

PROGRESS REPORTS

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FISH DIVISION
Oregon Department of Fish and Wildlife

2004 Oregon Chub Investigations

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SUMMARY

Oregon chub *Oregonichthys crameri*, small minnows endemic to the Willamette Valley, were federally listed as endangered under the Endangered Species Act in 1993. Factors implicated in the decline of this species include changes in flow regimes and habitat characteristics resulting from the construction of flood control dams, revetments, channelization, diking, and the drainage of wetlands. The Oregon chub is further threatened by predation and competition by non-native species such as largemouth bass *Micropterus salmoides*, crappies *Pomoxis* sp., sunfishes *Lepomis* sp., bullheads *Ameiurus* sp., and western mosquitofish *Gambusia affinis*. We surveyed in the Willamette River drainage to quantify the abundance of known Oregon chub populations, search for unknown populations, evaluate potential introduction sites, and monitor introduced populations as part of the implementation of the Oregon Chub Recovery Plan (USFWS 1998).

We sampled a total of 114 sites in 2004. A new population of Oregon chub was discovered in a small unnamed tributary to Muddy Creek (Linn County) in the Mid-Willamette River drainage. Fifty-one of the 114 sites were new locations that were sampled for the first time in 2004. Sixty-three sites, sampled in 1991-2003, were revisited. Four sites were sampled twice.

We confirmed the continued existence of Oregon chub at 29 locations. These included 21 naturally occurring and eight introduced populations. Locations of naturally occurring populations were: Santiam drainage (Geren Island, Santiam I-5 Side Channel Pond, Santiam Conservation Easement, Stayton Public Works Pond, and Gray Slough), Mid-Willamette drainage (Finley Gray Creek Swamp, Dry Muddy Creek, and Little Muddy Creek tributary), McKenzie drainage (Shetzline Pond and Big Island), Coast Fork Willamette drainage (Coast Fork Side Channels), and the Middle Fork Willamette drainage (two Dexter Reservoir Alcoves, East Fork Minnow Creek Pond, Shady Dell Pond, Buckhead Creek, Oakridge Slough, two Elijah Bristow State Park sloughs and an island pond, Barnhard Slough, and Hospital Pond). Introduced populations were located in the Middle Fork Willamette (Wicopee Pond and Fall Creek Spillway Ponds), Santiam (Foster Pullout Pond), McKenzie (Russell Pond), Coast Fork Willamette (Herman Pond), and Mid-Willamette drainages (Dunn Wetland, Finley Display Pond, and Finley Cheadle Pond).

We did not find Oregon chub at twelve locations where they were collected on at least one occasion between 1991-2003 (Jasper Park Slough, Wallace Slough, East Ferrin Pond, Dexter East Alcove, Hospital Impoundment Pond, Rattlesnake Creek, Middle Fork Willamette backwater, Elijah Bristow Large Gravel Pit, Elijah Bristow Small Gravel Pit, Camas Swale, Green's Bridge backwater, and Menear's Bend). Nonnative fish were collected at 10 of these locations.

We evaluated several potential Oregon chub introduction sites in 2004. These included sites in the Mid-Willamette River drainage (Finley National Wildlife Refuge, Ankeny National Wildlife Refuge, Aumsville Ponds, Long Tom Ranch Pond, and Jampolsky Ponds) and Santiam River drainage (Santiam Rearing Ponds and St. Paul Ponds). Two introductions were conducted in 2004 (Jampolsky Ponds and Ankeny Willow Marsh).

We obtained abundance estimates of naturally occurring populations of Oregon chub at 16 locations in the Middle Fork Willamette (East Fork Minnow Creek Pond, Shady Dell Pond, Elijah Bristow State Park Sloughs, Hospital Pond, Dexter Reservoir Alcoves, and Buckhead Creek), Santiam (Geren Island and Santiam I-5 Side Channel Pond), McKenzie (Big Island and Shetzline Pond), and Mid-Willamette drainages (Finley Gray Creek) (Table 1).

We obtained abundance estimates for eight introduced populations of Oregon chub in 2004, including populations located in Fall Creek Spillway Ponds, Wicopee Pond, Dunn Wetland

Table 1. Oregon chub population abundance from 1992-2004. Abundances are mark-recapture estimates, except those shown in bold, which are the number of fish captured. Site names in bold italics are locations where Oregon chub were introduced. The number of fish stocked in 2004 at two introduction sites is shown in parentheses. Basin codes: SANT- Santiam, MID- Mid-Willamette, MFW- Middle Fork Willamette, MCK- McKenzie, and CFW- Coast Fork Willamette. See *Methods* for definitions of five year abundance trends. Five-year trends were left blank if data was not available for at least five years, or the population abundance was not estimated using mark-recapture techniques.

Site Name	Basin	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	5 year Trend
Geren Island North Channel	SANT					8,340	8,660	1,830	860	360	760	740	1,590	2,290	increasing
Foster Pullout Pond	SANT									80	210	320	640	570	increasing
Gray Slough	SANT				2	3	2	0	13	4	2	12	270	340	
Santiam 1-5 Backwaters	SANT						5	2	3	13	13	350	220	320	
Santiam Conservation Easement	SANT			1,250		830	300	250	13	4	12	2	0	1	
Santiam Public Works Pond	SANT							3	4	1	0	0	0	1	
Pioneer Park Backwater	SANT						2	0	0	2	9	4	6	0	
Meneer's Bend	SANT										7	29	0	0	
Green's Bridge	SANT		5			2	5	0	2	0	3	2	4	0	
Logan Slough	SANT						2			0					
Dunn Wetland	MID							460	4,860	14,090	26,240	19,270	28,740	25,810	stable
Finley Gray Creek Swamp	MID		370	600	460	470	520	620	510	730	630	290	230	520	stable
Ankeny Willow Marsh	MID													(500)	
Jampolsky Ponds	MID													(500)	
Cheadle Pond	MID												50	220	
Finley Display Pond	MID								360	1,750	670	500	130	70	declining (<500)
Little Muddy Creek tributary	MID													5	
Dry Muddy Creek	MID			26			2						22	1	
Camous Creek	MID		5			5									
Fall Creek Spillway Ponds	MFW						480	1,420	6,310	5,030	7,770	6,370	5,620	5,850	stable
Hospital Pond	MFW		690		780		3,160	3,030	3,020	2,980	2,700	2,130	1,600	4,940	stable
Wicopee Pond	MFW	3			0	1	9	25	160	4,580	4,080	2,410	4,100	4,780	stable
Shady Dell Pond	MFW		1,630	4,770	3,770	4,240	3,790	3,650	2,860	3,830	2,280	2,420	2,330	4,210	stable
Buckhead Creek	MFW	3	4		2				3,010	3,570	7,140	4,080	2,830	3,600	stable
East Fork Minnow Creek Pond	MFW		8,770	7,540	7,130	4,540	4,020	4,440	4,780	5,050	3,380	3,270	3,650	3,140	declining
Elijah Bristow St. Park- Berry Slough	MFW		4,010		1,930		2,010	5,350	2,720	1,190	3,970	4,910	2,140	2,950	stable
Elijah Bristow St. Park- NE Backwater	MFW								1,060	1,170	1,090	940	610	1,340	stable
Dexter Reservoir Alcove- DEX3	MFW				15		1,330	830	50	880	1,950	2,270	870	790	stable
Elijah Bristow Island Pond	MFW												2,780	420	
Dexter Reservoir Alcove- PIT1	MFW	780			140	40	920	450	1,130	1,440	800	460	390	70	declining (<500)
Barnhard Slough	MFW	0								3	7	2	1	2	
Oakridge Slough	MFW			4	8		2	21	480	140	140	9	1	1	
Rattlesnake Creek	MFW				6				1	2	2	2	2	0	
Elijah Bristow Large Gravel Pit	MFW	3			0			7	0	0	0	8	2	0	
Elijah Bristow Small Gravel Pit	MFW	31			0			22	0	0	0	0	0	0	
Hospital Impoundment Pond	MFW				6	0	1	0	1	0	0	0	0	0	
East Ferrin Pond	MFW				3,520	5,610	7,160	3,490	60	0	0	0	0	0	
Wallace Slough	MFW						3	0	0	0	0	0	0	0	
Dexter East Alcove	MFW	40				0	0	0	0	0	0	0	0	0	
Jasper Park Slough	MFW			3		0		0	0	0	0	0	0	0	
Middle Fork Willamette Backwater	MFW												13	0	
West Ferrin Pond	MFW	3			2	0	0	0	0						
Shetzline Pond	MCK											120	650	1,050	
Russell Pond	MCK											470	450	720	
Big Island	MCK											940	620	310	
Herman Pond	CFW												420	350	
Coast Fork Side Channels	CFW											16	130	190	
Camas Swale	CFW	1	2	0		0			0	0	0	0	0	0	

Ponds, Finley Display Pond, Finley Cheadle Pond, Foster Pullout Pond, Herman Pond, and Russell Pond. The two largest populations in 2004 were introduced populations.

The Oregon Chub Recovery Plan (U.S. Fish and Wildlife Service 1998) set recovery criteria for downlisting the species to "threatened" and for delisting the species. The criteria for downlisting the species are: 1) establish and manage 10 populations of at least 500 adult fish, 2) all of these populations must exhibit a stable or increasing trend for five years, and 3) at least three populations meeting criterion 1 and 2 must be located in each of the three recovery areas (Middle Fork Willamette River, Santiam River, and Mid-Willamette River tributaries). In 2004, there were 15 populations totaling 500 or more individuals (Table 1). Twelve of these populations met the above criteria. Eight were located in the Middle Fork Willamette drainage, two were located in the Mid-Willamette drainage, and two were located in the Santiam drainage.

Findings to date indicate that Oregon chub remain at risk due to the loss of suitable habitat and the continued threats posed by the proliferation of non-native fishes, illegal water withdrawals, accelerated sedimentation due to logging activities, and potential chemical spills or careless pesticide applications. Their status has improved in recent years, resulting primarily from successful introductions and the discovery of previously undocumented populations.

INTRODUCTION

Oregon chub are endemic to the Willamette River drainage of western Oregon (Markle et al. 1991). This species was formerly distributed throughout the Willamette River Valley (Snyder 1908) in off-channel habitats such as beaver ponds, oxbows, stable backwater sloughs, and flooded marshes. These habitats usually have little or no water flow, have silty and organic substrate, and have an abundance of aquatic vegetation and cover for hiding and spawning. In the last 100 years, off-channel habitats have disappeared because of changes in seasonal flows resulting from the construction of dams throughout the basin, channelization of the Willamette River and its tributaries, and agricultural practices. This loss of habitat combined with the introduction of non-native species to the Willamette Valley resulted in a sharp decline in Oregon chub abundance.

The reduction of habitat and the restricted distribution of the Oregon chub resulted in a determination of "endangered" status under the federal endangered species act (Markle and Pearsons 1990; Rhew 1993). To evaluate Oregon chub population abundance and distribution, the Oregon Department of Fish and Wildlife conducted surveys in April-October 2004. We conducted similar surveys in 1991-2003 (Scheerer et. al. 1992; 1993; 1994; 1995; 1996; 1998; 1999; 2000; 2001; 2002; 2003; 2004; Scheerer and Jones 1997). The survey objectives were to collect information on the status, distribution, and abundance of Oregon chub, the presence of non-native and native species, the characteristics of Oregon chub habitats, the characteristics of potential introduction sites, and to evaluate the success of Oregon chub introductions. In addition, we reviewed and evaluated projects and activities with the potential to impact Oregon chub and their habitats and provided summaries to the U.S. Fish and Wildlife Service.

METHODS

We conducted surveys at 114 locations in the Willamette River drainage (Figures 1-2). We sampled off-channel habitats using a 1 m x 5 m seine with 64 mm mesh. When seining was impractical due to water depth or impenetrable aquatic vegetation, we collected fish using dip nets and/or baited minnow traps. We identified and counted all fish captured. We recorded the presence of amphibian and reptile species and their life stages that were encountered.

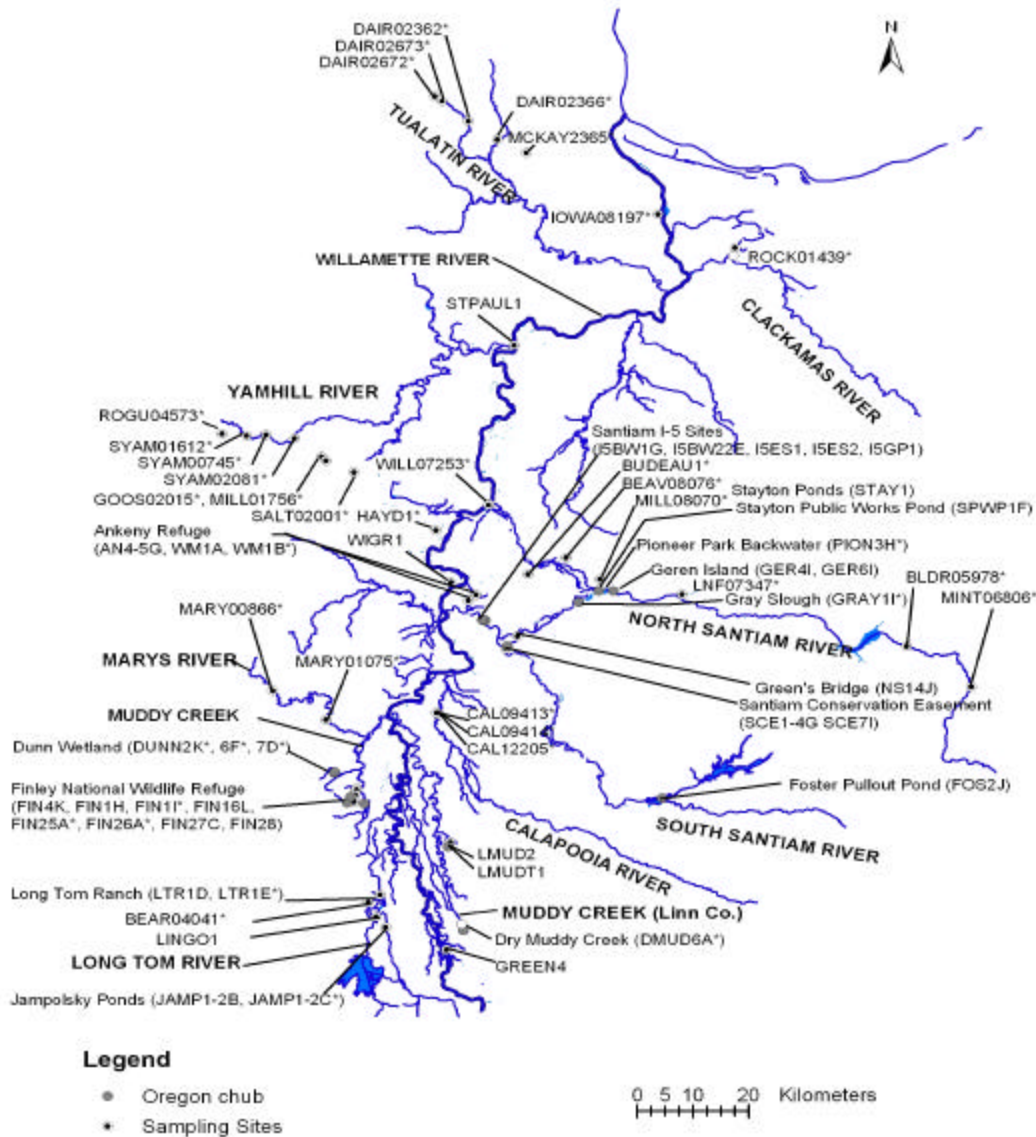


Figure 1. Survey locations for Oregon chub in the Santiam and lower and Mid-Willamette River drainages in 2004. Open circles with center dots indicate sites where Oregon chub were not collected. Solid circles indicate sites where Oregon chub were collected.

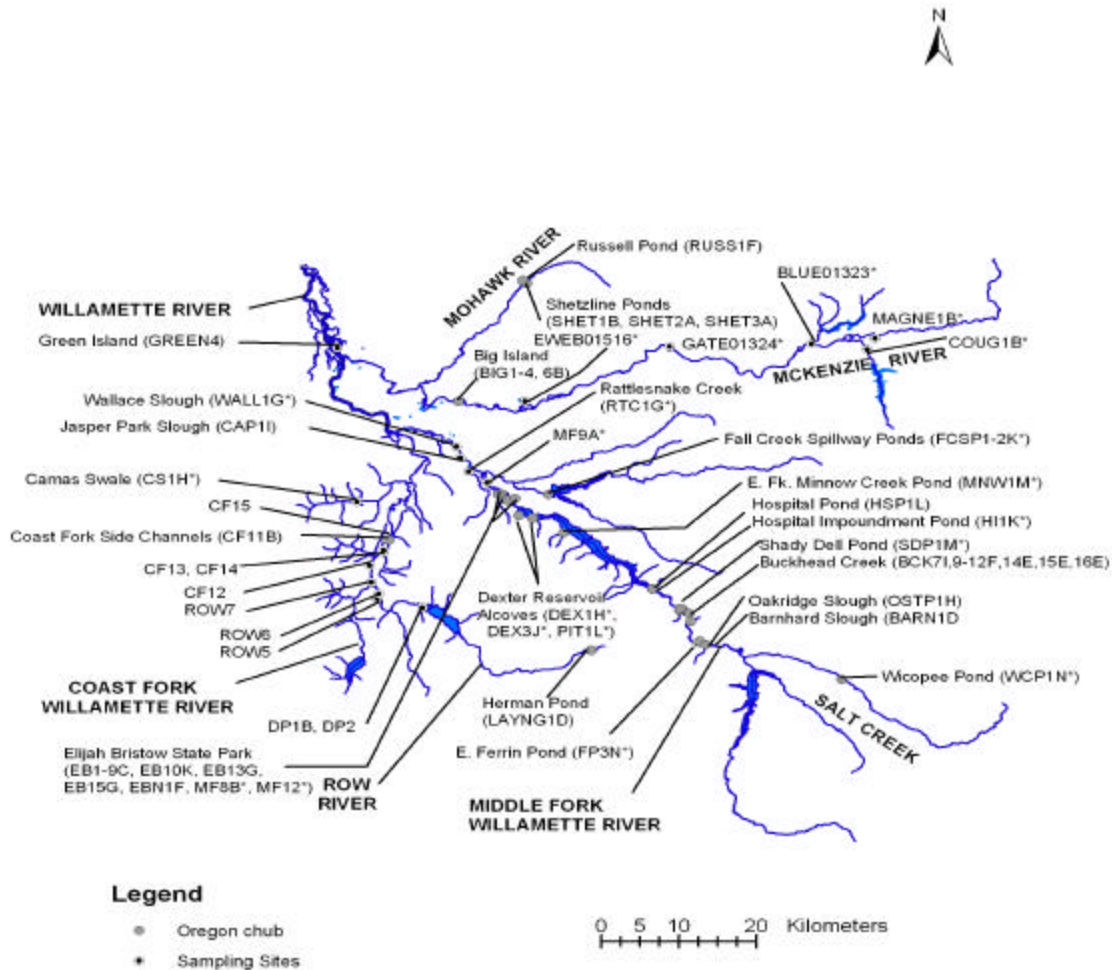


Figure 2. Survey locations for Oregon chub in the upper Willamette River drainage in 2004. Open circles with center dots indicate sites where Oregon chub were not collected. Solid circles indicate sites where Oregon chub were collected.

We recorded physical and biological habitat parameters at each site including substrate type, type and abundance of aquatic vegetation, mean and maximum depth, water temperature, and total surface area. We photographed each new site. We assigned a unique map code to each site. Map codes begin with several capital letters followed by a number. For example, the first site we sampled at a location was given the code "XXX1", the second site we sampled at that location was given the code "XXX2", and so on. If site we revisited site "XXX1", the first time we revisited the capital letter "A" was added to the map code (i.e. XXX1A). If the site was revisited the following year, we replaced the capital letter "A" with "B" (i.e. XXX1B), and so on. To distinguish sites we sampled in the fall from those we sampled in the spring, we added an asterisk (*) to the end of the sites we sampled in the fall. We made this distinction because of differences in habitat conditions (water temperature, pond area, vegetation, depth, etc.) that occur as water levels recede during the summer months. Hence, if we revisited site "XXX1B" in May of the following year we assigned the map code "XXX1C". If we revisited the site in September, rather than May, we added an asterisk and the map code was "XXX1C*". If we revisited the site in both May and September, we assigned the map code "XXX1C" in May and the map code "XXX1D*" in September.

