Jimmycomelately Ecosystem Restoration

Lessons Learned Report

Jamestown S'Klallam Tribe
1033 Old Blyn Highway
Sequim, WA 98382

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JIMMYCOMELATELY ECOSYSTEM RESTORATION: LESSONS LEARNED

Electronic copies of this report are available at:
http://www.jamestowntribe.org/jstweb_2007/programs/nrs/nrs_jimmy.htm.

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Spawning summer chum salmon in Jimmycomelately Creek (Dave Shreffler)

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INTRODUCTION

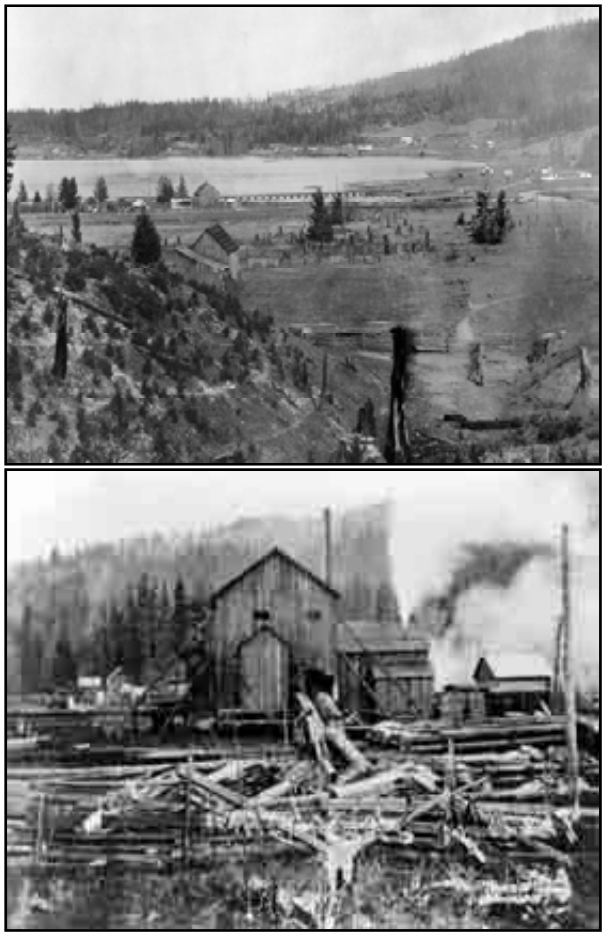
Dave Shreffler :: Shreffler Environmental

Intended Audience for this Report

The following summary of "lessons learned" is intended to serve as guidance to other restoration practitioners embarking on projects similar to the Jimmycomelately Ecosystem Restoration Project (The Jimmy Project). Most restoration projects face a range of technical, engineering, financial, social, and political challenges—The Jimmy Project was no exception.

Our goal with this report is to provide an objective and accurate assessment of what worked and what did not work in addressing these challenges. We recognize that restoration is an inexact science. We share our experiences, both the successes and the failures, in the hope of furthering the art and science of ecosystem restoration.

This report is not intended to be a data-rich, post-project analysis of how the restored ecosystem is functioning relative to the performance criteria we established pre-project. We intend to produce such a data synthesis report in the future, when enough time has passed to rigorously assess the post-project changes in ecological processes, habitat conditions, and biological responses.



(Photos Jamestown S'Klallam Tribe archives)

Project Need

The Jimmycomelately Watershed comprises an area of 15.4 square miles, with Jimmycomelately Creek (JCL) being the major tributary flowing into Sequim Bay. JCL is an unfortunate example of human degradation of natural ecosystems. In contrast to the network of structurally and functionally connected habitats that historically occurred in JCL and lower Sequim Bay, the existing habitats were isolated and fragmented.

Development of south Sequim Bay began in the late 18th century with logging, roads and development, railroad construction, dredging,

wetland draining, filling, and diking. JCL Creek itself was relocated, channelized, straightened, and constricted by roads and fill to facilitate farming and the settlement of the community known as "Blyn" (see top photo previous page, circa 1920). In the late 1800's, wetlands were filled and converted for the Old Blyn Shingle Mill (see bottom photo previous page) and a log yard that was in operation until the late 1990's. In addition, native vegetation was removed, and non-native vegetation became established on the fill and dikes.

The history of degradation and fragmentation of the Jimmycomelately Watershed is described in greater detail in *A Preliminary Plan for Restoring Jimmycomelately Creek and the Lower Sequim Bay Estuary* (Shreffler 2000), which is downloadable as a PDF file from:

http://www.jamestowntribe.org/jstweb_2007/programs/nrs/nrs_jimmy.htm

The cumulative effect of human activities was fragmentation of the natural landscape into smaller pieces with diminished functions and services for both natural resources and people. This dysfunctional state: (1) limited the ability of JCL and the estuary to provide optimal feeding, rearing, and breeding habitats in support of critical biological resources, including ESA-listed summer chum salmon, other anadromous fish species, shorebirds, shellfish, and waterfowl; (2) placed property owners and local, state, and tribal infrastructure at a greater risk of flood damage; and (3) highlighted the urgent need to develop and implement integrated restoration actions in JCL and the estuary.

In the late 1990's, the Jamestown S'Klallam Tribe, Clallam Conservation District, Clallam County, Washington Department of Fish and Wildlife, Washington State University Cooperative Extension, and many other partners began to address the two major problems in the watershed: declining fish populations (only 7 adult summer chum salmon returned to spawn in 1999) and annual flooding of Jimmycomelately Creek and its estuary.

The Birth of "The Jimmy Project"

A wall of water, sediment, and wood roared over the top of Highway 101. Whole trees bulldozed their way downstream. The incessant chatter of rock on rock was deafening. Washington State Highway Patrol responded quickly, shutting down the Highway to traffic in both directions.

Flood waters overtop Old Blyn Highway, New Year's Day 1997 (Randy Johnson)

It was New Year's Eve 1996 and the entire flood volume of the Jimmycomelately Creek watershed could no longer squeeze through two undersized 6-foot diameter box culverts. Decades of land and creek alterations had finally come to a head. The Jimmycomelately ecosystem was out of whack.

The Jamestown S'Klallam Tribe, known locally as "the welcoming people," opened impromptu shelters to stranded travelers. Westbound travelers were offered hot drinks and a warm place to stay at the Jamestown Community Center. Those headed east were similarly welcomed at the 7 Cedars Casino. No one was hurt. No one died. The situation could have been far worse.

On New Year's Day 1997, Highway 101 reopened, but water was still flooding across Old Blyn Highway, downstream of 101 (see photo next page). The Clallam County Public Works Department asked Randy Johnson, a fisheries

biologist with the Washington Department of Fish and Wildlife, to attend an emergency meeting at Jimmycomelately Creek between the County and a group of concerned local citizens. The County wanted an emergency permit from Randy to dredge the creek in the immediate vicinity of the Old Blyn Highway Bridge to return the flow to its channel.

Mud at the Howe property, New Year's Day flood 1997 (Randy Johnson)

According to Randy, when he arrived for the meeting there was still an angry brown torrent of water blasting down the dysfunctional Jimmycomelately Creek channel "like it was shot out the end of a fire hose."

After discussing the permitting details, several folks, including John McLaughlin, the owner of Rosemary's Garden on the south side of Highway 101, lingered to continue the conversation and take photos. Randy and John spoke about not only what they were seeing, but also the changes they hoped to see.

John described the local landowners' years of frustration with the flooding problems (see photo above). Randy offered his observation that the creek and estuary habitats were severely degraded and fragmented, placing threatened summer chum salmon at risk of extinction. In this one relatively brief conversation, John and Randy found common ground, the potential for a solution that could solve both the flooding problems and the habitat problems. Neither offered prescriptions for what to do or how to do it, but they had formed a fortuitous alliance.

That morning, with Mother Nature as midwife and Randy and John as doulas, "The Jimmy Project" was born.

The surprise birth of Jimmy led to the dramatic confluence of ideas and commitments. As with any newborn, Jimmy required a lot of care and feeding and the Blyn Community and 26 other partners rose to the occasion, exemplifying the adage that "it takes a village to raise a child."

The rest of the story we will tell in this report is one of the power of restoration; the power to heal not only a wounded landscape but people's connection to the land and each other. Like proud parents, we will share the lessons we learned with young Jimmy.

Project Vision and Goals

The Jimmy Project was an attempt to remove, to the extent possible, human infrastructure and stressors on the Jimmycomelately-Sequim Bay ecosystem and thereby restore more natural ecosystem processes and functions. Stated simply, the partners dubbed the project: "A vision of undevelopment." The sense of a unified vision among the multiple project partners not only gave the project needed momentum, but also led to the cooperative spirit that was a hallmark of this project.

The unofficial mantra of the Jimmy Project partners was: It's amazing how much can be accomplished when no one cares who gets the credit. This quote has been attributed to Ann Seiter, the former Natural Resources Director for the Jamestown S'Klallam Tribe.

Project goals established by the partners included:

- Restore in perpetuity the river and estuarine habitat of JCL Creek and South Sequim Bay for fish, shellfish, waterfowl, and wildlife;
- Reduce flood hazards to homes, roads, and utilities;
- Improve water quality;
- Monitor and evaluate the project as a model restoration program; and
- Keep the community involved.

To accomplish these goals, technical experts recommended realigning JCL Creek into one of its historic sinuous channels, reconnecting the link between the creek and the tidal actions of the estuary, and restoring estuary habitat. Restoration actions included removal of fill and roads, the construction of a new Highway 101 bridge, revegetation with native trees and shrubs, and land acquisition required to accomplish the restoration goals; also included in the project were low-impact public access and small-scale educational activities.

Project Phases

Between 1997 and 2001, a number of critical restoration planning activities took place: extensive partnerships were formed, the local community became vocal supporters of the project, grant funding was secured, properties were acquired, restoration plans were written, and engineering drawings were completed. The Jimmy Project was then implemented in four phases between 2002 and 2006 (see graphic next page).

Phase 1: Channel Realignment (Completed 2004)

Channel construction began in July 2002, with the Clallam Conservation District, Jamestown S'Klallam Tribe, and U.S. Fish & Wildlife Service leading the effort. The new JCL channel was located west of the former channel, and was designed to meander naturally in a stable manner both in the freshwater and intertidal areas. Channel realignment construction occurred over three summers and was completed in 2004. In addition to channel realignment, over 700 pieces of large woody debris were placed in the channel and floodplain, and over 10,000 shrubs and trees were planted. Over time, the large woody debris (lwd) and native plants placed there will form habitat, and increasingly control the channel form and processes.

Phase 2: Estuary Restoration / Fill Removal (Completed 2005)

Estuary restoration was dependent on property and easement purchase and funding. The following estuary restoration activities were accomplished:

- Remove log yard pier & wetland fill (Completed in 2003);
- Restore log yard to 1870 shoreline (Completed in 2004);
- Remove Log Deck Road (Completed in 2004),
- Remove creosote-treated log yard pilings (Completed in 2005);
- Realign Dean Creek (Completed in 2005);
- Restore Sequim Bay RV Park area (Completed in 2005);
- Remove fill from "delta cone" area at the former creek mouth (Completed in 2005);
- Remove Old Blyn Highway (Completed in 2004);
- Provide public access and interpretation (Olympic Discovery Trail completed 2005; interpretation ongoing).

Phase 3: New Highway 101 Bridge (Completed 2004)

A new bridge was constructed over the realigned JCL channel to accommodate JCL flood flows, allow sediment transport to Sequim Bay, and improve fish and wildlife passage. The JCL channel previously flowed through two 6-foot box culverts, which were not large enough to accommodate flows in the former armored and straightened channel.

The Four Phases of the Jimmy Project (Randy Johnson)

Phase 4: Diversion of Creek Flow (Partial Diversion 2004, Full diversion 2005)

> Within 24 hours of diverting Jimmycomelately Creek into its new channel, adult coho salmon were seen swimming upstream to spawn.

The stream flow was diverted into the new JCL channel in October 2004 after bridge completion and the first three estuary restoration actions described above. However, adult summer chum had already spawned in the old JCL channel prior to diversion. An engineered structure was placed between the new and old channel to meter up to 10 cubic feet per second of water into the old channel to allow the chum eggs to develop that fall and the fry to out migrate the following spring. During the spring of 2005, more than 20,000 fish—mostly rainbow trout and cutthroat trout residing in the old JCL channel below the diversion point were trapped and removed before the flow was cut off to the old channel. In the summer of 2005, an earthen plug finally closed the old channel, and was planted with native trees and shrubs according to the Clallam Conservation District's revegetation plan.

Project Timeline and Budget

The Jimmy Project was a 10 year, nearly $7 million restoration project involving 27 partners. The project has received local, state, and national recognition, as well as several environmental awards.

The first table illustrates the complexities of a restoration project of this scale. We show the estimated **project timeline** in 2000, revised timeline in 2002, and 2006 actual timeline for each of the project phases.

A detailed narrative of the project timeline between 1991 and 2000 is provided in *A Preliminary Plan for Restoring Jimmycomelately Creek and the Lower Sequim Bay Estuary* (Shreffler 2000).

	2000 Estimated	2002 Revised	2006 Actual
Restoration Planning	'97 to 01	'97 to '02	'97 to '05
Channel Realignment	'01	'02	'02 to '04
Estuary Restoration	'01 to '02	'02 to '03	'03 to '05
Bridge Replacement	'01	'03	'04
Diversion of Existing Creek Flow	'02	'03	'04/'05

As with the timeline, the project budget was also a moving target. The table below summarizes the estimated **project budget** in 2000, revised budget in 2002, and 2006 actual budget.

	2000 Estimated	2002 Revised	2006 Actual
Restoration Planning and Monitoring	??	$470 k	$ 262,500
Channel Realignment[a]	$250 k	$400 k	$ 450,000
Estuary Restoration[a]	$350 k	$575 k	$1,200,000
Bridge Design and Construction	$595 k	$980 k	$1,400,000
Acquisition	$1.3 M	$1.3 M	$2,645,000
Other contributions[b]			$1,000,000
TOTAL	$2.5 M	$3.8 M	**$6,957,500**

[a] These costs included design, engineering, construction, and revegetation.

[b] Other contributions include staff time of partners, the costs of project monitoring since 2006, vegetation management and maintenance, interpretive signs, Olympic Discovery Trail construction, and Washington State Department of Transportation acquisition of the Eng Property.

> In every phase of our restoration planning, we were at least one year off in our timeline projections and for some phases several years. The project also cost more than two times as much as our original budget.

PARTNERSHIPS &COORDINATION

Byron Rot :: Jamestown S'Klallam Tribe

> This was a bottoms-up restoration project demanded-by and responding-to a local need to reduce flooding, which aligned with improving fish habitat.

Because the Jimmy Project responded to a local need, many community meetings were called early on to get input and to generate support for the conceptual restoration plan. There were several key turning points during the first year of the Jimmy Project:

- On January 1, 1997, Randy Johnson (WDFW area habitat biologist) and John McLaughlin (one of several landowners affected by flooding) met while the flooding was taking place and agreed that habitat restoration and flood relief were one and the same.
- Marycile Olexer, the leader of a landowner outreach effort called the "8 Streams Project," was able to immediately step in and contact landowners, coordinate meetings, and keep the Jimmy Project moving in its inception.
- The Jamestown S'Klallam Tribe fully supported the project and invested substantial staff time to move it along. The project area is within the Tribe's Reservation.
- At a public meeting on June 10, 1997, Randy Johnson effectively illustrated the root cause of the flooding problems and the poor salmon habitat in a presentation called "The Sturgeon and the Moon." This educational presentation clearly explained the connection between tidal energy, river energy, and habitat degradation, and resulted in overwhelming support for the Jimmy Project from the public.

Project genesis and landowner outreach (1997-1999)

The early stages of the Jimmy Project were focused on developing support from local landowners and relationships among the potential project partners. There was no identified project "lead" and no committees in these early stages. There was simply a group of potential partners referred to (rather loosely) as the *Full Group*.

Who was at the table in the beginning and why? From 1997 to 1999, the Full Group of partners consisted of the following:

- Washington State Department of Transportation (WSDOT): Hwy 101 was closed New Year's Eve (1996) due to flooding and several landowners complained about flooding to WDFW and the County. Later JCL served as a WSDOT wetland mitigation site for Hwy 101 improvements in the Blyn basin.
- Clallam County Department of Community Development (DCD): Old Blyn Hwy (OBH) is a county road, and the County Roads Department was accustomed to dredging the creek under OBH every few years. In the late 1980's and early 1990's one could walk under the OBH bridge (Brad Sele, personal communication). Jimmycomelately Creek was the #2 priority county-wide for restoration (Joel Freudenthal, meeting notes 1998). Some residents called for the County to dredge the entire lower JCL from Hwy 101 downstream to the mouth, which the County was reluctant to do given cost, fisheries impacts, and precedent.
- Washington Department of Fish and Wildlife (WDFW): WDFW issued the Hydraulic Permit Approvals (HPA's) for dredging and was looking for alternatives. Annual dredging was dealing with a symptom, not the problem (i.e. loss of tidal prism), as illustrated by Randy Johnson's "The Sturgeon and the Moon" presentation.

- Washington State University Cooperative Extension (WSU): Marycile Olexer served as the initial project coordinator from 1997-1999 through the 8 Streams Project, which implemented water quality plans for small streams in eastern Clallam County.
- Jamestown S'Klallam Tribe (JST): Prior to 1997, the Tribe had plans to develop the land as a golf course where the creek was relocated. The Tribal Council supported restoration of JCL Creek as long as this was agreeable to other landowners and did not conflict with the Tribe's development goals for the Reservation. In 1999, the Tribal Council formally agreed to donate the land to the Jimmy Project. The Tribe staffed the project coordinator position from 1999 to 2001 (Linda Newberry), and hired Sam Gibboney of Gibboney Management Services (now ISE Consultants) as project coordinator from 2001 to 2005.
- Clallam Conservation District (CCD): In the mid to late 1990's, CCD was focused on stream restoration through the Jobs in the Woods and Jobs for the Environment programs, and the Jimmy Project fit into their county-wide strategy. Clallam Conservation District applied for and received a Centennial Clean Water Grant to move the JCL channel, even before it became apparent that land would need to be acquired, or the design for the channel realignment was completed. The CCD funding for channel relocation was not nearly enough, and that became apparent once design and engineering were completed. The CCD later led the design and construction of the channel relocation.
- Landowners: Local landowners were especially interested in solutions that reduced flooding of their properties. John McLaughlin, a retired executive and owner of Rosemary's Garden adjacent to the Jimmy Project, represented landowners on the subsequent *Technical Team*.

Project conceptual design and organization of work groups (1999-2005)

Once local support had been garnered, the Full Group shifted its focus to how to implement the project: where would restoration occur, what land needed to be purchased, what agencies and governments should participate, and how would the project be funded? Property acquisition, grant-writing, and project outreach were an early focus of this phase. The draft scope of work from May 1998 served as a starting point. At this point, Clallam County was leading the project with project coordination from JST.

In fall of 1999, only 7 ESA-listed summer chum returned to JCL Creek; with the stock at risk of extirpation, the WDFW *Broodstock Recovery Program* began. Since 1999, a group of local volunteers contributes an average of 500 hours annually assisting with the broodstock recovery program, which is scheduled to end no later than fall of 2010.

