Oregon Pesticide Stewardship Partnership Program Update

PARC Meeting

November 20, 2019

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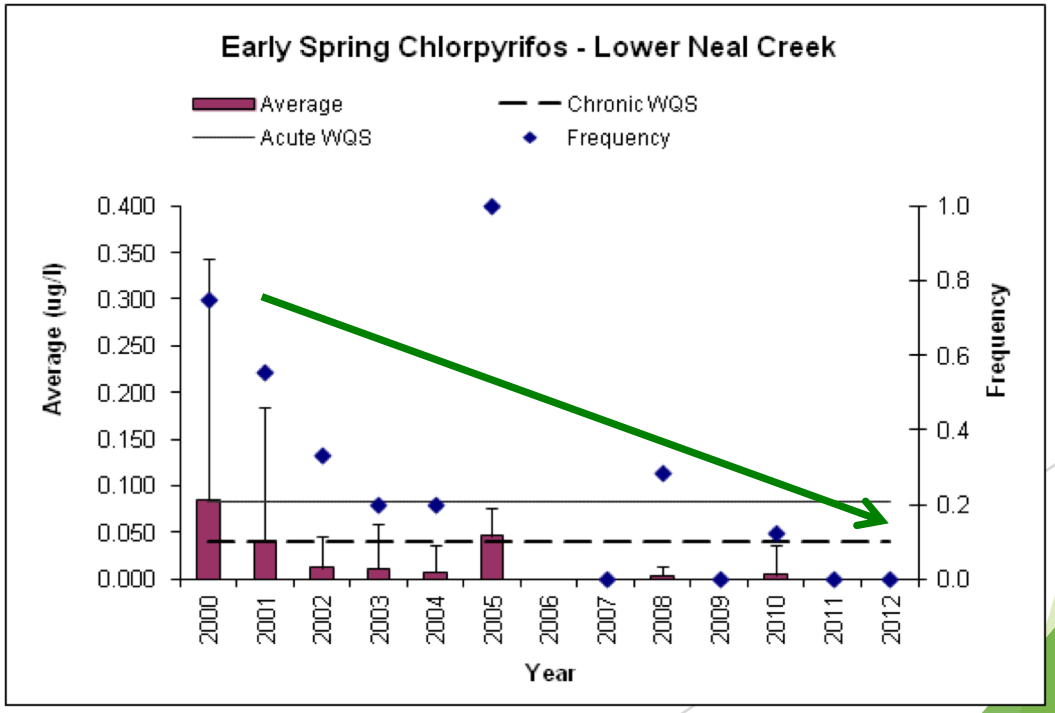
Pesticide Stewardship Partnership
Background

The program began in the Hood River area as a collaborative to address pesticide and water quality concerns

Uses local expertise combined with water quality sampling results

Goal: promote voluntary changes in pesticide use practices that improve water quality



Pesticide Stewardship Partnership
Background

Program focuses on current-use pesticides

Initial funding from 319 water quality grants, funds from partners (Warm Springs Tribe), and in-kind technical assistance (OSU Extension)

In 2013 The Oregon Legislature allocated stable funding for the program to expand PSP efforts

Pesticide Stewardship Partnership

Funding and administration

Funding: 1:1 General Fund and Other Fund (pesticide registration fees)

$960K GF:$960K OF for the 2019-2021 biennium

DEQ conducts laboratory analyses

ODA administers local partner grants

Agencies collaborate on program delivery

Pesticide Stewardship Partnership

Role of Water Quality Pesticide Management Team

Direction for the PSP Program is provided by the Water Quality Pesticide Management Team (WQPMT):

- Departments of Agriculture, Environmental Quality, Forestry, Oregon Health Authority, Oregon Watershed Enhancement Board and OSU (technical advisor)
- ODA's cooperative agreement with the US EPA references PSP and the WQPMT
- WQPMT develops Oregon's Pesticide Management Plan for Water Quality (approved by EPA in 2011)

Decision Matrix Based on Water Monitoring Data (2019)

Detected concentration relative to aquatic life benchmarks (ALB) and frequency of detection

Reference Level Criteria

Frequency of Detection in % Last 3 Years	≥ 1 detection at or above 50% of an acute ALB	≥ 3 detections at or above 50% of a chronic ALB	1 to 2 detections at or above 50% of a chronic ALB	No detections over 50% of any ALB
100 to 65.1	High Level of Concern	High Level of Concern	High Level of Concern	Moderate Level of Concern
65 to 35.1	High Level of Concern	High Level of Concern	Moderate Level of Concern	Moderate Level of Concern
35 to 0	High Level of Concern	High Level of Concern	Moderate Level of Concern	Low Level of Concern