We used minnow traps, measuring 23 by 46 cm with 64 mm mesh, to obtain mark-recapture population estimates of all fish species at selected sites. We baited the traps with a half slice of bread and fished them for 3-18 hours. We measured total lengths (TL) of a subsample of the Oregon chub we collected in the traps (N=50). We marked all fish with a partial caudal fin clip and returned them to the water. When catch rates were low, we repeated this procedure for a second day. On the second day, we marked all unmarked fish and counted all previously marked fish in the sample. We typically marked fish until approximately 15 percent of the population was marked. We returned all fish to the water. We estimated population abundance using single-sample mark-recapture procedures (Ricker 1975). To calculate population abundance, we used the total number of marked fish, and the catch and recaptures from the last sample date. We calculated 95% confidence intervals using a Poisson approximation (Ricker 1975). Because we do not capture fish smaller than ~35 mm (TL) in the minnow traps, these fish were not included in the estimates. Excluded fish were young-of-the-year (Scheerer and McDonald 2003).

We defined abundance trends quantitatively as increasing, declining, stable, or not declining. We calculated a linear regression of abundance over time for each abundant population (>500 fish) for the past five years (2000-2004). When the slope of this regression was negative and significantly different from zero ($P < 0.10$), we defined the population as exhibiting a declining trend in abundance. When the slope was positive and significantly different from zero ($P < 0.10$), we defined the population as exhibiting an increasing trend in abundance. When the slope was not significantly different from zero ($P > 0.10$), then we calculated the coefficient of variation of the abundance estimates for the past five years. When this coefficient of variation was less than 1.0 then we defined population as stable. Otherwise, we defined the population as not declining in abundance.

RESULTS

Detailed descriptions of habitat characteristics and the fish species present at each of the 114 sites sampled in 2004 are presented in **APPENDIX A**. The results of sampling conducted in 2004, summarized by Willamette River subbasin, is presented in Table 2.

Table 2. Sampling locations in the Willamette River drainage in 2004 listed by subbasin. Locations were divided into the number of new sites visited for the first time, the number of sites that were sampled in 1991-2003 and revisited in 2004, the number and percentage of sites containing Oregon chub, and the number and percentage of sites containing non-native fish. The Lower Willamette and the Mid-Willamette subbasins were further subdivided into smaller drainages.

Subbasin	Number of sites			Sites with Oregon chub		Sites with non-native fish	
	new	revisited	total	number	percentage	number	percentage
Lower Willamette River							
Clackamas River	1	0	1	0	0	0	0
Tualatin River	5	0	5	0	0	0	0
Yamhill River	7	0	7	0	0	2	29
Rickreall Creek	1	0	1	0	0	1	100
Mill Creek	3	0	3	0	0	0	0
Mainstem	5	2	7	0	0	3	43
Total	22	2	24	0	0	6	25
Santiam River	6	11	17	6	35	8	47
Mid-Willamette River							
Calapooia River	3	0	3	0	0	1	33
Marys River	3	9	12	4	25	1	8
Muddy Creek (Linn Co.)	2	1	3	2	67	1	33
Long Tom River	2	2	4	0	0	3	75
McKenzie River	4	7	11	3	27	3	27
Total	14	19	33	9	27	9	27
Coast Fk. Willamette River	8	4	12	2	17	11	92
Middle Fk. Willamette River	1	27	28	13	46	12	43
Grand Total	51	63	114	30	26	46	40 ^a

^a Non-native fish were collected at 41% of the new sites (21 out of 51 sites) that we sampled in 2004.

Population Estimates

In 2004, we obtained population estimates for Oregon chub at 24 locations (Table 3). These annual abundance estimates allow us to monitor the status of Oregon chub in relation to recovery goals (U.S. Fish and Wildlife Service 1998) and to determine which populations of Oregon chub are sufficiently large to be used as donor populations for reintroduction efforts.

We estimated the population abundance of Oregon chub at 11 locations in the Middle Fork Willamette River drainage. The Middle Fork Willamette drainage contains the greatest concentration of large Oregon chub populations (>500 fish) in the Willamette Valley. In 2004, there were nine populations in the Middle Fork Willamette drainage that totaled 500 or more adult Oregon chub. Eight of these populations have been stable or increasing in abundance for the past five years (Table 1). Most of the Middle Fork Willamette chub populations increased in abundance in 2004, compared to 2003 estimates. Many of these populations declined following the 2001 drought, which reduced the surface area of these locations and may have resulted in lower survival of the 2001 brood.

The largest population of Oregon chub in the Middle Fork Willamette drainage was located in the Fall Creek Spillway Ponds (\hat{N} =5,850), site of a 1996 introduction. The second largest population in the drainage was Hospital Pond (\hat{N} =4,940). Oregon chub abundance in Hospital Pond declined steadily from 1997 through 2003. Favorable conditions resulting from a wet spring and a full Lookout Point reservoir produced a very strong 2002 year-class (Scheerer and Terwilliger 2003) that was first vulnerable to our traps as adults in 2004. The third largest population in the drainage was located in Wicopee Pond (\hat{N} =4,780), site of a 1988 introduction. Other locations where chub abundance was estimated in the basin include Shady Dell Pond (\hat{N} =4,210), Buckhead Creek (\hat{N} =3,600), East Fork Minnow Creek Pond (\hat{N} =3,140), Elijah Bristow Berry Slough (\hat{N} =2,950), Elijah Bristow State Park North Slough (\hat{N} =1,340), Dexter Reservoir RV Alcove (DEX3I*; \hat{N} =790), Elijah Bristow Island Pond (\hat{N} =420), and Dexter Reservoir Alcove "The Pit" (\hat{N} =70). Only East Fork Minnow Creek Pond and Dexter Reservoir Alcove "The Pit" had declining 5-year abundance trends. Both sites have lost pond surface area in the past 10 years. Nonnative fish were collected from both Dexter Reservoir alcoves.

We estimated the population abundance of Oregon chub at four locations in the Santiam River drainage. In 2004, there were two populations in the Santiam drainage that totaled 500 or more adult Oregon chub. Both of these populations have been increasing in abundance for the past five years (Table 1). The largest Oregon chub population in the Santiam drainage was located in the Geren Island North Channel (GER4I). Population abundance has increased from a low of 360 fish in 2000 to 2,290 fish in 2004. No Oregon chub were collected from Geren North Channel (GER6H) in 2004. Non-native bluegill and bullhead have increased in abundance in the North Pond since the pond was flooded in 1996. Screening of intake from the North Santiam River to the North Channel and between the North Channel and North Pond was completed in 2002 to prevent further invasion by non-native fish. The second largest chub population in the Santiam drainage was the introduced population in Foster Pullout Pond (FOS2J) in the South Santiam subbasin (\hat{N} =570). Other large populations in the basin were located in Gray Slough (\hat{N} =340) and in the Santiam I-5 Side Channel Pond (\hat{N} =320).

We estimated the population abundance of Oregon chub at seven locations in the Mid-Willamette River drainage. In 2004, there were four populations in the Mid-Willamette drainage (including the McKenzie River) that totaled 500 or more adult Oregon chub. Two of these populations were stable or increasing in abundance for five years (Table 1). The largest Oregon chub population in the Willamette drainage was located at Dunn Wetland Ponds. This population was introduced in 1997-1998. The population abundance totaled 25,810 fish in 2004. The Oregon chub population abundance in Gray Creek Swamp on Finley National Wildlife

Table 3. Estimates of the 2004 population abundance of Oregon chub at locations in the Willamette Valley, Oregon.

Location	Estimate	95% Confidence Limits	
		lower	upper
Santiam River Drainage			
Geren Island North Channel	2,290	1,740	3,360
Foster Pullout Pond	570	370	1,240
Gray Slough	340	230	500
Santiam I-5 Side Channel	320	240	500
Mid-Willamette River Drainage			
Dunn Wetland Ponds	25,810	19,910	33,420
Finley Gray Creek Swamp	520	380	840
Finley Cheadle Pond	220	130	710
Finley Display Pond	70	50	130
McKenzie River Drainage			
Shetzline Pond	1,050	780	1,590
Russell Pond	720	560	1,010
Big Island	310	220	550
Coast Fork Willamette River Drainage			
Herman Pond	350	220	840
Coast Fork Side Channels	190	110	600

Table 3 (continued).

Location	Estimate	95% Confidence Limits	
		lower	upper
Middle Fork Willamette River Drainage			
Fall Creek Spillway Ponds	5,850	4,770	7,170
Hospital Pond	4,940	4,230	5,950
Wicopee Pond	4,780	3,890	5,870
Shady Dell Pond	4,210	3,470	5,110
Buckhead Creek	3,600	2,570	5,610
East Fork Minnow Creek Pond	3,140	2,700	3,660
Elijah Bristow State Park Berry Slough	2,950	2,240	4,350
Elijah Bristow State Park Northeast Slough	1,340	1,130	1,640
Dexter RV Alcove "DEX3"	790	460	1,330
Elijah Bristow Island Pond	420	240	720
Dexter Alcove "PIT1"	70	30	120

Refuge increased from 230 fish to 520 fish in 2004. The abundance of the introduced chub population in Finley Display Pond has decreased steadily from 1,750 fish in 2000 to 70 fish in 2004. No recruitment has been noted in the past 3 years. The chub population in Finley Cheadle Pond, site of a 2002 introduction, increased to 220 fish.

We estimated the population abundance of three Oregon chub populations in the McKenzie River drainage. The most abundant chub population in the McKenzie drainage was located in Shetzline South Pond, near Marcola. This chub population increased from 650 fish in 2003 to 1,050 fish in 2004. The chub population abundance at Big Island decreased from 940 fish in 2002 to 310 fish in 2004. The Oregon chub population abundance in Russell Pond, site of a 2001-2002 introduction, increased to 720 fish.

We estimated the Oregon chub population abundance at two sites in the Coast Fork Willamette drainage. The chub population located in the Coast Fork Side Channels near Saginaw was estimated at 190 fish. The chub population introduced into Herman Pond in the Row River subbasin was estimated at 350 fish. The Coast Fork Willamette subbasin was not identified as a targeted subbasin for recovery when the Oregon Chub Recovery Plan was written in 1998, because Oregon chub had not been collected from the subbasin since 1991, despite widespread surveys. The discovery of a new population in Coast Fork Side Channels in 2002 changed our view, and this subbasin is now included on the list of subbasins for chub recovery.

DISCUSSION

Currently there are twelve populations totaling 500 or more individuals that have exhibited a stable or increasing trend for the past five years (Table 1, Figure 3). Eight of these populations are located in the Middle Fork Willamette drainage, two populations are located in the Mid-Willamette drainage, and two populations are located in the Santiam drainage. We have made significant progress in increasing both the number of known populations of Oregon chub and the number of large populations (>500 fish) in the Willamette drainage over the past six years (Table 4). Most populations of chub are currently isolated from other chub populations due to the reduced frequency and magnitude of flood events and the presence of migration barriers such as impassible culverts and permanent, high beaver dams. Genetic exchange between populations is believed to be minimal. We defined a population as those chub that occupy a single location. If there is an open connection and the potential for frequent movement of chub between adjacent sloughs or ponds, then we consider adjacent sites to be a single population (for example- the two sloughs at the Santiam Conservation Easement).

Status of Naturally Occurring Populations

In 2004, there were ten naturally occurring populations of Oregon chub that totaled 500 or more individuals in the Willamette River basin; seven were located in the Middle Fork Willamette drainage (Table 1). Eight naturally occurring chub populations (>500 fish) have exhibited a stable or increasing trend for the past five years. These include Geren Island, Finley Gray Swamp, Hospital Pond, Shady Dell Pond, Buckhead Creek, Elijah Bristow Berry Slough, Elijah Bristow Northeast Slough, and Dexter Reservoir Alcove "DEX3".

Status of Introduced Populations and Habitat Restoration Projects

A major recovery effort for Oregon chub recovery has focused on the introduction of Oregon chub into suitable habitats within their historic range. Several new populations have been established since 1988. In addition, several habitat restoration projects have been

Figure 3. Abundance trends (linear regressions) for Oregon chub populations from 2000 through 2004. Horizontal bars represent 95% confidence intervals for each estimate. Fitted regression lines are shown where significant slopes occur.

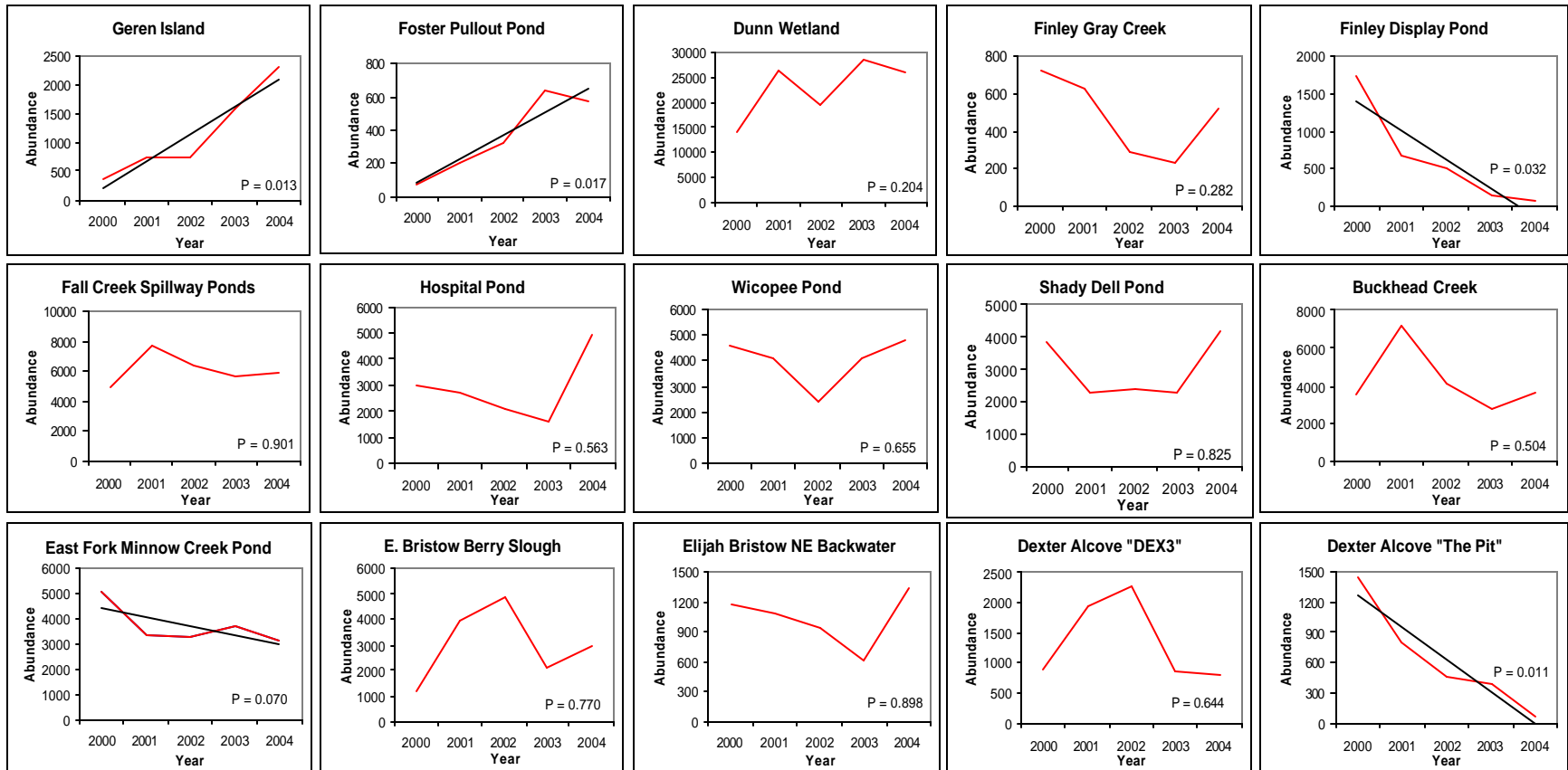


Table 4. Status of Oregon chub recovery efforts, 1998-2004.

Number of populations	Santiam		Mid-Willamette ^a		M. Fk. Willamette		C. Fk. Willamette		All subbasins	
	1998	2004	1998	2004	1998	2004	1998	2004	1998	2004
Total	4	6	2	11	12	13	0	2	18	32
Large (>500 adults)	1	2	1	4	7	9	0	0	9	15
Viable (>500 adults, stable or increasing for 5 years) ^b	0	2	1	2	1	8	0	0	2	12
Introduced ^c	0	1	2	6	4	2	0	1	6	10
Extirpated (since 1991)	0	3	0	0	4	9	1	1	5	13

^a The McKenzie drainage is included in Mid-Willamette recovery area.

^b Recovery criteria are from the Oregon Chub Recovery Plan.

^c Failed introductions (N=3) were not included in the totals.

Table 5. Status of Oregon chub introductions and habitat restoration projects. Oregon chub abundance was determined from mark-recapture population estimates. Numbers in bold are the number of fish captured when no mark-recapture estimates were obtained. Numbers in parentheses are the number of fish stocked. Basin codes: MID= Mid-Willamette River basin, MFW= Middle Fork Willamette River basin, SANT= Santiam River basin; MCK= McKenzie River basin; and CFW= Coast Fork Willamette River basin. Ownership codes: ACOE= U.S. Army Corps of Engineers, USFS= U.S. Forest Service, and USFWS= U.S. Fish and Wildlife Service.

Site Name	Basin	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Donor Site	Ownership
Dunn Wetland	MID				(200)	(373) 460	4,860	14,090	26,240	19,270	28,740	25,810	Geren Island, Elijah Bristow, Shady Dell	private
Fall Creek Spillway Ponds	MFW			(500)	480	1,420	6,310	5,030	7,770	6,370	5,620	5,850	East Fk Minnow Pond, Shady Dell Pond	ACOE
Wicopee Pond	MFW		0	1	9	25	160	4,580	4,080	2,410	4,100	4,780	Dexter Alcove "The Pit" (1988)	USFS
Lower Buckhead Ponds ^a	MFW						4	4	1,430	1,220	610	1,130	-----	USFS
Russell Pond	MCK								(350)	(150) 470	450	720	Buckhead Creek	private
Foster Pullout Pond	SANT						(85)	(20) 80	(75) 210	(50) 320	(158) 640	(112) 570	Geren Island	ACOE
Ankeny Willow Marsh	MID											(500)	Dunn Wetlands	USFWS
Jampolsky Ponds	MID											(500)	Dunn Wetlands	private
Herman Pond	CFW									(400)	420	350	Fall Creek Spillway Ponds	USFS
Cheadle Pond	MID									(50)	50	220	Finley Display Pond	USFWS
Finley Display Pond	MID					(60)	(45) 360	1,750	(49) 670	500	130	70	Finley Gray Swamp	USFWS
Menear's Bend	SANT							(15)	7	(26) 29	0	0	Geren Island	ACOE
East Ferrin Pond	MFW	(576)	3,520	5,610	7,160	3,490	60	0	0	0	0	0	East Fork Minnow Pond	USFS
West Ferrin Pond	MFW	(525)	2	0	0	0	0	0	0	0	0	0	Shady Dell Pond	USFS
Hospital Impoundment Pond ^a	MFW		6	0	1	0	1	0	0	0	0	0	-----	ACOE

^a These sites are habitat enhancement projects where no Oregon chub were introduced. Oregon chub colonized these sites naturally.

completed to increase the quantity of habitat or enhance the suitability of habitat for Oregon chub. In 2004, there were five introduced populations that totaled 500 or more fish, four of these populations have had a stable or increasing trend in abundance for the past five years (Table 1).

In 2004, we monitored Oregon chub introductions at nine locations: Wicopee Pond, Ferrin Ponds, Fall Creek Spillway Ponds, Dunn Wetland Ponds, Finley Display Pond, Finley Cheadle Pond, Foster Pullout Pond, Russell Pond, and Herman Pond, and we monitored habitat restoration projects at three locations: Finley Refuge, Hospital Impoundment Pond, and Lower Buckhead Creek Ponds (Table 5). These introduction and habitat enhancement efforts have been generally successful.

Wicopee Pond was the site of a 1988 introduction of 50 Oregon chub from the Dexter Reservoir Alcove "The Pit". The pond is a former borrow pit adjacent to Salt Creek in the Middle Fork Willamette River drainage. Small numbers of Oregon chub were collected from the pond between 1992 and 1999. In 2000, the population abundance increased dramatically. In 2004, the chub abundance was estimated at 4,780 adults and the population has had a stable five-year abundance trend.