By April 25, 2000, the Full Group made the decision to form an *Executive Committee* (JST, DCD, CCD, WDFW) as the policy decision-making body, and a *Technical Team* (JST, DCD, CCD, WDFW, WSDOT, Environmental Protection Agency [EPA], landowners) to come up with a conceptual design for the restoration project. The Full Group continued to meet infrequently thereafter.

Broodstock Recovery Program (Dave Shreffler)

By June 2000, the Executive Committee had established project goals and objectives. They prioritized the following tasks in alignment with available funding: property acquisition, channel relocation, bridge design and construction, estuary design and construction, and permitting.

Subsequently, the Technical Team evolved into the *Channel Design Group* (CDG) comprised of CCD, JST, WSDOT, WDFW, EPA, DCD, one landowner, and JST consultants, and the *Estuary Design Group* (EDG) comprised of JST, WSDOT, WDFW, DCD, EPA, and JST consultants. These groups provided technical design input to the Jimmy Project throughout construction. Various other agencies had representatives attend the CDG and/or EDG meetings sporadically, including Clallam County Roads Department, Clallam County PUD, and Peninsula Trails Coalition (PTC).

The Clallam Conservation District provided the Project Engineer for the JCL channel realignment, and from 2002 through 2005 the natural resources staff from the Jamestown S'Klallam Tribe and their consultants provided construction oversight for the realignment. A different consulting firm, ESA Inc., was hired as the Project Engineer for the estuary. From 2003 through 2005 the Jamestown S'Klallam Tribe and its partner consultants provided construction oversight for the estuary restoration.

As early as 2000, several potential funding partners were interested in the Jimmy Project, including Ducks Unlimited (DU) and the US Army Corps of Engineers (the Corps). In both cases, each organization wanted to lead the design, engineering, and construction of the project. The Executive Committee also investigated hiring a consultant to design, engineer, and construct the project. In the end, the Executive Committee decided to use the partners' expertise to design and oversee construction, instead of hiring it out to a consultant, DU, or the Corps.

The Jimmy Project *Funding Partners* were: USFWS, Aquatic Lands Enhancement Account (ALEA), Salmon Recovery Funding Board (SRFB), Washington State Department of Ecology (Ecology), Bureau of Indian Affairs (BIA), Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture Farm Services Agency, U.S. Forest Service (USFS), and EPA.

The Jimmy Project *Design Partners* were: WDFW, Clallam County (Community Development, Roads, and Emergency Management), JST, CCD, WSDOT, EPA, Battelle Marine Sciences Laboratory, Natural Resources Conservation Service (NRCS), US Fish and Wildlife Service (USFWS), Puget Sound Action Team, DU, the Corps, USFS, WSU, North Olympic Salmon Coalition (NOSC), and many, many volunteers.

Volunteers contribute hundreds of hours annually to the Jimmy Project on a diverse range of tasks, including the broodstock recovery program, replanting native vegetation, water quality monitoring, bird surveys, beach seining, and Olympic Discovery Trail maintenance.

Volunteers planting Camas (Dave Shreffler)

Lessons Learned

- *A unified vision and clear goals* are integral in developing and sustaining partnerships.
- *Be opportunistic.* A project of the scope and scale of the Jimmy Project faces many challenges. It's critical to be opportunistic at all phases of the planning, implementation,

and monitoring of a restoration project. There were multiple times when the Jimmy Project could have failed, or at least been significantly delayed, without partners viewing challenges as opportunities for creative thinking.

- *Communication is critical*. The Jimmy Project ran into many difficult situations due to not enough communication between the partners; this occurred despite having open communication pathways and a competent coordinator. Because this was such a complex project, each project partner had significant contributions to make. For example, our point of contact to Clallam County was through Natural Resources Department staff, who were participating in the restoration design discussions. Yet, our project needed to build a bridge on Hwy 101 and to locate the Olympic Discovery Trail through the project area; both tasks required us to be in contact with County Public Works and on their project schedule. Public Works was not brought into the planning process soon enough and they had to scramble to manage the Hwy 101 bridge construction, as discussed in greater detail in the Olympic Discovery Trail Section.
- Invite funding agencies to be partners early in the process. This project was funded on the fly. When we started channel construction, we didn't even have enough funding for that piece, let alone estuary restoration. In part that was due to our low restoration cost estimates (see Introduction Section Project Timeline and Budget), and in part it was due to individual grant funding caps that rarely will finance an entire restoration project. Although granting agencies ask for ecosystem-level restoration, they lack the capacity to fully fund projects at that level. Numerous grants were needed to complete the Jimmy Project. The agencies that initially funded the project did so based upon solid grant writing, our restoration concept, and graphics (See the Graphics, Photos & GIS Section). As the scope of the Jimmy Project grew, we were able to attract additional funding agencies as partners. We used the leverage of "a project in process" many times to secure additional funding. We were fortunate. In hindsight, we would not recommend asking for money before you're certain what you're going to do with it.
- *Think outside the box*. We had numerous project-killing hurdles to overcome. For example, one key landowner did not like the appraisal of his property and refused to sell a property that was essential to our channel realignment. Due to grant funding constraints, we could not offer more than the 10% above appraisal, and the Jimmy Project seemed doomed. However, WSDOT needed a wetland mitigation site and could acquire this key property "under threat of eminent domain", allowing them to pay the modestly

The restored JCL estuary at high tide, November 2007 (Dave Shreffler)

higher amount the landowner required as well as all the landowner's real estate costs. WSDOT designed that portion of the project, which became a subset of the larger Jimmy Project as discussed in the Property Acquisition & Funding Section. Another example is the foresight of the CCD to enroll the JCL channel in the CREP program before it was even built, in order to take advantage of additional funds and needed match. This required extensive negotiation and special permission from USDA, but made the channel construction possible.

- *Partners have their own needs that may be different than the project needs*. Find out what the partners needs are and fulfill them. You may find out your partners' needs at your most vulnerable moment. It is important to be kind and willing to compromise; we all have responsibilities to our organizations and governments. For example, the PUD had power poles and lines adjacent to Old Blyn Hwy, along the portion of the road we wanted to decommission. We had brainstormed several ideas with the PUD on what to do with those poles (i.e., leave the poles in place, remove the poles and construct new towers out of the estuary, remove the poles and bury the lines), but we had never reached a final agreement. We were advised by another project partner that the road preceded the power lines and to not worry about removing the poles in the estuary, because PUD has lines across other estuaries. On the other side, PUD thought we were going to saddle them with the cost of moving their existing poles out of the estuary and building expensive new towers. PUD threatened a lawsuit. This potential project shut-down issue was resolved through compromise, during an impromptu field meeting. The Jimmy partners agreed to build an "at grade" road for PUD emergency access to their existing poles, which would stay in place. Wetland vegetation is now colonizing portions of this road. This incident also underscores the need for absolute clarity regarding utility movement and/or alteration, and the need to put any agreement in writing so that there is less chance for misunderstanding.
- *Landowner cooperation and community support are critical to the long-term success of a restoration project*. The most successful restoration projects are typically those for which the community is involved from the beginning. The Jimmy partners did not approach the community with a completed design and a "this is what we're going to do" attitude. The community was invited to take part in the restoration discussions and the eventual solutions, and most (but certainly not all) landowners were supportive of the Jimmy Project from the start. So, while the restoration process can be characterized as mostly collaborative and cooperative, there were many difficult landowner negotiations along the way, as discussed further in the Property Acquisition & Funding Section.

Oblique aerial photo of the restored Jimmycomelately Creek and Estuary in 2006
(David Woodcock, Greywolf Photography)

RESTORATION PLANNING

Sam Gibboney :: ISE Consultants

From Ideas to Reality

The need for restoration is discussed in the Introduction Section and in greater detail in *A Preliminary Plan for Restoring Jimmycomelately Creek and the Lower Sequim Bay Estuary* (Shreffler 2000).

Property Acquisition

The Jimmy Project could not have happened without the acquisition of essential properties. The intricacies, frustrations, and rewards of our property acquisition efforts are discussed in the Property Acquisition & Funding Section.

Design and Process

The conceptual design for the Jimmy Project was completed by the Channel Design Group (CDG) and the Estuary Design Group (EDG). Three reports were developed that guided and documented the design process for JCL Creek and the Lower Sequim Bay Estuary:

- *A Preliminary Plan for Restoring Jimmycomelately Creek and the Lower Sequim Bay Estuary* (Shreffler 2000)
- *Jimmycomelately Creek – Lower Sequim Bay Estuary Restoration Project: Channel Design for Realignment of the Jimmycomelately Creek Channel* (Shreffler et al. 2003)
- *Jimmycomelately Creek – Lower Sequim Bay Estuary Restoration Project: A Conceptual Plan for the Lower Sequim Bay Estuary* (Shreffler 2003)

These reports are downloadable as PDF files from:

http://www.jamestowntribe.org/jstweb_2007/programs/nrs/nrs_jimmy.htm

Three critical events illuminated the urgent need for restoration of the JCL creek and estuary: the 1996 New Year's Eve storm that closed Highway 101 and stranded motorists; the return of only seven summer chum salmon to JCL in 1999; and the federal listing of summer chum salmon as threatened under the Endangered Species Act.

Channel Design

The channel design was arguably the most complicated aspect of the restoration design. The above referenced report (Shreffler et al. 2003) details the channel design process. The channel design benefited tremendously from the multi-discipline team and rigorous peer review. The project also benefited from blending of two very different design approaches. These approaches can be characterized as numerical-modeling based and ecosystem-function based. The conversations and debates between the holders of these approaches were nothing less than educational and humorous, and yet the tension between these approaches continued right through construction.

A primary Project Goal was to relocate Jimmycomelately Creek into one of the several historic creek channels that we hypothesized had existed in several swales across this valley. Yet what we observed during construction (excavation) of the new channel and floodplain, were only wetland soils (e.g. see "During Construction" graphic, page 24). There was no indication in the soil record that the creek had been located there since glacial times (i.e. there was no gravel in the soil record). How did this occur? Our soil tests did find gravel farther east. However, during engineering, we had to meander more widely to reduce channel grade. We also decided to locate the channel near the existing forest cover, which also pushed the channel to the west. After these

decisions and design changes had been made, we never went back to dig new test pits along the channel centerline to see whether this new design was still in a historic channel location. Sometimes it's the simple, overlooked details. Another $1000 spent on test pits may have resulted in an entirely different design or, at the very least, a different construction method.

Estuary Design

With the exception of the design of the Dean Creek restoration, the restoration of the estuary was arguably not that complicated. The complexity came more in the coordination of all the different property owners, easements, utilities, vehicle access, Olympic Discover Trail route, and project sequencing. The estuary design had to accommodate the needs of partners who were not necessarily directly involved with the detailed planning of the project. The estuary design process is documented in the above referenced estuary design report (Shreffler 2003).

Bridge Design

The design of the Highway 101 Bridge was completed by WSDOT. However, CDG and EDG had to give guidance on many issues. First was whether the bridge would be a clear span or have piers mid-channel – the CDG and EDG insisted on a clear span for ecological reasons. Second, the type of bridge deck affected both the cost and the amount of expected freeboard between the bottom of the bridge and the water surface elevation during a high creek flow (flood) and high tide. Finally, an acceptable protection of the bridge abutments could not impinge on the channel width (i.e. CDG insisted that rip rap could not extend into the channel). Careful review and collaboration between the WSDOT engineers and the CDG and EDG prevented the requirements of 'hard engineering' from over-riding the ecological objectives of the restoration project. The bridge design considerations are documented in the above referenced channel design report (Shreffler et al. 2003).

Design Process

This brief description should not imply that the Jimmy design process was not peppered with sometimes humorous, and sometimes not, episodes of confusion.

The design group members worked together exceptionally well. The CDG and EDG had no ground rules and no formal method for reaching agreement or making decisions. Rather, topics were simply discussed and debated until participants either felt comfortable or gracefully bowed out of the group, as was the case with one member of the CDG. It was not exactly a consensus-based process, as there was no polling. Instead, it was a process of truly building trust among the participants and keeping the focus on the intended outcome.

The CDG and EDG typically met at least monthly, and more frequently when critical decisions had to be made. These groups also employed several successful tools. The first tool was the summation and assignment of action items at each meeting. These action items were reviewed at the start of each meeting, and while it may seem simple, assignment of action items served to keep the group on track and making progress.

The second tool was the use of a laptop computer and projector, which allowed maps and aerial photos to be easily viewed by the entire design groups. The design groups were also fortunate to have Randy Johnson, who is exceptionally skilled with photo editing software. Using a combination of Geographic Information System (GIS) and Adobe Photoshop, Randy could mock up a design idea in real time, allowing the group to discuss the proposed design then and there. This was an immensely helpful and time-saving technique, especially in comparison to trying to achieve the same end result via multiple phone calls and emails. The importance of graphics, photos, and GIS were so critical to the restoration design

process that they are discussed in greater detail in the Graphics, Photos & GIS Section.

Lastly, each design group member accepted the responsibility of communicating issues to their respective agencies or governments. The overall project contained many elements and a multitude of issues that needed to be coordinated with various departments. Completing this "internal homework" kept the design group productive and making progress, but also demanded a lot of time and participation from partners – much more than anyone anticipated originally. While the dedication of partner time and resources was absolutely necessary to accomplish the project, there was some tension and friction caused by the level of effort demanded.

One seemingly simple but essential item was the agreement on elevation datum. Some maps and elevation data were referenced to Mean Lower Low Water (MLLW) and some to the North American Vertical Datum (NAVD 83). We learned early on that biologists are more used to MLLW and the engineers NAVD. The difference was about one foot and the group learned to double check which datum reference was being used. (Nevertheless, we still had an error when de-constructing the Sequim Bay RV Park, see Section 10.0). As one of the biologists was fond of reminding us: "Engineers are a different species" – or so the biologists thought. By the end of the project, both disciplines were at least conversational in each others language and could translate their needs and perspectives. Without this level of communication and understanding between biologists and engineers, many restoration projects fail.

Landowner Coordination

The project was also very fortunate to have the full support and cooperation of one of the key landowners, John McLaughlin. John was the same resident that had the serendipitous conversation with Randy Johnson in the aftermath of the New Years Eve storm. John served as a liaison with the other property owners keeping them apprised of design efforts and bringing their concerns to the table. The value of this neighbor-to-neighbor communication can not be over-stated. John brought an outside perspective not encumbered by bureaucratic wrangling. He also brought his "golden shovel" to meetings, laying it on the table as a reminder that it was imperative that we get passed all the seemingly endless design discussions and actually get to the point of turning dirt.

Not all landowner relations went smoothly and the challenges that did arise were almost always a result of poor communication. For example, a misunderstanding of the channel clearing limits led to an upset adjacent landowner. Though this property owner had been shown the engineering drawings, the drawings were not sufficient to communicate the full extent of the clearing, as explained further in Section 10.0. Regular and frequent communication with all affected landowners was needed.

Lessons Learned

- *Approach the overall design with an open mind.* The project will undoubtedly turn out differently than any one person imagined. But by incorporating many points of view, it will likely turn out better.
- *Understand which project elements are critical to the project success and which are not.* This may not be as obvious as it sounds, because what is "critical" often varies by individual. However, by asking the question "Can the project proceed without this element?" when problems are encountered, the design group can usually determine which elements are truly mission critical.
- *Find the method of decision making for your group that results in trusting relationships.* We did this without votes and role calls. Remember, it is far more important to be able to honestly talk to your project partners than it is to get your way on any one decision.

- *Building trust is important, but don't forget to get agreements in writing.* This is especially important for more peripheral partners who may not sleep and breathe the project like you do. Save this formality for large items on the critical path. For example, getting in writing what some members of the estuary design group thought was an agreement to move the PUD utility poles out of the estuary would have served to clarify responsibility, cost, and schedule.
- *Remember that most people don't know how to read engineering drawings.* Restoration practitioners tend to forget this is a learned skill and that most people cannot visualize a three-dimensional world very well from two-dimensional drawings. Recognizing the limitations of construction drawings is especially important in communicating with cooperating and/or adjacent landowners. Find other ways to communicate like flagging in the field and clear photos and graphics.
- *Stay open to "non-restoration" ideas that can make your project successful.* For example, the removal of Old Blyn Highway was only possible because our team was able to justify the building of a new access route to serve remaining property owners. At first glance, this element may not have looked like a typical restoration activity, but in actuality it made the entire project possible.
- *Peer review* of conceptual restoration designs often facilitates the engineering design and permitting process.

Shorebirds feeding near the mouth of Jimmycomelately Creek (Randy Johnson)

Option X Graphic (Randy Johnson)

Aerial photo with graphic overlay used to show proposed actions (Randy Johnson)

Altered photo used to depict proposed conditions (Randy Johnson)

GRAPHICS, PHOTOS & GIS

Randy Johnson :: Jamestown S'Klallam Tribe

The Jimmy Project was large and complicated, involved numerous stakeholders, and needed millions of dollars of funding. Developing the project required extensive communication between the Technical Team and a broad array of people and groups. Unfortunately, Jimmy's complexity made it nearly impossible to give a clear verbal description of the project. Verbal and written narratives could enumerate the project's many elements, but did not convey a clear picture of the overall project. Early meetings became bogged down whenever someone attempted to describe the restoration vision.

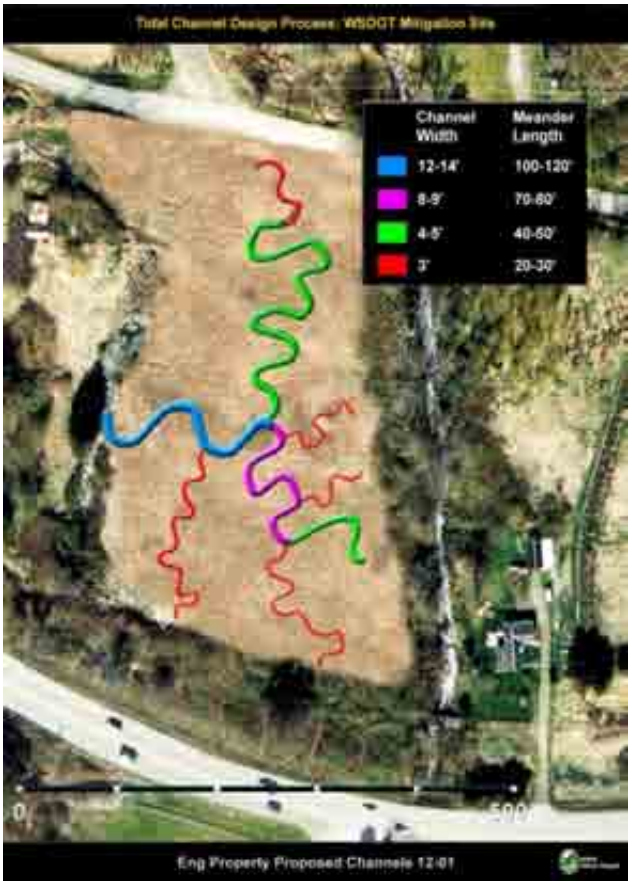
In an effort to enhance our ability to describe the project, we developed the Option X graphic, on the top of the facing page.

The Option X graphic was a communication breakthrough. Viewing the graphic allowed anyone to gain a clear understanding of the restoration concept in moments. We found that the Option X vision appealed strongly to people. Although developed to simply depict the restoration concept, the graphic also became a powerful marketing tool. The original Option X graphic was eventually refined and used innumerable times for a variety of purposes.

