

PROGRESS REPORTS

2015



FISH DIVISION
Oregon Department of Fish and Wildlife

2015 Oregon Chub Investigations

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ANNUAL PROGRESS REPORT

FISH RESEARCH PROJECT
OREGON

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SUMMARY

Oregon chub *Oregonichthys crameri*, a small minnow endemic to the Willamette Valley, was listed as endangered under the federal Endangered Species Act (ESA) in 1993. Factors implicated in the decline of this species included 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 was further affected by predation and competition by nonnative species such as largemouth bass *Micropterus salmoides*, crappies *Pomoxis* sp., sunfishes *Lepomis* sp., bullheads *Ameiurus* sp., and western mosquitofish *Gambusia affinis*. In February 2015, Oregon chub became the first fish removed (delisted) from the ESA due to recovery (Federal Register 2015).

Prior to the delisting, the U.S. Fish and Wildlife Service (USFWS) led a multiagency group that developed the Post-Delisting Monitoring Plan (PDM) for the Oregon Chub (U.S. Fish and Wildlife Service 2014). This document provides monitoring guidance for Oregon chub to track changes in distribution, abundance, habitat conditions, and threats after delisting. Monitoring through the PDM will extend, at a minimum, for 9 years. The PDM identifies three Recovery Areas that cover the range of Oregon chub populations: Santiam, Mainstem Willamette, and Middle Fork Willamette. One Recovery Area will be sampled each year and each Recovery Area will be sampled three times during the PDM period. This monitoring program will consist of the following three components: 1) population abundance and distribution monitoring, 2) monitoring the distribution of co-occurring nonnative species, and 3) habitat monitoring. The PDM identifies circumstances that will trigger increased monitoring or potentially lead to a status review under the ESA, and circumstances when there are no longer concerns for Oregon chub and the PDM requirements have been fulfilled. The PDM continues the monitoring program that was initiated in 1991 to evaluate the status and implement the research and recovery objectives listed in the Oregon Chub Recovery Plan (U.S. Fish and Wildlife Service 1998). In addition, we sampled locations in other basins included in our ongoing floodplain study or that were of management or conservation interest.

In 2015, we sampled a total of 118 locations, 29 of which we visited for the first time. We discovered five new populations of Oregon chub; three in the Santiam Recovery Area and two in the Middle Fork Willamette Recovery Area. We confirmed the continued existence of Oregon chub at 60 locations, including 48 naturally occurring and 12 introduced populations. We obtained abundance estimates for 35 naturally occurring populations and 9 introduced populations of Oregon chub that were located throughout the Willamette Basin. We documented 35 populations of Oregon chub ≥ 500 individuals; 15 of these populations were in the Santiam Recovery Area, 8 in the Mainstem Willamette Recovery Area, and 12 in the Middle Fork Willamette Recovery Area. We documented nonnative fish at 51% of all occupied Oregon chub habitats sampled in 2015, and discovered that green sunfish *Lepomis cyanellus* had colonized one population in the Mainstem Willamette Recovery Area and two in the Middle Fork Willamette Recovery Area. Our results confirm that habitat conditions continue to support populations of Oregon chub in habitats hydrologically connected to mainstem rivers in

each Recovery Area. Our results suggest that Oregon chub remain secure in the areas sampled without the protection of the ESA based on criteria established by the PDM.

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, 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 concealment and spawning. In the past 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 nonnative fish species to the Willamette Valley, resulted in a restricted distribution and sharp decline in Oregon chub abundance and a determination of "endangered" status under the federal endangered species act in 1993 (Markle and Pearsons 1990; Rhew 1993).

Since 1991, the Oregon Department of Fish and Wildlife - Native Fish Investigations Program (ODFW) has evaluated the status and implemented the research and recovery objectives listed in the Oregon Chub Recovery Plan (U.S. Fish and Wildlife Service 1998; Bangs et al. 2014a). In 2009, ODFW initiated an additional, ongoing study to assess the effects of flow and temperature modifications and proposed reconnection of floodplain habitats on Oregon chub and other floodplain fishes (Bangs et al. 2014b). Through the coordinated efforts of a multiagency working group, with the aid of private landowners and other non-governmental organizations, the status of the Oregon chub has dramatically improved (Scheerer et al. 2007, Bangs et al. 2014a). The USFWS downlisted the Oregon chub to "threatened" status in 2010 (Federal Register 2010), and in February 2015 Oregon chub became the first fish delisted from the ESA due to recovery (Federal Register 2015).

Prior to delisting the Oregon chub, the USFWS led a multiagency group that developed the Post-Delisting Monitoring Plan (PDM) for the Oregon chub (U.S. Fish and Wildlife Service 2015). This document builds upon the success of the Recovery Plan for the Oregon chub by incorporating the information gained while the species was listed. The PDM period will extend, at a minimum, for nine years to 2023. The PDM identifies three Recovery Areas that cover the range of Oregon chub populations: Santiam, Mainstem Willamette, and Middle Fork Willamette. One Recovery Area will be sampled each year and each Recovery Area will be sampled three times during the PDM period (Table 1).

Table 1. Frequency of sampling in each Recovery Area.

Recovery Area	Year								
	Cycle 1			Cycle 2			Cycle 3		
Santiam	2015			2018			2021		
Mainstem Willamette		2016			2019			2022	
Middle Fork Willamette			2017			2020			2023

The PDM provides monitoring guidance for Oregon chub following delisting to track changes in distribution, abundance, habitat conditions, and threats. Section 5 of the PDM identifies circumstances that will trigger increased monitoring and identifies circumstances when there are no longer concerns for Oregon chub and the PDM requirements have been fulfilled. The triggers for concluding the PDM are:

I. Population Abundance and Distribution Triggers

1. There are at least 25 populations with population abundance ≥ 500 individuals each; and
2. At least 5 populations with ≥ 500 individuals each exist in each of the three Recovery Areas; and

II. Nonnative Species Triggers

1. Fewer than 80 percent of all habitats occupied by Oregon chub contain competitive or predatory nonnative species; and
2. New competitive or predatory nonnative species are absent or distributed in less than 30 percent of Oregon chub habitat within each individual Recovery Area; and

III. Habitat Status Triggers

1. The U.S. Army Corps of Engineers does not conduct additional complete reservoir drawdowns upstream of Oregon chub populations, or, if complete reservoir drawdowns occur, no significant adverse changes to the fish community or habitat are caused; and
2. At least 50 percent of the hydrologically connected Oregon chub habitats in a subbasin continue to have sufficient habitat quality to support Oregon chub populations; and

3. A 50-year interval flood event does not occur in the basins containing Oregon chub or a 50-year interval flood event does occur, but does not cause a decline in Oregon chub populations or habitat, or a significant increase in the distribution of nonnative fish.

This report summarizes the surveys conducted in 2015 and evaluates the status of Oregon chub relative to the triggers listed for conclusion of the PDM. In addition, we discuss the history of, and additional opportunities for, introductions of Oregon chub into new habitats.

METHODS

The PDM defines the three Recovery Areas for the Oregon chub: Santiam, Middle Fork Willamette, and Mainstem Willamette. The Santiam and Middle Fork Willamette Recovery Areas include all locations within the Santiam River basin and Middle Fork Willamette River basin, respectively. The Mainstem Willamette Recovery Area includes the remainder of the Willamette River basin, including the Luckiamute River, Mary's River, McKenzie River, and Molalla River tributaries. In 2015, we focused our monitoring on the Santiam Recovery Area. In addition, we sampled locations in other basins included in our ongoing floodplain study or that were of management or conservation interest. We conducted surveys at 118 locations in the Willamette River drainage. We sampled off-channel habitats using baited minnow traps, seines, dip nets, hoop nets, and boat electrofishing. Minnow traps were cylindrical, were 46 cm long and 23 cm in diameter, were constructed of 3.2 mm wire mesh, and were baited with 1/3 slice of wheat bread. Seines were 1 m tall and 5 m long and constructed of 6.4 mm mesh. Dip nets were constructed of 6.4 mm mesh (stretch measure). Hoop nets consisted of 4 hoops measuring 61 cm in diameter, were 3.1 m long, had two 0.6 m tall by 7.6 m long wings, and were constructed of 1.3 cm mesh (stretch measure). Boat electrofishing was conducted using a Smith-Root 5,000 W generator powered pulsator (model 5.0 GPP). The hoop nets had two wings measuring 0.6 m tall by 7.6 m long with 1.3 cm stretched mesh. We identified and enumerated all fish captured. We recorded the presence and life stage of amphibian and reptile species that we encountered.

We recorded biotic and abiotic characteristics at each location including substrate type, genus and percent of wetted surface area with aquatic vegetation, mean and maximum depth, water temperature, and total wetted surface area. Substrate was categorized as percent fines (<1/16th mm), sand (1/16th-2 mm), gravel (3-64 mm), cobble (65-256 mm), boulder (>256 mm), and bedrock. We photographed and assigned a unique map code to each new location.

We used minnow traps to obtain mark-recapture population estimates for all fish species, when possible. We baited the traps with one third slice of bread and fished them for three to 18 hours. We measured the total length (TL) of a subsample (n=50) of the Oregon chub that we collected in the traps. We marked all fish with a partial caudal fin clip and returned them to the water. On the second day, if the ratio of unmarked to recaptured fish exceeded 10:1, we repeated this procedure and marked all unmarked fish captured on the

second day. We typically marked fish until a minimum of 15 percent of the population was marked, based on previous population estimates. We estimated population abundance using a single-sample mark-recapture model (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). Our minnow traps were unable to catch fish smaller than ≈ 30 mm (TL), and these fish were assumed to be young-of-the-year (Scheerer and McDonald 2003) and were not included in the abundance estimates. In addition, in habitats that have at least periodic open-water connection to adjacent waterbodies, we checked each captured Oregon chub for a VIE tag, which were implanted during previous studies for tracking movement among populations (Bangs et al. 2013).

We defined a population as a group of Oregon chub that occupies a single, defined waterbody. If there was an open-water connection and the potential for frequent movement of chub between adjacent sloughs or ponds, then we considered adjacent locations to be part of a single population. At locations where abundance estimates were obtained in 2014 (Bangs et al. 2014) and 2015, we compared the 95% confidence intervals. If the ranges of each 95% confidence intervals did not overlap, we defined these changes in abundance as significant.

RESULTS

Detailed descriptions of habitat characteristics and the fish species present at each of the 118 locations sampled in 2015 (Figure 1) are presented in **APPENDIX A**.

We obtained population estimates for Oregon chub at 44 locations, and confirmed the continued presence of Oregon chub at 16 locations (Tables 1 and 2). We estimated the population abundance of Oregon chub at 16 locations in the Santiam River Recovery Area, 14 of which had ≥ 500 Oregon chub. We captured over 500 Oregon chub at Taloali Slough, but did not estimate abundance at this location. We were unable to capture Oregon chub at Boomer Slough, where Oregon chub were discovered in 2014. We discovered three new locations containing Oregon chub (Eck Slough, Hatch Side Channels, and Alder Creek). We noted significant increases in Oregon chub abundance at Foster Pullout Pond and Santiam Conservation Easement. We noted significant declines in Oregon chub abundance at Chahalpam Slough, Geren Island North Channel, Mehama Slough, Pioneer Park, and South Stayton Pond. We noted an apparent increase in Oregon chub abundance at Stout Creek, and apparent declines in abundance at Santiam I-5 Backwater and Stayton Public Works Pond.

We estimated the population abundance of Oregon chub at seven locations in the Mainstem Willamette River Recovery Area. There were eight populations in the Mainstem Willamette drainage with ≥ 500 Oregon chub. We were unable to locate Oregon chub at Williams Pond and St. Paul Pond desiccated in the summer of 2015. We noted significant

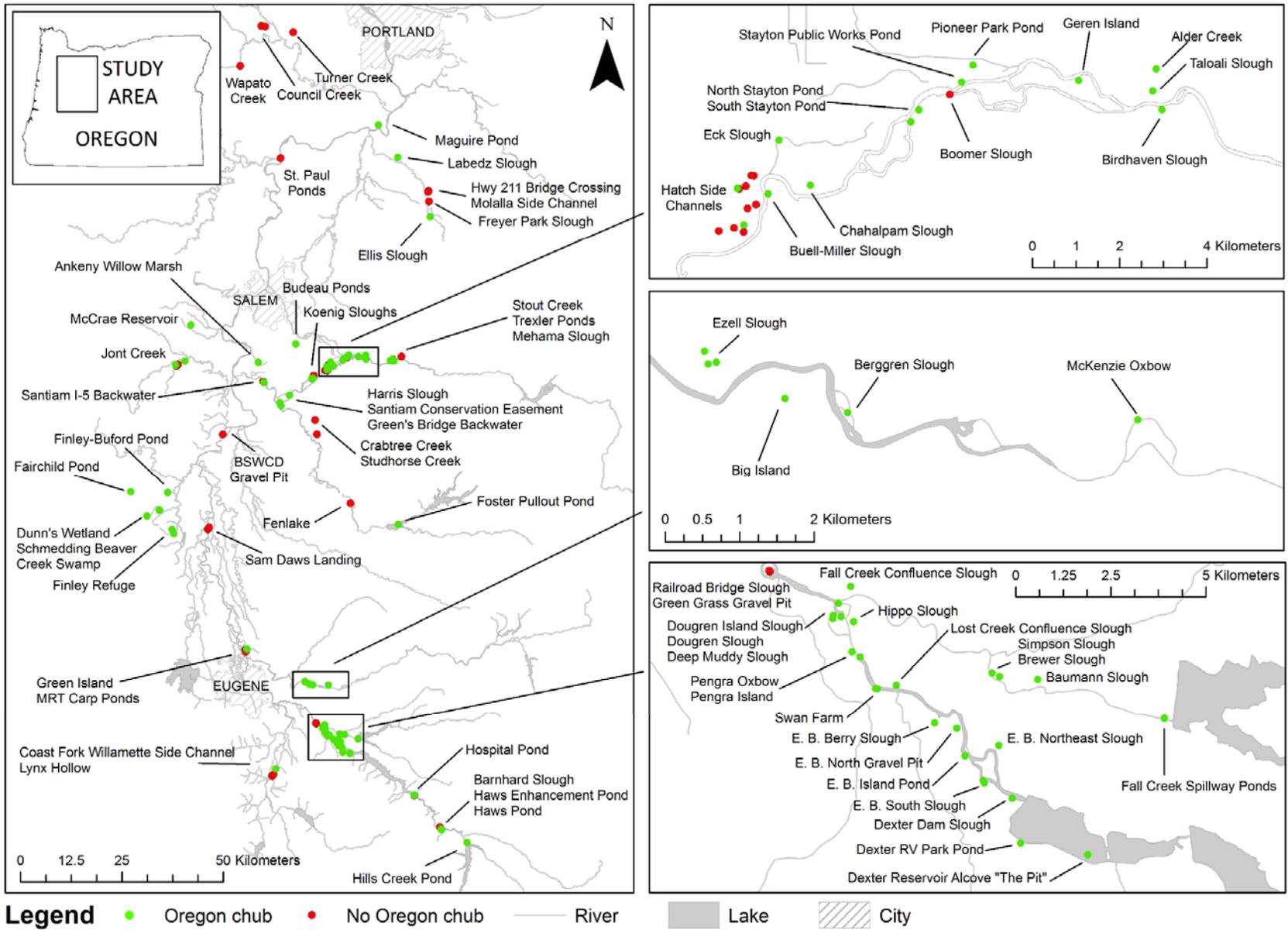


Figure 1. Survey locations for Oregon chub in the Willamette River basin in 2015. Green circles indicate locations where Oregon chub were collected. Red circles indicate locations where Oregon chub were not collected. Overlapping symbols represent multiple locations occurring at or near the same survey location.

Table 1. Oregon chub population abundance estimates from 2008-2014, listed by Recovery Area. Basins: CFW= Coast Fork Willamette, FALL= Fall Creek, LONG = Long Tom, LUCK= Luckiamute, MARY= Mary's, MCK= McKenzie, MFW= Middle Fork Willamette, MILL= Mill Creek, MOL= Molalla, MS= Mainstem Willamette and tributaries, MOL= Molalla, NS= North Santiam, SANT= Mainstem Santiam, SS= South Santiam. We also included a summary of data prior to 2007, including the years when we first discovered or introduced each population and the ranges of abundance. Abundance was calculated using a mark-recapture model, except where numbers are shown in bold, which only represent the number of fish captured. Location names in bold italics are locations where Oregon chub were introduced. The numbers of fish stocked at introduction locations are shown in parentheses.