Ferrin Ponds were the sites of habitat restoration projects completed by the U.S. Forest Service in 1993. These former borrow pits were deepened and permanent water control structures were constructed. Non-native fish (largemouth bass, western mosquitofish, and crappies) were poisoned using a rotenone treatment. Oregon chub were introduced into West Ferrin Pond (N=525) and East Ferrin Pond (N=576) in 1994. Oregon chub were collected from both ponds in May 1995; however no Oregon chub have been collected in West Ferrin Pond since 1995. The rotenone treatment was ineffective in eliminating the western mosquitofish and they quickly became abundant in both ponds. In 1997, the Oregon chub population in East Ferrin Pond was 7,160 fish. In 1998, largemouth bass were first observed in the pond and were believed to have been illegally introduced into the pond. The chub population declined rapidly. No Oregon chub were collected from 2000 through 2004. The rapid increase in abundance of the Oregon chub population was encouraging, however the subsequent collapse of the population after largemouth bass were introduced illustrates the continued threat that non-native predators pose to Oregon chub survival and recovery.

In 1996, Oregon chub were introduced into the Fall Creek Spillway Ponds, located in the overflow channel below Fall Creek Dam on U.S. Army Corps of Engineers property. The ponds were formed by beaver dams that blocked the spillway overflow channel. The beaver dams have been in existence for approximately 15 years. A total of 500 Oregon chub were introduced in 1996, 150 from Shady Dell Pond and 350 from East Fork Minnow Creek Pond. After the introduction, the chub population abundance increased rapidly, increasing to 6,300 fish in 1999. This was the third largest Oregon chub population in 2004 and the population has had a stable five-year abundance trend.

In 1994, a large habitat enhancement project was completed at the Dunn Wetlands in the Muddy Creek drainage in Benton County. Approximately 12 hectares of wetland were restored and a permanent (year round) spring-fed pond was constructed. Two additional permanent ponds were constructed in 1997 and 1999. The entire wetland floods during the winter and the ponds are interconnected. Oregon chub were introduced into this site in 1997 (N=200) and 1998 (N=373). In 2004, the population totaled 25,810 fish and was the largest chub population in the Willamette Valley. This population has had an increasing five-year abundance trend.

A multi-year habitat enhancement project was completed in 2003 in the Muddy Creek drainage on Finley National Wildlife Refuge. The goal was to move portions of the Gray Creek chub population to suitable locations on the refuge to reduce their risk of extinction and expand their numbers. The project involved habitat restoration of two ponds in the Gray Creek drainage (Display and Beaver Ponds) and the creation of another pond (Cheadle Pond). Display Pond was drained in 1996 to remove the non-native fish. Oregon chub from Gray Creek Swamp were

introduced into Display Pond in 1998 (n=60), 1999 (n=45), and 2001 (n=49). The chub population abundance was estimated at 1,750 fish in 2000, but has declined steadily since then. Recruitment failure is the suspected cause of this decline. No small fish (<50 mm) have been collected in the past two years. We conducted surveys during the summer of 2003 and found very few juvenile chub (<25 mm). In 2002, we introduced 50 chub from Display Pond into Cheadle Pond. We estimated the chub abundance in Cheadle Pond to be 220 fish in 2004. During the summer of 2003, the U.S. Fish and Wildlife Service completed the Beaver Pond habitat project. They replaced the spillway and water control structure and deepened the pond to prevent desiccation. Native fish colonized the fish in 2004 (threespine sticklebacks, speckled dace, redbreast shiners). We will continue to monitor the site to determine whether Oregon chub colonize this pond from Gray Creek Swamp, which is located upstream. Oregon chub will be introduced into the pond, if they do not colonize on their own.

Foster Pullout Pond is located on U.S. Army Corps of Engineers property on the north shore of Foster Reservoir in the South Santiam River drainage. The pond is perched several meters above the reservoir full pool level, is spring-fed, and the water level is maintained by a beaver dam at the outflow. We introduced 500 Oregon chub into the pond from Geren Island between 1999 and 2004. In 2004, we estimated the chub population abundance at 570 fish.

Menear's Bend Pond is located on U. S. Army Corps of Engineers property in the Middle Santiam drainage upstream of Foster Reservoir. The pond is a small beaver pond that is fed by a small tributary and springs. We introduced Oregon chub from Geren Island in 2000 (n=15) and 2002 (n=26). The pond dried up in 2003.

Russell Pond is located on private land in the McKenzie River drainage. The pond is a small spring-fed farm pond that is isolated from the Mohawk River at all flow levels. We introduced Oregon chub into the pond from Buckhead Creek in October 2001 (n=350) and May 2002 (n=150). We estimated the Oregon chub population abundance at 720 fish in 2004.

Hospital Impoundment Pond is located in Lookout Point Reservoir (Middle Fork Willamette drainage) adjacent to Hospital Pond. The U.S. Forest Service and the U.S. Army Corps of Engineers constructed the pond in 1994. They excavated the pond in a former railroad grade in the drawdown zone of the reservoir. The outflow from Hospital Pond was diverted into the pond. The project was designed to benefit western pond turtles and Oregon chub. The fish community in this pond varies each year, depending on which species enter the pond from Lookout Point Reservoir or Hospital Pond. We collected non-native fish, which originate from the reservoir, in 1995 and 1997 through 2004. We collected a few Oregon chub in 1995, 1997, and 1999. The pond appears to provide few benefits for Oregon chub.

The Lower Buckhead Enhancement Ponds are located in the Buckhead Creek floodplain in the Middle Fork Willamette drainage. The U.S. Forest Service constructed three shallow off-channel ponds in 1998. They excavated these ponds to increase the amount of off-channel habitat available for Oregon chub. The ponds are connected to the creek during typical winter high-flow events. In 2004, we found two of the ponds to contain Oregon chub (n=1,130).

Herman Pond is an isolated, spring-fed pond located in the Coast Fork Willamette River drainage on U.S. Forest Service Property. In 2002, we introduced 400 Oregon chub. In 2004, we estimated the chub population abundance at 350 fish.

Willow Marsh is a large pond located on Ankeny National Wildlife Refuge. The pond was modified in 2003 and 2004 to deepen the pond and isolate it from an adjacent marsh that contains nonnative fish. In 2004, we introduced 500 Oregon chub from Dunn Wetlands.

Jampolsky Ponds are part of a wetland restoration project completed in 2000 on private land in the Amazon Creek drainage (Long Tom River). In 2004, we introduced 500 Oregon chub from Dunn Wetlands.

Identification and Evaluation of Potential Introduction Sites

New populations of Oregon chub are established by introductions to suitable habitats within their historical range. A minimum of 400 fish are to be used when establishing new fish populations to avoid genetic bottlenecks. The Oregon Chub Recovery Plan states that a maximum of 10% of a population may be removed for an introduction in any one year. Donor stocks should be in the same subbasin as the introduction site, whenever possible. Potential Oregon chub introduction sites were identified and evaluated using the following guidelines:

1. Restrict introductions to the historic distribution of Oregon chub.
2. Restrict introductions to protected sites that are secure from imminent or future threats of habitat destruction (*invasion by warmwater fish is included in this category*).
3. Restrict introductions to sites where the potential for dispersal has been determined and is acceptable (*all proposed sites meet this criterion*).
4. Restrict introductions to sites that likely fulfill life history requirements. Features include small ponds, less than 1,000 meters in elevation, depositional substrate, gradually sloping banks, varied and abundant aquatic vegetation, little or no water velocity, mostly less than 2 meters deep, limited use or access by the public, no non-native fish species, and summer water temperatures exceeding 16°C. Site manipulations to comply with this guideline are permissible. Introductions and site manipulations will be coordinated with landowners of proposed sites. A site management plan will be developed prior to introduction and coordination will occur with the landowner and/or managing agencies.
5. Restrict introductions to sites that contain sufficient habitat to support a genetically viable population (*all proposed sites meet this criterion*).
6. Prohibit introductions into areas where other rare or endemic taxa could be adversely affected (*all proposed sites meet this criterion because Oregon chub are not a known threat to any rare or endemic taxa*).

Following are descriptions of the locations that were evaluated as potential introduction sites for Oregon chub in 2004.

1. *Beaver Pond*- This pond is located in the Gray Creek drainage on the Finley National Wildlife Refuge in Benton County. The pond has dried up most years between 1991 and 2002. One Oregon chub was collected from Beaver Pond in 1990 (personal communication, Dr. Douglas Markle, Oregon State University). Presumably this fish moved downstream from Gray Creek Swamp. In 2003, a habitat enhancement project was completed to reconstruct the dike, replace the water control structure, and deepen the pond to maintain water levels throughout the summer months. Water levels and reestablishment of aquatic vegetation were monitored in 2004. Native fish were collected in 2004, but no Oregon chub were found. We will wait several years to see whether Oregon chub colonize the site naturally. If colonization does not occur naturally, we will introduce fish from Gray Creek Swamp.
2. *Brown Creek Ponds*- These ponds are located on Finley National Wildlife Refuge in Benton County. The ponds were constructed in the lower Brown Creek drainage in 1999. Water control structures were completed in 2000. The vegetation in the north pond has become well established. The refuge has the ability to divert water into either pond. We recommend focusing on the north pond for a future chub introduction.
3. *South-Dunlin-Woodduck Ponds*- This site is located on Ankeny National Wildlife Refuge in Marion County. The site was first sampled in 1991. A major habitat enhancement project

was completed in 1998. Initially, the site was drained to remove non-native fish. Then the site was recontoured, deepened, and a new dike and water control structure were constructed. The enhancement project created abundant shallow water vegetated habitat. The dike reconstruction and water control structure were designed to prevent invasion by non-native fish. No fish were collected in 1999-2001. Threespine sticklebacks were collected in 2003 and 2004. The site has suitable habitat for Oregon chub. The U.S. Fish and Wildlife Service is attempting to secure an additional source of water (wells, diversion) to increase the pond area available to Oregon chub during the summer months.

4. *Long Tom Ranch*- This site is located near the confluence of Amazon Creek and the Long Tom River in Lane County. A large wetland restoration project was completed in 1999. Partners for Wildlife funds were used to create a large pond for Oregon chub. The aquatic vegetation was well established in the pond by September 2002. Non-native fish were collected in May 2003. The U.S. Fish and Wildlife Service modified the pond in 2003 to exclude access by non-native fish. The pond was dried up to remove existing non-native fish. Nonnative fish were again collected from the pond in 2004. We will attempt to determine how nonnative fish entered the pond (overland flow during high water events?) and correct this situation.
5. *Stayton Ponds*- This location is the site of former ODFW salmon rearing ponds in the North Santiam drainage near Stayton (Marion County). The facility was no longer being used to rear salmon and the ponds were drained. Water control structures were damaged during the 1996 floods. A habitat enhancement project was completed in 2004 to create two chub ponds in a portion of the existing wetland area. We will monitor the establishment of aquatic vegetation and the degree of isolation during high flow events before Oregon chub will be introduced.
6. *Aumsville Ponds*- This site is located in the Mill Creek drainage in Marion County. The site is owned by Marion County. Planning for a restoration project is in progress. The site was a former ODFW rearing facility and consists of a series of shallow earthen ponds. There is an historic record of one Oregon chub collected from the site in 1979. Non-native fish were abundant in 1991; no Oregon chub were collected. The restoration project would create an isolated Oregon chub pond. Non-native fish would be removed and excluded.
7. *St. Paul Ponds*- This site is located in the Willamette River drainage in Marion County. The site is owned by ODFW. The site was a former ODFW warmwater rearing facility and consists of a series of shallow earthen ponds. A restoration project is currently in the planning stages.
8. *Strube Flats*- This site consists of a series of ponds located downstream of Cougar Reservoir on a side channel to the South Fork McKenzie River on U.S. Forest Service Property. Habitat is suitable for Oregon chub. Only native fish were present (speckled dace, sculpins, and cutthroat trout).
9. *Magne Pond*- This site is located on private property in the McKenzie River drainage near Cougar Reservoir. Habitat is suitable for Oregon chub. Only cutthroat trout are present in the pond. A new water control structure is needed to replace an aging notched log.

Threats to Oregon Chub and Limitations to Their Recovery

Oregon chub continue to be impacted by human activities. During the past decade, Oregon chub populations have been threatened by illegal water withdrawals, unauthorized fill and removal activities, timber harvest, highway and pipeline construction, roadside herbicide applications, chemical spills, and routine culvert cleaning operations. However, the proliferation of non-native fish is the largest current threat to Oregon chub populations. Non-native fish have been collected from 42 percent of the 651 sites we have sampled in the Willamette Valley since 1991 and 54 percent of those sites that contained fish. After the 1996 floods, non-native fish were first collected from several Oregon chub sites in the Santiam River drainage; the two largest populations subsequently declined sharply in abundance (Scheerer 2002). Illegal planting of largemouth bass into an introduction site in the Middle Fork Willamette River drainage coincided with the collapse of a Oregon chub population that had once totaled more than 7,000 fish. Non-native fish are well established throughout the Willamette Valley. They threaten to invade sites containing Oregon chub and limit the ability of Oregon chub to migrate from existing sites and colonize suitable habitats elsewhere. Non-native fish are more common in off-channel habitats in the Santiam and Mid-Willamette River drainages than in the Middle Fork Willamette and McKenzie River drainage (Scheerer 2002).

Recovery of Oregon chub in the Santiam and Mid-Willamette subbasins is severely limited by the proliferation of non-native fish in off-channel habitats. The resulting paradox is that the frequent interaction of the river with the floodplain habitats in these particular subbasins, conditions which historically created off-channel habitats and aided in the dispersal of chub and the interchange of individuals among populations, now poses a threat to Oregon chub by allowing dispersal of nonnative species (Scheerer 2002). Because of the threats posed by nonnative fish, and the loss and fragmentation of suitable Oregon chub habitats, we have few options other than to manage chub populations in isolation. This approach has potentially severe genetic consequences. Genetic analyses that are under way will assist in determining the extent of genetic drift and inbreeding in existing populations and will help guide future management. Managers may be assigned the task of moving fish among certain populations, both natural and introduced, to maintain and enhance the genetic variability necessary for the persistence and recovery of this species.

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APPENDIX A

Fish Species and Habitat Characteristics at Each Survey Location

Sites are sorted by major recovery basin then listed alphabetically by map code.

¹ Vegetation types are expressed as a percentage of the total surface area of the site.

² Vegetation codes:

ACER	Big leaf maple (<i>Acer macrophyllum</i>)
ALIS	Water plantain (<i>Alisma</i> sp.)
ALNU	Alder (<i>Alnus</i> sp.)
ATRO	Nightshade (<i>Atropa belladonna</i>)
AZOL	Water velvet (<i>Azolla</i> sp.)
BIDE	Beggars tick (<i>Bidens</i> sp.)
CABO	Fanwort (<i>Cabomba</i> sp.)
CALI	Water starwort (<i>Callitriche</i> sp.)
CARE	Sedge (<i>Carex</i> sp.)
CERA	Coontail (<i>Ceratophyllum</i> sp.)
CHAR	Stonewort (<i>Chara</i> sp.)
CORN	Red osier dogwood (<i>Cornus sericea</i>)
DOWN	Box elengia (<i>Downingia elegans</i>)
ELEO	Spike rush (<i>Eleocharis</i> sp.)
ELOD	Waterweed (<i>Elodea</i> sp.)
EQUI	Horsetail (<i>Equisetum</i> sp.)
FILA	Filamentous Algae
FONT	Water moss (<i>Fontinalis</i> sp.)
FRAX	Oregon ash (<i>Fraxinus latifolia</i>)
GRAM	Grasses (<i>Gramineae</i>)
IRIS	Yellow iris (<i>Iris pseudacorus</i>)
JUNC	Rush (<i>Juncas</i> sp.)
LEMN	Duckweed (<i>Lemna minor</i>)
LOTU	Birdsfoot trefoil (<i>Lotus corniculatus</i>)
LUDW	False loosestrife (<i>Ludwigia palustris</i>)
LYSI	Skunk cabbage (<i>Lysichiton americanum</i>)
MENT	Mint (<i>Mentha</i> sp.)
MYRI	Water milfoil (<i>Myriophyllum</i> sp.)
NONE	No aquatic vegetation
NUPH	Yellow water lily (<i>Nuphar</i> sp.)
NYMP	White water lily (<i>Nymphaea</i> sp.)
OENA	Water celery (<i>Oenanthe</i> sp.)
POLY	Smartweed (<i>Polygonum</i> sp.)
POTA	Pondweed (<i>Potamogeton</i> sp.)
RANU	Buttercup (<i>Ranunculus</i> sp.)
RUBU	Blackberry (<i>Rubus</i> sp.)
SALI	Willow (<i>Salix</i> sp.)
SAGI	Arrowhead or wapato (<i>Sagittaria latifolia</i>)
SCIR	Bullrush (<i>Scirpus</i> sp.)
SCOT	Scot's broom (<i>Cytisus scoparius</i>)
SOLA	Nightshade (<i>Solanum</i> sp.)
SPAR	Burr reed (<i>Sparganium</i> sp.)
TYPH	Cattail (<i>Typha</i> sp.)
ULTR	Bladderwort (<i>Utricularia</i> sp.)
VALI	Tapegrass (<i>Vallisneria</i> sp.)
VERO	Speedwell (<i>Veronica</i> sp.)

³ Salmonid codes: CO= coho salmon *Oncorhynchus kisutch*; CH= chinook salmon *O. tshawytscha*; CT= cutthroat trout *O. clarki*; RB= rainbow trout *O. mykiss*; TF= unknown trout fry.

⁴ Centrarchid codes: BG= bluegill *Lepomis macrochirus*; C= crappie *Pomoxis* spp.; LB= largemouth bass *Micropterus salmoides*; SB= smallmouth bass *M. dolomieu*; PK= pumpkinseed *L. gibbosus*, and WM= warmouth *Chaenobryttus gulosus*.

