasive occurrences	I	Avoid major habitat problems	Beach Watchers	$11,000				Loss of Habitat (2)	Nearshore Beaches	Nearshore	Chinook	Bull Trout	survey Spartina	$2,000	eradicate	$3,000	eradicate	$3,000	eradicate	$3,000	on-going
Exotic Species	I	Monitor/map exotic species on priority	Beach Watchers	$10,000			FHL		Nearshore Beaches	Nearshore	Chinook	Bull Trout	design	5000-	adapt. Manage.	$5,000	action	unknown	action	unknown	
salmon use of drift habitat, kelp canopy and understory	I	Sample habitat, Map and document		$150,000				Loss of Habitat (2)	Marine	Marine	Chinook	Bull Trout			sampling	$50,000	map	$50,000	analysis	$50,000	
water quality characterization	I	Understand freshwater and	Tina and sloc wish list				some marine wq monitoring	Water Quality (5)	Marine	Water Quality	Chinook	Bull Trout									
Stock Monitoring Support																					
Stream Habitat Surveys / Watertype Assessment		Interactive GIS showing water type	Wild Fish Conservancy	$175,000	$55,000	(Secured) 120000	KWIAHT, Beach Watchers						mapping, spawner	$30,000	mapping, spawner	$50,000	synthesis, landowner	$40,000			2009
Discrete Population Segments - Salmon		ID priority habitats for ESA listed	KWIAHT	$100,000	$30,000	(Secured) $70,000	SJCMRC, NOAA						pilot study	$30,000	sampling from seine studies,	$35,000	sampling from seine studies,	$35,000			2010
Discrete Population Segments - Coastal Cutthroat		ID range and effective population	KWIAHT	$80,000	$40,000	$40,000	NOAA, PSC, NSF								known populations	$10,000	marker discovery	$50,000	analysis of data	$20,000	2011
Ecological interactions of hatchery and wild salmon in marine habitats		May affect size, timing, quantity of	WDFW	$30,000			Tribes, NOAA								sampling	$10,000	sampling	$10,000	analysis	$10,000	
Glenwood Springs Chinook hatchery		Pathways they use after	LLTK	$30,000			Tribes, WDFW								design	$5,000	sampling	$10,000	sampling/analysis	$10,000	
Cypress Island Fish Farm		Evaluate if farmed Atlantic salmon are	NMFS	$50,000			SJC						concept		research	$30,000	research and evaluation	$20,000			
Research																					
Other																					
Total Non-Capital Need:				**$3,791,696**	**$1,018,381**	**$1,259,325**								**$835,500**		**$981,000**		**$894,000**		**$852,990**	
Priority Projects and Programs Benefiting Non-Listed Species																					
Total Non-Listed Species Need:																					

2008 three-year Watershed Implementation Priorities Template: Addendum

Project Name	Partnership Goals					
	Human Health	Human Well-Being	Species/Food Web	Habitat	Water Quality	Water Flow
Capital Projects						
Habitat						
Hatchery						
Other						
Total Capital Need						
Non-Capital Programs						
Harvest Management Support						
Future Habitat Project Development						
Habitat Protection						

Watershed Plan Implementation & Coordination

Outreach & Education

Instream Flow Protection

Habitat Project Monitoring

Stock Monitoring Support

Research

Other

Total Non-Capital Need:

Priority Projects and Programs Benefiting Non-Listed Species

Total Non-Listed Species Need: