Appendix C
Subbasin Profiles

Analysis of Toxic Pollutant Sources and Characteristics Contributing to Water Quality Impairments in the Willamette River Basin

Profile

Description
HUC 8 Subbasin 17090011
Land cover ..... 603,343 acres (8.2% of Willamette Basin)
Watersheds 6
Subwatersheds 34
Counties ..... Clackamas, Marion, and Wasco

Impairments
Watersheds 4
River miles ..... 200 (5.4% of Willamette Basin)

2012 Category 5 303(d)-listed Toxic Pollutants

Metals	Organochlorine Insecticide	Organophosphorus Insecticide
Lead Mercury	Dieldrin	Chlorpyrifos Guthion

Beneficial Uses
Aquatic Life and Human Health

Sources: (DEQ, 2012; OSDL, 2011, 2015a, 2017)

Impairments

Watershed (HUC 10)	Subwatershed (HUC 12)		City
1709001101 Collawash River	170900110101	Upper Hot Springs Fork	
	170900110102	Nohorn Creek	
	170900110103	Lower Hot Springs Fork	
	170900110104	Elk Lake Creek	
	170900110105	East Fork Collawash River	
	170900110106	Happy Creek-Collawash River	
	170900110107	Farm Creek-Collawash River	
1709001102 Upper Clackamas River	170900110201	Cub Creek	
	170900110202	Headwaters Clackamas River	
	170900110203	Lowe Creek-Clackamas River	
	170900110204	Last Creek-Pinhead Creek	
	170900110205	Pot Creek-Clackamas River	
1709001103 Oak Grove Fork Clackamas River	170900110301	Headwaters Oak Grove Fork Clackamas River	
	170900110302	Timothy Lake-Oak Grove Fork Clackamas River	
	170900110303	Stone Creek	
	170900110304	Shellrock Creek	
	170900110305	Anvil Creek-Oak Grove Fork Clackamas River	
	170900110306	Cot Creek-Oat Grove Fork Clackamas River	
1709001104 Middle Clackamas River	170900110401	Three Lynx Creek-Clackamas River	
	170900110402	Roaring River	
	170900110403	Fish Creek	
	170900110404	South Fork Clackamas River	
	170900110405	North Fork Clackamas River	

	170900110406	Helion Creek-Clackamas River	
1709001105 Eagle Creek	170900110501	Upper Eagle Creek	
	170900110502	North Fork Eagle Creek	
	170900110503	Lower Eagle Creek	Estacada
1709001106 Lower Clackamas River	170900110601	Upper Clear Creek	
	170900110602	Middle Clear Creek	
	170900110603	Dubois Creek-Clackamas River	Estacada
	170900110604	Tickle Creek-Deep Creek	Sandy
	170900110605	North Fork Deep Creek-Deep Creek	Damascus, Sandy
	170900110606	Lower Clear Creek	
	170900110607	Rock Creek-Clackamas River	Damascus, Gladstone, Happy Valley, Oregon City

Note: Bold text indicates toxic pollutant impairment

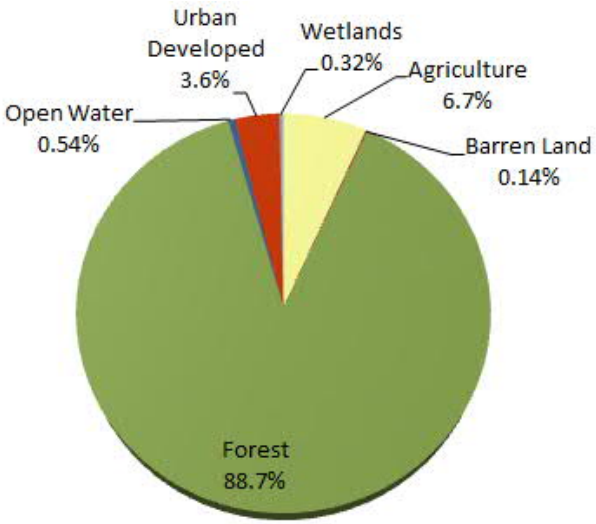
Subwatershed	Toxic Pollutant	Impaired River Miles	
		by Pollutant	by Subwatershed
Clackamas River	Lead	83.1	166.3
	Mercury	83.2	
North Fork Deep Creek	Chlorpyrifos	9	27
	Dieldrin	9	
	Guthion	9	
Noyer Creek	Chlorpyrifos	3.5	7
	Dieldrin	3.5	
Total			200.3

Total Impaired River Miles	
Toxic Pollutant	by Pollutant
Lead	83.1
Mercury	83.2
Chlorpyrifos	12.5
Dieldrin	12.5
Guthion	9

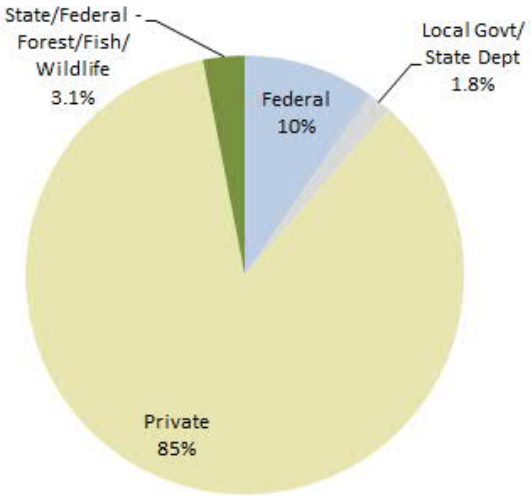
Sources: (DEQ, 2012; OSDL, 2017)

Land Use

Land Cover	Area (acres)
Agriculture	40,655
Barren Land	822
Forest	534,958
Open Water	3,283
Perennial Snow/Ice	0
Urban Developed	21,528
Wetlands	1,956
Total	603,202



Land Management	Area (acres)
DOD/DOE/USACE	-
Federal	-
Local Government	683
Private	479,037
State Departments	9,257
Tribal	-
State Fish & Wildlife	-
US Fish & Wildlife Service	-
BLM	54,006
State Forest	14,375
US Forest Service	2,778
Total	560,136



Sources: (OSDL, 2011, 2015b)

Pollutant Sources

Point Sources

	Stormwater/Wastewater Discharges					
Total	DEQ NPDES Facilities	EPA NPDES Reporting Facilities	DOGAMI Mining Sites	NPDES Outfalls	ODOT Outfalls	NPDES Pesticide Applications
235	143	11	41	19	21	0
6%	7%	9%	4%	10%	4%	n/a

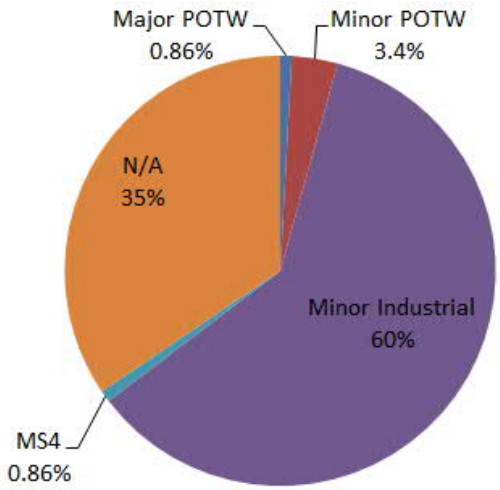
Nonpoint Sources

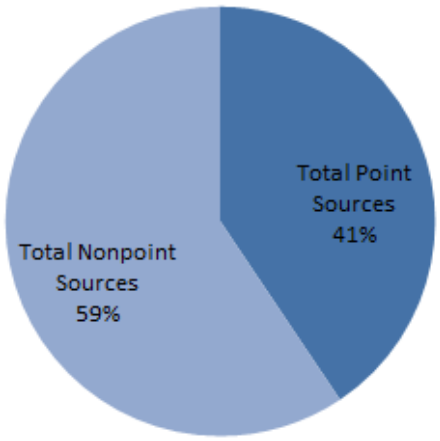
Total	Pesticide Applications (pounds)	Farms Harvesting Crops	DEQ ECSI Sites	EPA Superfund Sites
231	56,899	202	29	0
2%	2%	2%	3%	n/a

Mining Sites

Permit Status		
County	Closed	Permitted
Clackamas	33	8

Permit Type		
NPDES 1200-A (offsite discharge)	WPCF 10000 (no discharge)	Unidentified
2	4	35
Total		41
Percent of Basin		6%
Percent of Basin - offsite discharge		0.3%





Sources:
(DEQ, 2009, 2017, 2018; DOGAMI, 2017; EPA, 2011, 2016, 2017, 2018; ODOT, 2016; USDA, 2012; USGS, 2017)

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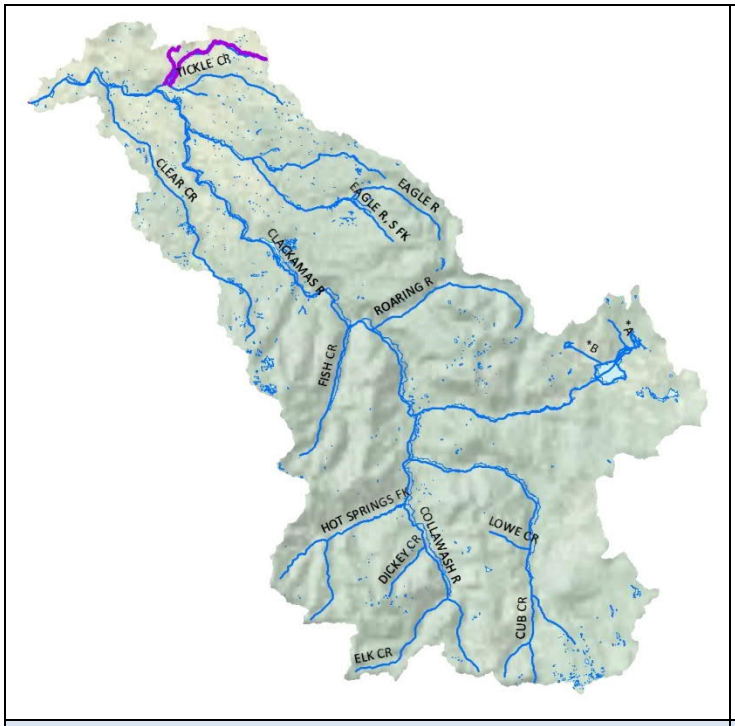
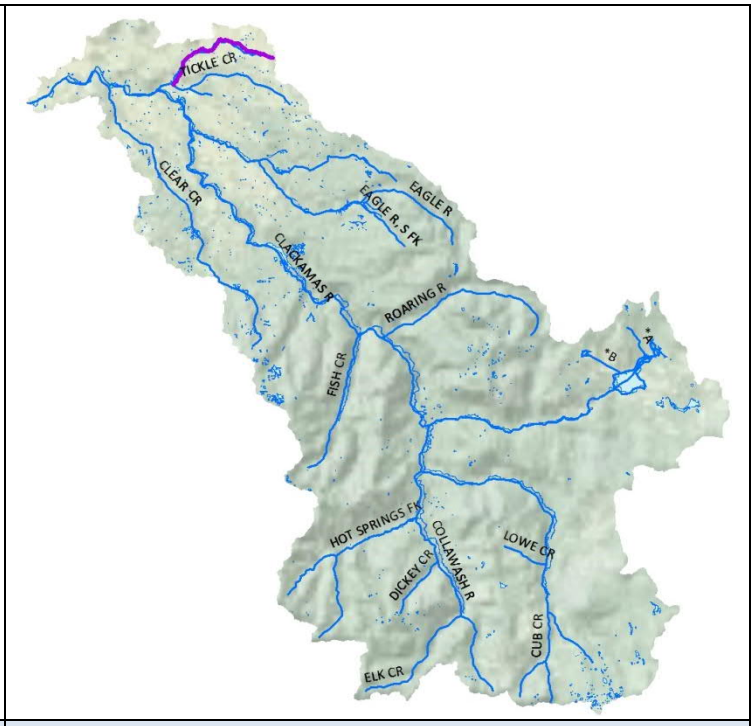
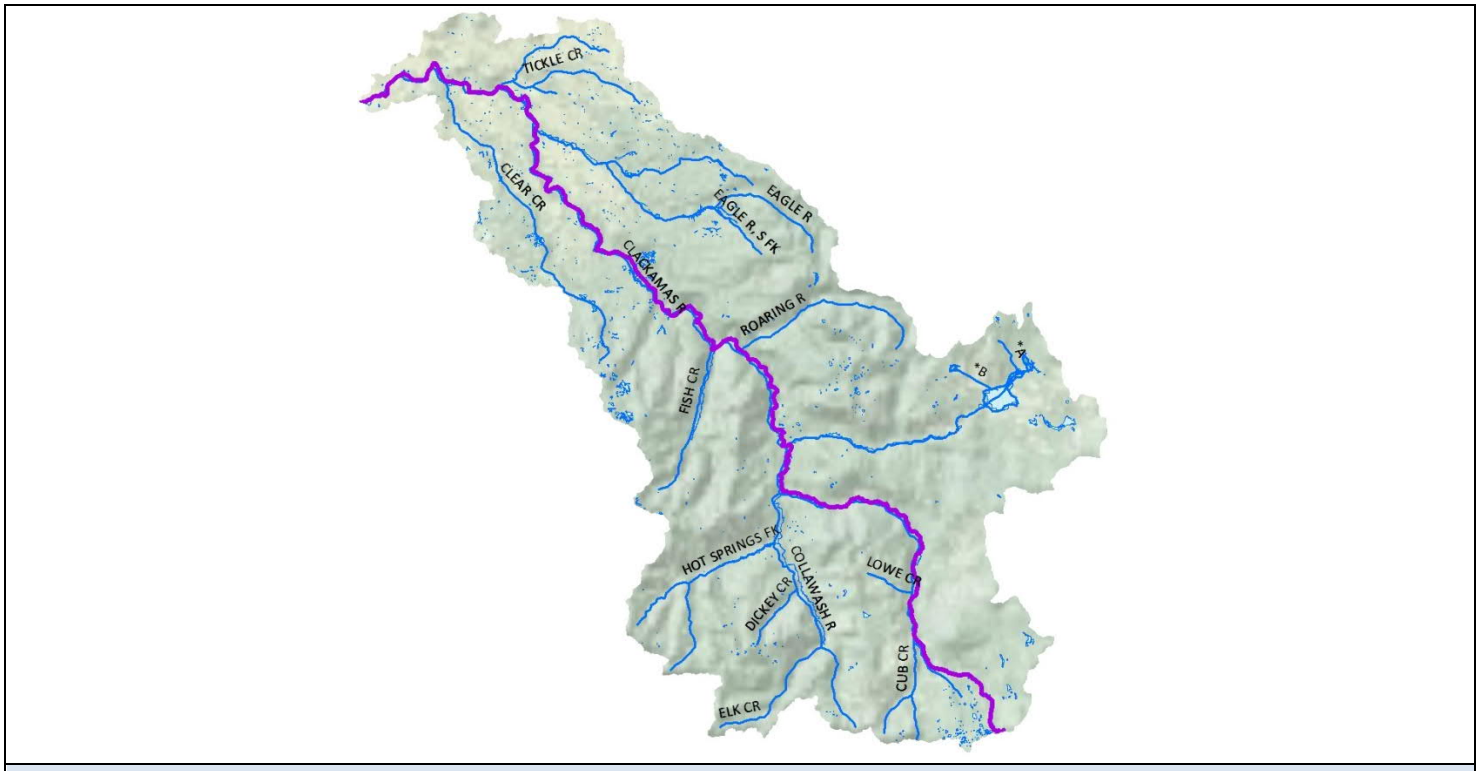
	http://spatialdata.oregonexplorer.info/geoportal/details;id=4b1b008d5a764a209b2df040689c0779 USDA. (2012). Census of Agriculture Table 8 Farms, Land in Farms, Value of Land and Buildings, and Land Use: 2012 and 2007. Retrieved from https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Oregon/ USGS. (2017). National Water Quality Assessment Project, Pesticide National Synthesis Project. Retrieved July 8, 2018, from https://water.usgs.gov/nawqa/pnsp/usage/maps/county-level/
Acronyms	BLM – Bureau of Land Management DEQ – (Oregon) Department of Environmental Quality DOD – Department of Defense DOE – Department of Energy DOGAMI – (Oregon) Department of Geology and Mineral Industries EPA – (United States) Environmental Protection Agency HUC – Hydrologic Unit Code n/a – not available / not analyzed NPDES – National Pollution Discharge Elimination System NLCD – National Land Cover Dataset ODOT – Oregon Department of Transportation USACE – United States Army Corps of Engineers WPCF – Water Pollution Control Facility
Limitations	The compilation of point and nonpoint sources was retrieved from publicly available information on the Internet, from state and federal regulatory databases. Therefore, the status of facilities identified in this subbasin as of the date of this report may change.



Chlorpyrifos and Dieldrin Impairments



Guthion Impairments



Lead and Mercury Impairments

Note: impairments identified in purple

Figure A. Toxic Pollutant Impairments of the Clackamas Subbasin

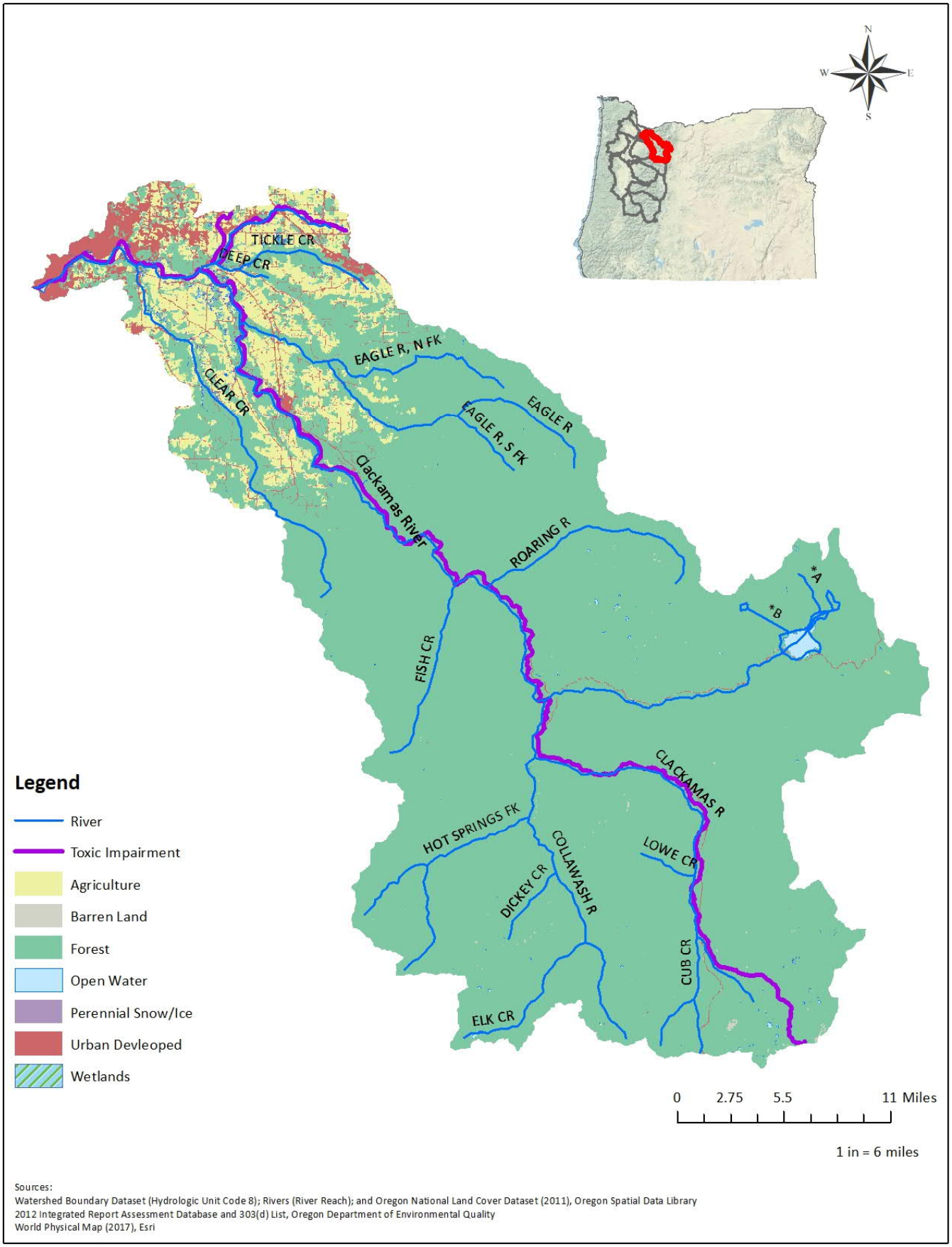


Figure B. Land Cover and Toxic Pollutant Impairments of the Clackamas Subbasin

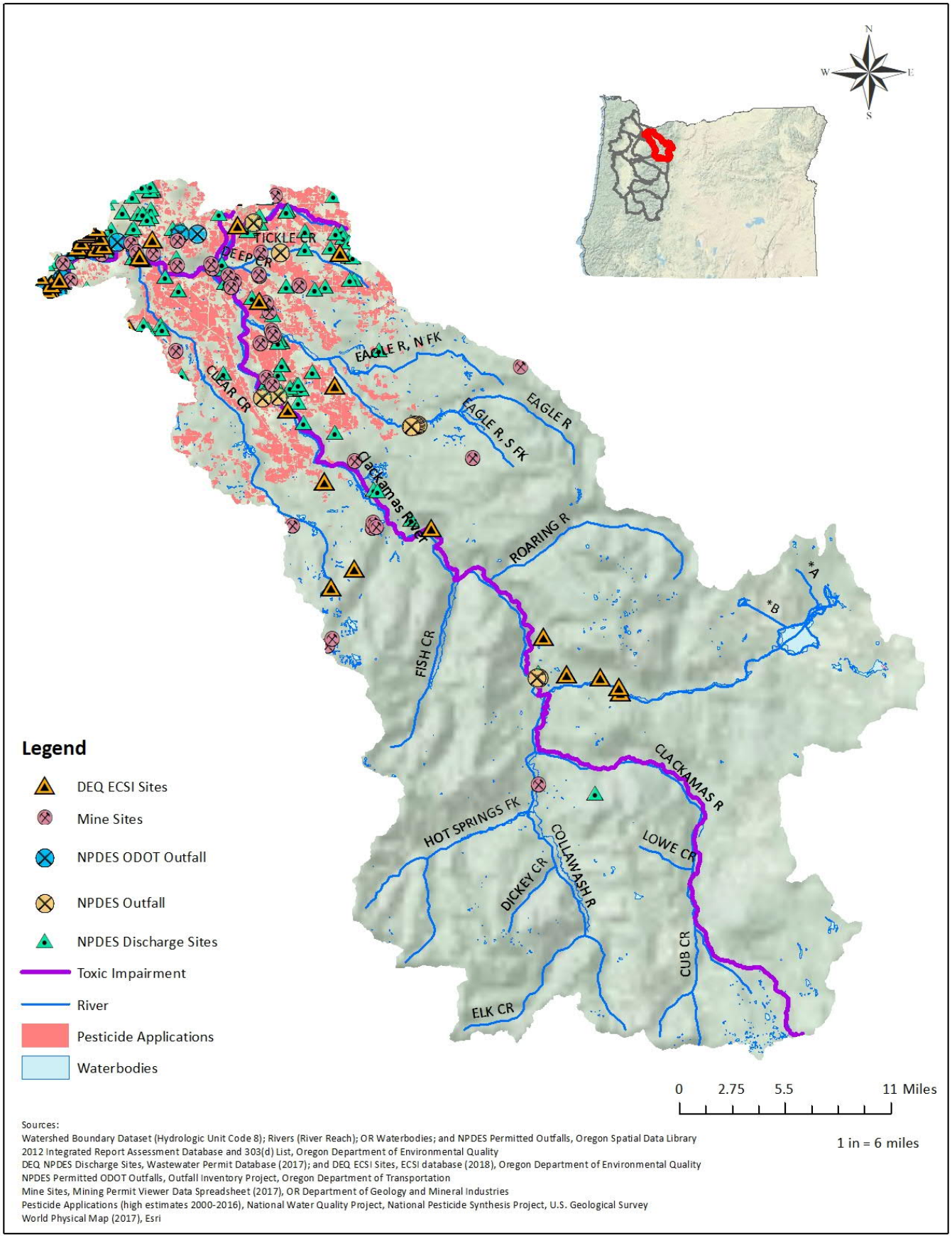


Figure C. Toxic Pollutant Sources and Impairments of the Clackamas Subbasin

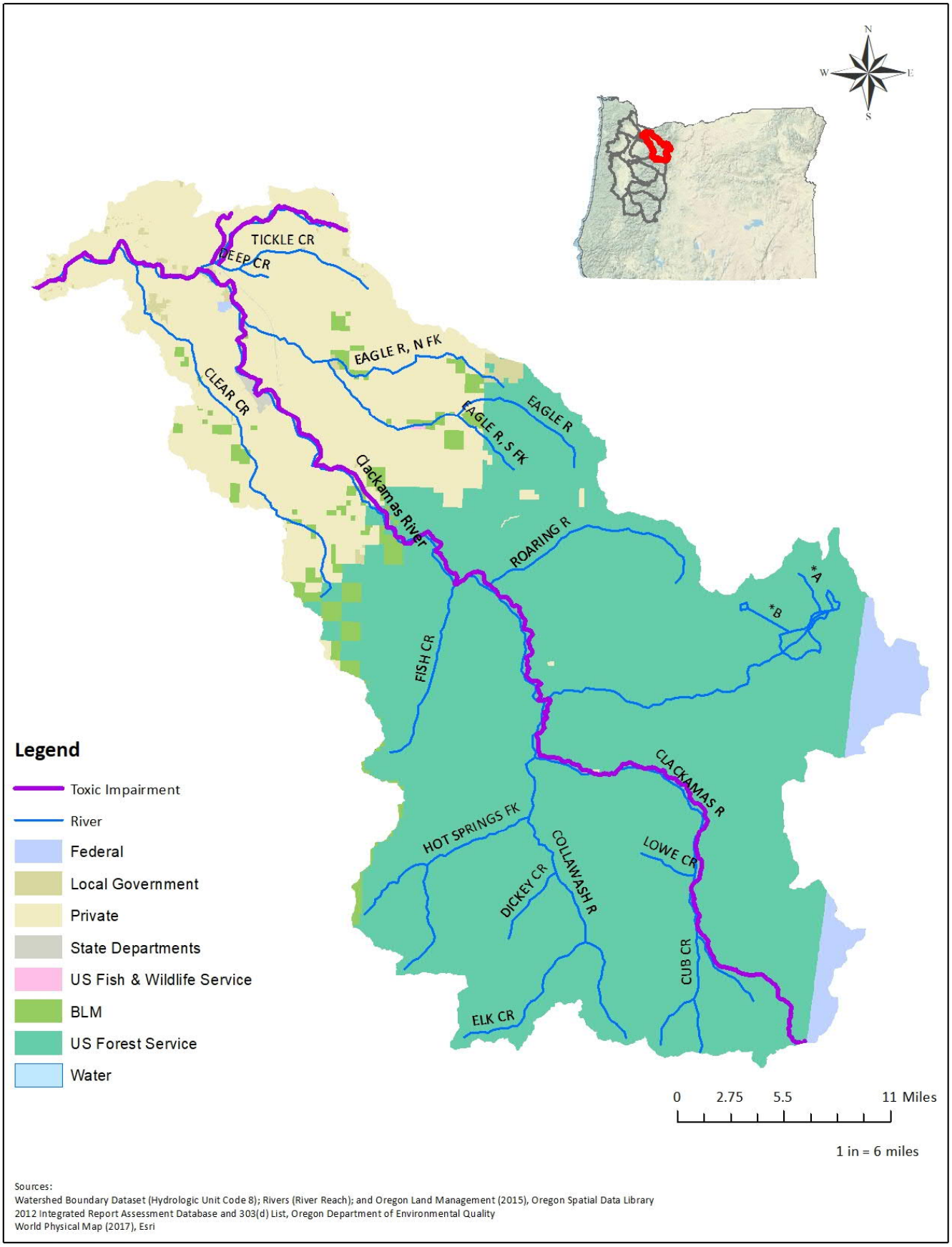


Figure D. Land Management and Toxic Pollutant Impairments of the Clackamas Subbasin

Profile

Description

HUC 8 Subbasin 17090002
Land cover ..... 426,542 acres (5.8% of Willamette Basin)
Watersheds 4
Subwatersheds 19
Counties ..... Douglas and Lane

Impairments

Watersheds 3
River Miles ..... 164 (4.4% of Willamette Basin)

2012 Category 5 303(d)-listed Toxic Pollutants

Metals
Copper
Iron
Lead
Mercury

Beneficial Uses

Aquatic Life, Human Health, Drinking Water, Resident Fish and Aquatic Life, and Anadromous Fish Passage

Sources: (EPA, 2017a; NLM, 2017)

Impairments

Watershed (HUC 10)	Subwatershed (HUC 12)		City
1709000201 Mosby Creek	170900020101	Upper Mosby Creek	
	170900020102	Middle Mosby Creek	
	170900020103	Lower Mosby Creek	
1709000202 Row River	170900020201	Layng Creek	
	170900020202	Brice Creek	
	170900020203	Sharps Creek	
	170900020204	King Creek-Row River	
	170900020205	Dorena Lake-Row River	Cottage Grove
1709000203 Upper Coast Fork Willamette RIver	170900020301	Upper Big River	
	170900020302	Lower Big River	
	170900020303	Combs Creek-Coast Fork Willamette	
	170900020304	Cottage Grove Lake-Coast Fork Willamette River	
	170900020305	Martin Creek-Coast Fork Willamette	
	170900020306	Silk Creek-Coast Fork Willamette River	Cottage Grove
1709000204 Lower Coast Fork Willamette RIver	170900020401	Hill Creek-Coast Fork Willamette River	
	170900020402	Upper Camas Swale Creek	Eugene
	170900020403	Lower Camas Swale Creek	Creswell
	170900020404	Bear Creek-Coast Fork Willamette	Creswell
	170900020405	Papenfus Creek-Coast Fork Willamette	Eugene

Note: Bold text indicates toxic pollutant impairment

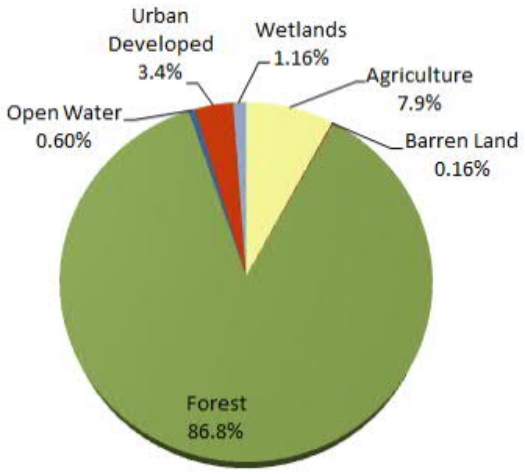
Subwatershed	Toxic Pollutant	Impaired River Miles by Pollutant	Impaired River Miles by Subwatershed
Coast Fork Willamette River	Copper	31.3	155.2
	Iron	38.8	
	Lead	38.8	
	Mercury	46.3	
Coast Fork Willamette River/Cottage Grove Reservoir	Mercury	2.8	2.8
Row River/Dorena Lake	Mercury	4.6	4.6
TOTAL			164

Total Impaired River Miles	
Toxic Pollutant	by Pollutant
Copper	31.3
Iron	38.8
Lead	38.8
Mercury	55.1

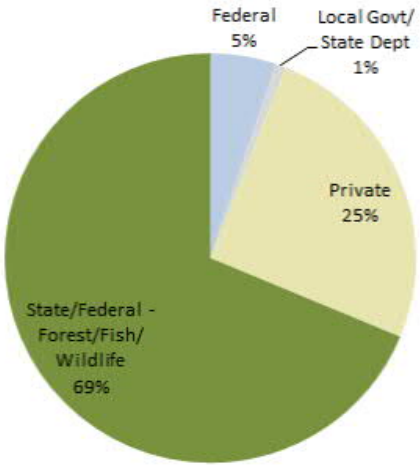
Sources: (DEQ, 2012; OSDL, 2017)

Land

Land Cover	Area (acres)
Agriculture	33,558
Barren Land	674
Forest	370,156
Open Water	2,566
Perennial Snow/Ice	0
Urban Developed	14,475
Wetlands	4,948
Total	426,376