Location name	Basin	First discovered/		2009	2010	2011	2012	2013	2014	2015	
		introduced	Range through 2008								
Mainstem Willamette											
Ankeny Willow Marsh	MS	2004	500 - 35,650	46,560	21,790	96,810	82,800	47,920	19,340	16,930	
Ellis Slough	MOL	2014							1,100	6,580	
McKenzie Oxbow	MCK	2009		2,420	3,000	3,550	2,880	6,180	9,030	3,700	
Big Island	MCK	2002	190 - 940	610	1,240	400	330	1,160	860	2,160	
Dunn Wetland	MS	1997	200 - 46,330	34,300	28,510	47,350	44,160	6,440	14,600	1,000	
Finley-Buford Pond	MARY	2011				(160)	460	1,010	503	800	
Berggren Slough	MCK	2009		520	520	640	920	610	290	750	
Maguire Pond	MOL	2015		0						(510)	
Coast Fork Side Channels	CFW	2002	16 - 150	100	190	80	70	60	240	240	
McCrae Reservoir	LUCK	2013						(29)	(14) 0	208	
Fairchild Pond	MARY	2015								(150)	
Schmedding Beaver Creek Swamp	MARY	2015								(150)	
Labeled Slough	MOL	2013						29	90	100	
Ezell Slough	MCK	2005	6			29	140			65	
Green Island	MCK	2007	12	2	0	10	8	3	2	22	
Finley Beaver Pond	MARY	2010			420	310	1,340	1,600	37	10	
Finley Display Pond	MARY	1998	60 - 1,750	(85) 320	(119) 500	(67) 420	220	120	530	5	
Finley Gray Creek Swamp	MARY	1993	230 - 2,140	1,700	2,350	2,150	1,720	1,370	5	5	
Jont Creek	LUCK	2012					90	370	140	4	
Dry Muddy Creek	MS	1994				20	500	52	34	2	
Feyrer Park Slough	MOL	2013						1	0	0	
Williams (Murphy) Pond	MARY	2011				(32)	(182) 7	1,080	500	0	
Lynx Hollow Side Channels	CFW	2005	0 - 2	4	2	2	2	4	0	0	
St. Paul Ponds	MS	2008	25	(64) 2	(106) 32	4,430	510	440	53	dry	
Shetzline Pond	MCK	2002	120 - 1,050	300	350	5,750	9,270	3,240	4,330		
Sprick Pond	CFW	2008	12	(10) 12	(31) 22	(12) 80	700	610	500		
Finley Cheadle Pond	MARY	2002	50 - 3,520	(85) 1,140	(118) 1,130	(30) 0	(184) 20	160	370		
Russell Pond	MCK	2001	350 - 1,400	1,290	2,780	340	340	130	360		
Vickery Park Slough	MCK	2011				22	60	12	80		
Hendrick's Bridge Slough	MCK	2011				2	70	22	39		
Wagonwheel Park	MOL	2014							25		
Camous Creek	MS	1993	5					56	22		
Muddy Creek	MS	2007	3			33	0	46	2		
Milk Creek	MOL	2014							1		
Herman Pond	CFW	2002	3 - 420	0	200	130	190	150			
Cedar Creek	MCK	2012					170	25			
Ellison Pond and Slough	MCK	2012					(110) 1	9			
Dunawi Creek	MS	2012					5	0			
Jampolsky Wetlands	MS	2004	500 - 8,320denied access.....					0		
Grant Farm Channel	MCK	2012					8	0			
Springfield Oxbow	MCK	2012					4				
Camas Swale	CFW	1992	0 - 2	0			0				
Bull Run Creek	MS	2005	0 - 2								
Little Muddy Creek tributary	MS	2004	0 - 5								

Table 1 (continued).

Location name	Basin	First discovered/ introduced	Range through 2000	2009	2010	2011	2012	2013	2014	2015
Santiam Recovery Area										
Budeau North Pond	NS	2010			(310)	2,240	5,730	8,350		11,260
Budeau South Pond	NS	2010			(312)	890	4,160	2,810		6,180
Birdhaven Slough	NS	2014							5350	5,980
Foster Pullout Pond	NS	1999	85 - 2,640	2,640	2,010	2,360	2,240	3,410	2,420	5,050
Pioneer Park Pond	NS	1997	0 - 420	830	540	1,470	2,710	1,630	3,880	2,220
Koenig Slough	NS	2011				443	2,410	1,780		1,640
North Stayton Pond	NS	2010			(620)	300	4,370	3,720	50	1,090
Mehama Slough	NS	2010			15	1,240	1,080	1,380	2,800	1,030
Santiam Conservation Easement	NS	1994	0 - 1,250	22	530	54	260	310	300	930
Buell-Miller Slough	NS	2010			2	710	170	760		730
Green's Bridge Slough	NS	1993	0 - 8	240	610	370	190	670	510	690
Chahalpam (Gray) Slough	NS	1995	0 - 700denied access.....			520	2430	2200	680
South Stayton Pond	NS	2006	54 - 1,710	142) 4,970 232)	6,230	2,210	2,000	1,100	1,370	620
Geren Island North Channel	NS	1996	210 - 8,660	560	2,230	3,030	1,940	2,280	1,370	610
Taloali Slough	NS	2013						4		581
Stout Creek	NS	2013						39	54	420
Eck Slough	NS	2015								43
Hatch Side Channels	NS	2015								33
Stayton Public Works Pond	NS	1998	0 - 530	30	3	110	1,100	1,530	260	22
Harris Slough	NS	2011				18	80	30	30	19
Trexler Farm Ponds	NS	2013						53	28	4
Santiam I-5 Side Channels	SANT	1997	2 - 350	100	160	280	100	420	30	3
Alder Creek	NS	2015								1
Boomer Slough	NS	2014							6	0
Logan Slough	NS	1997				1	0	0		0
Foster Reservoir	NS	2014							9	
Hospital Slough	SS	2009		2			10			
Cold Creek Slough	NS	2011				59	0			
Menear's Bend	NS	2000								

Table 1 (continued).

Location name	Basin	First discovered/ introduced	Range through 2008	2009	2010	2011	2012	2013	2014	2015
Middle Fork Willamette										
Fall Creek Spillway Ponds	MFW	1996	480 - 7,770	2,930	4,110	6,690	6,750	9,110	9,900	13,400
Dexter Reservoir RV Alcove - DEX3	MFW	1992	15 - 3,310	2,280	1,800	940	190	3,550	3,960	6,550
Elijah Bristow Island Pond	MFW	2003	420 - 2,780	870	2,050	1,400	840	2,250	890	3,950
Haws Enhancement Pond	MFW	2009		(47)	(86) 1	3,150	900	790	1,800	3,220
Elijah Bristow North Gravel Pit	MFW	2011	0	0	0	3	60	450	510	1,870
Dexter Reservoir Alcove - PIT1	MFW	1992	40 - 1,440	1,370	1,020	350	680	2,590	870	1,740
Elijah Bristow South Slough	MFW	2008	1	880	640	380	230	280	750	1,550
Elijah Bristow Northeast Slough	MFW	1999	210 - 1,340	550	670	670	1,280	890	1,030	1,360
Dougren Slough	MFW	2008	1	1,640	830	1,730	1,070	522	958	1,150
Dexter Dam Slough	MFW	2009		640	510	820	920	1,090	2,120	900
Hospital Pond	MFW	1993	690 - 5,040	730	1,330	2,860	2,110	1,360	2,640	870
Lost Creek Slough	MFW	2012					13	21	42	500
Elijah Bristow Berry Slough	MFW	1993	1,190 - 5,460	8,130	2,360	1,040	1,440	1,170	510	330
Hills Creek Pond	MFW	2010			(1,127)	23,000	13,460	14,610	1,950	330
Haws Pond	MFW	2005	120 - 440	470	810	350	600	510	510	210
Swan Farm	MFW	2015								140
Dougren Island Slough	MFW	2011				34	280	1,700	323	110
Pengra Island Slough	MFW	2003		200	60	40	60	40	60	110
Deep Muddy Slough	MFW	2009	0	10	40	10	10	10	29	90
Baumann Slough	FALL	2012					1	0	90	20
Brewer Slough	FALL	2013						1	40	20
Hippo Slough	MFW	2015								9
Pengra Oxbow Slough	MFW	2008	1	9	60	80	20	160	100	2
Simpson Slough	FALL	2012					1	0	1	2
Fall Creek Confluence Slough	FALL	2012					5	1	3	1
Barnhard Slough	MFW	2000	0 - 7	2	1	0	0	0	0	0
Green Grass Gravel Pit	MFW	2012					24	7	3	0
Hospital Impoundment Pond	MFW	1995	0 - 6		80	70	20	1	0	0
Railroad Bridge Slough	MFW	2009	0	80	20	30	20	0	8	0
East Fork Minnow Creek Pond	MFW	1993	1,730 - 8,770	1,340	2,980	2,170	3,330	1,340	1,890	
Buckhead Creek	MFW	1992	2 - 7,140	3,600	1,280	1,900	3,180	4,600	1,794	
Yeti Slough	MFW	2014						1,060	1,059	
Wicopee Pond	MFW	1988	0 - 5,430	3,040	2,200	3,390 (128)	5,620	4,380	35	
Shady Dell Pond	MFW	1993	1,630 - 7,250	2,070	3,110	1,760	1,600	2,890	2	
Oakridge Slough	MFW	1994	0 - 480	0		1	4	3	0	
Salt Creek Diversion Canal	MFW	2012					150	2		
Elijah Bristow Large Gravel Pit	MFW	1992	0 - 8					0		
Elijah Bristow Small Gravel Pit	MFW	1992	0 - 31					0		
Rattlesnake Creek	MFW	1992	0 - 5	2			0	0		
TNC Island Slough	MFW	2012					2			
Lookout Point Reservoir	MFW	2012					1			
Pudding Creek	MFW	2011				1	0			
Jasper Park Slough	MFW	1994	0 - 3	0		0				
East Ferrin Pond	MFW	1994	0 - 7,160	0	0					
Springfield Millrace Slough	MFW	2009		8	0					
Dexter East Alcove	MFW	1992	0 - 40	0						
Dexter Reservoir	MFW	2002	1							
Wallace Slough	MFW	1997	0 - 3							
West Ferrin Pond	MFW	1992	0 - 525							

Table 2. 2015 Oregon chub abundance estimates and 95% confidence limits for locations in the Willamette Valley, Oregon. Locations are grouped by Recovery Area and drainage. Note: the Mainstem Recovery Area contains multiple river drainages.

Location	Estimate	95% Confidence limits	
		Lower	Upper
Mainstem Recovery Area			
Mainstem Willamette River Drainage			
Ankeny Willow Marsh	16,930	15,710	18,237
McKenzie River Drainage			
McKenzie Oxbow	3,700	3,130	4,370
Big Island	2,160	1,850	2,530
Berggren Slough	750	660	860
Molalla River Drainage			
Ellis Slough	6,580	5,570	7,760
Labeled Slough	100	60	170
Coast Fork Willamette River Drainage			
Coast Fork Side Channels	240	90	470
Santiam River Recovery Area			
Budeau North	11,260	10,090	12,560
Budeau South	6,180	5,640	6,760
Birdhaven Slough	5,980	4,290	5,950
Foster Pullout Pond	5,050	4,290	5,950
Pioneer Park Pond	2,220	1,860	2,650
South Stayton Pond	1,370	1,110	1,680
Koenig Slough	1,640	1,420	1,910
North Stayton Pond	1,090	980	1,230
Mehama Slough	1,030	920	1,150
Santiam Conservation Easement	830	620	1,100
Buell-Miller Slough	730	620	860
Green's Bridge Slough	690	570	830
Chahalpam Slough	680	610	750
Geren Island North Channel	610	520	720
Stout Creek	420	130	730
Eck Slough	40	20	90

Table 2 continued on next page

Table 2 (continued).

Location	Estimate	95% Confidence limits	
		Lower	Upper
Middle Fork Willamette Recovery Area			
Fall Creek Spillway Ponds	9,900	8,540	11,470
Dexter Reservoir Alcove "DEX3"	6,550	5,930	7,230
Haws Enhancement Pond	3,222	2,820	3,690
Elijah Bristow North Gravel Pond	1,870	1,560	2,230
Elijah Bristow South Slough	1,550	1,350	1,790
Dexter Reservoir Alcove "PIT1"	1,470	1,270	1,700
Elijah Bristow Northeast Slough	1,360	1,170	1,600
Dougren Slough	1,150	960	1,400
Dexter Dam Slough	900	750	1,080
Elijah Bristow Island Pond	890	630	1,250
Hospital Pond	870	740	1,020
Lost Creek Slough	500	400	640
Elijah Bristow Berry Slough	330	100	580
Hills Creek Pond	330	130	650
Haws Pond	210	150	310
Swan Farm	140	90	210
Dougren Island Slough	110	70	170
Pengra Island Slough	110	70	180
Deep Muddy Slough	30	20	50
Baumann Slough	20	10	40
Brewer Slough	20	10	40

increases in Oregon chub abundance at Berggren Slough, Big Island, and Ellis Slough. We noted a significant decline in Oregon chub abundance at McKenzie Oxbow.

We estimated the population abundance of Oregon chub at 21 locations in the Middle Fork Willamette River Recovery Area. There were 12 populations in the Middle Fork Willamette drainage with ≥ 500 Oregon chub. The largest population was located at Fall Creek Spillway Ponds, where Oregon chub were introduced in 1996. We noted significant increases in Oregon chub abundance at Dexter Reservoir RV Alcove – DEX3, Elijah Bristow Island Pond, Elijah Bristow North Gravel Pit, Elijah Bristow South Slough, Fall Creek Spillway Ponds, and Haws Enhancement Pond. We noted significant declines in Oregon chub abundance at Dexter Alcove “The Pit”, Dexter Dam Slough, Hills Creek Pond, and Hospital Pond. We noted an apparent decline in Oregon chub abundance at Pengra Oxbow. We discovered two new naturally occurring Oregon chub populations at Hippo Slough and Swan Farm in the Middle Fork Willamette drainage.

DISCUSSION

Status of Naturally Occurring Populations

In 2015, we documented 24 naturally occurring populations of Oregon chub with ≥ 500 individuals in the Willamette River basin; four of these populations in the Mainstem Recovery Area, 10 in the Santiam Recovery Area, and 10 in the Middle Fork Willamette Recovery Area. Additionally, six naturally occurring Oregon chub populations, comprised of 500 or more individual, have been previously documented (Bangs et al. 2014), but were not included in our 2015 sampling effort. There are two unsampled populations in the Mainstem Recovery Area and four in the Middle Fork Willamette Recovery Area. Despite finding Oregon chub in a greater extent of their historic range, we have not found Oregon chub populations in some areas where they were documented historically, such as downstream of Willamette falls near the mouth of the Clackamas River, in mainstem Willamette River sloughs and backwaters, or in the Long Tom River and Calapooia River basins.

In recent years we have documented a number of newly discovered populations in habitats that are frequently hydrologically connected (have an open water connection to the adjacent river). In 2015 we discovered Oregon chub in five new connected locations. However, we were unable to capture Oregon chub in three connected locations where they were present in 2014. Two-thirds (60 out of 90) of the locations containing Oregon chub are connected habitats.

Status of Introduced Populations and Habitat Restoration Projects

One of the key components to the successful recovery of the Oregon chub was the implementation of a program to introduce Oregon chub into suitable habitats within its historic range. Twenty-four new populations have been established since 1988 (Table 3). In addition,

Table 3. Oregon chub introduction and habitat restoration locations, donor populations, ownership of the locations, numbers of fish introduced, and year of first introduction. There were no chub introductions between 1988 and 1996. Ownership codes: ACOE= U.S. Army Corps of Engineers, USFS= U.S. Forest Service, ODFW= Oregon Department of Fish and Wildlife, and USFWS= U.S. Fish and Wildlife Service.

