Elk Creek Wood Placement Phase II

Oregon Watershed Enhancement Board

Grant # 206-292

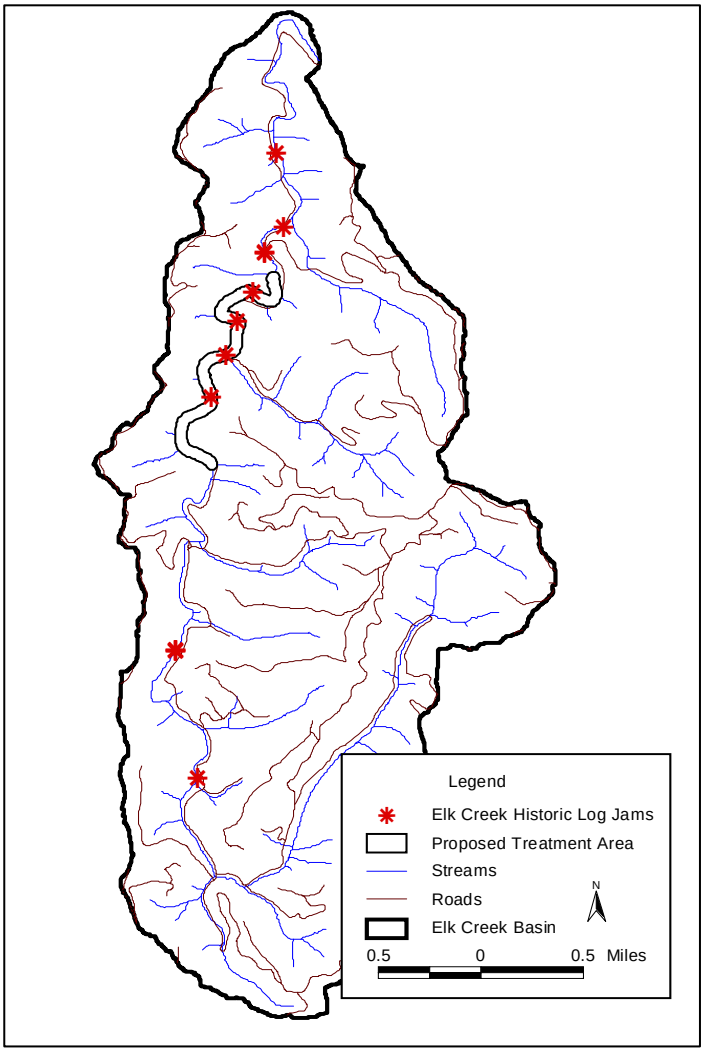
Final Grant Report

Grant Administered by: Coos Watershed Association

Cover photo by Joseph Feldhaus. A large log is being pulled by a cable tree puller towards Elk creek. This placement occurred on September 19th, 2007 and was part of the added value wood placement. This log is waypoint ID 23.

Background and Introduction

Historic land management of the Elliott State Forest has resulted in present day stream conditions that are lacking in large wood, a vital component of instream aquatic habitat complexity. The lack of large wood has been caused by intentional removal of large wood from streams during the middle part of the century, harvest of riparian conifers from before the Forest Practices Act and subsequent conversion of riparian stands from mixed stands to hardwood dominated stands, and removal of conifers from slide draws. These processes have been well documented in the Elliott State Forest Watershed Analysis (2003).



Map 1- Elk Creek 1967 Historic Log Jams

Stream surveys conducted in 1967 documented the size and location of large logjams found in Elk Creek. Recent Oregon Department of Fish and Wildlife (ODFW) Aquatic Habitat Inventory (AHI) surveys found only 63% of the wood volume found in the 1967 historic wood surveys in Elk Creek (Map 1). Prior to large wood placement projects on Elk Creek (Elk Phase 1-OWEB 204-372B; Elk Phase II-OWEB 206-292) the wood volumes per 100 feet on Elk Creek was just over 10% of the volume of wood found in nine undisturbed streams on nearby Bureau of Land Management (BLM) property (Riparian Vegetation and Abundance of Woody Debris in Streams of Southwest Oregon, Ursitti 1990).

Numerous problems in watershed function have been linked to deficiencies of large wood in forested streams. Large wood aids in the formation of essential in stream habitat features such as pool scour, formation of secondary and off-channel habitat, and sediment retention. Sediment stored behind large wood provides high-quality spawning habitat for coho, steelhead, and cutthroat, and increases the stream elevation which helps connect the main channel with the floodplain. Large wood also plays a role in nutrient cycling processes, such as nutrient retention (e.g. salmon carcasses), wood decay, and production of benthic macro-invertebrates.

The goal of this project was to improve stream complexity and enhance watershed function in an effort to increase the adult spawning population in Elk Creek relative to the population levels in the West Fork Millicoma 6th field HUC. Our objectives were to (1) increase

the number of complex pools, (2) increase the total pool area and average residual pool depth, (3) increase the total area of secondary channels and off-channel habitat (i.e., alcoves, backwater pools, and isolated pools), and (4) increase extent and number of juvenile coho utilizing pools in the treatment reach.

This report will focus on the restoration and monitoring work that occurred concurrent with Elk Phase II. Since the wood placement projects on Elk creek are part of the same concentrated effort to improve habitat in the Elk creek basin, past (i.e. Elk Phase I – OWEB 204-372B) and future (i.e., Elk Phase III 207-291) restoration and monitoring efforts connected to large wood restoration in Elk creek will be presented.

Site Characteristics

The 1.5 mile reach of Elk Creek that was the focus of Elk Phase II (OWEB 206-292) has a stream gradient of 1.2% and an average bankfull width of 30-35 feet. The watershed area above the project is 5 mi^2 and has a 50-year peak flow of approximately 1,000 cfs. There are no large log jams in the proposed treatment reach even though numerous large jams were detailed during the 1967 survey (Map 1). An Aquatic Habitat Inventory (AHI) report completed by ODFW on December 12, 1996, from the confluence of Crane Creek to Skunk Creek, indicated there were only 0.3 key pieces of wood per 100 meters, and a total wood volume of 11.6 m^3 per 100 meters. Pre-project surveys from March 9th and June 27th, 2006 indicate the treatment reach had $\leq$ 0.5 key pieces of wood per 100 meters and a total wood volume of 11.5 m^3 per 100 meters (Table 4). According to ODFW Habitat Benchmarks, these wood values would be classified as "undesirable."

The riparian area in the treatment reach is hardwood dominated within the first 50 feet and conifer-dominated beyond 50 feet. Future recruitment of large wood, especially conifers that will persist in the stream, is expected to increase as the stand age increases. The robust riparian conifer stem retention strategy employed by the Elliott State Forest in recent timber sales should ensure desired wood levels in the long-term. Such management should be continued under the in-progress Habitat Conservation Plan under development by the Elliott State Forest and USFWS.

Project Design

We constructed 16 large wood structures using 52 trees and logs. Each structure consisted of 3 to 5 key pieces keyed on riparian trees and stacked to reduce mobility. Each piece of wood placed in this project met the key piece standard for the Regional General Permit (RGP) requirements for placement of large wood and boulders. All placed logs met the criteria of 2x bankfull width, and trees with root wads were greater than 100 feet in length, exceeding the requirement for a tree length of 1.5x bankfull width.

The wood was donated by the Elliott State Forest in two forms:

- *Pull trees:* Sixteen whole Douglas-fir trees, sizes ranging from 22 to 32 inches in DBH and 120 to 170 feet in height, were pulled from adjacent timber stands from outside the Riparian Management Area (RMA). Prior to pulling down trees, each tree was evaluated by ODF and ODFW biologists for potential Marbled Murrelet habitat.
- *Logs:* Thirty-six 70-foot long Douglas-fir logs, stockpile from a nearby logging operation (Figure 1), were transported on a lowboy to the Elk Creek project site and

staged along the road near the placement site. These logs did not have an attached root wad.

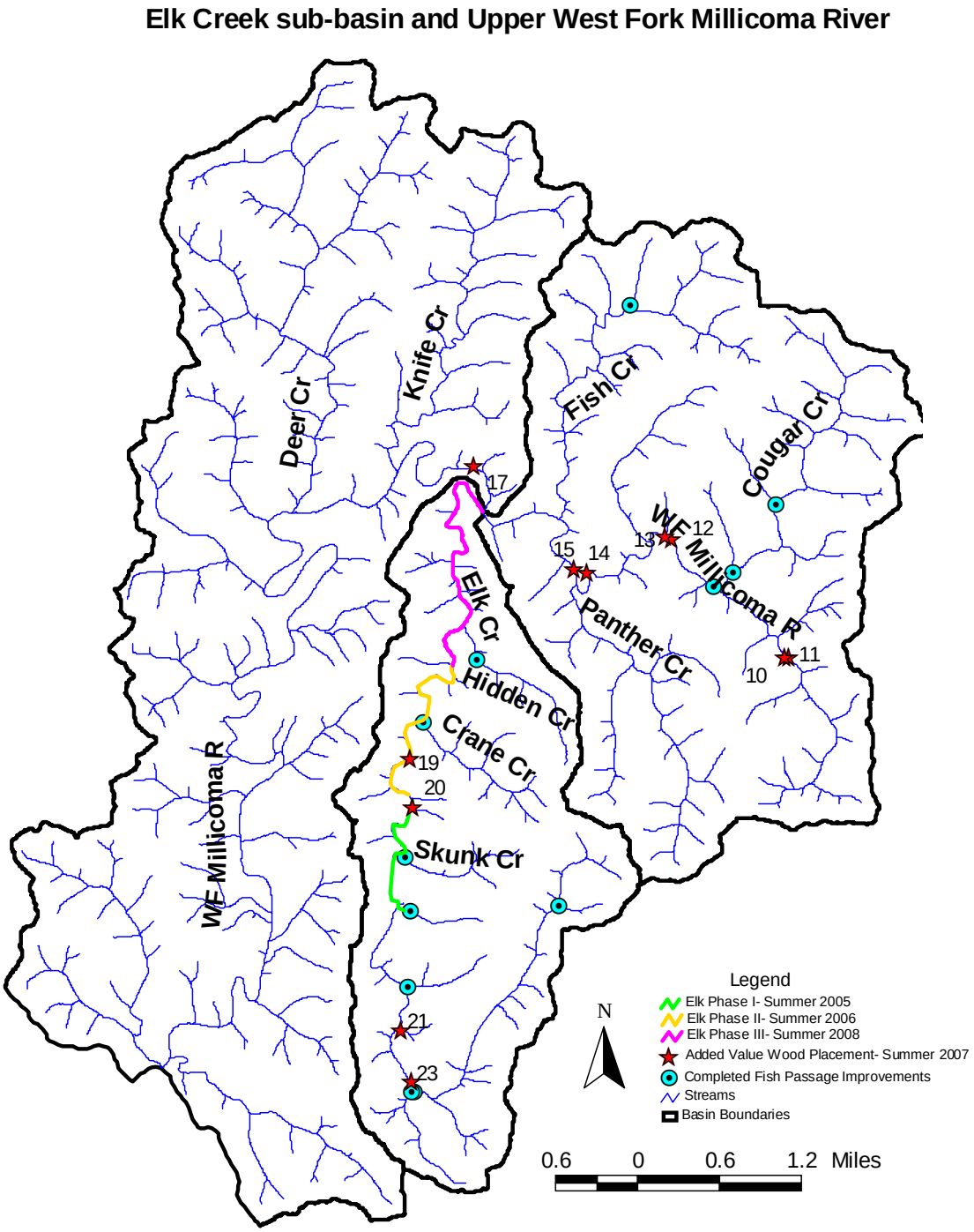
All trees and logs were placed with a cable yarder attached to a truck (Figure 1). The standing trees were pulled over with the same equipment. By pulling trees in this manner, the entire root wad remains intact. Root wads are desired on trees used in large wood projects because the root wad helps increase habitat complexity, aids in pool scour, and enhances structural stability by acting as an anchor. Placing wood using this method also removes the need to operate heavy equipment in the stream channel or riparian area and minimizes incidental damage.

Project designs were completed by Matthew Anderson, Project Manager for the Coos Watershed Association (Coos WA), Jennifer Feola, Fish Habitat Restoration Biologist with ODFW and Randy Smith, Southern Oregon Area Biologist with ODF. All three had prior experience designing and implementing large wood structures. This team completed Elk Creek Wood Placement Phase I and West Fork Millicoma River Wood Phase III during the summer of 2005.

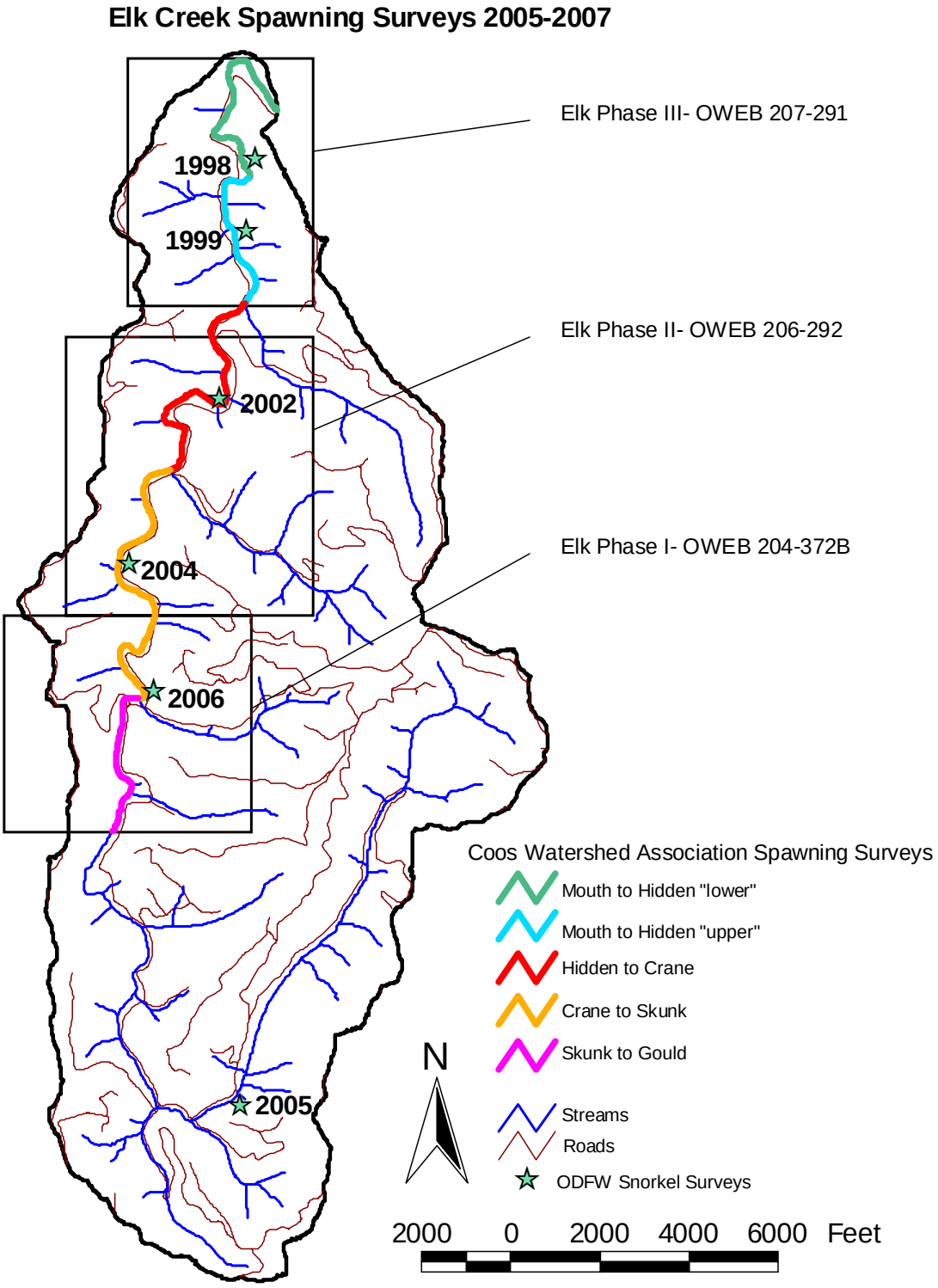
Figure 1-Stockpiled logs (left photo) and the cable tree puller (right photo) used to pull over trees and place logs.

The Added Value Wood Project-Summer 2007

A modification to the original proposal was the inclusion of the added wood placement project that was completed during the summer of 2007. At the conclusion of Elk Phase II (Map 2), there was $5,000 left in contracted services. During the winter of 2006, a windstorm blew over trees in the Elliott State Forest. Randy Smith, Southern Oregon Area Biologist for ODF, identified blow down trees adjacent to Elk Creek, the West Fork Millicoma, and Footlog creek that could be easily yarded into the creek. Randy secured $10,000 from ODF for an added value wood project to match the remaining $5,000 in contracted service funds from OWEB 206-292. We used this $15,000 to hire Mark Villers owner of Blue Ridge Timber Cutting Inc., a contractor specializing in large wood placements, to place the blow down trees in the creek. The locations of the large wood placement that were part of the added value project are summarized in Table 5 and shown on Map 2.



Map 2- Large wood restoration projects in the Elk Creek sub-basin, and the added value wood placed in the West Fork sub-basin. Elk Phase I was funded by OWEB 204-372B. Elk Phase III (OWEB 207-291) is planned for summer 2008. Large wood projects prior to 2007 on the West Fork Millicoma, the added value logs placed on Footlog creek, road decommission projects, and boulder placements are not shown on this map.



Map 3—Location of Elk Phase I-III large wood placements and how the restoration efforts match up with spawning surveys conducted by CoosWA staff from 2005-2007. For reference purposes, ODFW snorkel survey locations are also shown.

Project Monitoring

Snorkel Surveys

Pre and post project snorkel surveys were conducted by CoosWA staff in the stream reach that was the focus of the Elk Creek Phase II large wood placement project (Map 2). Surveyors followed the ODFW protocol for snorkel surveys described in *Protocols for Conducting Oregon Plan Surveys of Juvenile Salmonids in Oregon Coastal Steams* (2004). Different CoosWA staff members collected data between the pre and post project surveys. Snorkel surveyors were not calibrated for snorkel efficiency.

Spawning Surveys

CoosWA staff completed pre and post project spawning surveys in the vicinity of Elk Phase II (Map 3). The survey methods followed the ODFW protocol described in the *Coastal Salmon Spawning Survey Procedures Manual 2006 (*a copy is available at: *http://oregonstate.edu/dept/ODFW/spawn/reports.htm).*

Aquatic Habitat Inventory (AHI)

Pre and post project AHI surveys were completed by ODFW between 2004 and 2007 (Maps 5-8). The AHI data was entered and analyzed by ODFW staff, and reports were provided to CoosWA.

The habitat benchmarks developed by ODFW define *undesirable* (poor) and *desirable* (good) fish habitat characteristics and provide a method for comparing key components of streams. *Intermediate levels* are defined as levels between undesirable and desirable. This analysis of Elk Creek uses benchmark criterion for medium streams (7 - 15 meters active channel width) with sedimentary material in west-side forested basins.

Results

Snorkel Surveys

CoosWA staff completed pre-project surveys on the Elk Creek Phase II project area (Map 2) from July 27-August 7, 2006. One snorkeler surveyed pools in 2006. Post project surveys were completed from September 10-12, 2007. Two surveyors's snorkeled pools in 2007. The number of coho, cutthroat trout, and steelhead >100 mm, and coho density/m^2 was higher in the pre-project survey than the post project snorkel survey (Table 1). The total length of snorkeled pools, and the average pool depth was similar between pre and post-project surveys.

Table 1-Comparison of CoosWA pre-project (July 27-Aug 7, 2006) and post project (Sept. 10-12, 2007) snorkel survey counts for juvenile coho, cutthroat trout (CUT), and juvenile steelhead trout (STH) >100 mm in the Elk Phase II wood reach (see Map 2).

		Number of Fish Counted			**Density (Fish/m$^{2)}$**			**Survey Characteristics**				
	# Pools surveyed	Coho	CUT	STH	Coho	CUT	STH	Total Survey Length (m)	Total Pool Area (m)	Avg. Pool length (m)	Avg. Pool width (m)	Avg. Pool depth (cm)
Pre-Project	82	7135	418	328	1.0	0.05	0.06	1425	7,065	19.4	5.3	58
Post-Project	77	5979	51	200	0.66	0.005	0.02	1490	9,106	17.4	4.85	56

As part of the Western Oregon Rearing Project (WORP) for monitoring salmonids, ODFW has been completing snorkel surveys in the Coos Basin. Between 1998 and 2006, six snorkel surveys have been conducted on Elk Creek (Table 2, Map 3). Each ODFW survey was conducted in a different location each year, and in general, has progressed from a downstream to upstream direction (Map 3). Juvenile coho densities range from 0.215 fish/m^2 to 1.053 fish/m^2. Cutthroat (CUT) and steelhead trout (STH) densities were lower than coho densities in all years surveyed, and range between 0 and 0.019 fish/m^2.

The range of coho densities (0.29-1.05 fish/m^2) observed by ODFW encompassed the densities observed by CoosWA (0.66-1.0 fish/m^2) for pre and post project surveys. The pre-project surveys by CoosWA in 2006 had higher densities of cutthroat trout (0.05 fish/m^2) and juvenile steelhead (0.06 fish/m^2) than any survey by ODFW between 1998 and 2006. Densities of cutthroat and steelhead observed by CoosWA staff in 2007 were within the range of values observed by ODFW (Table 2).

Table 2-Snorkel survey data collected by ODFW staff. CUT = cutthroat trout. STH= juvenile steelhead trout >100 mm. N.A. = Not Applicable. The Elk Phase I large wood placement was implemented in the summer of 2005 and Elk Phase II was implemented in the summer of 2006.

			GPS Coordinates for start location				Density (fish/m^2)		
Elk Wood Project Phase	ODFW Survey Year	Survey Length (meters)	Longitude	Latitude	# Pools surveyed	Total # of Coho Counted	Coho	CUT	STH
Phase III	1998	1000	-123.93380	43.57973	22	1326	0.794	0.025	0
Phase III	1999	987	-123.93430	43.57528	29	396	0.215	0.014	0.001
Phase II	2002	1000	-123.93600	43.56489	33	2132	1.053	0.014	0.008
Phase II	2004	1000	-123.94300	43.55451	21	559	0.291	0.02	0.009
N.A.	2005	971	-123.93170	43.52146	41	982	0.91	0	0.019
Phase I	2006	1213	-123.94050	43.54670	46	3651	0.902	0.008	0.018

Spawning Surveys

CoosWA has been conducting spawning surveys in the Elk Creek sub-basin as part of effectiveness monitoring for restoration projects since 2003. Prior to 2005, these surveys were largely focused on meeting objectives for culvert replacement projects. With funding from OWEB 204-372B, restoration efforts in the Elk Creek sub-basin began to shift towards large

wood placements. For spawning surveys that have been completed within large wood treatment reaches (Table 3), the number of coho observed in the spawning surveys has decreased each year. In the 2005 spawning year, the AUC population estimate for the two spawning reaches on Elk Creek was between 50 and 52 adult coho. In 2006, the number of coho observed decreased by almost 50%. In 2007, the highest AUC estimate for spawning coho was 11.2 coho in the Skunk to Gould survey.

For the last three years, basin wide, adult coho counts in Coos watershed have been in decline. There is yearly fluctuation, largely dictated by ocean survival, in the number of adult coho that return to spawn in natal streams. Without a more in-depth comparison of surveys in other basins, it is not possible to determine if the decline in Elk creek is more precipitous than that of observed in other basins with the Coos watershed.

Table 3-Estimates of adult and jack coho from surveys completed by CoosWA staff in the vicinity of Elk Large Wood Placement Projets Phase I-III.

					Spawning year 2005		Spawning year 2006		Spawning year 2007	
Reach	**Survey**	ODFW Reach ID	CoosWA Segment	Survey Distance (km)	Coho Adult	Coho Jack	Coho Adult	Coho Jack	Coho Adult	Coho Jack
Elk Phase III	Mouth to Hidden "lower"	22297	1-1	1.75	na	na	na	na	1.2	0.0
Elk Phase III	Mouth to Hidden "upper"	22297	1-2	1.27	na	na	na	na	0.6	0.0
Elk Phase II	Hidden to Crane	22297.4	1-1	1.95	50.5	4.3	25.7	0.9	2.5	0.0
Elk Phase II	Crane to Skunk	22297.6	1-2	2.4	na	na	36.9	2.6		
Elk Phase I	Skunk To Gould	22297.6	2-1, 2-2	1.46	51.6	2.8	34.3	1.0	11.2	0.7

AHI Surveys

Pre and post project AHI surveys were completed by ODFW for Elk phase I-II (Table 4) between 2004 and 2007. There were three pre-project surveys completed for Elk Phase I and two post project surveys. Pre-project surveys on March 3 and June 29, 2004 were too short by about 1000 meters (Map 5) and did not encompass the entire length of the Elk Creek Phase I large wood project. The pre-project survey complete on February 7, 2005 was about 1000 meters too long (Map 6). The two post project survey lengths for Elk Phase I are correct (Map 7). The pre and post project survey lengths for Elk Phase II are correct. Pre-project surveys are currently under way for Elk Phase III.

Compared to ODFW benchmark values for medium streams (Table 4), the pre project AHI surveys for Elk Phase I and II show intermediate levels for the number of large wood pieces/100 m stream length, intermediate levels for wood volume, and undesirable levels for the number of “key” pieces. Post project surveys show an increase in all three wood metrics, and all wood metrics are either intermediate or desirable. For Elk Phase I, post project surveys on July 11, 2006 show that wood volume and the number of key pieces/100 m was desirable, but intermediate for the number of pieces/100 m stream length. For Elk Phase II, post project wood volume was desirable, but the number of key pieces and pieces/100 m stream length was intermediate.

Table 4-ODFW Aquatic Habitat Inventories (AHI) surveys prior to (pre) and after (post) large wood placement projects funded by the Oregon Watershed Enhancement Board (OWEB). The notes about the survey distance indicate how the AHI survey matched with the implemented large wood project. In comparison to the large wood project, short = AHI survey > 1000 m too short; long = AHI survey >1000 m too long; Correct = AHI survey matches with implemented restoration effort. Selected habitat parameters from the AHI surveys are compared to ODFW habitat benchmarks (Moore 1997) for stream in forested basins.

Survey Information			**Elk Creek Phase I (OWEB 204-372B)**					**Elk Creek Phase II (OWEB 206-292)**			
Pre or Post Wood Placement	--	--	Pre	Pre	Pre	Post	Post	Pre	Pre	Post	Post
Aquatic Habitat Survey Date	--	--	3/3/04	6/29/04	2/7/05	3/14/06	7/11/06	3/9/06	6/27/06	3/7/07	7/19/07
ODFW Reach ID	--	--	MS-232	MS-232	MS-285	MS-285	MS-285	MS-325	MS-325	MS-325	MS-325
Survey Distance (m) Notes about survey distance and AHI Map	--	--	1,020 Short Map 5	1,041 Short Map 5	3,267 Long Map 6	2,168 Correct Map 7	2,177 Correct Map 7	2,907 Correct Map 8	2,921 Correct Map 8	2,714 Correct Map 8	2,888 Correct Map 8
ODFW Benchmarks	**Und.**	**Des.**									
POOLS											
Pool Area (% Total Stream Area)	<10	>35	61.83	72.03	66.66	79.28	77.91	64.2	50.76	59.52	58.21
Pool Frequency (Channel Widths	>20	5-8	2.3	3.5	5.2	2.5	2.4	3.9	3.9	4.3	4.5
Residual Pool Depth Medium Streams (7m and <15m width; gradient < 3%)	<0.3	>0.6	0.61	0.70	0.71	0.67	0.70	0.65	0.65	0.65	0.65
Complex Pools (Pools w/ wood complexity > 3) km	<1.0	>2.5	20.1	16.2	12.6	18.7	14.3	9.1	7.4	8.5	8.5
RIFFLES											
Gravel (% Riffle Area)	<15	≥ 35	61	69	49	55	75	37	49	59	47
LARGE WOOD* (15 cm x 3 m minimum piece size)											
Pieces /100 m Stream Length	<10	>20	15.1	16.1	13.3	19.1	16.5	15.0	9.6	12.5	14.1
Volume /100 m Stream Length	<20	>30	15.6	15.1	12.5	23.9	43.3	11.5	10.8	23.7	32.1
"Key" Pieces (>60cm diameter & ≥ 12 m long/ 100 m)	<1	>3	0.9	0.3	0.4	1.9	3.3	0.2	0.5	1.7	2.4

Added Value Wood Project

The locations of the wood placements that occurred as part of the added value wood project are summarized in Table 5 and Map 2. The cover photo of this report shows the contractor working to pull a large log (waypoint ID 23) towards Elk Creek. Before and after photos of one of the log placements (waypoint ID 20) are shown in Figure 2. The Footlog Creek wood placement occurred on September 12, 2007. Placements on the West Fork occurred on September 13 and 14, 2007. Placements on Elk Creek occurred from September 17-19, 2007

Table 5- Location and GPS coordinates of the large wood pieces that were placed in the Elliott State Forest (ESF) as part of the added value wood project. Waypoint ID's correspond to the X's on Map 4.

Sub-basin	Waypoint ID	Latitude	Longitude	Comment
West Fork Millicoma	010	43.56864	-123.88661	
West Fork Millicoma	011	43.56865	-123.88723	
West Fork Millicoma	012	43.58064	-123.90449	
West Fork Millicoma	013	43.58094	-123.90548	
West Fork Millicoma	014	43.57666	-123.91668	Point falls within FEMA Flood Zone A. See Map 4
West Fork Millicoma	015	43.57708	-123.91845	Point falls within FEMA Flood Zone A. See Map 4
West Fork Millicoma	017	43.58748	-123.93377	
Elk Creek	019	43.55628	-123.94120	
Elk Creek	020	43.55114	-123.94055	
Elk Creek	021	43.52743	-123.94090	
Elk Creek	023	43.52213	-123.93911	
Footlog Creek	NA	NA	NA	Two logs were placed at the 0.5 mile marker on the ESF 7500 road

Project Photos

Figure 2- The photo in the left pane was taken immediately after the piece of wood was pulled into the creek on Sept. 18, 2007. The photo on the right was taken on March 3rd. This piece of wood was part of the added value project and is waypoint ID 21.

Figure 3-Log placement (Waypoint ID 17) on the West Fork Millicoma River, September 13, 2008 (left photo). The photo on the right was taken March 3, 2008.

Figure 4- Pictures of log placements that were part of Elk Phase II. Pictures taken on March 3, 2008

Before and after photos of wood placements associated with Elk Phase I are attached to this report as an appendix.

Conclusions and Discussion

The ability to link changes in aquatic habitat variables and juvenile fish numbers to restoration activities is limited by the short time scale for evaluating the effectiveness of this project. For example, Roni et al (2003) suggests that a decade is required to detect significant effects of juvenile salmonid usage of a project area and it can take up to 25 years to detect a doubling of juvenile usage. Changes in morphological features (i.e. habitat changes) may be detectable in a much shorter time, but these changes are highly dependent on high-flow events that can transport larger stream particles and scour pools. In this report, we have tried to overcome some of these limitations by including information from past (i.e., Elk Phase I), current (i.e., Elk Phase II), and future (i.e., Elk Phase III) restoration efforts. CoosWA has also endeavored to include, where available, the monitoring data collected by ODFW. Currently, for planning pre and post project AHI surveys of large wood projects, there is excellent communication between the local ODFW restoration habitat biologist and CoosWA staff. Unfortunately, as in the case with Elk Phase I, the anticipated treatment reaches (i.e, pre-project surveys) are often different than the actual project implementation reach. For this reason, it can be difficult to match up pre and post project AHI data. Similarly, there is a lag time between data collection by ODFW and its availability to interested parties. For example, ODFW conducted spawning surveys on Elk Creek in the winter of 2007/2008 that will provide post project data for a section of Elk Phase II, but this data is not yet available. This delay in data availability and the timing of report deadlines for OWEB does not always provide sufficient time to integrate all of the monitoring activities that have occurred on a restoration project.

Habitat Benchmarks

The ODFW habitat benchmarks help with interpreting the AHI data because they provide a common reference point to compare other stream surveys. A limitation to these benchmarks is that they are context dependent and may not be appropriate for all drainages in all circumstances. Furthermore, different surveyors surveyed the reaches on Elk creek between 2004 and 2007, and it is difficult to control for surveyor error/bias between years. However, it is possible to have consistency in estimation of habitat variables within a year by having the same surveyor collect the same habitat variables. Efforts to ensure uniformity and consistency between years in data collection are improved by having all surveyors receive the same training. Although care is taken to ensure the quality and integrity of the data, some of the variation between years within a reach may be a result of differences between surveyors and not actual changes in a habitat variable.

The movement of substrate and wood in Elk Creek is a dynamic process that might be occurring at a time and spatial scale that is not appropriately captured by the one year of pre and one year of post project monitoring data that is currently available for the large wood restoration projects. To detect long term changes in trends, such as substrate change, pool formation, and habitat, monitoring needs to occur for many years.