Land Management	Area (acres)
DOD/DOE/USACE	-
Federal	17,088
Local Government	3,686
Private	152,515
State Departments	1,259
Tribal	-
State Fish & Wildlife	-
US Fish & Wildlife Service	124
BLM	14,079
State Forest	-
US Forest Service	414,426
Total	603,178



Sources: (OSDL, 2011, 2015)

Pollutant Sources

Point Sources

Total	Stormwater/Wastewater Discharges					
	DEQ NPDES Facilities	EPA NPDES Reporting Facilities	DOGAMI Mining Sites	NPDES Outfalls	ODOT Outfalls	NPDES Pesticide Applications
169	116	4	31	18	0	0
4%	6%	3%	3%	9%	n/a	n/a

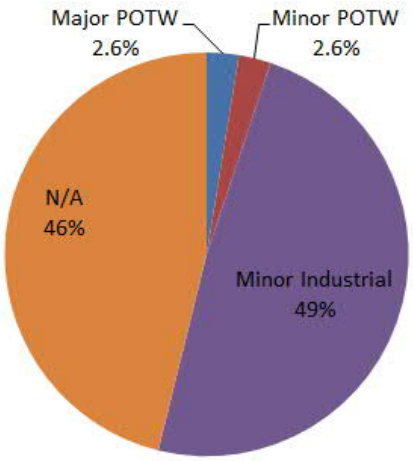
Nonpoint Sources

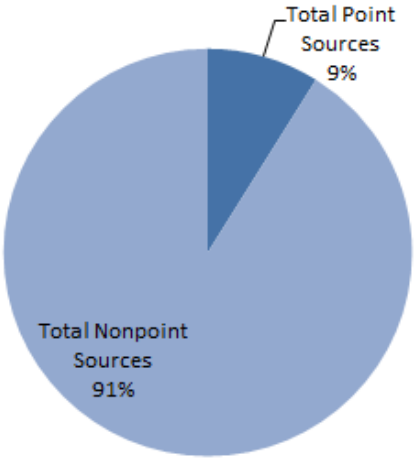
Total	Pesticide Applications (pounds)	Farms Harvesting Crops	DEQ ECSI Sites	EPA Superfund Sites
640	54,243	611	28	1
5%	2%	5%	3%	9%

Mining Sites

Permit Status			
County	Closed	Permitted	New
Lane	22	8	1

Permit Type		
NPDES 1200-A (offsite discharge)	WPCF 10000 (no discharge)	Unidentified
2	2	27
Total		31
Percent of Basin		3.6%
Percent of Basin - offsite discharge		0.3%





Sources:
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References

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	https://www.oregon.gov/deq/Hazards-and-Cleanup/env-cleanup/Pages/ecsi.aspx DOGAMI. (2017). Mining Permit Viewer. Retrieved October 13, 2017, from http://www.oregongeology.org/mlrr/permitviewer.htm EPA. (2011). 2011 Pesticide General Permit. Retrieved August 24, 2018, from https://ofmpub.epa.gov/apex/aps/f?p=PGP_2011:HOME:12412394495167::::: EPA. (2016). 2016 Pesticide General Permit. Retrieved August 24, 2018, from https://ofmpub.epa.gov/apex/aps/f?p=PGP_2016:HOME:1374111898385::::: EPA. (2017a). Chemistry Dashboard. Retrieved November 1, 2017, from https://comptox.epa.gov/dashboard EPA. (2017b). Water Pollution Search, Water Pollutant Loading Tool. Retrieved October 24, 2017, from https://echo.epa.gov/trends/loading-tool/water-pollution-search EPA. (2018). National Priorities List and Superfund Alternative Approach Sites Search. Retrieved January 10, 2018, from https://www.epa.gov/superfund/search-superfund-sites-where-you-live NLM. (2017). PubChem Substance and Compound Databases. Retrieved November 1, 2017, from https://pubchem.ncbi.nlm.nih.gov/ ODOT. (2016). Stormwater Outfall Inventory Management. Retrieved from https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Stormwater.aspx OSDL. (2011). Oregon NLCD Land Cover 2011. Retrieved April 15, 2018, from http://spatialdata.oregonexplorer.info/geoportal/details;id=81916ee1b2b741c0aacb814ee8e73af9 OSDL. (2015). Oregon Land Management 2015. Retrieved April 15, 2018, from http://spatialdata.oregonexplorer.info/geoportal/details;id=9b644e0f7a7d4124a50f6b35c05626ae OSDL. (2017). Oregon Watershed Boundary Dataset. Retrieved December 13, 2017, from http://spatialdata.oregonexplorer.info/geoportal/details;id=4b1b008d5a764a209b2df040689c0779 USDA. (2012). Census of Agriculture Table 8 Farms, Land in Farms, Value of Land and Buildings, and Land Use: 2012 and 2007. Retrieved from https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Oregon/ USGS. (2017). National Water Quality Assessment Project, Pesticide National Synthesis Project. Retrieved July 8, 2018, from https://water.usgs.gov/nawqa/pnsp/usage/maps/county-level/
Acronyms	BLM – Bureau of Land Management DEQ – (Oregon) Department of Environmental Quality DOD – Department of Defense DOE – Department of Energy DOGAMI – (Oregon) Department of Geology and Mineral Industries EPA – (United States) Environmental Protection Agency HUC – Hydrologic Unit Code n/a – not available / not analyzed

	NPDES – National Pollution Discharge Elimination System NLCD – National Land Cover Dataset ODOT – Oregon Department of Transportation USACE – United States Army Corps of Engineers
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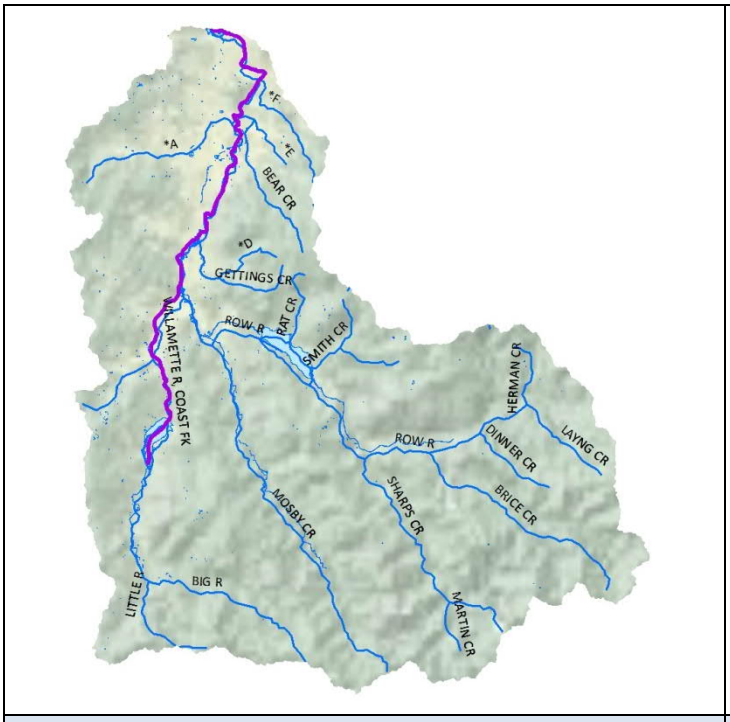
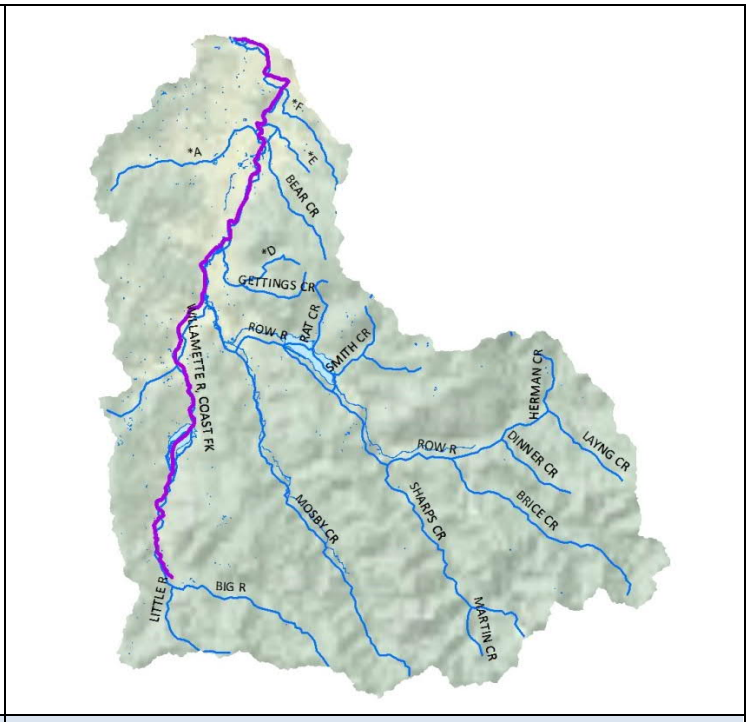
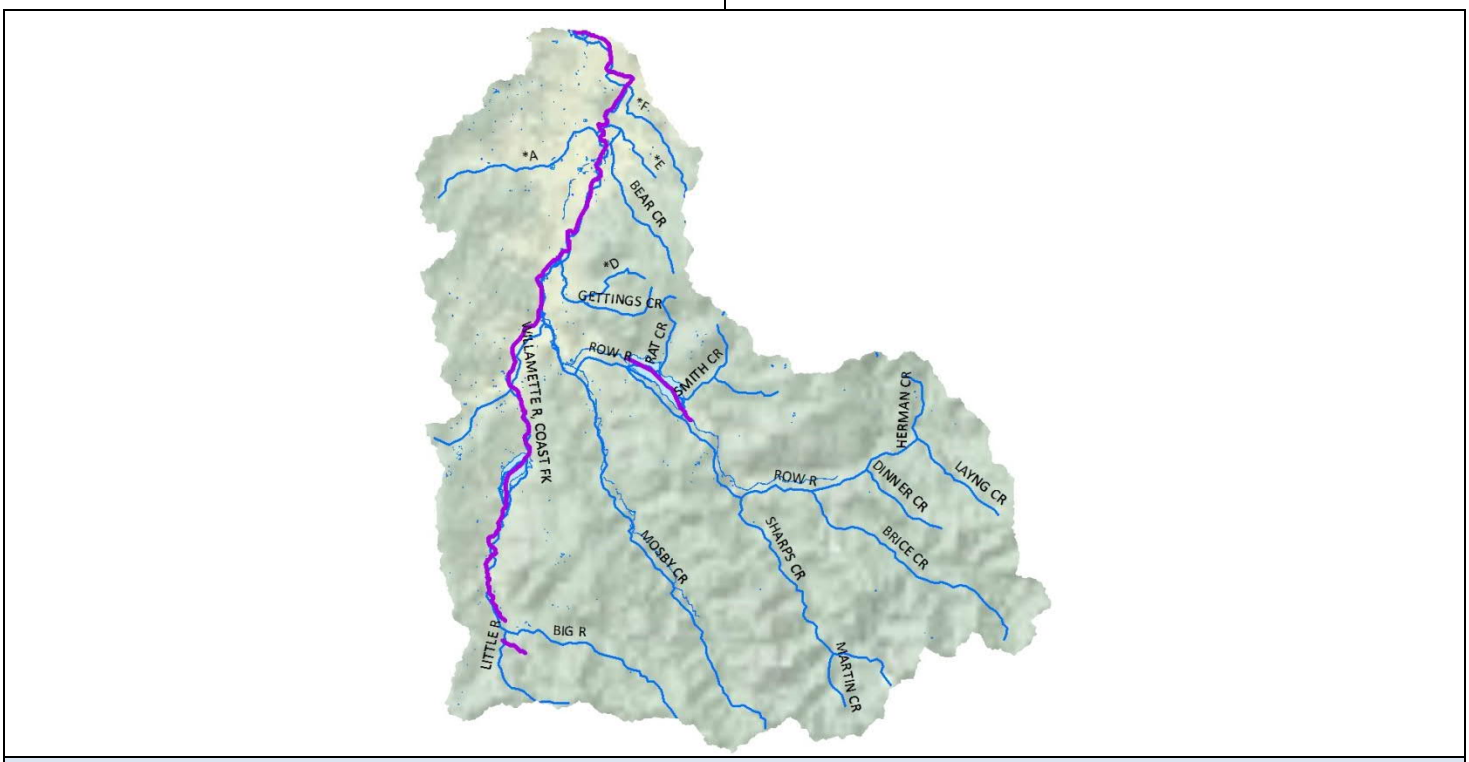


Copper Impairments



Iron and Lead Impairments



Mercury Impairments

Note: impairments identified in purple

Figure A. Toxic Pollutant Impairments of the Coast Fork Willamette Subbasin

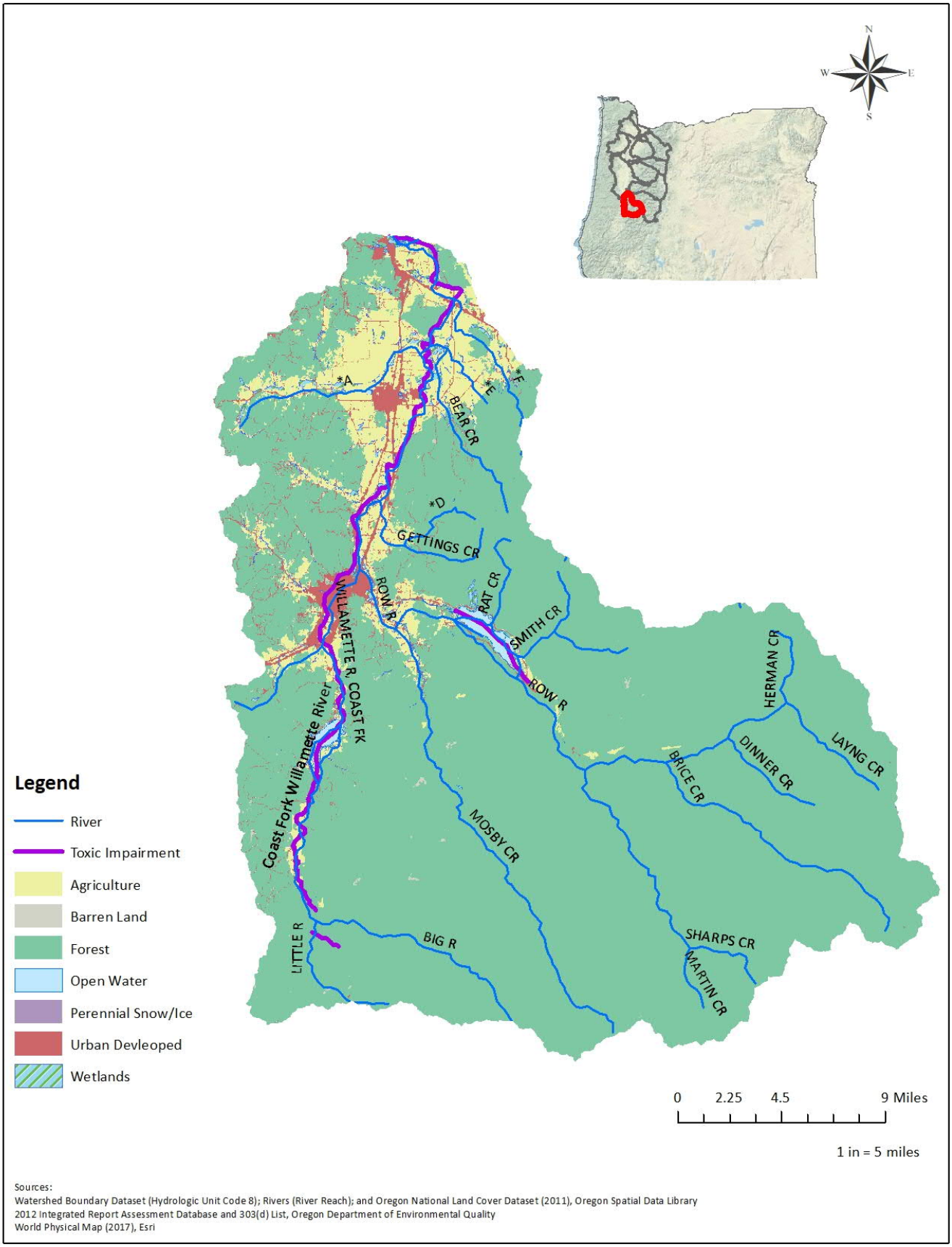


Figure B. Land Cover and Toxic Pollutant Impairments of the Coast Fork Willamette Subbasin

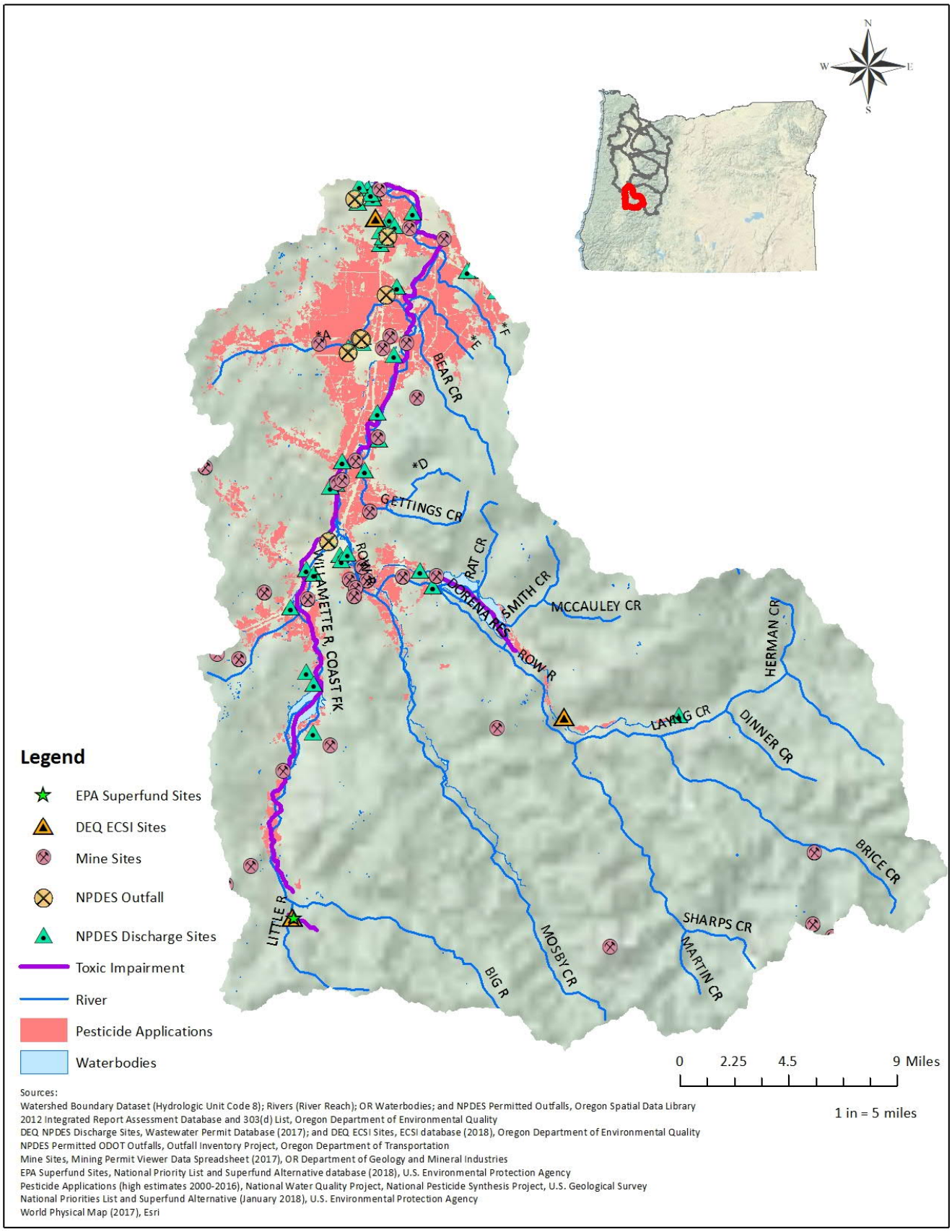


Figure C. Toxic Pollutant Sources and Impairments of the Coast Fork Willamette Subbasin

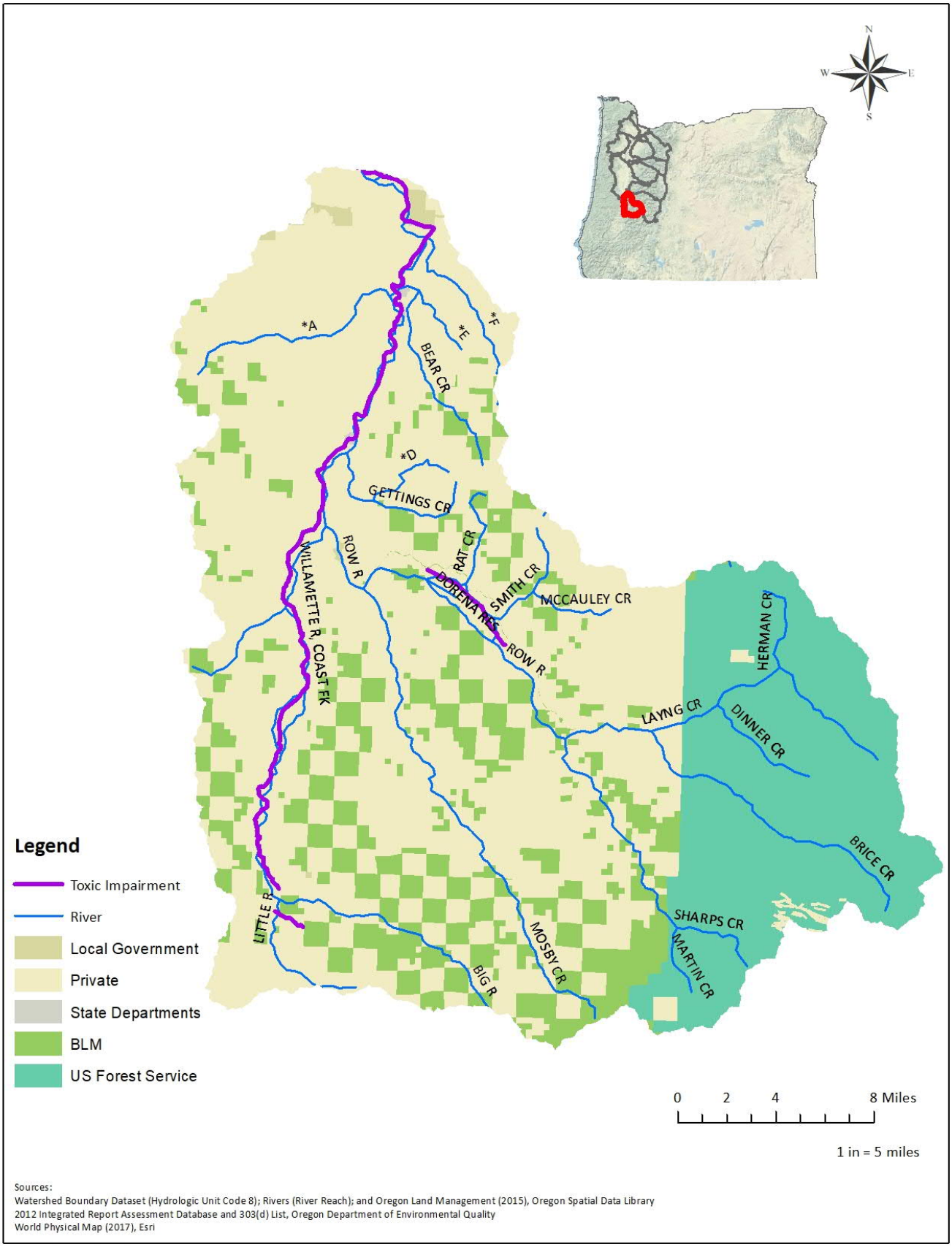


Figure D. Land Management and Toxic Pollutant Impairments of the Coast Fork Willamette Subbasin

Profile

Description

HUC 8 Subbasin 17090012
Land cover ..... 260,250 acres (3.5% of Willamette Bain)
Watersheds 3
Subwatersheds 11
Counties ..... Clackamas, Columbia, Multnomah, and Washington

Impairments
Watersheds 3
River miles ..... 509 (14% of Willamette Basin)

2012 Category 5 303(d)-listed Toxic Pollutants

Metals	Organochlorine Insecticide	VOCs	Others
Copper Iron Lead Mercury	Aldrin Chlordane DDE/DDT Dieldrin Endosulfan Endrin Aldehyde	Ammonia as N Cyanide Hexachlorobenzene	PAHs PCBs

Beneficial Uses
Aquatic Life, Human Health, Drinking Water, Fishing, Resident Fish and Aquatic Life, and Anadromous Fish Passage

Sources: (EPA, 2017a; NLM, 2017)

Impairments

Watershed (HUC 10)	Subwatershed (HUC 12)		City
1709001201 Johnson Creek-Willamette River	170900120101	Upper Johnson Creek	Damascus, Gresham, Happy Valley, Portland
	170900120102	Kellogg Creek	Gladstone, Happy Valley, Johnson City, Milwaukie, Portland
	170900120103	Lower Johnson Creek	Gresham, Happy Valley, Milwaukie, Portland
1709001201 Johnson Creek-Willamette River	170900120104	Oswego Creek-Willamette River	Gladstone, Lake Oswego, Milwaukie, Portland, Tigard, Tualatin, West Linn

1709001202 Columbia Slough-Willamette River	170900120201	Columbia Slough	Fairview, Gresham, Maywood Park, Portland, Troutdale, Wood Village
	170900120202	Balch Creek-Willamette River	Milwaukie, Portland
1709001203 Multnomah Channel	170900120301	South Scappoose Creek	Scappoose
	170900120302	North Scappoose Creek	Scappoose
	170900120303	Milton Creek	St. Helens
	170900120304	Scappoose Creek	Scappoose, St. Helens
	170900120305	Multnomah Channel	Portland, Scappoose, St. Helens

Note: Bold text indicates toxic pollutant impairment

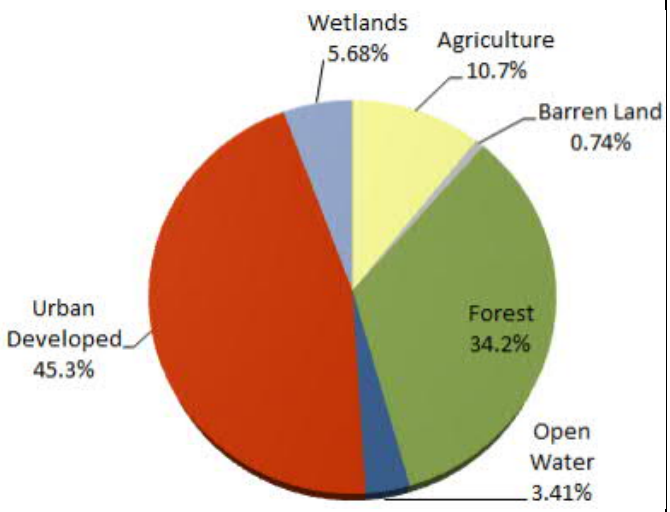
Subwatershed	Toxic Pollutant	Impaired River Miles by Pollutant	Impaired River Miles by Subwatershed
Arata Creek/Blue Lake	Ammonia as N	0.9	0.9
Columbia Slough	Iron	18.3	18.3
Johnson Creek	DDE-4,4	23.7	142.2
	Endosulfan	23.7	
	Endrin Aldehyde	23.7	
	Lead	23.7	
	PAHs	23.7	
	PCBs	23.7	
Multnomah Channel	Mercury	21.7	21.7
South Columbia Slough	Iron	3.2	3.2
Willamette River	Aldrin	24.8	322.4
	Chlordane	24.8	-
	Copper	24.8	-
Willamette River	Cyanide	24.8	-
	DDE-4,4	24.8	-
	DDT-4,4	49.6	-
	Dieldrin	24.8	-
	Hexachlorobenzene	24.8	-
	Iron	24.8	-
	Lead	24.8	-
	PAHs	24.8	-
	PCBs	24.8	-
Total			508

Total Impaired River Miles	
Toxic Pollutant	by Pollutant
Aldrin	24.8
Ammonia as N	0.9
Chlordane	24.8
Copper	24.8
Cyanide	24.8
DDE-4,4	48.5
DDT-4,4	49.6
Dieldrin	24.8
Endosulfan	23.7
Endrin Aldehyde	23.7
Hexachlorobenzene	24.8
Iron	46.3
Lead	48.5
Mercury	21.7
PAHs	48.5
PCBs	48.5

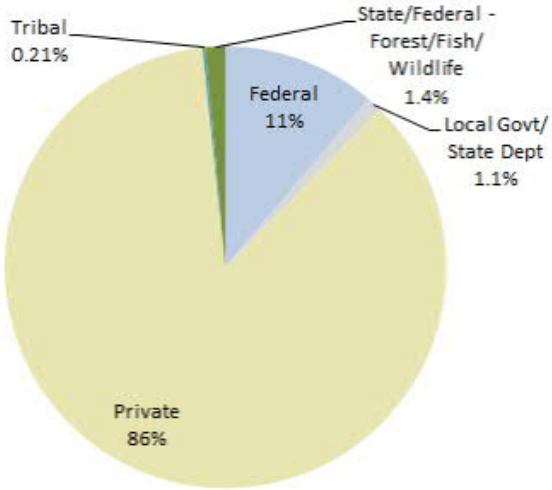
Sources:
(DEQ, 2012) (OSDL, 2017)

Land

Land Cover	Area (acres)
Agriculture	27,868
Barren Land	1,922
Forest	88,895
Open Water	8,875
Perennial Snow/Ice	-
Urban Developed	117,934
Wetlands	14,795
Total	260,288



Land Management	Area (acres)
DOD/DOE/USACE	-
Federal	10,229
Local Government	5,169
Private	424,566
State Departments	436
Tribal	1,037
State Fish & Wildlife	-
US Fish & Wildlife Service	182
BLM	45,195
State Forest	394
US Forest Service	6,544
Total	493,752



Sources: (OSDL, 2011, 2015)

Pollutant Sources

Point Sources

Total	Stormwater/Wastewater Discharges					
	DEQ NPDES Facilities	EPA NPDES Reporting Facilities	DOGAMI Mining Sites	NPDES Outfalls	ODOT Outfalls	NPDES Pesticide Applications
323	121	8	54	12	128	0
8%	6%	7%	5%	6%	2%	n/a

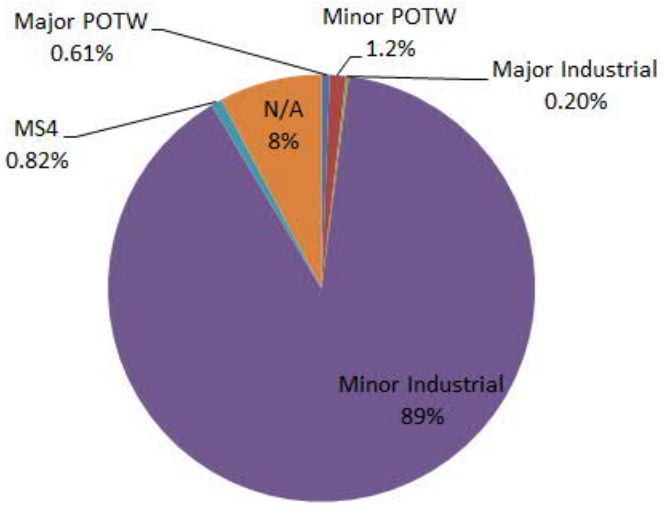
Nonpoint Sources

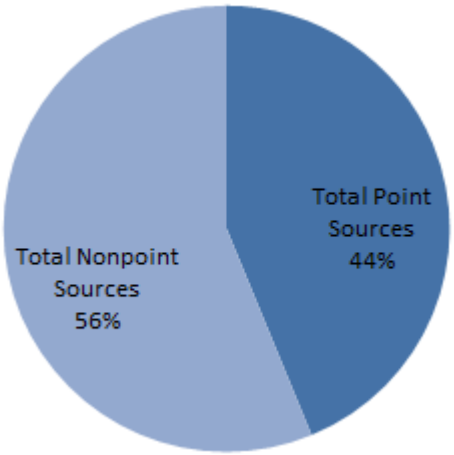
Total	Pesticide Applications (pounds)	Farms Harvesting Crops	DEQ ECSI Sites	EPA Superfund Sites
345	47,451	323	15	7
3%	1%	3%	2%	64%