Location name	Ownership	Donor site (introduced populations)	Year																	Total moved									
			1988	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011		2012	2013	2014	2015					
			Molalla River																										
Maguire Pond	private	Ellis Slough Labeledz Slough																					500	500					
			Luckiamute River																										
McCrae Reservoir	private	Jont Creek																				29	13	42					
			Santiam River																										
Budeau North Pond	private	South Stayton Pond																					310	310					
Budeau South Pond	private	South Stayton Pond																					312	312					
Foster Pullout Pond	ACOE	Geren Island					85	20	75	50	158	112												500					
Menear's Bend	ACOE	Geren Island						15		26														41					
North Stayton Pond	ODFW	South Stayton Pond																					620	620					
South Stayton Pond	ODFW	Stayton Public Works Pond																					44	26	3	73			
		Geren Island																						232	232				
		Pioneer Park Slough																					10	41	83	134			
			Mainstem Willamette River																										
Ankeny Willow Marsh	USFWS	Dunn Wetland																					500	500					
		Jampolsky Wetlands ^a																						1,525	1,525				
Dunn Wetland	private	Geren Island																					200	200					
		Elijah Bristow Berry Slough																					300	300					
		Shady Dell																					73	73					
Fairchild Pond	private	Finley-Buford Pond																						150	150				
Finley Beaver Pond ^b	USFWS	-----																						-----	-----				
Finley-Buford Pond	private	Finley Gray Creek Swamp																						150	150				
		Finley Beaver Pond																						10	10				
Finley Cheadle Pond	USFWS	Finley Gray Creek Swamp																						53	85	118	30	184	470
		Finley Display Pond																					50	50					
Finley Display Pond	USFWS	Finley Gray Creek Swamp																					60	45	49	50		500	
Jampolsky Wetlands	private	Dunn Wetland																						500	500				
Murphy Pond	private	Finley-Buford Pond																						32	32				
		Finley Gray Creek Swamp																						182	182				
Schmedding Beaver Creek Swamp	private	Finley-Buford Pond																						150	150				
St. Paul Ponds	ODFW	Big Island																					25	64	106	195			
			McKenzie River																										
Ellison Pond	private	McKenzie Oxbow																						110	110				
Russell Pond	private	Buckhead Creek																						350	150	500			
		St. Paul Ponds																							53	53			
Shetzline North Pond	private	Shetzline Pond																						29	31	60			
			Middle Fork Willamette River																										
East Ferrin Pond	USFS	East Fork Minnow Pond																						576	576				
Fall Creek Spillway Ponds	ACOE	East Fork Minnow Pond																						350	350				
		Shady Dell																						150	150				
Haws Enhancement Pond	private	Haws Pond																						47	86	133			
Hills Creek Pond	ACOE	Dexter Alcove "PIT1"																						507	507				
		Dexter Reservoir RV Alcove "DEX3"																						620	620				
Hospital Imound. Pond ^b	ACOE	-----																						-----	-----				
Lower Buckhead Ponds ^b	USFS	-----																						-----	-----				
West Ferrin Pond	USFS	Shady Dell Pond																						525	525				
Wicopee Pond	USFS	Dexter Reservoir Alcove "PIT1"																						50	50				
		Salt Creek Diversion Canal																						128	128				
			Coast Fork Willamette River																										
Herman Pond	USFS	Buckhead Creek																						400	400				
Sprick Pond	private	Coast Fork Side Channels																						12	10	31	12	65	

^aOregon chub colonized these sites naturally. We removed Oregon chub from Jampolsky Wetlands in the fall of 2007 at the landowner's request. These introductions originated from the same donor source.

^bThese sites are habitat enhancement projects where no Oregon chub were introduced.

several habitat restoration projects have been completed to increase the quantity of habitat or enhance the suitability of habitat for Oregon chub.

In 2015, we documented 11 introduced Oregon chub populations with 500 or more individuals; five of these populations in the Mainstem Recovery Area, five in the Santiam Recovery Area, and two in the Middle Fork Willamette Recovery Area. We introduced Oregon chub into three habitats in the Mainstem Recovery Area. We moved 300 Oregon chub from Finley-Buford Pond into Fairchild Pond (150 fish) and Schmedding Beaver Creek Swamp (150 fish). We moved 500 Oregon chub from Ellis Slough and 10 Oregon chub from Labeledz Slough into Maguire Pond. St. Paul pond desiccated in the summer of 2015; we transferred Oregon chub from this location in 2014. We did not sample Wicopee Pond or Sprick Pond, which had populations greater than 500 fish in previous years.

Oregon chub introduction guidelines for establishing new populations recommend that we transfer a minimum of 500 fish, but only remove a maximum of 10% from a donor population annually to minimize impacts to the donor population. When donor populations total <5,000 fish, it takes us multiple years to achieve this target. In addition, the guidelines also state that donor stocks should be from the same subbasin as the introduction location, whenever possible.

Distribution of Nonnative Species

We confirmed the presence of nonnative fish species in 33 locations containing Oregon chub in 2015. Nonnative fish were captured at 23% (5 of 21), 70% (16 of 23), and 48% (12 of 25) of the locations containing Oregon chub in the Mainstem, Santiam, and Middle Fork Willamette recovery areas, respectively. Combined with data from previous years, nonnative fish are present in 27% (9 of 34), 71% (17 of 24) and 38% (12 of 32) of the locations containing Oregon chub in the Mainstem, Santiam, and Middle Fork Willamette recovery areas, respectively. Across all Recovery Areas and combining data from previous years, nonnative fish are present in 42% (38 of 90) of known Oregon chub habitats.

In 2015 we discovered that Green Sunfish *Lepomis cyanellus* colonized one Oregon chub population in the Mainstem Willamette (Green Island) and two in the Middle Fork Willamette (Deep Muddy Slough and Dougren Slough). We are concerned about the potential for Green Sunfish piscivory on Oregon chub because Green Sunfish has a larger gape than bluegill and pumpkinseed (Scott and Crossman 1979) and have been documented consuming Gila chub *Gila intermedia* similar in size to young-of-the-year Oregon chub (Dudley and Matter 2000).

Other Research and Monitoring

In addition to the monitoring outlined above, ODFW has carried out research/monitoring of Oregon chub funded by the USACE. A brief summary of these activities is included below.

Floodplain Study

In 2009, we initiated a floodplain monitoring study to assess factors that may allow Oregon chub to co-exist with nonnative fishes in connected (non-isolated) habitats (Bangs et al. 2010; 2011; 2014b). During this multi-year study, we have been assessing the effects of flow and temperature regimes on the suitability of off-channel habitats for Oregon chub (availability of aquatic vegetation and temperatures conducive for successful spawning) and effects of the timing, frequency, magnitude, and duration of connectivity on the composition of fish assemblages (native and nonnative) (Bangs et al. 2011b). We will use these data to assess the impacts of proposed floodplain restoration and reconnection projects on Oregon chub populations and their habitats. We are working to determine the combination of flows, temperatures, connectivity, and habitat modifications that will favor native fishes, including Oregon chub, over nonnative predatory fishes. Ideally, these data, when used by managers to enhance off-channel habitat conditions for Oregon chub, will contribute to the long-term recovery of the species by minimizing the inherent residual threat posed by nonnative fishes in these habitats.

An early result of the floodplain study was documenting many previously undiscovered populations of Oregon chub in habitats that are frequently connected to the floodplain in the North Santiam River, McKenzie River, and Middle Fork Willamette River. We hypothesized that movement may occur between populations, but did not have a technique to identify individual or groups of Oregon chub. In 2009 we tested the feasibility of using passive integrated transponder (PIT) tags with small minnows, using reidside shiners *Richardsonius balteatus* as a surrogate species for Oregon chub (Bangs et al. 2011b), and demonstrated the ability to mark fish similar in size to adult Oregon chub. In 2011, we conducted a study in which we marked Oregon chub with two different sized PIT-tags (9 X 2.12 mm and 8.4 X 1.4 mm), visual implant elastomer (VIE) tags, and freeze branding (Bangs et al. 2013). We observed high survival rates (>98%) and high retention rates (>98%) with VIE and freeze brand marks in the laboratory.

In 2012, we began using VIE marks to assess Oregon chub movement *in situ*. We marked about 4,229 Oregon chub with VIE marks in the Middle Fork, McKenzie, and Santiam drainages in 2012-2014. We documented movement of six Oregon chub in the Middle Fork Willamette: three from Dougren Slough to Deep Muddy (upstream 200 m), one from Dougren Slough to Pengra Oxbow (upstream 1,200 m), and two from Dexter Dam Slough to Elijah Bristow South Slough (downstream 950 m). In the McKenzie drainage, we documented movement of two Oregon chub from Berggren Slough to McKenzie Oxbow (upstream 5,500 m) and one Oregon chub from McKenzie Oxbow to Berggren Slough (downstream 5,500 m). In 2015, we documented movement of one Oregon chub from Koenig Slough 6,500 m upstream to the Hatch Side Channels. These data show that Oregon chub can move substantial distances among habitats (e.g., at least 6.5 km). Therefore, these fish are likely capable of colonizing new or previously extirpated habitats, and gene flow among local populations may be possible under contemporary conditions. Prior to these observations, evidence of Oregon chub movements among locations was limited to colonization of previously unoccupied restoration

locations by Oregon chub (e.g., Buckhead Creek Enhancement Ponds, Finley Beaver Pond, Hospital Impoundment Pond, and lower Fall Creek Spillway Pond).

In a complementary study, the USFWS used genetic data to assess the degree of movement and gene flow among 10 populations in the Dexter – Jasper reach of the Middle Fork Willamette River (DeHaan et al. 2015). This reach was selected based on the varying degree of hydrologic connectivity the populations have to the adjacent river, the number of known habitats, and our findings that movement was occurring within this reach. Genetic studies can provide information from a broader time scale than physical marking studies and can provide information about gene flow among local populations. Oregon chub in the Dexter-Jasper reach represent a single population with high levels of gene flow among sample locations (DeHaan et al. 2015). In addition, the lack of genetic differentiation among locations precluded the ability to identify individual migrants among locations. These data suggest that gene flow may be high among populations in other areas (e.g., the Middle Fork Willamette above Lookout Point Reservoir), in basins where we have documented populations with frequent connectivity to the river (e.g., the Molalla, North Santiam, and McKenzie rivers), and in areas where we have documented movement based on physical marks.

Status of Oregon Chub Relative to PDM Criteria

The PDM identifies triggers to increase monitoring and track the status of Oregon chub based on population abundance and distribution, the distribution of nonnative species, and habitat status. In addition, the PDM identifies criteria to determine the conclusion of post-delisting monitoring when Oregon chub monitoring is no longer necessary. There are currently 43 Oregon chub populations with ≥ 500 individuals; 15 of these populations were in the Santiam Recovery Area, 11 in the Mainstem Willamette Recovery Area, and 17 in the Middle Fork Willamette Recovery Area. Nonnative fish are present in 42% of the habitats containing Oregon chub. While we found a new nonnative predatory fish invading Oregon chub habitats, its current distribution is limited to 6% of the Middle Fork Willamette Recovery Area and 3% of the Mainstem Willamette Recovery Area. There are currently 60 habitats that contain Oregon chub and frequently connect to adjacent rivers. There have been no additional complete reservoir drawdowns or 50-year flood events, which are identified as triggers for additional monitoring by the PDM. Oregon chub are currently exceeding the PDM criteria and remain secure without the protection of the ESA.

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APPENDIX A

Fish species and habitat characteristics at 2015 Oregon chub survey locations

Locations are sorted by subbasin then listed alphabetically by location name.

¹ Vegetation types are expressed as a percentage of the total surface area of the locations. The sum of all vegetation types cannot exceed 100 percent.

² Salmonid codes: CO= coho salmon *Oncorhynchus kisutch*; CH= chinook salmon *O. tshawytscha*; CT= cutthroat trout *O. clarki*; RB= rainbow trout *O. mykiss*, ST= steelhead *O. mykiss*, TF= unknown trout fry.

Appendix A (continued).

COAST FORK WILLAMETTE RIVER BASIN

Site Name	COAST FORK WILLAMETTE SIDE CHN	Map Code	CF11M	
Basin	COAST FORK WILLAMETTE RIVER	Sampling Date	6/7/2015	
Subbasin		Location: Zone 10T	498954	4857992

Surface Area (m2)	1344	Types of aquatic vegetation ¹	
Average Depth (m)	0.4	Submergent	60
Maximum Depth (m)	1	Emergent	20
Water Temperature (C)	18	Floating	0
Percent Silt / Organics	25	Algae	10
		<i>Total</i>	90

Native Fish Species Collected:

Oregon Chub	244
Cottids	351
Speckled Dace	1093
Redside Shiners	198
Northern Pikeminnows	1089
Largescale Suckers	7
Sand Rollers	924
Threespine Sticklebacks	873
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	20
Bullheads	1
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	1
Crappies	
Smallmouth Bass	
Banded Killifish	

Other: YP=3

NOTE: POPULATION ESTIMATE, FLOAT DS FROM LYNX

Site Name	LYNX HOLLOW	Map Code	LYNX1L	
Basin	COAST FORK WILLAMETTE RIVER	Sampling Date	6/7/2015	
Subbasin		Location: Zone 10T	498103	4856295

Surface Area (m2)	4780	Types of aquatic vegetation ¹	
Average Depth (m)	0.25	Submergent	20
Maximum Depth (m)	0.5	Emergent	15
Water Temperature (C)	18	Floating	0
Percent Silt / Organics	60	Algae	10
		<i>Total</i>	45

Native Fish Species Collected:

Oregon Chub	0
Cottids	1
Speckled Dace	
Redside Shiners	2
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	15
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other: YP=1

NOTE: STATE PARK GREENWAY SITE, P/A

Appendix A (continued).

COAST FORK WILLAMETTE RIVER BASIN

Site Name	LYNX HOLLOW BOAT RAMP SLOUGH	Map Code	LYNX2C	
Basin	COAST FORK WILLAMETTE RIVER	Sampling Date	6/7/2015	
Subbasin		Location: Zone 10T	498450	4856645

Surface Area (m2)	4780	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	25
Maximum Depth (m)	1.5	Emergent	30
Water Temperature (C)	16	Floating	0
Percent Silt / Organics	40	Algae	15
		<i>Total</i>	70

Native Fish Species Collected:

Oregon Chub	0
Cottids	8
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	1
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	9
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	4
Common Carp	
Bluegills	1
Largemouth Bass	
Pumpkinseeds	1
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: NORTH OF MAIN LYNX HOLLOW AREA

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	ANKENY NWR-WILLOW MARSH	Map Code	WM1M*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	9/24/2015	
Subbasin	ANKENY	Location: Zone 10T	494684	4958441

Surface Area (m2)	25120	Types of aquatic vegetation ¹		
Average Depth (m)	0.8	Submergent	50	
Maximum Depth (m)	1.6	Emergent	25	
Water Temperature (C)	21	Floating	10	
Percent Silt / Organics	100	Algae	15	
		<i>Total</i>	100	

Native Fish Species Collected:

Oregon Chub	16925
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	25
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	10000
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: REINTRO, MANY CHUB WITH PARASITES

Site Name	COUNCIL CREEK	Map Code	CNCL1*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	9/17/2015	
Subbasin	TUALATIN RIVER	Location: Zone 10T	496362	5041391

Surface Area (m2)	800	Types of aquatic vegetation ¹		
Average Depth (m)	1.2	Submergent	10	
Maximum Depth (m)	2	Emergent	50	
Water Temperature (C)	15	Floating	10	
Percent Silt / Organics	80	Algae	10	
		<i>Total</i>	80	

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other: NO FISH

NOTE: P/A, DECENT LOOKING HABITAT

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	COUNCIL CREEK	Map Code	CNCL2*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	9/17/2015	
Subbasin	TUALATIN RIVER	Location: Zone 10T	495373	5041520

Surface Area (m2)	600	Types of aquatic vegetation ¹		
Average Depth (m)	0.8	Submergent	10	
Maximum Depth (m)	1.7	Emergent	50	
Water Temperature (C)	14	Floating	10	
Percent Silt / Organics	80	Algae	10	
		<i>Total</i>	80	

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	2
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: P/A, DECENT LOOKING HABITAT

Site Name	ELLIS SLOUGH	Map Code	MOLALLA4A*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	9/15/2015	
Subbasin	MOLALLA RIVER	Location: Zone 10T	537042	4994450

Surface Area (m2)	2000	Types of aquatic vegetation ¹		
Average Depth (m)	0.5	Submergent	30	
Maximum Depth (m)	1.4	Emergent	20	
Water Temperature (C)	13	Floating	10	
Percent Silt / Organics	10	Algae	10	
		<i>Total</i>	70	

Native Fish Species Collected:

Oregon Chub	6577
Cottids	8
Speckled Dace	441
Redside Shiners	10
Northern Pikeminnows	2
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: WEYERHAUSER PROPERTY, POP EST

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	FEYRER PARK SLOUGH	Map Code	FEY1B*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	9/15/2015	
Subbasin	MOLALLA RIVER	Location: Zone 10T	536785	4998233

Surface Area (m2)	500	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	10
Maximum Depth (m)	0.75	Emergent	15
Water Temperature (C)		Floating	0
Percent Silt / Organics	50	Algae	5
		<i>Total</i>	30

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	19
Redside Shiners	15
Northern Pikeminnows	10
Largescale Suckers	3
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: P/A, SLOUGH ACROSS RIVER FROM PARK

Site Name	HWY 211 BRIDGE CROSSING	Map Code	MOLALLA2A*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	9/16/2015	
Subbasin	MOLALLA RIVER	Location: Zone 10T	536671	5000800

Surface Area (m2)	600	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	5
Maximum Depth (m)	1	Emergent	10
Water Temperature (C)	16	Floating	0
Percent Silt / Organics	70	Algae	10
		<i>Total</i>	25

Native Fish Species Collected:

Oregon Chub	0
Cottids	2
Speckled Dace	
Redside Shiners	18
Northern Pikeminnows	
Largescale Suckers	13
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	41
Largemouth Bass	
Pumpkinseeds	48
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: BACKWATER ON E END OF BRIDGE

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	LABEDZ SLOUGH	Map Code	MILK1B*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	9/15/2015	
Subbasin	MOLALLA RIVER	Location: Zone 10T	529098	5009134

Surface Area (m2)	2250	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	50
Maximum Depth (m)	1.2	Emergent	20
Water Temperature (C)		Floating	10
Percent Silt / Organics	100	Algae	20
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	101
Cottids	4
Speckled Dace	4
Redside Shiners	666
Northern Pikeminnows	513
Largescale Suckers	2
Sand Rollers	
Threespine Sticklebacks	1827
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: MILK CREEK, OLD OXBOW CHANNEL, POP EST

Site Name	MAGUIRE POND	Map Code	MP1A*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	9/16/2015	
Subbasin		Location: Zone 10T	524293	5017115

Surface Area (m2)	844	Types of aquatic vegetation ¹	
Average Depth (m)	1.5	Submergent	30
Maximum Depth (m)	3.9	Emergent	30
Water Temperature (C)		Floating	0
Percent Silt / Organics	100	Algae	5
		<i>Total</i>	65

Native Fish Species Collected:

Oregon Chub	510
Cottids	50
Speckled Dace	50
Redside Shiners	50
Northern Pikeminnows	50
Largescale Suckers	20
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: INTRODUCTION (500 ELLIS, 10 LABEDZ)

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	MCCRAE RESERVOIR	Map Code	HART1B	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	6/11/2015	
Subbasin	ASH CREEK	Location: Zone 10T	478031	4967606

Surface Area (m2)	3000
Average Depth (m)	1
Maximum Depth (m)	2.2
Water Temperature (C)	18
Percent Silt / Organics	100

Types of aquatic vegetation ¹	
Submergent	80
Emergent	10
Floating	0
Algae	10
<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	208
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: 2013 INTRO, 8 ADULT, REMAIN LARVAL

Site Name	MOLALLA SIDE CHANNEL	Map Code	MOLALLA5*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	9/16/2015	
Subbasin	MOLALLA RIVER	Location: Zone 10T	536539	5000655

Surface Area (m2)	300
Average Depth (m)	0.2
Maximum Depth (m)	0.5
Water Temperature (C)	14
Percent Silt / Organics	20

Types of aquatic vegetation ¹	
Submergent	5
Emergent	15
Floating	0
Algae	10
<i>Total</i>	30

Native Fish Species Collected:

Oregon Chub	0
Cottids	12
Speckled Dace	21
Redside Shiners	23
Northern Pikeminnows	9
Largescale Suckers	2
Sand Rollers	
Threespine Sticklebacks	
Salmonids ² CO	5
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: FLOWING CREEK SOUTH OF BRIDGE

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	NORTH BUDEAU POND	Map Code	BUDEAU2D	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	5/11/2015	
Subbasin	MILL CREEK	Location: Zone 10T	503912	4962973

Surface Area (m2)	15730
Average Depth (m)	1
Maximum Depth (m)	1.75
Water Temperature (C)	14
Percent Silt / Organics	65

Types of aquatic vegetation ¹	
Submergent	60
Emergent	30
Floating	0
Algae	0
<i>Total</i>	90

Native Fish Species Collected:

Oregon Chub	11256
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: POPULATION ESTIMATE, 2010 INTRODUCTION

Site Name	SOUTH BUDEAU POND	Map Code	BUDEAU1D	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	5/11/2015	
Subbasin	MILL CREEK	Location: Zone 10T	503938	4962957

Surface Area (m2)	9264
Average Depth (m)	1
Maximum Depth (m)	2
Water Temperature (C)	14
Percent Silt / Organics	90

Types of aquatic vegetation ¹	
Submergent	15
Emergent	80
Floating	0
Algae	5
<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	6176
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: POPULATION ESTIMATE, 2010 INTRODUCTION

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	ST. PAUL PONDS (10 PONDS)	Map Code	STPAUL1H	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	7/1/2015	
Subbasin		Location: Zone 10T	500165	5008900

Surface Area (m2)	3000
Average Depth (m)	0
Maximum Depth (m)	0
Water Temperature (C)	20
Percent Silt / Organics	100

Types of aquatic vegetation ¹

- Submergent
- Emergent
- Floating
- Algae

Total

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

- Western Mosquitofish
- Bullheads
- Common Carp
- Bluegills
- Largemouth Bass
- Pumpkinseeds
- Crappies
- Smallmouth Bass
- Banded Killifish

Other: NO FISH

NOTE: SITE DESSICATED SUMMER 2015

Site Name	TURNER CREEK	Map Code	TURN1*	
Basin	LOWER WILLAMETTE RIVER	Sampling Date	9/17/2015	
Subbasin	TUALATIN RIVER	Location: Zone 10T	503268	5040002

Surface Area (m2)	300
Average Depth (m)	0.3
Maximum Depth (m)	1.1
Water Temperature (C)	16.5
Percent Silt / Organics	70

Types of aquatic vegetation ¹

- Submergent 20
- Emergent 20
- Floating 25
- Algae 20

Total 85

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	2
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	10
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

- Western Mosquitofish 56
- Bullheads
- Common Carp
- Bluegills
- Largemouth Bass
- Pumpkinseeds
- Crappies
- Smallmouth Bass
- Banded Killifish

Other:

NOTE: DIPNET, DECENT LOOKING HABITAT

Appendix A (continued).

LOWER WILLAMETTE RIVER BASIN

Site Name	WAPATO CREEK	Map Code	WPT1*
Basin	LOWER WILLAMETTE RIVER	Sampling Date	9/17/2015
Subbasin	TUALATIN RIVER	Location: Zone 10T	490217 5031691

Surface Area (m2)	1000
Average Depth (m)	0.3
Maximum Depth (m)	1.1
Water Temperature (C)	16.5
Percent Silt / Organics	50

Types of aquatic vegetation ¹

Submergent	10
Emergent	10
Floating	10
Algae	10
<i>Total</i>	40

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	10
Bullheads	
Common Carp	
Bluegills	2
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: P/A, NEAR USFWS REFUGE, WAPATO LAKE BED

Appendix A (continued).

MCKENZIE RIVER BASIN

Site Name	BERGGREN (HUNSAKER) PROPERTY	Map Code	HUNS1-3F	
Basin	MCKENZIE RIVER	Sampling Date	7/6/2015	
Subbasin		Location: Zone 10T	508092	4878827

Surface Area (m2)	1800
Average Depth (m)	0.3
Maximum Depth (m)	1.25
Water Temperature (C)	21
Percent Silt / Organics	10

Types of aquatic vegetation ¹

Submergent	35
Emergent	5
Floating	0
Algae	0
<i>Total</i>	40

Native Fish Species Collected:

Oregon Chub	753
Cottids	11
Speckled Dace	86
Redside Shiners	459
Northern Pikeminnows	2
Largescale Suckers	1
Sand Rollers	
Threespine Sticklebacks	1407
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: POP EST, VIE RED

Site Name	BIG ISLAND	Map Code	BIG1-6N	
Basin	MCKENZIE RIVER	Sampling Date	6/26/2015	
Subbasin		Location: Zone 10T	507253	4879014

Surface Area (m2)	3180
Average Depth (m)	0.3
Maximum Depth (m)	2.5
Water Temperature (C)	22
Percent Silt / Organics	50

Types of aquatic vegetation ¹

Submergent	50
Emergent	40
Floating	0
Algae	1
<i>Total</i>	91

Native Fish Species Collected:

Oregon Chub	2160
Cottids	784
Speckled Dace	1381
Redside Shiners	1478
Northern Pikeminnows	2
Largescale Suckers	14
Sand Rollers	
Threespine Sticklebacks	11284
Salmonids ²	
Lamprey	1
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: POPULATION ESTIMATE

Appendix A (continued).

MCKENZIE RIVER BASIN

Site Name	GREEN ISLAND CARP POND NE	Map Code	GREEN7B
Basin	MCKENZIE RIVER	Sampling Date	7/29/2015
Subbasin		Location: Zone 10T	491661 4887445

Surface Area (m2)	6000	Types of aquatic vegetation ¹	
Average Depth (m)	1.5	Submergent	30
Maximum Depth (m)	4	Emergent	15
Water Temperature (C)	25	Floating	0
Percent Silt / Organics	20	Algae	5
		<i>Total</i>	50

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	1000
Bullheads	1
Common Carp	
Bluegills	12
Largemouth Bass	3
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other: GRN=933

NOTE: MCKENZIE RIVER TRUST RESTORATION SITE

Site Name	GREEN ISLAND CARP POND NW	Map Code	GREEN6B
Basin	MCKENZIE RIVER	Sampling Date	7/29/2015
Subbasin		Location: Zone 10T	491539 4887461

Surface Area (m2)	7500	Types of aquatic vegetation ¹	
Average Depth (m)	1.5	Submergent	30
Maximum Depth (m)	4	Emergent	15
Water Temperature (C)	25	Floating	0
Percent Silt / Organics	20	Algae	5
		<i>Total</i>	50

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	2
Sand Rollers	
Threespine Sticklebacks	1
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	1000
Bullheads	
Common Carp	
Bluegills	16
Largemouth Bass	46
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other: YP1,GN1187

NOTE: MCKENZIE RIVER TRUST RESTORATION SITE

Appendix A (continued).

MCKENZIE RIVER BASIN

Site Name	GREEN ISLAND CARP POND SOUTH	Map Code	GREEN8B
Basin	MCKENZIE RIVER	Sampling Date	7/29/2015
Subbasin		Location: Zone 10T	491626 4887293

Surface Area (m2)	22500	Types of aquatic vegetation ¹	
Average Depth (m)	1.5	Submergent	40
Maximum Depth (m)	4	Emergent	20
Water Temperature (C)	25	Floating	5
Percent Silt / Organics	20	Algae	10
		<i>Total</i>	75

Native Fish Species Collected:

Oregon Chub	0
Cottids	4
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	4
Largescale Suckers	2
Sand Rollers	
Threespine Sticklebacks	12
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	1000
Bullheads	
Common Carp	
Bluegills	20
Largemouth Bass	10
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other: GN361

NOTE: MCKENZIE RIVER TRUST RESTORATION SITE

Site Name	GREEN ISLAND CARP SOUTH CHANNE	Map Code	GREEN9A
Basin	MCKENZIE RIVER	Sampling Date	6/29/2015
Subbasin		Location: Zone 10T	491565 4886978

Surface Area (m2)	2000	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	10
Maximum Depth (m)	1.2	Emergent	20
Water Temperature (C)	25	Floating	0
Percent Silt / Organics	10	Algae	10
		<i>Total</i>	40

Native Fish Species Collected:

Oregon Chub	0
Cottids	3
Speckled Dace	
Redside Shiners	1
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	100
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	407
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other: GREEN=27

NOTE: MCKENZIE RIVER TRUST RESTORATION SITE

Appendix A (continued).

MCKENZIE RIVER BASIN

Site Name	GREEN ISLAND MELEVIN CROSSING	Map Code	GREEN5I
Basin	MCKENZIE RIVER	Sampling Date	7/30/2015
Subbasin		Location: Zone 10T	491894 4887617

Surface Area (m2)	12000	Types of aquatic vegetation ¹	
Average Depth (m)	0.75	Submergent	45
Maximum Depth (m)	2	Emergent	0
Water Temperature (C)	17	Floating	20
Percent Silt / Organics	40	Algae	5
		<i>Total</i>	70

Native Fish Species Collected:

Oregon Chub	22
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	800
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	1000
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other: GREEN=40

NOTE: MCKENZIE RIVER TRUST PROPERTY & PRIVATE

Site Name	MCKENZIE EZELL NORTH SLOUGH	Map Code	EZELL1D*
Basin	MCKENZIE RIVER	Sampling Date	9/12/2015
Subbasin		Location: Zone 10T	506171 4879648

Surface Area (m2)	1300	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	40
Maximum Depth (m)	1	Emergent	40
Water Temperature (C)		Floating	10
Percent Silt / Organics	100	Algae	10
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	20
Cottids	5
Speckled Dace	40
Redside Shiners	40
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: MRT PROP., P/A

Appendix A (continued).

MCKENZIE RIVER BASIN

Site Name	MCKENZIE EZELL SOUTH SLOUGH	Map Code	EZELL2A*	
Basin	MCKENZIE RIVER	Sampling Date	9/12/2015	
Subbasin		Location: Zone 10T	506221	4879475

Surface Area (m2)	2504	Types of aquatic vegetation ¹	
Average Depth (m)	0.6	Submergent	40
Maximum Depth (m)	1.1	Emergent	40
Water Temperature (C)		Floating	10
Percent Silt / Organics	100	Algae	10
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	40
Cottids	10
Speckled Dace	20
Redside Shiners	80
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	40
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: MRT PROP., P/A

Site Name	MCKENZIE EZELL SOUTH SLOUGH	Map Code	EZELL3A*	
Basin	MCKENZIE RIVER	Sampling Date	9/12/2015	
Subbasin		Location: Zone 10T	506329	4879497

Surface Area (m2)	200	Types of aquatic vegetation ¹	
Average Depth (m)	0.3	Submergent	60
Maximum Depth (m)	0.5	Emergent	20
Water Temperature (C)		Floating	10
Percent Silt / Organics	100	Algae	10
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	5
Cottids	2
Speckled Dace	20
Redside Shiners	30
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ² CT	10
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: AT EDGE OF SPRING (CHUB USE SPRING)

Appendix A (continued).