Juvenile snorkel surveys

Juvenile fish usage is important to monitor because it directly measures the basic project objective: improving habitat for native fish species. Currently, with the way data has been collected, we do not know if increases or decreases in fish numbers reflect changes in habitat quality, or is a function of adult coho spawning densities. For example, since 2005, the number of adult coho observed spawning in Elk creek has decreased every year. This decrease in spawning fish in 2007 was observed throughout the entire watershed. Therefore, a decrease or increase if juvenile fish numbers may be more tightly connected to the number of adult spawners and ocean survival and not changes in habitat quality. Additionally, interpretation of the snorkel data is confounded by the fact that the CoosWA staff who conducted the pre and post project surveys changed between years. Additionally, these snorkel values were not calibrated, and we have no reference for how efficient each snorkeler was at identifying and numerating fish. It is likely the ability to accurately identify and quantify fish was different between surveyors.

Spawning surveys

The CoosWA is fortunate to have two trained technicians who have been conducting spawning surveys on Elk Creek for three consecutive years. These surveyors have attended the same training that ODFW staff receives. The consistency between years with our surveyors helps improve the quality of our data.

In addition to Elk Creek, CoosWA also conducts spawning surveys in the Palouse and Larson sub-basins, and on several tributaries to the South Fork Coos River. The trend in the Elk creek spawning survey reaches has been for a decrease in the number of spawning adult coho. This trend is not isolated to Elk Creek. Our surveyors reported that in 2007, all surveys had lower adult coho AUC's than the previous year.

Efforts to promote the project

This project was discussed at the CoosWa's 2006 Annual meeting. The project site was also visited by a representative of the Bonneville Environmental Foundation in the summer of 2006. Additionally, since this project is close to the road, it is highly visible to the public who utilize the Elliott State Forest for recreation.

Lessons learned from the project

It took more effort to obtain permits for the three added value wood projects than was anticipated. This was a result of a change in Project Managers at CoosWA. The new Project Manager did not have prior experience filling out and submitting permits to the Department of State Lands and the US Army Corps of Engineers. As a result, the permit process went slower than expected.

There were also substantial problems in obtaining a permit for the wood placements on the West Fork Millicoma because three of the proposed sites were located in a mapped FEMA floodplain (Map 4) and the Coos County Planning Department required a floodplain elevation

certification. To temporarily resolve the problem, ODF paid $400 for the application fee and submitted a letter from a state engineer. After review, the Coos County Planning Department granted authorization for the placement of the large wood within the mapped FEMA floodplain. Unfortunately, the $400 came out of the funds originally allocated by ODF for contracted services, and one of the originally proposed placement trees could not be put in the stream because we did not have the funds to pay the contractor. The locations of large wood placed as part of the added value project is shown in Map 4 and summarized in Table 5.

The CoosWA, ODF, and ODFW are currently trying to work with the Coos County Planning Department to try and resolve language in the local county ordinance that would provide a provision for placement of large wood in a mapped FEMA floodplain within the Elliott State Forest. An e-mail from Liz Dent, Aquatic Specialist for ODF, dated January 16, 2008, requesting a meeting the Coos County Planning Department is attached to this report. A copy of a letter to the County Planning Department from Jim Young, the Coos District Forester, on this subject is also provided. To date, we have not received feedback from the County Planning Department and the issue remains unresolved.

We were unable to spend the $640 that was awarded for snorkel survey training. Staff was occupied with other job priorities and the opportunity to attend training was missed.

The beginning and end points for Elk Phase II are clearly known, as are the locations of wood placements within the Elk Phase II reach. However, in many instances, the site has changed dramatically from the pre-project conditions and matching up post project photos has proven to be challenging because it is not clear which pre project photos relate to each of the wood placements..

Recommendations for more effective implementation of similar projects

It is important to visit the wood projects during high flows to watch how high water interacts with the wood placements. These observations help with planning future projects.

It is unfortunate that we missed out on the opportunity to spend training money to develop staff skills at snorkeling. To help avoid missed opportunities for future snorkel training, CoosWA staff will need to be more proactive about contacting ODFW and asking about training dates. It would also be helpful if ODFW would send out e-mails to watershed councils inquiring if watershed council staff could benefit from training opportunities. There does not appear to be effective communication between ODFW staff that arrange training for ODFW employees and watershed councils. Perhaps OWEB could help bridge the communication gap and help coordinate trainings opportunities between ODFW and watershed councils.

More effort needs to be put into documenting and archiving photo points while the project is being implemented. This would save time and reduce costs for post project monitoring efforts that occur after project completion.

Compliance with the Oregon Aquatic Habitat Restoration and Enhancement Guide

This project met all guidelines in the Oregon Aquatic Habitat Guide. The 30-foot average bankfull width stream was treated with 60-80-foot logs 22-36 inches in diameter and whole Douglas-fir trees 22-30 inches in diameter with rootwads. Structures consisted of 3-6 key pieces. Standing trees selected from the project were taken from upslope areas and each tree was examined for potential avian habitat, specifically marbled murrelet.

OWRI Reporting

OWRI forms were submitted to OWEB for each of the four projects mentioned in this report.

- Elk Wood Large Wood Phase I-OWRI Project number 2005-0020
- Elk Creek Large Wood Phase II- OWRI Project Number 2006-0003:
- The OWRI forms for the added value blow down projects on Elk Creek, the West Fork Millicoma, and Footlog, were submitted by Randy Smith (ODF) in November 2007 and have not been assigned a project number by OWEB.

Budget Information

An accounting of expenditures of Board monies, in-kind and cash contributions, donations, and non-OWEB match (>25%) is included at the end of the report.

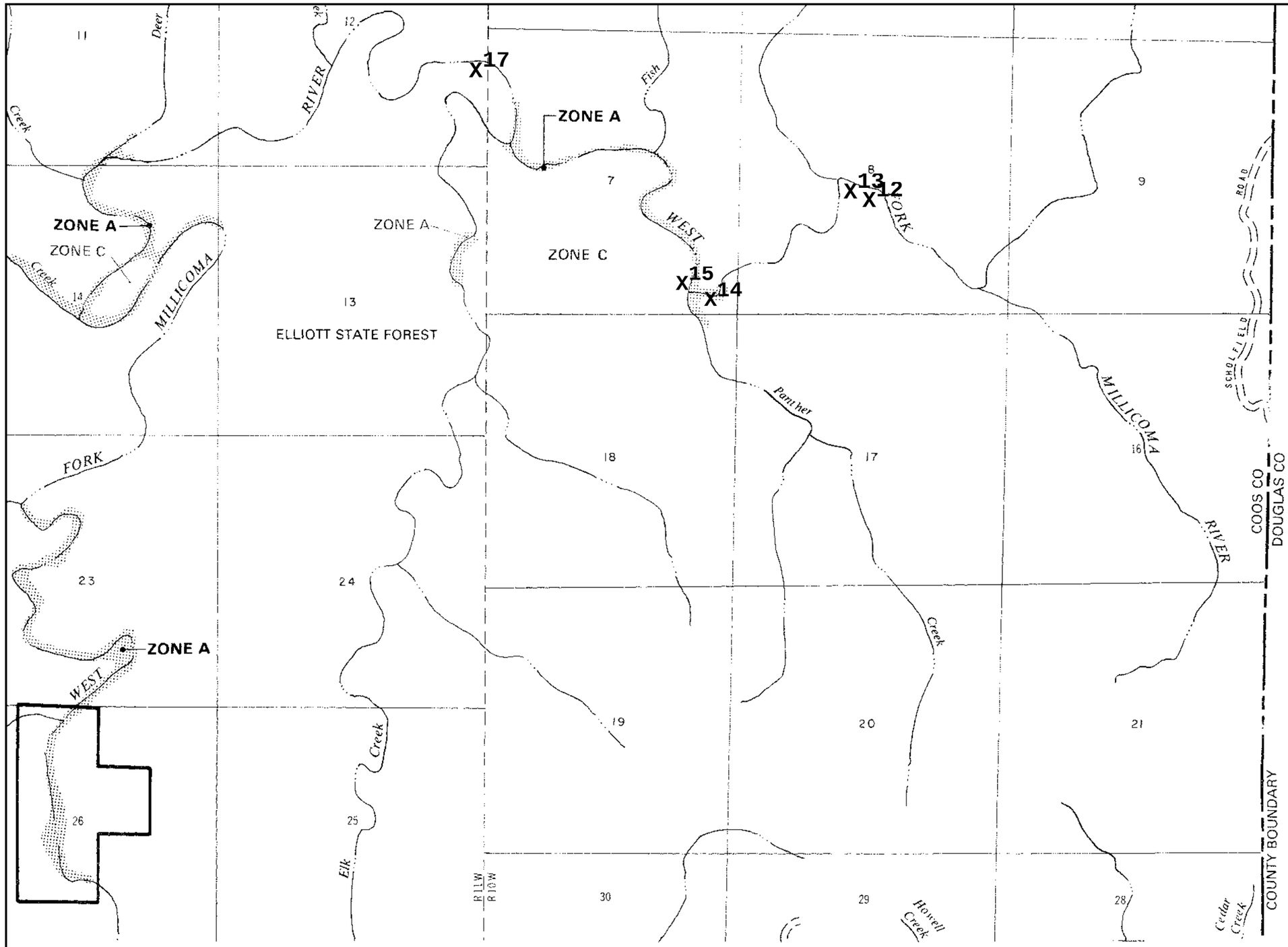
References

Jones, K. & Moore. 2005. Oregon Department of Fish and Wildlife: Stream habitat survey data entry and report program, Version 1.2. Oregon Department of Fish and Wildlife.