Mining Sites

Permit Status			
County	Closed	Permitted	New
Clackamas	6	0	0
Columbia	4	10	0
Multnomah	30	4	0
Total	40	14	0

Permit Type		
NPDES 1200-A (offsite discharge)	WPCF 10000 (no discharge)	Unidentified
3	3	48
Total		54
Percent of Basin		7.6%
Percent of Basin - offsite discharge		0.4%





Sources:
(DEQ, 2009, 2017, 2018; DOGAMI, 2017; EPA, 2011, 2016, 2017b, 2018; ODOT, 2016; USDA, 2012; USGS, 2017)

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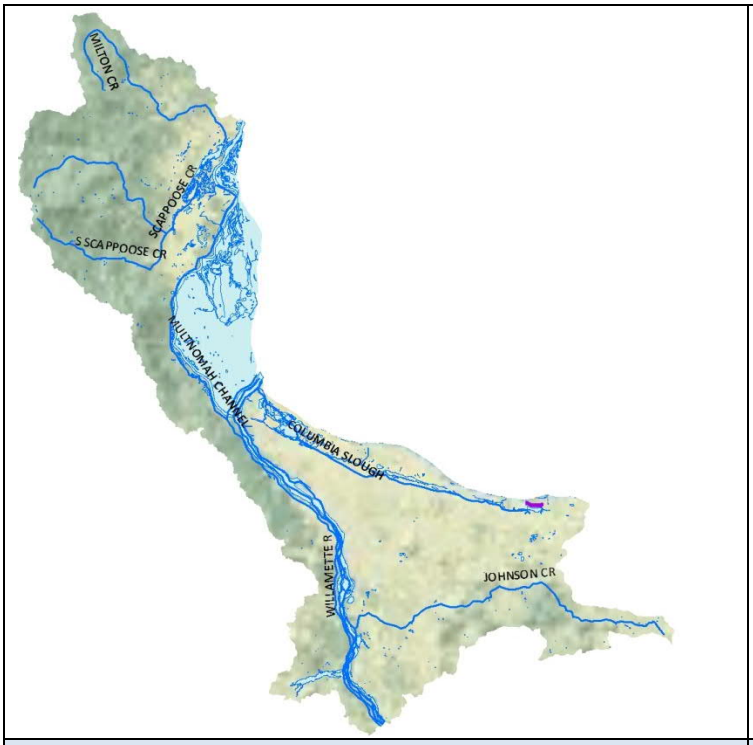
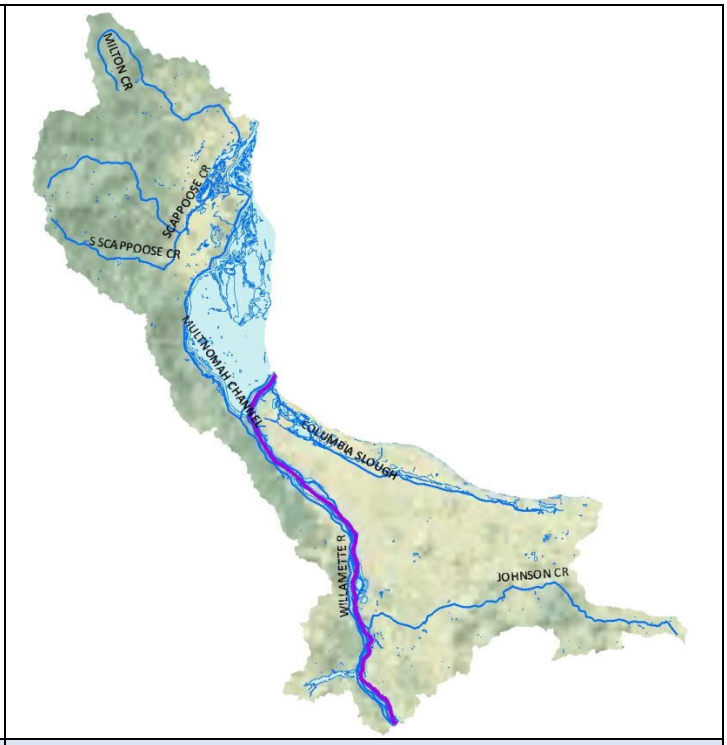
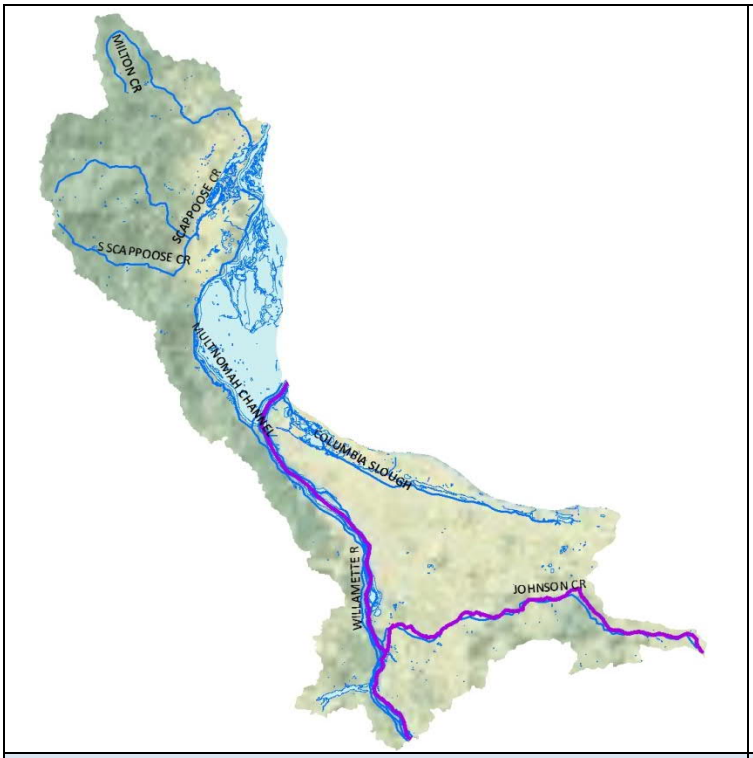
Acronyms	BLM – Bureau of Land Management DEQ – (Oregon) Department of Environmental Quality DOD – Department of Defense DOE – Department of Energy DOGAMI – (Oregon) Department of Geology and Mineral Industries EPA – (United States) Environmental Protection Agency HUC – Hydrologic Unit Code n/a – not available / not analyzed NPDES – National Pollution Discharge Elimination System NLCD – National Land Cover Dataset ODOT – Oregon Department of Transportation USACE – United States Army Corps of Engineers
Limitations	The compilation of point and nonpoint sources was retrieved from publicly available information on the Internet, from state and federal regulatory databases. Therefore, the status of facilities identified in this subbasin as of the date of this report may change.



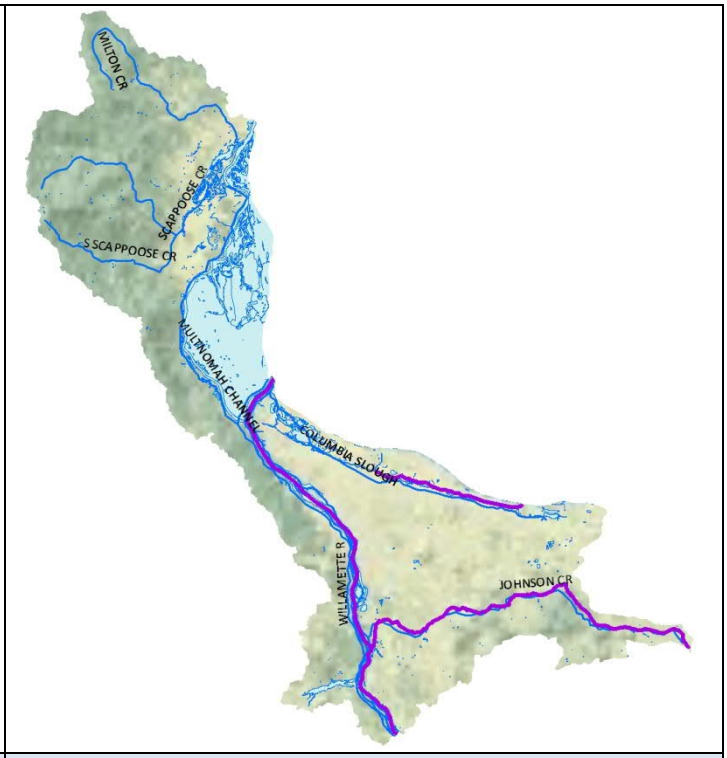
Ammonia Impairments



Aldrin, Chlordane, Copper, Cyanide, Hexachlorobenzene Impairments



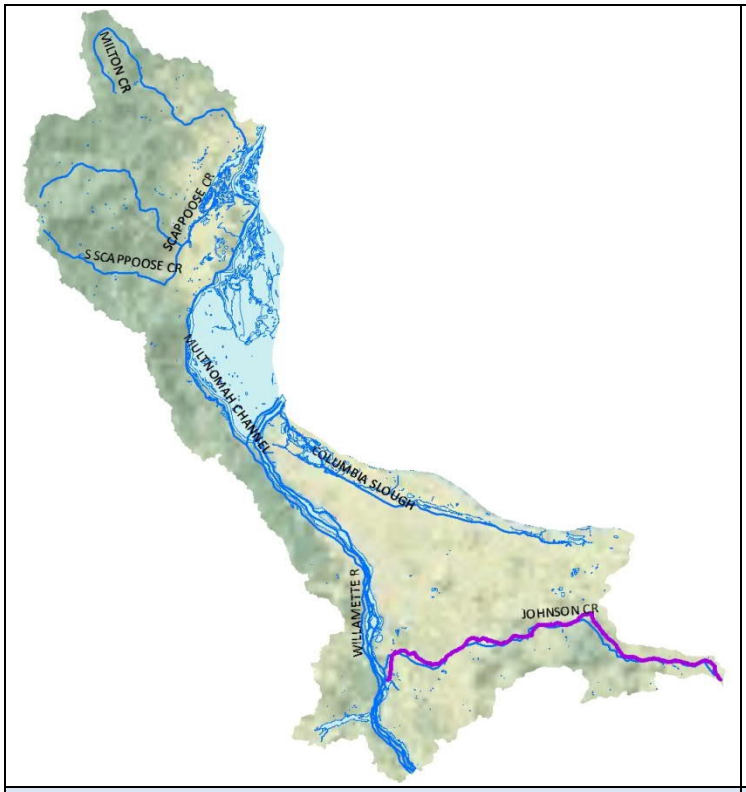
Dieldrin, DDT, PAHs Impairments



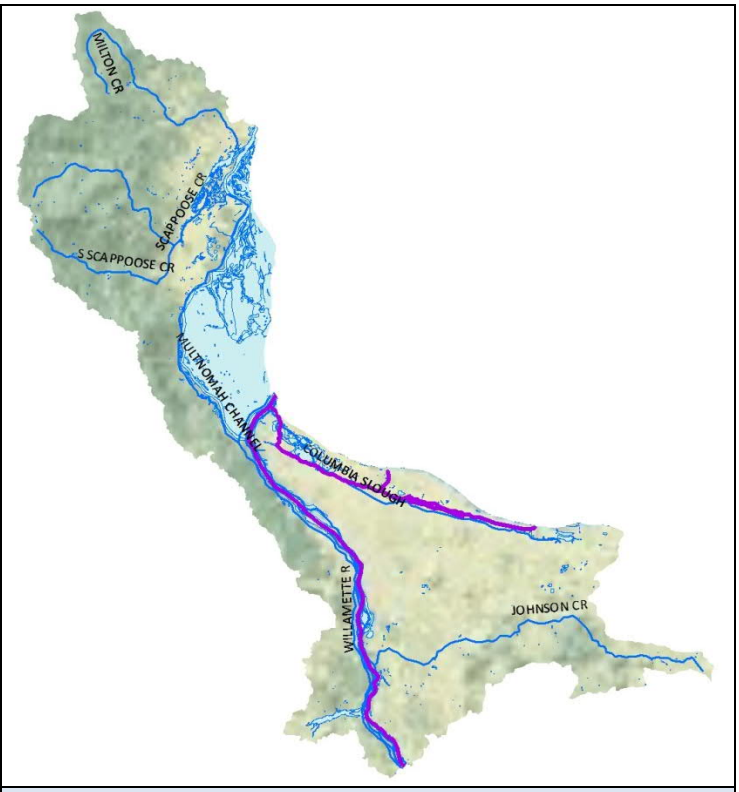
DDE, Lead, PCBs Impairments

Note: impairments identified in purple

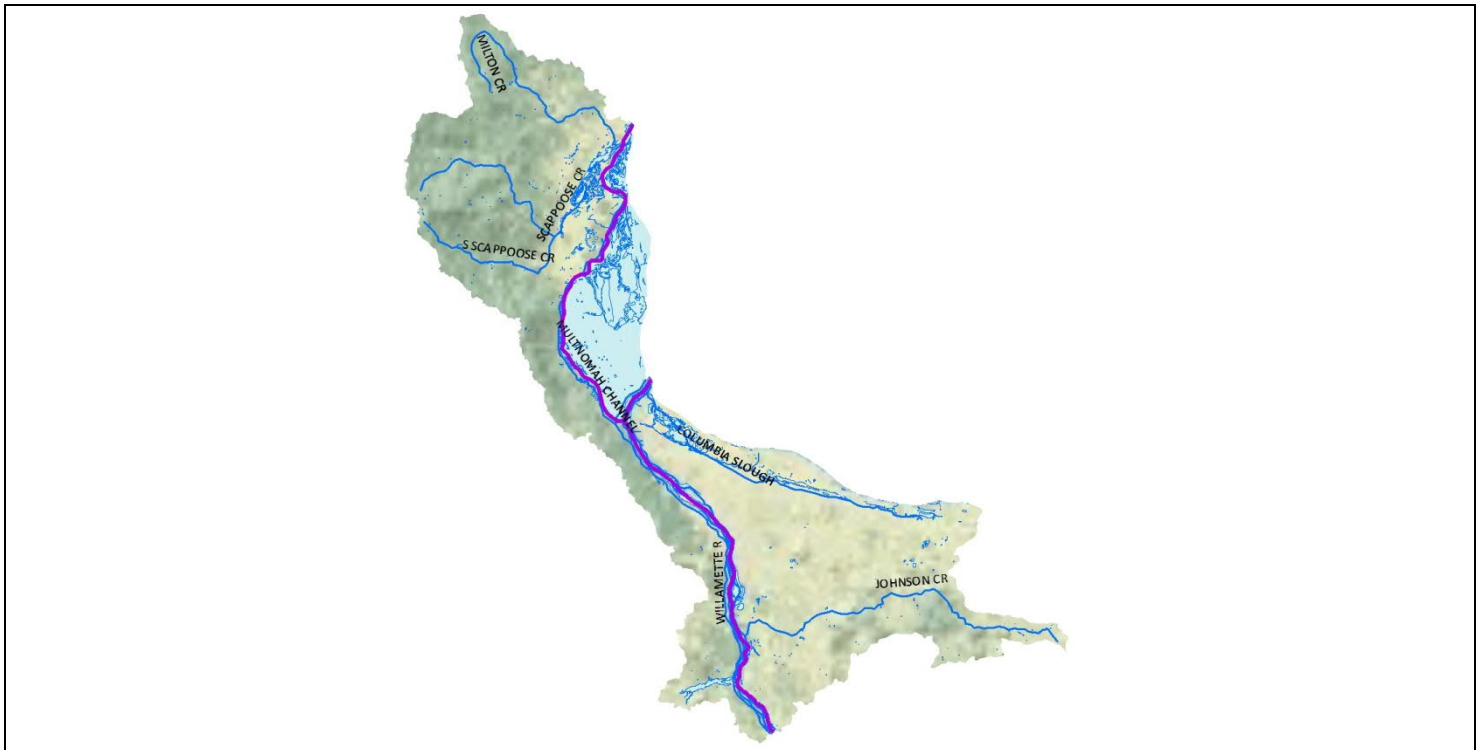
Figure A. Toxic Pollutant Impairments of the Lower Willamette Subbasin



Endosulfan, Endrin Aldehyde Impairments



Iron Impairments



Mercury Impairments

Figure A. Toxic Pollutant Impairments of the Lower Willamette Subbasin (cont'd)

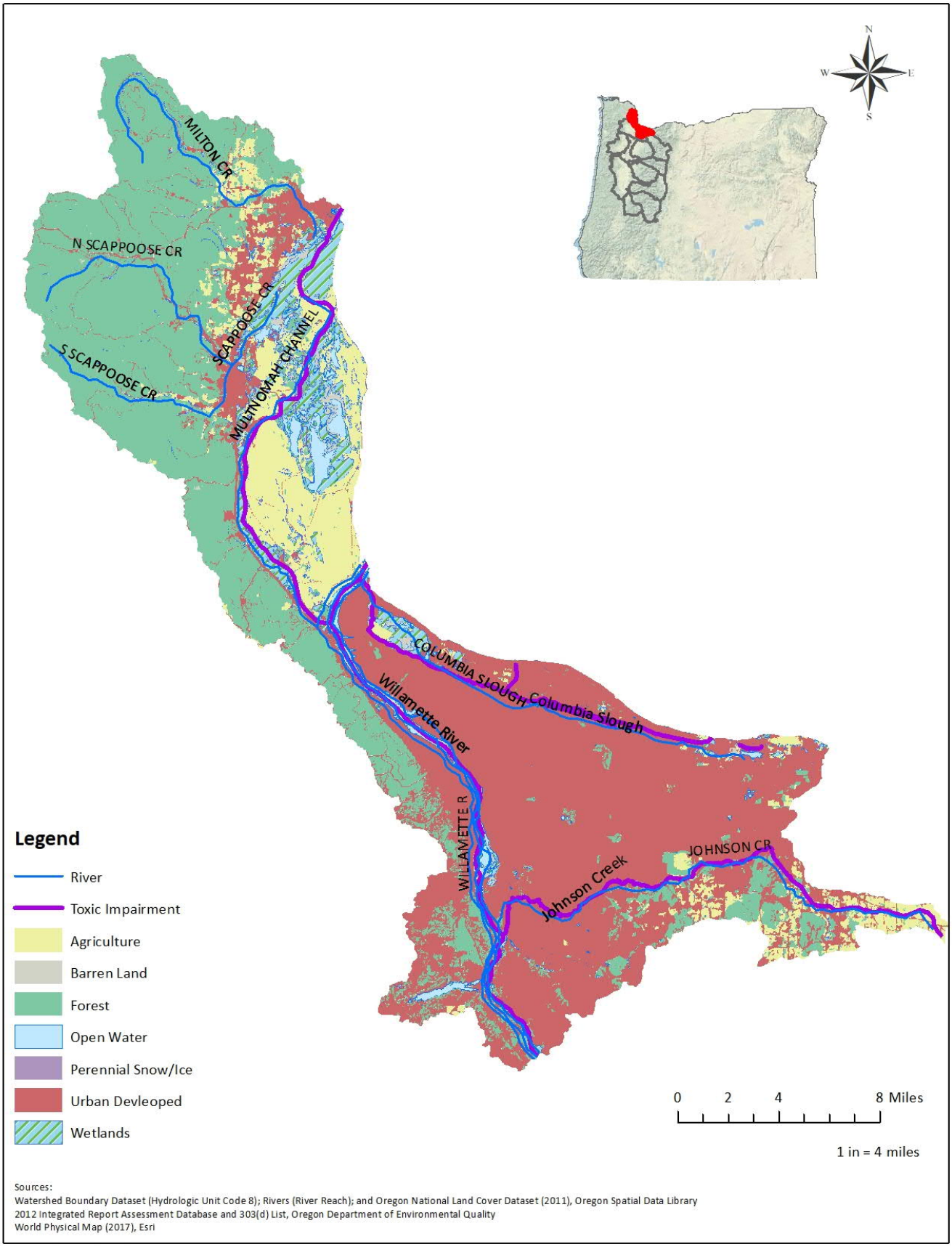


Figure B. Land Cover and Toxic Pollutant Impairments of the Lower Willamette Subbasin

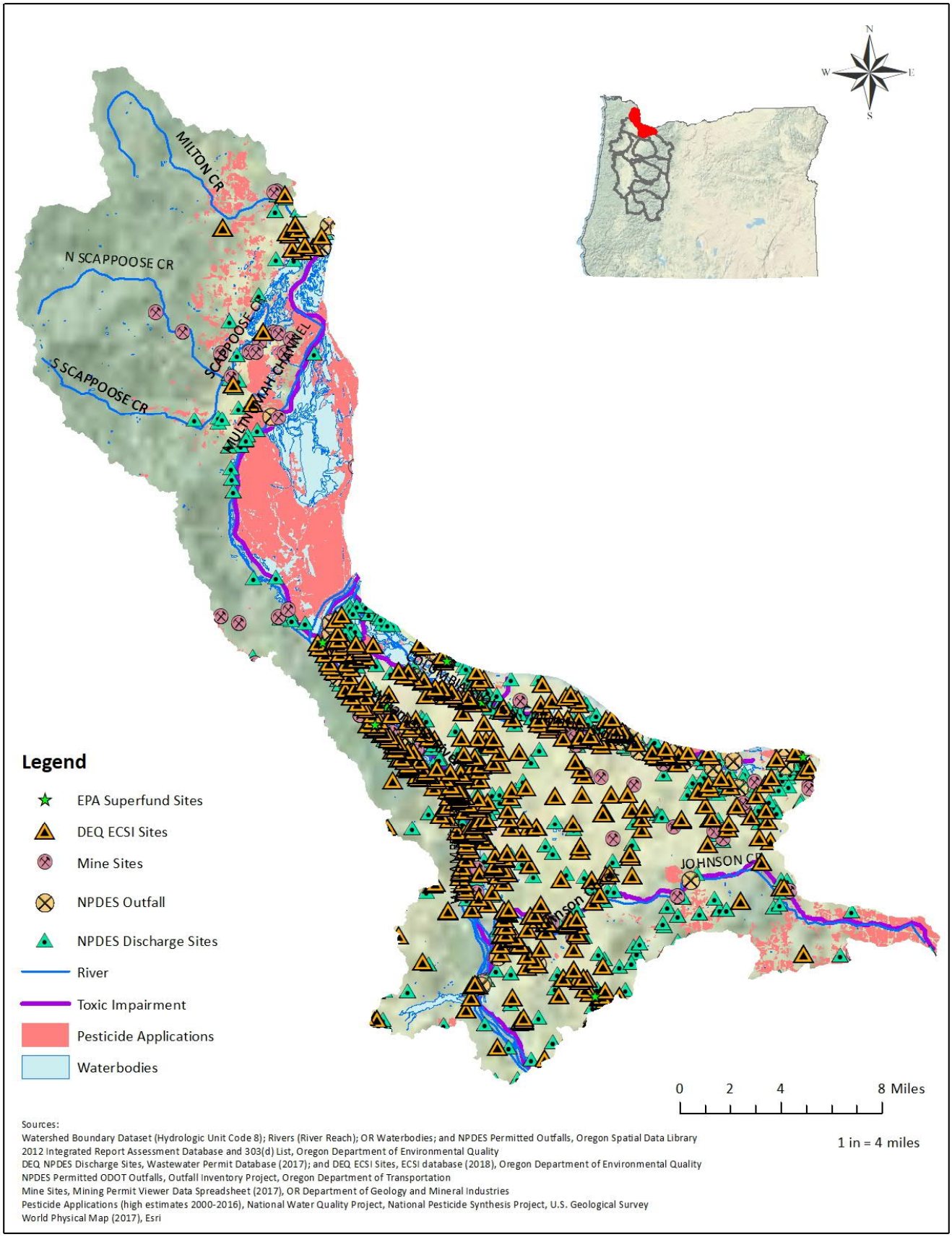


Figure C. Toxic Pollutant Sources and Impairments of the Lower Willamette Subbasin

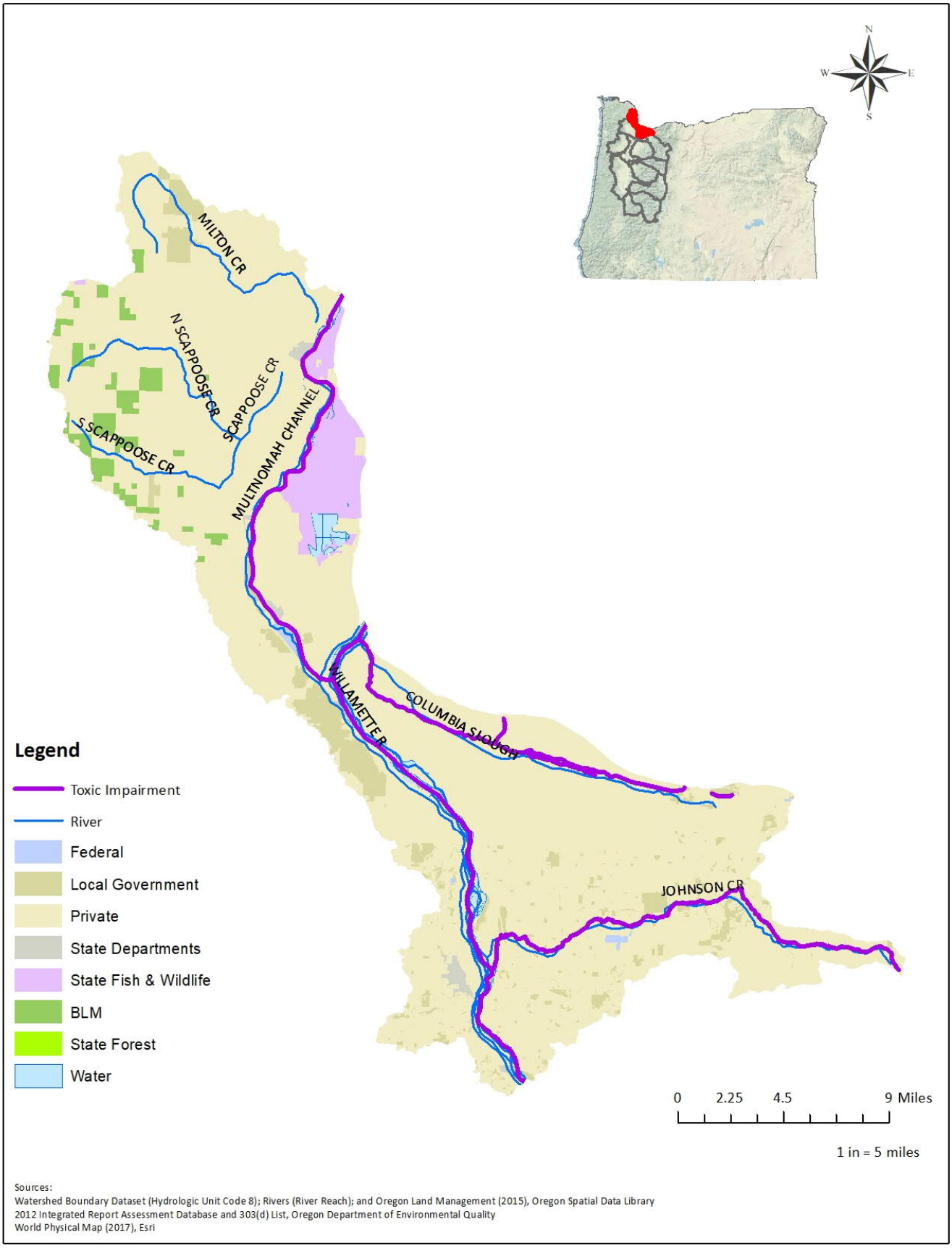


Figure D. Land Management and Toxic Pollutant Impairments of the Lower Willamette Subbasin

Profile

Description
HUC 8 Subbasin 17090004
Land cover ..... 857,011 acres (12% of Willamette Basin)
Watersheds 7
Subwatersheds 38
Counties ..... Deschutes, Jefferson, Lane, and Linn

Impairments
Watersheds 2
River miles ..... 195 (5.2% of Willamette Basin)

2012 Category 5 303(d)-listed Toxic Pollutants

Metals
Iron
Lead
Mercury

Beneficial Uses
Aquatic Life and Human Health

Sources: (EPA, 2017a; NLM, 2017)

Impairments

Watershed (HUC 10)	Subwatershed (HUC 12)		City
1709000401 Horse Creek	170900040101	Upper Separation Creek	
	170900040102	Lower Separation Creek	
	170900040103	Upper Horse Creek	
	170900040104	Middle Horse Creek	
	170900040105	Lower Horse Creek	
1709000402 Headwaters McKenzie River	170900040201	Parks Creek-Lost Lake	
	170900040202	Hackleman Creek-McKenzie River	
	170900040203	Smith River	
	170900040204	Kink Creek-McKenzie River	
	170900040205	Deer Creek	
	170900040206	Boulder Creek-McKenzie River	
	170900040207	White Branch	
	170900040208	Lost Creek	
	170900040209	Florence Creek-McKenzie River	
1709000403 South Fork McKenzie River	170900040301	Elk Creek-South Fork McKenzie River	
	170900040302	Roaring River-South Fork McKenzie River	
	170900040303	Augusta Creek-South Fork McKenzie River	
	170900040304	Rebel Creek-South Fork McKenzie River	
	170900040305	French Pete Creek	
	170900040306	East Fork South Fork McKenzie River	
	170900040307	Cougar Reservoir-South Fork McKenzie River	
	170900040308	Cougar Creek-South Fork McKenzie River	

1709000404 Blue River	170900040401	Lookout Creek	
	170900040402	Upper Blue River	
	170900040403	Lower Blue River	
1709000405 Quartz Creek-MzKenzie River	170900040501	Quartz Creek	
	170900040502	Elk Creek-McKenzie River	
1709000406 Mohawk River	170900040601	Headwaters Mohawk River	
	170900040602	Shotgun Creek-Mohawk River	
	170900040603	Mill Creek	
	170900040604	Parsons Creek-Mohawk River	
	170900040605	McGowan Creek-Mohawk River	
1709000407 McKenzie River	170900040701	Gate Creek	
	170900040702	East Fork Deer Creek-McKenzie River	
	170900040703	Ritchie Creek-McKenzie River	
	170900040704	Holden Creek-McKenzie River	
	170900040705	Camp Creek	
	170900040706	Walterville Canal-McKenzie River	Eugene, Springfield

Note: Bold text indicates toxic pollutant impairment

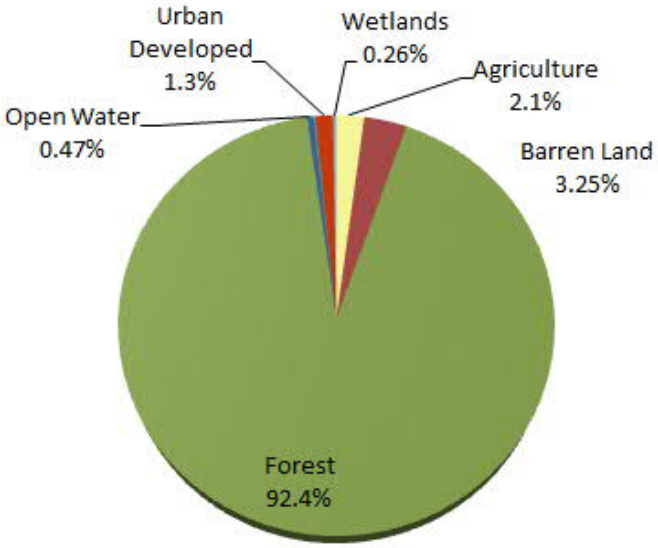
Subwatershed	Toxic Pollutant	Impaired River Miles by Pollutant	Impaired River Miles by Subwatershed
McKenzie River	Lead	84.5	169.3
	Mercury	84.8	
Mohawk River	Iron	25.4	25.4
Total			194.7

Total Impaired River Miles	
Toxic Pollutant	by Pollutant
Iron	25.4
Lead	84.5
Mercury	24.8

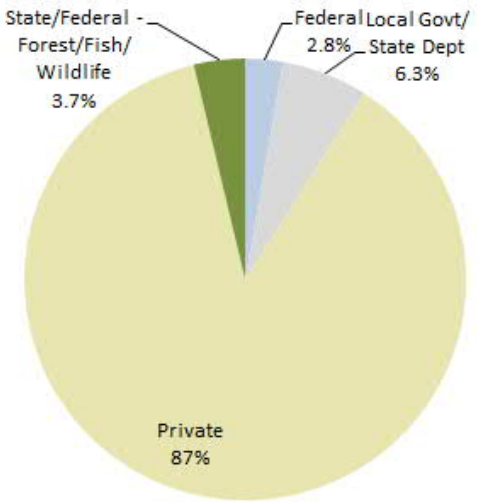
Sources: (DEQ, 2012; OSDL, 2017)