MCKENZIE RIVER BASIN

Site Name	MCKENZIE OXBOW	Map Code	MOX1F	
Basin	MCKENZIE RIVER	Sampling Date	7/6/2015	
Subbasin		Location: Zone 10T	511995	4878728

Surface Area (m2)	22500	Types of aquatic vegetation ¹		
Average Depth (m)	0.5	Submergent	63	
Maximum Depth (m)	2	Emergent	15	
Water Temperature (C)	23.5	Floating	0	
Percent Silt / Organics	50	Algae	5	
		<i>Total</i>	83	

Native Fish Species Collected:

Oregon Chub	3697
Cottids	8
Speckled Dace	32
Redside Shiners	2767
Northern Pikeminnows	42
Largescale Suckers	87
Sand Rollers	1
Threespine Sticklebacks	3848
Salmonids ² CH	4
Lamprey	1
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	6
Common Carp	
Bluegills	14
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP ESTIMATE, VIE YELLOW, LOW WATER

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	BARNHARD SLOUGH	Map Code	BARN1P*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/29/2015	
Subbasin		Location: Zone 10T	539426	4843773

Surface Area (m2)	1440	Types of aquatic vegetation ¹	
Average Depth (m)	1	Submergent	15
Maximum Depth (m)	2	Emergent	20
Water Temperature (C)	10	Floating	20
Percent Silt / Organics	10	Algae	10
		<i>Total</i>	65

Native Fish Species Collected:

Oregon Chub	0
Cottids	1
Speckled Dace	7
Redside Shiners	8
Northern Pikeminnows	
Largescale Suckers	6
Sand Rollers	
Threespine Sticklebacks	
Salmonids ² CT	11
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: FLOODPLAIN STUDY SITE

Site Name	BAUMANN SLOUGH	Map Code	BAUM1C*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/29/2015	
Subbasin	FALL CREEK	Location: Zone 10T	515956	4866355

Surface Area (m2)	480	Types of aquatic vegetation ¹	
Average Depth (m)	0.6	Submergent	20
Maximum Depth (m)	2	Emergent	20
Water Temperature (C)	10	Floating	0
Percent Silt / Organics	20	Algae	10
		<i>Total</i>	50

Native Fish Species Collected:

Oregon Chub	21
Cottids	1
Speckled Dace	2
Redside Shiners	255
Northern Pikeminnows	4
Largescale Suckers	3
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	1
Bullheads	9
Common Carp	
Bluegills	46
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

BBH & YBH

NOTE: HEAVY SEDIMENTATION

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	BREWER SLOUGH	Map Code	BREW1C*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/19/2015	
Subbasin	FALL CREEK	Location: Zone 10T	514753	4866528

Surface Area (m2)	160
Average Depth (m)	0.5
Maximum Depth (m)	1.1
Water Temperature (C)	10.5
Percent Silt / Organics	40

Types of aquatic vegetation ¹	
Submergent	20
Emergent	30
Floating	0
Algae	10
<i>Total</i>	60

Native Fish Species Collected:

Oregon Chub	21
Cottids	72
Speckled Dace	43
Redside Shiners	142
Northern Pikeminnows	3
Largescale Suckers	34
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: HEAVY SILTATION

Site Name	DEEP MUDDY SLOUGH	Map Code	MF14G*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/5/2015	
Subbasin		Location: Zone 10T	510783	4868002

Surface Area (m2)	500
Average Depth (m)	0.4
Maximum Depth (m)	0.8
Water Temperature (C)	18
Percent Silt / Organics	100

Types of aquatic vegetation ¹	
Submergent	
Emergent	60
Floating	25
Algae	5
<i>Total</i>	90

Native Fish Species Collected:

Oregon Chub	87
Cottids	10
Speckled Dace	6
Redside Shiners	6
Northern Pikeminnows	34
Largescale Suckers	5
Sand Rollers	
Threespine Sticklebacks	3
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	7
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other: GREEN=1

NOTE: POP EST - FLOODPLAIN STUDY SITE, 1R VIE

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	DEXTER ALCOVE "THE PIT"	Map Code	PIT1W	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	4/27/2015	
Subbasin	DEXTER RESERVOIR	Location: Zone 10T	517270	4861753

Surface Area (m2)	780
Average Depth (m)	0.5
Maximum Depth (m)	1.5
Water Temperature (C)	10
Percent Silt / Organics	100

Types of aquatic vegetation ¹	
Submergent	0
Emergent	25
Floating	0
Algae	10
<i>Total</i>	35

Native Fish Species Collected:

Oregon Chub	1471
Cottids	2
Speckled Dace	
Redside Shiners	3
Northern Pikeminnows	30
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POPULATION ESTIMATE

Site Name	DEXTER DAM SLOUGH	Map Code	EB26G*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/3/2015	
Subbasin	ELIJAH BRISTOW	Location: Zone 10T	515281	4863226

Surface Area (m2)	1800
Average Depth (m)	0.3
Maximum Depth (m)	0.5
Water Temperature (C)	20
Percent Silt / Organics	70

Types of aquatic vegetation ¹	
Submergent	55
Emergent	10
Floating	0
Algae	15
<i>Total</i>	80

Native Fish Species Collected:

Oregon Chub	896
Cottids	7
Speckled Dace	78
Redside Shiners	30
Northern Pikeminnows	3
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ² CT	1
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	6
Common Carp	
Bluegills	210
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST, FLOODPLAIN SITE, VIE ORANGE

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	DEXTER RV ALCOVE	Map Code	DEX3U	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	4/20/2015	
Subbasin	DEXTER RESERVOIR	Location: Zone 10T	515504	4862061

Surface Area (m2)	1650	Types of aquatic vegetation ¹	
Average Depth (m)	1	Submergent	60
Maximum Depth (m)	2.3	Emergent	20
Water Temperature (C)	15	Floating	0
Percent Silt / Organics	100	Algae	20
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	6546
Cottids	50
Speckled Dace	
Redside Shiners	81
Northern Pikeminnows	14
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POPULATION ESTIMATE

Site Name	DOUGREN ISLAND SLOUGH	Map Code	MF16BB*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/18/2015	
Subbasin		Location: Zone 10T	510717	4868355

Surface Area (m2)	1200	Types of aquatic vegetation ¹	
Average Depth (m)	0.3	Submergent	0
Maximum Depth (m)	0.6	Emergent	0
Water Temperature (C)	20	Floating	25
Percent Silt / Organics	10	Algae	0
		<i>Total</i>	25

Native Fish Species Collected:

Oregon Chub	106
Cottids	1
Speckled Dace	
Redside Shiners	5
Northern Pikeminnows	
Largescale Suckers	3
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	60
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: ACROSS FROM DOUG SLOUGH, VIE RED, EST

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	DOUGREN SLOUGH	Map Code	MF15G*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/12/2015
Subbasin		Location: Zone 10T	510579 4868037

Surface Area (m2)	1000
Average Depth (m)	0.5
Maximum Depth (m)	2
Water Temperature (C)	20
Percent Silt / Organics	75

Types of aquatic vegetation ¹	
Submergent	65
Emergent	15
Floating	5
Algae	5
<i>Total</i>	90

Native Fish Species Collected:

Oregon Chub	1007
Cottids	3
Speckled Dace	1
Redside Shiners	6
Northern Pikeminnows	4
Largescale Suckers	30
Sand Rollers	
Threespine Sticklebacks	9
Salmonids ² RT=3/CT=2	4
Lamprey	12
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	19
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other: GREEN=3

NOTE: POP EST, FLOODPLAIN SITE, VIE RED

Site Name	DOUGREN SLOUGH UPSTREAM	Map Code	MF17B*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/12/2015
Subbasin		Location: Zone 10T	510570 4867958

Surface Area (m2)	1000
Average Depth (m)	0.6
Maximum Depth (m)	2.2
Water Temperature (C)	22
Percent Silt / Organics	30

Types of aquatic vegetation ¹	
Submergent	35
Emergent	10
Floating	5
Algae	5
<i>Total</i>	55

Native Fish Species Collected:

Oregon Chub	140
Cottids	
Speckled Dace	
Redside Shiners	7
Northern Pikeminnows	
Largescale Suckers	4
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	40
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST, RED VIE CHUB PRESENT ~1/4

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	ELIJAH BRISTOW BERRY SLOUGH	Map Code	EB1-11W	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	5/18/2015	
Subbasin	ELIJAH BRISTOW	Location: Zone 10T	513244	4865199

Surface Area (m2)	5650
Average Depth (m)	0.75
Maximum Depth (m)	1.25
Water Temperature (C)	15
Percent Silt / Organics	100

Types of aquatic vegetation ¹	
Submergent	25
Emergent	30
Floating	40
Algae	5
<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	332
Cottids	
Speckled Dace	542
Redside Shiners	110
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	110
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	4
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST, UPS HAB DRY SUMMER 15

Site Name	ELIJAH BRISTOW ISLAND POND	Map Code	MF80*,120*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/10/2015	
Subbasin	ELIJAH BRISTOW	Location: Zone 10T	514043	4864334

Surface Area (m2)	10490
Average Depth (m)	0.5
Maximum Depth (m)	1.5
Water Temperature (C)	17.5
Percent Silt / Organics	80

Types of aquatic vegetation ¹	
Submergent	60
Emergent	10
Floating	0
Algae	10
<i>Total</i>	80

Native Fish Species Collected:

Oregon Chub	3948
Cottids	22
Speckled Dace	4628
Redside Shiners	46
Northern Pikeminnows	1
Largescale Suckers	440
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	49
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST - FLOODPLAIN STUDY SITE

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	ELIJAH BRISTOW NE GRAVEL PIT 1	Map Code	EB30G*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/10/2015	
Subbasin	ELIJAH BRISTOW	Location: Zone 10T	513830	4865059

Surface Area (m2)	1000
Average Depth (m)	1
Maximum Depth (m)	5
Water Temperature (C)	23.5
Percent Silt / Organics	15

Types of aquatic vegetation ¹	
Submergent	55
Emergent	30
Floating	5
Algae	10
<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	1865
Cottids	4
Speckled Dace	910
Redside Shiners	36
Northern Pikeminnows	5
Largescale Suckers	11
Sand Rollers	
Threespine Sticklebacks	
Salmonids ² CT	5
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	1000
Bullheads	
Common Carp	
Bluegills	2
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST - FLOODPLAIN STUDY 2010

Site Name	ELIJAH BRISTOW NORTH SLOUGH	Map Code	EBN1Q	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	5/4/2015	
Subbasin	ELIJAH BRISTOW	Location: Zone 10T	514931	4864608

Surface Area (m2)	3000
Average Depth (m)	0.5
Maximum Depth (m)	1.5
Water Temperature (C)	12
Percent Silt / Organics	90

Types of aquatic vegetation ¹	
Submergent	30
Emergent	40
Floating	10
Algae	0
<i>Total</i>	80

Native Fish Species Collected:

Oregon Chub	1363
Cottids	8
Speckled Dace	310
Redside Shiners	48
Northern Pikeminnows	112
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	6
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST. - FLDPLN STUDY SITE, VIE PINK

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	ELIJAH BRISTOW SE SLOUGH	Map Code	EB21J*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/3/2015	
Subbasin	ELIJAH BRISTOW	Location: Zone 10T	514551	4863630

Surface Area (m2)	600	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	25
Maximum Depth (m)	1.5	Emergent	15
Water Temperature (C)	18	Floating	5
Percent Silt / Organics	15	Algae	5
		<i>Total</i>	50

Native Fish Species Collected:

Oregon Chub	1554
Cottids	261
Speckled Dace	1354
Redside Shiners	1088
Northern Pikeminnows	5
Largescale Suckers	206
Sand Rollers	
Threespine Sticklebacks	
Salmonids ² CT	3
Lamprey	2
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	9
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST - FLOODPLAIN STUDY SITE

Site Name	ELIJAH BRISTOW SE SLOUGH	Map Code	EB22E*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/5/2015	
Subbasin	ELIJAH BRISTOW	Location: Zone 10T	514521	4863691

Surface Area (m2)	1500	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	70
Maximum Depth (m)	2	Emergent	20
Water Temperature (C)	18	Floating	10
Percent Silt / Organics	10	Algae	0
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	125
Cottids	4
Speckled Dace	41
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: DOWNSTREAM OF EB SOUTH SITE, P/A SAMPLE

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	FALL CREEK CONFLUENCE SLOUGH	Map Code	FCC1C*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/29/2015
Subbasin	FALL CREEK	Location: Zone 10T	511037 4868799

Surface Area (m2)	500
Average Depth (m)	0.3
Maximum Depth (m)	0.8
Water Temperature (C)	10.5
Percent Silt / Organics	10

Types of aquatic vegetation ¹	
Submergent	5
Emergent	10
Floating	0
Algae	20
<i>Total</i>	35

Native Fish Species Collected:

Oregon Chub	1
Cottids	15
Speckled Dace	4
Redside Shiners	4
Northern Pikeminnows	6
Largescale Suckers	189
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: SIDE CHANNEL AT THE MOUTH OF FALL CREEK

Site Name	FALL CREEK SPILLWAY POND 1	Map Code	FCSP1V
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	4/27/2015
Subbasin	FALL CREEK	Location: Zone 10T	519285 4865320

Surface Area (m2)	1875
Average Depth (m)	0.5
Maximum Depth (m)	1.5
Water Temperature (C)	14.5
Percent Silt / Organics	100

Types of aquatic vegetation ¹	
Submergent	40
Emergent	15
Floating	5
Algae	5
<i>Total</i>	65

Native Fish Species Collected:

Oregon Chub	4545
Cottids	
Speckled Dace	3110
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: REINTROD, POP EST

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	FALL CREEK SPILLWAY POND 2	Map Code	FCSP2J
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	4/27/2015
Subbasin	FALL CREEK	Location: Zone 10T	519285 4865320

Surface Area (m2)	6000
Average Depth (m)	0.4
Maximum Depth (m)	1.2
Water Temperature (C)	14.5
Percent Silt / Organics	100

Types of aquatic vegetation ¹	
Submergent	40
Emergent	15
Floating	5
Algae	5
<i>Total</i>	65

Native Fish Species Collected:

Oregon Chub	8888
Cottids	1
Speckled Dace	2843
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	10
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST, ACTIVE BV, 4 PONDS

Site Name	GREEN GRASS GRAVEL PIT	Map Code	GGGP1C*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/20/2015
Subbasin		Location: Zone 10T	508909 4869179

Surface Area (m2)	1560
Average Depth (m)	0.75
Maximum Depth (m)	2
Water Temperature (C)	16
Percent Silt / Organics	30

Types of aquatic vegetation ¹	
Submergent	80
Emergent	10
Floating	5
Algae	5
<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	2
Common Carp	
Bluegills	1
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: GRAVEL PIT ON MFW ISLAND NEAR MF10, P/A

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	HAWS ENHANCEMENT POND	Map Code	HAW2F	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	5/4/2015	
Subbasin		Location: Zone 10T	539759	4843167

Surface Area (m2)	1200	Types of aquatic vegetation ¹	
Average Depth (m)	1.75	Submergent	0
Maximum Depth (m)	2.5	Emergent	15
Water Temperature (C)	13	Floating	0
Percent Silt / Organics	35	Algae	85
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	3222
Cottids	
Speckled Dace	315
Redside Shiners	260
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: INTRO, POP EST, 5 LEGGED NWS

Site Name	HAWS POND	Map Code	HAW1J	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	5/4/2015	
Subbasin		Location: Zone 10T	539931	4843130

Surface Area (m2)	1000	Types of aquatic vegetation ¹	
Average Depth (m)	1	Submergent	30
Maximum Depth (m)	2	Emergent	20
Water Temperature (C)	11	Floating	0
Percent Silt / Organics	20	Algae	15
		<i>Total</i>	65

Native Fish Species Collected:

Oregon Chub	213
Cottids	
Speckled Dace	651
Redside Shiners	769
Northern Pikeminnows	
Largescale Suckers	2
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	5
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: POP ESTIMATE, 2010 FLOW ALTERED HABITAT

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	HILLS CREEK POND	Map Code	HCP1G*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/28/2015	
Subbasin	HILLS CREEK	Location: Zone 10T	546154	4839955

Surface Area (m2)	3000
Average Depth (m)	0.2
Maximum Depth (m)	0.3
Water Temperature (C)	15.5
Percent Silt / Organics	100

Types of aquatic vegetation ¹	
Submergent	65
Emergent	15
Floating	10
Algae	10
<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	326
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: INTRO SITE, POP EST, V. LOW WATER

Site Name	HIPPO SLOUGH	Map Code	HIPPO1*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/25/2015	
Subbasin		Location: Zone 10T	511113	4867876

Surface Area (m2)	1000
Average Depth (m)	0.5
Maximum Depth (m)	1.5
Water Temperature (C)	18
Percent Silt / Organics	20

Types of aquatic vegetation ¹	
Submergent	50
Emergent	20
Floating	0
Algae	10
<i>Total</i>	80

Native Fish Species Collected:

Oregon Chub	9
Cottids	4
Speckled Dace	132
Redside Shiners	23
Northern Pikeminnows	2
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	7
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: P/A, SMALL PORTION SAMPLED

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	HOSPITAL IMPOUNDMENT POND	Map Code	HI1T	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	4/20/2015	
Subbasin		Location: Zone 10T	533115	4851517

Surface Area (m2)	1768	Types of aquatic vegetation ¹	
Average Depth (m)	0.25	Submergent	0
Maximum Depth (m)	0.5	Emergent	25
Water Temperature (C)	13	Floating	70
Percent Silt / Organics	90	Algae	0
		<i>Total</i>	95