Moore, K., K., Jones, J. Dambacher, Burke, J. Stein, C., & STEP Biologists. 2006. Aquatic Inventory Project: Training materials and methods for stream habitat surveys. Oregon Department of Fish and Wildlife.

Roni, P., M. Liermann, and A. Steel. 2003. Monitoring and evaluating responses of salmonids and other fishes to instream restoration. Pages 318–329 *in* D. R. Montgomery, S. Bolton, D. B. Booth, and L.Wall, editors. Restoration of Puget Sound rivers. University of Washington Press, Seattle.

Map 4



APPROXIMATE SCALE
2000 0 2000 FE

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

COOS COUNTY, OREGON
(UNINCORPORATED AREAS)

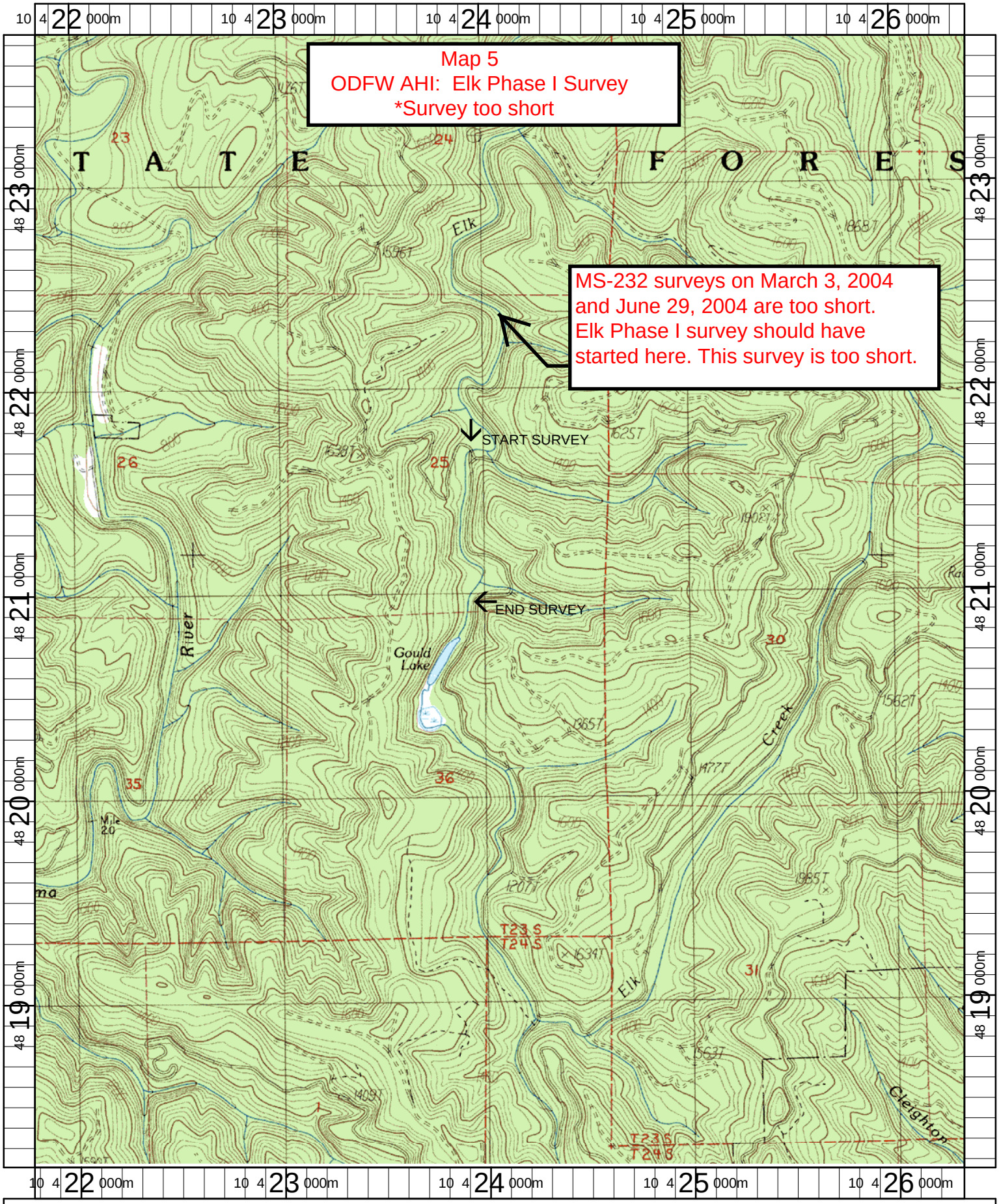
PANEL 50 OF 525
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
410042 0050 B