Site Name **C. FORK SIDE CHANNELS I-5 BC**
 Basin COAST FORK WILLAMETTE RIVER
 Subbasin

Map Code **CF11B**
 Sampling Date 5/19/2004
 UTM 10T 498891 4857908

Surface Area (m2) 9100
 Average Depth (m) 0.8
 Water Temperature (C) 16
 Percent Silt / Organics 50

Types of aquatic vegetation¹

Submergent 15
 Emergent 10
 Floating
 Algae
 Total 25

Aquatic Vegetation (genera)²

POTA 5
 MYRI 5
 GRAM 5
 ELOD 5
 SALI 5

Native Fish Species Collected:

Oregon Chub 185
 Cottids 4
 Speckled Dace 107
 Redside Shiners 16
 Northern Pikeminnows 69
 Largescale Suckers 11
 Sandrollers 3
 Threespine Sticklebacks 90
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴ BG PK 130
 Bullheads 1
 Common Carp

Other: CM

NOTE: POPULATION ESTIMATE

Site Name **C FK ISLAND- WATERHOUSE SLOUGH**
 Basin COAST FORK WILLAMETTE RIVER
 Subbasin

Map Code **CF12**
 Sampling Date 5/26/2004
 UTM 10T 496483 4854014

Surface Area (m2) 3200
 Average Depth (m) 0.5
 Water Temperature (C) 16
 Percent Silt / Organics 40

Types of aquatic vegetation¹

Submergent 75
 Emergent 17
 Floating
 Algae
 Total 92

Aquatic Vegetation (genera)²

SCIR 5
 GRAM 5
 SALI 2
 MYRI 40
 ELEO 30
 SPAR 5
 POTA 5

Native Fish Species Collected:

Oregon Chub
 Cottids 3
 Speckled Dace 25
 Redside Shiners
 Northern Pikeminnows 2
 Largescale Suckers 1
 Sandrollers 1
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish 71
 Centrarchids ⁴ BG PK 35
 Bullheads 1
 Common Carp

Other:

NOTE:

Site Name **COAST FORK BACKWATER RT- CF13**
 Basin COAST FORK WILLAMETTE RIVER
 Subbasin

Map Code **CF13**
 Sampling Date 5/26/2004
 UTM 10T 498201 4856036

Surface Area (m2) 1600
 Average Depth (m) 0.5
 Water Temperature (C) 16
 Percent Silt / Organics 100

Types of aquatic vegetation¹

Submergent 45
 Emergent 15
 Floating 5
 Algae
 Total 65

Aquatic Vegetation (genera)²

SPAR 10
 LEMN 5
 POTA 25
 GRAM 5
 ELOD 20

Native Fish Species Collected:

Oregon Chub
 Cottids 8
 Speckled Dace 41
 Redside Shiners 23
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴ BG 23
 Bullheads
 Common Carp

Other:**NOTE:**

Site Name **COAST FORK BACKWATER LF- CF14**
 Basin COAST FORK WILLAMETTE RIVER
 Subbasin

Map Code **CF14**
 Sampling Date 5/26/2004
 UTM 10T 498245 4856340

Surface Area (m2) 3360
 Average Depth (m) 0.5
 Water Temperature (C) 14
 Percent Silt / Organics 100

Types of aquatic vegetation¹

Submergent 20
 Emergent 50
 Floating
 Algae
 Total 70

Aquatic Vegetation (genera)²

SPAR 50
 ELOD 20
 0

Native Fish Species Collected:

Oregon Chub
 Cottids
 Speckled Dace
 Redside Shiners 73
 Northern Pikeminnows 32
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴ BG 31
 Bullheads
 Common Carp

Other:**NOTE:**

Site Name **COAST FORK BACKWATER RT- CF15**
 Basin COAST FORK WILLAMETTE RIVER
 Subbasin

Map Code **CF15**
 Sampling Date 5/26/2004
 UTM 10T 498588 4857930

Surface Area (m2) 900
 Average Depth (m) 0.7
 Water Temperature (C) 14
 Percent Silt / Organics 100

Types of aquatic vegetation¹

Submergent 35
 Emergent 40
 Floating 2
 Algae
 Total 77

Aquatic Vegetation (genera)²

SPAR 40
 ELOD 15
 POLY 20
 LEMN 2

Native Fish Species Collected:

Oregon Chub
 Cottids
 Speckled Dace 1
 Redside Shiners 26
 Northern Pikeminnows 6
 Largescale Suckers 2
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴ BG 27
 Bullheads
 Common Carp

Other:**NOTE:**

Site Name **CAMAS SWALE**
 Basin COAST FORK WILLAMETTE RIVER
 Subbasin CAMAS SWALE

Map Code **CS1H***
 Sampling Date 9/7/2004
 UTM 10T 494550 4863575

Surface Area (m2) 150
 Average Depth (m) 0.2
 Water Temperature (C) 18
 Percent Silt / Organics 90

Types of aquatic vegetation¹

Submergent
 Emergent 10
 Floating
 Algae 10
 Total 20

Aquatic Vegetation (genera)²

FILA 10
 GRAM 10

Native Fish Species Collected:

Oregon Chub
 Cottids
 Speckled Dace
 Redside Shiners
 Northern Pikeminnows
 Largescale Suckers 2
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish 79
 Centrarchids ⁴ BG 21
 Bullheads
 Common Carp

Other:**NOTE:**

Site Name **DORENA POND (SCHWARZ POND)**
 Basin COAST FORK WILLAMETTE RIVER
 Subbasin ROW RIVER

Map Code **DP1B**
 Sampling Date 5/19/2004
 UTM 10T 503494 4847807

Surface Area (m2) 2880
 Average Depth (m) 0.4
 Water Temperature (C) 12
 Percent Silt / Organics 100

Types of aquatic vegetation¹

Submergent 35
 Emergent 65
 Floating 0
 Algae 0
 Total 100

Aquatic Vegetation (genera)³

SPAR 40
 ELEO 20
 SCIR 3
 MYRI 15
 ELOD 15
 POLY 5
 SALI 2

Native Fish Species Collected:

Oregon Chub
 Cottids
 Speckled Dace
 Redside Shiners
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴ BG LB 14
 Bullheads 2
 Common Carp

Other:**NOTE:** MERCURY STUDY

Site Name **DORENA BACKWATER**
 Basin COAST FORK WILLAMETTE RIVER
 Subbasin ROW RIVER

Map Code **DP2**
 Sampling Date 5/19/2004
 UTM 10T 503439 4847829

Surface Area (m2) 4800
 Average Depth (m) 0.8
 Water Temperature (C) 12
 Percent Silt / Organics 70

Types of aquatic vegetation¹

Submergent 15
 Emergent 20
 Floating
 Algae
 Total 35

Aquatic Vegetation (genera)³

POLY 5
 ELOD 5
 MYRI 5
 SPAR 20

Native Fish Species Collected:

Oregon Chub
 Cottids
 Speckled Dace
 Redside Shiners
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴ BG 33
 Bullheads
 Common Carp

Other:**NOTE:** MERCURY STUDY

Appendix A (continued).

COAST FORK WILLAMETTE RIVER BASIN

Site Name	HERMAN POND	Map Code	LAYNG1D
Basin	COAST FORK WILLAMETTE RIVER	Sampling Date	5/20/2004
Subbasin	ROW RIVER	UTM 10T	525471 4842030
Surface Area (m2)	3240	Native Fish Species Collected:	
Average Depth (m)	0.9	Oregon Chub	345
Water Temperature (C)	14	Cottids	
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent	40	Northern Pikeminnows	
Emergent	57	Largescale Suckers	
Floating	2	Sandrollers	
Algae	0	Threespine Sticklebacks	
Total	99	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
TYPH	50	Western Mosquitofish	
POTA	40	Centrarchids ⁴	
SALI	5	Bullheads	
LEMN	2	Common Carp	
JUNC	1	Other:	
CARE	1		
NOTE: POPULATION EST- 2002 INTROD N=400 FCSP			
Site Name	ROW RIVER BACKWATER LEFT ROW5	Map Code	ROW5
Basin	COAST FORK WILLAMETTE RIVER	Sampling Date	5/26/2004
Subbasin	ROW RIVER	UTM 10T	497583 4848970
Surface Area (m2)	540	Native Fish Species Collected:	
Average Depth (m)	0.8	Oregon Chub	
Water Temperature (C)	13.5	Cottids	2
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent	65	Northern Pikeminnows	
Emergent	20	Largescale Suckers	
Floating		Sandrollers	
Algae		Threespine Sticklebacks	
Total	85	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
POLY	10	Western Mosquitofish	81
ELOD	20	Centrarchids ⁴	
VALI	5	Bullheads	
SPAR	10	Common Carp	
MYRI	30	Other:	
GRAM	10		
NOTE:			

Appendix A (continued).

COAST FORK WILLAMETTE RIVER BASIN

Site Name	ROW RIVER SLOUGH RIGHT ROW6	Map Code	ROW6
Basin	COAST FORK WILLAMETTE RIVER	Sampling Date	5/26/2004
Subbasin	ROW RIVER	UTM 10T	497757 4849785
Surface Area (m2)	700	Native Fish Species Collected:	
Average Depth (m)	0.7	Oregon Chub	
Water Temperature (C)	15	Cottids	2
Percent Silt / Organics	70	Speckled Dace	14
Types of aquatic vegetation¹		Redside Shiners	32
Submergent	40	Northern Pikeminnows	90
Emergent	11	Largescale Suckers	3
Floating		Sandrollers	
Algae		Threespine Sticklebacks	
Total	51	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)³		Non-native Fish Species Collected:	
VALI	25	Western Mosquitofish	
GRAM	10	Centrarchids ⁴ BG C PK	18
ALIS	1	Bullheads	
POTA	10	Common Carp	
CALI	5	Other:	

NOTE:

Site Name	ROW RIVER BW (BEAVER PND) ROW7	Map Code	ROW7
Basin	COAST FORK WILLAMETTE RIVER	Sampling Date	5/26/2004
Subbasin	ROW RIVER	UTM 10T	496735 4851510
Surface Area (m2)	2625	Native Fish Species Collected:	
Average Depth (m)	0.7	Oregon Chub	
Water Temperature (C)	18	Cottids	1
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent	66	Northern Pikeminnows	
Emergent	25	Largescale Suckers	
Floating		Sandrollers	
Algae		Threespine Sticklebacks	
Total	91	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)³		Non-native Fish Species Collected:	
POLY	60	Western Mosquitofish	123
POTA	1	Centrarchids ⁴ BG	12
SPAR	10	Bullheads	
MYRI	5	Common Carp	
GRAM	10	Other:	
SALI	5		

NOTE:

Site Name	ANKENY NWR DUNLIN-WOODDUCK PND	Map Code	AN4-5G
Basin	LOWER WILLAMETTE RIVER	Sampling Date	5/27/2004
Subbasin	ANKENY	UTM 10T	493369 4957231

Surface Area (m2)	6000	Native Fish Species Collected:	
Average Depth (m)	1.2	Oregon Chub	
Water Temperature (C)	17	Cottids	
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent		Northern Pikeminnows	
Emergent	67	Largescale Suckers	
Floating	20	Sandrollers	
Algae		Threespine Sticklebacks	3
		Salmonids ³	
		Lamprey	
	Total		
	87		
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
GRAM	50	Western Mosquitofish	
LEMN	20	Centrarchids ⁴	
ELEO	10	Bullheads	
SCIR	5	Common Carp	
ALIS	2		
		Other:	

NOTE: PONDS FULL AND CONNECTED

Site Name	BEAVER CREEK	Map Code	BEAV08076*
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/5/2004
Subbasin	MILL CREEK	UTM 10T	510583 4966429

Surface Area (m2)	788	Native Fish Species Collected:	
Average Depth (m)	0.4	Oregon Chub	
Water Temperature (C)	14	Cottids	3
Percent Silt / Organics	25	Speckled Dace	2
Types of aquatic vegetation¹		Redside Shiners	54
Submergent	0	Northern Pikeminnows	15
Emergent	25	Largescale Suckers	1
Floating	0	Sandrollers	
Algae	0	Threespine Sticklebacks	
		Salmonids ³ CT	2
	Total	Lamprey	
	25		
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
GRAM	25	Western Mosquitofish	
		Centrarchids ⁴	
		Bullheads	
		Common Carp	
		Other:	

NOTE: LOW GRAD SALM HAB, ABUTMT MID CREEK

Site Name	BUDEAU POND	Map Code	BUDEAU1*
Basin	LOWER WILLAMETTE RIVER	Sampling Date	8/23/2004
Subbasin	MILL CREEK	UTM 10T	503925 4962925

Surface Area (m2)	0
Average Depth (m)	0
Water Temperature (C)	
Percent Silt / Organics	100

Types of aquatic vegetation¹

Submergent	0
Emergent	0
Floating	0
Algae	<u>0</u>
Total	0

Aquatic Vegetation (genera)²

GRAM	5
------	---

Native Fish Species Collected:

Oregon Chub	
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sandrollers	
Threespine Sticklebacks	
Salmonids ³	
Lamprey	

Non-native Fish Species Collected:

Western Mosquitofish	
Centrarchids ⁴	
Bullheads	
Common Carp	

Other: NO FISH

NOTE: POTENTIAL INTRODUCTION SITE- DRY

Site Name	WEST FORK DAIRY CREEK #2362	Map Code	DAIR02362*
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/11/2004
Subbasin	TUALATIN RIVER	UTM 10T	490647 5053800

Surface Area (m2)	550
Average Depth (m)	0.3
Water Temperature (C)	11.5
Percent Silt / Organics	10

Types of aquatic vegetation¹

Submergent	0
Emergent	5
Floating	0
Algae	<u>0</u>
Total	5

Aquatic Vegetation (genera)²

GRAM	5
------	---

Native Fish Species Collected:

Oregon Chub	
Cottids	9
Speckled Dace	
Redside Shiners	64
Northern Pikeminnows	
Largescale Suckers	
Sandrollers	
Threespine Sticklebacks	
Salmonids ³ CT	2
Lamprey	

Non-native Fish Species Collected:

Western Mosquitofish	
Centrarchids ⁴	
Bullheads	
Common Carp	

Other:

NOTE: ODOT- SALMONID HABITAT

Site Name **EAST FORK DAIRY CREEK #2366**
 Basin LOWER WILLAMETTE RIVER
 Subbasin TUALATIN RIVER

Map Code **DAIR02366***
 Sampling Date 10/11/2004
 UTM 10T 496007 5050282

Surface Area (m2) 600
 Average Depth (m) 0.7
 Water Temperature (C) 11.5
 Percent Silt / Organics 5

Types of aquatic vegetation¹

Submergent 0
 Emergent 5
 Floating 0
 Algae 0
 Total 5

Aquatic Vegetation (genera)²

GRAM 5

Native Fish Species Collected:

Oregon Chub
 Cottids 9
 Speckled Dace 1
 Redside Shiners 21
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³ CT 3
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other:

NOTE: ODOT BRIDGE SITE, LOW GRAD SALM HABITAT

Site Name **WEST FORK DAIRY CREEK #2672**
 Basin LOWER WILLAMETTE RIVER
 Subbasin TUALATIN RIVER

Map Code **DAIR02672***
 Sampling Date 10/11/2004
 UTM 10T 484580 5058733

Surface Area (m2) 399
 Average Depth (m) 0.4
 Water Temperature (C) 10.5
 Percent Silt / Organics 10

Types of aquatic vegetation¹

Submergent 0
 Emergent 5
 Floating 0
 Algae 0
 Total 5

Aquatic Vegetation (genera)²

GRAM 5

Native Fish Species Collected:

Oregon Chub
 Cottids 36
 Speckled Dace 1
 Redside Shiners 28
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other:

NOTE: ODOT- SALMONID HABITAT

Site Name **WEST FORK DAIRY CREEK #2673**
 Basin LOWER WILLAMETTE RIVER
 Subbasin TUALATIN RIVER

Map Code **DAIR02673***
 Sampling Date 10/11/2004
 UTM 10T 485847 5057789

Surface Area (m2) 696
 Average Depth (m) 0.4
 Water Temperature (C) 11
 Percent Silt / Organics 10

Types of aquatic vegetation¹

Submergent 0
 Emergent 2
 Floating 0
 Algae 0
 Total 2

Aquatic Vegetation (genera)³

GRAM 2

Native Fish Species Collected:

Oregon Chub
 Cottids 8
 Speckled Dace
 Redside Shiners 25
 Northern Pikeminnows
 Largescale Suckers 3
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³ CT 1
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other:

NOTE: ODOT- SALMONID HABITAT

Site Name **GOOSENECK CREEK #2015**
 Basin LOWER WILLAMETTE RIVER
 Subbasin YAMHILL RIVER

Map Code **GOOS02015***
 Sampling Date 10/6/2004
 UTM 10T 466162 4985508

Surface Area (m2) 243
 Average Depth (m) 0.2
 Water Temperature (C) 14.5
 Percent Silt / Organics 20

Types of aquatic vegetation¹

Submergent 2
 Emergent 0
 Floating 0
 Algae 0
 Total 2

Aquatic Vegetation (genera)³

POLY 2

Native Fish Species Collected:

Oregon Chub
 Cottids 6
 Speckled Dace
 Redside Shiners
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³ CO CT UT 4
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other:

NOTE: SALMONID HABITAT, CONCRETE UNDER BRIDGE

Site Name	HAYDEN SLOUGH	Map Code	HAYD1*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/4/2004	
Subbasin	RICKREALL CREEK	UTM	10T	487099 4971301
Surface Area (m2)	4680	Native Fish Species Collected:		
Average Depth (m)	1	Oregon Chub		
Water Temperature (C)	15	Cottids		
Percent Silt / Organics	95	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	55	Northern Pikeminnows	
	Emergent	10	Largescale Suckers	
	Floating	30	Sandrollers	
	Algae	5	Threespine Sticklebacks	
	Total	100	Salmonids ³	
			Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:		
NUPH	20	Western Mosquitofish		
GRAM	10	Centrarchids ⁴ BG LB		
MYRI	10	Bullheads		
LEMN	10	Common Carp		
CHAR	15	Other:		
ELOD	20	NOTE: PROPOSED GRAVEL OPERATION		
POLY	5			
Site Name	IOWA STREET VIADUCT	Map Code	IOWA08197*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/11/2004	
Subbasin		UTM	10T	525200 5036075
Surface Area (m2)		Native Fish Species Collected:		
Average Depth (m)		Oregon Chub		
Water Temperature (C)		Cottids		
Percent Silt / Organics	0	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	0	Northern Pikeminnows	
	Emergent	0	Largescale Suckers	
	Floating	0	Sandrollers	
	Algae	0	Threespine Sticklebacks	
	Total	0	Salmonids ³	
			Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:		
NONE		Western Mosquitofish		
		Centrarchids ⁴		
		Bullheads		
		Common Carp		
		Other:		
		NOTE: ODOT BRIDGE- UNABLE TO SAMPLE VIADUCT		

Site Name	MCKAY CREEK #2365	Map Code	MCKAY2365*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/11/2004	
Subbasin	TUALATIN RIVER	UTM 10T	501271	5047820
Surface Area (m2)	720	Native Fish Species Collected:		
Average Depth (m)	0.9	Oregon Chub		
Water Temperature (C)	11	Cottids 3		
Percent Silt / Organics	5	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners 12		
Submergent	0	Northern Pikeminnows		
Emergent	2	Largescale Suckers		
Floating	0	Sandrollers		
Algae	0	Threespine Sticklebacks		
Total	2	Salmonids ³		
		Lamprey		
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:		
GRAM	2	Western Mosquitofish		
		Centrarchids ⁴		
		Bullheads		
		Common Carp		
		Other:		
NOTE: ODOT BRIDGE SITE, LOW GRAD SALM HABITAT				
Site Name	MILL CREEK (YAMHILL) #1756	Map Code	MILL01756*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/6/2004	
Subbasin	YAMHILL RIVER	UTM 10T	466985	4984772
Surface Area (m2)	3157	Native Fish Species Collected:		
Average Depth (m)	0.5	Oregon Chub		
Water Temperature (C)	14	Cottids 4		
Percent Silt / Organics	5	Speckled Dace 10		
Types of aquatic vegetation¹		Redside Shiners 17		
Submergent	0	Northern Pikeminnows		
Emergent	2	Largescale Suckers		
Floating	0	Sandrollers		
Algae	0	Threespine Sticklebacks		
Total	2	Salmonids ³		
		Lamprey		
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:		
CARE	2	Western Mosquitofish		
		Centrarchids ⁴		
		Bullheads		
		Common Carp		
		Other:		
NOTE: ODOT- SALMONID HABITAT				

Site Name	MILL CREEK	Map Code	MILL08070*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/5/2004	
Subbasin	MILL CREEK	UTM	10T	516857 4962210

Surface Area (m2)	450	Native Fish Species Collected:		
Average Depth (m)	0.3	Oregon Chub		
Water Temperature (C)	14	Cottids		6
Percent Silt / Organics	100	Speckled Dace		1
Types of aquatic vegetation¹		Redside Shiners		83
Submergent	0	Northern Pikeminnows		2
Emergent	5	Largescale Suckers		1
Floating	0	Sandrollers		
Algae	0	Threespine Sticklebacks		
Total	5	Salmonids ³		
		Lamprey		
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:		
GRAM	5	Western Mosquitofish		
		Centrarchids ⁴		
		Bullheads		
		Common Carp		
		Other:		

NOTE: ODOT- LOW GRADIENT, MODERATE FLOW

Site Name	ROCK CREEK #01439	Map Code	ROCK01439*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/11/2004	
Subbasin	CLACKAMAS RIVER	UTM	10T	501273 5047822

Surface Area (m2)	495	Native Fish Species Collected:		
Average Depth (m)	0.2	Oregon Chub		
Water Temperature (C)	11	Cottids		4
Percent Silt / Organics	10	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
Submergent	0	Northern Pikeminnows		
Emergent	0	Largescale Suckers		
Floating	0	Sandrollers		
Algae	0	Threespine Sticklebacks		
Total	0	Salmonids ³ CT		3
		Lamprey		
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:		
NONE		Western Mosquitofish		
		Centrarchids ⁴		
		Bullheads		
		Common Carp		
		Other:		

NOTE: ODOT- SALMONID HABITAT

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	ROGUE RIVER (YAMHILL) #4573	Map Code	ROG04573*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/6/2004	
Subbasin	YAMHILL RIVER	UTM	10T 448284	4989612
Surface Area (m2)	833	Native Fish Species Collected:		
Average Depth (m)	0.6	Oregon Chub		
Water Temperature (C)	14	Cottids 4		
Percent Silt / Organics	20	Speckled Dace 1		
Types of aquatic vegetation¹		Redside Shiners		
Submergent	0	Northern Pikeminnows		
Emergent	2	Largescale Suckers		
Floating	0	Sandrollers		
Algae	0	Threespine Sticklebacks		
Total	2	Salmonids ³ CO CT=1 42		
Aquatic Vegetation (genera)²		Lamprey		
GRAM	2	Non-native Fish Species Collected:		
		Western Mosquitofish		
		Centrarchids ⁴		
		Bullheads		
		Common Carp		
		Other:		
		NOTE: ODOT- SALMONID HABITAT W/ LWD		