Each Pesticide Stewardship Partnership area will determine the level of concern for detected pesticides. Pesticides that are deemed of high concern in over 30% of The PSP areas will be designated as statewide pesticide of high concern or statewide Pesticides of concern (POC's)

Pesticide Stewardship Partnership
Examples of Grant Projects

Grant Project	PSP Area	Summary
OSU IPPC	Clackamas	Christmas Tree Integrated Pest Management Methods
OSU Extension	Various	Field trials of innovative process for deterring an invasive fruit fly in cherries and berries
Strategic Planning	Middle Rogue	Development of 1st Strategic Plan for implementation of PSP program at watershed level

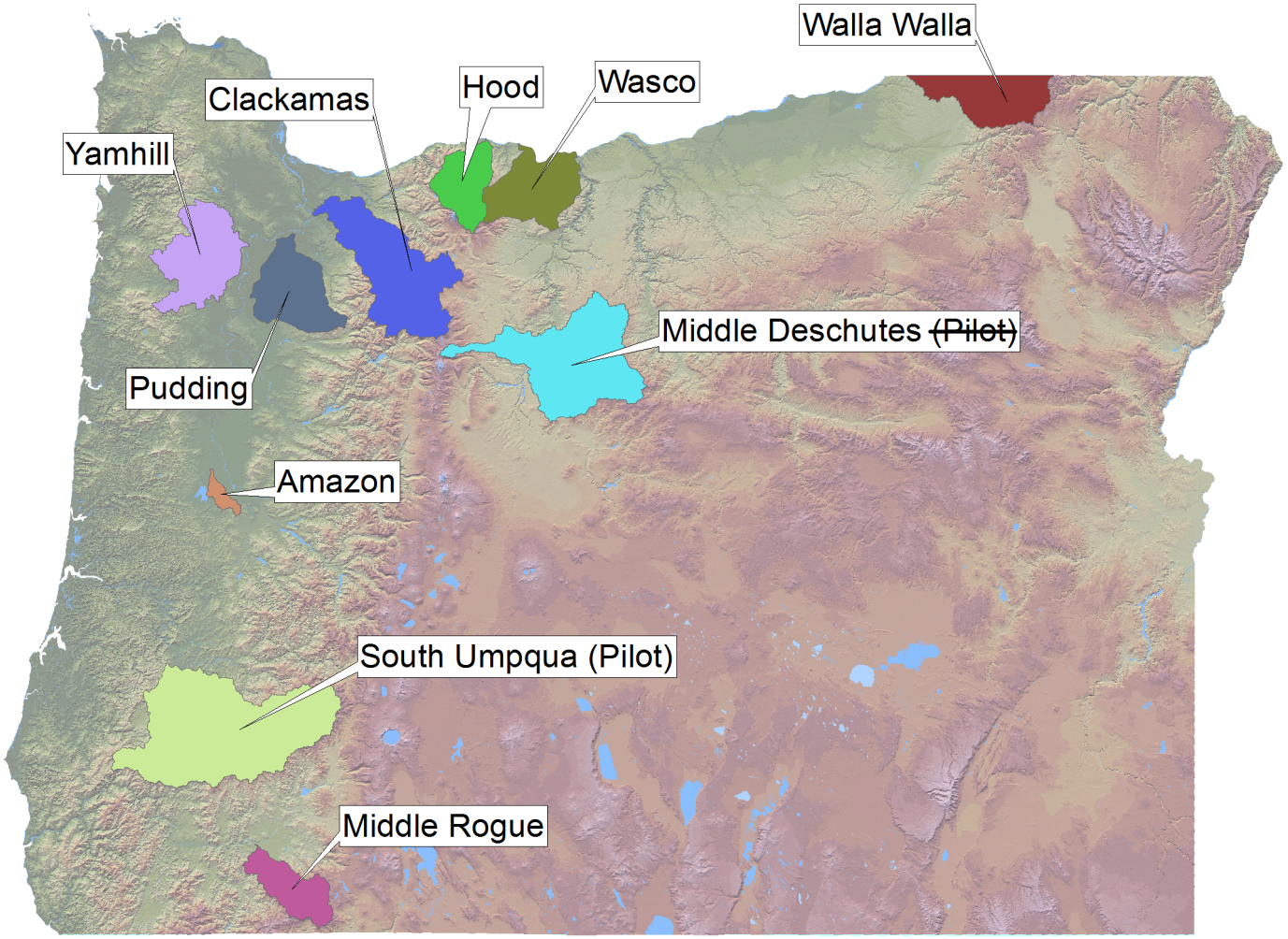
Pesticide Stewardship Partnership
Program Enhancements