Land

Land Cover	Area (acres)
Agriculture	18,109
Barren Land	27,852
Forest	791,543
Open Water	4,022
Perennial Snow/Ice	1,446
Urban Developed	11,365
Wetlands	2,262
Total	856,599



Land Management	Area (acres)
DOD/DOE/USACE	-
Federal	705
Local Government	14,566
Private	220,484
State Departments	1,330
Tribal	-
State Fish & Wildlife	9,411
US Fish & Wildlife Service	-
BLM	6,275
State Forest	63
US Forest Service	-
Total	252,833



Sources: (OSDL, 2011, 2015)

Pollutant Sources

Point Sources

Total	Stormwater/Wastewater Discharges					
	DEQ NPDES Facilities	EPA NPDES Reporting Facilities	DOGAMI Mining Sites	NPDES Outfalls	ODOT Outfalls	NPDES Pesticide Applications
575	488	29	19	34	5	0
15%	24%	24%	2%	18%	1%	n/a

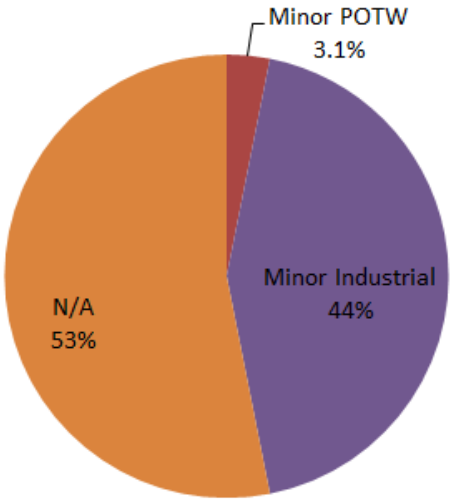
Nonpoint Sources

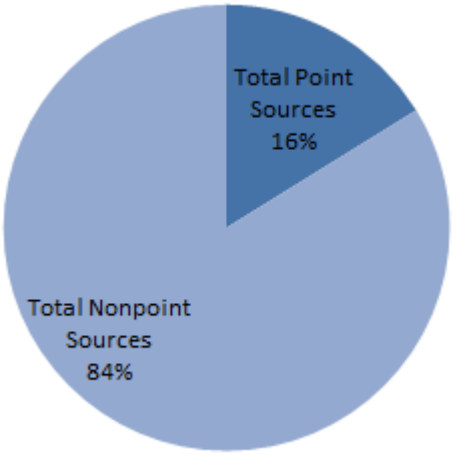
Total	Pesticide Applications (pounds)	Farms Harvesting Crops	DEQ ECSI Sites	EPA Superfund Sites
846	34,566	365	477	0
6%	1%	3%	52%	n/a

Mining Sites

Permit Status			
County	Closed	Permitted	New
Lane	9	8	0
Linn	0	2	0
Total	9	10	0

Permit Type		
NPDES 1200-A (offsite discharge)	WPCF 10000 (no discharge)	Unidentified
1	0	18
Total		19
Percent of Basin		3%
Percent of Basin - offsite discharge		0.1%





Sources:
(DEQ, 2009, 2017, 2018; DOGAMI, 2017; EPA, 2011, 2016, 2017b, 2018; ODOT, 2016; USDA, 2012; USGS, 2017)

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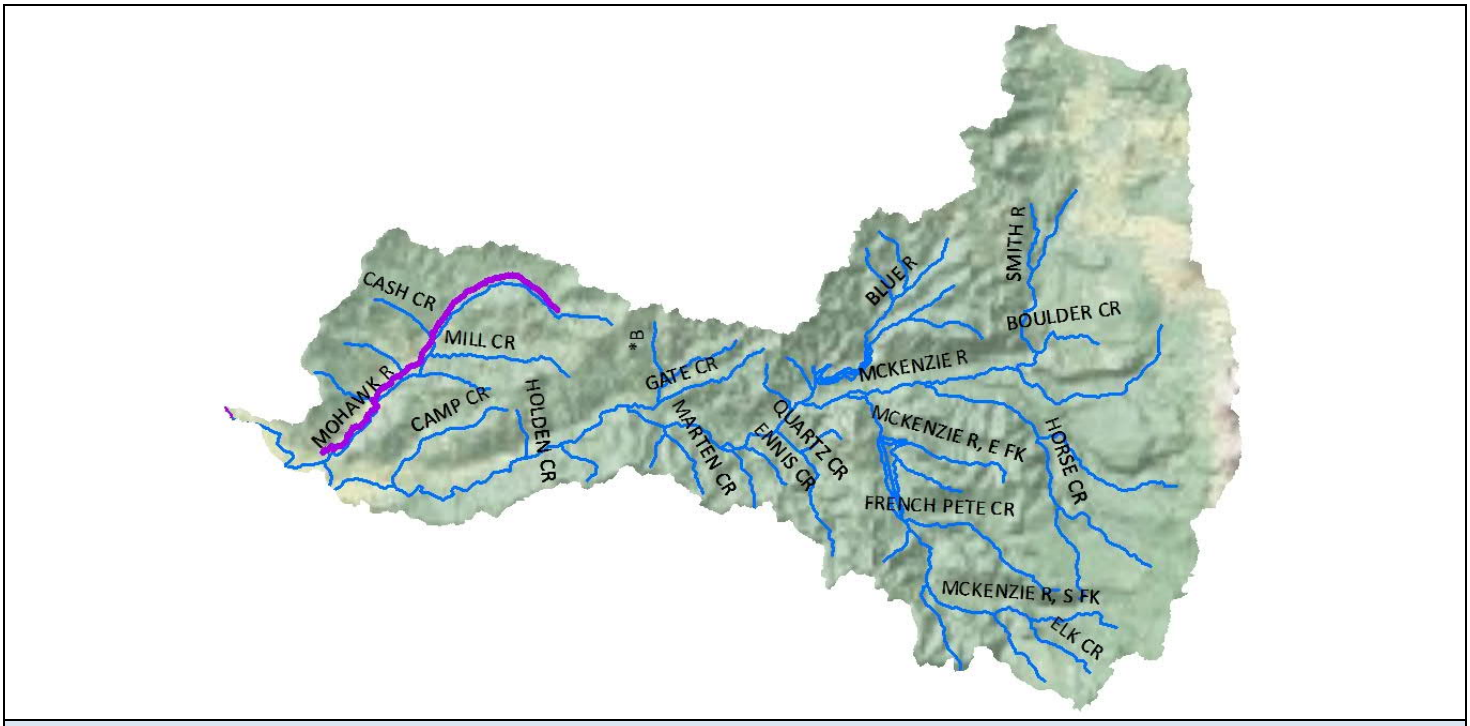
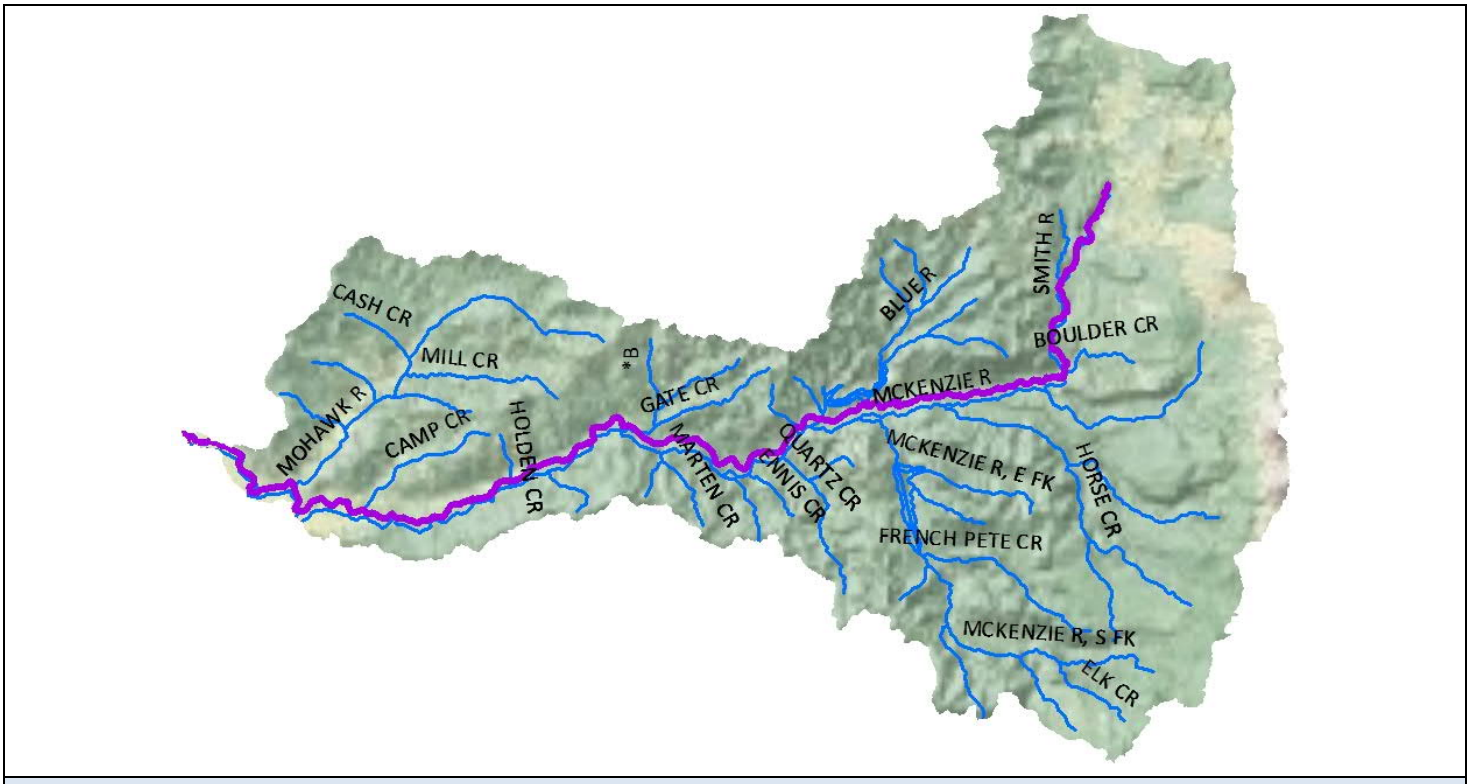
	http://spatialdata.oregonexplorer.info/geoportal/details;id=9b644e0f7a7d4124a50f6b35c05626ae OSDL. (2017). Oregon Watershed Boundary Dataset. Retrieved December 13, 2017, from http://spatialdata.oregonexplorer.info/geoportal/details;id=4b1b008d5a764a209b2df040689c0779 USDA. (2012). Census of Agriculture Table 8 Farms, Land in Farms, Value of Land and Buildings, and Land Use: 2012 and 2007. Retrieved from https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Oregon/ USGS. (2017). National Water Quality Assessment Project, Pesticide National Synthesis Project. Retrieved July 8, 2018, from https://water.usgs.gov/nawqa/pnsp/usage/maps/county-level/
Acronyms	BLM – Bureau of Land Management DEQ – (Oregon) Department of Environmental Quality DOD – Department of Defense DOE – Department of Energy DOGAMI – (Oregon) Department of Geology and Mineral Industries EPA – (United States) Environmental Protection Agency HUC – Hydrologic Unit Code n/a – not available / not analyzed NPDES – National Pollution Discharge Elimination System NLCD – National Land Cover Dataset ODOT – Oregon Department of Transportation USACE – United States Army Corps of Engineers
Limitations	The compilation of point and nonpoint sources was retrieved from publicly available information on the Internet, from state and federal regulatory databases. Therefore, the status of facilities identified in this subbasin as of the date of this report may change.



Iron Impairments



Lead and Mercury Impairments

Note: impairments identified in purple

Figure A. Toxic Pollutant Impairments of the McKenzie Subbasin

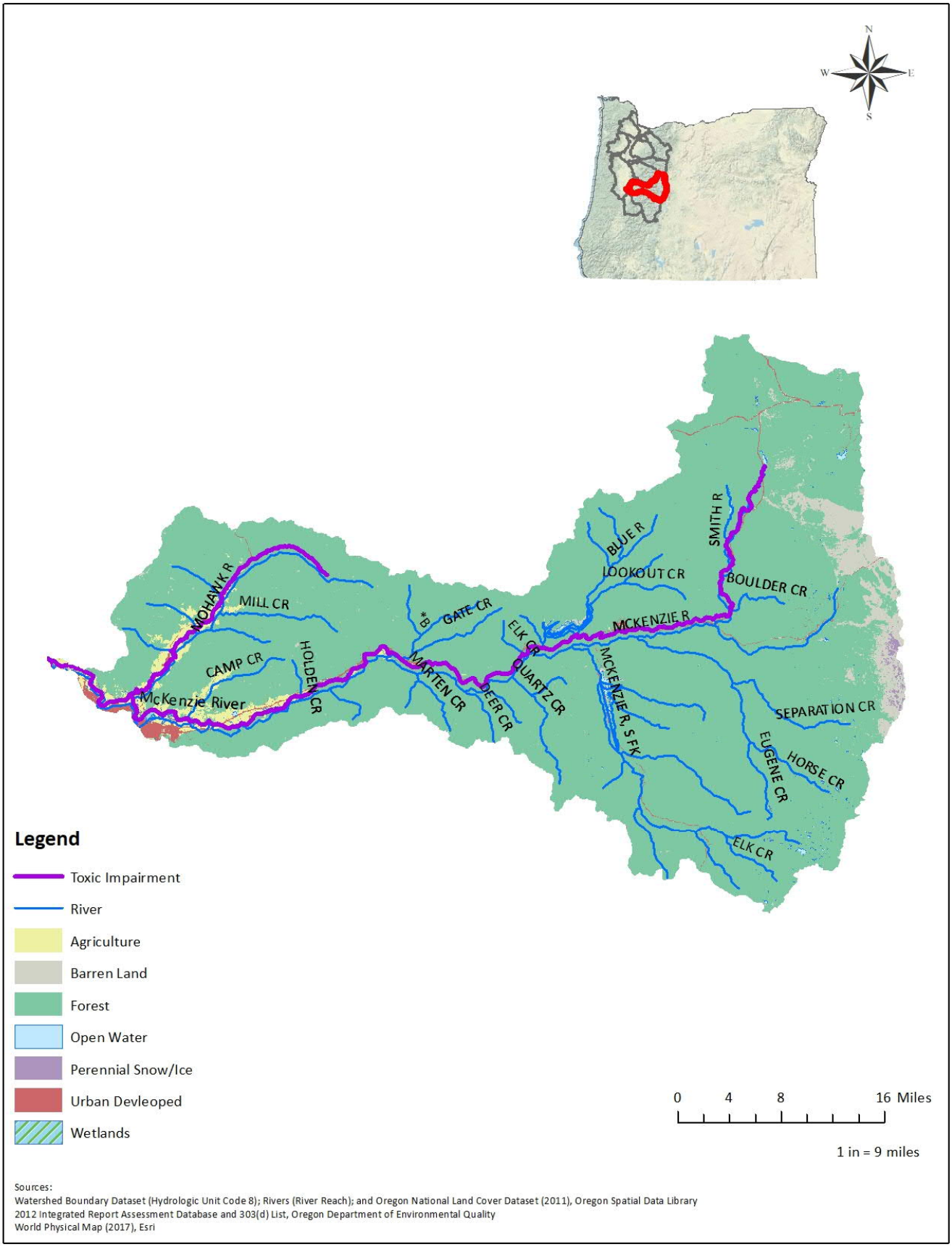


Figure B. Land Cover and Toxic Pollutant Impairments of the McKenzie Subbasin

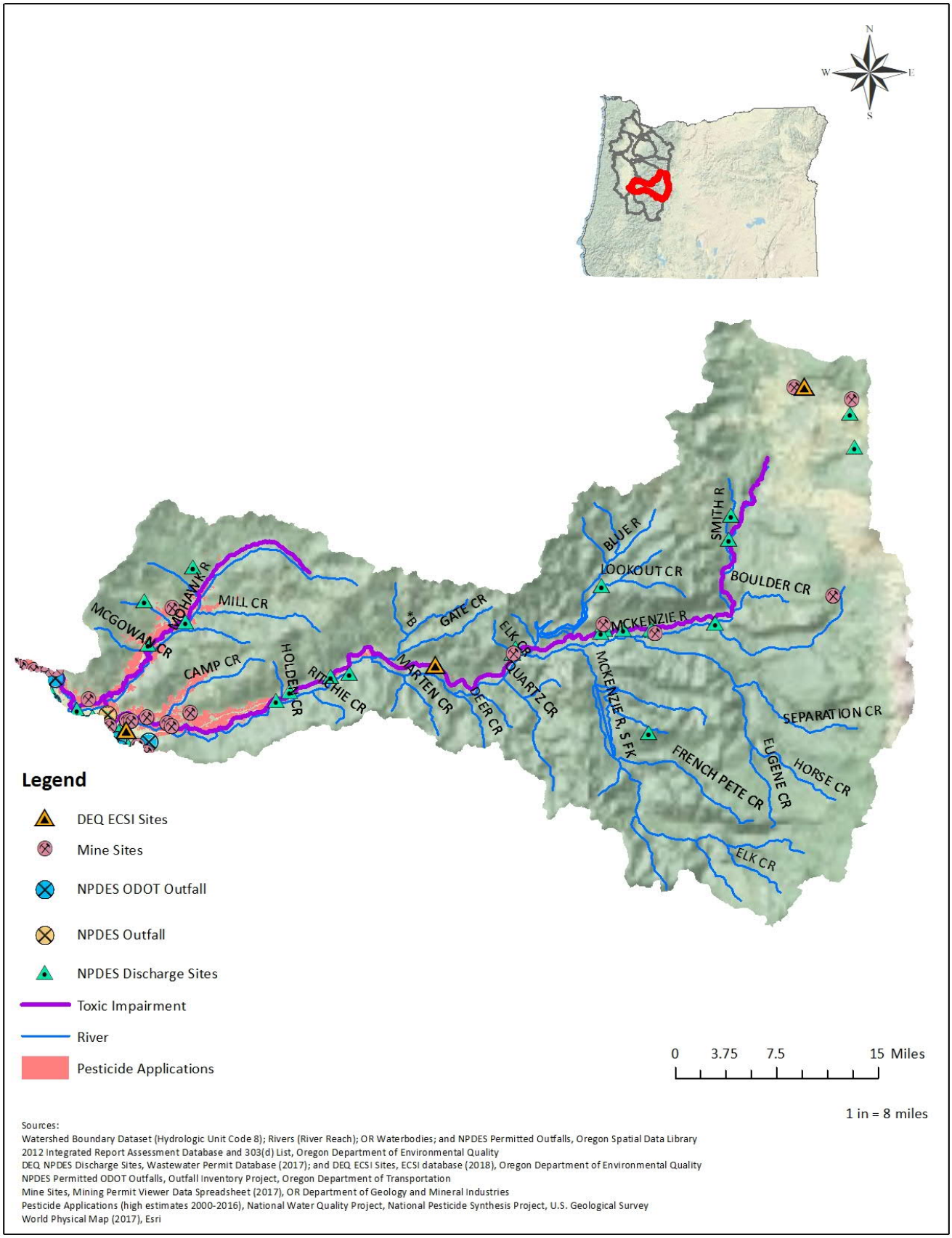


Figure C. Toxic Pollutant Sources and Impairments of the McKenzie Subbasin

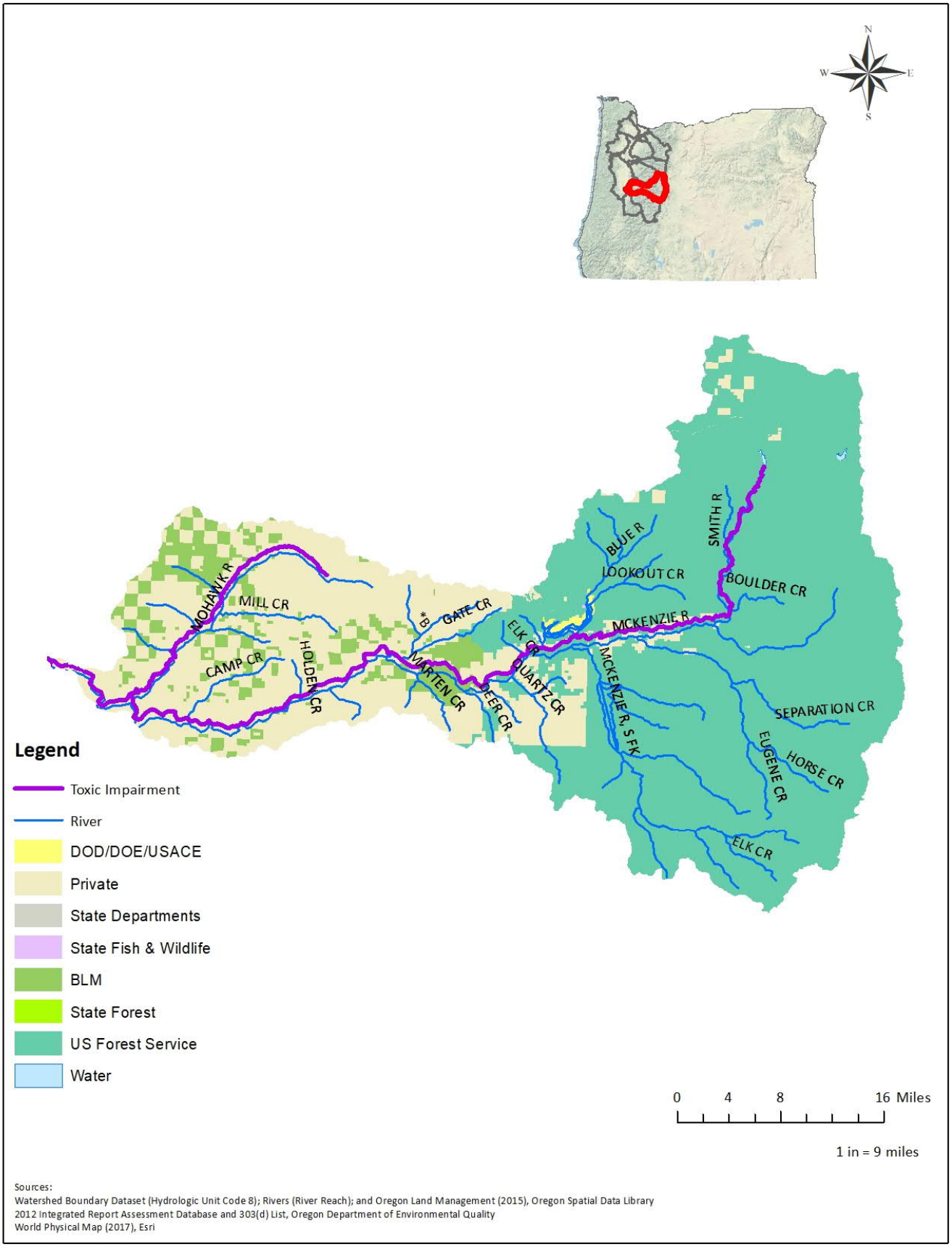


Figure D. Land Management and Toxic Pollutant Impairments of the McKenzie Subbasin

Profile

Description

HUC 8 Subbasin 17090001
Land cover ..... 874,862 acres (12% of Willamette Basin)
Watersheds 10
Subwatersheds 41
Counties ..... Deschutes, Douglas, Klamath, and Lane

Impairments
Watersheds 2
River miles ..... 82 (2.2% of Willamette Basin)

2012 Category 5 303(d)-listed Toxic Pollutants

Metals
Mercury

Beneficial Uses
Human Health

Sources: (EPA, 2017a; NLM, 2017)

Impairments

Watershed (HUC 10)	Subwatershed (HUC 12)		City
1709000101 Headwaters Middle Fork Willamette River	170900010101	Paddys Valley-Middle Fork Willamette River	
	170900010102	Tumblebug Creek	
	170900010103	Pioneer Gulch-Middle Fork Willamette River	
	170900010104	Swift Creek	
	170900010105	Staley Creek	
	170900010106	Echo Creek-Middle Fork Willamette River	
1709000102 Hills Creek	170900010201	Upper Hills Creek	
	170900010202	Lower Hills Creek	
1709000103 Salt Creek	170900010301	Upper Salt Creek	
	170900010302	Middle Salt Creek	
	170900010303	Lower Salt Creek	
1709000104 Salmon Creek	170900010401	Black Creek	
	170900010402	Upper Salmon Creek	
	170900010403	Lower Salmon Creek	Oakridge
1709000105 Hills Creek Lake-Middle Fork Willamette River	170900010501	Coal Creek	
	170900010502	Buck Creek-Middle Fork Willamette River	
	170900010503	Packard Creek-Middle Fork Willamette River	
	170900010504	Larison Creek-Middle Fork Willamette River	
	170900010505	Gray Creek-Middle Fork Willamette River	Oakridge, Westfir
1709000106	170900010601	Waldo Lake-North Fork Middle	

North Fork Middle Fork Willamette River		Fork Willamette River	
	170900010602	Skookum Creek-North Fork Middle Fork Willamette River	
	170900010603	Fisher Creek-North Fork Middle Fork Willamette River	
	170900010604	Devils Canyon-North Fork Middle Fork Willamette River	
	170900010605	Upper Christy Creek	
	170900010606	Lower Christy Creek	
	170900010607	Eighth Creek-North Fork Middle Fork Willamette River	
	170900010608	Dartmouth Creek-North Fork Middle Fork Willamette River	Oakridge, Westfir
1709000107 Lookout Point Lake-Middle Fork Willamette River	170900010701	Deception Creek-Middle Fork Willamette River	Westfir
	170900010702	Lost Creek	
	170900010703	Dexter Reservoir-Middle Fork Willamette River	Lowell
1709000108 Little Fall Creek	170900010801	Upper Little Fall Creek	
	170900010802	Lower Little Fall Creek	
1709000109 Fall Creek	170900010901	Delp Creek-Fall Creek	
	170900010902	Portland Creek	
	170900010903	Hehe Creek-Fall Creek	
	170900010904	Andy Creek-Fall Creek	
	170900010905	Winberry Creek	
	170900010906	Fall Creek Lake-Fall Creek	Lowell
1709000110 Pudding Creek-Middle Fork Willamette River	170900011001	Hills Creek	
	170900011002	Rattlesnake Creek-Middle Fork Willamette River	

Note: Bold text indicates toxic pollutant impairment

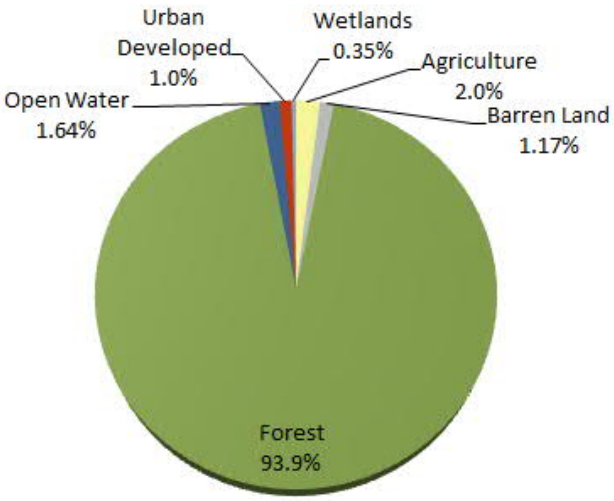
Subwatershed	Toxic Pollutant	Impaired River Miles by Pollutant	Impaired River Miles by Subwatershed
Middle Fork Willamette River	Mercury	82.2	82.2
Total			82.2

Impaired River Miles	
Toxic Pollutant	by Pollutant
Mercury	82.2

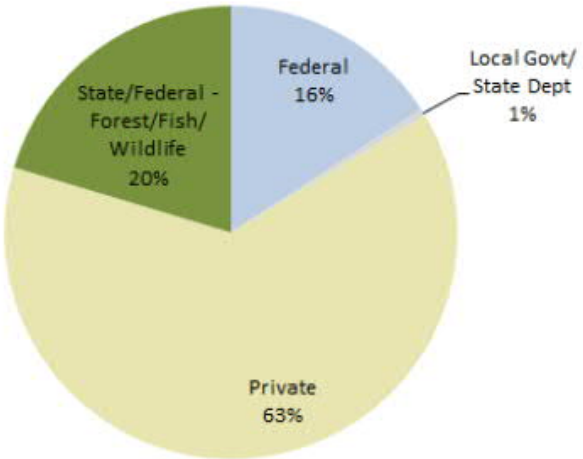
Sources: (DEQ, 2012; OSDL, 2017)

Land

Land Cover	Area (acres)
Agriculture	17,282
Barren Land	10,249
Forest	820,936
Open Water	14,354
Perennial Snow/Ice	-
Urban Developed	8,596
Wetlands	3,103
Total	874,519



Land Management	Area (acres)
DOD/DOE/USACE	-
Federal	-
Local Government	1,750
Private	269,816
State Departments	449
Tribal	-
State Fish & Wildlife	-
US Fish & Wildlife Service	-
BLM	67,561
State Forest	-
US Forest Service	86,801
Total	426,378



Sources: (OSDL, 2011, 2015)

Pollutant Sources

Point Sources

	Stormwater/Wastewater Discharges					
Total	DEQ NPDES Facilities	EPA NPDES Reporting Facilities	DOGAMI Mining Sites	NPDES Outfalls	ODOT Outfalls	NPDES Pesticide Applications
87	39	4	26	7	11	0
2%	2%	3%	3%	4%	2%	n/a

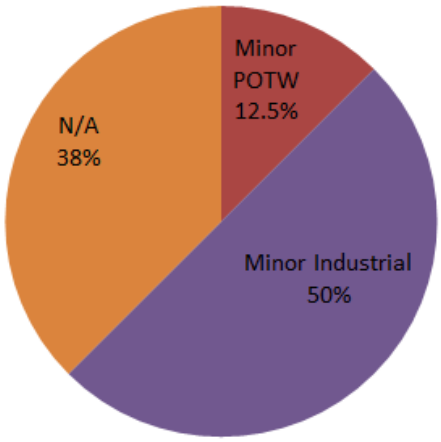
Nonpoint Sources

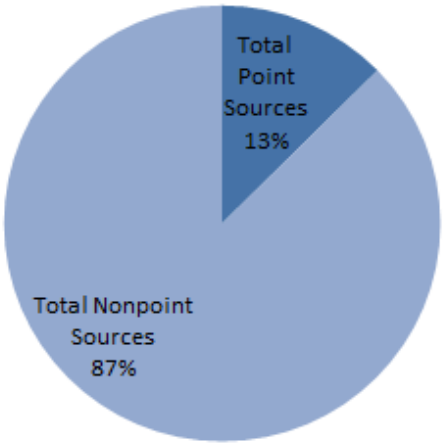
Total	Pesticide Applications (pounds)	Farms Harvesting Crops	DEQ ECSI Sites	EPA Superfund Sites
318	27,934	315	3	0
2%	1%	2%	n/a	n/a

Mining Sites

Permit Status			
County	Closed	Permitted	New
Lane	14	11	1

Permit Type		
NPDES 1200-A (offsite discharge)	WPCF 10000 (no discharge)	Unidentified
2	0	24
Total		26
Percent of Basin		4%
Percent of Basin - offsite discharge		0.3%





Sources:
(DEQ, 2009, 2017, 2018; DOGAMI, 2017; EPA, 2011, 2016, 2017b, 2018; ODOT, 2016; USDA, 2012; USGS, 2017)

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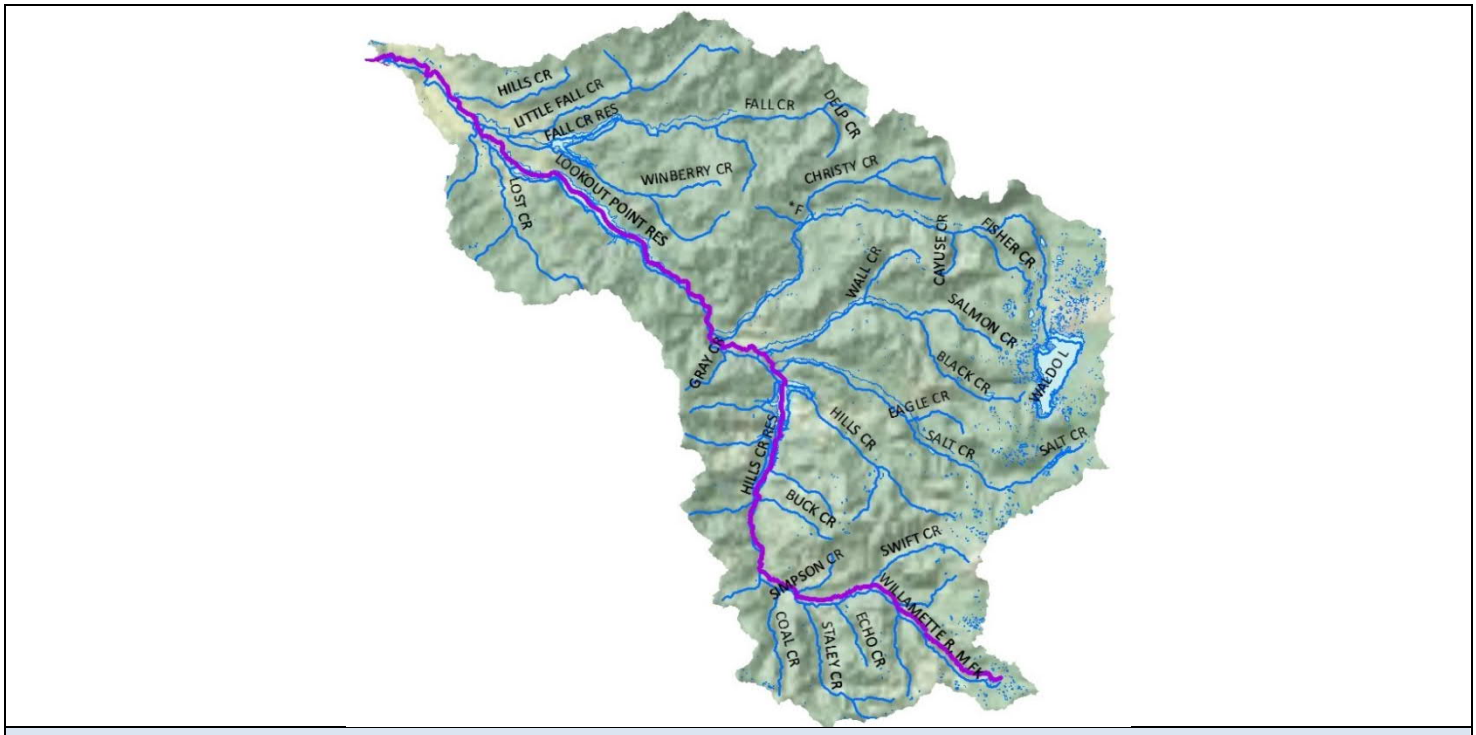
	https://pubchem.ncbi.nlm.nih.gov/ ODOT. (2016). Stormwater Outfall Inventory Management. Retrieved from https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Stormwater.aspx OSDL. (2011). Oregon NLCD Land Cover 2011. Retrieved April 15, 2018, from http://spatialdata.oregonexplorer.info/geoportal/details;id=81916ee1b2b741c0aacb814ee8e73af9 OSDL. (2015). Oregon Land Management 2015. Retrieved April 15, 2018, from http://spatialdata.oregonexplorer.info/geoportal/details;id=9b644e0f7a7d4124a50f6b35c05626ae OSDL. (2017). Oregon Watershed Boundary Dataset. Retrieved December 13, 2017, from http://spatialdata.oregonexplorer.info/geoportal/details;id=4b1b008d5a764a209b2df040689c0779 USDA. (2012). Census of Agriculture Table 8 Farms, Land in Farms, Value of Land and Buildings, and Land Use: 2012 and 2007. Retrieved from https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Oregon/ USGS. (2017). National Water Quality Assessment Project, Pesticide National Synthesis Project. Retrieved July 8, 2018, from https://water.usgs.gov/nawqa/pnsp/usage/maps/county-level/
Acronyms	BLM – Bureau of Land Management DEQ – (Oregon) Department of Environmental Quality DOD – Department of Defense DOE – Department of Energy DOGAMI – (Oregon) Department of Geology and Mineral Industries EPA – (United States) Environmental Protection Agency HUC – Hydrologic Unit Code n/a – not available – not analyzed NPDES – National Pollution Discharge Elimination System NLCD – National Land Cover Dataset ODOT – Oregon Department of Transportation USACE – United States Army Corps of Engineers
Limitations	The compilation of point and nonpoint sources was retrieved from publicly available state and federal regulatory databases. Therefore, the status of facilities identified as of the date of this report may change.