EFFECTIVE DATE:
NOVEMBER 15, 1984

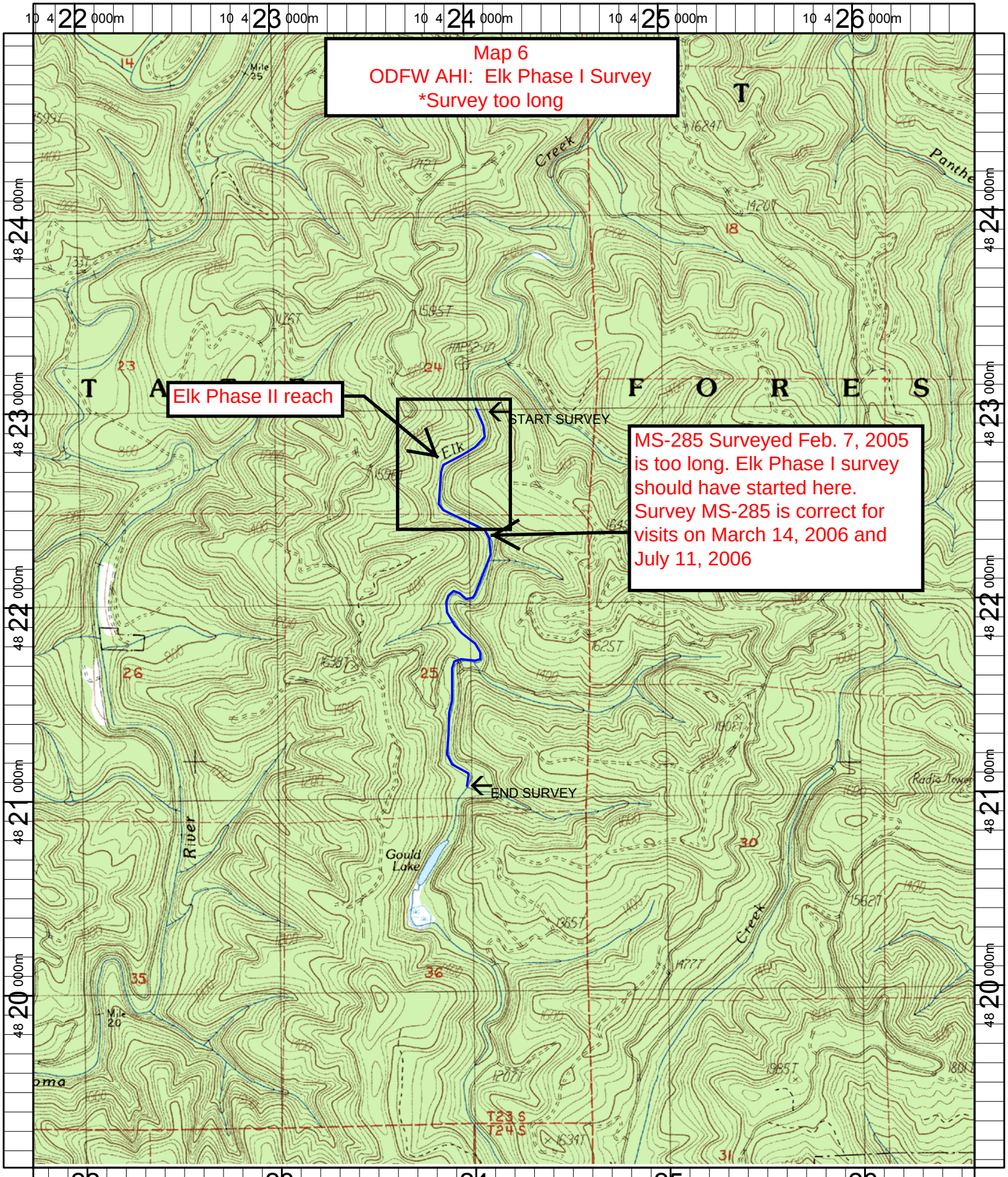
Federal Emergency Management Agency

X = Large Wood Placement Locations and Waypoint Id's



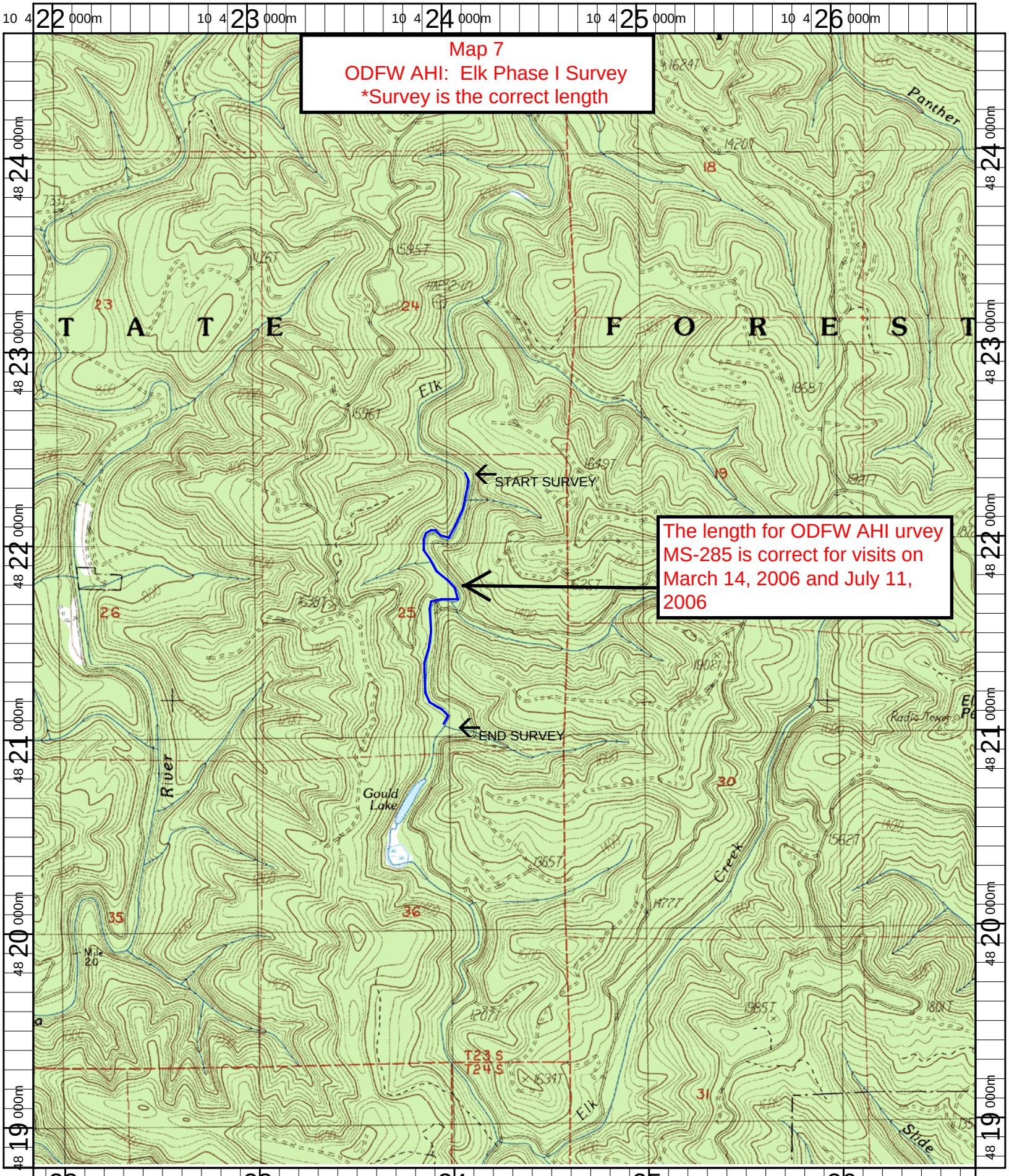
Name: ELK PEAK
Date: 1/5/2004
Scale: 1 inch equals 2000 feet

Location: 10 424073 E 4820956 N
Caption: ELK CREEK #1 RESTORATION SITE - MILLICOMA BASIN



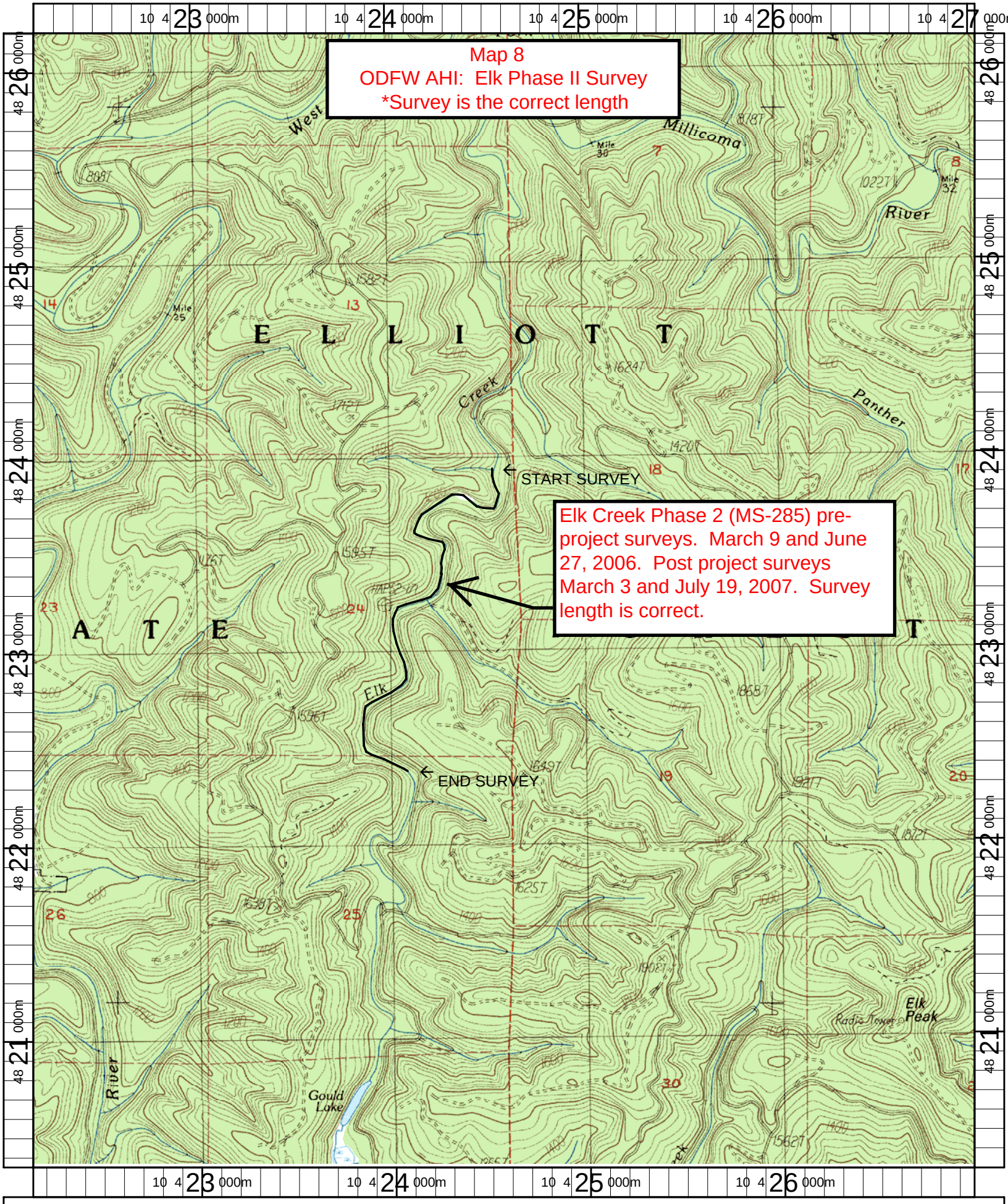
Name: ELK PEAK
Date: 1/6/2005
Scale: 1 inch equals 2000 feet