- Implementation of watershed-level strategic plans
- Improvement of program outreach to meet communication needs and increase transparency
- Including flow monitoring to determine pesticide loadings
- Establishment of Stakeholder Advisory Group for PSP related issues – first meeting November 15, 2019

PSP Stakeholder Advisory Group

Name	Affiliation
Brian Wolcott	Walla Walla WSC
Bryan Harper	Farmer/Board of Ag member
Derron Coles	Blueprint Foundation
Jeff Jenkins	OSU
Karen Lewotsky	Oregon Environmental Council
Katie Fast	Oregonians for Food and Shelter
Lisa Arkin	Beyond Toxics
Lisa Kilders	Clackamas SWCD
Mary Anne Cooper	Oregon Farm Bureau
Robin Harris	Confederated Tribes of Umatilla
Seth Barnes	Oregon Forest Industries Council
Steve Stewart	City of Newport

Current PSP Watershed Projects 2018-19



What Pesticide Water Monitoring Has Been Done and What Does it Tell Us?

What Pesticides Have Been Detected Most Frequently and at the Highest Levels in Oregon Waters?

What Are the Top 5 Pesticides or Pesticide Degradates by Land Use since 2012?

- Detection Frequency (minimum 30 samples)
- Concentrations Relative to EPA Benchmarks (minimum 3 detects) = "Aquatic Life Ratio" (ALR)
- What data sets were used?
  - Pesticide Stewardship Partnership stream samples (DEQ Lab)
  - 2015 USGS Pacific Northwest Stream Quality Assessment (Willamette Basin)
  - Municipal agency pesticide monitoring data (stormwater, stream and sediment)

What Pesticides Have Been Detected Most Frequently and at the Highest Levels in Oregon Waters?

Managed Forest Areas

Detection Frequency in FORESTRY Areas		Aquatic Life Ratio in FORESTRY Areas	
Current Use Pesticide	% Samples Detected	Current Use Pesticide	Aquatic Life Ratio
Hexazinone (Velpar)	8%	Metsulfuron-methyl (Escort)	0.14
Diuron (Karmex, Direx) – *not used in forestry*	8%	Sulfometuron-methyl (Oust)	0.14
Atrazine	6%	**Diuron** (Karmex, Direx) – *not used in forestry*	0.12
Imazapyr (Arsenal, Chopper)	5%	Atrazine	0.09
Sulfometuron-methyl (Oust)	4%	Imazapyr (Arsenal, Chopper)	0.02

Bolded compounds = statewide Pesticides of Concern

What Pesticides Have Been Detected Most Frequently and at the Highest Levels in Oregon Waters?

Urban Areas

Detection Frequency in URBAN Areas		Aquatic Life Ratio in URBAN Areas	
Current Use Pesticide	% Samples Detected	Current Use Pesticide	Aquatic Life Ratio
2,6 Dichlorobenzamide (Casoron degradate)	77%	Bifenthrin (Brigade, et.al.)	176.15
Diuron (Karmex, Direx)	62%	**Imidacloprid** (Admire, et.al)	105.0
AMPA (Roundup degradate)	56%	**Chlorpyrifos** (Lorsban) – *no urban uses*	43.17
Glyphosate (Roundup)	37%	Fipronil (Frontline, et.al.)	11.52
Simazine (Princep)	35%	Ethoprop (Mocap)	3.69

Bolded compounds = statewide Pesticides of Concern

What Pesticides Have Been Detected Most Frequently and at the Highest Levels in Oregon Waters?