Mercury Impairments

Note: impairments identified in purple

Figure A. Toxic Impairments of the Middle Fork Willamette Subbasin

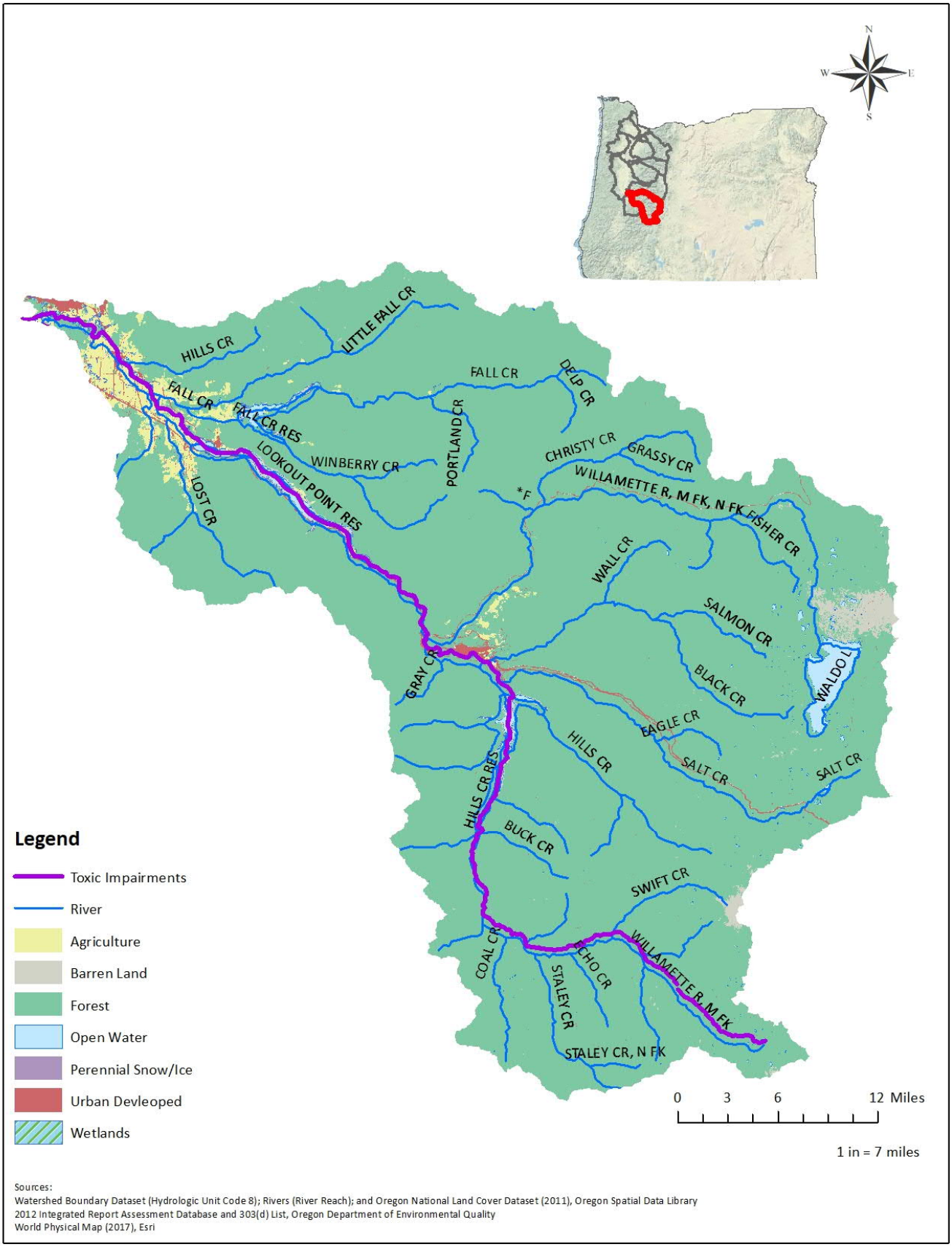


Figure B. Land Cover and Toxic Pollutant Impairments of the Middle Fork Willamette Subbasin

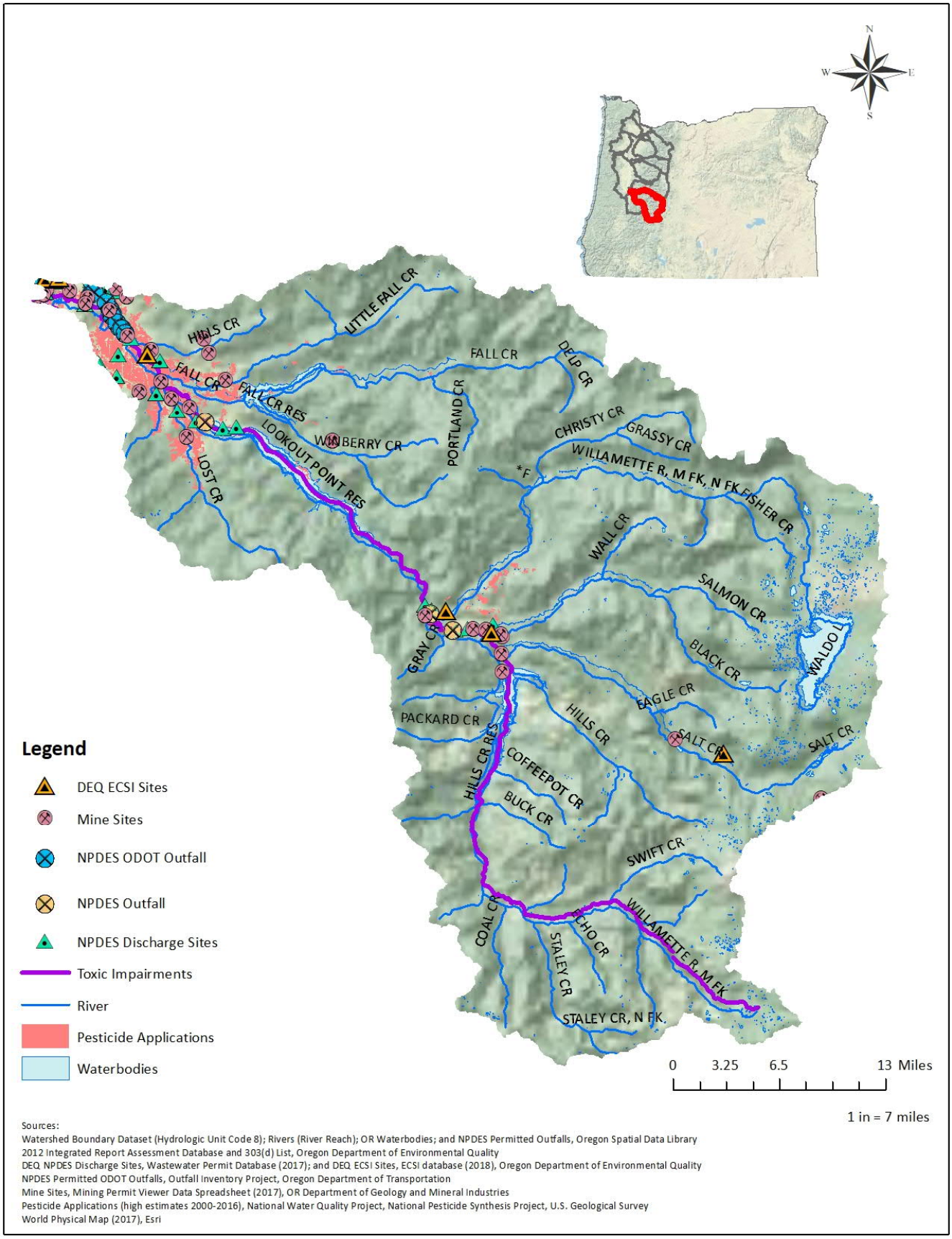


Figure C. Toxic Pollutant Sources and Impairments of the Middle Fork Willamette Subbasin

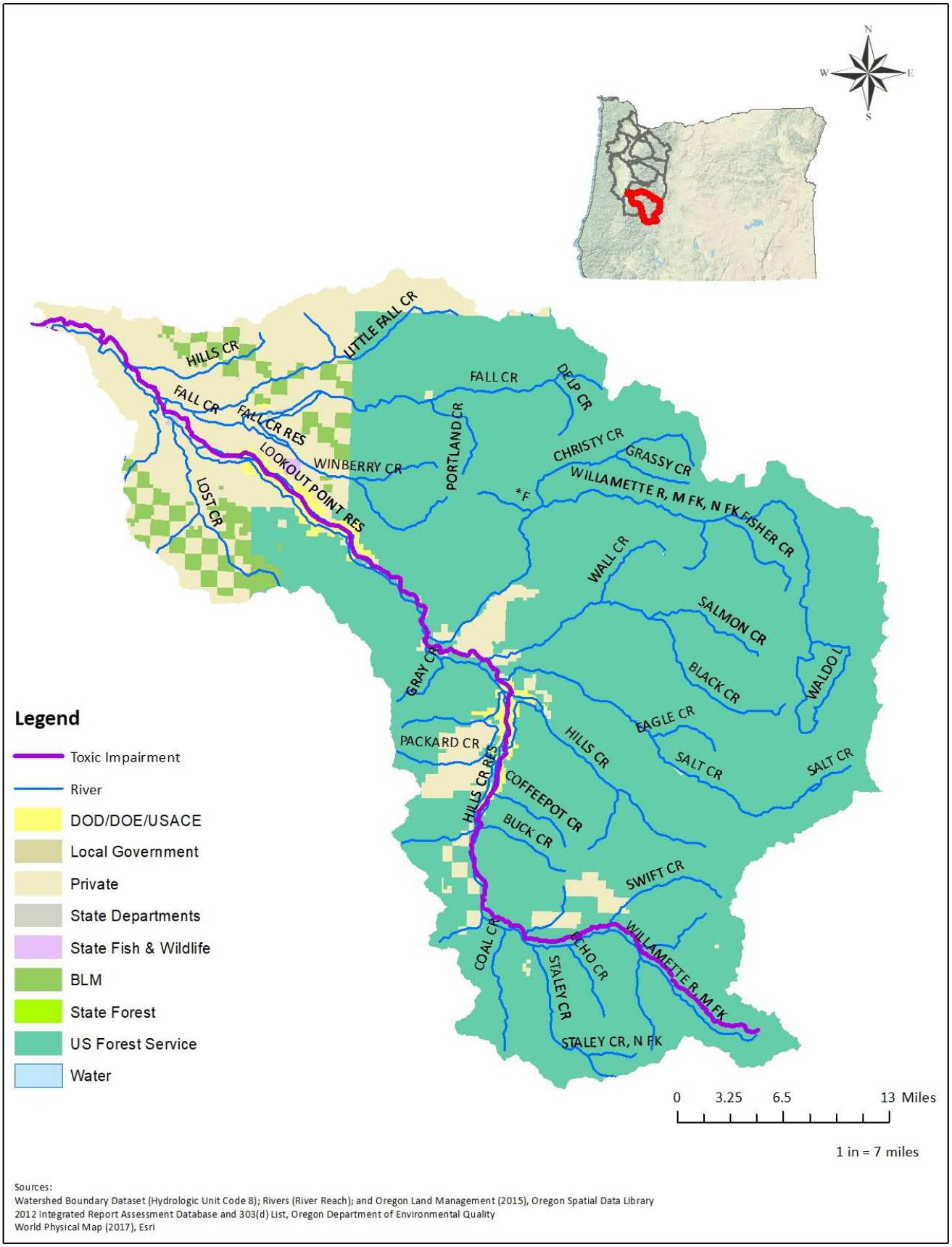


Figure D. Land Management and Toxic Pollutant Impairments of the Middle Fork Willamette Subbasin

Profile

Description

HUC 8 Subbasin 17090007
Land cover ..... 455,040 acres (6.2% of Willamette Basin)
Watersheds 4
Subwatersheds 23
Counties ..... Clackamas, Marion, Polk, Washington, and Yamhill

Impairments
Watersheds 3
River miles ..... 524 (14% of Willamette Basin)

2012 Category 5 303(d)-listed Toxic Pollutants

Metals	Organochlorine Insecticides	Others
Copper	Aldrin	PCBs
Iron	DDE/DDT	
Lead	Dieldrin	
Zinc	Heptachlor	

Beneficial Uses
Aquatic Life, Human Health, Drinking Water, Fishing, Resident Fish and Aquatic Life, and Anadromous Fish Passage

Sources: (EPA, 2017a; NLM, 2017)

Impairments

Watershed (HUC 10)	Subwatershed (HUC 12)		City
1709000701 Rickreall Creek-Willamette River	170900070101	Bashaw Creek-Willamette River	
	170900070102	Ash Creek	Dallas, Independnce, Monmouth
	170900070103	Upper Rickreall Creek	
	170900070104	Baskett Slough	Dallas
	170900070105	Hayden Slough Creek	Independence
	170900070106	Lower Rickreall Creek	Dallas
	170900070107	Wilkerson Creek-Willamette River	Independence, Salem
1709000702 Mill Creek	170900070201	Upper Mill Creek	Aumsville, Stayton, Sublimity
	170900070202	Beaver Creek	Aumsville, Sublimity, Turner
	170900070203	McKinney Creek	Salem
	170900070204	Lower Mill Creek	Salem, Stayton, Turner
1709000703 Chehalem Creek-	170900070301	Croisan Creek-Willamette River	Salem
	170900070302	Spring Valley Creek	

Willamette River	170900070303	Glenn Creek-Willamette River	Keizer, Salem
	170900070304	Lambert Slough-Willamette River	
	170900070305	Champoeg Creek	St. Paul
	170900070306	Chehalem Creek	Dundee, Newberg
	170900070307	Hess Creek-Willamette River	Dundee, Newberg
1709000704 Abernethy Creek-Willamette River	170900070401	Corral Creek-Willamette River	Donald, Wilsonville
	170900070402	Coffee Lake Creek-Willamette River	Tualatin, Wilsonville
	170900070403	Parrott Creek-Beaver Creek	Oregon City
	170900070404	Abernethy Creek	Oregon City
	170900070405	Tanner Creek-Willamette River	Canby, Gladstone, Oregon City, West Linn

Note: Bold text indicates toxic pollutant impairment

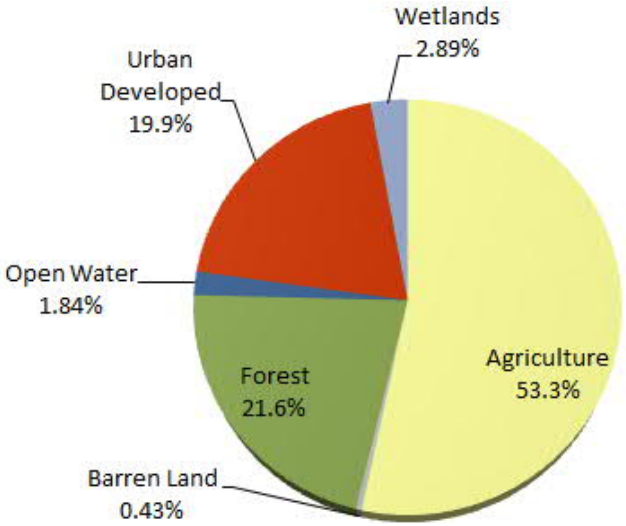
Subwatershed	Toxic Pollutant	Impaired River Miles by Pollutant	Impaired River Miles by Subwatershed
Champoeg Creek	Dieldrin	7.5	7.5
Clark Creek	Dieldrin	1.9	1.9
Pringle Creek	Copper	6.2	24.8
	Dieldrin	6.2	
	Lead	6.2	
	Zinc	6.2	
Pringle Creek Tributary	Heptachlor	2.8	2.8
Willamette River	Aldrin	47.2	319.2
	DDE-4,4	47.2	
	DDT-4,4	47.2	
	Dieldrin	47.2	
	Iron	83.2	
	PCBs	47.2	
Total			356.2

Impaired River Miles	
Toxic Pollutant	by Pollutant
Aldrin	47.2
Copper	6.2
DDE-4,4	47.2
DDT-4,4	47.2
Dieldrin	62.8
Heptachlor	2.8
Iron	83.2
Lead	6.2
PCBs	47.2
Zinc	6.2

Sources: (DEQ, 2012; OSDL, 2017)

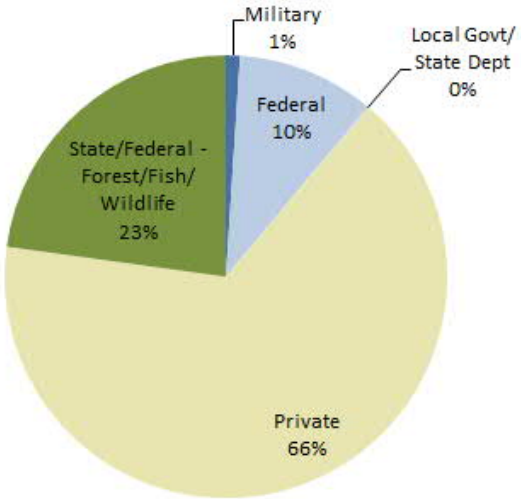
Land Use

Land Cover	Area (acres)	Percent of Basin
Agriculture	242,591	3.3%
Barren Land	1,953	0.03%
Forest	98,457	1.3%
Open Water	8,370	0.11%
Perennial Snow/Ice	-	-
Urban Developed	90,406	1.2%
Wetlands	13,144	0.18%
Total	454,922	6.2%



Land Management	Area (acres)	Percent of Basin
DOD/DOE/USACE	6,735	16%
Federal	-	-
Local Government	677	1.4%
Private	439,311	9.9%
State Departments	308	0.8%
Tribal	-	-
State Fish & Wildlife	42	0.3%
US Fish & Wildlife Service	-	-
BLM	66,910	16%
State Forest	3,856	4.6%
US Forest Service	148,100	6.7%
Total	665,939	-

Sources: (OSDL, 2011, 2015)



Pollutant Sources

Point Sources

	Stormwater/Wastewater Discharges					
Total	DEQ NPDES Facilities	EPA NPDES Reporting Facilities	DOGAMI Mining Sites	NPDES Outfalls	ODOT Outfalls	NPDES Pesticide Applications
219	35	2	113	4	65	0
6%	2%	2%	11%	2%	12%	n/a

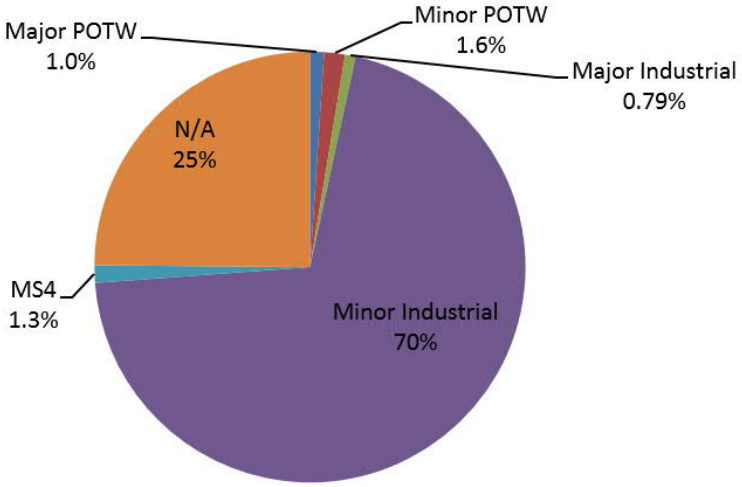
Nonpoint Sources

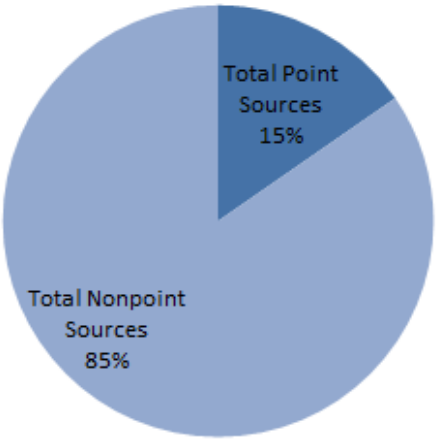
Total	Pesticide Applications (pounds)	Farms Harvesting Crops	DEQ ECSI Sites	EPA Superfund Sites
2,522	826,601	2,508	14	0
18%	25%	20%	2%	n/a

Mining Sites

Permit Status			
County	Closed	Permitted	New
Clackamas	5	0	0
Marion	27	21	0
Polk	17	12	0
Washington	2	4	0
Yamhill	12	12	1
Total	63	49	1

Permit Type		
NPDES 1200-A (offsite discharge)	WPCF 10000 (no discharge)	Unidentified
22	5	86
Total		113
Percent of Basin		16%
Percent of Basin - offsite discharge		3%





Sources:
(DEQ, 2009, 2017, 2018; DOGAMI, 2017; EPA, 2011, 2016, 2017b, 2018; ODOT, 2016; USDA, 2012; USGS, 2017)

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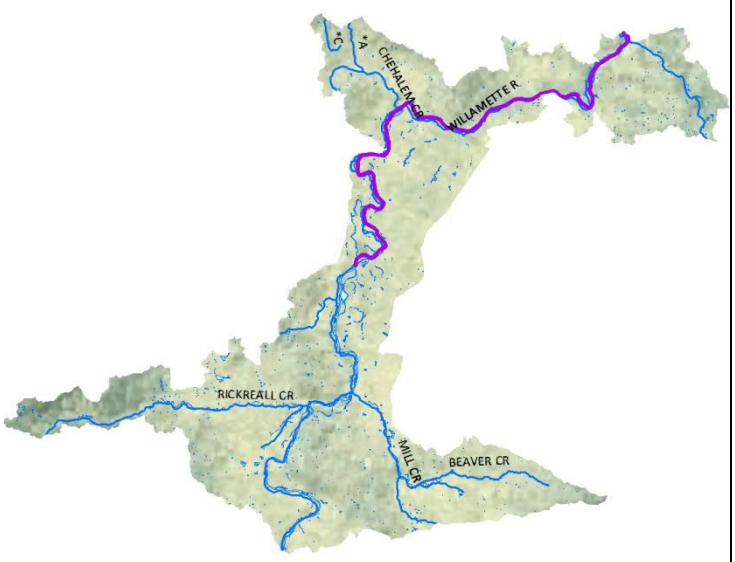
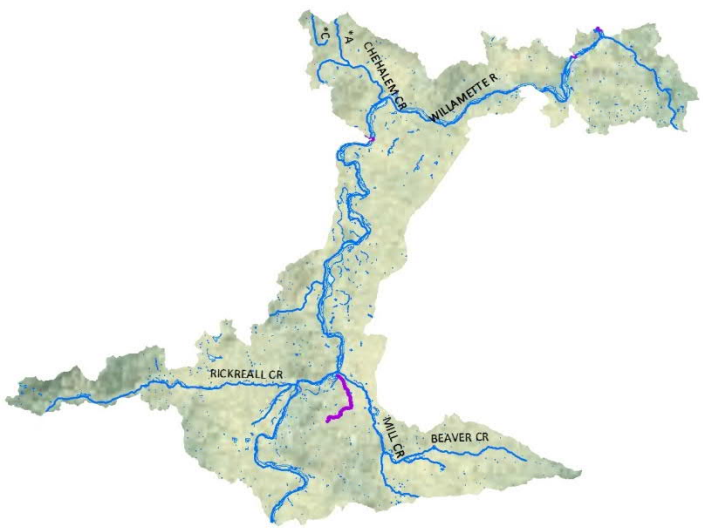
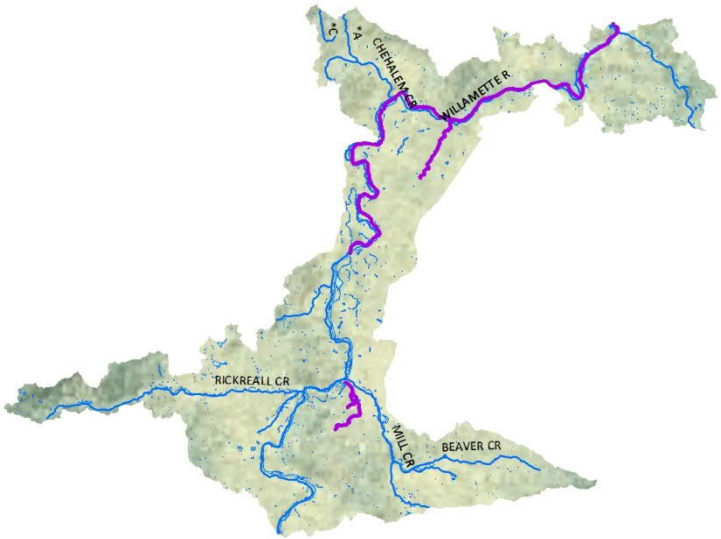
Acronyms	BLM – Bureau of Land Management DEQ – (Oregon) Department of Environmental Quality DOD – Department of Defense DOE – Department of Energy DOGAMI – (Oregon) Department of Geology and Mineral Industries EPA – (United States) Environmental Protection Agency HUC – Hydrologic Unit Code n/a – not available / not analyzed NPDES – National Pollution Discharge Elimination System NLCD – National Land Cover Dataset ODOT – Oregon Department of Transportation USACE – United States Army Corps of Engineers
Limitations	The compilation of point and nonpoint sources was retrieved from publicly available information on the Internet, from state and federal regulatory databases. Therefore, the status of facilities identified in this subbasin as of the date of this report may change.