Native Fish Species Collected:

Oregon Chub	0
Cottids	9
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: P/A, NO CHUB

Site Name	HOSPITAL POND	Map Code	HSP1W	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	4/20/2015	
Subbasin		Location: Zone 10T	533115	4851567

Surface Area (m2)	5000	Types of aquatic vegetation ¹	
Average Depth (m)	1.5	Submergent	5
Maximum Depth (m)	4	Emergent	30
Water Temperature (C)	10.5	Floating	0
Percent Silt / Organics	95	Algae	10
		<i>Total</i>	45

Native Fish Species Collected:

Oregon Chub	869
Cottids	59
Speckled Dace	
Redside Shiners	1322
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: POPULATION ESTIMATE, ACOE ASSISTING

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	LOST CREEK CONFLUENCE SLOUGH	Map Code	EB32C*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/5/2015	
Subbasin	LOST CREEK	Location: Zone 10T	512240	4866202

Surface Area (m2)	800	Types of aquatic vegetation ¹	
Average Depth (m)	0.6	Submergent	60
Maximum Depth (m)	1.4	Emergent	30
Water Temperature (C)	17	Floating	0
Percent Silt / Organics	90	Algae	10
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	504
Cottids	7
Speckled Dace	25
Redside Shiners	7
Northern Pikeminnows	
Largescale Suckers	1
Sand Rollers	
Threespine Sticklebacks	20
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: E OF LOST CR MOUTH, POP EST

Site Name	PENGRA ISLAND SLOUGH	Map Code	MF9H*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/18/2015	
Subbasin		Location: Zone 10T	511283	4866938

Surface Area (m2)	840	Types of aquatic vegetation ¹	
Average Depth (m)	0.8	Submergent	20
Maximum Depth (m)	2.3	Emergent	15
Water Temperature (C)	17	Floating	15
Percent Silt / Organics	10	Algae	30
		<i>Total</i>	80

Native Fish Species Collected:

Oregon Chub	111
Cottids	60
Speckled Dace	616
Redside Shiners	31
Northern Pikeminnows	1
Largescale Suckers	15
Sand Rollers	
Threespine Sticklebacks	1008
Salmonids ²	
Lamprey	12
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: POP EST, FLOODPLAIN STUDY SITE

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	PENGRA OXBOW SLOUGH	Map Code	MF13G*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/18/2015
Subbasin		Location: Zone 10T	511070 4867078

Surface Area (m2)	1000	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	40
Maximum Depth (m)	1.25	Emergent	5
Water Temperature (C)	23	Floating	40
Percent Silt / Organics	40	Algae	5
		<i>Total</i>	90

Native Fish Species Collected:

Oregon Chub	2
Cottids	4
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	3
Largescale Suckers	7
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	1000
Bullheads	201
Common Carp	
Bluegills	145
Largemouth Bass	2
Pumpkinseeds	1
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST, FLOODPLAIN STUDY SITE

Site Name	RAILROAD BRIDGE SLOUGH	Map Code	MF10H*
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	8/13/2015
Subbasin		Location: Zone 10T	508890 4869217

Surface Area (m2)	1560	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	10
Maximum Depth (m)	1.2	Emergent	20
Water Temperature (C)	20	Floating	0
Percent Silt / Organics	20	Algae	5
		<i>Total</i>	35

Native Fish Species Collected:

Oregon Chub	0
Cottids	46
Speckled Dace	27
Redside Shiners	20
Northern Pikeminnows	19
Largescale Suckers	9
Sand Rollers	1
Threespine Sticklebacks	12
Salmonids ² CT	1
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	40
Bullheads	1
Common Carp	
Bluegills	25
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST, FLOODPLAIN SITE

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	SIMPSON SLOUGH	Map Code	SIMP1C*	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	9/29/2015	
Subbasin	FALL CREEK	Location: Zone 10T	514955	4866429

Surface Area (m2)	1080
Average Depth (m)	0.25
Maximum Depth (m)	0.5
Water Temperature (C)	10
Percent Silt / Organics	20

Types of aquatic vegetation ¹

Submergent	15
Emergent	0
Floating	0
Algae	40
<i>Total</i>	45

Native Fish Species Collected:

Oregon Chub	2
Cottids	9
Speckled Dace	9
Redside Shiners	4
Northern Pikeminnows	
Largescale Suckers	1
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	1
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: POOLS AT MOUTH AND UPS, P. LAMP

Site Name	SWAN FARM BAYOU	Map Code	SWAN1	
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	5/20/2015	
Subbasin	LOST CREEK	Location: Zone 10T	511740	4866109

Surface Area (m2)	1000
Average Depth (m)	0.75
Maximum Depth (m)	1
Water Temperature (C)	
Percent Silt / Organics	80

Types of aquatic vegetation ¹

Submergent	60
Emergent	30
Floating	0
Algae	10
<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	47
Cottids	
Speckled Dace	56
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	7
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: POP EST, DOWNSTREAM LOCATION

Appendix A (continued).

MIDDLE FORK WILLAMETTE RIVER BASIN

Site Name	SWAN FARM UPSTREAM	Map Code	SWAN2
Basin	MIDDLE FORK WILLAMETTE RIVER	Sampling Date	5/20/2015
Subbasin	LOST CREEK	Location: Zone 10T	511693 4866111

Surface Area (m2)	1000	Types of aquatic vegetation ¹	
Average Depth (m)	0.75	Submergent	60
Maximum Depth (m)	1	Emergent	30
Water Temperature (C)		Floating	0
Percent Silt / Organics	80	Algae	10
		<i>Total</i>	100

Native Fish Species Collected:		Non-native Fish Species Collected:	
Oregon Chub	77	Western Mosquitofish	
Cottids		Bullheads	
Speckled Dace	63	Common Carp	
Redside Shiners		Bluegills	
Northern Pikeminnows		Largemouth Bass	
Largescale Suckers		Pumpkinseeds	
Sand Rollers		Crappies	
Threespine Sticklebacks	216	Smallmouth Bass	
Salmonids ²		Banded Killifish	
Lamprey			
Chiselmouth			

Other:

NOTE: POP EST, UPSTREAM LOCATION

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	BSWCD GRAVEL PIT	Map Code	BGP1	
Basin	MID-WILLAMETTE RIVER	Sampling Date	7/28/2015	
Subbasin		Location: Zone 10T	485901	4940722

Surface Area (m2)	8000	Types of aquatic vegetation ¹		
Average Depth (m)	1	Submergent	60	
Maximum Depth (m)	3	Emergent	40	
Water Temperature (C)	17	Floating	0	
Percent Silt / Organics	100	Algae	0	
		<i>Total</i>	100	

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	1
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	1000
Bullheads	1
Common Carp	1
Bluegills	47
Largemouth Bass	5
Pumpkinseeds	
Crappies	1
Smallmouth Bass	
Banded Killifish	

Other: YP=1

NOTE: BSWCD PROJECT SITE, PRE-RESTORATION

Site Name	DRY MUDDY CREEK	Map Code	DMC6B	
Basin	MID-WILLAMETTE RIVER	Sampling Date	2/25/2015	
Subbasin	EAST MUDDY CREEK	Location: Zone 10T	491269	4898063

Surface Area (m2)	100	Types of aquatic vegetation ¹		
Average Depth (m)		Submergent		
Maximum Depth (m)		Emergent		
Water Temperature (C)		Floating		
Percent Silt / Organics		Algae		
		<i>Total</i>		

Native Fish Species Collected:

Oregon Chub	2
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: ALEX FARRAND, ODFW DISTRICT SAMPLING

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	DUNN WETLAND DUNN2	Map Code	DUNN2V*	
Basin	MID-WILLAMETTE RIVER	Sampling Date	9/1/2015	
Subbasin	MARYS RIVER	Location: Zone 10T	470249	4921916

Surface Area (m2)	2240	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	90
Maximum Depth (m)	1	Emergent	10
Water Temperature (C)	20	Floating	0
Percent Silt / Organics	100	Algae	0
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	200
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: REINTRO, SW, CHECKED FOR LO

Site Name	DUNN WETLAND DUNN6	Map Code	DUNN6P*	
Basin	MID-WILLAMETTE RIVER	Sampling Date	9/1/2015	
Subbasin	MARYS RIVER	Location: Zone 10T	470249	4921836

Surface Area (m2)	880	Types of aquatic vegetation ¹	
Average Depth (m)	0.15	Submergent	20
Maximum Depth (m)	0.25	Emergent	20
Water Temperature (C)	20	Floating	0
Percent Silt / Organics	100	Algae	0
		<i>Total</i>	40

Native Fish Species Collected:

Oregon Chub	200
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: INTRO, NW, V. LOW, MANY JUV. TO SW, SE

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	DUNN WETLAND DUNN7	Map Code	DUNN7M*	
Basin	MID-WILLAMETTE RIVER	Sampling Date	9/1/2015	
Subbasin	MARYS RIVER	Location: Zone 10T	470299	4921916

Surface Area (m2)	3500	Types of aquatic vegetation ¹	
Average Depth (m)	1	Submergent	30
Maximum Depth (m)	2	Emergent	30
Water Temperature (C)	20	Floating	0
Percent Silt / Organics	100	Algae	5
		<i>Total</i>	65

Native Fish Species Collected:

Oregon Chub	600
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: REINTRO, SE, CHECKED FOR LO

Site Name	FAIRCHILD POND	Map Code	FAIR1	
Basin	MID-WILLAMETTE RIVER	Sampling Date	4/23/2015	
Subbasin	MARYS RIVER	Location: Zone 10T	463216	4926448

Surface Area (m2)	500	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	80
Maximum Depth (m)	2	Emergent	20
Water Temperature (C)	12	Floating	
Percent Silt / Organics	90	Algae	
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	150
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: REINTRODUCTION

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	FINLEY NWR BEAVER POND	Map Code	FIN1S*	
Basin	MID-WILLAMETTE RIVER	Sampling Date	10/2/2015	
Subbasin	MARYS RIVER	Location: Zone 10T	473847	4916139

Surface Area (m2)	4400	Types of aquatic vegetation ¹		
Average Depth (m)	0.2	Submergent	10	
Maximum Depth (m)	0.5	Emergent	80	
Water Temperature (C)		Floating		
Percent Silt / Organics	100	Algae	10	
		<i>Total</i>	100	

Native Fish Species Collected:

Oregon Chub	10
Cottids	
Speckled Dace	10
Redside Shiners	20
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	10
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	10
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: P/A, JAPANESE BIOS VISIT, LOW WATER

Site Name	FINLEY NWR DISPLAY POND	Map Code	FIN16W	
Basin	MID-WILLAMETTE RIVER	Sampling Date	2/17/2015	
Subbasin	MARYS RIVER	Location: Zone 10T	473386	4917139

Surface Area (m2)	9900	Types of aquatic vegetation ¹		
Average Depth (m)	1	Submergent	20	
Maximum Depth (m)	2.5	Emergent	40	
Water Temperature (C)	14	Floating	0	
Percent Silt / Organics	100	Algae	0	
		<i>Total</i>	60	

Native Fish Species Collected:

Oregon Chub	10
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: P/A, DELISTING EVENT

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	FINLEY NWR- GRAY CREEK SWAMP	Map Code	FIN4V*	
Basin	MID-WILLAMETTE RIVER	Sampling Date	10/2/2015	
Subbasin	MARYS RIVER	Location: Zone 10T	472649	4915908

Surface Area (m2)	22872	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	40
Maximum Depth (m)	0.7	Emergent	35
Water Temperature (C)		Floating	0
Percent Silt / Organics	100	Algae	15
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	5
Cottids	
Speckled Dace	10
Redside Shiners	10
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	5
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: P/A, MID AREA, JAPANESE VISIT, LOW WATER

Site Name	FINLEY-BUFORD POND	Map Code	FBP1A	
Basin	MID-WILLAMETTE RIVER	Sampling Date	4/23/2015	
Subbasin	MARYS RIVER	Location: Zone 10T	472351	4926239

Surface Area (m2)	2500	Types of aquatic vegetation ¹	
Average Depth (m)	1	Submergent	40
Maximum Depth (m)	1.8	Emergent	20
Water Temperature (C)	18	Floating	0
Percent Silt / Organics	100	Algae	15
		<i>Total</i>	75

Native Fish Species Collected:

Oregon Chub	800
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: 2011 REINTRODUCTION SITE, P/A

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	FINLEY-BUFORD POND	Map Code	FBP1C	
Basin	MID-WILLAMETTE RIVER	Sampling Date	10/2/2015	
Subbasin	MARYS RIVER	Location: Zone 10T	472351	4926239

Surface Area (m2)	2500	Types of aquatic vegetation ¹	
Average Depth (m)	1	Submergent	40
Maximum Depth (m)	1.8	Emergent	20
Water Temperature (C)	20	Floating	0
Percent Silt / Organics	100	Algae	15
		<i>Total</i>	75

Native Fish Species Collected:

Oregon Chub	500
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: 2011 REINTRODUCTION SITE, P/A

Site Name	JONT CREEK	Map Code	JONT1D	
Basin	MID-WILLAMETTE RIVER	Sampling Date	4/16/2015	
Subbasin	LUCKIAMUTE RIVER	Location: Zone 10T	474315	4957763

Surface Area (m2)	50	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	30
Maximum Depth (m)	0.7	Emergent	30
Water Temperature (C)	9.5	Floating	10
Percent Silt / Organics	90	Algae	10
		<i>Total</i>	80

Native Fish Species Collected:

Oregon Chub	3
Cottids	5
Speckled Dace	5
Redside Shiners	46
Northern Pikeminnows	1
Largescale Suckers	10
Sand Rollers	
Threespine Sticklebacks	370
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: SIMPS RD BRIDGE, FLOODED, P/A DIPNET

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	JONT CREEK- AUER CULVERT POOLS	Map Code	JONT3A	
Basin	MID-WILLAMETTE RIVER	Sampling Date	4/16/2015	
Subbasin	LUCKIAMUTE RIVER	Location: Zone 10T	476589	4958749

Surface Area (m2)	1200	Types of aquatic vegetation ¹	
Average Depth (m)	0.8	Submergent	20
Maximum Depth (m)	1.3	Emergent	60
Water Temperature (C)	9.5	Floating	0
Percent Silt / Organics	100	Algae	10
		<i>Total</i>	90

Native Fish Species Collected:

Oregon Chub	1
Cottids	19
Speckled Dace	16
Redside Shiners	39
Northern Pikeminnows	1
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	42
Salmonids ² 10=CO 2=C	12
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: BV DAM DOWN TO TREELINE, CHINOOK, COHO

Site Name	JONT CREEK MOUTH THROUGH WOODS	Map Code	JONT6	
Basin	MID-WILLAMETTE RIVER	Sampling Date	4/16/2015	
Subbasin	LUCKIAMUTE RIVER	Location: Zone 10T	474827	4957895

Surface Area (m2)	800	Types of aquatic vegetation ¹	
Average Depth (m)	0.8	Submergent	10
Maximum Depth (m)	1.3	Emergent	10
Water Temperature (C)	9.5	Floating	0
Percent Silt / Organics	20	Algae	0
		<i>Total</i>	20

Native Fish Species Collected:

Oregon Chub	0
Cottids	5
Speckled Dace	50
Redside Shiners	100
Northern Pikeminnows	1
Largescale Suckers	25
Sand Rollers	2
Threespine Sticklebacks	
Salmonids ² CT	1
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: P/A SAMPLING, LARGE CT

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	JONT CREEK UPS POOL	Map Code	JONT1D	
Basin	MID-WILLAMETTE RIVER	Sampling Date	4/16/2015	
Subbasin	LUCKIAMUTE RIVER	Location: Zone 10T	474491	4957575

Surface Area (m2)	1000	Types of aquatic vegetation ¹		
Average Depth (m)	0.3	Submergent	50	
Maximum Depth (m)	0.5	Emergent	50	
Water Temperature (C)	9.5	Floating	0	
Percent Silt / Organics	100	Algae	0	
		<i>Total</i>	100	

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other: NO FISH

NOTE: UPS SIMP BRIDGE, LIKELY EPHEMERAL

Site Name	SAM DAWS LANDING	Map Code	SAMDAWS4*	
Basin	MID-WILLAMETTE RIVER	Sampling Date	9/2/2015	
Subbasin		Location: Zone 10T	482219	4917171

Surface Area (m2)		Types of aquatic vegetation ¹		
Average Depth (m)		Submergent		
Maximum Depth (m)		Emergent		
Water Temperature (C)		Floating		
Percent Silt / Organics		Algae		
		<i>Total</i>		

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	9
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	3
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other: GREEN=1

NOTE: PRE-RESTORATION LOCATION, LTWC

Appendix A (continued).