Agricultural Areas

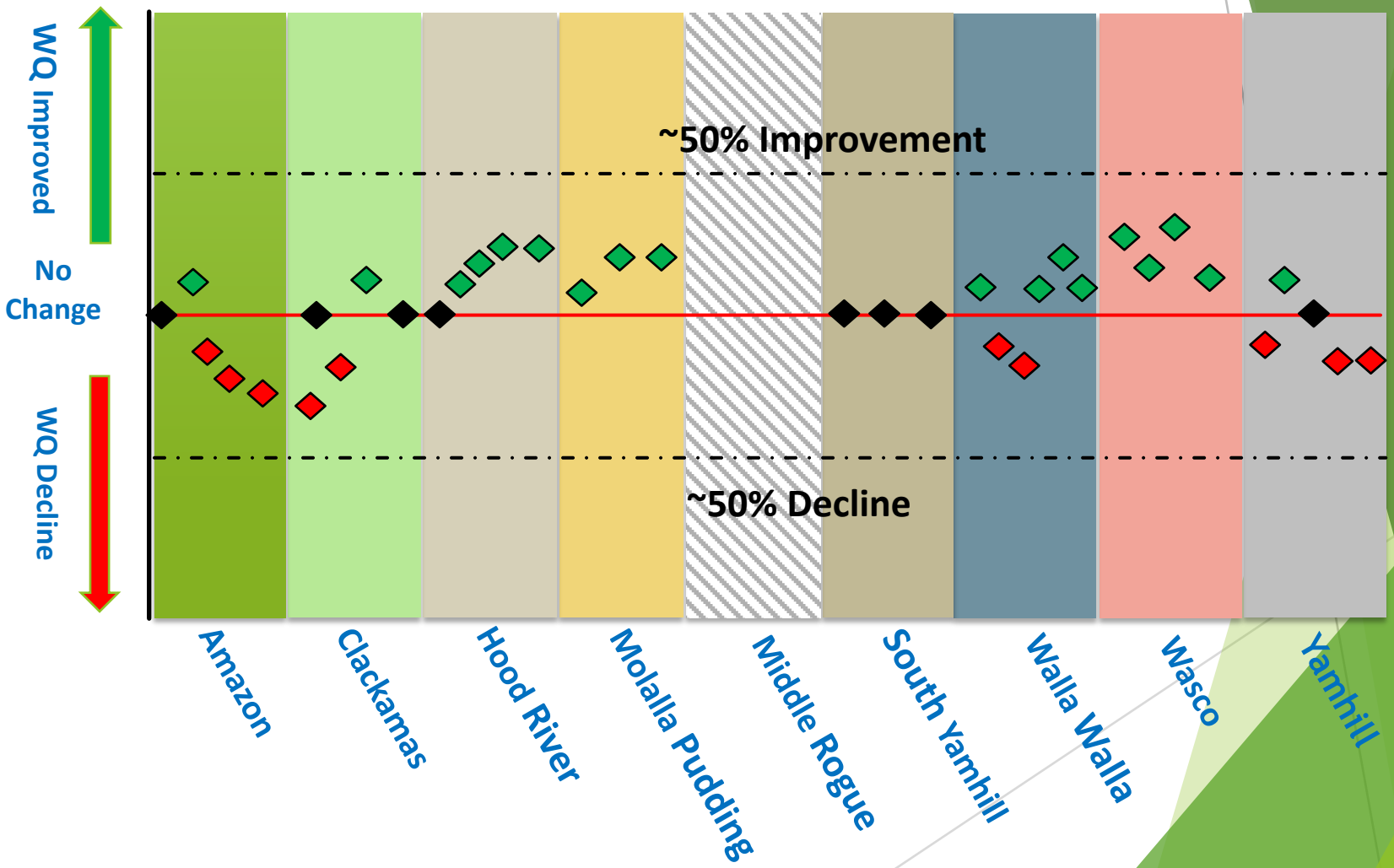
Detection Frequency in AGRICULTURAL Areas		Aquatic Life Ratio in AGRICULTURAL Areas	
Current Use Pesticide	% Samples Detected	Current Use Pesticide	Aquatic Life Ratio
AMPA (Roundup degradate)	66%	**Chlorpyrifos** (Lorsban)	196.1
Diuron (Karmex, Direx)	56%	**Imidacloprid** (Admire, et.al)	125.0
Glyphosate (Roundup, Rodeo)	51%	Malathion	63.7
2,6 Dichlorobenzamide (Casoron degradate)	42%	Diazinon	47.36
Deisopropylatrazine (atrazine degradate)	31%	Bifenthrin (Brigade, et.al.)	37.69