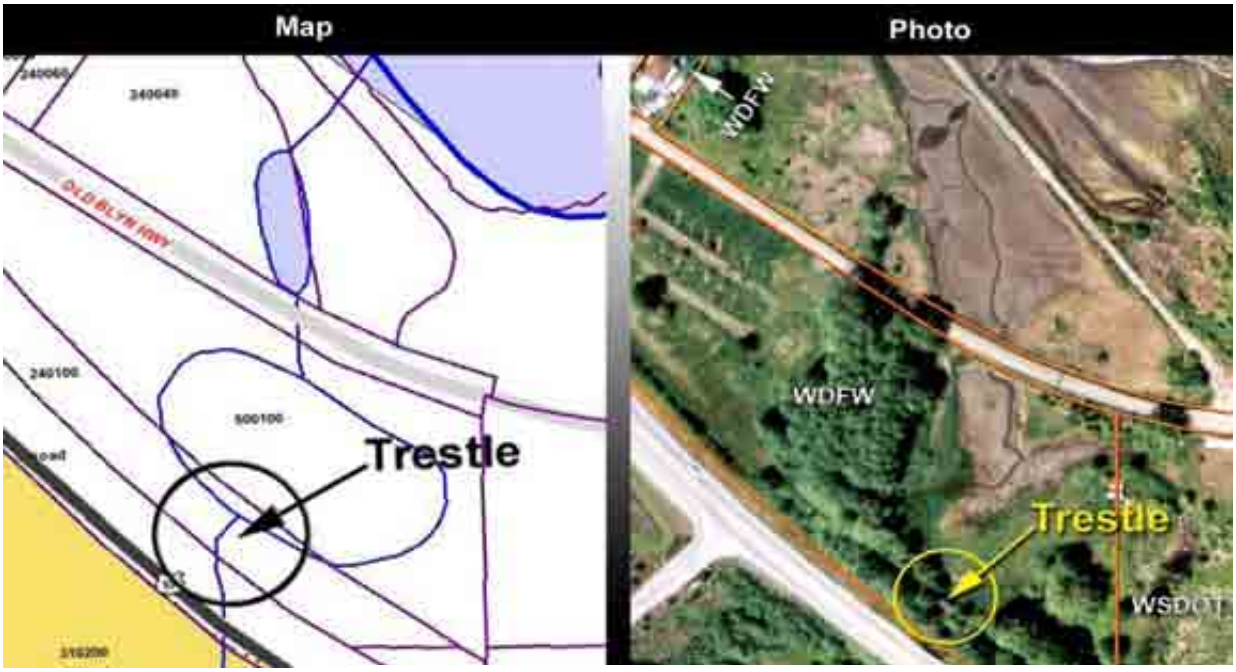
With the success of the Option X graphic, we placed an emphasis upon supporting the Jimmy Project with visual products to the greatest extent possible. Graphics and photos were used for communicating with stakeholders, planning, grant writing, permitting, monitoring habitat changes, and educational and interpretive purposes (see graphic on the bottom of the facing page).

Lessons Learned

Visual communication contributes powerfully to the development and promotion of restoration projects and is vital to the preparation of successful grant applications (see tidal channel design graphic, below). The use of visual communication should be a high priority for all restoration projects. Developing visual simulation products requires that people with high proficiencies in GIS and Photoshop software be included on the restoration team.
Logically, graphics should be information rich. Less obvious is the fact that graphics should also be abstraction poor. For example, high quality photographs should be used in place of traditional maps whenever possible. Maps are abstractions of reality; while photographs are generally perceived to accurately depict reality, making them a more effective communication medium (see graphic, next page, for a Trestle that was removed).



Graphic (Randy Johnson)



Comparison of a map and aerial photo showing the same project element (Randy Johnson)

Essential products for developing effective graphics

Adobe Photoshop Software (latest version)

Of particular importance are the abilities to create "paths" and "layer comps." Although measurements are obtained most accurately using GIS (geographic information system) software such as ArcView, the Photoshop measuring tools are also extremely useful. Presently (2008) Photoshop measuring tools are available only in the "extended" software version. Other software, including ArcView and PowerPoint, can be used to develop graphical layouts, but not to Photoshop's level of sophistication. The great majority of the Jimmy Project graphics seen by the public were developed in Photoshop.

GIS Software

Its ability to provide extremely accurate measurements, utilize elevation data, and easily georectify photos and maps, made GIS an indispensable tool for design work, monitoring habitat changes, and graphics development We developed maps in both GIS and Photoshop.

High Resolution Color Orthophotos

A good set of pre-project color orthophotos (aerial photos taken perpendicular to the Earth's surface) of the restoration site is crucial. These will likely be the most useful photos for depicting current conditions, project elements, and proposed restoration conditions. It is also extremely useful to have photo sets taken annually during the life of the project, and preferably for several years post-project.

Orthophotos should be professionally taken at an altitude of approximately 3,000 feet and with coverage of approximately 4,500 x 4,500 feet. This will render a 9 inch x 9 inch photograph at a scale of 1 inch equals 500 feet. In digital form, resolution should be a minimum of 600 pixels per inch (ppi), which equals 5,400 pixels x 5,400 pixels and a file size (uncompressed) of 83.4 megabytes (Mb).

Color orthophoto with graphic overlay and alterations (Randy Johnson)

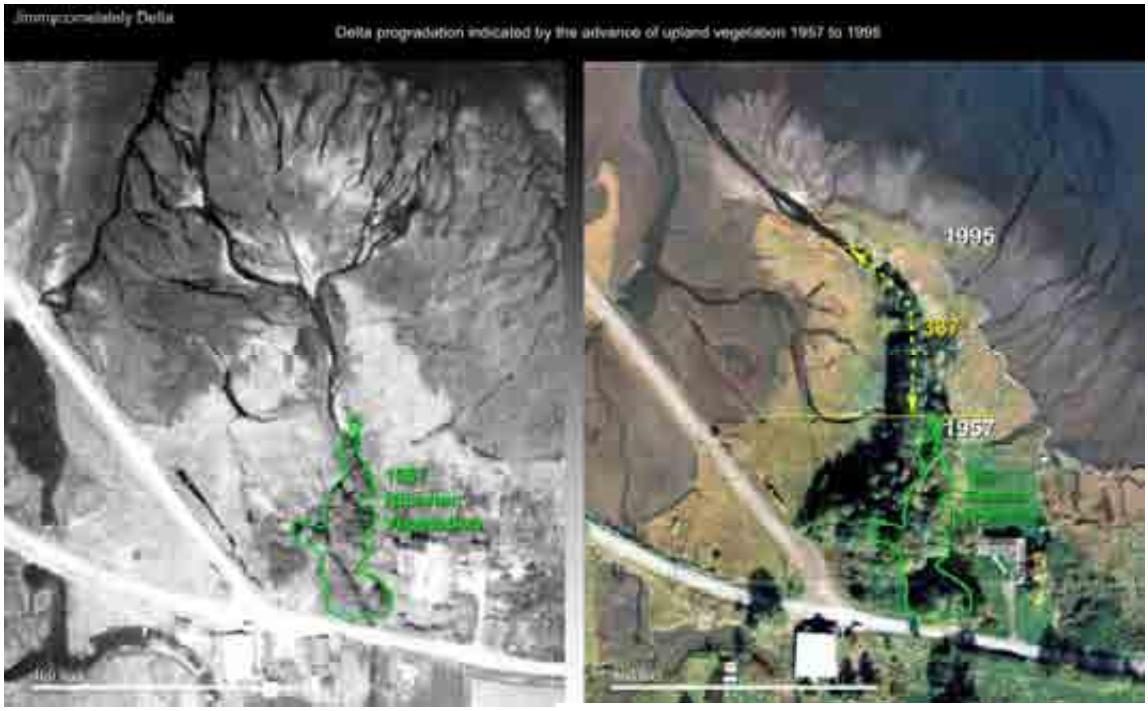
Color orthophoto with graphic overlay used for grant application (Randy Johnson)

Historical photos and orthophotos

Early photos are valuable for illustrating pre-disturbance or evolving conditions at the restoration site. Using historical orthophotos, we were able to document artificially high rates of delta progradation at Jimmy. This information was valuable for understanding the dysfunctional nature of fluvial and tidal energy interactions at Jimmy and then prescribing appropriate restoration measures.

Historical maps

Often human impacts pre-date the earliest photos of the restoration site. Therefore, maps usually provide the best information for understanding pre-disturbance conditions. When projects seek to restore ecosystem processes, as at Jimmy, pre-disturbance site conditions likely represent the best reference conditions for planning. In these cases, historical maps can be invaluable.



Aerial photo with graphic overlay (Randy Johnson)

Historical map and aerial photo with graphic overlay (Randy Johnson)

Oblique aerial photos

Although oblique photos are not useful for measuring or using in a GIS application, they do combine the realism of ground-level photos with the expansive view of orthophotos.

This quality makes oblique photos excellent for depicting the restoration site. Adding labels, lines, and other graphical features increases the information content of the photo enormously.

Aerial photo with graphic overlay (photo: David Woodcock, Greywolf Photography; graphic: Randy Johnson)

Aerial photo with graphic overlay (photo: David Woodcock, Greywolf Photography; graphic: Randy Johnson)

Ground-level photos

Photos taken at ground level provide the most realistic and completely non-abstract depiction of the restoration site and the events that occur there. Because the extent of their view is limited, Jimmy ground-level photos were not the best resource for grant writing, permitting, or planning activities.

Their greatest role has been in the documentation of site-specific activities and conditions. Good ground-level photos are especially useful for documenting before and after conditions and for use in presentations. Collecting an extensive set of pre-restoration, ground-level photos is extremely important.

Ground-level photos (Randy Johnson)

Recommendations

- Early in the development of the restoration project, considerable effort should be given to the collection of orthophotos, oblique aerial photos, ground-level photos, and historical photos and maps. These are the raw materials essential to the production of graphics that:
  - effectively inform stakeholders,
  - assist in technical planning,
  - contribute to successful grant applications.
- All photos should be color corrected. This process should be done in Photoshop using adjustment layers. Once adjustment layers have been created, the photo should be saved in PSD (Photoshop) file format. When the photo is needed for a specific purpose it can be flattened (all the layers combined with the background to create a single-layer photo) and re-saved as a jpeg, tif, or other image file type. The PSD version should always be retained as the master version from which various products are made.
- All your orthophotos and maps should be georectified.
- Orthophotos should be color corrected before being georectified (see graphic below). Whenever color adjustment work is done on a photo that is already georectified, a new RRD file should be produced. RRD files are made during the "build pyramids" process and provide the image seen in the GIS window. To make a new RRD file, discard the existing RRD file, and then run the build pyramids process to create a new one. The new file will display the changes to the photo resulting from the color adjustment work.
- All graphical work done on a photo should be performed on separate layers. For example, lines should not be drawn directly upon the background. Having more layers is better than having fewer. All layers (except adjustment layers) should be given a logical name, otherwise you will quickly lose track of each layer's contents and will waste time turning layers on and off searching for the one you now want to use.

Oblique aerial photo (photo: Aerometric, Inc; GIS: Randy Johnson)

- Graphics products should be saved as layer comps (a state with certain layers turned on and others turned off) within your master PSD file. Having more layer comps is better than having fewer.
- A master PSD file should be created containing all the orthophotos you are likely to use. This is most easily done by the following process:
  - Ensure that the photos are georectified.
  - In GIS, zoom into the desired coverage. For a master file that will be used for many purposes, be sure to have a sufficiently expansive coverage.
  - Export each photo as a separate file. In the export dialog box, set the resolution sufficiently high to match or exceed the resolution of the highest-resolution photo. Then use the same resolution setting for each export.
  - In Photoshop, create a new, empty PSD file that is large enough to contain the exported orthophotos.

> Do not require your audience to use their imagination to visualize the conditions you will create with your restoration project. Make a picture for them.

- Open each orthophoto file and drag the background layer into your new file. Rename each layer, usually to reflect the year or date of the photo. Arrange all the photos directly on top of each other. Place all the orthophoto layers into a new folder named “photos” or something similar. Now you can turn on and off the various photos and maps, which you could already do in GIS. The difference is that now you can use Photoshop’s excellent tools to create superior graphics, save them as layer comps, and produce products of appropriate resolution for print, web, electronic viewing, or PowerPoint use.

Aerial photo with graphic overlay (Randy Johnson)

Oblique view of restored log yard and Dean Creek in 2006 (Dave Woodcock)

Properties involved in making the Jimmy Project possible (Randy Johnson)

PROPERTY ACQUISITION & FUNDING

Lyn Muench

The official Jimmy Project may have been born on New Year's Eve 1996, but efforts to improve habitat and water quality in the watershed had been in the works for at least a decade. Much of this earlier work contributed to the success in finding the funding needed to complete the JCL restoration. Funding and property acquisition are tightly interwoven in this part of the story.

A total of 10 "properties" were needed to accomplish this project. Some of the properties consisted of more than one parcel. Some transactions involved easements, others were direct purchase. Many lessons were learned over the ten plus years we were involved in land and tideland acquisition.

> We succeeded because we persevered in the face of many obstacles, had the support of funding agencies, and were in some cases very lucky.

We used many sources of funding, public and private. Different funding sources have different strings attached. However, every public source of funding requires that an acquisition be supported by an appraisal and appraisal review, and requires that you pay no more than fair market value or at best 10% above that amount. Hence appraisals are absolutely critical. We found appraisals to be quixotic – coming in low when we were dealing with a difficult landowner, and coming in high when a lower cost would have worked better. In some cases, only cash solved the problem. Another requirement for acquisition using public funding is a Phase I Environmental Assessment, and this varied in thoroughness depending on who did the assessment.

The following is a summary of the properties and easements acquired to make the Jimmy Project possible, and the issues associated with each property. Property locations are shown in the graphic on the facing page.

Property Acquisition North of Highway 101 Needed for Restoring Estuary and Dean Creek

The Blyn Log Yard

The first key acquisition was the purchase of the log yard in 2001. This property contained the remnants of the historic mouth of the JCL channel as well as extensive tidelands and intact salt marsh habitat along the lower end of Sequim Bay. The project could not proceed without this acquisition. However, the log yard acquisition was a 10-year saga involving protracted negotiations, failed grant applications, creative juggling of acquisition/restoration funds, the unexpected discovery of toxics on the property, and a complicated road easement.

The log yard had been identified as a potential water quality problem in the Sequim Bay Watershed Management Plan (1991). When the owner, Weyerhauser, put a For Sale sign on the property in 1992, the Tribe contacted them to explore the possibility of purchase. One new piece of information emerged – the active log yard occupied only a small part of the six parcels Weyerhauser owned, which included a broad sweep of tidelands in lower Sequim Bay, and the mouths of both Dean and JCL creeks.
The Tribe was farming oysters on adjacent tidelands, and purchase of the Weyerhauser tidelands as well as removal of the log yard (a suspected water quality problem in Sequim Bay) was a high priority. The Tribe applied for acquisition funds from the US Fish and Wildlife Service (USFWS) for a grant under the North American Wetland Conservation Act (NAWCA), a

fund for wetland acquisition to support migratory waterfowl.

NAWCA Grants are ranked first by the Pacific Coast Joint Venture, an international cooperative entity for the Pacific Coast Flyway from Alaska to Mexico. Our NAWCA application was unsuccessful but we were urged to apply again.

Meanwhile, the Tribe made a valiant attempt to deal with Weyerhauser, with help from the Pacific Coast Joint Venture and others, to no avail. Weyerhauser marketed the property for development (although the For Sale sign slumped into the wetland, surrounded by skunk cabbage.) In the end Weyerhauser sold the property in 1994 to Dunlap Towing, who was operating the log yard at the time. The Tribe then contacted Dunlap to see if they would be willing to sell or lease the tidelands east of the active log yard area. The answer was "not at this time, we have just purchased the property." This seemed like the end of the story.

However, four years later, the Tribe received a call from Dunlap: "We are planning on selling the property, but have not yet put it on the market. Are you still interested?" At about this time the State Department of Fish and Wildlife (WDFW) determined that they would be unable to purchase a wetland in the north end of Sequim Bay, for which they had been awarded a Coastal Wetland Grant from the USFWS, with matching funds from the Washington State WWRP program. The Tribe proposed they contribute to the cost of the log yard property as an alternative, important wetland in the Sequim Bay Watershed, and WDFW agreed.

This piece of luck began a series of grant applications and partnerships that resulted in the end in purchase of nearly the entire JCL watershed north of Highway 101.

The Tribe applied again for a NAWCA grant in 1998, and this time was successful. The ten year detailed record of birds kept by a local Audubon Society volunteer was instrumental in the grant award. Thus, migratory waterfowl financed the first and largest purchase of our envisioned flood and salmon project. An application to the Washington Department of Natural Resources Aquatic Lands Enhancement Account (ALEA) was also successful and provided the non-federal match. We now had state and tribal grants for acquisition and restoration of much of the estuary. WDFW Real Estate Division took the lead in the acquisition process.

The log yard purchase itself was fraught with difficulties. Dunlap Towing was cooperative and patient beyond the call of duty as state appraisal processes and state and federal environmental reviews slowly wended their way. Dunlap's business mindset did not mesh well with the bureaucratic negotiation style of WDFW. The Tribe began to act as a go between, which proved another piece of luck. In 1999 we had the first of several major set-backs: Dunlap had given the Tribe and its partners first priority in the purchase, but a timber company also expressed interest in purchasing the property. In 1999 they made Dunlap a take-it or leave-it offer, which by now Dunlap was tempted to take due to the long delay in purchase. This time the Trust for Public Land came to the rescue, advising the Tribe on its options. In the end the timber company withdrew their offer, perhaps realizing the property had so little development potential, and the Tribal/WDFW purchase was back on track.

The original plan had been for WDFW and the Tribe to divide the property ownership, each taking several parcels. However, a wrangle over environmental assessments created a late-date crisis (see the Toxics Section for a detailed explanation). A single soil test registered above the State standard for petroleum hydrocarbons (TPH), and WDFW felt it could not acquire a property with what it deemed an environmental cloud over it. Seeing no risk, the Tribe offered to purchase the entire log yard using its own grant

funds, and asked WDFW to use their funds on the other acquisitions needed on the north side of Highway 101.

This resulted in a much cleaner line of authority than the original plan, and meant that the Tribe now owned all the tidelands. However, it required the cooperation of both NAWCA and ALEA, our funding partners. In each grant there was a portion of funds for acquisition and another for restoration. The grant budgets assumed that most of the NAWCA funds would go for acquisition and most of the ALEA for restoration, but our ALEA grant was about to expire. Because we had line items in both grants for both actions and the support and cooperation of the two agencies, we were able to switch the acquisition funds and restoration funds around. Nearly all the ALEA funds went for acquisition, with the promise that restoration using NAWCA funds would follow. Similarly, NAWCA administrators were willing to devote most of their grant to restoration, instead of the small amount originally anticipated.

Log Yard Road Easement

> Read all the fine print on the title deed of any prospective property purchase, and imagine the worst case scenario for each one.

The Tribe purchased the log yard on May 11, 2001. However, the story was still not over. An adjacent private landowner had an easement along the "log yard road," which we planned to remove. This log road easement had not been used for many years. There was an alternate route that they had been using, which the Tribe offered to formalize as a new easement in exchange for the log road easement. It became apparent that the landowner would insist on monetary compensation for the log road easement, since the log road easement was on the title deed of the Dunlap purchase. We learned that easements are a tangled web and would probably involve protracted court proceedings to determine the landowner's "loss." Instead we opted to pay and have the "loss" appraised. The landowner's appraiser found the easement had no value. The owner still insisted the easement had value. In the end the Tribal Council offered the landowner an additional cash payment. This was an action that a public agency might not have been able to take, nor could the Tribe have used any public funds for the payoff. The easement was finally extinguished June 17, 2004.

Log Yard Pilings

In 2004 the Tribe successfully applied to US Environmental Protection Agency for Brownfields funds to remove 102 creosote-treated pilings from the log yard. Removal of these creosote-treated pilings (see the Toxics Section for greater detail) completed the cleanup of the former log yard for the benefit of migratory waterfowl and shellfish.

Sequim Bay RV Park

Meanwhile, WDFW had purchased the Sequim Bay RV Park, which involved a complex relocation process for the remaining tenants, clean-up of an underground storage tank that was not discovered during the Environmental Assessment, and asbestos and lead testing before the trailer used as an office could be demolished. This property contained the area needed for the construction of a tidal basin and channels that would help flush the JCL channel and provide off-channel habitat for juvenile salmonids.

Smith, Kettle, Pressler, and Cronauer Properties

None of these properties acquired by WDFW were essential to the restoration of JCL Creek or the estuary. Nevertheless, these properties significantly improved the overall restoration project by providing adjacent habitat and/or providing a route for the Olympic Discovery Trail through the restoration area.

Gunstone and Richardson Properties

All parties were unsuccessful in purchasing these two properties due to a very large gap between appraisals by a State-approved appraiser and

owner expectations. Both the Gunstone and Richardson properties used the portion of Old Blyn Highway that was proposed for removal. Consequently, since neither property was acquired, a new access route to Highway 101 needed to be constructed. So, while neither property was essential to the success of the project, not being able to acquire these properties added cost and complications to the overall project.

Eng Property

Meanwhile the Tribe had applied in 2000 to the State Salmon Recovery Funding Board (SRFB) to purchase the last remaining major property north of the highway – the Eng Property. Mr. Eng had contacted the Tribe as early as 1994 to sound out its interest in purchasing his property; this was long before the idea of JCL creek realignment. The property was entirely wetlands, and encumbered by a large "dance hall" dating from the early 20th century that regularly flooded, so at the time the Tribe did not pursue purchase. Once the Jimmy Project was born, it became imperative to acquire the Eng Property, because the Channel Design Group had determined the historic JCL channel went through the dance hall.

The appraisal for the property came in significantly lower than the SRFB grant, and not surprisingly the owner refused to sell. It seemed as if the whole restoration project might come to a halt. At about that time, Washington State Department of Transportation (WSDOT) was seeking opportunities for restoration as advance mitigation for three planned highway widening projects in the vicinity that would have wetland impacts. This was a huge stroke of luck, because WSDOT has the power of condemnation; they can condemn your property for a public purpose, and then negotiate a price with you that can be above appraised value. They were the only agency with the necessary tools to complete negotiations with this particular landowner. Furthermore, they agreed to pay for the restoration of the property – another critical contribution, since the public restoration dollars held by the Tribe and WDFW could not be used in connection with any mitigation. With the cooperation of the SRF Board, the Tribe's SRFB grant was reprogrammed to provide the final funds needed to purchase the log yard.

Old Blyn Highway and Olympic Discovery Trail

Now that all the critical land north of Highway 101 was purchased, one would have thought that restoration could proceed smoothly, notwithstanding the challenges of unanticipated archeological finds and hazardous waste that are described in the Cultural Resources Section and the Toxics Section, respectively.

The final hurdles involved the vacation of the County's Old Blyn Highway, provision of alternate access to the remaining private properties, and construction of the Olympic Discovery Trail (ODT).

> This kind of cooperation from funding agencies only came about because by then the project had achieved such momentum and support from the community.

The County had for years assumed that the trail would go down Old Blyn Highway. In the focus on restoration, none of the project sponsors thought to build in a trail route in the scope of work for any of the restoration grants, although public access would have been an eligible element in all of them. A trail route was eventually agreed upon, more or less along the former railroad right-of-way that crossed three acquired properties now owned by WDFW (see the Olympic Discovery Trail Section for more details on the complicated ODT story). The County applied for ALEA funds to construct the trail, including three bridges. The Tribe applied for another ALEA grant to complete restoration of Dean Creek and the estuary. ALEA grants require public access of some sort, and we were able to present the applications as companions, with the County providing the public access and the Tribe providing the aquatic enhancement component.

But our property woes were still not over. The County insisted on an easement rather than a "right of use" for the trail route. While WDFW could grant right of use, an easement required that they be paid back in land of equivalent value and use, since it constituted a loss of land acquired for restoration. The section of Old Blyn Highway to be removed was identified as a possible "swap", and appraised and found to be of equivalent value. However Old Blyn Highway itself had only right of use, so that once the County vacated the right of way, its width reverted to the adjacent landowners – one was now WDFW, and the other now the Tribe. The only solution was a three-way legal transfer of ownership between the County, the Tribe, and WDFW. It took over a year to arrive at this solution and obtain all the necessary permissions. It was further complicated by another tangle – the need to convert a small portion of the WDFW property known as Cronauer to provide the access easement to the adjacent property owner who had been so difficult in relinquishing the log road easement. It was mere luck that the "solution" – the change of ownership to WDFW from the Tribe's property, purchased with ALEA and NAWCA funds – did not constitute a change of use, or yet another conversion would have had to be negotiated with another state agency, and a federal agency.

If all this sounds complicated, that is the point – property acquisition IS extremely complicated. It is very difficult to anticipate all the nuances of a big restoration project in the early days when you are writing the first grant applications.

Funding the Estuary Restoration

To pay for the estuary restoration, the Tribe applied to the EPA for a competitive pot of Clean Water Act Section 319 funds set aside for Tribes, and subsequently to the USFWS for a Coastal Wetlands Grant. The US Department of Agriculture also gave us significant estuary restoration dollars through its Natural Resource Conservation Service (NRCS) Wetland Reserve Program, as the area had a clearly established history of farming. An EPA Brownfield grant to the Tribe paid for creosote piling removal. While most other grants could be justified as habitat restoration, the Brownfield grant relied on job creation (tribal shell fishing) and creation of "green space" (kayaking – we called it "blue space") to meet grant criteria. With the Tribe's ALEA grant, and contributions from the WSDOT to restore the Eng property, and the County to build the trail, the restoration north of Highway 101 was fully funded.

Property Acquisition South of Highway 101 Needed for Restoring JCL Creek

The upper reaches of the JCL Creek valley are fairly steep and consequently the restored JCL Creek channel needed to contain sufficient meanders in order to lower the channel slope to an acceptable level. The Tribe already owned two properties south of Highway 101 that encompassed the preferred route for the realigned creek. These properties had been purchased for Tribal development, but the Tribal Council agreed to donate the 15 acres of land to relocate the creek and provide a 150' buffer.

The challenge was that the preferred design for the JCL creek realignment would have the new channel encroach significantly onto the McLaughlin Property. Thus, one important property remained – that belonging to John McLaughlin, who had stood observing the 1996 New Year's Eve flood with Randy Johnson. John and his wife, Rosemary, agreed to a conservation easement along the edge of their flower farm (Rosemary's Garden) to accommodate the relocated creek. The Tribe applied to the State Department of Natural Resources Aquatic Lands Enhancement Account (ALEA) for a grant to buy the easement. ALEA grants are for navigable

water – and the Tribe had cultural records of a fishing weir on the JCL. However, the McLaughlins wanted a longer term agreement that the Tribe would purchase the rest of their property at a mutually agreeable time and price. Again the Tribal Council agreed to this, once they were assured by the JCL team that the property could be developed outside of the creek and buffer.

The ALEA grant was awarded in 2000. Appraisal proceeded in an orderly manner and the McLaughlins were extremely cooperative. Meanwhile the Channel Design Group determined that the preferred route for the realigned creek, based on soil tests and preliminary engineering, would also have to involve the Penn property. This brought yet another kind of landowner into the mix; one who was not interested in any kind of sale or easement or other compensation. As long as the project stayed away from a fenced pasture, this landowner was willing to let the project team do whatever they wanted. The landowner contributed 6.3 acres of creek and buffer. This contribution saved the project money and complications. The Clallam Conservation District facilitated the enrollment of portions of the Tribal, McLaughlin, and Penn properties into the Conservation Reserve Enhancement Program (CREP), providing the necessary funding for plantings and 5 years of maintenance, as well as compensation to the landowners for loss of use of the enrolled acreage (a total of 18.4 acres). The three landowners were willing to accept this arrangement, and CREP funds helped a great deal with the restoration process.

Funding the Jimmycomelately Creek Relocation

Funding restoration of the creek relocation was another story in itself. Following the disastrous 1996 New Year's Eve flood, the return of only seven ESA-listed summer chum salmon to JCL Creek in 1999, and the coming together of partners and property owners, restoration planning began. In a burst of enthusiasm, the Clallam Conservation District applied for a State Centennial Clean Water Act grant to relocate the creek and succeeded. This galvanized the partners into detailed restoration planning and engineering that perhaps should have been further along before the Centennial grant was awarded. It turned out that there were conflicting opinions as to exactly how the new creek alignment should be designed, and a protracted period of biological and engineering debate ensued among the partners. It is hard to say whether it was bad luck that the Centennial grant was awarded before the design was settled – or whether it was good luck that the clock started ticking on a $250,000 grant that forced an eventual compromise design for the channel realignment.

The ALEA grant which paid for the McLaughlin easement included a small amount of restoration funds, and about $10,000 for monitoring, at that time an ALEA requirement. In the end, monitoring was paid for with EPA and other funds, and because of the small line item for restoration, we were able to convert the monitoring dollars to restoration work. This was another example of the benefit of putting a number of different activities in a grant, as it facilitates reallocating funds, which would not be possible without those individual line items in the original budget.

Funding for a new bridge over Highway 101 was yet another story in itself, or perhaps two stories. One story concerned the cost of the bridge, the second the sources of funding. To determine the bridge cost, early on in project planning a County biologist requested a cost estimate from WSDOT engineers, which they obligingly provided. When it came time for detailed costing, it turned out that WSDOT had provided only the cost for "the bridge." There was no design cost, no labor, and no mobilization/demobilization of equipment or any other construction-related costs. These estimates are provided by another group at WSDOT. The biologist had no road construction experience, at that point we did not have an engineer as part of our restoration team, and WSDOT did not understand the full scope of the Jimmy Project.

As for bridge funding sources, the JCL culvert under the highway was not deemed a fish passage barrier, eliminating the most obvious source for funding a new bridge. There were no compelling traffic problems either, so the bridge had to be funded with salmon restoration money. This was a hard sell to the Salmon Recovery Funding Board (SRFB). When the SRFB grant was awarded, we all sighed with relief. But the challenges were not over. When the discrepancy in cost estimates was revealed, we had to ask WSDOT for a complete cost estimate, and then go back to SRFB and ask for more of their reluctantly awarded funds. Once again project momentum, strong support at the County and State level, and cooperation of the funding agency prevailed. A final blow came at the eleventh hour: all bids were significantly above the new WSDOT estimate, which had not allowed for the extra cost of delivering expensive bridge construction items to a distant location on the Peninsula and the extra cost to build concrete bridge columns of differing heights. WSDOT agreed to pay for the cost overruns.

Planning and Design

Grant writing itself takes time. Permitting can be a very daunting and expensive process. Staff time for these tasks was donated by all the partners, and constituted a significant but un-quantified part of total project cost. We used two EPA Wetland Planning Development Grants to hire a coordinator for the design work, and to write the monitoring plans. And the team of partners never gave up; whenever a seemingly impassible blockage occurred, we rescheduled, negotiated, or compromised.

There is always far more planning and design work needed than individual restoration grants will support.

Grant Management

With so many funding sources granted to different partners–all with different match requirements–grant management became a monumental, unanticipated task. It was essential to assign a single person to manage the "match matrix," and to keep the good will of all the partners by ensuring that everyone's grant requirements were met.

Lessons Learned

- *When it comes to property acquisition, remember that there is usually more than one way to "skin a cat."* If one agency is constrained by its policies, another may not be and may be able to legally and ethically complete the deal.
- *Build as much flexibility* into your grant applications as possible and include line items for multiple tasks, so you have the ability to move money around. This applied to the Log Yard Property purchase and the McLaughlin Property easement.
- *Think creatively* to meet every criterion of each granting agency. We used birds, shellfish, flooding, historic farming, a nonexistent but proposed riparian buffer, a pedestrian trail, and even kayaking to fund a salmon restoration project.
- *Read every title deed with great care*, and assume that any conditions on the property will need to be resolved.
- *The first few grants for a large restoration project are difficult to get*. Once the project gains momentum, favorable press, and visibility with the community, funders are eager to share in the success story.
- *Multiple partners bring great strength to a project*, providing a wide range of skills, capacities, and points of view. However, these partnerships can also include conflicting views that have to be resolved, and may take time.

- *Assign one person to manage the match requirements of multiple different grants*.
- *Roads, easements, and indeed all utilities are extremely important when land changes hands*, and are an essential part of the restoration planning process.

A volunteer helps install the estuary restoration sign, April 2007 (Dave Shreffler)

OUTREACH & EDUCATION

Lyn Muench

While public outreach and education were never specific goals of the Jimmy Project, they were essential to implement the project, and one of the primary benefits. Because the project is so visible from Highway 101, people who know and may care little about salmon restoration are aware of the project, think it "looks wonderful," and are highly supportive. Repeatedly we hear this same focus on how the project looks: the clear view across the restored estuary to Sequim Bay, the blooming each spring of the experimental camas prairie, the number of waterfowl visible from the highway, and a myriad of other comments about how pleasing the restored area is to see.

> A photographable moment is worth a thousand words, and especially once we were in the construction phase, supportive articles in the local paper were a regular feature.

As described in the Partnerships & Coordination Section, the first key outreach was to the neighbors, to explain our concepts, and to obtain their input and ultimately their support. Our success was largely due to the spectacular graphics developed by Randy Johnson, and more fully described in the Graphics, Photos & GIS Section.

> Our instinct was to always say "yes" no matter how time consuming or inconvenient providing a tour of the Jimmy Project might be.

The next step was formal outreach, first to potential funders, who had to be convinced of the merit and feasibility of the project. Again, graphics played an important part in securing funding, as well as some good luck, described in the Property Acquisition & Funding Section. The next formal step was the public review process under the State Environmental Policy Act (SEPA).

The SEPA permitting process engendered one or two articles in the local paper, which developed over the years into an excellent source of general public outreach. We staged two major celebrations – a party at the completion of the new Jimmy Creek channel, and a First Salmon Ceremony at the connection of the new creek to the estuary (see photo below). We invited many dignitaries and the press came. We also think the name of our project— "Jimmycomelately" — captured people's imagination.

First Salmon Ceremony, July 8, 2005 (Debbie Preston)

Fairly early on we began informal tours of the site with peers such as restoration planners from other Tribes and potential funding agencies. Tours of the site, with its

dramatic examples of infrastructure cutting straight through wetlands and tidelands, convinced funders that we had a project worthy of consideration. It also helped that the estuary directly adjacent to the project site on both sides was relatively undeveloped, making it easy to visualize how the project might succeed.

Presentations were also an important part of our outreach. As described in the Graphics, Photos & GIS Section, graphics showing the phases of the project overlaid on aerial photos were an excellent aid in describing this complex project. Various team members took advantage of opportunities to present talks at a wide range of regional conferences to local, state, and federal peers. The Jimmy Project also became quite popular on the habitat conference circuit for several years in a row.

> Public access to the restoration site may have been antithetical to our early restoration planning, but it became a requirement and finally a goal of the project.

As both presentations and press coverage spread word of the project, people began to request tours for students and interest groups. Luckily, the project is located adjacent to the Tribal reservation and there were 4 or 5 staff members capable of conducting a tour, plus other team members willing to pitch in when tribal staff were unavailable. Student tours ranged from local grade school groups, tribal children, and local college students to an AmeriCorps group comprised of youths from all over the country working for EPA. The usual format for these tours was a short PowerPoint presentation with maps and graphics for orientation, followed by a walk through the estuary. Early on we paid for large-scale, aerial maps (approximately 3ft by 5ft) that could be lined up with a window view of the project area. The combination of "seeing and being there" was quite successful.

One of the major funding sources, the State Aquatic Lands Enhancement Account (ALEA) required public access, although they would accept limited public access where the project goal is habitat restoration. Our challenge was how to accomplish good visual access without creating trespass problems associated with physical access to the restored habitats.

The solution was both aided and complicated by the fact that a regional, non-motorized trail, the Olympic Discovery Trail (ODT), was planned to pass through the project area. It turned out to be a grave error on our part not to incorporate the exact trail route into our early site planning – that error is described more fully in the Property Acquisition & Funding Section on land acquisition to accommodate the ODT and in the Olympic Discovery Trail Section on infrastructure challenges with designing a route for the ODT. Aside from the difficulties of fixing the trail route and building the trail, the trail itself has proved to be an effective way to provide visual access to the restored creeks and estuary, so far with no major trespass problems. The trail will ultimately go from Port Townsend to the Pacific Ocean, at La Push. If and when trail use by cyclists and hikers increases significantly, new challenges may emerge.

The trail also provides an excellent location for interpretive signs to explain the project. We never budgeted enough money for the four interpretive signs we planned to install as part of the Jimmy Project. Now, post-restoration, it is difficult to find funds for signs alone. To date two interpretive signs have been installed along the ODT with funding from EPA. One sign focuses on the estuary restoration. The other sign focuses specifically on the restoration of the former Blyn Log Yard.