Location: 10 424175 E 4822012 N
Caption: ELK CREEK RESTORATION SITE - MILLICOMA BASIN



Name: ELK PEAK
Date: 5/22/2006
Scale: 1 inch equals 2000 feet

Location: 10 424289 E 4821693 N
Caption: ELK CREEK #285 RESTORATION SITE - MILLICOMA BASIN



Name: ELK PEAK (OR)
Date: 4/26/2007
Scale: 1 inch equals 2000 feet

Location: 10 0424584 E 4823252 N
Caption: ELK CREEK #325 RESTORATION SITE - MILLICOMA BASIN

Subject: Stream Restoration and Coos County Ordinances
From: "DENT Liz F" <Liz.F.Dent@state.or.us>
Date: Wed, 16 Jan 2008 15:35:57 -0800
To: <peverndenden@co.coos.or.us>
CC: <ddarling@co.coos.or.us>, <sleep@co.coos.or.us>, <jfeldhaus@cooswatershed.org>, "YOUNG Jim W" <Jim.W.Young@state.or.us>, "SMITH Randy C" <Randy.C.Smith@state.or.us>, "FEOLA Jennifer E" <IMCEAEX-_O=ODF_OU=EXCHANGE_CN=RECIPIENTS_CN=Jennifer+20E+20Feola@ODF.STATE.OR.US>

Dear Ms. Evernden-

My name is Liz Dent, I am the aquatic specialist for the Oregon Department of Forestry (ODF). I am contacting you on behalf of several interested parties involved in stream restoration projects in Coos County. I am following up on a letter ODF sent to you last summer, August 11, 2007 (attached). I also left a message on your voice mail today.

As you are probably aware, fish restoration projects, particularly large wood placement and culvert replacements, are an integral part of Oregon's plan for recovering and protecting native fish species. Last year when planning a wood placement project on the Elliott State Forest we ran into procedural and financial hurdles associated with Coos County ordinances (Articles 3 and 4) and interpretations of FEMA requirements.

At the suggestion of Commissioner Griffith, I have been working with local ODFW, Watershed Council, and ODF biologists to propose changes to these ordinances (attached). The goals are to:

- Remove the disincentives for stream restoration projects where they are most needed ecologically
- Increase permitting efficiencies associated with stream restoration projects
- Maintain reasonable protections dealing with structures in FEMA-designated, 100-year floodways.

As such we have drafted proposed changes to Articles 3 and 4 (attached). These ideas have been forwarded to our ODF Assistant State Forester Ted Lorensen and County Commissioner John Griffith who will likely contact you on the matter.

My colleagues and I are happy to meet with you or your staff to answer questions and work collaboratively to arrive at a desired outcome. If there is anything I can do to help this process move as smoothly as possible, please let me know.

I appreciate your time.
Sincerely,

Liz Dent
Aquatic Specialist
State Forests Program
Oregon Department of Forestry
Phone Numbers:
Philomath: 541.929.9168
Salem: 503.945.7371

Attachments:
(1) Letter from August 2007 characterizing the nature of the issue
(2) DRAFT proposed edits to Coos County ordinances in Articles 3 and 4

ODF_County_Letter.pdf	**Content-Description:**	ODF_County_Letter.pdf
	Content-Type:	application/octet-stream
	Content-Encoding:	base64

Coos ARTICLE 3 proposed edits Jan 08.doc	**Content-Description:**	Coos ARTICLE 3 proposed edits Jan 08.doc

Oregon
Theodore R. Kulongoski, Governor

Department of Forestry
Coos District
63612 Fifth Rd.
Coos Bay, OR 97420-3899
(541) 267-4136
Fax: (541) 269-2027

"STEWARDSHIP IN FORESTRY"

Patty Evernden
Planning Director
Coos County Planning Department
Coos County Annex
Coquille, OR 97423

Dear Ms Evernden,

We are pleased to submit our Floodplain Application for approval to implement a stream enhancement project in the Elliott State Forest. We plan to place wood in accordance with state guidelines along short reaches of the Upper West Fork Millicoma drainage.

We have reviewed FEMA maps and determined that parts of the project will take place in FEMA-designated "Zone A" floodplains and therefore are requesting a permit from the county to proceed. Attached you will find an engineer's letter addressing floodplain-related county ordinances concerned with increasing flood height. While wood projects are designed to interact with flood flows, such interactions are typically limited to smaller annual high flows and mostly influence on-site sediment transport. In summary we conclude that this activity is "not of the type and magnitude to affect potential water surface elevations or increase the level of insurable damages."

While we are submitting this full application as directed by the county planning office, we are not confident that it is necessary for stream restoration activities that take place within FEMA-designated Zone A floodplains. There are several reasons for our uncertainty:

- Zone A floodplains do not have data or studies to establish base flood elevations. As such there is no basis against which to evaluate a potential effect on flood elevations (i.e. no-rise assessment).
- Discussions with FEMA representatives suggest that no-rise evaluations are not required for Zone A floodplains.
- Material and techniques used to place wood, result in ever-changing relationships between flows and wood, creating a much different condition than classic "encroachment" activities.
- FEMA's "Policy on Fish Enhancement Structures in the Floodway" states that even for floodplains which require no-rise evaluations (floodways), informed judgments by local professionals regarding fish enhancement structures can be made as exceptions "for which less than maximum hydraulic analyses are required".

We understand the importance of documenting activities that take place along floodplains and support county processes designed to achieve such documentation. Furthermore we are sensitive to financial burdens such services place on county resources and accept our

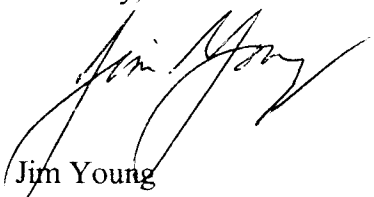
responsibility to compensate accordingly. To that end, we would appreciate setting up a meeting to visit with county planners to better prepare us for similar projects which will undoubtedly occur in the future. We will contact the Planning Department to find a time when we can set up a short meeting. We believe this could result in a savings of time and expense for the county, state and watershed organizations. We would like to:

- Jointly evaluate and come to a common understanding of FEMA and county regulatory requirements.
- Explore procedural options for future fish enhancement projects within non-floodway floodplains that don't impact private property.

Wood placement projects are intended to interact with flows to re-establish stream functions and features that are currently lacking in coastal watersheds. This condition has been established as a key limiting factor for coho. Without exception, research, studies and monitoring projects from the Coastal Oregon region have established the importance of placing wood specifically in lower-gradient streams (which typically will have floodplains) to improve fish habitat and restore coho populations. This type of work is considered more valuable than working in higher gradient streams and of critical importance for meeting Oregon Plan goals for coho populations.

Given the ecological importance of this kind of work, we hope to discuss these technical and policy issues and come to a common understanding that is beneficial for the county and practitioners so more restoration projects of this nature can be implemented in the future.

Sincerely,



Jim Young
Coos District Forester

CC
Debby Darling, County Planner
Greg Kreimeyer, ODF Coos Assistant District Forester
Jim Young, ODF Coos District Forester
Jo Morgan, ODF Policy Analyst
Joseph Feldhaus, Coos Watershed Association
Keith Mills, ODF Engineer
Ken Bierly, OWEB Deputy Director
Kevin Hercamp, DSL Regulatory Streamlining Coordinator
Liz Dent, ODF Riparian and Aquatic Specialist
Nancy Hirsch, ODF State Forests Program Director
Randy Smith, ODF Biologist
Ted Lorensen, ODF Assistant State Forester

John Griffith, Coos County Commissioner
Nikki Whitty, Coos County Commissioner
Kevin Stufflebean, Coos County Commissioner

Attachments:
(a) Keith Mills Letter
(b) FEMA Policy on Fish Enhancement Structures in the Floodway
(c) County Floodplain Application- Debby Darling only

Appendix

Large Wood Placement Photos

Elk Phase I
OWEB 204-372B

Elk Phase I-Site A

Before

After

Elk Phase I-Site B

Before

After

Elk Phase I-Site C

Before

After

Elk Phase I-Site E

Before

After

Elk Phase I-Site G

Before

After

Elk Phase I-Site G.5

Before

After

Elk Phase I-Site H

Before

After

Elk Phase I-Site L

Before

After

Elk Phase I-Site M

Before

After

Elk Phase I-Site N

Before

After

Elk Phase I-Site O

Before

After

Elk Phase I-Site Q

Before

After