Site Name	SALT CREEK (YAMHILL) #2001	Map Code	SALT02001*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/6/2004	
Subbasin	YAMHILL RIVER	UTM	10T 472049	4982581
Surface Area (m2)	270	Native Fish Species Collected:		
Average Depth (m)	0.25	Oregon Chub		
Water Temperature (C)	15	Cottids 11		
Percent Silt / Organics	5	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners 23		
Submergent	0	Northern Pikeminnows 46		
Emergent	2	Largescale Suckers		
Floating	0	Sandrollers		
Algae	0	Threespine Sticklebacks		
Total	2	Salmonids ³ RB 1		
Aquatic Vegetation (genera)²		Lamprey		
GRAM	2	Non-native Fish Species Collected:		
		Western Mosquitofish		
		Centrarchids ⁴		
		Bullheads		
		Common Carp		
		Other:		
		NOTE: ODOT- SALMONID HABITAT		

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	ST. PAUL PONDS (10 PONDS)	Map Code	STPAUL1	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	5/25/2004	
Subbasin		UTM 10T	500165	5008900
Surface Area (m2)	3000	Native Fish Species Collected:		
Average Depth (m)	0	Oregon Chub		
Water Temperature (C)		Cottids		
Percent Silt / Organics	100	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	5	Northern Pikeminnows	
	Emergent	95	Largescale Suckers	
	Floating		Sandrollers	
	Algae		Threespine Sticklebacks	
	Total	100	Salmonids ³	
			Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:		
GRAM	90	Western Mosquitofish		
POTA	5	Centrarchids ⁴		
TYPH	5	Bullheads		
		Common Carp		
		Other:	NO FISH	
NOTE: POTENTIAL REINTRODUCTION SITE				
Site Name	SOUTH YAMHILL RIVER #0745	Map Code	SYAM00745*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/6/2004	
Subbasin	YAMHILL RIVER	UTM 10T	456206	4989639
Surface Area (m2)	2253	Native Fish Species Collected:		
Average Depth (m)	0.5	Oregon Chub		
Water Temperature (C)	13	Cottids		
Percent Silt / Organics	5	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	0	Northern Pikeminnows	
	Emergent	5	Largescale Suckers	
	Floating	0	Sandrollers	
	Algae	0	Threespine Sticklebacks	
	Total	5	Salmonids ³	
			Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:		
GRAM	3	Western Mosquitofish		
CARE	2	Centrarchids ⁴		
		Bullheads		
		Common Carp		
		Other:		
NOTE: ODOT- SALMONID HABITAT				

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	SOUTH YAMHILL RIVER #1612	Map Code	SYAM01612*
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/6/2004
Subbasin	YAMHILL RIVER	UTM 10T	452655 4989421

Surface Area (m2)	1029	Native Fish Species Collected:	
Average Depth (m)	1.2	Oregon Chub	
Water Temperature (C)	13	Cottids	2
Percent Silt / Organics	50	Speckled Dace	35
Types of aquatic vegetation¹		Redside Shiners	
Submergent	0	Northern Pikeminnows	12
Emergent	5	Largescale Suckers	1
Floating	0	Sandrollers	
Algae	0	Threespine Sticklebacks	
Total	5	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
GRAM	3	Western Mosquitofish	
CARE	2	Centrarchids ⁴	
		Bullheads	
		Common Carp	
		Other:	

NOTE: OLD BRIDGE ABUTMENTS, SAMPLE EDGES

Site Name	SOUTH YAMHILL RIVER #2081	Map Code	SYAM02081*
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/6/2004
Subbasin	YAMHILL RIVER	UTM 10T	461278 4989081

Surface Area (m2)	3567	Native Fish Species Collected:	
Average Depth (m)	0.3	Oregon Chub	
Water Temperature (C)	13.5	Cottids	4
Percent Silt / Organics	5	Speckled Dace	58
Types of aquatic vegetation¹		Redside Shiners	4
Submergent	0	Northern Pikeminnows	18
Emergent	12	Largescale Suckers	
Floating	0	Sandrollers	5
Algae	0	Threespine Sticklebacks	
Total	12	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
GRAM	2	Western Mosquitofish	
CARE	10	Centrarchids ⁴	
		Bullheads	
		Common Carp	
		Other:	

NOTE: ODOT- SALMONID HABITAT

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	WILLAMETTE RIVER OVERFLOW CHNL	Map Code	WIGR1	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	4/29/2004	
Subbasin		UTM 10T	490151 4960906	
Surface Area (m2)	5913	Native Fish Species Collected:		
Average Depth (m)	2.2	Oregon Chub		
Water Temperature (C)	18	Cottids	13	
Percent Silt / Organics	90	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	29	Northern Pikeminnows	
	Emergent	8	Largescale Suckers	
	Floating	2	Sandrollers	
	Algae		Threespine Sticklebacks	
	Total	39	Salmonids ³	
			Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:		
GRAM	3	Western Mosquitofish	178	
FRAX	5	Centrarchids ⁴ BG LB	113	
POLY	20	Bullheads		
LEMN	2	Common Carp	2	
CALI	2			
ELOD	5			
FONT	1			
		Other:		
		NOTE:	WIGRICH ROAD BRIDGE REPLACEMENT PROJECT	
Site Name	WILLAMETTE RIVER BACKWATER	Map Code	WILL00123*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/4/2004	
Subbasin		UTM 10T	496450 4976650	
Surface Area (m2)	300	Native Fish Species Collected:		
Average Depth (m)	0.3	Oregon Chub		
Water Temperature (C)	22	Cottids		
Percent Silt / Organics	10	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	22	Northern Pikeminnows	
	Emergent	52	Largescale Suckers	1
	Floating		Sandrollers	
	Algae		Threespine Sticklebacks	
	Total	74	Salmonids ³	
			Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:		
GRAM	50	Western Mosquitofish	8	
DOWN	2	Centrarchids ⁴		
CARE	2	Bullheads		
POLY	20	Common Carp		
		Other:	KF-54	
		NOTE:	ODOT BRIDGE SITE	

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	WILLAMETTE RIVER BACKWATER	Map Code	WILL07253*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	10/4/2004	
Subbasin		UTM 10T	496648 4976823	
Surface Area (m2)	2756	Native Fish Species Collected:		
Average Depth (m)	0.9	Oregon Chub		
Water Temperature (C)	19	Cottids		
Percent Silt / Organics	30	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	38	Northern Pikeminnows	
	Emergent	6	Largescale Suckers	1
	Floating	10	Sandrollers	
	Algae	<u>15</u>	Threespine Sticklebacks	
Total	69	Salmonids ³		
		Lamprey		
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:		
GRAM	5	Western Mosquitofish		31
LEMN	5	Centrarchids ⁴ BG PK L		35
AZOL	5	Bullheads		
ELOD	25	Common Carp		
MYRI	10	Other:		KF-70 YP-3
FILA	15	NOTE:		ODOT BRIDGE SITE
SAGI	1			
Site Name	ANKENY NWR-WILLOW MARSH	Map Code	WM1A	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	5/26/2004	
Subbasin	ANKENY	UTM 10T	494684 4958441	
Surface Area (m2)	25120	Native Fish Species Collected:		
Average Depth (m)	0.7	Oregon Chub		
Water Temperature (C)	17	Cottids		
Percent Silt / Organics	100	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	57	Northern Pikeminnows	
	Emergent	20	Largescale Suckers	
	Floating		Sandrollers	
	Algae		Threespine Sticklebacks	
Total	77	Salmonids ³		
		Lamprey		
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:		
POTA	50	Western Mosquitofish		
GRAM	10	Centrarchids ⁴		
ELEO	5	Bullheads		
SALI	5	Common Carp		
ALIS	2	Other:		NO FISH
POLY	5	NOTE:		POTENTIAL REINTRODUCTION SITE

Site Name	ANKENY NWR-WILLOW MARSH	Map Code	WM1B*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	9/28/2004	
Subbasin	ANKENY	UTM	10T	494684 4958441

Surface Area (m2)	25120
Average Depth (m)	0.7
Water Temperature (C)	19
Percent Silt / Organics	100

Types of aquatic vegetation¹

Submergent	25
Emergent	60
Floating	5
Algae	<u>10</u>
Total	100

Aquatic Vegetation (genera²)

POLY	25
GRAM	50
FILA	10
ELEO	1
ALIS	5
AZOL	5
TYPH	2

Native Fish Species Collected:

- Oregon Chub
- Cottids
- Speckled Dace
- Redside Shiners
- Northern Pikeminnows
- Largescale Suckers
- Sandrollers
- Threespine Sticklebacks
- Salmonids ³
- Lamprey

Non-native Fish Species Collected:

- Western Mosquitofish
- Centrarchids ⁴
- Bullheads
- Common Carp

Other: NO FISH

NOTE: PRE-INTRODUCTION SAMPLING, 500 FISH INTR

Site Name	BIG ISLAND	Map Code	BIG1-4,6B
Basin	MCKENZIE RIVER	Sampling Date	5/10/2004
Subbasin		UTM 10T	507253 4879014

Surface Area (m2)	8519	Native Fish Species Collected:	
Average Depth (m)	0.6	Oregon Chub	312
Water Temperature (C)	11	Cottids	2
Percent Silt / Organics	90	Speckled Dace	714
Types of aquatic vegetation¹		Redside Shiners	479
Submergent	25	Northern Pikeminnows	5
Emergent	37	Largescale Suckers	4
Floating	10	Sandrollers	
Algae		Threespine Sticklebacks	7842
Total	72	Salmonids ³ CH	4
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
NUPH	10	Western Mosquitofish	
ELOD	20	Centrarchids ⁴	
SPAR	10	Bullheads	
GRAM	20	Common Carp	
SALI	5	Other:	
CALI	5		
CARE	2		

NOTE: POPULATION ESTIMATE

Site Name	BLUE RIVER #01323	Map Code	BLUE01323*
Basin	MCKENZIE RIVER	Sampling Date	10/7/2004
Subbasin		UTM 10T	552645 4888990

Surface Area (m2)	1763	Native Fish Species Collected:	
Average Depth (m)	0.2	Oregon Chub	
Water Temperature (C)	14	Cottids	
Percent Silt / Organics	5	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent	0	Northern Pikeminnows	
Emergent	5	Largescale Suckers	
Floating	0	Sandrollers	
Algae	0	Threespine Sticklebacks	
Total	5	Salmonids ³ RB	2
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
CARE	5	Western Mosquitofish	
		Centrarchids ⁴	
		Bullheads	
		Common Carp	
		Other:	

NOTE: SALMONID HABITAT, ISLAND, SWIFT WATER

Site Name	SF MCKENZIE SIDE CHANNEL PONDS	Map Code	COUG1B*
Basin	MCKENZIE RIVER	Sampling Date	10/7/2004
Subbasin	S. FK. MCKENZIE	UTM 10T	559850 4888350

Surface Area (m2)	8530	Native Fish Species Collected:	
Average Depth (m)	1.5	Oregon Chub	
Water Temperature (C)	10	Cottids	1
Percent Silt / Organics	80	Speckled Dace	5
Types of aquatic vegetation¹		Redside Shiners	
Submergent	51	Northern Pikeminnows	
Emergent	10	Largescale Suckers	
Floating	1	Sandrollers	
Algae	0	Threespine Sticklebacks	
Total	62	Salmonids ³ CT	1
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
POTA	50	Western Mosquitofish	
CARE	5	Centrarchids ⁴	
SPAR	3	Bullheads	
AZOL	1	Common Carp	
JUNC	1	Other:	
GRAM	1		
POLY	1		

NOTE: POTENTIAL INTRODUCTION SITE-3 PONDS

Site Name	EWEB WALTERVILLE CANAL #1516	Map Code	EWEB01516*
Basin	MCKENZIE RIVER	Sampling Date	10/7/2004
Subbasin		UTM 10T	515822 4879343

Surface Area (m2)	2400	Native Fish Species Collected:
Average Depth (m)	1.2	Oregon Chub
Water Temperature (C)	12	Cottids
Percent Silt / Organics	0	Speckled Dace
Types of aquatic vegetation¹		Redside Shiners
Submergent	0	Northern Pikeminnows
Emergent	1	Largescale Suckers
Floating	0	Sandrollers
Algae	0	Threespine Sticklebacks
Total	1	Salmonids ³
		Lamprey
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:
GRAM	1	Western Mosquitofish
		Centrarchids ⁴
		Bullheads
		Common Carp

Other: NO FISH

NOTE: ODOT- SCREENED CANAL

Site Name	GATE CREEK #1324	Map Code	GATE01324*	
Basin	MCKENZIE RIVER	Sampling Date	10/7/2004	
Subbasin		UTM 10T	534309	4888070
Surface Area (m2)	1250	Native Fish Species Collected:		
Average Depth (m)	0.2	Oregon Chub		
Water Temperature (C)	13	Cottids		
Percent Silt / Organics	0	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
Submergent	0	Northern Pikeminnows		
Emergent	1	Largescale Suckers		
Floating	0	Sandrollers		
Algae	0	Threespine Sticklebacks		
Total	1	Salmonids ³	UT	1
		Lamprey		
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:		
CARE	1	Western Mosquitofish		
		Centrarchids ⁴		
		Bullheads		
		Common Carp		
		Other:		
		NOTE: ODOT- SALMONID HABITAT		
Site Name	GREEN ISLAND CHERRY ORCH POND	Map Code	GREEN4	
Basin	MCKENZIE RIVER	Sampling Date	5/5/2004	
Subbasin		UTM 10T	491364	4886692
Surface Area (m2)	4008	Native Fish Species Collected:		
Average Depth (m)	0.9	Oregon Chub		
Water Temperature (C)	18	Cottids		
Percent Silt / Organics	100	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
Submergent	60	Northern Pikeminnows		
Emergent	30	Largescale Suckers		
Floating		Sandrollers		
Algae		Threespine Sticklebacks		
Total	100	Salmonids ³		
		Lamprey		
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:		
CARE	2	Western Mosquitofish		103
SPAR	20	Centrarchids ⁴ LB		2
POLY	10	Bullheads		
MYRI	30	Common Carp		
ELOD	30	Other:		
ELEO	5	NOTE: MCKENZIE RIVER TRUST LAND		
GRAM	3			

Site Name	MAGNE POND	Map Code	MAGNE1B*		
Basin	MCKENZIE RIVER	Sampling Date	10/12/2004		
Subbasin		UTM	10T	560796	4890058
Surface Area (m2)	2175	Native Fish Species Collected:			
Average Depth (m)	0.9	Oregon Chub			
Water Temperature (C)	16	Cottids			
Percent Silt / Organics	100	Speckled Dace			
Types of aquatic vegetation¹		Redside Shiners			
Submergent	50	Northern Pikeminnows			
Emergent	30	Largescale Suckers			
Floating	0	Sandrollers			
Algae	0	Threespine Sticklebacks			
Total	80	Salmonids ³	CT	1	
		Lamprey			
Aquatic Vegetation (genera)³		Non-native Fish Species Collected:			
POTA	50	Western Mosquitofish			
SPAR	20	Centrarchids ⁴			
CARE	5	Bullheads			
JUNC	5	Common Carp			
		Other:			
		NOTE: POTENTIAL REINTRODUCTION SITE			
Site Name	RUSSELL POND	Map Code	RUSS1F		
Basin	MCKENZIE RIVER	Sampling Date	5/16/2004		
Subbasin	MOHAWK RIVER	UTM	10T	515585	4897084
Surface Area (m2)	800	Native Fish Species Collected:			
Average Depth (m)	1.5	Oregon Chub			
Water Temperature (C)	13	Cottids			
Percent Silt / Organics	100	Speckled Dace			
Types of aquatic vegetation¹		Redside Shiners			
Submergent	10	Northern Pikeminnows			
Emergent	20	Largescale Suckers			
Floating	0	Sandrollers			
Algae	0	Threespine Sticklebacks			
Total	30	Salmonids ³			
		Lamprey			
Aquatic Vegetation (genera)³		Non-native Fish Species Collected:			
CHAR	10	Western Mosquitofish			
GRAM	20	Centrarchids ⁴			
		Bullheads			
SALI		Common Carp			
		Other:			
		NOTE: POP ESTIMATE- REINTRODUCTION SITE			

Site Name	SHETZLINE SOUTH POND		Map Code	SHET1B	
Basin	MCKENZIE RIVER		Sampling Date	5/6/2004	
Subbasin	MOHAWK RIVER		UTM	10T	515031 4897452
Surface Area (m2)	700		Native Fish Species Collected:		
Average Depth (m)	2		Oregon Chub		1049
Water Temperature (C)	15		Cottids		
Percent Silt / Organics	100		Speckled Dace		143
Types of aquatic vegetation¹			Redside Shiners		1132
Submergent	50		Northern Pikeminnows		
Emergent	10		Largescale Suckers		
Floating	20		Sandrollers		
Algae			Threespine Sticklebacks		
			Salmonids ³		
			Lamprey		
	Total	80	Non-native Fish Species Collected:		
Aquatic Vegetation (genera)²			Western Mosquitofish		
MYRI	50		Centrarchids ⁴		
NYMP	20		Bullheads		
CARE	10		Common Carp		
			Other:		
NOTE: POPULATION ESTIMATE					
Site Name	SHETZLINE MIDDLE POND		Map Code	SHET2A	
Basin	MCKENZIE RIVER		Sampling Date	5/6/2004	
Subbasin	MOHAWK RIVER		UTM	10T	515031 4897492
Surface Area (m2)	700		Native Fish Species Collected:		
Average Depth (m)	2		Oregon Chub		
Water Temperature (C)	15		Cottids		
Percent Silt / Organics	100		Speckled Dace		
Types of aquatic vegetation¹			Redside Shiners		
Submergent	35		Northern Pikeminnows		
Emergent	14		Largescale Suckers		
Floating			Sandrollers		
Algae			Threespine Sticklebacks		
			Salmonids ³		
	Total	49	Lamprey		
Aquatic Vegetation (genera)²			Non-native Fish Species Collected:		
CARE	3		Western Mosquitofish		
ELOD	5		Centrarchids ⁴ BG		9
MYRI	30		Bullheads		
SALI	2		Common Carp		
ELEO	5		Other:		
GRAM	2				
JUNC	2				
NOTE: HABITAT PROJECT SUMMER 2004					

Site Name	SHETZLINE NORTH POND	Map Code	SHET3A
Basin	MCKENZIE RIVER	Sampling Date	5/6/2004
Subbasin	MOHAWK RIVER	UTM 10T	515031 4897532
Surface Area (m2)	700	Native Fish Species Collected:	
Average Depth (m)	2	Oregon Chub	
Water Temperature (C)	15	Cottids	
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent	39	Northern Pikeminnows	
Emergent	25	Largescale Suckers	
Floating		Sandrollers	
Algae		Threespine Sticklebacks	
		Salmonids ³	
		Lamprey	
	Total		
	64	Non-native Fish Species Collected:	
Aquatic Vegetation (genera²)		Western Mosquitofish	
CALI	5	Centrarchids ⁴ BG	
JUNC	15	Bullheads	
MYRI	30	Common Carp	
ELEO	5		
GRAM	3	Other:	
ELOD	5		
SALI	1		
		NOTE: HABITAT PROJECT SUMMER 2004	

Site Name **BARNHARD SLOUGH**
 Basin MIDDLE FORK WILLAMETTE RIVER
 Subbasin

Map Code **BARN1D**
 Sampling Date 4/13/2004
 UTM 10T 539426 4843773

Surface Area (m2) 1440
 Average Depth (m) 0.8
 Water Temperature (C) 9
 Percent Silt / Organics 90

Types of aquatic vegetation¹

Submergent 5
 Emergent 80
 Floating 5
 Algae 5
 Total 95

Aquatic Vegetation (genera)²

OENA 20
 SPAR 50
 GRAM 10
 LEMN 5
 FILA 5
 CALI 5

Native Fish Species Collected:

Oregon Chub 2
 Cottids 3
 Speckled Dace 3
 Redside Shiners 3
 Northern Pikeminnows
 Largescale Suckers 2
 Sandrollers
 Threespine Sticklebacks
 Salmonids³ CT, CH=1 2
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids⁴
 Bullheads
 Common Carp

Other:**NOTE:**

Site Name **LOWER BUCKHEAD ENHANCEMENT PND**
 Basin MIDDLE FORK WILLAMETTE RIVER
 Subbasin BUCKHEAD CREEK

Map Code **BCK14E**
 Sampling Date 4/14/2004
 UTM 10T 536825 4848623

Surface Area (m2) 540
 Average Depth (m) 0.8
 Water Temperature (C) 13
 Percent Silt / Organics 100