In summary, most of our public outreach and education was "free"--either through the press or through the time and effort of team members to provide tours and talks. However both the physical public access and the interpretive signs cost much more than anticipated, and we should

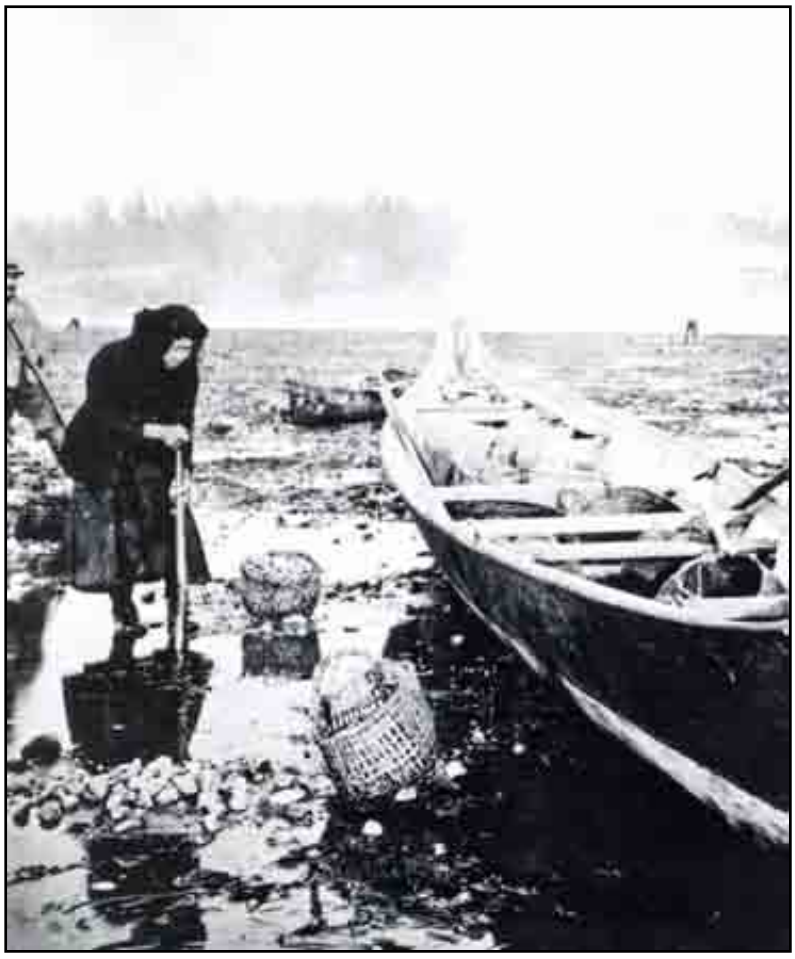
have budgeted more money for each. In fact, public outreach and education should be included from the beginning as a key element of the restoration planning process.

It was always our intention that this project should serve as a model for other larger restoration projects. Two such local projects were in our minds: Salmon and Snow Creek to the east, and the Dungeness River to the west. We assumed that our little Jimmy estuary would be simpler than those projects, but we learned how complex and expensive even a "little" estuary project could be.

Lessons Learned

- *A catchy project name* like "Jimmycomelately" and good photo opportunities can generate excellent press coverage and result in public awareness and support.
- *Aesthetics matter*. The general public cares more about how a restoration project looks when completed than the intricacies of how the end result was achieved or the nuances of how the habitats are functioning post-restoration relative to pre-restoration.
- *Budget money for interpretive signs up front*, rather than trying to find funds after the project is completed.
- *If your project is successful, expect to devote time and energy to showing it off* – to peers, to students, and to community groups.
- *Public outreach & education needs to be included from the beginning* as a key element of the restoration planning process.

Five Acre School students tour the Jimmycomelately estuary, pre-restoration, November 2003 (Dave Shreffler)



Jamestown S'Klallam elder harvesting clams in Sequim Bay
(Jamestown S'Klallam Tribe Archives)

CULTURAL RESOURCES

Byron Rot :: Jamestown S'Klallam Tribe

On the surface, we did everything right. We hired an archeologist to do a "limited location survey" on the JCL channel and estuary restoration site. She walked the sites in the estuary that were to be excavated and she did shovel tests along the JCL channel length. Her investigation showed no cultural sites. However, our final estuary design expanded beyond excavating fill or young alluvial deposits and went into native soils. We also did not have a cultural resources expert on-site during construction and as a result we unknowingly managed to destroy a portion of a shell midden.

In 2004 following the 2003 construction season, our project team noticed an exposed shell midden along an excavated bank within the project area. We asked the same archeologist to investigate our excavated bank and she recommended we hire a shell-midden expert. The expert determined that a portion of the shell midden site had been removed during construction. This experience was the beginning of this author's ongoing training on tribal cultural sites.

Lessons Learned

Here are some clues or red flags that could indicate a potential cultural site:

- *Near a source of fresh water and close to a shoreline*. Look at old maps (e.g. GLO or T-Sheet maps, see U.W. River History website http://riverhistory.ess.washington.edu/). Are streams indicated on those maps? Older cultural sites may be located on higher terraces, newer sites on lower terraces.
- *Any beach or spit feature*. Look for concentrated accumulations of shells on the beach or in the bank. These accumulations are potential shell middens. Some shell middens are 6-8 ft deep. The calcium within shells preserves bone fragments (animals and humans) contained within shell middens. Plan your project to avoid shell middens. If it is deemed unavoidable, then you have an archeological dig on your hands, and you must contact the State Historic Preservation Office.
- *Canoe transport corridors*. Watch for sites where canoes can be pulled across narrow land features separating marine waters.
- *Mudflats or salt marsh*. These habitats are often near areas of known long-term occupation by Tribes.

If your restoration site contains one or more of the above features, you want to closely follow the guidance below. This will help avoid a shut-down of your restoration site, or even worse disturbing a cultural site:

- Investigate cultural resources prior to finalizing the engineering drawings.
- Don't underfund the cultural resource investigation, which must extend at least to the depth of your expected restoration excavation and should include test digs into the native soil of your project site.
- Pay particular attention to the edges between upland and shoreline, shore and spit.
- If your site contains indications of a cultural site, hire an archeologist to be on site during all excavation work.
- Many cultural sites are known but not mapped. Contact your local Tribal Cultural Resources Specialist for help (this should be part of your permit process).

Water quality monitoring during the removal of creosote-treated pilings (Dave Shreffler)

Toxics

Removal of Creosote-Treated Pilings

Dave Shreffler :: Shreffler Environmental

Environmental Risk and Human Health Risk

More than 100 creosote-treated pilings and their associated "footprint" occupied valuable tidelands in Sequim Bay that were once rich eelgrass and mudflat habitats and supported shellfish and prey resources for salmon and waterfowl. In order to protect recovering chum salmon runs in Jimmycomelately Creek, remove a potential source of creosote contamination, and restore the historic habitat and important shellfish beds, the Tribe removed all known creosote-treated pilings from the project area.

Because of the Tribe's desire to harvest shellfish in the future from these areas where pilings were removed, significant emphasis was placed on evaluating the environmental risk and human health risk associated with the legacy of creosote contamination in lower Sequim Bay. Weston Solutions was hired by the Tribe to perform rigorous monitoring pre-removal, during removal, and post-removal of the pilings.

Prior to piling removal, the nature and extent of sediment and tissue creosote contamination were evaluated to assist the Tribe in selecting a piling removal technology and to evaluate human health risk associated with shellfish harvest and consumption. During piling removal, water-column monitoring was conducted to document suspended sediment and creosote mobilization during removal and to guide post-removal monitoring efforts (see photo on facing page). Following piling removal, sediment samples were collected in the former log yard to evaluate the nature and extent of polycyclic aromatic hydrocarbons (PAHs) in the former log yard and surrounding areas and to evaluate human-health risk associated with shellfish harvest and consumption in these areas.

The results of Weston Solution's monitoring are available as a downloadable PDF file from the Tribe's website:

(http://www.jamestowntribe.org/jstweb_2007/programs/nrs/jcl-final%20report.pdf)

In short:

The results of this study indicated that PAHs in the sediment and clam tissues collected from the former log yard were highly localized in the immediate vicinity of the 99 pilings that were removed. While the piling removal process did result in some redistribution of log yard sediments, it did not appear to result in a spreading of the sediments with higher PAH concentrations that were documented in the immediate vicinity of the pilings prior to removal. Based on WDOE sediment quality standards, sediments from the former log yard do not likely represent a significant environmental risk to invertebrates or fish. Based on post-removal PAH concentrations in sediment and clam tissues, the human health risk associated with the harvest and consumption of shellfish from the areas of the log yard and control sites is within USEPA acceptable limits.

The Piling Removal Operation

In July and August 2005, a total of 99 creosote-treated pilings were removed from Sequim Bay via dead pull with a crane or via vibratory extraction from a barge-based operation (see photo below). Another 3 pilings were removed by

Creosote piling removal via vibratory hammer (Dave Shreffler)

cutting them below the mud line with a chainsaw at low tide. Two untreated pilings were left in place as bird perches.

An additional 32 creosote-treated pilings were removed from in front of the Jamestown S'Klallam Tribal Administration Building by cutting them below the mud line with a chainsaw at low tide (see photo below).

> Take home message: Communication, communication, communication.

Communications were the weakest part of the whole piling removal operation. There was never a clear chain of command between the barge operator, deck foreman, crane operator, and skiff operator. There was also no means of direct and immediate communication (e.g. handheld VHFs) between the tug, the barge, the crane operator, the work skiff, and the water quality monitoring boat. This resulted in either difficult communications or no communications, and two unsafe incidents: 1) a work skiff getting pinned and nearly crushed between the barge and a piling, because the tug began moving the barge without alerting the work skiff; and 2) a work skiff fuel line snapping and spraying gas everywhere, including in the face of the Tribe's project supervisor and all over the project data sheets.

Despite having EPA and USFWS approved best management practices (BMPs) in the contract, the primary focus of the contractor's foreman was on "production"—getting the pilings out as fast as possible. He did not have much patience or understanding for the required water quality monitoring, boom deployment, creosote sheen cleanup, or other aspects of the job that he perceived to be outside of his area of responsibility.

Because of concerns about the potential for sediment plumes and the corresponding dispersal of creosote during piling removal, USFWS required that a silt curtain made of chicken wire and Ecology fabric be attached to the bottom of the debris boom placed around each piling prior to removal. This silt curtain concept was previously untested and quickly proved ineffective. In fact, the silt curtain made deployment and retrieval of the boom more difficult. The chicken wire portion of the silt curtain was continually getting snagged on the pilings and lifted out of the water as the crane pulled the pilings out of the water; this resulted in the release of any debris or sheen that had been contained within the boom.

Lessons Learned

- *Make sure your contractor understands the environmental as well as physical aspects of the project*, is properly equipped and trained, and that lines of authority and communication are clear before work begins. On the Jimmy Project, the "time is money" mindset of the piling removal contractor was in direct opposition to the Tribe's "environmentally sensitive cleanup" mindset.
- *Rigorously stick to all agreed upon best management practices (BMPs).* Despite having BMPs clearly outlined in the contract, the environmental sensitivity of the piling

Pilings cut via chainsaw at low tide (Dave Shreffler)

removal project was not adequately emphasized by the contractor's management staff to the workers in the field.

- *Ensure that the contractor provides all needed equipment and trained staff to complete the work.* Two skiffs and two people were needed for debris boom and absorbent sausage deployment and retrieval in order to keep up with the crew pulling the pilings. The contractor provided one skiff and one untrained worker.
- *Define pre-piling removal what degree of surface sheen is "acceptable" during removal.* The absorbent sausages were only an estimated 20-30% effective in cleaning up any observed surface sheen.
- *Define pre-piling removal what degree of sediment plume is "acceptable" during removal.* Based on Optical Back Scatter (OBS) sensor data, the most significant sediment plumes resulted not from pulling the pilings but from the tug's prop wash while maneuvering the barge. The silt curtains did nothing to contain the sediment plumes caused by the tug's prop wash.
- *Determine pre-piling removal whether you need to conduct an assessment of environmental and human health risk.* At the time of the Jimmy Project, little was known about the potential for redistribution of sediments and creosote resulting from a large scale piling removal operation. This project and the risk assessment helped further the science of piling removal.

Hazardous Waste in the Log Yard

Lyn Muench

In order to use public funds for property acquisition, a Phase I Environmental Assessment must be completed. At the time of the Jimmy Project, the list of things to inspect was well spelled out, but the criteria for the inspector were fairly general. In 2002, the federal government set more stringent standards for an environmental professional authorized to carry out Environmental Assessments, usually a licensed engineer or geologist.

For the log yard purchase, a cursory Phase I Environmental Assessment was completed by USFWS personnel at the time of the grant award to buy the log yard. The finding was that the building on the log yard site should be removed but no further cleanup was indicated. When WDFW Real Estate division took over responsibility for purchase negotiations, they commissioned a consultant to conduct a more thorough Phase I, and then a limited Phase II Environmental Assessment. The consultant identified three locations – a dry well, an old settling pond, and a well-to-pond culvert – where petroleum hydrocarbons (TPH) and volatile organic chemicals (VOC) in the soils might exceed cleanup standards. The consultant gave a very general estimate of likely clean-up costs, ranging from $20,000 - $60,000. The owner, Dunlap Towing, hired their own consultant to confirm the findings and to get a clear understanding of the clean-up costs. On January 4, 2001, a total of 10.62 tons of hydrocarbon-impacted soil was excavated and transported for thermal treatment. The excavated area was backfilled with clean sand. Confirmation samples by both WDFW and Dunlap consultants were conducted. The WDFW consultant samples all met standards but a single soil test by the Dunlap consultant registered above the existing Model Toxics Control Act (MTCA) standard of 200 ppm for diesel and 500 ppm for heavy oils.

The conflicting confirmation samples were collected in March of 2001. Four months earlier, in December 2000, the State had revised its MTCA standards for diesel from 200 to 2000 ppm and from 500 to 4500 ppm for heavy oils. These new standards were to come into effect August 15, 2001. No enforcement actions were to be taken during the interim. The errant soil test was well within the limits of the new standard. However, WDFW felt it could not acquire a property with what it deemed an environmental cloud over it. The Tribe's grant for its share of the purchase price had to be spent by July 31, two weeks

before the new MTCA rules came into effect, when WDFW was willing to purchase the property. The entire JCL project was in jeopardy.

The Tribe contacted the State Department of Ecology and determined that the enforcement against the contaminated soil, if it came to their attention, would be a notice to clean up the property within 180 days. After the new rules came into force, a mere 90 days away, Ecology would determine the property in compliance. The Tribe hired another consultant to review all the lab results and documents, determined it was at no risk, and purchased the property without WDFW funds. (see the Property Acquisition & Funding Section for that story.)

These are the "facts" of dealing with a hazardous waste site. The process of identifying and resolving the log yard problems took a great deal of staff time, patience, and a steep learning curve.

Lessons Learned

- A State agency, under public scrutiny, is likely to follow rules and regulations very literally, with no room for flexibility.
- Laws can change.

Hazardous waste is one of those non-fish parts of a restoration project that you MUST take into serious consideration. Sampling results can vary, both in determining the existence of hazardous waste and in confirming cleanup results.

Hazardous Waste in the Eng Property

Byron Rot :: Jamestown S'Klallam Tribe

It was July 3, 1pm, and our contractor was excavating a small dam next to the old 1920's dance hall. The excavator bucket suddenly uncovered foul, slimy, petroleum-smelling soil. The dam limited tidal action and the tide was coming in. We had uncovered a potentially hazardous waste site. After a few expletives, we shut down excavation and called the Department of Ecology. Their response was panic, not for our dilemma, but for their own weekend holiday plans. When they found out a tribe was calling, the relief was obvious, "oh you need the EPA; you're out of our jurisdiction." "But we're on state-owned land, we explained." "Oh doesn't matter, anything tribal must be handled by the EPA." Hmmm, a problem delegated is a problem solved. By that time EPA was closed for the holiday weekend. We were on our own.

How do we keep the tide from carrying out the potential toxics into the bay? The various absorbent pads, rolls found in the contractors spill kit were virtually useless. Credit the equipment operator for saving the day; we just constructed a second tidal dam with clean dirt bay-ward of the first dam.

We hired an expert in site remediation, sent soil samples to the lab, determined the extent and type of the contamination, hauled all the toxic soil to a waste facility in Oregon, and finally completed restoration on that site.

Lessons Learned

- Containment booms and absorbent pads are virtually useless for light, oily material.
- The best tactic is to isolate the potentially toxic soils site.
- If you can afford it, hire local experts that are licensed by the State Department of Ecology in hazardous site remediation.
- Take detailed notes and photos.
- You're cleaning up someone else's mess; do a good job so it never has to be done again.

Olympic Discovery Trail

Sam Gibboney :: ISE Consultants

One of the most difficult elements to coordinate of the Jimmy Project was the planning and construction of the Olympic Discovery Trail. The Olympic Discovery Trail (ODT) is envisioned as a non-motorized, multi-user transportation system connecting the communities of the North Olympic Peninsula. The Trail will ultimately stretch approximately 100 miles from Port Townsend at the east end to the Pacific Coast at the west end. The ODT traverses the JCL project area (photo at right), but it wasn't easy getting it there.

The first hint of discord came when the Tribe submitted a Critical Areas permit and accompanying State Environmental Policy Act (SEPA) checklist for the Jimmy Project to Clallam County Department of Community Development for review. The Clallam County Public Works Department was tasked with planning and building the ODT and they objected to the removal of Old Blyn Highway—one of the essential elements of the estuary restoration design. County Public Works staff maintained that they had always planned to use the existing Old Blyn Highway roadway as the trail route through the Blyn area.

The trail proponents saw the Old Blyn Highway route as the ideal opportunity for the regional trail to remain along the waterfront, in a far more pleasant location for trail users than a trail along the shoulder of Highway 101 or along the old railroad grade. The proponents of the trail were understandably concerned that if the restoration team removed Old Blyn Highway it would be difficult to find an acceptable trail route through the project area.

Walkers on the ODT (Lyn Muench)

The Estuary Design Group (EDG) was, for the most part, supportive of the trail and acknowledged the need to somehow accommodate the trail through the project area. However, EDG was far more focused on the ecological goals of the restoration project than a specific trail route. EDG had spent a year on the estuary design and the ecological goals of the project could not be achieved if Old Blyn Highway stayed in place. Furthermore, not all EDG members were enthusiastic about a regional trail traversing the restoration area. In fact, some argued that a regional trail was incompatible with some of the restoration goals, especially directing trail users through the middle of newly restored bird habitat.

So, there was an impasse. The trail planners wanted to keep the ODT on Old Blyn Highway or as close to the water as possible, and the restoration planners wanted to keep the ODT on the fringes of the restored habitat to minimize potential impacts to fish and wildlife.

The County issued their SEPA determination with several conditions, one of which was that the ODT must be provided a route through the project area. Unfortunately, this condition was stated in such general terms that it was open to many different interpretations. The relationship between the restoration project and the trail project never fully recovered from the initial mistrust and the ongoing coordination was fraught with difficulty.

Eventually a compromise trail route was reached with the trail remaining on Old Blyn Highway to the east of the restoration area and then jogging toward Highway 101 to connect with the old railroad grade through the restoration area (see graphic below). With this trail route agreed upon, two specific issues highlighted the difficulty in providing for restoration goals without undue cost to the trail project. The first issue was the need for a bridge along the railroad grade where the ODT crossed the new JCL channel. The Channel Design Group (CDG) had succeeded in designing, funding, permitting, and constructing the Highway 101 Bridge with a clear span and an opening of approximately 110 feet. The trail bridge was to be located immediately downstream of the Highway 101 Bridge and the trail planners proposed building a much shorter trail bridge in order to save money. The EDG believed that a shorter bridge would have constricted the stream channel with potentially disastrous results.

The second issue that created conflict was the removal of a creosote-treated trestle located in the old railroad right of way across a small, unnamed drainage that flows into the new JCL channel. EDG believed that removal of the trestle and its legacy of creosote contamination were essential to improve water quality and to ensure long term habitat viability. The trail planners saw removal of the trestle as another added, and unanticipated, cost to the trail project, because if the trestle were removed, a second bridge would be required.

At some point, both EDG and the trail planners decided that they must work together to resolve all the remaining trail issues. EDG then assisted the trail planners in obtaining additional funding for the trail project and worked with the County's engineer to design the trail through the project area. EDG also worked with and advocated for the dedication of easements and right of ways for the trail from multiple property owners including state agencies. This complicated process is

The Olympic Discovery Trail route through the Jimmy Project (Randy Johnson)

described in the Property Acquisition & Funding Section. EDG also designed and constructed a third bridge to get the trail across Dean Creek, which was also realigned as part of the overall estuary restoration.