Aldrin, DDD/DDT, PCBs Impairments



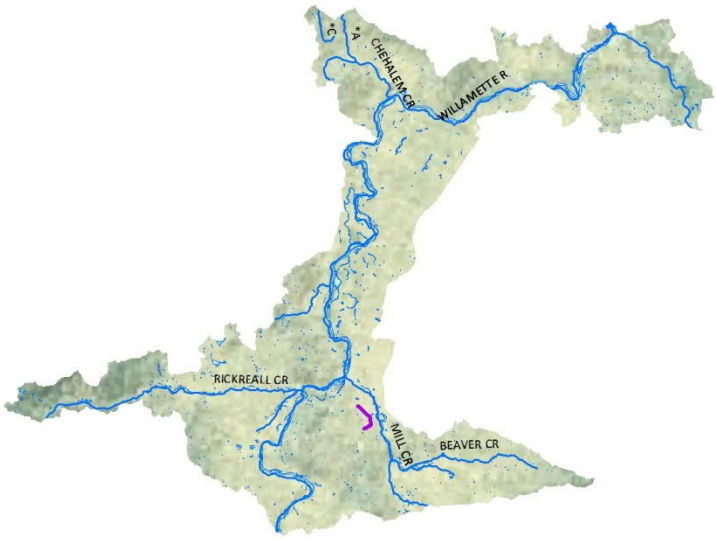
Copper, Zinc Impairments



Dieldrin Impairments

Note: impairments identified in purple

Figure A. Toxic Pollutant Impairments of the Middle Willamette Subbasin



Heptachlor Impairments

Iron Impairments

Lead Impairments

Note: impairments identified in purple

Figure A. Toxic Pollutant Impairments of the Middle Willamette Subbasin (cont'd)

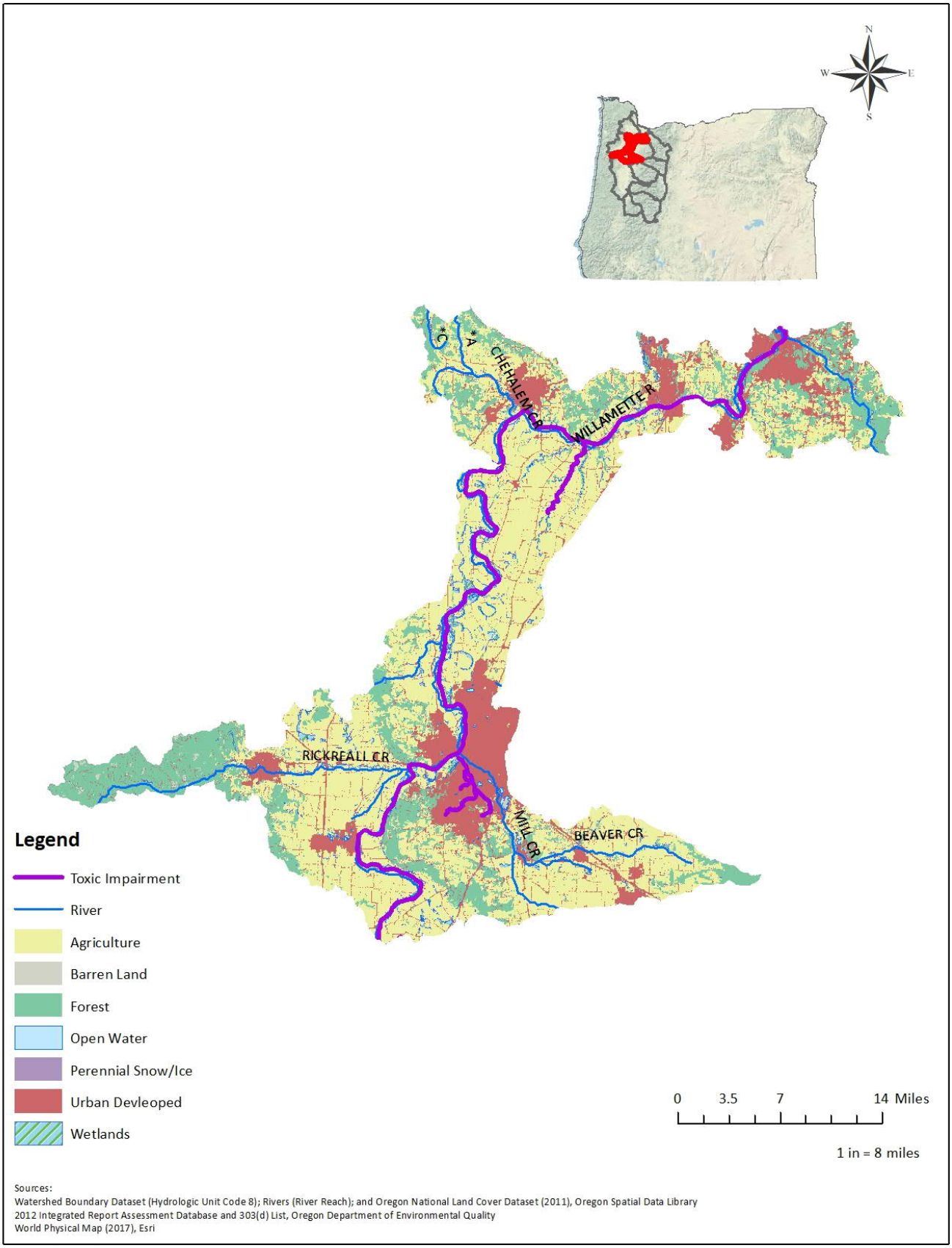


Figure B. Land Cover and Toxic Pollutant Impairments of the Middle Willamette Subbasin

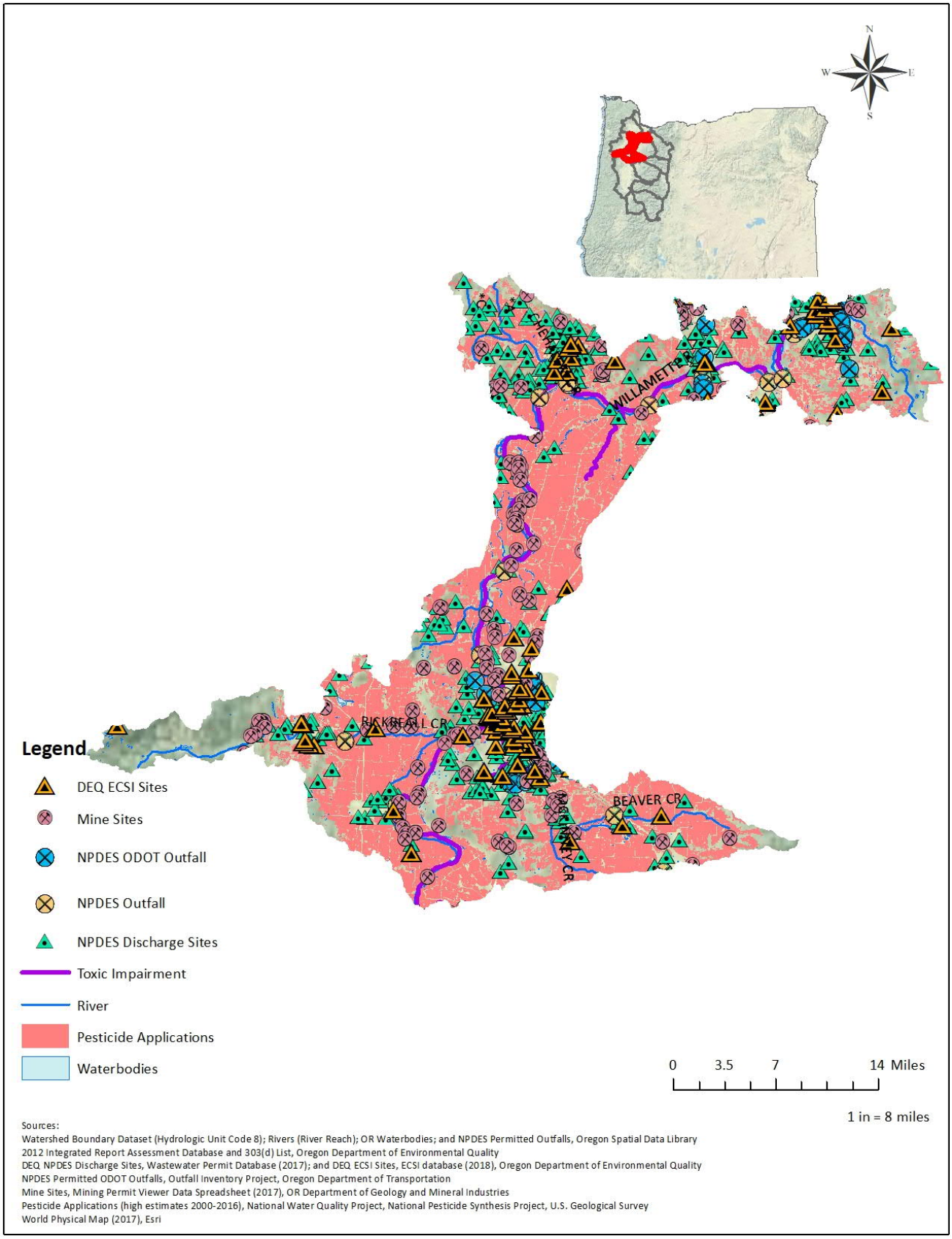


Figure C. Toxic Pollutant Sources and Impairments of the Middle Willamette Subbasin

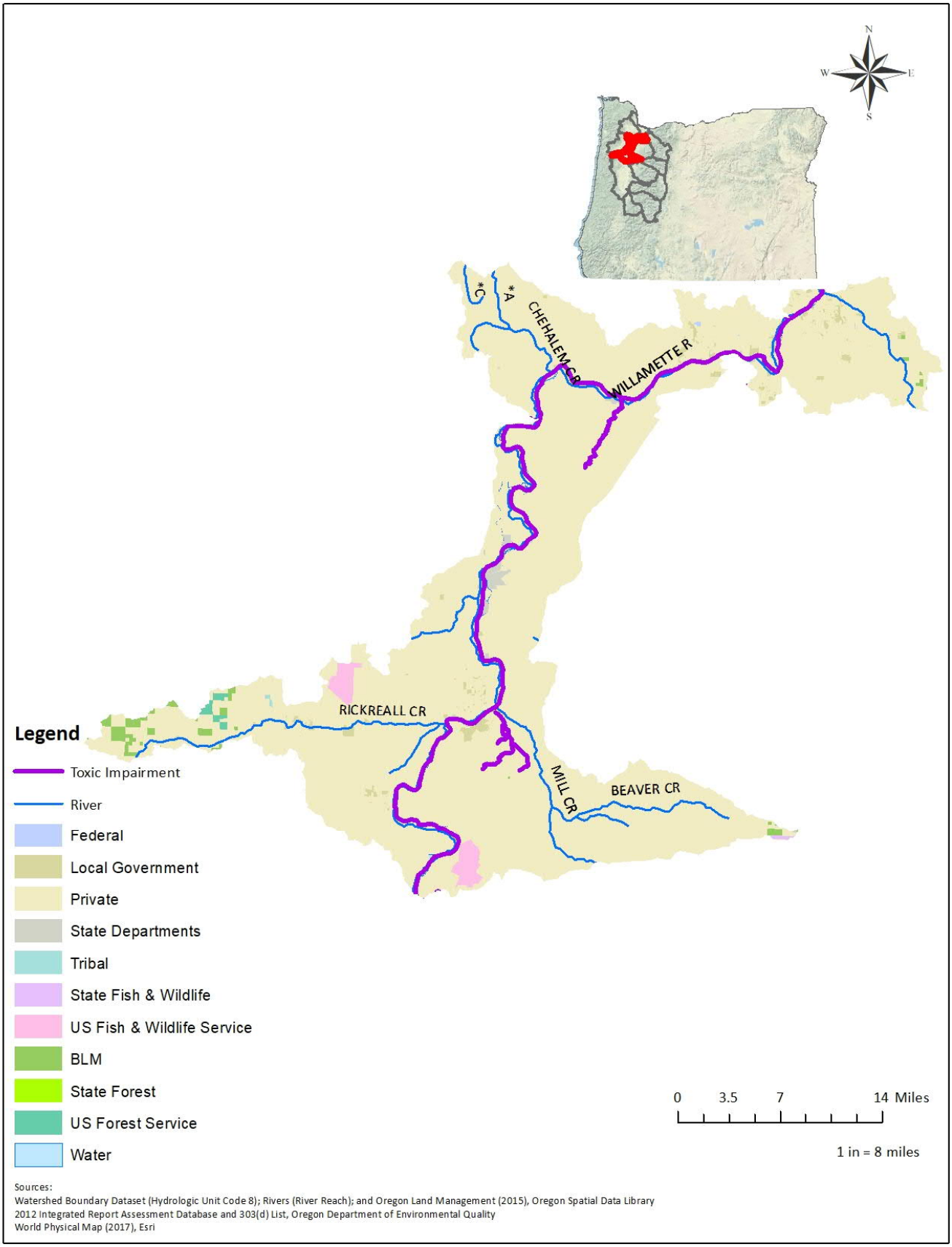


Figure D. Land Management and Toxic Pollutant Impairments of the Middle Willamette Subbasin

Profile

Description
HUC 8 Subbasin 17090009
Land cover ..... 560,311 acres (7.6% of Basin)
Watersheds 6
Subwatersheds 35
Counties ..... Clackamas and Marion

Impairments
Watersheds 5
River miles ..... 244 (6.6% of Basin)

2012 Category 5 303(d)-listed Toxic Pollutants

Metals	Organochlorine Insecticide	Organophosphorus Insecticide
Arsenic Iron Lead	DDE Endosulfan	Chlorpyrifos Guthion

Beneficial Uses
Aquatic Life and Human Health

Sources: (EPA, 2017a; NLM, 2017)

Impairments

Watershed (HUC 10)	Subwatershed (HUC 12)		City
1709000901 Abiqua Creek-Pudding River	170900090101	Headwaters Pudding River	
	170900090102	Drift Creek	
	170900090103	North Fork Silver Creek	
	170900090104	Silver Creek	Silverton
	170900090105	Upper Abiqua Creek	
	170900090106	Middle Abiqua Creek	
	170900090107	Lower Abiqua Creek	Silverton
	170900090108	Upper Little Pudding River	Salem
	170900090109	Lower Little Pudding River	Salem
	170900090110	Howell Prairie Creek-Pudding River	Mt. Angel, Silverton
1709000902 Butte Creek-Pudding River	170900090201	Upper Butte Creek	
	170900090202	Middle Butte Creek	
	170900090203	Lower Butte Creek	Scotts Mills
	170900090204	Brandy Creek-Pudding River	Gervais, Hubbard, Mt. Angel, Woodburn
1709000903 Rock Creek	170900090301	Garret Creek	
	170900090302	Upper Rock Creek	
	170900090303	Bear Creek	Molalla
1709000903 Rock Creek	170900090304	Lower Rock Creek	

1709000904 Rock Creek	170900090401	Table Rock Fork	
	170900090402	Headwaters Molalla River	
	170900090403	Pine Creek-Molalla River	
	170900090404	Trout Creek-Molalla River	
	170900090405	Dead Horse Canyon Creek	
	170900090406	Upper North Fork Molalla River	
	170900090407	Lower North Fork Molalla River	
	170900090408	Cedar Creek-Molalla River	
1709000905 Senecal Creek-Pudding River	170900090501	Senecal Creek	Donald, Woodburn
	170900090502	Mill Creek-Pudding River	Aurora, Barlow, Gervais, Hubbard, Woodburn
1709000906 Lower Molalla River	170900090601	Canyon Creek	
	170900090602	Headwaters Milk Creek	
	170900090603	Upper Milk Creek	
	170900090604	Woodcock Creek	
	170900090605	Middle Milk Creek	
	170900090606	Lower Milk Creek	
	170900090607	Molalla River	Barlow, Canby, Molalla

Note: Bold text indicates toxic pollutant impairment

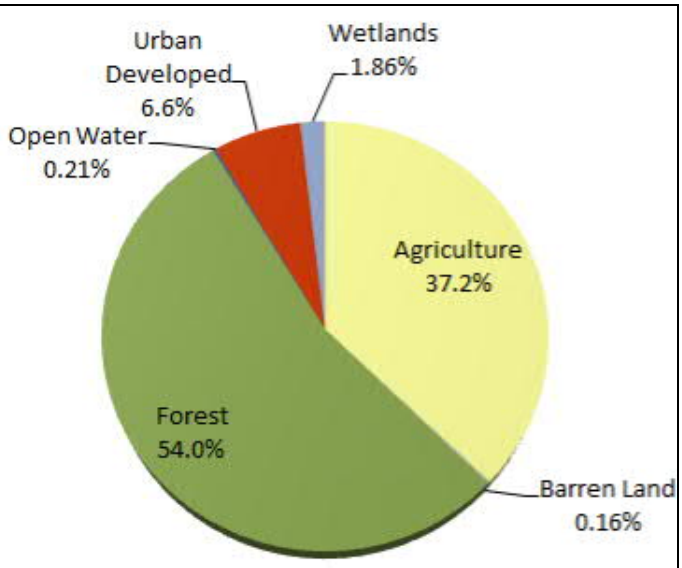
Subwatershed	Toxic Pollutant	Impaired River Miles by Pollutant	Impaired River Miles by Subwatershed
Bochsler Creek	Chlorpyrifos	0.6	0.6
Butte Creek	Iron	35.6	35.6
Little Pudding River	Chlorpyrifos	19.1	19.1
Mill Creek	Arsenic	12.5	12.5
Molalla River	Lead	48.2	48.2
Pudding River	Guthion	61.8	97.2
	Lead	35.4	
Zollner Creek	Chlorpyrifos	7.8	31.2
	DDE-4,4	7.8	
	Endosulfan	7.8	
	Guthion	7.8	
Total			

Impaired River Miles	
Toxic Pollutant	by Pollutant
Arsenic	12.5
Chlorpyrifos	27.5
DDE-4,4	7.8
Endosulfan	7.8
Guthion	69.6
Iron	35.6
Lead	83.6

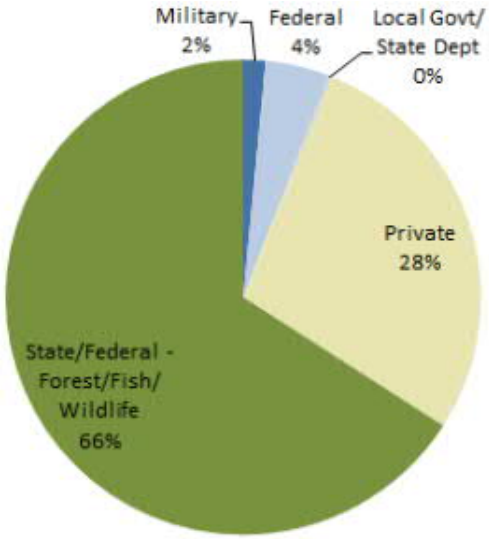
Sources: (DEQ, 2012; OSDL, 2017)

Land

Land Cover	Area (acres)	Percent of Basin
Agriculture	208,342	2.8%
Barren Land	901	0.01%
Forest	302,547	4.1%
Open Water	1,159	0.02%
Perennial Snow/Ice	-	-
Urban Developed	36,809	0.50%
Wetlands	10,392	0.14%
Total	560,151	7.6%



Land Management	Area (acres)	Percent of Basin
DOD/DOE/USACE	7,397	18%
Federal	868	2.9%
Local Government	880	1.8%
Private	136,801	3.1%
State Departments	218	0.57%
Tribal	-	-
State Fish & Wildlife	440	3.7%
US Fish & Wildlife Service	-	-
BLM	20,495	5.0%
State Forest	29,208	35%
US Forest Service	292,546	13%
Total	488,852	



Sources: (OSDL, 2011, 2015)

Pollutant Sources

Point Sources

	Stormwater/Wastewater Discharges					
Total	DEQ NPDES Facilities	EPA NPDES Reporting Facilities	DOGAMI Mining Sites	NPDES Outfalls	ODOT Outfalls	NPDES Pesticide Applications
129	19	2	92	9	7	0
3%	1%	2%	9%	5%	1%	n/a

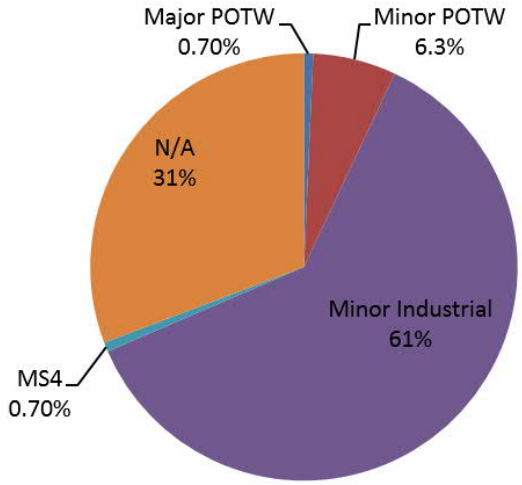
Nonpoint Sources

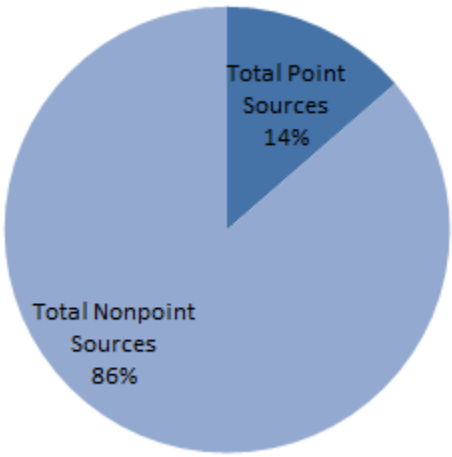
Total	Pesticide Applications (pounds)	Farms Harvesting Crops	DEQ ECSI Sites	EPA Superfund Sites
1,042	291,582	1,036	6	0
8%	9%	8%	1%	n/a

Mining Sites

Permit Status			
County	Closed	Permitted	New
Clackamas	53	16	0
Marion	14	9	0
Total	67	25	0

Permit Type		
NPDES 1200-A (offsite discharge)	WPCF 10000 (no discharge)	Unidentified
9	2	81
Total		92
Percent of Basin		13%
Percent of Basin - offsite discharge		11%





Sources:
(DEQ, 2009, 2017, 2018; DOGAMI, 2017; EPA, 2011, 2016, 2017b, 2018; ODOT, 2016; USDA, 2012; USGS, 2017)

References

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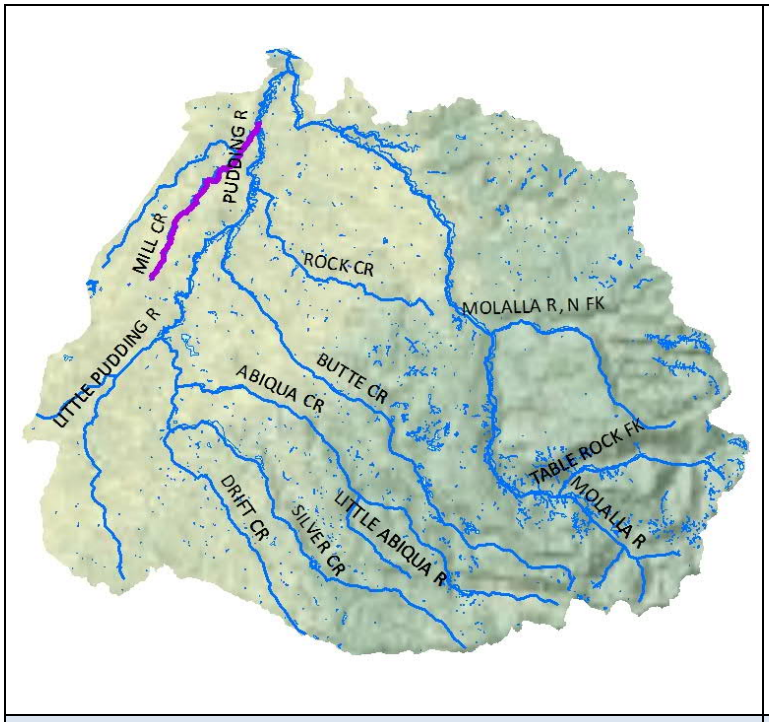
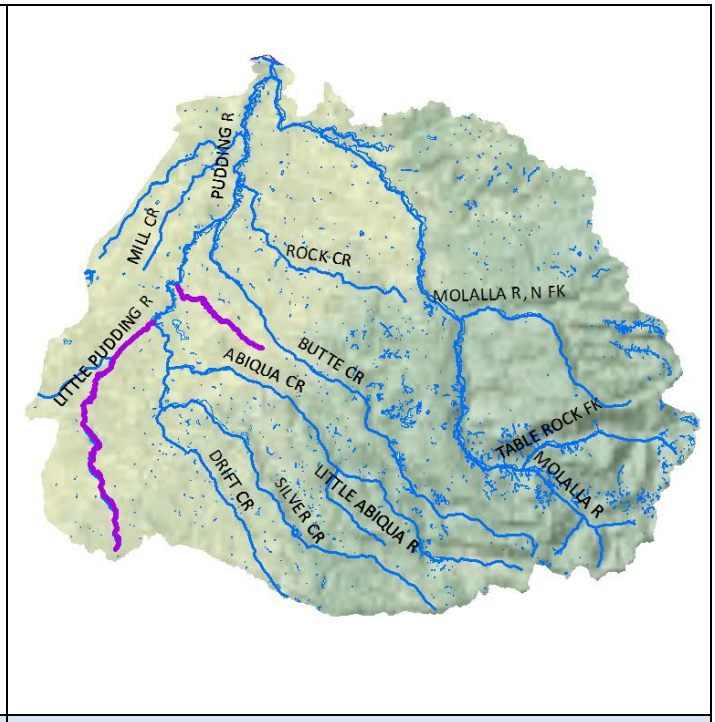
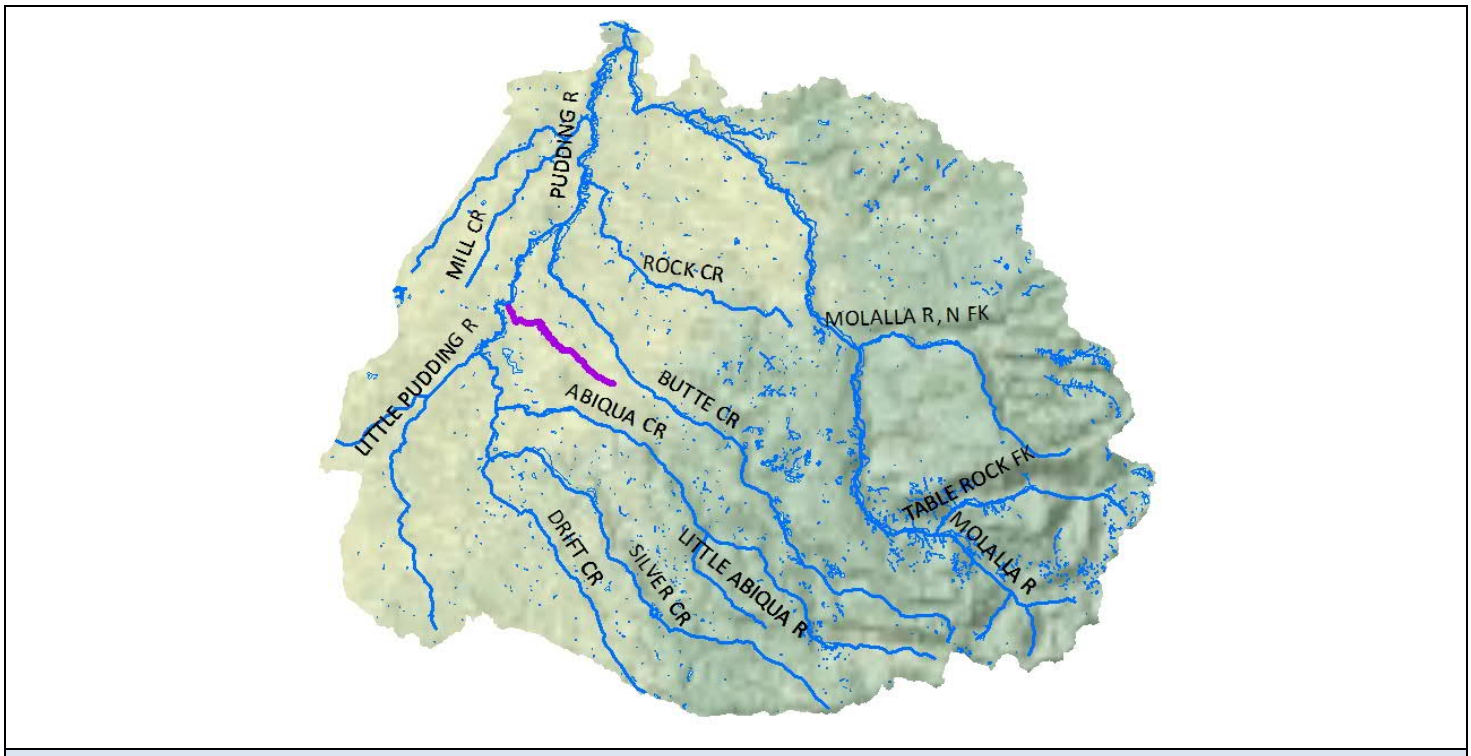
	January 10, 2018, from https://www.epa.gov/superfund/search-superfund-sites-where-you-live NLM. (2017). PubChem Substance and Compound Databases. Retrieved November 1, 2017, from https://pubchem.ncbi.nlm.nih.gov/ ODOT. (2016). Stormwater Outfall Inventory Management. Retrieved from https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Stormwater.aspx OSDL. (2011). Oregon NLCD Land Cover 2011. Retrieved April 15, 2018, from http://spatialdata.oregonexplorer.info/geoportal/details;id=81916ee1b2b741c0aacb814ee8e73af9 OSDL. (2015). Oregon Land Management 2015. Retrieved April 15, 2018, from http://spatialdata.oregonexplorer.info/geoportal/details;id=9b644e0f7a7d4124a50f6b35c05626ae OSDL. (2017). Oregon Watershed Boundary Dataset. Retrieved December 13, 2017, from http://spatialdata.oregonexplorer.info/geoportal/details;id=4b1b008d5a764a209b2df040689c0779 USDA. (2012). Census of Agriculture Table 8 Farms, Land in Farms, Value of Land and Buildings, and Land Use: 2012 and 2007. Retrieved from https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Oregon/ USGS. (2017). National Water Quality Assessment Project, Pesticide National Synthesis Project. Retrieved July 8, 2018, from https://water.usgs.gov/nawqa/pnsp/usage/maps/county-level/
Acronyms	BLM – Bureau of Land Management DEQ – (Oregon) Department of Environmental Quality DOD – Department of Defense DOE – Department of Energy DOGAMI – (Oregon) Department of Geology and Mineral Industries EPA – (United States) Environmental Protection Agency HUC – Hydrologic Unit Code n/a – not available / not analyzed NPDES – National Pollution Discharge Elimination System NLCD – National Land Cover Dataset ODOT – Oregon Department of Transportation USACE – United States Army Corps of Engineers
Limitations	The compilation of point and nonpoint sources was retrieved from publicly available information on the Internet, from state and federal regulatory databases. Therefore, the status of facilities identified in this subbasin as of the date of this report may change.