MID-WILLAMETTE RIVER BASIN

Site Name	SAM DAWS LANDING	Map Code	SAMDAWS3*	
Basin	MID-WILLAMETTE RIVER	Sampling Date	9/2/2015	
Subbasin		Location: Zone 10T	482535	4917627

Surface Area (m2)		Types of aquatic vegetation ¹		
Average Depth (m)		Submergent		
Maximum Depth (m)		Emergent		
Water Temperature (C)		Floating		
Percent Silt / Organics		Algae		
		<i>Total</i>		
Native Fish Species Collected:		Non-native Fish Species Collected:		
Oregon Chub	0	Western Mosquitofish		
Cottids		Bullheads		61
Speckled Dace		Common Carp		
Redside Shiners	2	Bluegills		39
Northern Pikeminnows	17	Largemouth Bass		
Largescale Suckers	3	Pumpkinseeds		
Sand Rollers		Crappies		
Threespine Sticklebacks	3	Smallmouth Bass		
Salmonids ²		Banded Killifish		
Lamprey				
Chiselmouth	2			
		Other:		GN=3,WM=22

NOTE: PRE-REST LOCATION, LTWC, BBH & YBH

Site Name	SCHMEDDING BEAVER CREEK SWAMP	Map Code	SCHMED1	
Basin	MID-WILLAMETTE RIVER	Sampling Date	4/23/2015	
Subbasin	MARYS RIVER	Location: Zone 10T	467189	4920417

Surface Area (m2)	1200	Types of aquatic vegetation ¹		
Average Depth (m)	0.5	Submergent		10
Maximum Depth (m)	1.5	Emergent		60
Water Temperature (C)	12	Floating		
Percent Silt / Organics	50	Algae		
		<i>Total</i>		70
Native Fish Species Collected:		Non-native Fish Species Collected:		
Oregon Chub	150	Western Mosquitofish		
Cottids		Bullheads		
Speckled Dace		Common Carp		
Redside Shiners		Bluegills		
Northern Pikeminnows		Largemouth Bass		
Largescale Suckers		Pumpkinseeds		
Sand Rollers		Crappies		
Threespine Sticklebacks		Smallmouth Bass		
Salmonids ²		Banded Killifish		
Lamprey				
Chiselmouth				
		Other:		

NOTE: REINTRODUCTION, LARGE BEAVER POND

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	ALDER CREEK	Map Code	ALDER1	
Basin	SANTIAM RIVER	Sampling Date	6/25/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	521147	4960166

Surface Area (m2)	2000	Types of aquatic vegetation ¹	
Average Depth (m)	0.25	Submergent	20
Maximum Depth (m)	1	Emergent	20
Water Temperature (C)	25	Floating	15
Percent Silt / Organics	60	Algae	5
		<i>Total</i>	60

Native Fish Species Collected:

Oregon Chub	1
Cottids	
Speckled Dace	
Redside Shiners	5
Northern Pikeminnows	1
Largescale Suckers	1
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	40
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: DRIVEWAY UPSTREAM, DAY SET

Site Name	BIRDHAVEN SLOUGH	Map Code	BH1A	
Basin	SANTIAM RIVER	Sampling Date	6/15/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	521285	4959235

Surface Area (m2)	7000	Types of aquatic vegetation ¹	
Average Depth (m)	0.75	Submergent	35
Maximum Depth (m)	1.5	Emergent	40
Water Temperature (C)	20	Floating	0
Percent Silt / Organics	60	Algae	5
		<i>Total</i>	80

Native Fish Species Collected:

Oregon Chub	5981
Cottids	20
Speckled Dace	268
Redside Shiners	809
Northern Pikeminnows	112
Largescale Suckers	102
Sand Rollers	
Threespine Sticklebacks	
Salmonids ² CO=2	2
Lamprey	5
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	1
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP. EST., OTTERS, REST. 2016 AFTER EST

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	BOOMER SLOUGH	Map Code	BOOM1A	
Basin	SANTIAM RIVER	Sampling Date	6/17/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	516421	4959578

Surface Area (m2)	1200
Average Depth (m)	0.35
Maximum Depth (m)	1
Water Temperature (C)	
Percent Silt / Organics	70

Types of aquatic vegetation ¹	
Submergent	90
Emergent	5
Floating	0
Algae	0
<i>Total</i>	95

Native Fish Species Collected:

Oregon Chub	0
Cottids	15
Speckled Dace	30
Redside Shiners	
Northern Pikeminnows	5
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	60
Salmonids ² CO	1
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: SE OF STAYTON RD BRIDGE

Site Name	BUELL MILLER PARK SLOUGH	Map Code	BMP1D	
Basin	SANTIAM RIVER	Sampling Date	6/1/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	512252	4957301

Surface Area (m2)	5250
Average Depth (m)	1
Maximum Depth (m)	2
Water Temperature (C)	19
Percent Silt / Organics	20

Types of aquatic vegetation ¹	
Submergent	50
Emergent	30
Floating	0
Algae	10
<i>Total</i>	90

Native Fish Species Collected:

Oregon Chub	731
Cottids	730
Speckled Dace	12
Redside Shiners	1336
Northern Pikeminnows	182
Largescale Suckers	196
Sand Rollers	
Threespine Sticklebacks	3561
Salmonids ² CO=3, ST=1	4
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	1
Common Carp	
Bluegills	5
Largemouth Bass	
Pumpkinseeds	128
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	CHAHALPAM (WARREN GRAY) SLOUGH	Map Code	GRAY1Q	
Basin	SANTIAM RIVER	Sampling Date	6/1/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	513224	4957493

Surface Area (m2)	6600	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	60
Maximum Depth (m)	1.5	Emergent	30
Water Temperature (C)	19	Floating	0
Percent Silt / Organics	90	Algae	5
		<i>Total</i>	95

Native Fish Species Collected:

Oregon Chub	678
Cottids	373
Speckled Dace	48
Redside Shiners	130
Northern Pikeminnows	47
Largescale Suckers	4
Sand Rollers	
Threespine Sticklebacks	2163
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	7
Largemouth Bass	
Pumpkinseeds	7943
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POPULATION ESTIMATE

Site Name	CRABTREE CREEK	Map Code	CRAB1*	
Basin	SANTIAM RIVER	Sampling Date	9/10/2015	
Subbasin	SOUTH SANTIAM	Location: Zone 10T	508693	4944228

Surface Area (m2)	800	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	10
Maximum Depth (m)	1.5	Emergent	10
Water Temperature (C)		Floating	0
Percent Silt / Organics	30	Algae	20
		<i>Total</i>	40

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	20
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	3
Banded Killifish	

Other:

NOTE: DAY SET, POOR HABITAT FOR CHUB

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	ECK SIDE CHANNEL	Map Code	NS10A	
Basin	SANTIAM RIVER	Sampling Date	6/22/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	512500	4958527

Surface Area (m2)	5400
Average Depth (m)	0.5
Maximum Depth (m)	1.75
Water Temperature (C)	15
Percent Silt / Organics	20

Types of aquatic vegetation ¹	
Submergent	40
Emergent	20
Floating	0
Algae	5
<i>Total</i>	65

Native Fish Species Collected:

Oregon Chub	43
Cottids	1458
Speckled Dace	265
Redside Shiners	1974
Northern Pikeminnows	
Largescale Suckers	2
Sand Rollers	
Threespine Sticklebacks	3893
Salmonids ²	
Lamprey	1
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	4
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: PUMP STATION/BV DAM TO BRAID

Site Name	FENLAKE	Map Code	FEN1	
Basin	SANTIAM RIVER	Sampling Date	7/24/2015	
Subbasin	SOUTH SANTIAM	Location: Zone 10T	517407	4923577

Surface Area (m2)	4000
Average Depth (m)	0.25
Maximum Depth (m)	0.5
Water Temperature (C)	25
Percent Silt / Organics	100

Types of aquatic vegetation ¹	
Submergent	40
Emergent	50
Floating	0
Algae	0
<i>Total</i>	90

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	10000
Bullheads	80
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: LARGE SHALLOW LAKE, NATIVE PLANTS

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	FOSTER PULLOUT POND	Map Code	FOS2U	
Basin	SANTIAM RIVER	Sampling Date	4/6/2015	
Subbasin	SOUTH SANTIAM	Location: Zone 10T	529165	4918350

Surface Area (m2)	1500
Average Depth (m)	1
Maximum Depth (m)	1.7
Water Temperature (C)	8
Percent Silt / Organics	100

Types of aquatic vegetation ¹	
Submergent	60
Emergent	15
Floating	10
Algae	10
<i>Total</i>	95

Native Fish Species Collected:

Oregon Chub	5054
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: INTRODUCTION SITE, POP EST.

Site Name	GEREN ISLAND NORTH CHANNEL	Map Code	GER4T	
Basin	SANTIAM RIVER	Sampling Date	4/13/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	519371	4959900

Surface Area (m2)	2700
Average Depth (m)	1
Maximum Depth (m)	1.5
Water Temperature (C)	12
Percent Silt / Organics	70

Types of aquatic vegetation ¹	
Submergent	40
Emergent	20
Floating	0
Algae	5
<i>Total</i>	65

Native Fish Species Collected:

Oregon Chub	614
Cottids	915
Speckled Dace	229
Redside Shiners	1364
Northern Pikeminnows	2
Largescale Suckers	1
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	649
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST, MICROHAB STUDY SUMMER 14, VIE

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	GREEN'S BRIDGE BACKWATER	Map Code	NS14U	
Basin	SANTIAM RIVER	Sampling Date	5/11/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	502354	4950367

Surface Area (m2)	1200	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	50
Maximum Depth (m)	1.5	Emergent	10
Water Temperature (C)	15	Floating	0
Percent Silt / Organics	85	Algae	10
		<i>Total</i>	80

Native Fish Species Collected:

Oregon Chub	688
Cottids	150
Speckled Dace	10
Redside Shiners	358
Northern Pikeminnows	8
Largescale Suckers	108
Sand Rollers	
Threespine Sticklebacks	732
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	54
Largemouth Bass	
Pumpkinseeds	109
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POPULATION ESTIMATE

Site Name	HARRIS SLOUGH	Map Code	HARRIS1D	
Basin	SANTIAM RIVER	Sampling Date	6/3/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	500010	4948467

Surface Area (m2)	1500	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	30
Maximum Depth (m)	1.5	Emergent	20
Water Temperature (C)	20	Floating	0
Percent Silt / Organics	80	Algae	10
		<i>Total</i>	60

Native Fish Species Collected:

Oregon Chub	49
Cottids	
Speckled Dace	5
Redside Shiners	190
Northern Pikeminnows	46
Largescale Suckers	9
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	2

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	4
Common Carp	
Bluegills	27
Largemouth Bass	
Pumpkinseeds	150
Crappies	
Smallmouth Bass	
Banded Killifish	

Other: PM=1

NOTE: ACROSS FROM SCEA, DOWN DRY CHNL, P/A

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	HATCH AIRPORT - POOL NEAR MOUT	Map Code	HATCH1*	
Basin	SANTIAM RIVER	Sampling Date	9/9/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	511924	4957715

Surface Area (m2)	500	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	30
Maximum Depth (m)	0.6	Emergent	60
Water Temperature (C)	17	Floating	0
Percent Silt / Organics	80	Algae	10
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	4
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	5
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	278
Largemouth Bass	
Pumpkinseeds	17
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: IMPOUNDMENT, LOOKS GREAT DESPITE BG

Site Name	HATCH AIRPORT GREENWOOD POND	Map Code	HATCH2*	
Basin	SANTIAM RIVER	Sampling Date	9/9/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	511550	4957419

Surface Area (m2)	600	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	5
Maximum Depth (m)	1	Emergent	15
Water Temperature (C)	17	Floating	0
Percent Silt / Organics	100	Algae	35
		<i>Total</i>	55

Native Fish Species Collected:

Oregon Chub	2
Cottids	8
Speckled Dace	4
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	10
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	7
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POND, CONNECTS SEASONALLY TO CHANNEL

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	HATCH AIRPORT SIDE CHANNEL	Map Code	HATCH3*	
Basin	SANTIAM RIVER	Sampling Date	9/9/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	511697	4956587

Surface Area (m2)	640	Types of aquatic vegetation ¹	
Average Depth (m)	0.7	Submergent	60
Maximum Depth (m)	1.6	Emergent	15
Water Temperature (C)	19	Floating	5
Percent Silt / Organics	35	Algae	5
		<i>Total</i>	85

Native Fish Species Collected:

Oregon Chub	31
Cottids	17
Speckled Dace	153
Redside Shiners	163
Northern Pikeminnows	1
Largescale Suckers	1
Sand Rollers	
Threespine Sticklebacks	105
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	3
Largemouth Bass	
Pumpkinseeds	2
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: NR CLVRT & IRR WELL, E CHNL, RED VIE

Site Name	HATCH AIRPORT SIDE CHANNEL	Map Code	HATCH5*	
Basin	SANTIAM RIVER	Sampling Date	9/9/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	511783	4956968

Surface Area (m2)	300	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	50
Maximum Depth (m)	1.8	Emergent	15
Water Temperature (C)	18	Floating	0
Percent Silt / Organics	30	Algae	10
		<i>Total</i>	75

Native Fish Species Collected:

Oregon Chub	0
Cottids	21
Speckled Dace	31
Redside Shiners	
Northern Pikeminnows	10
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	2
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: OTHER CHANNEL CC, WEST NR RIVER, MOVING

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	HATCH AIRPORT SIDE CHANNEL	Map Code	HATCH6*	
Basin	SANTIAM RIVER	Sampling Date	9/9/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	511693	4956426

Surface Area (m2)	400	Types of aquatic vegetation ¹	
Average Depth (m)	0.25	Submergent	10
Maximum Depth (m)	0.4	Emergent	10
Water Temperature (C)	24	Floating	0
Percent Silt / Organics	10	Algae	10
		<i>Total</i>	30

Native Fish Species Collected:

Oregon Chub	0
Cottids	3
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	1
Sand Rollers	
Threespine Sticklebacks	5
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	2
Largemouth Bass	
Pumpkinseeds	4
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: EAST CHANNEL MOUTH TO LARGER SLOUGH

Site Name	HATCH AIRPORT SIDE CHANNEL	Map Code	HATCH4*	
Basin	SANTIAM RIVER	Sampling Date	9/9/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	511473	4956521

Surface Area (m2)	1000	Types of aquatic vegetation ¹	
Average Depth (m)	0.7	Submergent	50
Maximum Depth (m)	1.7	Emergent	15
Water Temperature (C)	18	Floating	5
Percent Silt / Organics	40	Algae	10
		<i>Total</i>	80

Native Fish Species Collected:

Oregon Chub	0
Cottids	13
Speckled Dace	24
Redside Shiners	57
Northern Pikeminnows	2
Largescale Suckers	1
Sand Rollers	
Threespine Sticklebacks	42
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	11
Largemouth Bass	
Pumpkinseeds	1
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: MIDDLE POOLS, LOWER CHNL, BV DAM

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	HATCH AIRPORT SIDE CHANNEL	Map Code	HATCH7*	
Basin	SANTIAM RIVER	Sampling Date	9/9/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	511125	4956448

Surface Area (m2)	1000	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	60
Maximum Depth (m)	1	Emergent	20
Water Temperature (C)	18	Floating	10
Percent Silt / Organics	30	Algae	10
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	0
Cottids	21
Speckled Dace	16
Redside Shiners	25
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	28
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	2
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: LOWEST DOWNSTREAM POND IN CHNL, MOVING

Site Name	HATCH AIRPORT SIDE CHANNEL	Map Code	HATCH8*	
Basin	SANTIAM RIVER	Sampling Date	9/9/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	511587	4957413