Despite improved coordination and communication between EDG and the trail planners, ODT challenges persisted to the very end of the Jimmy Project.

Everything was seemingly going smoothly: the new JCL channel and the Highway 101 Bridge were constructed; the obstructing roadways (Old Blyn Highway and the Log Yard Road) were removed; and Jimmycomelately Creek was diverted into its new channel. Endangered chum salmon had returned and were making their way up the new JCL channel for the first time. Then, during this critical window when chum salmon were returning to spawn, the trail construction contractor decided to install the trail bridge across the new JCL channel. After a few tense meetings on site, a compromise was reached and the trail contractor erected some tall fabric shields along the banks of the creek, so that the returning chum salmon would be less likely to be spooked by the on-shore bridge construction activity.

Lessons Learned

- *Try to build as many constructive relationships as you can early in the project.* If you work on having trusting relationships with your project partners, you will be able to handle whatever issues or challenges arise. In a project of this scope and scale, issues always arise and it is more difficult to resolve them when partners are suspicious.
- *Realize that your project is not the center of the universe.* Shoreline areas will always attract many user groups and stakeholders. Take everyone's concerns seriously even if you don't share their opinions.
- *Do other stakeholders' work for them*. It may not seem fair to do someone else's work for them, but in the long run it may save you time, money, and headaches.
- *If you do need to coordinate with another agency that is building within the same project area, be very specific* as to who will be operating when and where. Do not assume that others will automatically understand the potential harm of construction activities during critical windows of fish spawning, bird nesting, etc.

Jimmycomelately Creek Channel Design: Concept to Reality (Randy Johnson)

ENGINEERING DESIGN

Byron Rot :: Jamestown S'Klallam Tribe

In earlier sections of this report, we alluded to the difficulty of translating the ecological objectives of the Jimmy Project into engineering plans, and the "skill" required to properly read these plans. Here, we provide two examples—one for the channel design and one for the estuary design—that illustrate a few of the challenges associated with engineering design on restoration projects.

Channel Design

The Jimmy channel went through many design iterations; both in terms of where to locate it and how it would meander across the landscape (see *Channel Design for Realignment of the Jimmycomelately Creek Channel*, Shreffler et al. 2003). We had many physical facts to consider: a beginning and ending elevation that we had to tie into, the fact we were excavating both the channel and floodplain roughly 4 to 6 feet into ground surface, the requirement of a low channel gradient favorable to summer chum (our target salmon species), and a finite area to meander the channel within. Our original concept was the channel would meander freely within its historic creek sediments known as alluvium (see graphic on facing page: top row, middle frame).

Yet the Washington Department of Fish and Wildlife biologists and engineers who wrote our permit were uncomfortable with this concept. Given the low numbers of ESA-listed summer chum in the Jimmy, WDFW required more design certainty in terms of channel location and performance. The design subsequently evolved from a free-wheeling conceptual design to a more traditional engineering plan (see graphic next page: Jimmycomelately Creek Channel Engineering Plan).

We also had some constraints in terms of land ownership. Approximately 1/3 of the channel length was owned by one landowner who was allowing this large restoration project to occur on her land. She said at an early meeting, "Go ahead and use it, it's too wet to graze." This informal arrangement, at least at the start, would contribute to several disagreements or misunderstandings as the project went forward.

For example, a major misunderstanding was clearing vegetation, in particular large, mature alders. As our conceptual design progressed to an engineered plan, we decided to push the channel further west to take advantage of the existing riparian forest (see channel design graphic on facing page: top row, middle and right frames). However, to fit the channel within the landscape, to minimize excavation, and to ensure the number of meanders required to reduce the channel grade, the engineered channel went well into several areas of mature alder forest.

The need to clear some of the mature alders was not communicated to the landowner, and this author was equally unaware of the extent of alders to be cleared until clearing limit stakes were installed in the field. The problems were several: unfamiliarity with engineering drawings (both landowner and author), inability (at the time) to transfer engineering CAD files onto an aerial photo, too many distractions from a large project, and the fact that clearing limits extended beyond the edge of the cut shown in the engineering plan.

The graphic on the next page is the field copy of the engineering plan. Note the "wavy line" which represents, "dense trees" and the extent this project moved into the existing forest.

In some cases the clearing limit stakes were adjusted in the field to "save trees," but one very large clump of alders was deemed necessary to cut and remove because it occupied too much of the future floodplain. In the end, the alder stumps were too large for the contractor to remove, so they remain in place as a tangible reminder to this

author to pay closer attention to engineering plans.

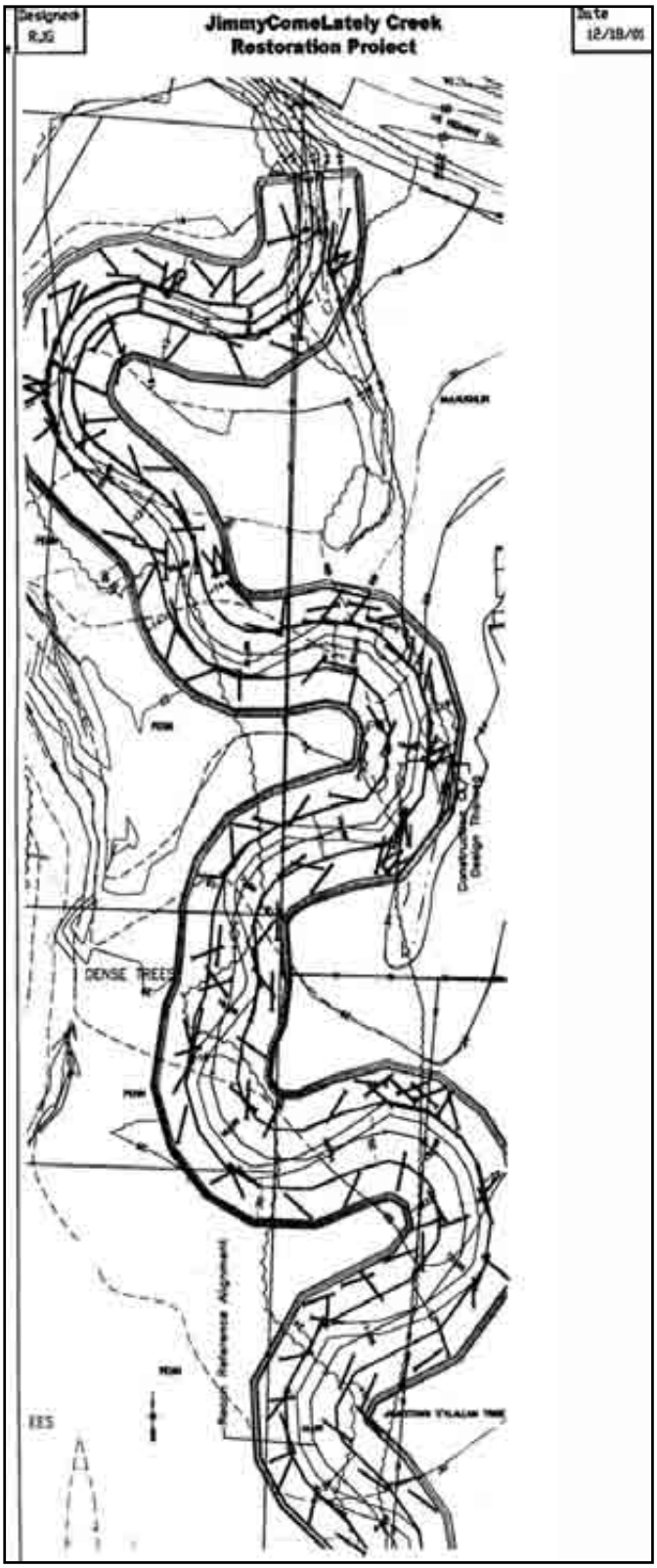
Also, please note that the wood placement was not engineered; the wood placement depicted in the engineering plan graphic on this page was a "placeholder." There is also a large difference between the installed wood placement and the post-project photo (see channel design graphic, two pages previous: "Post Project" frame, lower left corner). We installed over 700 pieces of wood. It is impossible to engineer that many pieces in a ½ mile channel. The wood placement was hand-drawn by the author and placed by a contractor who was paid time and materials, since we could not tell him how long the wood placement would take.

In our conceptual design, the channel meandered freely across its floodplain interacting with this wood. While approximately 25% of the wood was buried in the bank and sticking out into the channel, the rest was placed free in single pieces, small jams, or on the floodplain. The post-project photo is a result of multiple large floods since 2004 (several 2 yr floods, and a 10 yr, 25 yr, and 50 yr flood event). Three of these floods occurred in one fall/winter. During these floods, much of the single piece wood moved and formed the logjams you see in the post-project photo (see channel design graphic, two pages previous).

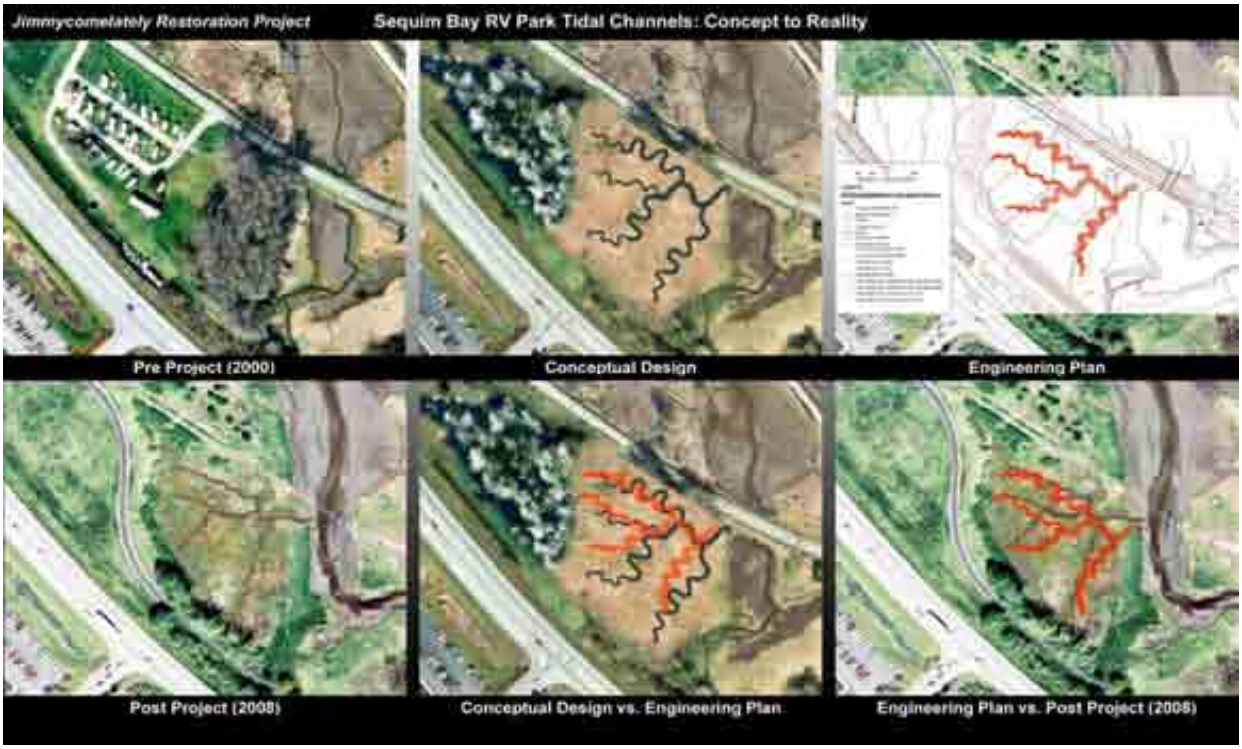
Estuary Design

There are many stories that could be written about the design work in the estuary. We used several strategies in designing and constructing (restoring) salt marsh. We will focus on the design process for the former Sequim Bay RV Park site.

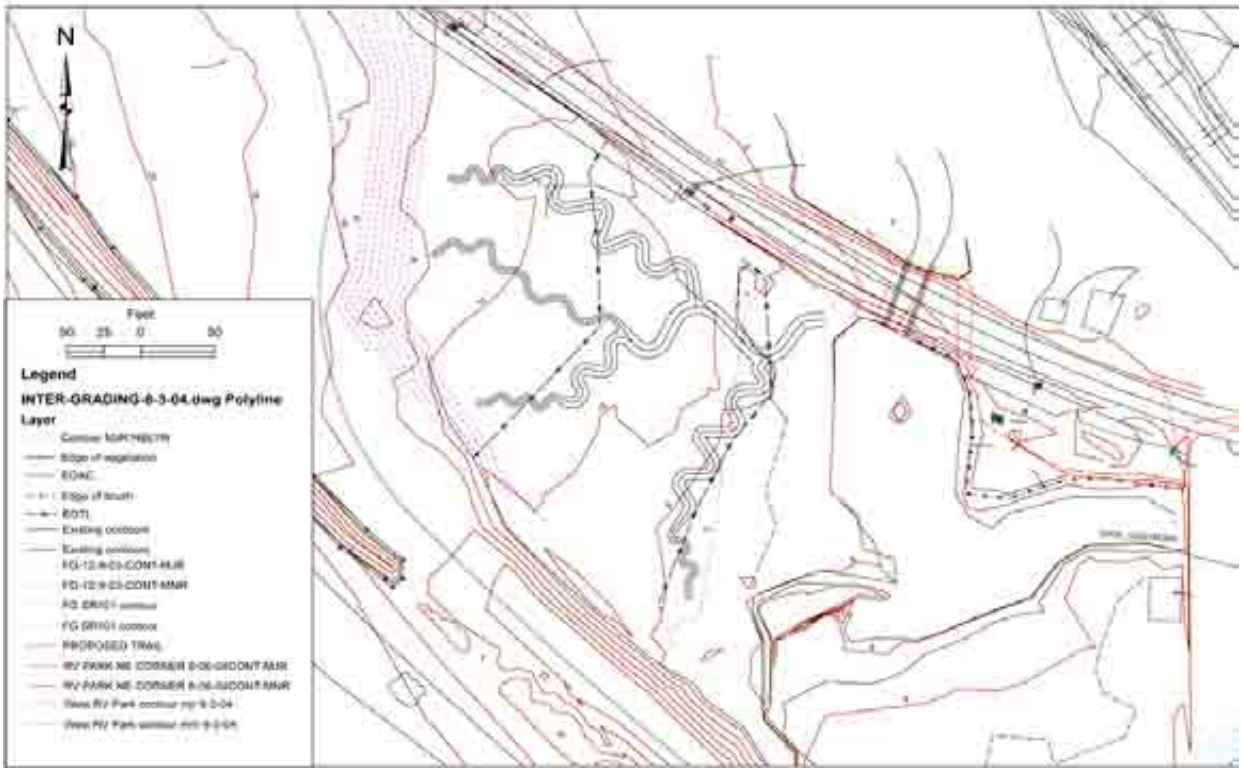
The conceptual idea for the former RV Park was to remove fill that had been placed on top of historic salt marsh to create a level surface for the construction of the RV Park. In addition to covering functioning salt marsh, this fill allowed an alder forest to establish (see graphic next page: "Pre Project" photo, top left frame). The engineering plan (see graphic next page) called



Jimmycomelately Creek Channel Engineering Plan (Rich Geiger)



Sequim Bay RV Park Tidal Channels Design: Concept to Reality (Randy Johnson)



Sequim Bay RV Park Engineering Plan (Pat McCullough)

for removing the RV Park infrastructure and the alder forest, and extended the excavation down to salt marsh elevation west into native soils to help mitigate the historic loss of salt marsh mainly due to construction of Hwy 101.

Throughout the estuary design process, we constantly had to remind ourselves which tidal datum was being used. Our engineer designed in the NAVD 88 tidal datum. In contrast, surveyors, tide gauges, and nautical charts all used Mean Lower Low Water (MLLW). The difference between NAVD 88 and MLLW was about ¾ ft, with NAVD 88 being approximately ¾ ft higher in elevation than MLLW. In other words, the staking for the contractor directing him how much to excavate, should have been in MLLW but was mistakenly staked in NAVD 88.

Our design elevation at the RV Park was between 7 and 8 ft, the finished elevation ranged between just under 8 ft to around 8.6 ft, according to post-project field surveying done by a WDFW engineer, Bob Bernard, in 2007. Those elevations (8.0 -8.6 ft) are inundated only 3-8% of the year, too infrequent for tidal channel development and presumably of limited use to juvenile salmonids. Thus, the post-project habitat ended up being a wetland complex of high salt marsh and freshwater marsh, when our target habitat was low salt marsh with a network of tidal channels. The latter habitat would have provided better feeding and rearing opportunities for juvenile salmonids.

The other issue you may notice with the RV Park design is the difference between the engineered and constructed tidal channels (see tidal channels design graphic previous page: "Engineering Plan vs. Post Project," lower right frame). To save surveying costs, we did not survey and stake the tidal channels. Instead, the contractor felt he could approximate the locations of the tidal channels, and constructed the tidal channels based on the engineering plan rather than on-the-ground surveying. You be the judge of how close the contractor was able to build our design.

Lessons Learned

Channel

- *Map engineering plans on aerial photos prior to staking* (or even going out to contract), so that adjustments to clearing limits, trees that need to be retained, etc. can all be easily identified up-front. Trying to locate a given area of forest on an engineering plan (CAD drawing) is very difficult to those not familiar with these plans.
- *Establish a restoration plan, discuss it with the landowner, and put any agreements in writing*. This is now usually required for many grants.
- *Don't get too tied to your wood placement*. Nature's design will supersede your carefully crafted plan. Most of the carefully placed wood was subsequently moved during floods.

Estuary

- *Pay close attention to elevation and which tidal datum is being used*. Plant communities are very sensitive to elevation. The RV Park marsh that was constructed at an elevation ¾ foot too high changed from what was expected to be a low salt marsh to what is actually a wetland complex of high salt marsh and freshwater marsh.
- For the most part, our strategy was to *construct finished tidal channels*. As noted, the finished RV Park tidal channels do not resemble either the conceptual design or the engineering plan. How and whether fish utilize these channels, or when utilization occurs will be the subject of ongoing monitoring. In particular, we're interested in tracking the development and fish use of constructed tidal channels vs. natural reference channels that exist in the estuary.

SEQUENCING & PERMITTING

Sam Gibboney :: ISE Consultants

Obtaining the necessary permits for a large restoration project can often be as complex as the project itself. In addition, obtaining those permits in a timely fashion can sometimes be more akin to a work of art than a scientific or engineering endeavor.

Scope of the Project

The scope of the overall Jimmy Project included realigning the channel, estuary restoration and fill removal, construction of a bridge over the newly realigned channel, and diversion of the creek into the new channel. Of course within each of these four main phases was a myriad of tasks. The Tribe took the lead on obtaining all project permits regardless of which agency might oversee the actual contract.

Permits Issued

The Jimmy Project took place in phases and was funded by numerous different sources. Consequently, applications for permits for different elements of the project or combinations of elements were filed separately. It is important to understand that most federal permits require review of a complete project and do not allow you to break it into phases simply for ease of permitting.