Types of aquatic vegetation¹

Submergent 55
 Emergent 25
 Floating 10
 Algae
 Total 90

Aquatic Vegetation (genera)²

GRAM 5
 ELOD 10
 JUNC 10
 ELEO 10
 CALI 5
 LEMN 10

Native Fish Species Collected:

Oregon Chub 706
 Cottids
 Speckled Dace 2
 Redside Shiners 1
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids⁴
 Bullheads
 Common Carp

Other:**NOTE:** POPULATION ESTIMATE- POND MADE 10-98

Site Name **MIDDLE BUCKHEAD ENHANCEMENT PD**
 Basin MIDDLE FORK WILLAMETTE RIVER
 Subbasin BUCKHEAD CREEK

Map Code **BCK15E**
 Sampling Date 4/14/2004
 UTM 10T 537105 4848567

Surface Area (m2) 500
 Average Depth (m) 0.8
 Water Temperature (C) 13
 Percent Silt / Organics 95

Types of aquatic vegetation¹

Submergent 55
 Emergent 20
 Floating 10
 Algae 5
 Total 85

Aquatic Vegetation (genera)²

GRAM 20
 ELOD 50
 LEMN 10
 CALI 5

Native Fish Species Collected:

Oregon Chub 428
 Cottids
 Speckled Dace 10
 Redside Shiners 5
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other:

NOTE: POPULATION ESTIMATE- POND MADE 1998

Site Name **UPPER BUCKHEAD ENHANCEMENT PND**
 Basin MIDDLE FORK WILLAMETTE RIVER
 Subbasin BUCKHEAD CREEK

Map Code **BCK16E**
 Sampling Date 4/14/2004
 UTM 10T 537144 4848481

Surface Area (m2) 300
 Average Depth (m) 0.8
 Water Temperature (C) 13
 Percent Silt / Organics 95

Types of aquatic vegetation¹

Submergent 60
 Emergent 28
 Floating 2
 Algae 0
 Total 90

Aquatic Vegetation (genera)²

SPAR 10
 ELOD 60
 POLY 2
 LEMN 2
 GRAM 5
 ELEO 6
 JUNC 5

Native Fish Species Collected:

Oregon Chub
 Cottids
 Speckled Dace
 Redside Shiners
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other: NO FISH

NOTE: NO FISH

Site Name **UPPER BUCKHEAD CREEK BACKWATER**
 Basin MIDDLE FORK WILLAMETTE RIVER
 Subbasin BUCKHEAD CREEK

Map Code **BCK71**
 Sampling Date 4/19/2004
 UTM 10T 538218 4846739

Surface Area (m2) 5953
 Average Depth (m) 1.2
 Water Temperature (C) 13
 Percent Silt / Organics 100

Types of aquatic vegetation¹

Submergent 32
 Emergent 30
 Floating 0
 Algae
 Total 62

Aquatic Vegetation (genera)²

POTA 10
 CARE 20
 VALI 20
 SALI 10
 CALI 2

Native Fish Species Collected:

Oregon Chub 1346
 Cottids
 Speckled Dace 345
 Redside Shiners 2941
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids³ CT 1
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids⁴
 Bullheads
 Common Carp

Other:**NOTE:** POPULATION ESTIMATE

Site Name **BUCKHEAD CREEK**
 Basin MIDDLE FORK WILLAMETTE RIVER
 Subbasin BUCKHEAD CREEK

Map Code **BCK9-12F**
 Sampling Date 4/22/2004
 UTM 10T 537950 4847919

Surface Area (m2) 11290
 Average Depth (m) 0.8
 Water Temperature (C) 9
 Percent Silt / Organics 95

Types of aquatic vegetation¹

Submergent 70
 Emergent 20
 Floating 0
 Algae 0
 Total 90

Aquatic Vegetation (genera)²

CERA 50
 POLY 10
 CALI 5
 CARE 2
 ELOD 5
 GRAM 18

Native Fish Species Collected:

Oregon Chub 1121
 Cottids 2
 Speckled Dace 289
 Redside Shiners 1892
 Northern Pikeminnows 2
 Largescale Suckers 1
 Sandrollers 1
 Threespine Sticklebacks
 Salmonids³ CT RB 9
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids⁴
 Bullheads
 Common Carp

Other:**NOTE:** POPULATION ESTIMATE

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name **JASPER PARK SLOUGH**
 Basin MIDDLE FORK WILLAMETTE RIVER
 Subbasin

Map Code **CAP11**
 Sampling Date 5/3/2004
 UTM 10T 507693 4870573

Surface Area (m2) 3600
 Average Depth (m) 1
 Water Temperature (C) 14
 Percent Silt / Organics 100

Types of aquatic vegetation¹

Submergent 100
 Emergent
 Floating
 Algae
 Total 100

Aquatic Vegetation (genera)²

MYRI 100

Native Fish Species Collected:

Oregon Chub
 Cottids
 Speckled Dace
 Redside Shiners 1
 Northern Pikeminnows 27
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks 36
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish 187
 Centrarchids ⁴ LB 1
 Bullheads
 Common Carp

Other:

NOTE: CHOKED WITH PARROTFEATHER

Site Name **DEXTER EAST ALCOVE**
 Basin MIDDLE FORK WILLAMETTE RIVER
 Subbasin DEXTER RESERVOIR

Map Code **DEX1H***
 Sampling Date 9/7/2004
 UTM 10T 517410 4861755

Surface Area (m2) 200
 Average Depth (m) 0.7
 Water Temperature (C) 17
 Percent Silt / Organics 100

Types of aquatic vegetation¹

Submergent 30
 Emergent 30
 Floating
 Algae
 Total 60

Aquatic Vegetation (genera)²

LYSI 20
 ELOD 30
 SPAR 10

Native Fish Species Collected:

Oregon Chub
 Cottids
 Speckled Dace
 Redside Shiners
 Northern Pikeminnows 5
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other:

NOTE:

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	DEXTER RV ALCOVE	Map Code	DEX3J*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/16/2004
Subbasin	DEXTER RESERVOIR	UTM 10T	515504 4862061
Surface Area (m2)	1080	Native Fish Species Collected:	
Average Depth (m)	0.4	Oregon Chub	793
Water Temperature (C)	18	Cottids	7
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	540
Submergent	70	Northern Pikeminnows	1
Emergent	7	Largescale Suckers	
Floating		Sandrollers	
Algae		Threespine Sticklebacks	
Total	87	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
POTA	20	Western Mosquitofish	
GRAM	5	Centrarchids ⁴ LB	2
MYRI	50	Bullheads	
ELEO	2	Common Carp	
POLY	10	Other:	
NOTE: POPULATION ESTIMATE			
Site Name	ELIJAH BRISTOW BERRY SLOUGH	Map Code	EB10K
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	4/21/2004
Subbasin	ELIJAH BRISTOW	UTM 10T	513244 4865199
Surface Area (m2)	6991	Native Fish Species Collected:	
Average Depth (m)	1.2	Oregon Chub	2696
Water Temperature (C)	12.5	Cottids	
Percent Silt / Organics	100	Speckled Dace	138
Types of aquatic vegetation¹		Redside Shiners	290
Submergent	10	Northern Pikeminnows	5
Emergent	90	Largescale Suckers	
Floating		Sandrollers	
Algae		Threespine Sticklebacks	173
Total	100	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
ELOD	70	Western Mosquitofish	
CALI	15	Centrarchids ⁴	
SPAR	5	Bullheads	
POLY	5	Common Carp	
GRAM	5	Other:	
NOTE: POPULATION ESTIMATE			

Site Name	ELIJAH BRISTOW LGE GRAVEL PIT	Map Code	EB13G
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	5/3/2004
Subbasin	ELIJAH BRISTOW	UTM 10T	513884 4864390
Surface Area (m2)	1050	Native Fish Species Collected:	
Average Depth (m)	0.9	Oregon Chub	
Water Temperature (C)	17	Cottids	
Percent Silt / Organics	80	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent	31	Northern Pikeminnows	
Emergent	45	Largescale Suckers	
Floating		Sandrollers	
Algae		Threespine Sticklebacks	
Total	76	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
JUNC	10	Western Mosquitofish	108
GRAM	20	Centrarchids ⁴ BG	3
TYPH	5	Bullheads	
MYRI	30	Common Carp	
SPAR	10	Other:	
CHAR	1		
NOTE:			
Site Name	ELIJAH BRISTOW SMALL GRAVL PIT	Map Code	EB15G
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	5/3/2004
Subbasin	ELIJAH BRISTOW	UTM 10T	513883 4864404
Surface Area (m2)	105	Native Fish Species Collected:	
Average Depth (m)	0.5	Oregon Chub	
Water Temperature (C)	12	Cottids	
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent	30	Northern Pikeminnows	
Emergent	50	Largescale Suckers	
Floating		Sandrollers	
Algae		Threespine Sticklebacks	
Total	80	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
GRAM	30	Western Mosquitofish	
ELOD	20	Centrarchids ⁴	
SPAR	20	Bullheads	
CALI	10	Common Carp	
		Other:	
NOTE:			

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	E. BRISTOW LOWER BERRY SLOUGH	Map Code	EB1-9C
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	5/3/2004
Subbasin	ELIJAH BRISTOW	UTM 10T	512968 4865334
Surface Area (m2)	9610	Native Fish Species Collected:	
Average Depth (m)	0.5	Oregon Chub	258
Water Temperature (C)	16	Cottids	
Percent Silt / Organics	100	Speckled Dace	3
Types of aquatic vegetation¹		Redside Shiners	47
Submergent	52	Northern Pikeminnows	1
Emergent	20	Largescale Suckers	
Floating	25	Sandrollers	
Algae		Threespine Sticklebacks	13
Total	97	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
SPAR	10	Western Mosquitofish	
ELOD	50	Centrarchids ⁴ LB	5
GRAM	10	Bullheads	
LEMN	5	Common Carp	
NUPH	20	Other:	
POLY	2		
NOTE: LOWER SLOUGH DOWNSTREAM EB10			
Site Name	ELIJAH BRISTOW NORTH SLOUGH	Map Code	EBN1F
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	5/3/2004
Subbasin	ELIJAH BRISTOW	UTM 10T	514931 4864608
Surface Area (m2)	1800	Native Fish Species Collected:	
Average Depth (m)	0.8	Oregon Chub	1336
Water Temperature (C)	9	Cottids	
Percent Silt / Organics	100	Speckled Dace	24
Types of aquatic vegetation¹		Redside Shiners	44
Submergent	40	Northern Pikeminnows	2
Emergent	10	Largescale Suckers	
Floating	50	Sandrollers	
Algae	0	Threespine Sticklebacks	
Total	100	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
POTA	20	Western Mosquitofish	
NUPH	50	Centrarchids ⁴	
CARE	5	Bullheads	
GRAM	5	Common Carp	
ELOD	20	Other:	
NOTE: POPULATION ESTIMATE			

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	FALL CREEK SPILLWAY PONDS	Map Code	FCSP1-2K*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/22/2004
Subbasin	FALL CREEK	UTM 10T	519285 4865320
Surface Area (m2)	9063	Native Fish Species Collected:	
Average Depth (m)	0.5	Oregon Chub	5849
Water Temperature (C)	18	Cottids	
Percent Silt / Organics	100	Speckled Dace	1574
Types of aquatic vegetation¹		Redside Shiners	
Submergent	70	Northern Pikeminnows	
Emergent	14	Largescale Suckers	
Floating	0	Sandrollers	
Algae	0	Threespine Sticklebacks	
Total	89	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
POTA	40	Western Mosquitofish	
MYRI	30	Centrarchids ⁴	
SALI	2	Bullheads	
JUNC	2	Common Carp	
ELEO	5		
GRAM	5	Other:	
TYPH	5	NOTE: REINTROD. SITE- POPULATION ESTIMATE	
Site Name	EAST FERRIN POND	Map Code	FP3N*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/20/2004
Subbasin	FERRIN CREEK	UTM 10T	539093 4843507
Surface Area (m2)	17000	Native Fish Species Collected:	
Average Depth (m)	1.2	Oregon Chub	
Water Temperature (C)	13	Cottids	
Percent Silt / Organics	95	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent	25	Northern Pikeminnows	
Emergent	70	Largescale Suckers	
Floating	5	Sandrollers	
Algae	0	Threespine Sticklebacks	
Total	100	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
TYPH	50	Western Mosquitofish	100
CHAR	5	Centrarchids ⁴ LB	25
POTA	25	Bullheads	
SCIR	5	Common Carp	
GRAM	5	Other:	
SPAR	5	NOTE: 1994 REINTRODUCTION- LB ILL. STOCKED	
NUPH	5		

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	HOSPITAL IMPOUNDMENT POND	Map Code	H11K*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/23/2004
Subbasin		UTM 10T	533115 4851517

Surface Area (m2)	1768	Native Fish Species Collected:	
Average Depth (m)	1	Oregon Chub	
Water Temperature (C)	11.5	Cottids	16
Percent Silt / Organics	95	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	11
Submergent	80	Northern Pikeminnows	1
Emergent	15	Largescale Suckers	
Floating		Sandrollers	
Algae		Threespine Sticklebacks	
Total	95	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
MYRI	60	Western Mosquitofish	
ELOD	20	Centrarchids ⁴ BG LB	20
GRAM	10	Bullheads	
ELEO	5	Common Carp	
		Other:	

NOTE: HABITAT RESTORATION PROJECT 1994

Site Name	HOSPITAL POND	Map Code	HSP1L
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	4/12/2004
Subbasin		UTM 10T	533115 4851567

Surface Area (m2)	4442	Native Fish Species Collected:	
Average Depth (m)	2	Oregon Chub	4943
Water Temperature (C)	12	Cottids	3
Percent Silt / Organics	100	Speckled Dace	4
Types of aquatic vegetation¹		Redside Shiners	1585
Submergent	60	Northern Pikeminnows	
Emergent	5	Largescale Suckers	
Floating	15	Sandrollers	
Algae	0	Threespine Sticklebacks	
Total	80	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
GRAM	5	Western Mosquitofish	
ELOD	60	Centrarchids ⁴	
AZOL	15	Bullheads	
		Common Carp	
		Other:	

NOTE: POPULATION ESTIMATE

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	M FK WILLAMETTE ISOL ISLAND PD	Map Code	MF12*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/14/2004
Subbasin		UTM 10T	517250 4861650

Surface Area (m2)	330	Native Fish Species Collected:	
Average Depth (m)	0.2	Oregon Chub	
Water Temperature (C)	17	Cottids	4
Percent Silt / Organics	70	Speckled Dace	25
		Redside Shiners	
Types of aquatic vegetation¹		Northern Pikeminnows	
Submergent	70	Largescale Suckers	
Emergent	20	Sandrollers	
Floating		Threespine Sticklebacks	
Algae		Salmonids ³	
		Lamprey	
Total	90		
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
MYRI	40	Western Mosquitofish	100
ELOD	30	Centrarchids ⁴	
SCIR	10	Bullheads	
CARE	10	Common Carp	

Other:

NOTE:

Site Name	ELIJAH BRISTOW ISLAND POND	Map Code	MF8B*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/14/2004
Subbasin	ELIJAH BRISTOW	UTM 10T	514043 4864334

Surface Area (m2)	11656	Native Fish Species Collected:	
Average Depth (m)	1	Oregon Chub	418
Water Temperature (C)	17	Cottids	16
Percent Silt / Organics	96	Speckled Dace	191
		Redside Shiners	13
Types of aquatic vegetation¹		Northern Pikeminnows	2
Submergent	85	Largescale Suckers	5
Emergent	7	Sandrollers	
Floating	0	Threespine Sticklebacks	
Algae	0	Salmonids ³	
Total	92	Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
MYRI	50	Western Mosquitofish	29
ELOD	30	Centrarchids ⁴ BG	1
CARE	5	Bullheads	
ELEO	2	Common Carp	10
POTA	5		

Other:

NOTE: POPULATION ESTIMATE

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	M FK WILLAMETTE SIDE CHANL BW	Map Code	MF9A*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/9/2004
Subbasin		UTM 10T	511283 4866938
Surface Area (m2)	840	Native Fish Species Collected:	
Average Depth (m)	0.3	Oregon Chub	0
Water Temperature (C)	18.5	Cottids	12
Percent Silt / Organics	70	Speckled Dace	80
Types of aquatic vegetation¹		Redside Shiners	11
Submergent	34	Northern Pikeminnows	1
Emergent	30	Largescale Suckers	
Floating		Sandrollers	
Algae		Threespine Sticklebacks	
Total	64	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
GRAM	10	Western Mosquitofish	2
MYRI	30	Centrarchids ⁴	
SPAR	10	Bullheads	
SALI	15	Common Carp	
ELEO	5	Other:	
ELOD	3		
POTA	1	NOTE:	
Site Name	EAST FORK MINNOW CREEK POND	Map Code	MNW1M*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/15/2004
Subbasin	MINNOW CREEK	UTM 10T	521411 4859624
Surface Area (m2)	5000	Native Fish Species Collected:	
Average Depth (m)	0.5	Oregon Chub	3141
Water Temperature (C)	14.5	Cottids	
Percent Silt / Organics	100	Speckled Dace	954
Types of aquatic vegetation¹		Redside Shiners	603
Submergent	20	Northern Pikeminnows	
Emergent	75	Largescale Suckers	
Floating	5	Sandrollers	
Algae		Threespine Sticklebacks	
Total	100	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
TYPH	20	Western Mosquitofish	
SALI	20	Centrarchids ⁴	
SPAR	30	Bullheads	
SCIR	5	Common Carp	
AZOL	5	Other:	
POTA	20		
		NOTE: SEDIMENTATION OCCURRING	

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	OAKRIDGE SLOUGH	Map Code	OSTP1H
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	4/15/2004
Subbasin		UTM 10T 540294	4843284
Surface Area (m2)	4800	Native Fish Species Collected:	
Average Depth (m)	1	Oregon Chub	1
Water Temperature (C)	8.5	Cottids	1
Percent Silt / Organics	100	Speckled Dace	
		Redside Shiners	
Types of aquatic vegetation¹		Northern Pikeminnows	
Submergent	15	Largescale Suckers	
Emergent	30	Sandrollers	
Floating	20	Threespine Sticklebacks	
Algae	<u>35</u>	Salmonids ³ CT	1
Total	100	Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
SPAR	20	Western Mosquitofish	
LEMN	20	Centrarchids ⁴	
LUDW	10	Bullheads	
FILA	35	Common Carp	
CALI	5		
GRAM	10		
		Other:	
		NOTE: HABITAT PROJECT SUMMER 2004?	
Site Name	DEXTER ALCOVE "THE PIT"	Map Code	PIT1L*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/15/2004
Subbasin	DEXTER RESERVOIR	UTM 10T 517270	4861753
Surface Area (m2)	150	Native Fish Species Collected:	
Average Depth (m)	0.3	Oregon Chub	66
Water Temperature (C)	20	Cottids	
Percent Silt / Organics	100	Speckled Dace	
		Redside Shiners	26
Types of aquatic vegetation¹		Northern Pikeminnows	1
Submergent	30	Largescale Suckers	
Emergent	35	Sandrollers	
Floating		Threespine Sticklebacks	
Algae	<u>35</u>	Salmonids ³	
Total	100	Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
TYPH	35	Western Mosquitofish	
ELOD	25	Centrarchids ⁴ BG	1
GRAM	5	Bullheads	
FILA	35	Common Carp	
		Other:	
		NOTE: POPULATION ESTIMATE	

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	RATTLESNAKE CREEK	Map Code	RTC1G*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/16/2004
Subbasin	RATTLESNAKE CK	UTM 10T	508885 4868530
Surface Area (m2)	1400	Native Fish Species Collected:	
Average Depth (m)	0.4	Oregon Chub	
Water Temperature (C)	15	Cottids	4
Percent Silt / Organics	50	Speckled Dace	9
		Redside Shiners	27
Types of aquatic vegetation¹		Northern Pikeminnows	
Submergent	30	Largescale Suckers	
Emergent	42	Sandrollers	
Floating	20	Threespine Sticklebacks	23
Algae		Salmonids ³	
Total	92	Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
ELOD	20	Western Mosquitofish	
SPAR	10	Centrarchids ⁴	
LEMN	20	Bullheads	1
POTA	10	Common Carp	
SCIR	2	Other:	
		NOTE: PURPLE LOOSESTRIFE ON BANK- PULLED	
Site Name	SHADY DELL POND	Map Code	SDP1M*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/23/2004
Subbasin		UTM 10T	536757 4848357
Surface Area (m2)	2400	Native Fish Species Collected:	
Average Depth (m)	0.8	Oregon Chub	4210
Water Temperature (C)	13	Cottids	2
Percent Silt / Organics	100	Speckled Dace	135
		Redside Shiners	402
Types of aquatic vegetation¹		Northern Pikeminnows	2
Submergent	30	Largescale Suckers	
Emergent	50	Sandrollers	
Floating	2	Threespine Sticklebacks	
Algae		Salmonids ³	
Total	82	Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
CARE	20	Western Mosquitofish	
SPAR	20	Centrarchids ⁴	
FONT	10	Bullheads	
LEMN	2	Common Carp	
GRAM	10	Other:	
POTA	20	NOTE: POPULATION ESTIMATE	