Arsenic Impairments



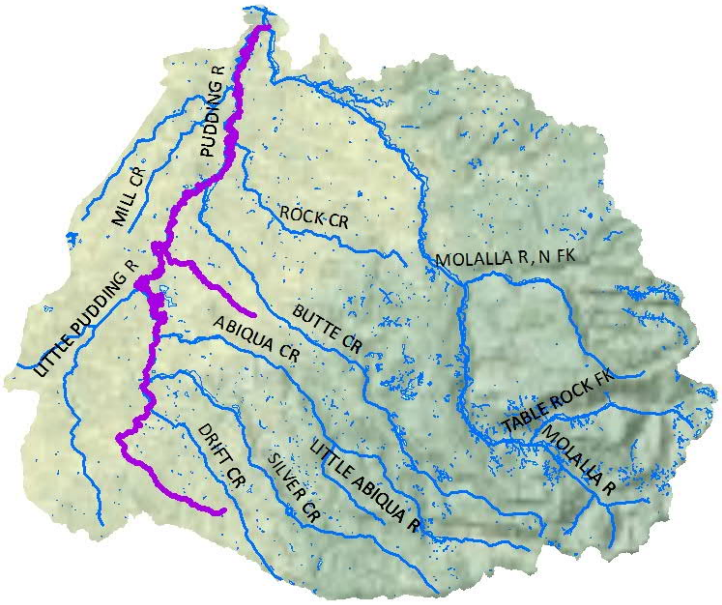
Chlorpyrifos, DDE Impairments



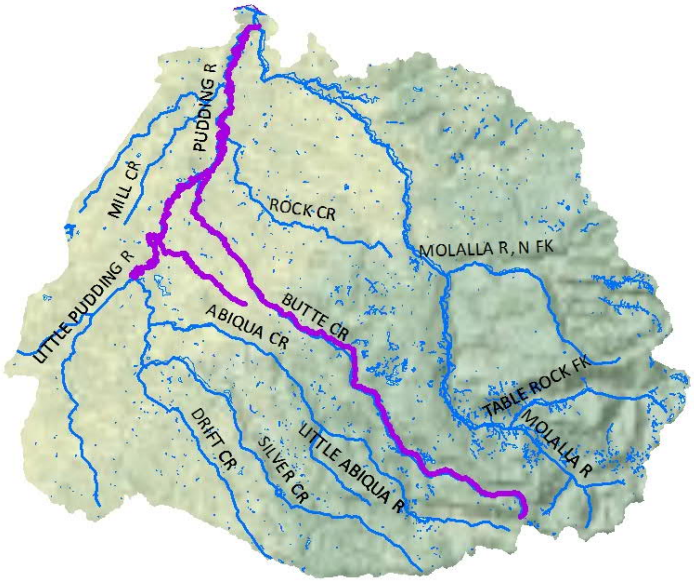
Endosulfan Impairments

Note: impairments identified in purple

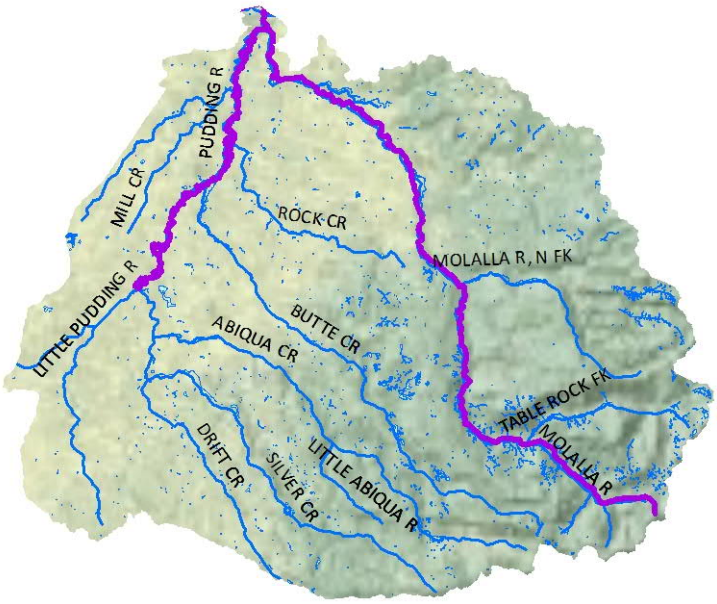
Figure A. Toxic Pollutant Impairments of the Molalla-Pudding Subbasin



Guthion Impairments



Iron Impairments



Lead Impairments

Note: impairments identified in purple

Figure A. Toxic Pollutant Impairments of the Molalla-Pudding Subbasin (cont'd)

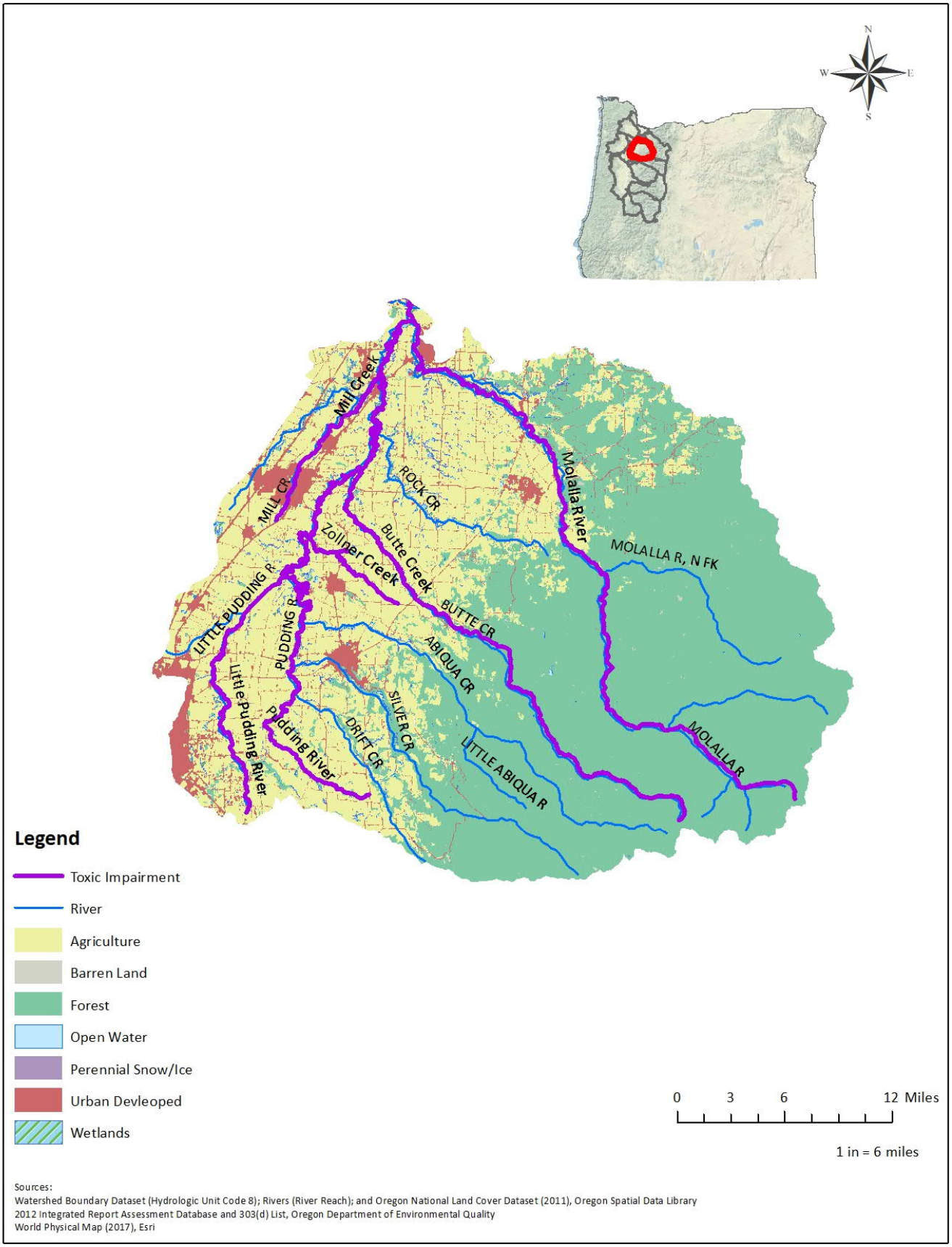


Figure B. Land Cover and Toxic Pollutant Impairments of the Molalla-Pudding Subbasin

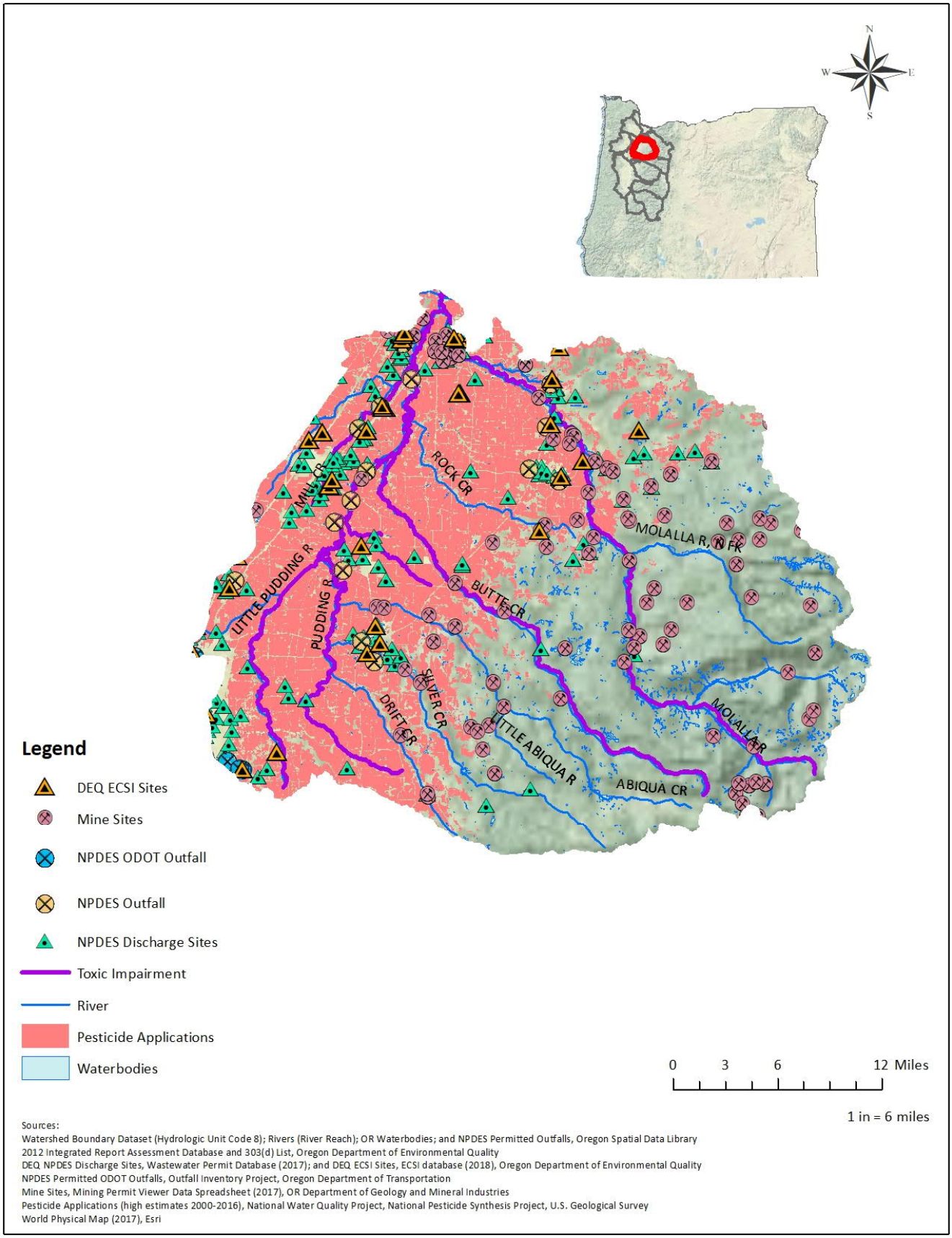


Figure C. Toxic Pollutant Sources and Impairments of the Molalla-Pudding Subbasin

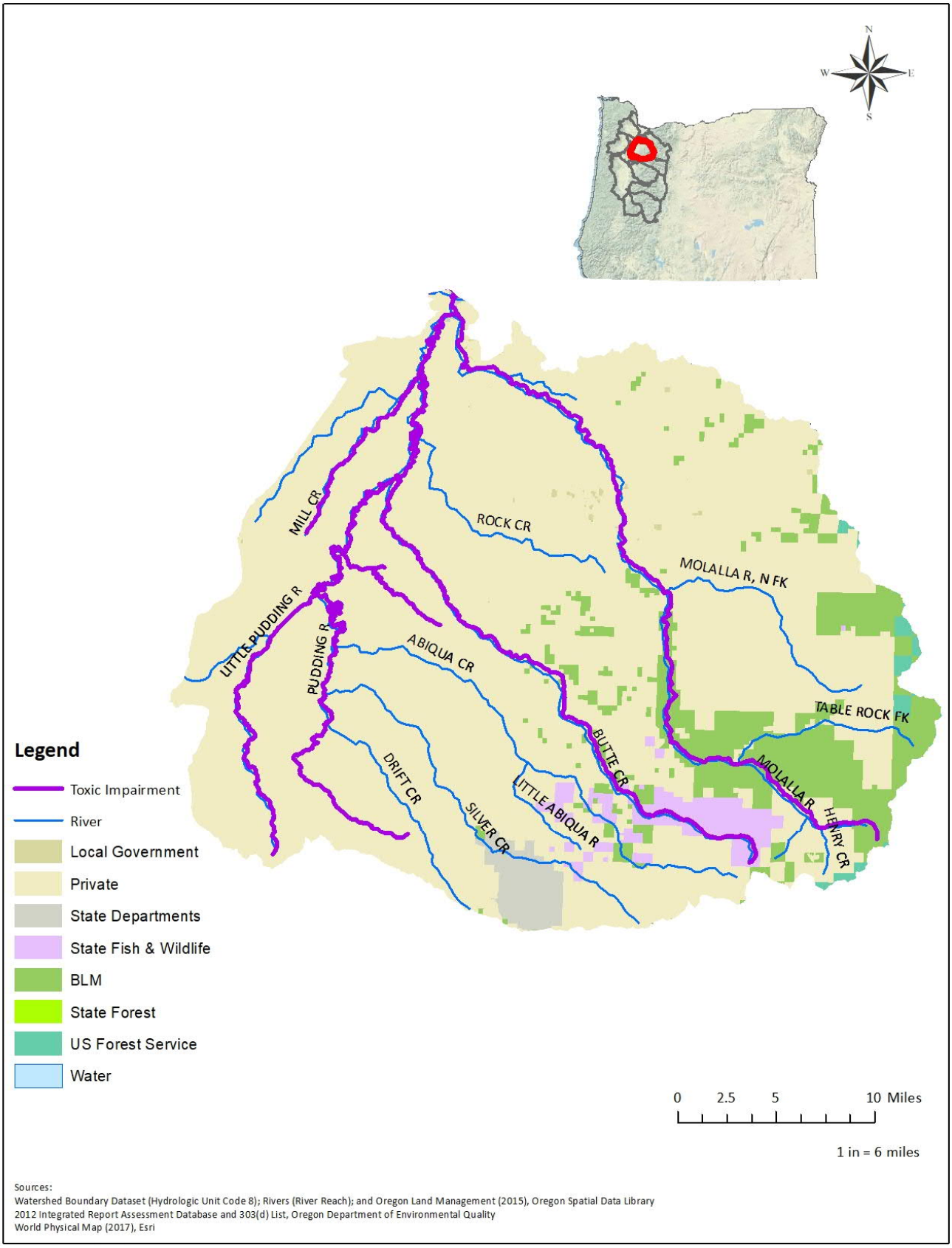


Figure D. Land Management and Toxic Pollutant Impairments of the Molalla-Pudding Subbasin

Profile

Description
HUC 8 Subbasin 17090005
Land cover ..... 489,106 acres (6.7% of Willamette Basin)
Watersheds 6
Subwatersheds 30
Counties ..... Clackamas, Jefferson, Marion, Polk, and Linn

Impairments
Watersheds 4
River miles ..... 26 (0.70% of Willamette Basin)

2012 Category 5 303(d)-listed Toxic Pollutants

Metals
Mercury

Beneficial Uses
Human Health

Sources: (EPA, 2017a; NLM, 2017)

Impairments

Watershed (HUC 10)	Subwatershed (HUC 12)		City
1709000501 Breitenbush River	170900050101	South Fork Breitenbush River	
	170900050102	North Fork Breitenbush River	
	170900050103	Humbug Creek	
	170900050104	Upper Breitenbush River	
	170900050105	Lower Breitenbush River	Detroit
1709000502 Headwaters North Santiam River	170900050201	Swede Creek-North Santiam River	
	170900050202	Straight Creek-North Santiam River	
	170900050203	Marion Creek	
	170900050204	Pamelia Creek	
	170900050205	Minto Creek-North Santiam River	
	170900050206	Whitewater Creek	
	170900050207	Boulder Creek-North Santiam River	Idanha
	170900050208	Sauers Creek-North Santiam River	Detroit, Idanha
1709000503 Upper North Santiam River	170900050301	Upper Blowout Creek	
	170900050302	Lower Blowout Creek	
	170900050303	French Creek-Detroit Lake	Detroit
	170900050304	Kinney Creek-Detroit Reservoir	
1709000504 Middle North Santiam River	170900050401	Sevenmile Creek-North Santiam River	
	170900050402	Rock Creek	
	170900050403	Mad Creek-North Santiam River	Gates
	170900050404	Walker Creek-North Santiam River	Lyons, Mill City
1709000505 Little North Santiam River	170900050501	Opal Creek	
	170900050502	Headwaters Little North Santiam	

		River	
	170900050503	Upper Little North Santiam River	
	170900050504	Middle Little North Santiam River	
	170900050505	Lower Little North Santiam River	
1709000506 Lower North Santiam River	170900050601	Stout Creek-North Santiam River	Lyons
	170900050602	Bear Branch-North Santiam River	Stayton
	170900050603	Marion Creek-North Santiam River	Stayton
	170900050604	Morgan Creek-North Santiam River	Jefferson

Note: Bold text indicates toxic pollutant impairment

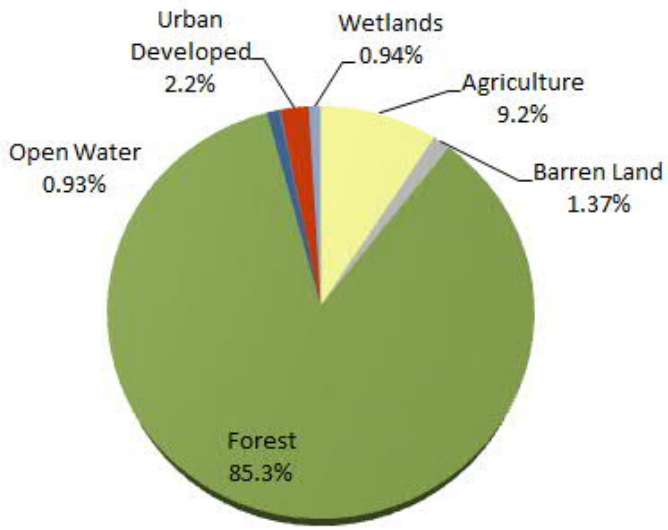
Subwatershed	Toxic Pollutant	Impaired River Miles by Pollutant	Impaired River Miles by Subwatershed
Santiam River	Mercury	26.2	26.2
Total			26.2

Impaired River Miles Toxic Pollutant	Impaired River Miles by Pollutant
Mercury	26.2

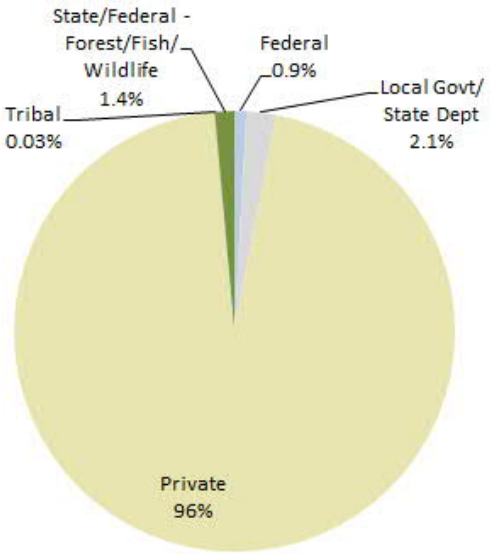
Sources: (DEQ, 2012; OSDL, 2017)

Land

Land Cover	Area (acres)
Agriculture	44,945
Barren Land	6,696
Forest	416,793
Open Water	4,545
Perennial Snow/Ice	594
Urban Developed	10,748
Wetlands	4,580
Total	488,901



Land Management	Area (acres)
DOD/DOE/USACE	12,189
Federal	-
Local Government	3
Private	147,104
State Departments	686
Tribal	-
State Fish & Wildlife	-
US Fish & Wildlife Service	-
BLM	24,595
State Forest	652
US Forest Service	689,265
Total	874,495



Sources: (OSDL, 2011, 2015)

Pollutant Sources

Point Sources

Total	Stormwater/Wastewater Discharges					
	DEQ NPDES Facilities	EPA NPDES Reporting Facilities	DOGAMI Mining Sites	NPDES Outfalls	ODOT Outfalls	NPDES Pesticide Applications
468	382	17	41	28	0	0
12%	19%	14%	4%	15%	n/a	n/a

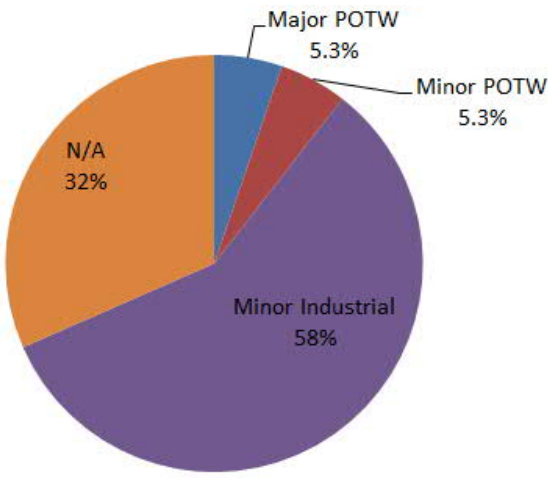
Nonpoint Sources

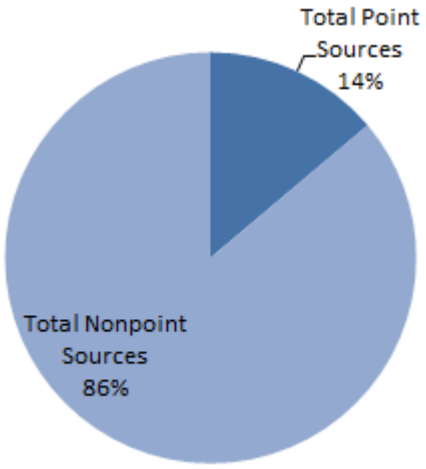
Total s	Pesticide Applications (pounds)	Farms Harvesting Crops	DEQ ECSI Sites	EPA Superfund Sites
397	76,042	311	86	0
3%	2%	2%	9%	n/a

Mining Sites

Permit Status			
County	Closed	Permitted	New
Linn	10	9	0
Marion	15	7	0
Total	25	16	0

Permit Type		
NPDES 1200-A (offsite discharge)	WPCF 10000 (no discharge)	Unidentified
4	1	36
Total		41
Percent of Basin		6%
Percent of Basin - offsite discharge		0.6%





Sources:
(DEQ, 2009, 2017, 2018; DOGAMI, 2017; EPA, 2011, 2016, 2017b, 2018; ODOT, 2016; USDA, 2012; USGS, 2017)

References

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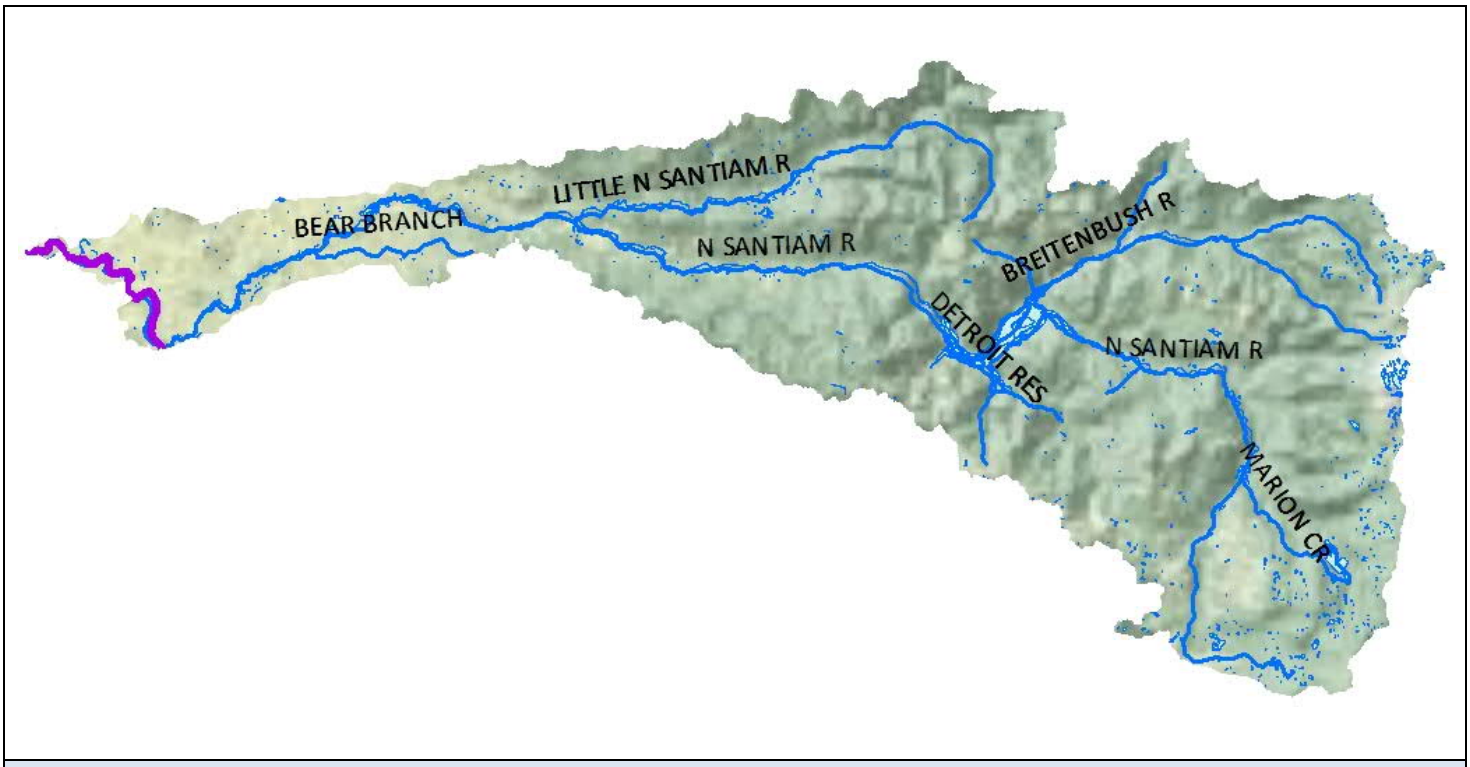
	http://spatialdata.oregonexplorer.info/geoportal/details;id=4b1b008d5a764a209b2df040689c0779 USDA. (2012). Census of Agriculture Table 8 Farms, Land in Farms, Value of Land and Buildings, and Land Use: 2012 and 2007. Retrieved from https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Oregon/ USGS. (2017). National Water Quality Assessment Project, Pesticide National Synthesis Project. Retrieved July 8, 2018, from https://water.usgs.gov/nawqa/pnsp/usage/maps/county-level/
Acronyms	BLM – Bureau of Land Management DEQ – (Oregon) Department of Environmental Quality DOD – Department of Defense DOE – Department of Energy DOGAMI – (Oregon) Department of Geology and Mineral Industries EPA – (United States) Environmental Protection Agency HUC – Hydrologic Unit Code n/a – not available / not analyzed NPDES – National Pollution Discharge Elimination System NLCD – National Land Cover Dataset ODOT – Oregon Department of Transportation USACE – United States Army Corps of Engineers
Limitations	The compilation of point and nonpoint sources was retrieved from publicly available information on the Internet, from state and federal regulatory databases. Therefore, the status of facilities identified in this subbasin as of the date of this report may change.



Mercury Impairments

Note: impairments identified in purple

Figure A. Toxic Pollutant Impairments of the North Santiam Subbasin

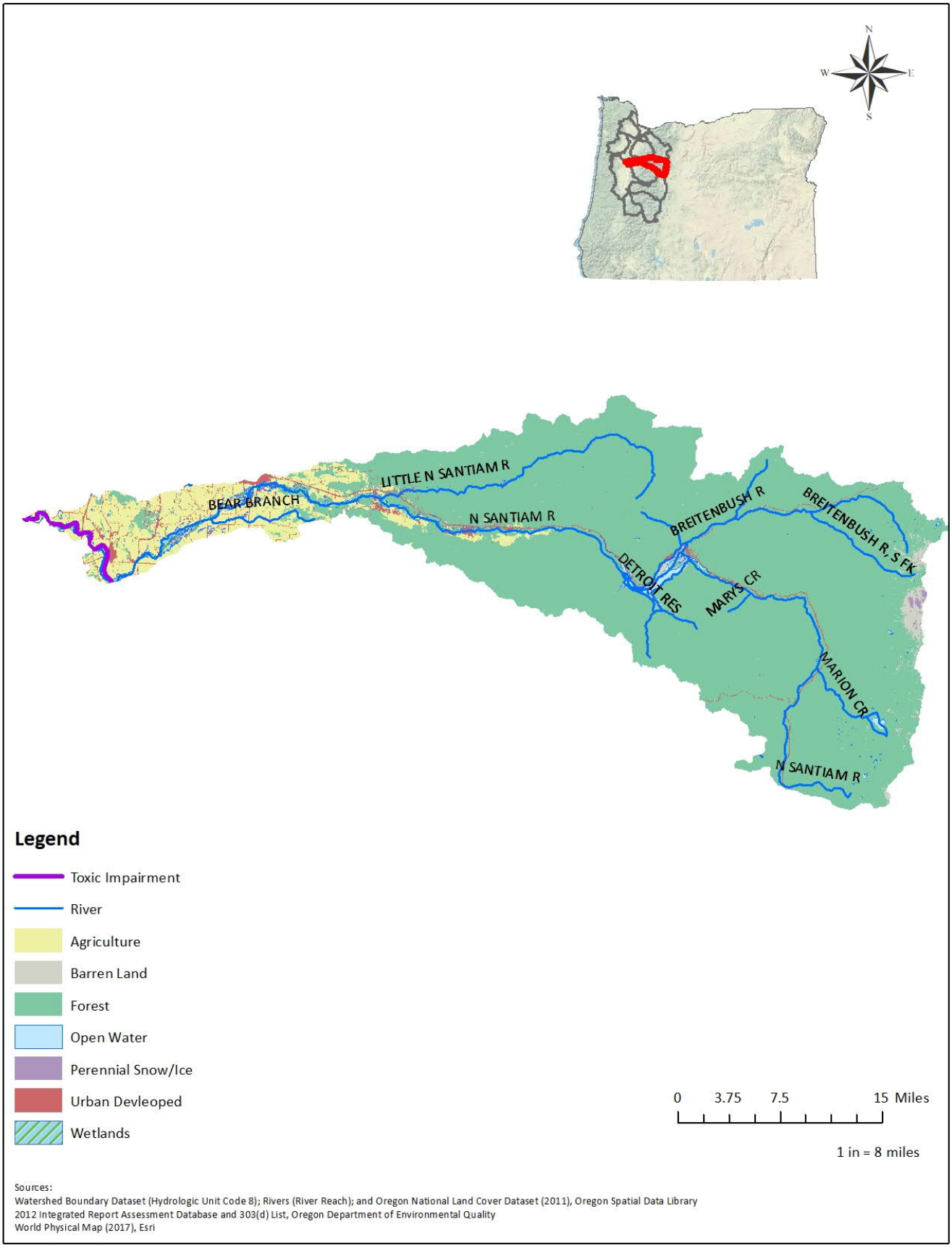


Figure B. Land Cover and Toxic Pollutant Impairments of the North Santiam Subbasin