A summary of permits issued is discussed below.

1. The Overall Project

The overall project includes all elements of restoration (channel realignment, Hwy 101 Bridge, all estuary restoration and associated nearshore work, stream diversion, and Olympic Discovery Trail construction). The following permits or determinations were issued:

- A Critical Areas Variance was approved September 24, 2001 by Clallam County.
- A modified Mitigated Determination of Non-Significance (MDNS) was issued on September 7, 2001 by Clallam County.
- A Department of the Army Nationwide Permit was issued May 20, 2002. The Bureau of Indian Affairs (BIA) was determined to be the lead agency responsible for compliance with Section 7 of the Endangered Species Act (ESA), Essential Fish Habitat (EFH) compliance in accordance with the Magnuson-Stevens Act, and Section 106 of the National Historic Preservation Act (NHPA). The following letters of concurrence were received following agency review of the Biological Evaluation (BE):
  - Endangered Species Act – Letters of concurrence from the US Fish and Wildlife Service (USFWS, May 31, 2002) and National Marine Fisheries Service (NMFS, May 1, 2002).
  - Essential Fish Habitat – A letter of concurrence was received from the National Marine Fisheries Service (NMFS, May 1, 2002).
  - National Historic Preservation Act – A letter of concurrence was received from the State of Washington Office of Archaeology and Historic Preservation (WA OAHP, May 30, 2002).
  - In addition, the Washington State Department of Ecology determined that the overall Jimmy Project was consistent with the conditions for Section 401 Certification and Coastal Zone Management and issued a letter to this effect on May 30, 2002.
- A letter was sent (May 9, 2002) to the US Coast Guard providing information for 'Advance Approval' of the project. An individual Coast Guard permit was not required.

- Hydraulic Project Approval (HPA) – An HPA was issued by the State on May 28, 2002. Additional plans and specifications for estuarine and nearshore work were required before work could occur below the ordinary high water mark (OHWM). This approval was issued under the streamlined process for fish habitat enhancement projects (RCW 77.55.29). This process entitled the project to exemption from all local permits and fees including Shoreline Management Act review. SEPA and Critical Areas review had been completed for the overall project, because they contained elements that would not be eligible for this exemption (e.g., Highway 101 Bridge).
- A WSDOT General Permit for Use of State Right of Way was issued July 3, 2002. This permit was issued for discharge of treated construction storm water associated with the channel realignment.
- A NPDES Storm Water General Permit for Construction Activity was issued by the Washington State Department of Ecology for the channel realignment on July 11, 2002. Another NPDES permit was issued for estuary work in June, 2004.

Site visits with grant funders (here NRCS) and permitters were an essential element of the Jimmy Project (Dave Shreffler)

2. Log Yard Pier removal

- The existing Hydraulic Project Approval was modified to include this project element.
- A Department of the Army permit was not required for this element.

3. Log Yard, Dean Creek, and Sequim Bay RV Park restoration

- This combination of project elements was covered under the overall project Department of the Army Nationwide permit. More detailed plans were submitted and an extension to the original permit was issued.
- The existing Hydraulic Project Approval was modified to include this combination of project elements.
- A National Pollutant Discharge Elimination System (NPDES) Storm water General Permit for Construction Activity was required and issued in June 2004.

4. Log Yard Pilings Removal

- A Department of the Army permit was not required for this project element.
- The existing Hydraulic Project Approval was modified to include this combination of project elements.
- The existing Biological Evaluation (BE) for the overall project was revised to address potential impacts of the piling removal operation.

5. Delta Cone Removal

- This project element was covered under the Department of the Army Nationwide permit for the overall project. More detailed plans were submitted and an extension to the original permit was issued.
- The existing Hydraulic Project Approval was modified to include this project element.

6. Eng (WSDOT) Property

Although work on this project was an integral part of the overall restoration effort, permitting and management of this project was handled separately by WSDOT. WSDOT used the restored area on this property as an advance mitigation site for future projects. As such, work on this property was fully funded, designed, permitted, constructed, and managed by WSDOT.

7. Intersections and Traffic Permits

Because the Jimmy Project removed part of Old Blyn Highway that was used by two remaining property owners, a new intersection was constructed. The new intersection required review and approval by WSDOT.

Permitting is commonly the rate-limiting step of any restoration project. Don't underestimate the amount of time and perseverance required to obtain all necessary permits, certifications, concurrences, or determinations.

Lessons Learned

- *Do it their way - even if it doesn't make sense to you.* Often the permit process is confusing and can seem overly burdensome on the applicant, even for a restoration project. Complaining about the process to the permit reviewer will not get you the permit any sooner. Also, it is not necessarily the job of the reviewer to explain the permitting process to you. Do your homework and know what the requirements of each permit are. Learn the steps and timeframes and submit materials exactly as requested.
- *Make the permit reviewer's job as easy as possible.* Most reviewers have hundreds of other applications to review, so don't expect them to know your project like you do. The Jimmy Project was a large, complex project and so we often submitted a brief summary of the overall project—and clear graphics—to help the reviewer see the context of the individual elements. Be succinct and clearly provide the information that they need for the review. Don't expect them to dig through plans or reports to gather salient points. The easier it is for the reviewer to find and understand the relevant issues, the sooner they can make a determination and issue a permit. A picture is worth 10,000 words.
- *Stay on top of the review and be persistently helpful.* Submitting a permit application and expecting it to simply pop out in a timely fashion is usually not realistic. On the other hand, permit reviewers do not generally appreciate being hounded. Check to see if your application is considered complete or if the reviewer needs more information. Ask for timeframes and milestones and call to see if the reviewer is on track. Be polite and courteous and consistently track the review progress.
- *Remember the permit reviewers are people too, and they have really long memories.* Permit reviewers have a job to do and it is not to impair the progress of your project. On the other hand, don't expect a permit reviewer to jump to service your application simply because you have a schedule to keep. That being said, permit applications that are complete, easy to understand, well documented, and submitted by a courteous person can tend to float to the top of the reviewer's pile. Arguing with the reviewer or going over their head may help you in the short run but will not ingratiate you in the long run. We had a lot of permits that required multiple amendments and since we had established a courteous and productive rapport with the reviewers the changes were often reviewed quickly.
- *Keep positive, productive relationships with the permit writers*; you may need to go back to them for amendments.

Construction on the Jimmy Project (Dave Shreffler)

CONSTRUCTION

Sam Gibboney :: ISE Consultants
Byron Rot :: Jamestown S'Klallam Tribe

Small-scale restoration often has a client and a contractor. Contracts are generic, usually the client's boiler-plate contract, and the contracts often just specify the minimum necessary to get on the ground. Missing generally from these contracts are how disputes between the client and contractor are handled, where those disputes are handled, what conditions would cause a shut-down of the job site (e.g. finding cultural artifacts), who pays for that shutdown, whether the contractor is bonded, whether the contractor has sufficient insurance to insure their activities, etc. Small-scale restoration usually requires the client or their representative to be on the restoration site whenever the contractor is working.

The Jimmy Project was a large project. Large-scale restoration projects are governed by a more strict definition of roles and responsibilities. Your project's success may depend upon professionals that have not been involved in the design and may not be familiar with the physical and biological goals that you are trying to achieve. Consequently, a good understanding of the world of construction administration can save many headaches and hopefully avert misunderstandings.

Roles and Responsibilities

The world of construction contains various participants with well-defined roles and responsibilities, which are defined through the individuals past experiences and within contract law.

Owner

In construction administration the Owner is the contracting party, and outside of the restoration world, is usually the property owner. Restoration is usually done by an agency or government for, or by the permission of, the property owner. For example, for the channel construction south of Highway 101 the project occurred on three separate properties. Yet, the "Owner" or the contracting party was the Clallam Conservation District. Depending on the contract, the Owner has several reserved rights, including the right to inspect the work, the right to award other contracts in conjunction with the same work, the right to require bonds, the right to retain portions of payments, the right to make changes to the work, the right to withhold payment for adequate cause, and the right to terminate the contract for adequate cause. Finally, the Owner has the right to stipulate that the Contractor must complete the project as designed, but may not tell the contractor how to do the work.

The Owner also bears some responsibilities, including providing land surveys and boundaries of the project, making periodic payments, making extra payment for eventualities not anticipated in the contract, and allowing extra time for completion of extra work resulting from unanticipated conditions.

It is very important to understand that the contract is between the Owner and the Contractor. Only the Owner can make changes or alterations with the Contractor. Understanding this relationship will help to avoid miscommunication and possible liability imposed by a third party giving direction to the Contractor. That is not to say that only the Owner's desires and needs can be considered. It is to say that it is the Owner's, property owners', and project partners' responsibility to decide on one course of action and to communicate that to the Contractor through the Owner (or Owner's Representative).

Property Owner(s)

The Property Owners or Landowners obviously play a key role in restoration projects. Often, the Landowner(s) will not act as the Owner or the contracting party, but rather give permission for the project to occur on their property. Again obviously, the Owner must have signed

Landowner Agreements before construction can begin. The Landowner Agreement should contain at a minimum the right to access the property, a description of the work to be performed, stipulations for covering the Landowner under the Contractor's insurance, a schedule, and the Owner's contact information should any concerns arise.

Design Team

The Design Team's vision and instruction will influence the construction and implementation of the restoration work. However it is up to the Project Engineer and the Owner's Representative to communicate this vision and instruction to the Contractor.

Project Engineer

The Project Engineer is employed by the Owner to develop plans and specifications for the construction of the project. The Project Engineer will often work with the Design Team to gain benefit from the multiple viewpoints expressed there. The Project Engineer will normally stamp the plans and specifications, develop contract documents, oversee the bidding and award process, and maintain responsibility for administering the contract. With this stamp, the Project Engineer is legally responsible (liable) for the performance of the project. Most often the Project Engineer serves as the Owner's Representative with the right to change and alter the contract as the Owner's agent. The Project Engineer is also required to practice sound engineering principles and to use their best professional judgment.

On-Site Representative and/or Inspector

The day to day monitoring of work is typically conducted by the On-Site Representative or Inspector. The Inspector acts as the eyes and ears of the Project Engineer and monitors work to assure compliance with the project plans and specifications. The Inspector also tracks work to assure accurate and timely payment of the Contractor. The Inspector is not empowered to make field changes or to authorize any changes to the contract. Of course, the Project Engineer usually relies on the Inspector for recommendations before authorizing such changes. The Inspector also monitors for compliance with environmental and safety practices and can stop work when the Contractor fails to correct any such non-compliance.

Field Biologist

The Field Biologist's role on a construction site can be an unfamiliar one to contractors and project engineers new to restoration. This role is typically not defined in standard specifications used by most construction contracts and so it is a good idea to clarify responsibilities and the appropriate channels of communication prior to construction. Yet, it is often the Field Biologist who understands the nuances of the desired outcome that will ultimately determine the success of the project. The role of the Field Biologist is to ensure that the on the ground interpretation of the plans and specifications will physically and biologically function as the design intends and will actually help meet the restoration goals. If the field biologist is not the On-Site representative, it is critical that the On-Site Representative and the Contractor understand the role of the Field Biologist and have an effective manner to address their concerns. It is helpful if the Field Biologist is familiar with contract law and the roles of the contractor and the others on site.

Contractor

The Contractor is responsible for constructing the project using their chosen ways and means or manner and methods to achieve the desired outcome. The Contractor controls the manner in which work is conducted and the schedule within the limitations specified within the contract. The Contractor is required to cooperate and coordinate with others conducting work for the Owner, as long as that work does not interfere with their own ability to complete work or otherwise imposes economic harm.

Jimmycomelately Creek during moderately high flow, December 28, 2006 (Byron Rot)

One-to-One Principle

The one-to-one principle designates a single individual as the sole spokesperson representing the Owner's interest. Most often this spokesperson is the Project Engineer. The Project Engineer often delegates portions of this authority to the On-Site Representative or Inspector. For example, the Inspector is often authorized to accept construction materials but may need the Project Engineer's approval for any substitutions. This principle assures the Contractor that they will receive direction from only one representative. Of course, other points of view and questions can and should be considered, but communication of the final decision to the Contractor should only be conducted by the Owner's Representative.

From Theory to Reality or the Difference between Construction and Restoration

The above roles and responsibilities have a long history of working well for most construction projects. However, as most restoration practitioners will tell you, restoration projects are not like other construction projects. First, you are often dealing with living ecosystems (non-uniform materials such as root wads or large woody debris) that are hard to specify (i.e. define in a contract). Second, it is often difficult to specify exact placement of such non-uniform materials. Also, because restoration projects are seeking to blend in with the adjacent functioning landscape, careful attention needs to be paid to construction impacts. Also, construction operations may be constrained by the sensitivity of fish species at various stages of their life cycles. Often these constraints can overlap leaving a short "fish window" of time where work in and over water may be permitted. Finally, most restoration projects seek to achieve a living, functioning ecosystem or a landscape that is constantly evolving and changing. This concept, that the contract's ultimate product is a landscape that is meant to change, is inherently foreign to most construction professionals who pride themselves on "building things to last".

Hence, you might well end up with a contractor or an engineer for a restoration project that is not at all familiar with restoration. This does not mean that they are unskilled or even uncooperative, it may simply mean that they are used to dealing with linear, uniform materials and that the idea of leaving an uneven grade to promote diversity in the landscape will likely seem foreign to them.

It is also important to understand that the more mundane construction activities, such as the bidding process for construction, managing the disposal site for excavation, or traffic control

could become the factors that ultimately control the success of your restoration project.

One "Project" – Many Contracts

The Jimmy Project involved many project partners that collaborated on design and funding of the overall project. This collaborative partnership was very productive in developing the overall concept and design. Yet, as the distinct elements of the project moved to construction, the project partners necessarily became more autonomous in order to effectively administer the individual contracts that were let. The actual construction of the Jimmy Project was divided into the following contracts:

- Construction of the Jimmycomelately Creek channel south of Highway 101
- Construction of the new Highway 101 Bridge
- Restoration of the Dance Hall (Eng) property
- Restoration of the Estuary – Phase I (Log Yard Pier and Log Deck Road removal, and restoration of the nearshore)
- Restoration of the Estuary – Phase II and Dean Creek (including Log Yard, Sequim Bay RV Park, and pedestrian bridge for the trail over Dean Creek)
- Removal of Old Blyn Highway
- Construction of the Olympic Discovery Trail (including 3 pedestrian bridges)
- Removal of the creosote-treated trestle along the old Railroad Grade
- Removal of the creosote-treated pilings in lower Sequim Bay

Each of these elements had different funding sources and each element was administered separately. However, they all had to fit together and thus close coordination was required. A summary of each of the contracts, as well as challenges, encountered is given below.

JCL Channel South of Highway 101

This was really the first phase of the overall project and began with a groundbreaking ceremony attended by the partners and dignitaries. After the cake was gone, the real work began.

The Owner or contracting party in this case was the Clallam Conservation District (CCD). The CCD received funding for the first summer of construction of the JCL channel and provided the Project Engineer and contract administration as an in-kind contribution. The Jamestown S'Klallam Tribe received funding for the second summer of construction, but CCD remained the contracting agency for the duration of the channel construction.

The work was divided into three main parts: excavation of the channel, hauling of the excavated soils, and disposal of the excavated soils. This contract also had the tightest budget. After the project coordinator reviewed the engineer's estimate, it became apparent that there were not sufficient funds to pay a contractor to do all three phases. Thus began the creative thinking phase.

Fortunately, the US Fish and Wildlife Service had an experienced equipment operator that was available to be loaned to the project thereby cutting the cost for the excavation. The Jamestown S'Klallam Tribe also contributed to the project by agreeing to dispose of the waste material onsite on a piece of its property, rather than hauling the material off site. The Tribe ultimately wanted to raise the elevation of the property and develop it, and so they were willing to accept and handle the fill material instead of buying fill from somewhere else. So a contract was awarded to Vision Builders of Port Angeles, WA to haul the excavated materials. In theory, the channel construction was supposed to work like this:

1. The USFWS Operator would excavate the channel and floodplain and load the soils into Vision Builders' trucks.
2. Vision Builders would haul the soils to the Tribe's property, and also assist with large woody debris placement and other items such as erosion control and hydroseeding.
3. Jamestown Excavating, working for the Tribe, would receive the soils and spread and compact them according to the Tribe's specifications.

All did not go according to this plan. During the initial clearing and grubbing phase, one of the landowners became very upset. Although this landowner had been provided copies of the plans and clearing limits, it became obvious that we had not adequately explained the extent of the clearing or the number of trees that would be removed. Some modifications to the clearing limits were made, but not before more trees had been removed than the landowner or the Tribe's field biologist wanted. By the time the trees had been cleared, the only promise we could make was to plant many more trees than had been cut. This was one of several instances of poor communication with this particular landowner (see Engineering Design Section).

It was initially thought that since excavation was not scheduled until late July the soils would be fairly dry and workable. This was not the case; not only were the soils near saturation, they also consisted of a high percentage of silt and clay. This caused two major challenges: bearing capacity for the excavation machinery and management of the disposal area.

The first challenge was the difficulty in handling the excavated material at the disposal site. An initial lift of soils was placed over the entire fill area. When the second lift began, the dump trucks became stuck as the first lift had not been properly dried and compacted. Lacking an alternate disposal site, the entire project came to a halt. This challenge was addressed in several ways. First, an on site representative was hired to help manage the disposal operation at the Tribe's property. Second, another disposal area had to be found because a good portion of the material was simply unsuitable for structural fill, and there was not enough room to either store or waste the material on site. Thus, another phase of creative thinking began.

The material not suited for structural fill was rejected mainly because of high organic content. However, with some processing and amendments, this material had high value as topsoil. Serendipitously, the WSDOT was planning on landscaping a large area along Highway 101 about 10 miles from the Jimmy Project. The WSDOT was given the reject material in exchange for the provision of WSDOT trucks and drivers to haul the material. Other local contractors were also given access to the material and in this manner over 12,000 cubic yards of "reject" material was hauled from the project site.

The near-saturated soils also presented a challenge for equipment operation. A field decision was made that turned out to be near-fatal for the project. The project had been delayed by the disposal difficulties and it was clear that the project would not be finished before the fall rainy season. So, the decision was made to excavate the floodplain, which was 100 feet wide in most places, for the entire length of the channel and to come back the next summer to excavate the actual channel. Because this portion of the project was being conducted by the USFWS operator, it was not up to the contractor to determine the manner in which to conduct the work. Most of the floodplain was excavated and the project was shut down for the winter.

The next summer all of the underlying soils had been left open to the winter's rain and were still quite saturated. Consequently, the excavators now had to traverse over 50 feet of soils in the excavated floodplain with little to no bearing capacity. This made the final excavation exceptionally difficult and slowed the work progress considerably. The conditions were so difficult to excavate the channel that another

challenge arose: how would we place the spawning gravel after the channel was excavated? Once again, creative thinking was necessary. Ultimately, a telescoping, belt-conveyor spreader called an Agracat was used to place the spawning gravel. This type of conveyor is typically used to off-load a dump truck and spread rock a few feet. We were able to extend the telescope to its full length and run the belt at top speed and throw the gravel the necessary 35 to 40 feet. It was an unconventional use, which was very loud and cost the project a new conveyor belt, but ultimately we were able to place the spawning gravel properly.