Bolded compounds = statewide Pesticides of Concern

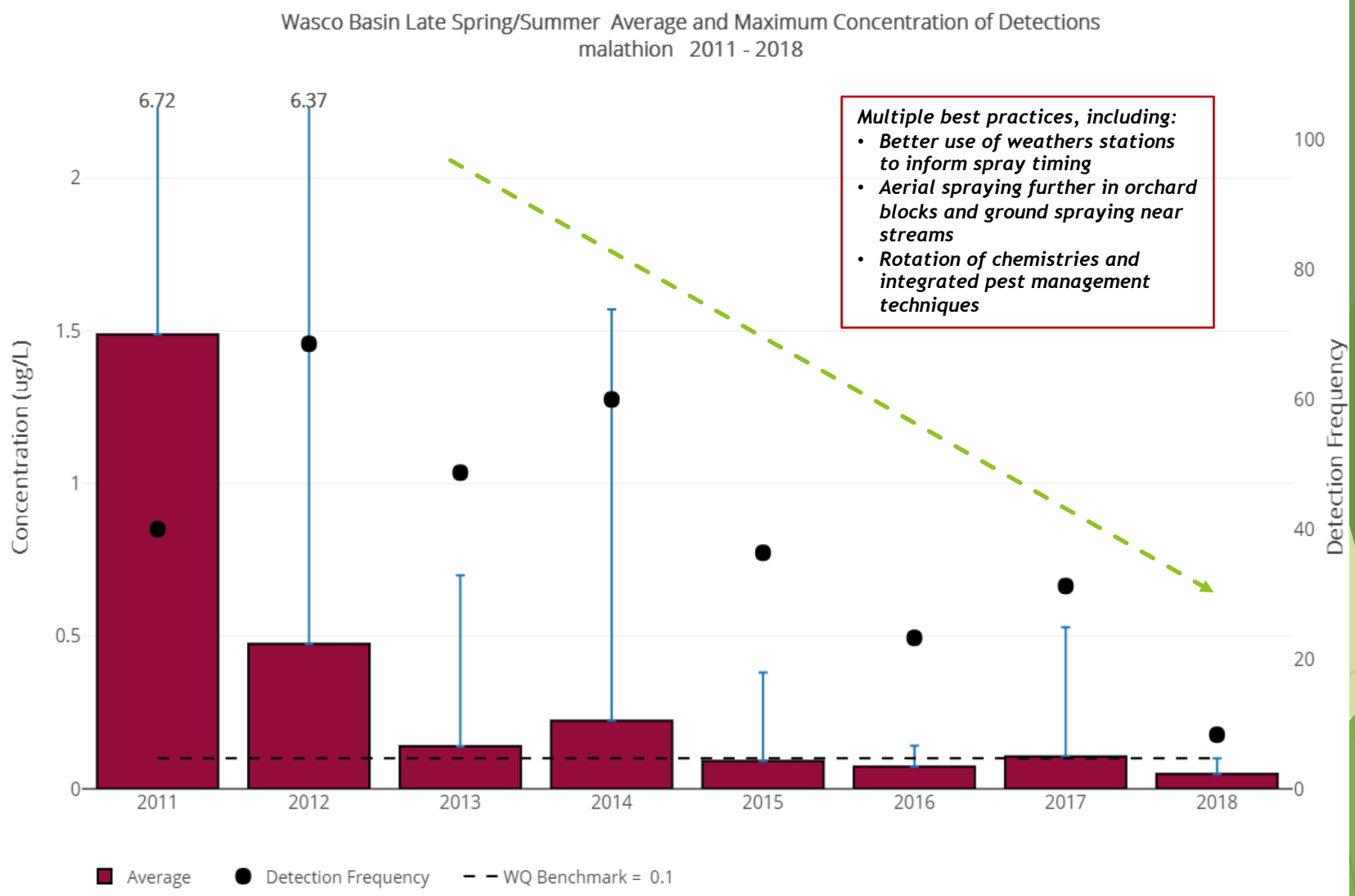
Pesticide Stewardship Partnership

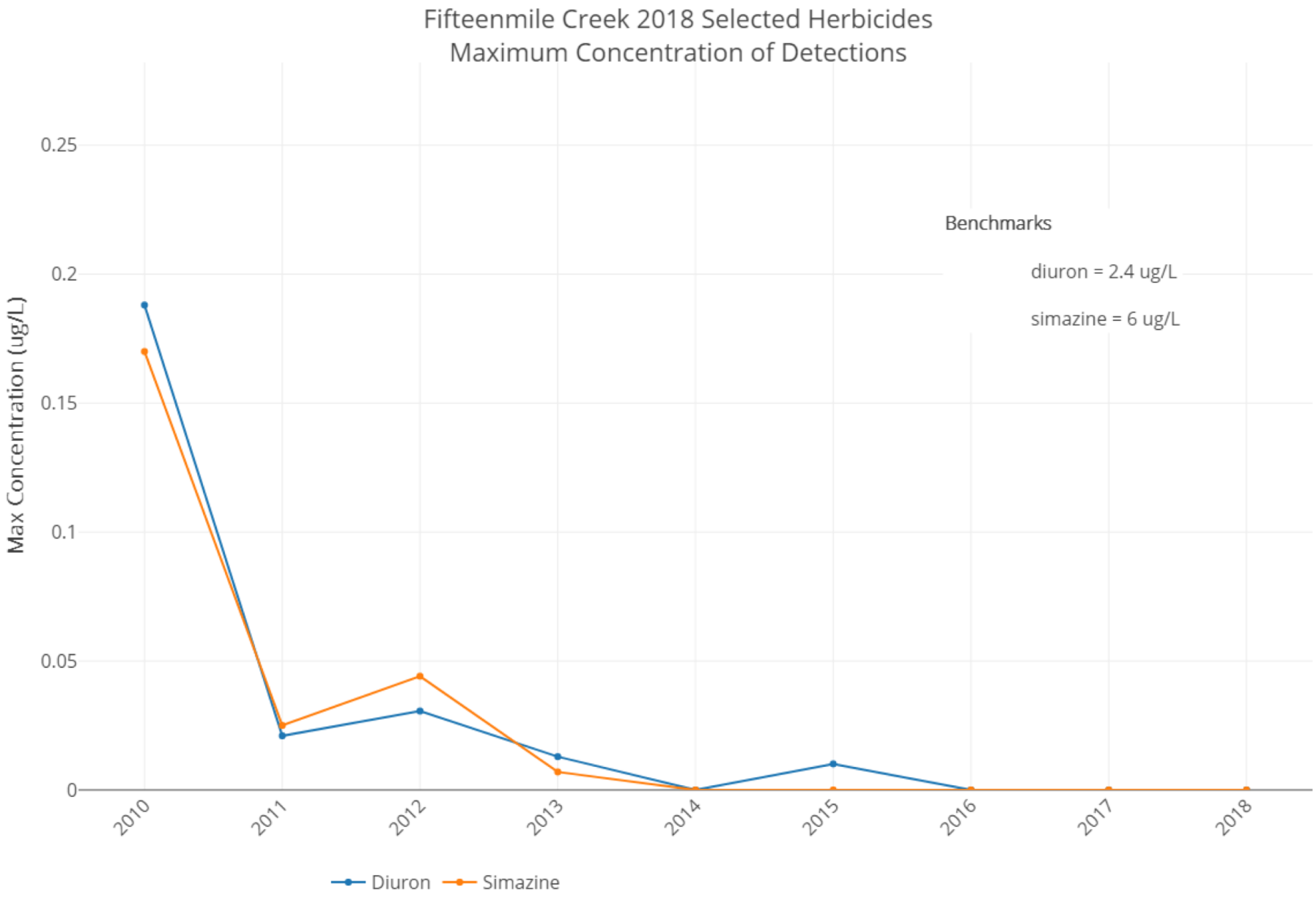
Outcomes/results

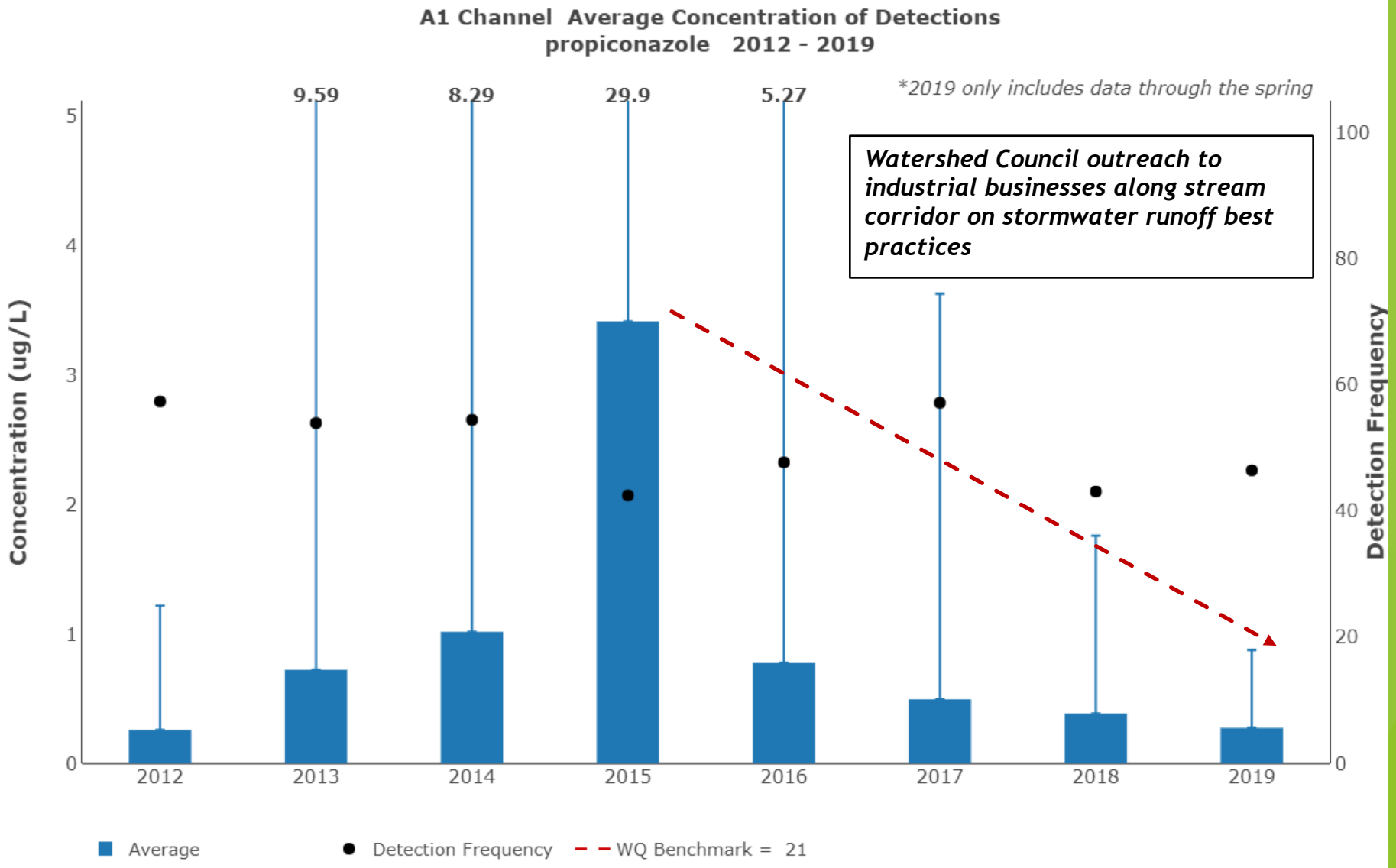
What were the overall water quality trends between the 2013-15 and the 2015-17 biennial periods?



Note: Diamonds represent individual monitoring sites


Wasco Basin Late Spring/Summer Average and Maximum Concentration of Detections
malathion 2011 - 2018
6.72
6.37
Multiple best practices, including:
• Better use of weathers stations to inform spray timing
• Aerial spraying further in orchard blocks and ground spraying near streams
• Rotation of chemistries and integrated pest management techniques
Concentration (ug/L)
Detection Frequency
0
0.5
1
1.5
2
0
20
40
60
80
100
2011
2012
2013
2014
2015
2016
2017
2018
Average
Detection Frequency
WQ Benchmark = 0.1


Fifteenmile Creek 2018 Selected Herbicides
Maximum Concentration of Detections
Max Concentration (ug/L)
0.25
0.2
0.15
0.1
0.05
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
Benchmarks
diuron = 2.4 ug/L
simazine = 6 ug/L
Diuron
Simazine