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	WALLACE SLOUGH	Map Code	WALL1G*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/7/2004
Subbasin		UTM 10T	507160 4872225
Surface Area (m2)	3600	Native Fish Species Collected:	
Average Depth (m)	1	Oregon Chub	
Water Temperature (C)	17	Cottids	3
Percent Silt / Organics	90	Speckled Dace	9
		Redside Shiners	24
Types of aquatic vegetation¹		Northern Pikeminnows	
Submergent	30	Largescale Suckers	2
Emergent	15	Sandrollers	
Floating	5	Threespine Sticklebacks	20
Algae		Salmonids ³	
Total	50	Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
ELOD	25	Western Mosquitofish	
CARE	10	Centrarchids ⁴ BG	5
GRAM	5	Bullheads	
AZOL	5	Common Carp	
CALI	5	Other:	

NOTE:

Site Name	WICOPEE POND	Map Code	WCP1N*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/23/2004
Subbasin	SALT CREEK	UTM 10T	557935 4838552
Surface Area (m2)	3250	Native Fish Species Collected:	
Average Depth (m)	1.2	Oregon Chub	4779
Water Temperature (C)	9	Cottids	
Percent Silt / Organics	100	Speckled Dace	67
		Redside Shiners	
Types of aquatic vegetation¹		Northern Pikeminnows	
Submergent	10	Largescale Suckers	
Emergent	90	Sandrollers	
Floating		Threespine Sticklebacks	
Algae		Salmonids ³ CT	1
Total	100	Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
SPAR	25	Western Mosquitofish	
TYPH	50	Centrarchids ⁴	
SALI	20	Bullheads	
CARE	5	Common Carp	
CABO	10	Other:	

NOTE: REINTROD SITE- POP ESTIMATE

Site Name	BEAR CREEK	Map Code	BEAR04041*
Basin	MID-WILLAMETTE RIVER	Sampling Date	10/7/2004
Subbasin	LONG TOM RIVER	UTM 10T	477089 4895953

Surface Area (m2) 300
 Average Depth (m) 0.2
 Water Temperature (C) 15.5
 Percent Silt / Organics 50

Types of aquatic vegetation¹

Submergent	0
Emergent	5
Floating	0
Algae	0
Total	5

Aquatic Vegetation (genera²)

GRAM	5
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Native Fish Species Collected:

- Oregon Chub
- Cottids
- Speckled Dace
- Redside Shiners
- Northern Pikeminnows
- Largescale Suckers
- Sandrollers
- Threespine Sticklebacks
- Salmonids ³
- Lamprey

Non-native Fish Species Collected:

- Western Mosquitofish
- Centrarchids ⁴ BG 6
- Bullheads
- Common Carp

Other:

NOTE: ODOT BRIDGE SITE

Site Name	CALAPOOIA RIVER OVERFLOW #9413	Map Code	CAL09413*
Basin	MID-WILLAMETTE RIVER	Sampling Date	10/12/2004
Subbasin	CALAPOOIA RIVER	UTM 10T	488705 4934189

Surface Area (m2) 10
 Average Depth (m) 0.05
 Water Temperature (C) 16
 Percent Silt / Organics 25

Types of aquatic vegetation¹

Submergent	0
Emergent	50
Floating	0
Algae	0
Total	50

Aquatic Vegetation (genera²)

GRAM	50
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Native Fish Species Collected:

- Oregon Chub
- Cottids
- Speckled Dace
- Redside Shiners
- Northern Pikeminnows
- Largescale Suckers
- Sandrollers
- Threespine Sticklebacks
- Salmonids ³
- Lamprey

Non-native Fish Species Collected:

- Western Mosquitofish
- Centrarchids ⁴
- Bullheads
- Common Carp

Other: NO FISH

NOTE: DRY W/ SM PUDDLES, DRY SLOUGH NEARBY

Site Name **CALAPOOIA RIVER OVERFLOW #9414**
 Basin MID-WILLAMETTE RIVER
 Subbasin CALAPOOIA RIVER

Map Code **CAL09414***
 Sampling Date 10/12/2004
 UTM 10T 488765 4934143

Surface Area (m2) 10
 Average Depth (m) 0.05
 Water Temperature (C) 16
 Percent Silt / Organics 50

Types of aquatic vegetation¹

Submergent 0
 Emergent 50
 Floating 0
 Algae 0
 Total 50

Aquatic Vegetation (genera)²

GRAM 50

Native Fish Species Collected:

Oregon Chub
 Cottids
 Speckled Dace
 Redside Shiners
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other: NO FISH

NOTE: DRY W/ SM PUDDLES, DRY SLOUGH NEARBY

Site Name **CALAPOOIA RIVER #12205**
 Basin MID-WILLAMETTE RIVER
 Subbasin CALAPOOIA RIVER

Map Code **CAL12205***
 Sampling Date 10/12/2004
 UTM 10T 488260 4934520

Surface Area (m2) 3800
 Average Depth (m) 1
 Water Temperature (C) 16
 Percent Silt / Organics 70

Types of aquatic vegetation¹

Submergent 0
 Emergent 0
 Floating 0
 Algae 0
 Total 0

Aquatic Vegetation (genera)²

NONE

Native Fish Species Collected:

Oregon Chub
 Cottids 5
 Speckled Dace 3
 Redside Shiners 46
 Northern Pikeminnows 5
 Largescale Suckers 2
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴ BG 3
 Bullheads
 Common Carp

Other:

NOTE: ODOT- INCISED, CLAY SUBSTRTE, TRASHY

Site Name	DRY MUDDY CREEK	Map Code	DMUD6A*
Basin	MID-WILLAMETTE RIVER	Sampling Date	9/23/2004
Subbasin	EAST MUDDY CREEK	UTM 10T	494195 4870794
Surface Area (m2)	128	Native Fish Species Collected:	
Average Depth (m)	0.3	Oregon Chub	1
Water Temperature (C)	17	Cottids	
Percent Silt / Organics	100	Speckled Dace	77
Types of aquatic vegetation¹		Redside Shiners	16
Submergent	75	Northern Pikeminnows	
Emergent	5	Largescale Suckers	2
Floating	10	Sandrollers	
Algae	<u>10</u>	Threespine Sticklebacks	98
Total	100	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
ELOD	70	Western Mosquitofish	
AZOL	5	Centrarchids ⁴	
LEMN	5	Bullheads	
GRAM	5	Common Carp	
CALI	5	Other:	
FILA	10		
		NOTE:	DAVE MALPASS- PROP. POWERPLANT
Site Name	DUNN WETLAND DUNN2	Map Code	DUNN2K*
Basin	MID-WILLAMETTE RIVER	Sampling Date	9/27/2004
Subbasin	MARYS RIVER	UTM 10T	470249 4921916
Surface Area (m2)	2240	Native Fish Species Collected:	
Average Depth (m)	0.7	Oregon Chub	17888
Water Temperature (C)	16.5	Cottids	
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent	60	Northern Pikeminnows	
Emergent	40	Largescale Suckers	
Floating	0	Sandrollers	
Algae	<u>0</u>	Threespine Sticklebacks	
Total	100	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
POTA	40	Western Mosquitofish	
CHAR	20	Centrarchids ⁴	
SPAR	5	Bullheads	
TYPH	5	Common Carp	
JUNC	5	Other:	
MYRI	20		
GRAM	5	NOTE:	1997 REINTRODUCTION- POP. ESTIMATE

Site Name **DUNN WETLAND DUNN6**
 Basin MID-WILLAMETTE RIVER
 Subbasin MARYS RIVER

Map Code **DUNN6F***
 Sampling Date 9/27/2004
 UTM 10T 470249 4921836

Surface Area (m2) 3500
 Average Depth (m) 0.7
 Water Temperature (C) 18.5
 Percent Silt / Organics 100

Types of aquatic vegetation¹

Submergent 20
 Emergent 40
 Floating 0
 Algae 0
 Total 60

Aquatic Vegetation (genera)³

TYPH 20
 SPAR 20
 POTA 10
 CHAR 10

Native Fish Species Collected:

Oregon Chub 2116
 Cottids
 Speckled Dace
 Redside Shiners
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other:**NOTE:** 1998 REINTRODUCTION- POP. ESTIMATE

Site Name **DUNN WETLAND DUNN7**
 Basin MID-WILLAMETTE RIVER
 Subbasin MARYS RIVER

Map Code **DUNN7D***
 Sampling Date 9/27/2004
 UTM 10T 470299 4921916

Surface Area (m2) 880
 Average Depth (m) 0.3
 Water Temperature (C) 22
 Percent Silt / Organics 100

Types of aquatic vegetation¹

Submergent 15
 Emergent 25
 Floating
 Algae
 Total 40

Aquatic Vegetation (genera)³

SPAR 5
 POTA 15
 ELEM 10
 TYPH 10

Native Fish Species Collected:

Oregon Chub 5808
 Cottids
 Speckled Dace
 Redside Shiners
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other:**NOTE:** REINTROD. SITE- POP. ESTIMATE

Site Name	FINLEY NWR DISPLAY POND	Map Code	FIN16L
Basin	MID-WILLAMETTE RIVER	Sampling Date	5/14/2004
Subbasin	MARYS RIVER	UTM 10T	473386 4917139
Surface Area (m2)	6400	Native Fish Species Collected:	
Average Depth (m)	1.5	Oregon Chub	72
Water Temperature (C)	16	Cottids	
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent	30	Northern Pikeminnows	
Emergent	45	Largescale Suckers	
Floating		Sandrollers	
Algae		Threespine Sticklebacks	
Total	75	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
MYRI	20	Western Mosquitofish	
ELEO	20	Centrarchids ⁴	
POTA	10	Bullheads	
GRAM	10	Common Carp	
TYPH	10		
SPAR	5	Other:	
		NOTE: POPULATION ESTIMATE- REINTROD. SITE	
Site Name	FINLEY NWR BEAVER POND	Map Code	FIN1H
Basin	MID-WILLAMETTE RIVER	Sampling Date	5/12/2004
Subbasin	MARYS RIVER	UTM 10T	473847 4916139
Surface Area (m2)	31559	Native Fish Species Collected:	
Average Depth (m)	1.2	Oregon Chub	
Water Temperature (C)	16	Cottids	
Percent Silt / Organics	100	Speckled Dace	1
Types of aquatic vegetation¹		Redside Shiners	
Submergent	10	Northern Pikeminnows	
Emergent	70	Largescale Suckers	
Floating	0	Sandrollers	
Algae	5	Threespine Sticklebacks	
Total	85	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
ELEO	50	Western Mosquitofish	
POTA	10	Centrarchids ⁴	
GRAM	20	Bullheads	
FILA	5	Common Carp	
		Other:	
		NOTE: POTENTIAL INTRODUCTION SITE	

Site Name	FINLEY NWR BEAVER POND	Map Code	FIN11*
Basin	MID-WILLAMETTE RIVER	Sampling Date	9/30/2004
Subbasin	MARYS RIVER	UTM 10T	473847 4916139
Surface Area (m2)	4514	Native Fish Species Collected:	
Average Depth (m)	0.5	Oregon Chub	
Water Temperature (C)	16	Cottids	
Percent Silt / Organics	100	Speckled Dace	1
		Redside Shiners	2
Types of aquatic vegetation¹		Northern Pikeminnows	
Submergent	57	Largescale Suckers	
Emergent	38	Sandrollers	
Floating	0	Threespine Sticklebacks	381
Algae	<u>0</u>	Salmonids ³	
Total	95	Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
ELEO	3	Western Mosquitofish	
POTA	50	Centrarchids ⁴	
GRAM	5	Bullheads	
CALI	5	Common Carp	
SPAR	25	Other:	
POLY	2		
JUNC	5	NOTE: POTENTIAL INTRODUCTION SITE	
Site Name	FINLEY NWR BROWN CK NORTH POND	Map Code	FIN25A*
Basin	MID-WILLAMETTE RIVER	Sampling Date	9/30/2004
Subbasin	MARYS RIVER	UTM 10T	474275 4918850
Surface Area (m2)	2000	Native Fish Species Collected:	
Average Depth (m)	0.5	Oregon Chub	
Water Temperature (C)	18	Cottids	
Percent Silt / Organics	100	Speckled Dace	
		Redside Shiners	
Types of aquatic vegetation¹		Northern Pikeminnows	
Submergent	10	Largescale Suckers	
Emergent	20	Sandrollers	
Floating	10	Threespine Sticklebacks	
Algae	<u>10</u>	Salmonids ³	
Total	40	Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
CALI	10	Western Mosquitofish	
ELEO	10	Centrarchids ⁴	
GRAM	10	Bullheads	
FILA	10	Common Carp	
		Other: NO FISH	
		NOTE: POTENTIAL REINTRODUCTION SITE	

Site Name	FINLEY NWR BROWN CK SOUTH POND	Map Code	FIN26A*
Basin	MID-WILLAMETTE RIVER	Sampling Date	9/30/2004
Subbasin	MARYS RIVER	UTM 10T	474300 4918600
Surface Area (m2)	500	Native Fish Species Collected:	
Average Depth (m)	0.1	Oregon Chub	
Water Temperature (C)	18	Cottids	
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
	Submergent	0	Northern Pikeminnows
	Emergent	16	Largescale Suckers
	Floating	0	Sandrollers
	Algae	20	Threespine Sticklebacks
	Total	36	Salmonids ³
			Lamprey
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
JUNC	5	Western Mosquitofish	
GRAM	10	Centrarchids ⁴	
FILA	20	Bullheads	
ELEO	1	Common Carp	
		Other:	NO FISH
NOTE: POTENTIAL REINTRODUCTION SITE			
Site Name	FINLEY NWR CHEADLE POND	Map Code	FIN27C
Basin	MID-WILLAMETTE RIVER	Sampling Date	5/12/2004
Subbasin	MARYS RIVER	UTM 10T	475856 4915761
Surface Area (m2)	8142	Native Fish Species Collected:	
Average Depth (m)	1.5	Oregon Chub	217
Water Temperature (C)	18.5	Cottids	
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
	Submergent	15	Northern Pikeminnows
	Emergent	71	Largescale Suckers
	Floating		Sandrollers
	Algae		Threespine Sticklebacks
	Total	86	Salmonids ³
			Lamprey
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
CARE	5	Western Mosquitofish	
GRAM	20	Centrarchids ⁴	
TYPH	25	Bullheads	
ELOD	10	Common Carp	
ELEO	20	Other:	
ALIS	1		
CALI	5		
		NOTE:	50 FISH INTRODUCED IN 2002

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	FINLEY FIELD 22 LOWER POND	Map Code	FIN28
Basin	MID-WILLAMETTE RIVER	Sampling Date	5/12/2004
Subbasin	MARYS RIVER	UTM 10T	474073 4917569
Surface Area (m2)	14222	Native Fish Species Collected:	
Average Depth (m)	0.8	Oregon Chub	
Water Temperature (C)	17	Cottids	
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
	Submergent	3	Northern Pikeminnows
	Emergent	24	Largescale Suckers
	Floating		Sandrollers
	Algae		Threespine Sticklebacks
	Total	27	Salmonids ³
			Lamprey
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
ELEO	15	Western Mosquitofish	
POTA	2	Centrarchids ⁴	
CARE	2	Bullheads	
SPAR	4	Common Carp	
MENT	1	Other: NO FISH	
GRAM	1		
CALI	2		
		NOTE: POTENTIAL INTRODUCTION SITE	
Site Name	FINLEY NWR- GRAY CREEK SWAMP	Map Code	FIN4K
Basin	MID-WILLAMETTE RIVER	Sampling Date	5/14/2004
Subbasin	MARYS RIVER	UTM 10T	472649 4915908
Surface Area (m2)	22872	Native Fish Species Collected:	
Average Depth (m)	1	Oregon Chub 523	
Water Temperature (C)	14	Cottids 6	
Percent Silt / Organics	100	Speckled Dace 1016	
Types of aquatic vegetation¹		Redside Shiners 1117	
	Submergent	35	Northern Pikeminnows
	Emergent	65	Largescale Suckers
	Floating		Sandrollers
	Algae		Threespine Sticklebacks 169
	Total	100	Salmonids ³ CT 1
			Lamprey
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
POTA	55	Western Mosquitofish	
JUNC	5	Centrarchids ⁴ BG 1	
CARE	5	Bullheads	
TYPH	5	Common Carp	
GRAM	15	Other:	
SPAR	5		
SALI	10		
		NOTE: POPULATION ESTIMATE	

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	JAMPOLSKY PONDS	Map Code	JAMP1-2B	
Basin	MID-WILLAMETTE RIVER	Sampling Date	5/23/2004	
Subbasin	LONG TOM RIVER	UTM	10T 480250	4890908
Surface Area (m2)	10000	Native Fish Species Collected:		
Average Depth (m)	1	Oregon Chub		
Water Temperature (C)	16	Cottids		
Percent Silt / Organics	100	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	11	Northern Pikeminnows	
	Emergent	8	Largescale Suckers	
	Floating		Sandrollers	
	Algae	20	Threespine Sticklebacks	
	Total	39	Salmonids ³	
			Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:		
ALIS	3	Western Mosquitofish		
ELEO	5	Centrarchids ⁴		
LUDW	5	Bullheads		
ELOD	3	Common Carp		
POTA	1	Other: NO FISH		
RANU	2			
FILA	20	NOTE: POTENTIAL INTRODUCTION SITE		
Site Name	JAMPOLSKY PONDS	Map Code	JAMP1-2C*	
Basin	MID-WILLAMETTE RIVER	Sampling Date	9/29/2004	
Subbasin	LONG TOM RIVER	UTM	10T 480282	4890921
Surface Area (m2)	6368	Native Fish Species Collected:		
Average Depth (m)	0.6	Oregon Chub		
Water Temperature (C)	17.5	Cottids		
Percent Silt / Organics	100	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	35	Northern Pikeminnows	
	Emergent	2	Largescale Suckers	
	Floating		Sandrollers	
	Algae		Threespine Sticklebacks	
	Total	37	Salmonids ³	
			Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:		
ALIS	2	Western Mosquitofish		
POTA	25	Centrarchids ⁴		
RANU	10	Bullheads		
		Common Carp		
		Other: NO FISH		
NOTE: PRE-INTRODUCTION SAMPLING, 500 FISH INTR				

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	LINGO SLOUGH	Map Code	LINGO1		
Basin	MID-WILLAMETTE RIVER	Sampling Date	7/19/2004		
Subbasin	LONG TOM RIVER	UTM 10T	478552	4892969	
Surface Area (m2)	480	Native Fish Species Collected:			
Average Depth (m)	0.2	Oregon Chub			
Water Temperature (C)	24	Cottids			
Percent Silt / Organics	95	Speckled Dace			
Types of aquatic vegetation¹		Redside Shiners			
	Submergent	90	Northern Pikeminnows		
	Emergent	5	Largescale Suckers		
	Floating		Sandrollers		
	Algae		Threespine Sticklebacks		
	Total	95	Salmonids ³		
			Lamprey		
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:			
GRAM	80	Western Mosquitofish			
SALI	5	Centrarchids ⁴			
FRAX	3	Bullheads			
MYRI	5	Common Carp			9
SOLA	2	Other:			GF
NOTE: BRIDGE REPLACEMENT PROJECT					
Site Name	LITTLE MUDDY CREEK BRIDGE XING	Map Code	LMUD2		
Basin	MID-WILLAMETTE RIVER	Sampling Date	5/17/2004		
Subbasin	EAST MUDDY CREEK	UTM 10T	491465	4908441	
Surface Area (m2)	490	Native Fish Species Collected:			
Average Depth (m)	0.3	Oregon Chub			
Water Temperature (C)	18	Cottids			
Percent Silt / Organics	25	Speckled Dace			
Types of aquatic vegetation¹		Redside Shiners			15
	Submergent	70	Northern Pikeminnows		3
	Emergent	10	Largescale Suckers		
	Floating		Sandrollers		
	Algae	5	Threespine Sticklebacks		
	Total	85	Salmonids ³		
			Lamprey		
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:			
ELOD	20	Western Mosquitofish			
POTA	40	Centrarchids ⁴			
GRAM	10	Bullheads			
MYRI	10	Common Carp			
FILA	5	Other:			
NOTE: ODOT BRIDGE CROSSING					