Highway 101 Bridge

Construction of the Highway 101 Bridge was completed with Clallam County Public Works acting as the Owner. Clallam County provided an on-site inspector who reported to a Clallam County engineer as the owner's representative. Most of the work went smoothly though there were a few issues with coordination of other work in the area. Estuary work was being completed simultaneously and the bridge contractor and the estuary contractor were using the same disposal area. This lead to some coordination challenges that were resolved.

Restoration of the Dance Hall (Eng) property

This phase of the project was handled separately from the other elements. The Eng Property was purchased by WSDOT as an advance mitigation site for wetland impacts in the Blyn sub-basin and thus was not eligible for restoration funds. WSDOT acted as owner and provided all inspection services. WSDOT, working in collaboration with the estuary design group, was responsible for implementing the overall design for that portion of the restoration project.

Phase I of Estuary Restoration (Log Yard Pier removal and eastern nearshore)

This phase of the project was completed with the Tribe acting as owner and providing inspection services. This phase used two different disposal sites for the excavated material: the same Tribal property used for disposal of the channel soils and a different property owned by Clallam County. On the Clallam County property, the material was used to build a perimeter berm around what the County plans to develop as a gravel pit within the next 20 years. Clallam County required that the material be tested for potential contaminants with an agreement to remove material exceeding state levels. A careful monitoring and sampling plan was developed to track the location of where materials were placed. No removal of material from the disposal area was required, as no contaminated material was found.

Phase II Estuary Restoration and Dean Creek (including Log Yard, Sequim Bay RV Park, and pedestrian bridge for Dean Creek)

Phase II of the estuary restoration and Dean Creek restoration constituted the largest area and volume of restoration work. The valuable lessons learned from the challenging channel work were conveyed to the Contractor doing the estuary work. The Contractor then chose to excavate the lower JCL channel (north of Highway 101) and floodplain concurrently. The excavation of the estuary was fairly straight forward, however, one can always expect surprises while digging (see the Toxics Section for a discussion of unanticipated toxic materials that were discovered in two places in the estuary).

Removal of Old Blyn Highway

Two remaining properties used Old Blyn Highway (OBH) to access Highway 101, and so a new access had to be designed and built as a replacement. In addition, as the time neared to actually remove OBH, staff at Clallam County recommended to the County Commissioners that they require this essential element of the restoration be delayed until the Olympic Discovery Trail was completed. Ultimately, the concerns of the staff and Commissioners were assuaged, OBH was removed, and the trail was built later.

Construction of the Olympic Discovery Trail (including pedestrian bridges for the JCL channel and the old trestle replacement) and Trestle Removal

These elements are discussed in Olympic Discovery Trail Section.

Removal of Creosote-Treated Pilings

This element is discussed in Toxics Section.

Lessons Learned

- *Carefully review and understand the Project Engineer's plans and specifications*. This step cannot be overstated; the contractor will build what is in the plans and specifications. Many restoration practitioners do not have much experience with construction drawings or the arcane language of specifications. Making sure that the design team's intentions are translated into construction documents will save many changes in the field.
- *Don't underestimate the complexity and importance of the construction bid process.* On the Jimmy Project some construction tasks could proceed rapidly from grant award to construction while others were slowed by the individual agencies bid process. In some cases, depending on the source of the funding, federal bidding rules applied and in other cases state rules applied. This led to some conflict between the contracting parties and frustration by the partners due to delays in construction.
- *As inspector or field biologist, anticipate contractor problems and questions*. While you can't dictate to the contractor how to do their work (violates "Means and Methods" portion of the contract), they will ask for your input, particularly if it involves wood placement, retaining vegetation, topographical variations, etc. Ask the contractor when they plan to do challenging tasks and be there in advance. Also try to be on site at the beginning of each day (often 7am or first light) to answer questions. If you're not there to provide input when it is needed, the contractor will make those decisions for you.
- *Closely review all design products.* Pay particular attention to clearing limits: do they extend into riparian forest you wanted to save?
- *Stake your project carefully*. During channel clearing there was one clump of very large alder trees that the field biologist and landowner wanted saved, but unfortunately these trees were staked within the clearing limits and the engineer was not comfortable with leaving them uncut (see the Engineering Design Section for the full story).
- *Place a strong emphasis on collecting data at both reference sites and at the restoration site.* For example, if soil test pits had been dug the entire length of the JCL channel centerline, we would have had enough data to either alter the channel design or to at least anticipate the difficult (wet) working conditions. In addition rely on good reference sites to guide channel design and use other restoration models or case histories as secondary confirmation of your design.
- *Do not break the work into separate contracts unnecessarily (The corollary is to make sure you have enough money in your budget for the contract)*. Had the channel excavation, haul, and disposal work been under the control of one contractor, many of our problems could have been avoided. That one contractor would have had enough control of the various work elements and enough financial incentive to make the operation work smoothly.
- *Employ experienced on-site personnel*. An experienced inspector would have detected problems with the channel construction and sought direction from the project engineer much sooner. With earlier interruption of JCL channel construction, some problems could have been lessened or avoided. It is also important that the on-site representative understand the implications of what happens

off-site. The initial problems with the JCL channel construction began at the disposal site, and eventually caused construction of the channel itself to be halted.

- *Engineers are legally liable for their design and the finished constructed project*. Hire engineers who either have restoration experience or have an attitude that will allow them to engineer and construct a non-fixed, living, project. However, understand that engineers will likely come with years of construction experience and responsibility, so consider their perspectives with due respect.
- *Write and review a communications plan before work begins*. It is important that all on-site personnel be able to have their concerns and issues addressed. However, it is crucial that the one-to-one principle be maintained. In the heat of construction, it may seem easier for whoever is on site to talk to the contractor, but a prudent use of the sole spokesperson will save many headaches in the long run. That being said, the owner's representative must be accessible and available to resolve and communicate issues.
- *Continue to keep project partners informed about the project*. Progress, changes, and schedule should be consistently conveyed to project partners, especially if you are relying on them to complete a portion of work.
- *Retain large trees, wetlands, and topographical variation in the landscape*. On the JCL channel, we designed the channel excavation to wrap around a large, live spruce tree. In the estuary, we retained areas of willow/rose scrub, and a single cedar along the JCL; we excavated salt marsh around them. By retaining upland vegetation within the salt marsh (they all lived), we created productive edges between these two habitats.

> Ultimately, the success of restoration projects does not depend on avoiding mistakes but creating solutions to problems.

- *Embrace construction mistakes*. Often it is more damaging to try to go back and fix excavation mistakes, especially if you're on soft soils. We constructed a section of 100 yr floodplain at below the 2 yr elevation. It is now a very productive riparian wetland.
- *When excavating a creek channel, err on the low side for the final floodplain elevation*. Our JCL channel design included a 2 yr floodplain on the inside of meanders and a 100 yr return interval floodplain. In hindsight, it likely would have been better to leave the floodplain at 25-50 yr elevation. The Jimmy Project has experienced some bed degradation (downcutting) in portions of the JCL channel, although that is currently in flux. A floodplain that is activated at smaller floods (i.e. 25 yr vs. 100 yr) would have decreased sediment transport capacity within the channel and reduced energy for downcutting.

MONITORING & ADAPTIVE MANAGEMENT

Dave Shreffler :: Shreffler Environmental

To achieve the restoration goals, and to be able to assess The Jimmy Project successes and failures, the Channel Design Group (CDG) and Estuary Design Group (EDG) realized that rigorous monitoring was critical at all phases of the JCL creek channel realignment and estuary restoration: pre-project (baseline monitoring), during construction (implementation monitoring), and post-project (performance monitoring).

The technical groups developed two separate monitoring plans—one for the channel realignment and one for the estuary restoration. As outlined in these two plans, monitoring was intended to proceed for a minimum of 10 years post-construction.

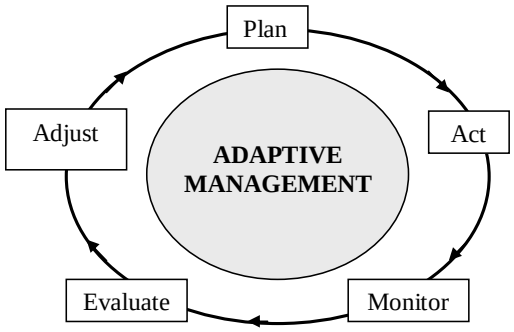
The two monitoring plans are available as a downloadable PDF files from the Tribe's website:

JCL channel realignment monitoring:
http://www.jamestowntribe.org/jstweb_2007/programs/nrs/jcl-Monitoring%20Plan%20(final).pdf

Estuary monitoring:
http://www.jamestowntribe.org/jstweb_2007/programs/nrs/jcl-Estuary%20Monitoring%20Plan-Final.pdf

The foundation of these monitoring plans is conceptual models that link controlling factors, habitat structure, and ecosystem functions. Monitoring tasks were divided into three inter-related, categories: ecological processes monitoring, habitat conditions and functions monitoring, and biological responses monitoring. The two technical groups prioritized all monitoring tasks as either "essential" or "recommended."

For each monitoring task, a quantifiable performance criterion was developed (e.g., *survival of riparian plantings in each cover class category (herb, shrub, trees) should be at least 75% at the end of 3 years*). The performance criteria are summarized in Table 3.1 of the Channel Monitoring Plan and Table 4.1 of the Estuary Monitoring Plan. Recognizing the need for adaptive management, potential contingency measures were also developed for each monitoring task, in case the performance criterion for that task was not being met within the expected timeframe.



In the context of this document, adaptive management can be defined as the process of: stating restoration goals (plan), implementing restoration actions (act), collecting credible data (monitor), determining if performance criteria are met (evaluate), and deciding what actions to take (adjust).

Monitoring of ecological processes (hydrology, sediment transport), habitat conditions (channel morphology, water quality, large woody debris, and flood conveyance), and biological responses (wetland and riparian vegetation, salmon, shellfish, and birds) is ongoing for both the channel and the estuary, with the caveat that the level of monitoring is significantly less than what the CDG and EDG prescribed at the time the monitoring plans were written.

In particular, we had to drop all of the "recommended" monitoring tasks due to lack of funding. We also eliminated several of the "essential tasks" either due to lack of funding or practical constraints in the field. The end result is

that we have limited data to assess whether the following *channel realignment performance criteria* were met or not:

Sediment Transport:

- Excessive sediment aggradation in the new JCL channel or new Dean Creek channel could trigger the need for contingency measures. (Note: We do have channel cross sections at multiple different stations along the channel that provide us with indications of changes in bed elevations and channel gradients, widths, and slopes. The "essential" monitoring we have been unable to do, due to lack of funding, is pebble counts and sampling of suspended sediment loads during flooding events).
- Scouring will be monitored in each reach of the new JCL channel to ensure that scour depth is less than reported literature values for salmon redd depths of various species. (Note: No scouring data has been collected, despite the fact this was deemed "essential" by the CDG).

Similarly, we have limited data to assess whether the following *estuary restoration performance criteria* were met or not:

Hydrology:

- A functioning hydrological connection shall be restored and self maintaining between JCL and the estuary, and Dean Creek and the estuary. (Note: We have empirical observations to confirm this criterion is being met, just not the quantitative data on channel flow capacity, tidal elevation, and tidal prism that was originally deemed "essential").
- The constructed tidal basins shall result in a net increase of tidal prism relative to pre-project conditions. (Note: We have empirical observations to confirm this criterion is being met, just not quantitative flood and ebb discharge measurements, tidal flux data, or tidal velocities that were originally deemed "essential").

Sediment Transport & Deposition:

- Tidal "flushing" capacity of the estuary tidal basins shall be sufficient to transport sediment out into Sequim Bay. (Note: We tried to perform this task, but it proved to be unworkable in the field, due to fast moving water and "boot sucking" mud).

Water & Sediment Quality:

- Sediment quality parameters (metals, organics, TPH) at the mouth of the new JCL Creek channel, the mouth of the new Dean Creek channel, and within the footprint of the former pilings shall not exceed state, federal, or tribal water quality standards. (Note: We do have water quality data to address performance criteria for water temp., dissolved oxygen, turbidity, and fecal coliform; we just don't have any of the sediment quality data deemed "essential" by the EDG).

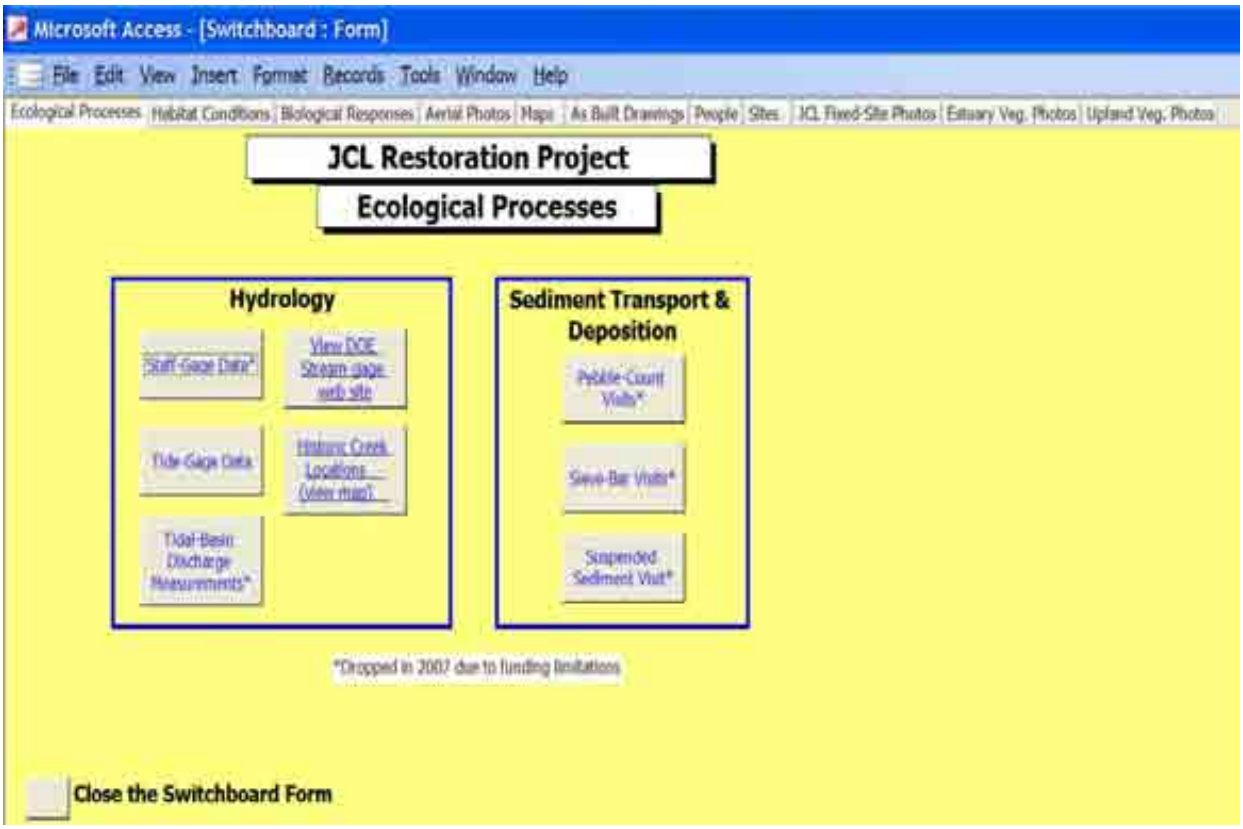
The Jamestown Tribe maintains an MS Access database with all the Jimmy Project monitoring data, maps, and photos regardless of whether they were obtained by the Tribe or other project partners. Funding for monitoring has been pieced together from multiple grants and is being conducted by multiple partners, as well as volunteers. WSDOT has a long-term monitoring program for the former Eng property. WSDOT monitoring reports are on the web at:

http://www.wsdot.wa.gov/Environment/Biology/Wetlands/reports.htm

Take home message: Due to lack of funding, we had to drop all of the recommended monitoring tasks and several of the essential tasks. Grant agencies want to fund "projects" but not monitoring. The science of ecosystem restoration will only advance if grant agencies are willing to consistently devote money to monitoring the successes and failures of restoration projects like the Jimmy Project.

Lessons Learned

- Monitoring takes time, money and several kinds of expertise.
- Funding for monitoring is THE most difficult grant funding to obtain; we had more difficulty securing several thousand dollars for monitoring than securing millions of dollars for property acquisition, bridge construction, and restoration. This lesson holds true not just for our experiences with the Jimmy Project, but also for the Elwha Dam Removal and Ecosystem Restoration and multiple SRFB projects that have been implemented on the North Olympic Peninsula.
- Monitoring is often mandated for restoration projects but it's almost always an unfunded mandate and there's no way to enforce the mandate. Lack of monitoring money leads to missed opportunities and the inability to understand why specific project elements succeed or fail.
- For a project as vast in scope as the Jimmy Project, a centralized database containing all project-related monitoring data is not only helpful but essential.



Screen view of the master "switchboard" form for the Jimmy Project database

The evolution of the Jimmycomelately Creek Channel (2000 – 2008) (Randy Johnson)

PARTING THOUGHTS

Dave Shreffler :: Shreffler Environmental

The project partners are often asked, "Why did the Jimmy Project succeed?" The answers to that question could be as varied as the definitions of "success."

From a process standpoint, there were tense moments and disagreements—some itemized in this report and others not—as well as many hurdles we faced. But we persevered until all our plans were implemented. In the end, the project was completed.

From an ecological standpoint, it is too soon to say that the project succeeded (i.e., more time needs to pass before we can rigorously quantify how the restored ecosystem is performing relative to pre-project conditions). Nevertheless, the authors are gratified that project partners, most landowners, the local community, and project funders perceive the project as a success.

In large part, we attribute the perceived success of the Jimmy Project to the following key elements:

- A unified vision and clear goals that addressed the urgent need to solve fish and flooding problems.
- Involvement of landowners and the community from the start.
- Luck and a spirit of opportunism among the project partners.
- Roadblocks that became opportunities.
- Honest and respectful communications.
- Innovative use of all "tools" at our disposal: historic photos & maps, aerial photos, ground-level photos, orthographic photos, and GIS.
- Creative blending of many different funding sources.
- Hiring a project coordinator with a clear mandate to coordinate with the 27 partners, rather than a project manager to manage people.
- The Jamestown S'Klallam Tribe serving as a project "anchor."
- Perseverance and buy-in to the idea that, "*It's amazing how much can be accomplished when no one cares who gets the credit.*"

Thus far, monitoring shows that the Jimmy Project is functioning as designed. There have been no major flooding events, road closures, or threats to homes or infrastructure post-restoration. Summer chum salmon are rebounding remarkably, with a high return of 1,698 fish in 2005 (up from 7 fish total in 1999). The restored creek (see graphic previous page) and tidal areas offer greatly improved habitat and better water quality for fish, shellfish, and birds. Native plants are returning naturally to the estuary. And locals have become avid stewards of Jimmycomelately Creek. The Jimmy Project partners hope to secure funding for a future report that will analyze 10 years of post-project monitoring data.

Five years post-restoration, it's too soon to know what the legacy of the Jimmy Project will ultimately be. The Jimmy story is ongoing, evolving as the restored ecosystem evolves. Yet, the authors of this Lessons Learned Report hope that the Jimmy Project will one day be remembered as a shining example of the power of restoration to connect people to the land and each other.