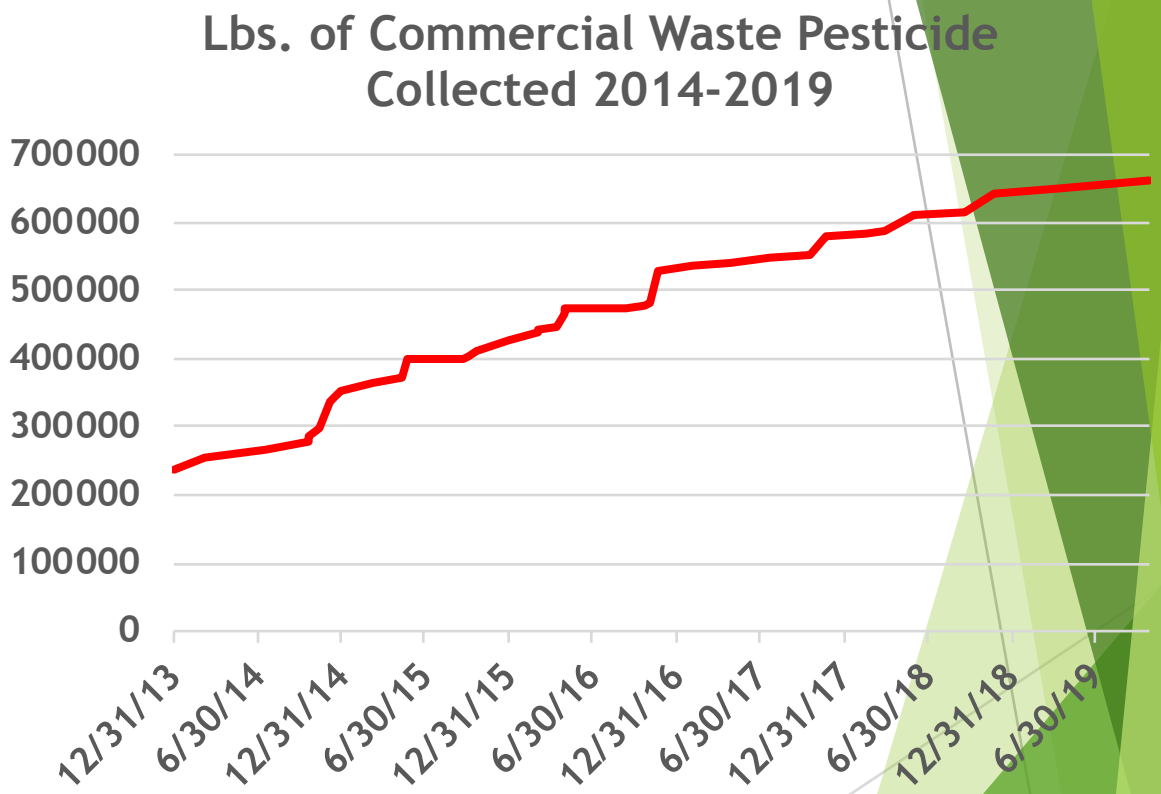

A1 Channel Average Concentration of Detections
propiconazole 2012 - 2019
*2019 only includes data through the spring
9.59
8.29
29.9
5.27
Watershed Council outreach to industrial businesses along stream corridor on stormwater runoff best practices
Concentration (ug/L)
Detection Frequency
0
1
2
3
4
5
0
20
40
60
80
100
2012
2013
2014
2015
2016
2017
2018
2019
Average
Detection Frequency
WQ Benchmark = 21

Pesticide Stewardship Partnership

Waste Pesticide Collection

The Waste Pesticide Collection program has collected ~ 420,000 lbs. of waste from ~ 670 applicators since 2014

Collections scheduled for October 26th in Clackamas and November 22nd in Tangent



Focus on Newest PSP Project

Middle Deschutes near Madras, OR

Middle Deschutes PSP

In 2014 the Jefferson County Soil and Water Conservation District and the Middle Deschutes Watershed Council coordinated with the state Water Quality Pesticide Management Team on a pilot monitoring study of streams within the Middle Deschutes watershed.

The 2014 results indicated the need for further assessment:

- Monitoring began at a modified set of sites in 2017
- In July 2019 the SWCD Board unanimously voted to transition to a longer-term PSP project

Middle Deschutes Water Quality Results

Station I.D.	Station Name	Pesticide Detections	Timeframe	ALB Exceedances
33215	Willow Ck Inflow	2	2014	0
34797	Mud Springs @ Gateway	54	2014-2018	0
35226	Campbell Ck @ Hwy 26	209	2014-2018	34
37635	Campbell Ck @ mouth	228	2014-2018	10
37636	Mud Springs @ mouth	10	2014	0
37637	Trout Ck @ Mud Springs	2	2014	0
36776	Trout Ck DS of Mud Springs	0	2014	0
38827	Culver Drain	48	2017-2018	3

Middle Deschutes PSP – Current Actions

- The Jefferson County SWCD is working closely with WQPMT (ODA/DEQ) to access the linkage between run-off/sedimentation and elevated pesticide concentrations

- The SWCD is continuing to place emphasis on improving irrigation practices in the Agency Plains area

- Partnership is exploring additional funding mechanisms to address dredging of settling ponds or re-engineering of ponds

- Expansion of stakeholder PSP group will include North Irrigation District, NRCS and others

- Over the next 2 years:
  - ✓ Further monitoring, including flow, turbidity and TSS
  - ✓ Interest groups contacted and requested to be part of coordinating body
  - ✓ Preliminary work on a Strategic plan will begin.

Settling ponds and irrigation systems in Agency Plains and Culver area being evaluated as factors for elevated pesticide levels in streams

The Middle Deschutes provides some unique challenges in that solutions may involve both off-site design and irrigation management actions coupled with enhanced education and outreach