Surface Area (m2)	300	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	20
Maximum Depth (m)	0.7	Emergent	40
Water Temperature (C)	16.5	Floating	0
Percent Silt / Organics	20	Algae	10
		<i>Total</i>	70

Native Fish Species Collected:

Oregon Chub	0
Cottids	8
Speckled Dace	9
Redside Shiners	18
Northern Pikeminnows	12
Largescale Suckers	1
Sand Rollers	
Threespine Sticklebacks	2
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	2
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: SMALL CHANNEL, MOST INLAND CHANNEL, FAST

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	HATCH AIRPORT SIDE CHANNEL	Map Code	HATCH9*	
Basin	SANTIAM RIVER	Sampling Date	9/9/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	511741	4957479

Surface Area (m2)	500	Types of aquatic vegetation ¹	
Average Depth (m)	0.3	Submergent	0
Maximum Depth (m)	0.75	Emergent	20
Water Temperature (C)	16	Floating	0
Percent Silt / Organics	0	Algae	0
		<i>Total</i>	20

Native Fish Species Collected:

Oregon Chub	0
Cottids	1
Speckled Dace	8
Redside Shiners	9
Northern Pikeminnows	1
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	1
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: HATCH AIRPORT TO GREENWOOD BC, FAST

Site Name	HATCH AIRPORT SIDE CHANNEL	Map Code	HATCH10*	
Basin	SANTIAM RIVER	Sampling Date	9/9/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	511873	4957720

Surface Area (m2)	3000	Types of aquatic vegetation ¹	
Average Depth (m)	0.75	Submergent	20
Maximum Depth (m)	1.75	Emergent	30
Water Temperature (C)	16.5	Floating	0
Percent Silt / Organics	10	Algae	10
		<i>Total</i>	60

Native Fish Species Collected:

Oregon Chub	0
Cottids	11
Speckled Dace	15
Redside Shiners	7
Northern Pikeminnows	2
Largescale Suckers	3
Sand Rollers	
Threespine Sticklebacks	21
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	38
Largemouth Bass	
Pumpkinseeds	1
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: MOUTH DOWNSTREAM TO GREENWOOD PROP

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	KOENIG SLOUGH	Map Code	COLD1C	
Basin	SANTIAM RIVER	Sampling Date	6/23/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	507892	4954522

Surface Area (m2)	800
Average Depth (m)	0.25
Maximum Depth (m)	0.5
Water Temperature (C)	9.5
Percent Silt / Organics	100

Types of aquatic vegetation ¹	
Submergent	15
Emergent	30
Floating	0
Algae	5
<i>Total</i>	50

Native Fish Species Collected:

Oregon Chub	1370
Cottids	2156
Speckled Dace	3
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	1761
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	2
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST, NEAR RIVER, VIE RED

Site Name	LOGAN SLOUGH	Map Code	NS17E	
Basin	SANTIAM RIVER	Sampling Date	6/22/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	508304	4955223

Surface Area (m2)	500
Average Depth (m)	0.5
Maximum Depth (m)	1
Water Temperature (C)	12
Percent Silt / Organics	70

Types of aquatic vegetation ¹	
Submergent	30
Emergent	35
Floating	15
Algae	10
<i>Total</i>	90

Native Fish Species Collected:

Oregon Chub	0
Cottids	19
Speckled Dace	15
Redside Shiners	8
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	50
Salmonids ²	
Lamprey	1
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: LOWER REACH, DNS GATE, NEAR RIVER

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	LOWER KOENIG	Map Code	COLD5	
Basin	SANTIAM RIVER	Sampling Date	6/22/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	507959	4954276

Surface Area (m2)	2250	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	20
Maximum Depth (m)	1.25	Emergent	70
Water Temperature (C)	18	Floating	
Percent Silt / Organics	60	Algae	10
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	21
Cottids	323
Speckled Dace	48
Redside Shiners	34
Northern Pikeminnows	40
Largescale Suckers	21
Sand Rollers	
Threespine Sticklebacks	647
Salmonids ² CO	1
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	14
Crappies	
Smallmouth Bass	
Banded Killifish	

Other: PM=1

NOTE: POP EST, LOWER OF 3 SITES, NEW 15

Site Name	MEHAMA SLOUGH	Map Code	MEHAMA1F	
Basin	SANTIAM RIVER	Sampling Date	5/26/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	528138	4958745

Surface Area (m2)	2000	Types of aquatic vegetation ¹	
Average Depth (m)	0.5	Submergent	40
Maximum Depth (m)	1.5	Emergent	25
Water Temperature (C)	17	Floating	0
Percent Silt / Organics	15	Algae	15
		<i>Total</i>	80

Native Fish Species Collected:

Oregon Chub	1026
Cottids	468
Speckled Dace	11
Redside Shiners	158
Northern Pikeminnows	451
Largescale Suckers	907
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	4
Common Carp	
Bluegills	85
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: 2 BVR PONDS IN EST, VIE YELLOW

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	MIDDLE KOENIG	Map Code	COLD4	
Basin	SANTIAM RIVER	Sampling Date	6/22/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	508172	4954431

Surface Area (m2)	3900
Average Depth (m)	0.5
Maximum Depth (m)	2
Water Temperature (C)	15
Percent Silt / Organics	60

Types of aquatic vegetation ¹

Submergent	20
Emergent	20
Floating	0
Algae	5
<i>Total</i>	45

Native Fish Species Collected:

Oregon Chub	251
Cottids	569
Speckled Dace	102
Redside Shiners	985
Northern Pikeminnows	3
Largescale Suckers	2
Sand Rollers	
Threespine Sticklebacks	1368
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	139
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST, MIDDLE OF 3 SITES, NEW 15

Site Name	NORTH STAYTON POND	Map Code	STAY2G	
Basin	SANTIAM RIVER	Sampling Date	4/7/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	515710	4959225

Surface Area (m2)	1575
Average Depth (m)	1.5
Maximum Depth (m)	3.5
Water Temperature (C)	9.5
Percent Silt / Organics	85

Types of aquatic vegetation ¹

Submergent	20
Emergent	20
Floating	0
Algae	10
<i>Total</i>	50

Native Fish Species Collected:

Oregon Chub	1094
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: INTRODUCTION, POP EST

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	PIONEER PARK BACKWATER	Map Code	PION3S	
Basin	SANTIAM RIVER	Sampling Date	4/13/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	516950	4960250

Surface Area (m2)	1300
Average Depth (m)	0.5
Maximum Depth (m)	1
Water Temperature (C)	9
Percent Silt / Organics	55

Types of aquatic vegetation ¹

Submergent	45
Emergent	20
Floating	0
Algae	5
<i>Total</i>	70

Native Fish Species Collected:

Oregon Chub	2219
Cottids	119
Speckled Dace	156
Redside Shiners	18
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ² CH	1
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POPULATION ESTIMATE, LOW WATER SUMMER

Site Name	SANTIAM CONS. EASEMENT SCE1-4	Map Code	SCE1-4Q	
Basin	SANTIAM RIVER	Sampling Date	6/2/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	500303	4947762

Surface Area (m2)	16300
Average Depth (m)	0.75
Maximum Depth (m)	2
Water Temperature (C)	15
Percent Silt / Organics	100

Types of aquatic vegetation ¹

Submergent	45
Emergent	40
Floating	0
Algae	10
<i>Total</i>	90

Native Fish Species Collected:

Oregon Chub	829
Cottids	5
Speckled Dace	2
Redside Shiners	13
Northern Pikeminnows	77
Largescale Suckers	1
Sand Rollers	
Threespine Sticklebacks	2709
Salmonids ² CO	1
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	9
Bullheads	
Common Carp	
Bluegills	1
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST, SCEA7 SCOURED, FLOWING WATER

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	SANTIAM I-5 OUTFLOW SLOUGH	Map Code	I5BW3C	
Basin	SANTIAM RIVER	Sampling Date	5/6/2015	
Subbasin		Location: Zone 10T	495899	4953723

Surface Area (m2)	200	Types of aquatic vegetation ¹		
Average Depth (m)	0.3	Submergent	65	
Maximum Depth (m)	0.8	Emergent	5	
Water Temperature (C)	9.5	Floating	0	
Percent Silt / Organics	25	Algae	15	
		<i>Total</i>	85	

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	2
Northern Pikeminnows	19
Largescale Suckers	13
Sand Rollers	
Threespine Sticklebacks	35
Salmonids ²	
Lamprey	
Chiselmouth	8

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: NEW POOL IN 2011, I5BW2 OUTFLOW

Site Name	SANTIAM I-5 SIDE CHANNEL POND	Map Code	I5BW2Q	
Basin	SANTIAM RIVER	Sampling Date	5/6/2015	
Subbasin		Location: Zone 10T	496051	4953491

Surface Area (m2)	6000	Types of aquatic vegetation ¹		
Average Depth (m)	0.25	Submergent	10	
Maximum Depth (m)	0.75	Emergent	85	
Water Temperature (C)	13	Floating	0	
Percent Silt / Organics	50	Algae	5	
		<i>Total</i>	100	

Native Fish Species Collected:

Oregon Chub	4
Cottids	98
Speckled Dace	
Redside Shiners	3097
Northern Pikeminnows	1990
Largescale Suckers	427
Sand Rollers	
Threespine Sticklebacks	152
Salmonids ²	
Lamprey	
Chiselmouth	180

Non-native Fish Species Collected:

Western Mosquitofish	58
Bullheads	
Common Carp	
Bluegills	5
Largemouth Bass	
Pumpkinseeds	1180
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

YB2GF21YP3

NOTE: POP EST, 50% PARROT FEATHER, PM=92 EST

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	SLOUGH S HATCH AIRPORT	Map Code	SHTCH1*	
Basin	SANTIAM RIVER	Sampling Date	9/9/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	511976	4957054

Surface Area (m2)	6000	Types of aquatic vegetation ¹	
Average Depth (m)	0.4	Submergent	45
Maximum Depth (m)	1.6	Emergent	15
Water Temperature (C)	21.5	Floating	0
Percent Silt / Organics	20	Algae	10
		<i>Total</i>	70

Native Fish Species Collected:

Oregon Chub	0
Cottids	5
Speckled Dace	1
Redside Shiners	2
Northern Pikeminnows	10
Largescale Suckers	8
Sand Rollers	
Threespine Sticklebacks	10
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	89
Largemouth Bass	
Pumpkinseeds	17
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: SEVERAL POOLS, MOUTH UPSTREAM ~200 M

Site Name	SOUTH STAYTON POND	Map Code	STAY1J	
Basin	SANTIAM RIVER	Sampling Date	4/8/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	515525	4958950

Surface Area (m2)	1200	Types of aquatic vegetation ¹	
Average Depth (m)	1.5	Submergent	10
Maximum Depth (m)	3.5	Emergent	15
Water Temperature (C)	12	Floating	30
Percent Silt / Organics	75	Algae	10
		<i>Total</i>	65

Native Fish Species Collected:

Oregon Chub	617
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	1000
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP EST, MSQ DISCOVERED 2010

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	STAYTON PUBLIC WORKS POND	Map Code	SPWP1Q*	
Basin	SANTIAM RIVER	Sampling Date	9/10/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	516689	4959858

Surface Area (m2)	2100
Average Depth (m)	1.25
Maximum Depth (m)	2
Water Temperature (C)	20.5
Percent Silt / Organics	80

Types of aquatic vegetation ¹	
Submergent	5
Emergent	20
Floating	0
Algae	5
<i>Total</i>	30

Native Fish Species Collected:

Oregon Chub	22
Cottids	
Speckled Dace	
Redside Shiners	42
Northern Pikeminnows	1
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	1730
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POP. EST.: BG ONLY

Site Name	STOUT CREEK	Map Code	STOUT1B	
Basin	SANTIAM RIVER	Sampling Date	5/27/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	527217	4958850

Surface Area (m2)	5300
Average Depth (m)	1.2
Maximum Depth (m)	1.8
Water Temperature (C)	12
Percent Silt / Organics	20

Types of aquatic vegetation ¹	
Submergent	20
Emergent	20
Floating	0
Algae	5
<i>Total</i>	45

Native Fish Species Collected:

Oregon Chub	420
Cottids	345
Speckled Dace	24
Redside Shiners	1122
Northern Pikeminnows	63
Largescale Suckers	
Sand Rollers	530
Threespine Sticklebacks	
Salmonids ² CO=3, ST=3	6
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: RECENT RESTORATION, P/A CHUB ONLY

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	STOUT CREEK NEAR MEAT MARKET	Map Code	STOUT2A	
Basin	SANTIAM RIVER	Sampling Date	5/28/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	529995	4959876

Surface Area (m2)	5300	Types of aquatic vegetation ¹	
Average Depth (m)	1	Submergent	40
Maximum Depth (m)	1.5	Emergent	0
Water Temperature (C)	22	Floating	0
Percent Silt / Organics	80	Algae	40
		<i>Total</i>	80

Native Fish Species Collected:

Oregon Chub	0
Cottids	5
Speckled Dace	500
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ² CO	1
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: POND WEST OF MARKET, GOOD FOR REINTRO

Site Name	STUDHORSE CREEK	Map Code	STUD1*	
Basin	SANTIAM RIVER	Sampling Date	9/10/2015	
Subbasin	SOUTH SANTIAM	Location: Zone 10T	509099	4940794

Surface Area (m2)	500	Types of aquatic vegetation ¹	
Average Depth (m)	0.3	Submergent	5
Maximum Depth (m)	0.4	Emergent	0
Water Temperature (C)	26.5	Floating	0
Percent Silt / Organics	100	Algae	20
		<i>Total</i>	25

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	20
Bullheads	
Common Carp	1
Bluegills	210
Largemouth Bass	1
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: SOUTH SANTIAM WSC RESTORATION SITE

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	TAOLALI SLOUGH	Map Code	TAOL1A	
Basin	SANTIAM RIVER	Sampling Date	6/25/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	521072	4959659

Surface Area (m2)	2000	Types of aquatic vegetation ¹	
Average Depth (m)	0.3	Submergent	40
Maximum Depth (m)	0.75	Emergent	20
Water Temperature (C)	20	Floating	5
Percent Silt / Organics	100	Algae	5
		<i>Total</i>	70

Native Fish Species Collected:

Oregon Chub	581
Cottids	31
Speckled Dace	48
Redside Shiners	
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ² CO	1
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	142
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: DRIVEWAY TO DAM, ALSO NR FOOTBRIDGE

Site Name	TREXLER EAST POND	Map Code	TREX2B	
Basin	SANTIAM RIVER	Sampling Date	5/26/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	527849	4959214

Surface Area (m2)	6000	Types of aquatic vegetation ¹	
Average Depth (m)	0.3	Submergent	30
Maximum Depth (m)	1	Emergent	40
Water Temperature (C)	22	Floating	0
Percent Silt / Organics	100	Algae	10
		<i>Total</i>	80

Native Fish Species Collected:

Oregon Chub	0
Cottids	
Speckled Dace	36
Redside Shiners	19
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ² CO	1
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish	
Bullheads	
Common Carp	
Bluegills	
Largemouth Bass	
Pumpkinseeds	
Crappies	
Smallmouth Bass	
Banded Killifish	

Other:

NOTE: BETWEEN FERRY AND RIVERHAVEN ROAD

Appendix A (continued).

SANTIAM RIVER BASIN

Site Name	TREXLER WEST POND	Map Code	TREX1B	
Basin	SANTIAM RIVER	Sampling Date	5/26/2015	
Subbasin	NORTH SANTIAM	Location: Zone 10T	527849	4959214

Surface Area (m2)	2250	Types of aquatic vegetation ¹	
Average Depth (m)	1	Submergent	30
Maximum Depth (m)	1.5	Emergent	10
Water Temperature (C)	15	Floating	40
Percent Silt / Organics	60	Algae	20
		<i>Total</i>	100

Native Fish Species Collected:

Oregon Chub	4
Cottids	2
Speckled Dace	5
Redside Shiners	43
Northern Pikeminnows	
Largescale Suckers	
Sand Rollers	
Threespine Sticklebacks	
Salmonids ²	
Lamprey	
Chiselmouth	

Non-native Fish Species Collected:

Western Mosquitofish
Bullheads
Common Carp
Bluegills
Largemouth Bass
Pumpkinseeds
Crappies
Smallmouth Bass
Banded Killifish

Other:

NOTE: ANOXIC CONDITIONS, BEHIND TREXLER FARMS



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