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	LITTLE MUDDY TRIB BRIDGE XING	Map Code	LMUDT1
Basin	MID-WILLAMETTE RIVER	Sampling Date	5/17/2004
Subbasin	EAST MUDDY CREEK	UTM 10T	491064 4907447
Surface Area (m2)	400	Native Fish Species Collected:	
Average Depth (m)	0.4	Oregon Chub	5
Water Temperature (C)	18	Cottids	
Percent Silt / Organics	60	Speckled Dace	2
		Redside Shiners	7
Types of aquatic vegetation¹		Northern Pikeminnows	
Submergent	30	Largescale Suckers	
Emergent	30	Sandrollers	
Floating		Threespine Sticklebacks	
Algae		Salmonids ³	
Total	60	Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
GRAM	30	Western Mosquitofish	28
ELOD	30	Centrarchids ⁴	
	0	Bullheads	
		Common Carp	
		Other:	
		NOTE: ODOT BRIDGE CROSSING	
Site Name	LONG TOM RANCH	Map Code	LTR1D
Basin	MID-WILLAMETTE RIVER	Sampling Date	5/20/2004
Subbasin	LONG TOM RIVER	UTM 10T	479151 4897535
Surface Area (m2)	4000	Native Fish Species Collected:	
Average Depth (m)	1.8	Oregon Chub	
Water Temperature (C)	23	Cottids	
Percent Silt / Organics	100	Speckled Dace	
		Redside Shiners	
Types of aquatic vegetation¹		Northern Pikeminnows	
Submergent	32	Largescale Suckers	
Emergent	17	Sandrollers	
Floating		Threespine Sticklebacks	
Algae		Salmonids ³	
Total	49	Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
POLY	5	Western Mosquitofish	
SALI	10	Centrarchids ⁴	
RANU	20	Bullheads	
ELOD	5	Common Carp	
ELEO	5	Other: NO FISH	
GRAM	2		
LUDW	2		
		NOTE: 2003 HABITAT PROJ- 2004 INTROD SITE	

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	LONG TOM RANCH	Map Code	LTR1E*	
Basin	MID-WILLAMETTE RIVER	Sampling Date	9/29/2004	
Subbasin	LONG TOM RIVER	UTM	10T	479151 4897535
Surface Area (m2)	4289	Native Fish Species Collected:		
Average Depth (m)	1	Oregon Chub		
Water Temperature (C)	18	Cottids		
Percent Silt / Organics	100	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	20	Northern Pikeminnows	
	Emergent	4	Largescale Suckers	
	Floating		Sandrollers	
	Algae		Threespine Sticklebacks	
		Salmonids ³		
	Total	24	Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:		
ELOD	5	Western Mosquitofish		
SALI	2	Centrarchids ⁴ BG		50
RANU	5	Bullheads		
ELOD	2	Common Carp		
POTA	10	Other:		
NOTE: POTENTIAL INTRODUCTION SITE				

Site Name	MARYS RIVER	Map Code	MARY00866*	
Basin	MID-WILLAMETTE RIVER	Sampling Date	10/7/2004	
Subbasin	MARYS RIVER	UTM	10T	458788 4938060
Surface Area (m2)	880	Native Fish Species Collected:		
Average Depth (m)	0.8	Oregon Chub		
Water Temperature (C)	14	Cottids		3
Percent Silt / Organics	10	Speckled Dace		5
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	0	Northern Pikeminnows	
	Emergent	0	Largescale Suckers	
	Floating	0	Sandrollers	
	Algae	0	Threespine Sticklebacks	
	Total	0	Salmonids ³ CT	
			Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:		
NONE		Western Mosquitofish		
		Centrarchids ⁴		
		Bullheads		
		Common Carp		
Other:				
NOTE: ODOT- SALMONID HABITAT				

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	MARYS RIVER	Map Code	MARY01075*	
Basin	MID-WILLAMETTE RIVER	Sampling Date	10/7/2004	
Subbasin	MARYS RIVER	UTM	10T	468412 4932510

Surface Area (m2) 2091

Average Depth (m) 0.3

Water Temperature (C) 16

Percent Silt / Organics 5

Types of aquatic vegetation¹

Submergent 0

Emergent 3

Floating 0

Algae 0

Total 3

Aquatic Vegetation (genera)²

GRAM 3

Native Fish Species Collected:

Oregon Chub

Cottids 9

Speckled Dace 5

Redside Shiners 31

Northern Pikeminnows 1

Largescale Suckers

Sandrollers

Threespine Sticklebacks

Salmonids³

Lamprey

Non-native Fish Species Collected:

Western Mosquitofish

Centrarchids⁴

Bullheads

Common Carp

Other:

NOTE: ODOT- SALMONID HABITAT

Site Name **BOULDER CREEK**
 Basin **SANTIAM RIVER**
 Subbasin **NORTH SANTIAM**

Map Code **BLDR05978***
 Sampling Date **10/5/2004**
 UTM 10T 572204 4950301

Surface Area (m2) 650
 Average Depth (m) 0.25
 Water Temperature (C) 9
 Percent Silt / Organics 0

Types of aquatic vegetation¹

Submergent 0
 Emergent 0
 Floating 0
 Algae 0
 Total 0

Aquatic Vegetation (genera)²

NONE

Native Fish Species Collected:

Oregon Chub
 Cottids
 Speckled Dace
 Redside Shiners
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³ CT 1
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other:

NOTE: ODOT BRIDGE- SALMONID HABITAT 7% GRAD.

Site Name **FOSTER PULLOUT POND**
 Basin **SANTIAM RIVER**
 Subbasin **MIDDLE SANTIAM**

Map Code **FOS2J**
 Sampling Date **5/4/2004**
 UTM 10T 529165 4918350

Surface Area (m2) 2405
 Average Depth (m) 1.2
 Water Temperature (C) 17
 Percent Silt / Organics 100

Types of aquatic vegetation¹

Submergent
 Emergent 80
 Floating 20
 Algae
 Total 100

Aquatic Vegetation (genera)²

POTA 80
 SPAR 10
 SALI 10

Native Fish Species Collected:

Oregon Chub 565
 Cottids
 Speckled Dace
 Redside Shiners
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other:

NOTE: POPULATION ESTIMATE- REINTRODUCTION

Site Name **GEREN ISLAND NORTH CHANNEL**
 Basin SANTIAM RIVER
 Subbasin NORTH SANTIAM

Map Code **GER4I**
 Sampling Date 4/26/2004
 UTM 10T 519371 4959900

Surface Area (m2) 4469
 Average Depth (m) 1
 Water Temperature (C) 12
 Percent Silt / Organics 90

Types of aquatic vegetation¹

Submergent 20
 Emergent 45
 Floating
 Algae
 Total 65

Aquatic Vegetation (genera)²

GRAM 30
 ELOD 20
 CARE 5
 JUNC 5
 IRIS 2
 SALI 3

Native Fish Species Collected:

Oregon Chub 2291
 Cottids 17
 Speckled Dace 2
 Redside Shiners 17
 Northern Pikeminnows
 Largescale Suckers 59
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴
 Bullheads
 Common Carp

Other:

NOTE: POPULATION ESTIMATE

Site Name **GEREN ISLAND NORTH POND**
 Basin SANTIAM RIVER
 Subbasin NORTH SANTIAM

Map Code **GER6I**
 Sampling Date 4/26/2004
 UTM 10T 519371 4959954

Surface Area (m2) 20625
 Average Depth (m) 1
 Water Temperature (C) 19
 Percent Silt / Organics 95

Types of aquatic vegetation¹

Submergent 50
 Emergent 10
 Floating
 Algae
 Total 60

Aquatic Vegetation (genera)²

GRAM 5
 ELOD 25
 MYRI 25
 JUNC 2
 ELEO 3

Native Fish Species Collected:

Oregon Chub
 Cottids
 Speckled Dace
 Redside Shiners 3
 Northern Pikeminnows
 Largescale Suckers
 Sandrollers
 Threespine Sticklebacks
 Salmonids ³
 Lamprey

Non-native Fish Species Collected:

Western Mosquitofish
 Centrarchids ⁴ BG 118
 Bullheads
 Common Carp

Other:

NOTE:

Site Name	WARREN GRAY SLOUGH	Map Code	GRAY11*	
Basin	SANTIAM RIVER	Sampling Date	10/5/2004	
Subbasin	NORTH SANTIAM	UTM 10T	513224 4957493	
Surface Area (m2)	8445	Native Fish Species Collected:		
Average Depth (m)	1.2	Oregon Chub	337	
Water Temperature (C)	17	Cottids	15	
Percent Silt / Organics	100	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners	13	
	Submergent	33	Northern Pikeminnows	4
	Emergent	22	Largescale Suckers	
	Floating		Sandrollers	
	Algae		Threespine Sticklebacks	714
	Total	55	Salmonids ³	
		Lamprey		
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:		
GRAM	10	Western Mosquitofish		
MYRI	20	Centrarchids ⁴ BG	16	
CALI	3	Bullheads		
SPAR	2	Common Carp		
JUNC	10	Other:		
POLY	10			
NOTE: POPULATION ESTIMATE				
Site Name	SANTIAM I-5 BACKWATER I5BW1	Map Code	I5BW1G	
Basin	SANTIAM RIVER	Sampling Date	4/27/2004	
Subbasin		UTM 10T	495928 4953377	
Surface Area (m2)	930	Native Fish Species Collected:		
Average Depth (m)	1.5	Oregon Chub		
Water Temperature (C)	17	Cottids		
Percent Silt / Organics	100	Speckled Dace		
Types of aquatic vegetation¹		Redside Shiners		
	Submergent	70	Northern Pikeminnows	
	Emergent	10	Largescale Suckers	
	Floating	0	Sandrollers	
	Algae	0	Threespine Sticklebacks	15
	Total	80	Salmonids ³	
		Lamprey		
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:		
SPAR	30	Western Mosquitofish		
ELOD	20	Centrarchids ⁴ BG	1	
POTA	10	Bullheads		
POLY	10	Common Carp		
GRAM	5	Other:		
ELEO	5			
NOTE:				

Site Name	SANTIAM I-5 SIDE CHNL PD I5BW2	Map Code	I5BW2E
Basin	SANTIAM RIVER	Sampling Date	4/27/2004
Subbasin		UTM 10T	496051 4953491
Surface Area (m2)	6000	Native Fish Species Collected:	
Average Depth (m)	1.2	Oregon Chub	324
Water Temperature (C)	18	Cottids	19
Percent Silt / Organics	80	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent	40	Northern Pikeminnows	16
Emergent	25	Largescale Suckers	20
Floating		Sandrollers	1
Algae		Threespine Sticklebacks	394
Total	65	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)³		Non-native Fish Species Collected:	
POLY	40	Western Mosquitofish	
SALI	5	Centrarchids ⁴ BG	7
SPAR	5	Bullheads	
ELEO	10	Common Carp	
GRAM	5	Other:	CM
		NOTE: POPULATION ESTIMATE	
Site Name	SANTIAM I-5 EAST SLOUGH #1	Map Code	I5ES1
Basin	SANTIAM RIVER	Sampling Date	4/28/2004
Subbasin		UTM 10T	496366 4953249
Surface Area (m2)	847	Native Fish Species Collected:	
Average Depth (m)	0.5	Oregon Chub	
Water Temperature (C)	18	Cottids	6
Percent Silt / Organics	100	Speckled Dace	5
Types of aquatic vegetation¹		Redside Shiners	96
Submergent	65	Northern Pikeminnows	65
Emergent	13	Largescale Suckers	47
Floating		Sandrollers	
Algae		Threespine Sticklebacks	8
Total	78	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)³		Non-native Fish Species Collected:	
MYRI	10	Western Mosquitofish	
POLY	50	Centrarchids ⁴	
GRAM	10	Bullheads	
IRIS	1	Common Carp	
ELEO	2	Other:	CM
POTA	5	NOTE: PONDED SLOUGH UPSTREAM OF I5BW1	

Site Name	SANTIAM I-5 EAST SLOUGH #2	Map Code	I5ES2
Basin	SANTIAM RIVER	Sampling Date	4/28/2004
Subbasin		UTM 10T	496438 4953261
Surface Area (m2)	270	Native Fish Species Collected:	
Average Depth (m)	0.8	Oregon Chub	
Water Temperature (C)	17	Cottids	3
Percent Silt / Organics	100	Speckled Dace	1
Types of aquatic vegetation¹		Redside Shiners	32
Submergent	70	Northern Pikeminnows	32
Emergent	22	Largescale Suckers	4
Floating		Sandrollers	1
Algae		Threespine Sticklebacks	6
Total	92	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
POLY	70	Western Mosquitofish	
GRAM	5	Centrarchids ⁴	
ELEO	10	Bullheads	
CARE	2	Common Carp	
SALI	5	Other:	CM
		NOTE: PONDED SLOUGH UPSTREAM OF I5BW1	
Site Name	SANTIAM I-5 GRAVEL PIT	Map Code	I5GP1
Basin	SANTIAM RIVER	Sampling Date	4/28/2004
Subbasin		UTM 10T	496399 4953370
Surface Area (m2)	14852	Native Fish Species Collected:	
Average Depth (m)	2.5	Oregon Chub	1
Water Temperature (C)	19	Cottids	4
Percent Silt / Organics	20	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	3
Submergent	65	Northern Pikeminnows	112
Emergent	5	Largescale Suckers	
Floating		Sandrollers	1
Algae		Threespine Sticklebacks	11
Total	70	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
MYRI	60	Western Mosquitofish	100
GRAM	5	Centrarchids ⁴ PK LB	57
LUDW	2	Bullheads	
CALI	3	Common Carp	
		Other:	CM
		NOTE: FORMER BORROW PIT	

Site Name	LITTLE NORTH FORK SANTIAM RIVR	Map Code	LNF07347*	
Basin	SANTIAM RIVER	Sampling Date	10/5/2004	
Subbasin	NORTH SANTIAM	UTM 10T	531625 4959549	
Surface Area (m2)	9996	Native Fish Species Collected:		
Average Depth (m)	0.8	Oregon Chub		
Water Temperature (C)	13	Cottids		
Percent Silt / Organics	5	Speckled Dace		
Types of aquatic vegetation¹	Submergent	0	Redside Shiners 132	
	Emergent	0	Northern Pikeminnows 81	
	Floating	0	Largescale Suckers	
	Algae	0	Sandrollers	
	Total	0	Threespine Sticklebacks	
Aquatic Vegetation (genera)³	NONE		Salmonids ³ CT TF 19	
			Lamprey	
			Non-native Fish Species Collected:	
			Western Mosquitofish	
			Centrarchids ⁴	
		Bullheads		
		Common Carp		
		Other:		
		NOTE: ODOT BRIDGE- SALMONID HABITAT		

Site Name	MINTO CREEK	Map Code	MINT06806*	
Basin	SANTIAM RIVER	Sampling Date	10/5/2004	
Subbasin	NORTH SANTIAM	UTM 10T	584115 4942359	
Surface Area (m2)	500	Native Fish Species Collected:		
Average Depth (m)	0.15	Oregon Chub		
Water Temperature (C)	7.5	Cottids		
Percent Silt / Organics	0	Speckled Dace		
Types of aquatic vegetation¹	Submergent	15	Redside Shiners	
	Emergent	0	Northern Pikeminnows	
	Floating	0	Largescale Suckers	
	Algae	0	Sandrollers	
	Total	15	Threespine Sticklebacks	
Aquatic Vegetation (genera)³	FONT	15	Salmonids ³ CT 2	
			Lamprey	
			Non-native Fish Species Collected:	
			Western Mosquitofish	
			Centrarchids ⁴	
		Bullheads		
		Common Carp		
		Other:		
		NOTE: ODOT BRIDGE SITE- SALMONID HABITAT		

Site Name	GREEN'S BRIDGE BACKWATER	Map Code	NS14J
Basin	SANTIAM RIVER	Sampling Date	4/26/2004
Subbasin	NORTH SANTIAM	UTM 10T	502354 4950367

Surface Area (m2)	2100	Native Fish Species Collected:	
Average Depth (m)	2.5	Oregon Chub	
Water Temperature (C)	13	Cottids	12
Percent Silt / Organics	90	Speckled Dace	2
Types of aquatic vegetation¹		Redside Shiners	
Submergent	60	Northern Pikeminnows	19
Emergent	10	Largescale Suckers	
Floating		Sandrollers	
Algae		Threespine Sticklebacks	27
Total	70	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
GRAM	10	Western Mosquitofish	
ELOD	20	Centrarchids ⁴ BG LB	30
MYRI	30	Bullheads	
JUNC	5	Common Carp	
ELEO	2	Other:	
VALI	10		

NOTE:

Site Name	PIONEER PARK BACKWATER	Map Code	PION3H*
Basin	SANTIAM RIVER	Sampling Date	9/28/2004
Subbasin	NORTH SANTIAM	UTM 10T	516950 4960250

Surface Area (m2)	2520	Native Fish Species Collected:	
Average Depth (m)	0.5	Oregon Chub	
Water Temperature (C)	14	Cottids	3
Percent Silt / Organics	20	Speckled Dace	7
Types of aquatic vegetation¹		Redside Shiners	22
Submergent	1	Northern Pikeminnows	
Emergent	7	Largescale Suckers	
Floating	0	Sandrollers	
Algae	0	Threespine Sticklebacks	
Total	8	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
GRAM	5	Western Mosquitofish	
SPAR	2	Centrarchids ⁴	
DOWN	1	Bullheads	
		Common Carp	
		Other:	

NOTE: SWCD RECONSTRUCTED, WILL MODIFY MORE

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	SANTIAM CONS. EASEMENT SCE1-4	Map Code	SCE1-4G
Basin	SANTIAM RIVER	Sampling Date	5/17/2004
Subbasin	NORTH SANTIAM	UTM 10T	500303 4947762
Surface Area (m2)	16300	Native Fish Species Collected:	
Average Depth (m)	1	Oregon Chub	
Water Temperature (C)	14	Cottids	3
Percent Silt / Organics	95	Speckled Dace	1
Types of aquatic vegetation¹		Redside Shiners	7
Submergent	81	Northern Pikeminnows	2
Emergent	2	Largescale Suckers	
Floating	2	Sandrollers	
Algae	0	Threespine Sticklebacks	422
Total	85	Salmonids ³ CT	3
		Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
MYRI	50	Western Mosquitofish	20
ELOD	25	Centrarchids ⁴	
POTA	2	Bullheads	
GRAM	2	Common Carp	
SPAR	4	Other:	
LEMN	2		
NOTE:			
Site Name	SANTIAM CONS EASEMENT SCE7	Map Code	SCE7I
Basin	SANTIAM RIVER	Sampling Date	5/17/2004
Subbasin	NORTH SANTIAM	UTM 10T	500581 4948239
Surface Area (m2)	4000	Native Fish Species Collected:	
Average Depth (m)	1.2	Oregon Chub	1
Water Temperature (C)	14	Cottids	3
Percent Silt / Organics	100	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	2
Submergent	78	Northern Pikeminnows	2
Emergent	5	Largescale Suckers	3
Floating	2	Sandrollers	
Algae	10	Threespine Sticklebacks	42
Total	95	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera²)		Non-native Fish Species Collected:	
ELOD	70	Western Mosquitofish	1
SPAR	6	Centrarchids ⁴	
IRIS	5	Bullheads	
POTA	2	Common Carp	
LEMN	2	Other:	
FILA	10		
NOTE:			

Site Name	STAYTON PUBLIC WORKS POND	Map Code	SPWP1F
Basin	SANTIAM RIVER	Sampling Date	4/26/2004
Subbasin	NORTH SANTIAM	UTM 10T	516689 4959858
Surface Area (m2)	1280	Native Fish Species Collected:	
Average Depth (m)	1.2	Oregon Chub	1
Water Temperature (C)	12	Cottids	1
Percent Silt / Organics	90	Speckled Dace	
Types of aquatic vegetation¹		Redside Shiners	
Submergent	97	Northern Pikeminnows	
Emergent	3	Largescale Suckers	
Floating	0	Sandrollers	
Algae	0	Threespine Sticklebacks	
Total	100	Salmonids ³	
		Lamprey	
Aquatic Vegetation (genera)²		Non-native Fish Species Collected:	
MYRI	80	Western Mosquitofish	132
ELOD	10	Centrarchids ⁴ BG LB	7
POLY	5	Bullheads	
JUNC	3	Common Carp	
CALI	2	Other:	

NOTE:



**3406 Cherry Ave. NE
Salem, Oregon 97303**