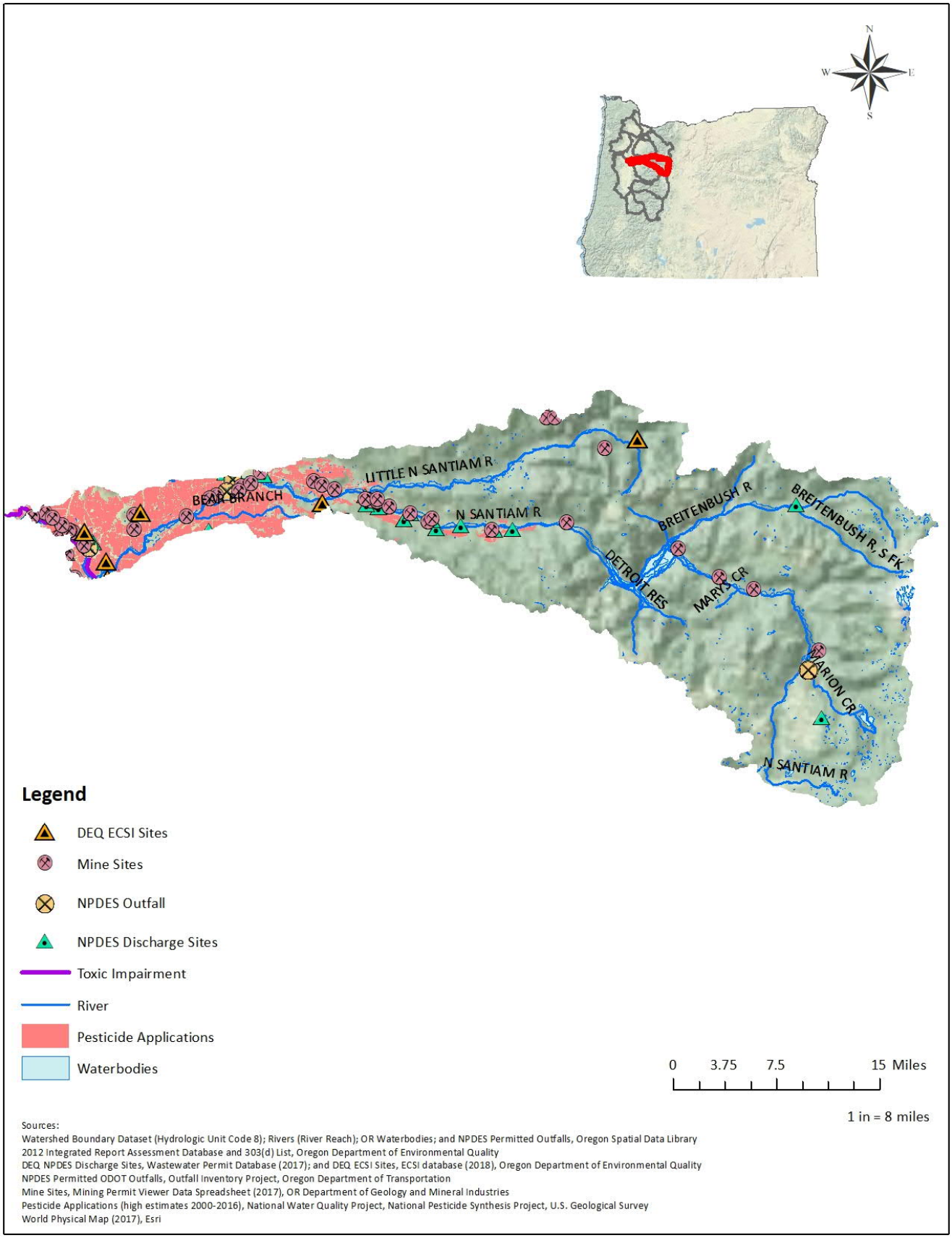


Figure C. Toxic Pollutant Sources and Impairments of the North Santiam Subbasin

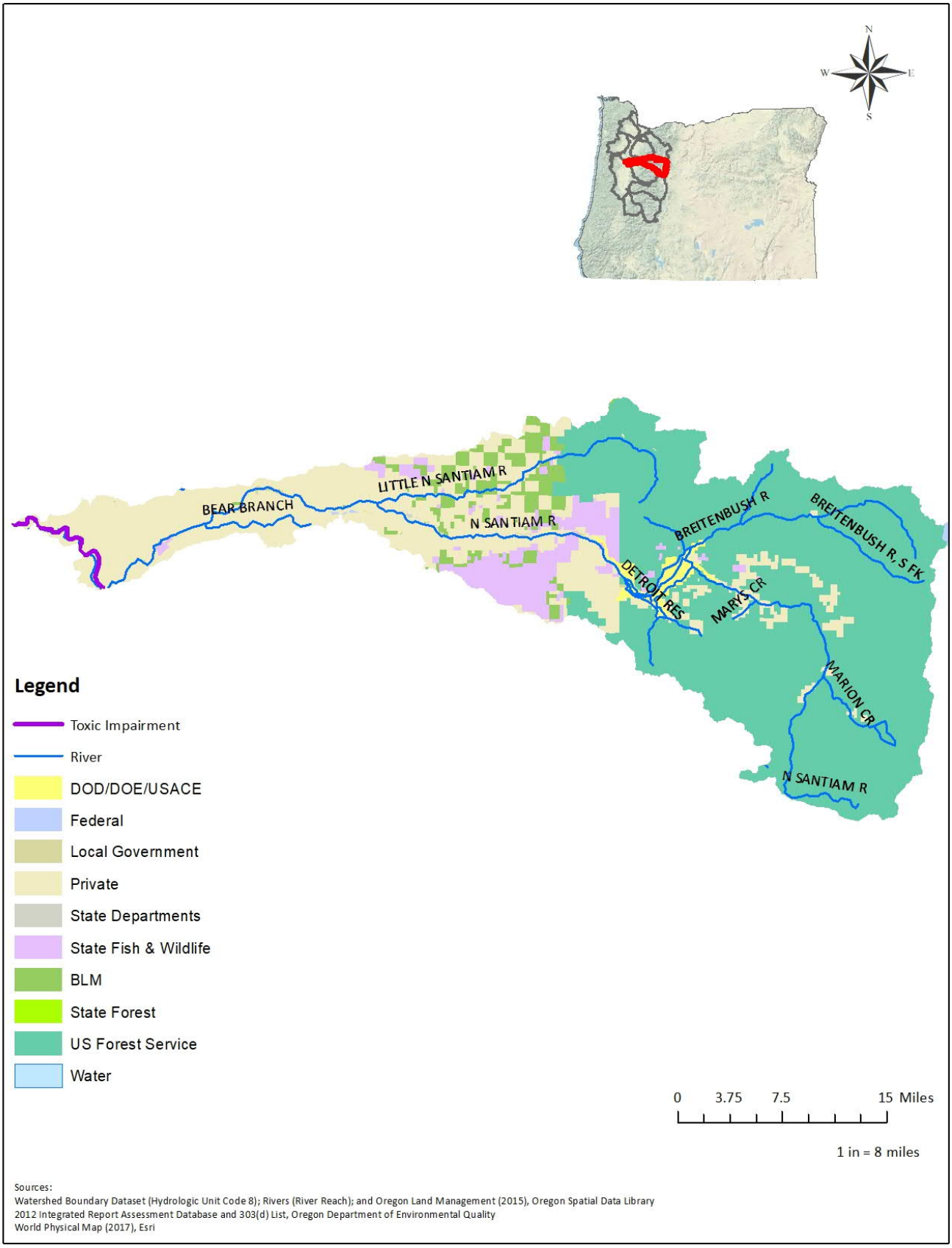


Figure D. Land Management and Toxic Pollutant Impairments of the North Santiam Subbasin

Profile

Description

HUC 8 Subbasin 17090010
Land cover ..... 453,673 acres (6.2% of Willamette Basin)
Watersheds 5
Subwatersheds 26
Counties ..... Clackamas, Columbia, Multnomah, Tillamook, Washington, and Yamhill

Impairments
Watersheds 5
River miles ..... 815 (22% of Willamette Basin)

2012 Category 5 303(d)-listed Toxic Pollutants

Metals	Organochlorine Insecticides	VOCs
Arsenic Chromium Copper Iron Lead Mercury Silver Thallium Zinc	Dieldrin	Ammonia as N Tetrachloroethylene

Beneficial Uses
Aquatic Life, Human Health, Resident Fish, and Aquatic Life

Sources: (EPA, 2017a; NLM, 2017)

Impairments

Watershed (HUC 10)	Subwatershed (HUC 12)		City
1709001001 Gales Creek	170900100101	Upper Gales Creek	
	170900100102	Middle Gales Creek	
	170900100103	Lower Gales Creek	Forest Grove
1709001002 Scoggins Creek-Tualatin River	170900100201	Headwaters Tualatin River	
	170900100202	Wapato Creek	Gaston
	170900100203	Sain Creek-Scoggins Creek	
	170900100204	Roaring Creek-Tualatin River	Gaston
	170900100205	Carpenter Creek-Tualatin River	
	170900100206	City of Forest Grove-Tualatin River	Cornelius, Forest Grove
1709001003 Dairy Creek	170900100301	Upper West Fork Dairy Creek	
	170900100302	Middle West Fork Dairy Creek	Banks
	170900100303	Lower West Fork Dairy Creek	Banks
	170900100304	Upper East Fork Dairy Creek	
	170900100305	Lower East Fork Dairy Creek	Banks
	170900100306	Upper McKay Creek	North Plains
	170900100307	Lower McKay Creek	Hillsboro, North Plains
	170900100308	Council Creek-Dairy Creek	Cornelius, Forest Grove, Hillsboro

1709001004 Rock Creek-Tualatin River	170900100401	Beaverton Creek	Beaverton, Hillsboro, Portland
	170900100402	Upper Rock Creek	Beaverton, Hillsboro, Portland
	170900100403	Lower Rock Creek	Hillsboro
	170900100404	Davis Creek-Tualatin River	Beaverton, Hillsboro
	170900100405	McFee Creek	
	170900100406	Christensen Creek-Tualatin River	Beaverton
1709001004 Fanno Creek-Tualatin River	170900100501	Chicken Creek	Sherwood
	170900100502	Fanno Creek	Beaverton, Durham, Lake Oswego, Portland, Tigard, Tualatin
	170900100503	Rock Creek-Tualatin River	Beaverton, Durham, King City, Sherwood, Tigard, Tualatin
	170900100504	Saum Creek-Tualatin River	Durham, Lake Oswego, Rivergrove, Sherwood, Tigard, Tualatin, West Linn

Notes:
Bold text indicates toxic pollutant impairment
Silver and zinc impairments also in the Koll Wetland

Subwatershed	Toxic Pollutant	Impaired River Miles by Pollutant	Impaired River Miles by Subwatershed
Beaverton Creek	Arsenic	9.8	29.4
	Iron	9.8	
	Lead	9.8	
Bronson Creek	Lead	6.5	
Chicken Creek	Iron	7	14
	Lead	7	
Dairy Creek	Iron	10.1	20.2
	Lead	10.1	
Fanno Creek	Arsenic	13.9	111.2
	Copper	13.9	
	Dieldrin	13.9	
	Iron	13.9	
	Lead	13.9	
	Tetrachloroethylene	13.9	
	Thallium	13.9	
	Zinc	13.9	
Gales Creek	Chromium	23.2	106.3
	Copper	27.7	
	Iron	27.7	
	Lead	27.7	
Koll Wetland	Chromium	-	-
	Copper	-	
	Lead	-	
	Silver	-	
	Zinc		
McFee Creek	Iron	8.3	8.3
McKay Creek	Arsenic	22.7	45.4
	Iron	22.7	

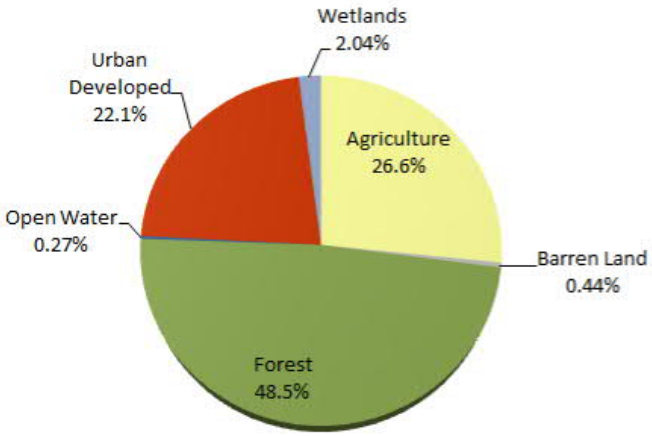
Toxic Pollutant	Impaired River Miles by Pollutant
Ammonia as N	44.7
Arsenic	64.6
Chromium	23.2
Copper	122.3
Dieldrin	13.9
Iron	216.4
Lead	162.7
Mercury	80.7
Silver	-
Tetrachloroethylene	13.9
Thallium	13.9
Zinc	58.6

Rock Creek	Arsenic	18.2	54.6
	Iron	18.2	
	Lead	18.2	
Scoggins Creek	Iron	18	18
Tualatin River	Ammonia as N	44.7	401
	Copper	80.7	
	Iron	80.7	
	Lead	69.5	
	Mercury	80.7	
	Zinc	44.7	
Total			814.9

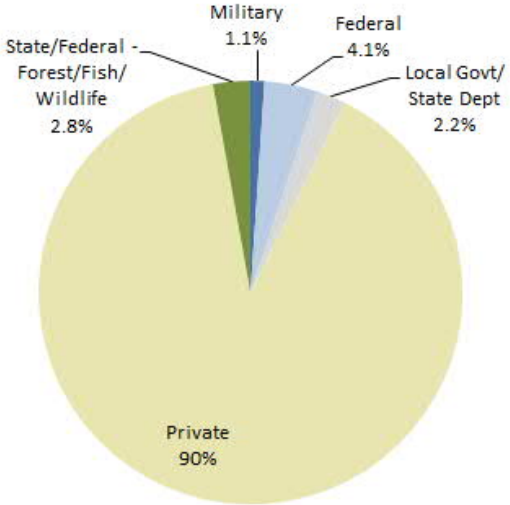
Sources: (DEQ, 2012; OSDL, 2017)

Land

Land Cover	Area (acres)
Agriculture	120,790
Barren Land	2,003
Forest	219,931
Open Water	1,234
Perennial Snow/Ice	-
Urban Developed	100,460
Wetlands	9,265
Total	453,682



Land Management	Area (acres)
DOD/DOE/USACE	-
Federal	-
Local Government	8,259
Private	453,567
State Departments	2,031
Tribal	-
State Fish & Wildlife	-
US Fish & Wildlife Service	2,095
BLM	12,774
State Forest	31,091
US Forest Service	-
Total	509,952



Sources: (OSDL, 2011, 2015)

Pollutant Sources

Point Sources

	Stormwater/Wastewater Discharges					
Total	DEQ NPDES Facilities	EPA NPDES Reporting Facilities	DOGAMI Mining Sites	NPDES Outfalls	ODOT Outfalls	NPDES Pesticide Applications
650	344	32	55	46	173	0
17%	17%	26%	5%	24%	33%	n/a

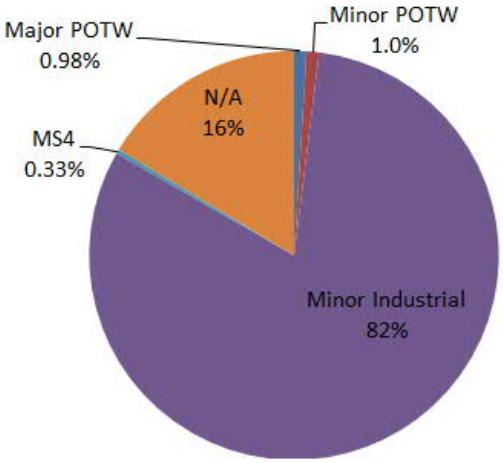
Nonpoint Sources

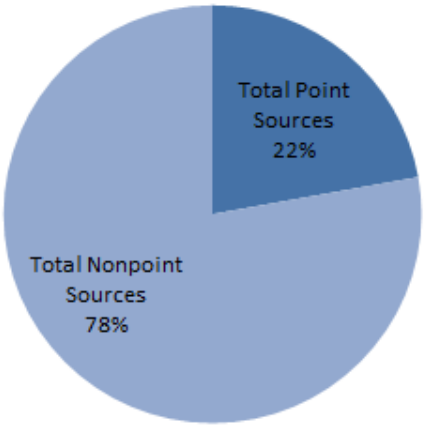
Total	Pesticide Applications (pounds)	Farms Harvesting Crops	DEQ ECSI Sites	EPA Superfund Sites
1,893	315,915	1,754	139	0
14%	10%	14%	15%	n/a

Mining Sites

Permit Status			
County	Closed	Permitted	New
Clackamas	2	1	1
Marion	0	1	0
Multnomah	1	1	0
Washington	26	17	1
Yamhill	3	1	0
Total	31	21	2

Permit Type		
NPDES 1200-A (offsite discharge)	WPCF 10000 (no discharge)	Unidentified
7	0	48
Total		55
Percent of Basin		8.0%
Percent of Basin - offsite discharge		1.0%





Sources:
(DEQ, 2009, 2017, 2018; DOGAMI, 2017; EPA, 2011, 2016, 2017b, 2018; ODOT, 2016; USDA, 2012; USGS, 2017)

References

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	n/a – not available / not analyzed NPDES – National Pollution Discharge Elimination System NLCD – National Land Cover Dataset ODOT – Oregon Department of Transportation USACE – United States Army Corps of Engineers
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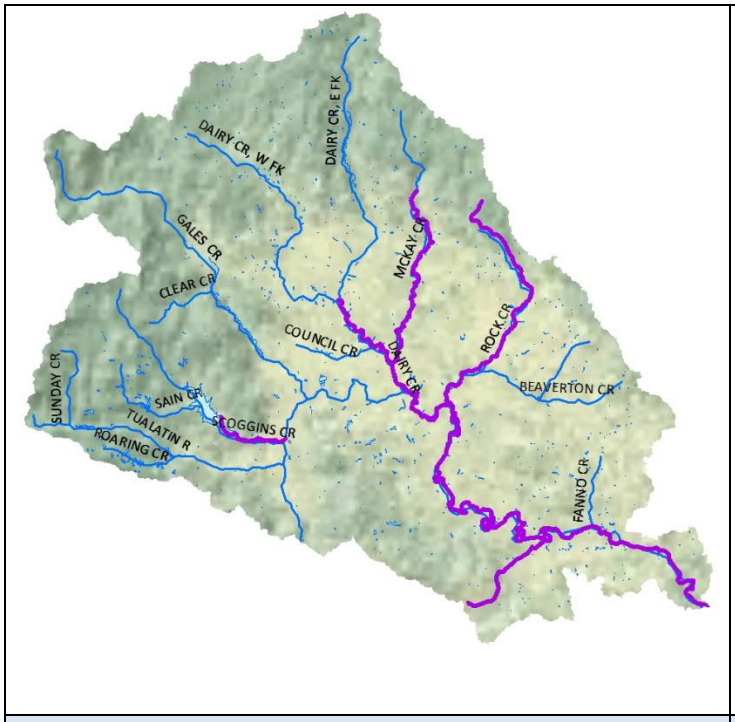
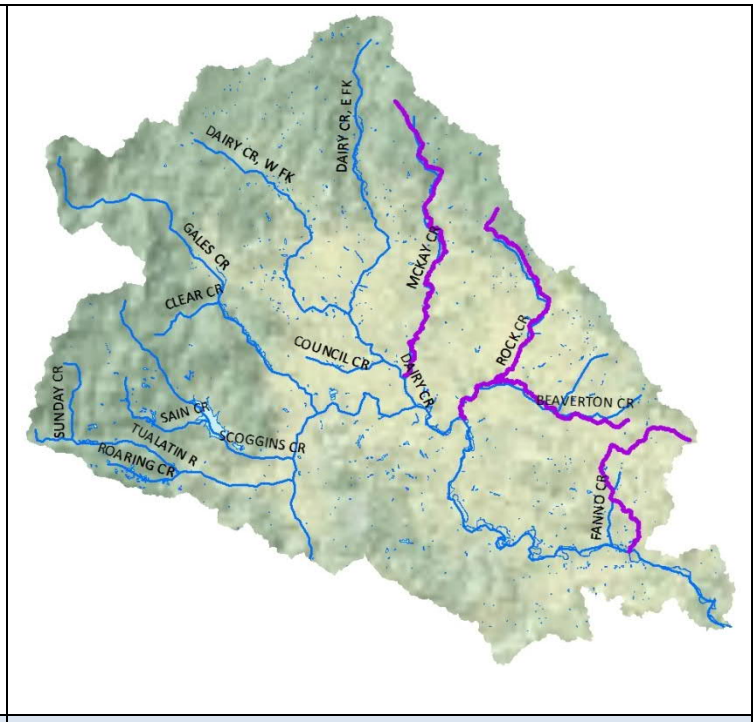
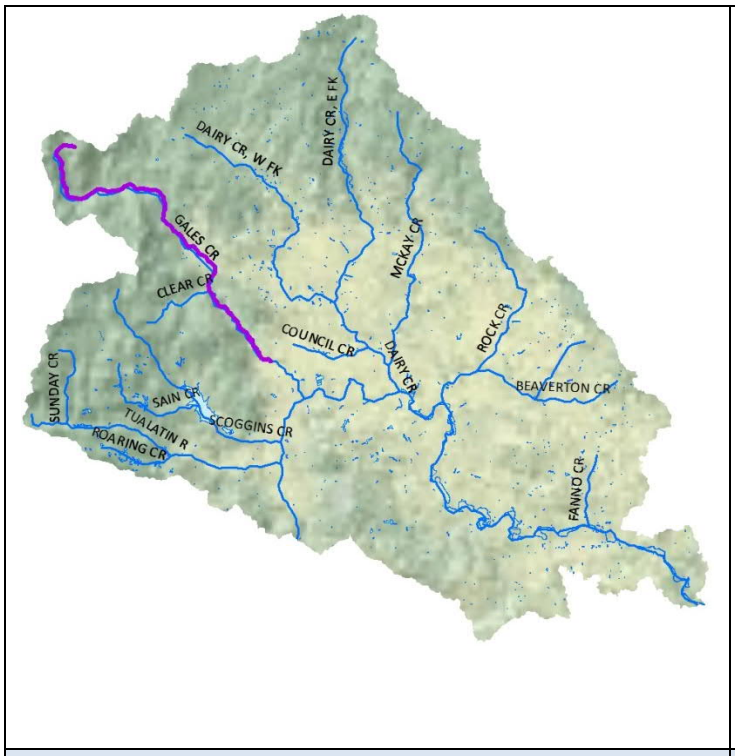


Ammonia Impairments



Arsenic Impairments



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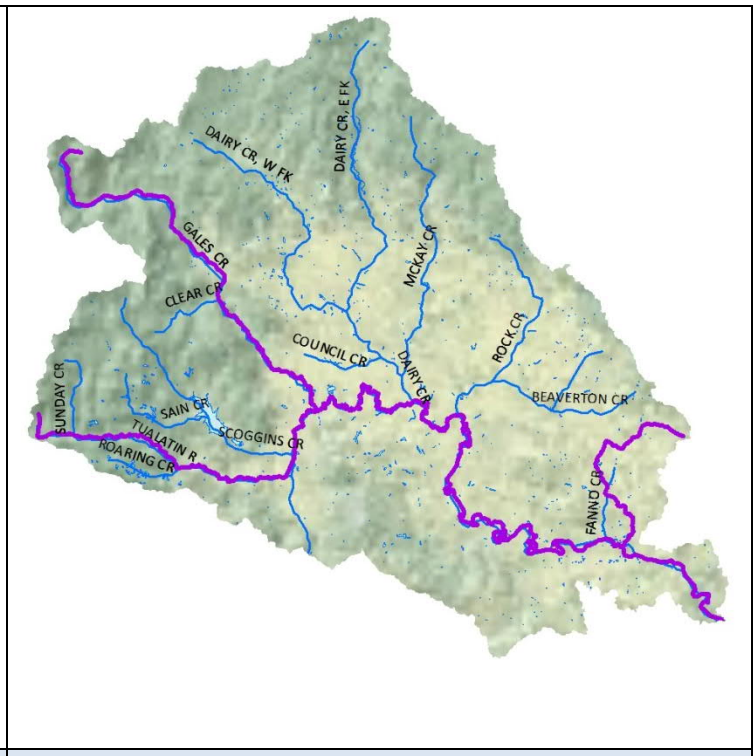
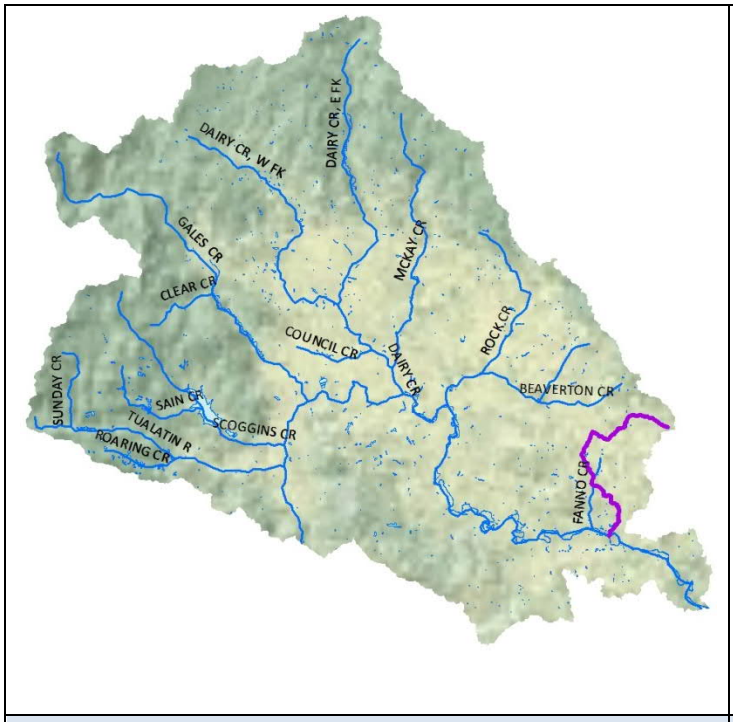


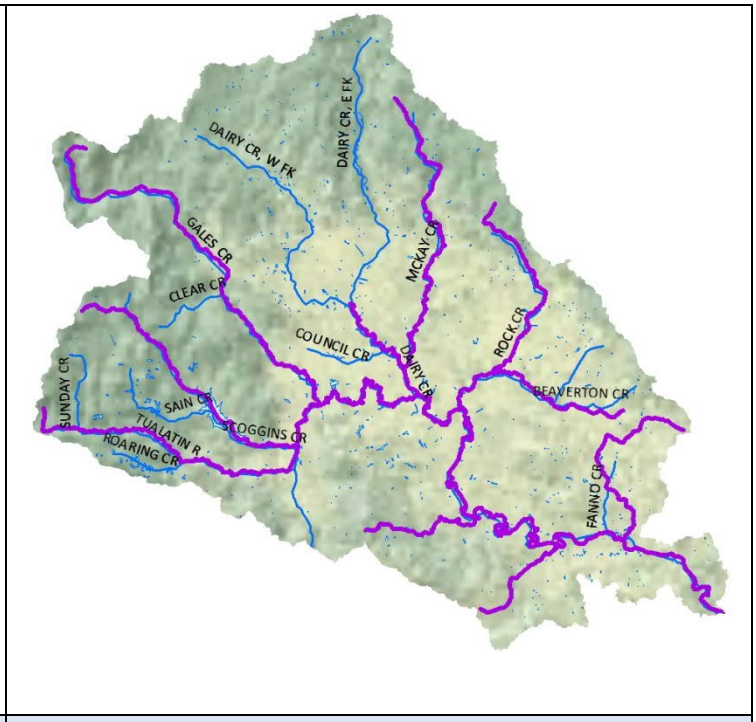
Copper Impairments

Note: impairments identified in purple

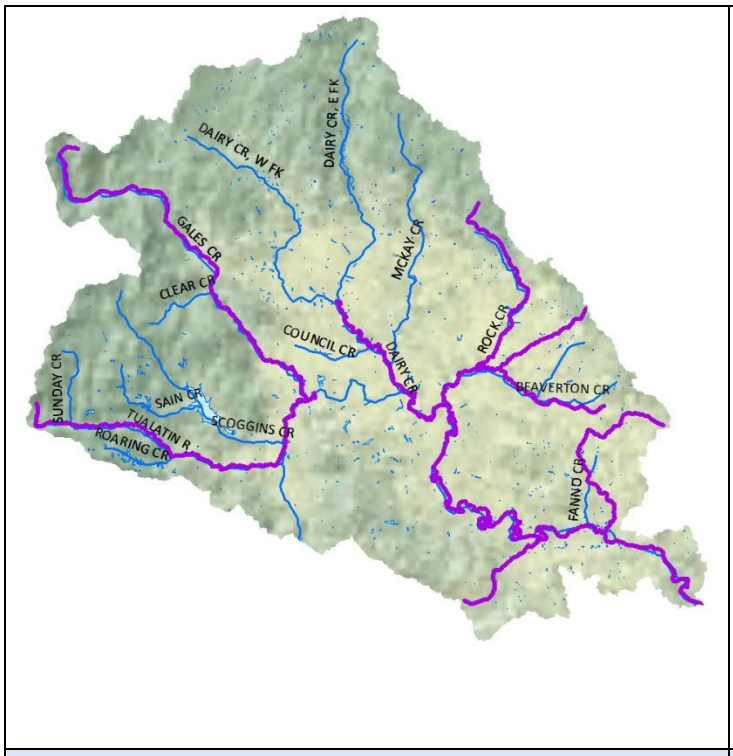
Figure A. Toxic Pollutant Impairments of the Tualatin Subbasin



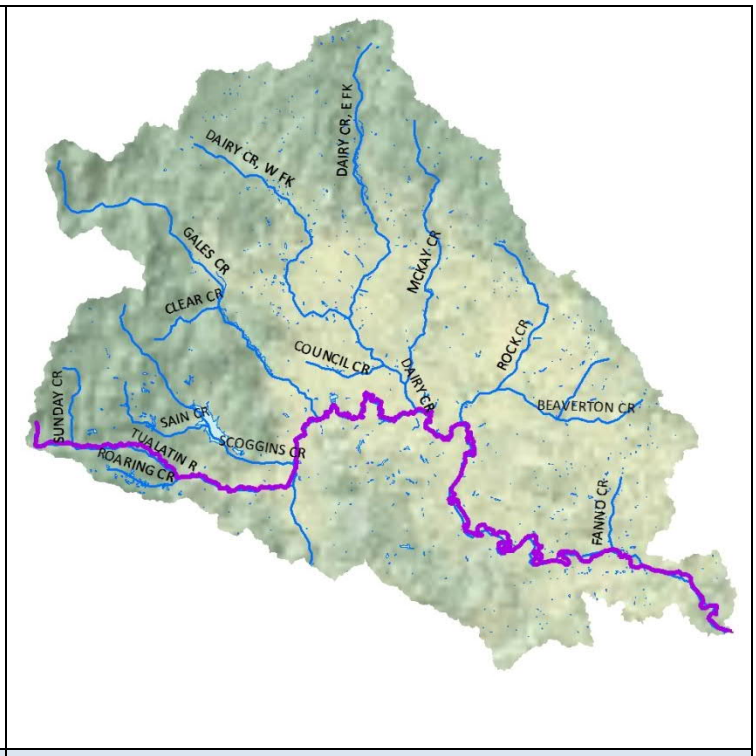
Dieldrin, PCE, Thallium Impairments



Iron Impairments



Lead Impairments



Mercury Impairments

Note: impairments identified in purple

Figure A. Toxic Pollutant Impairments of the Tualatin Subbasin (cont'd)

Zinc Impairments

Note: impairments identified in purple

Figure A. Toxic Pollutant Impairments of the Tualatin Subbasin (cont'd)

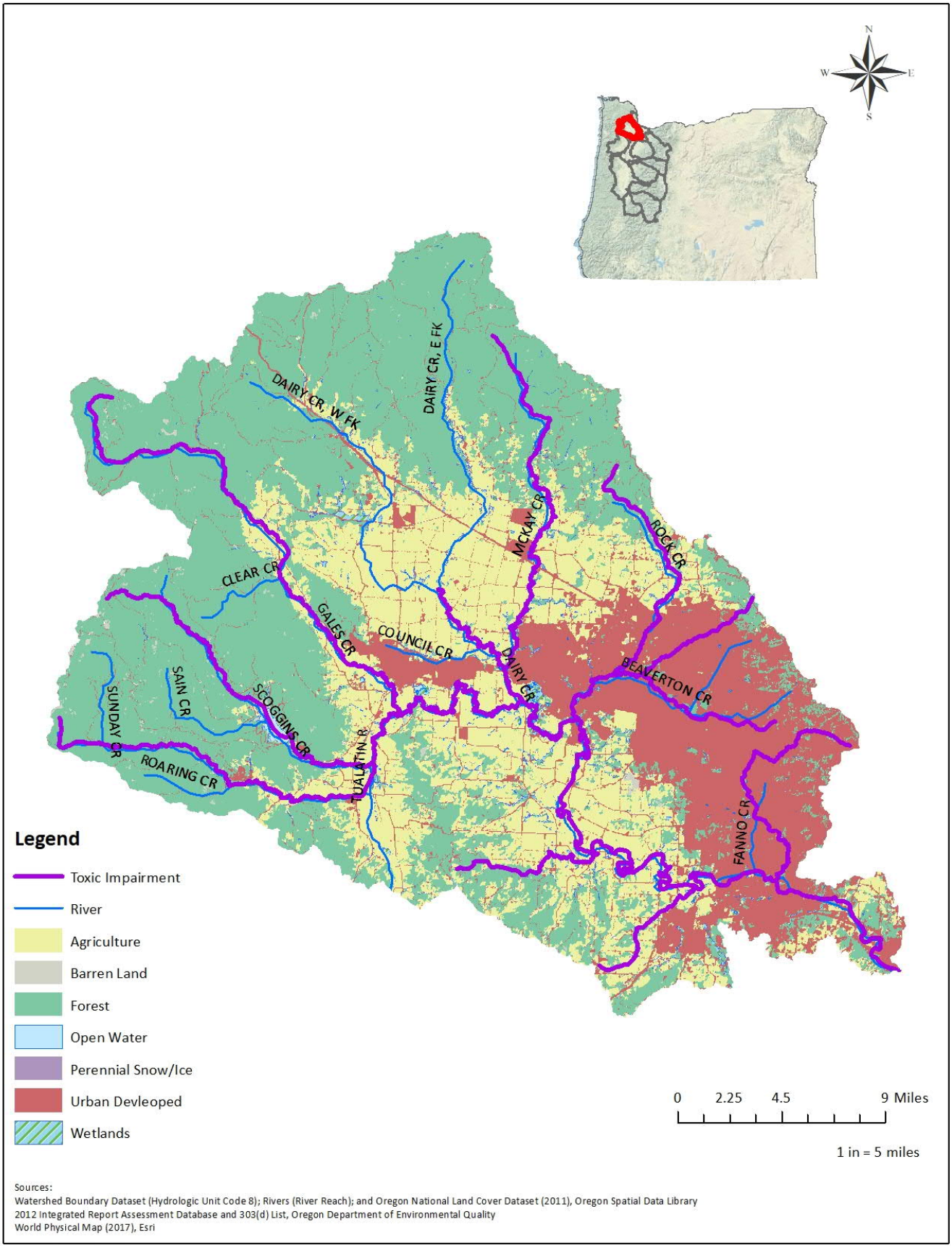
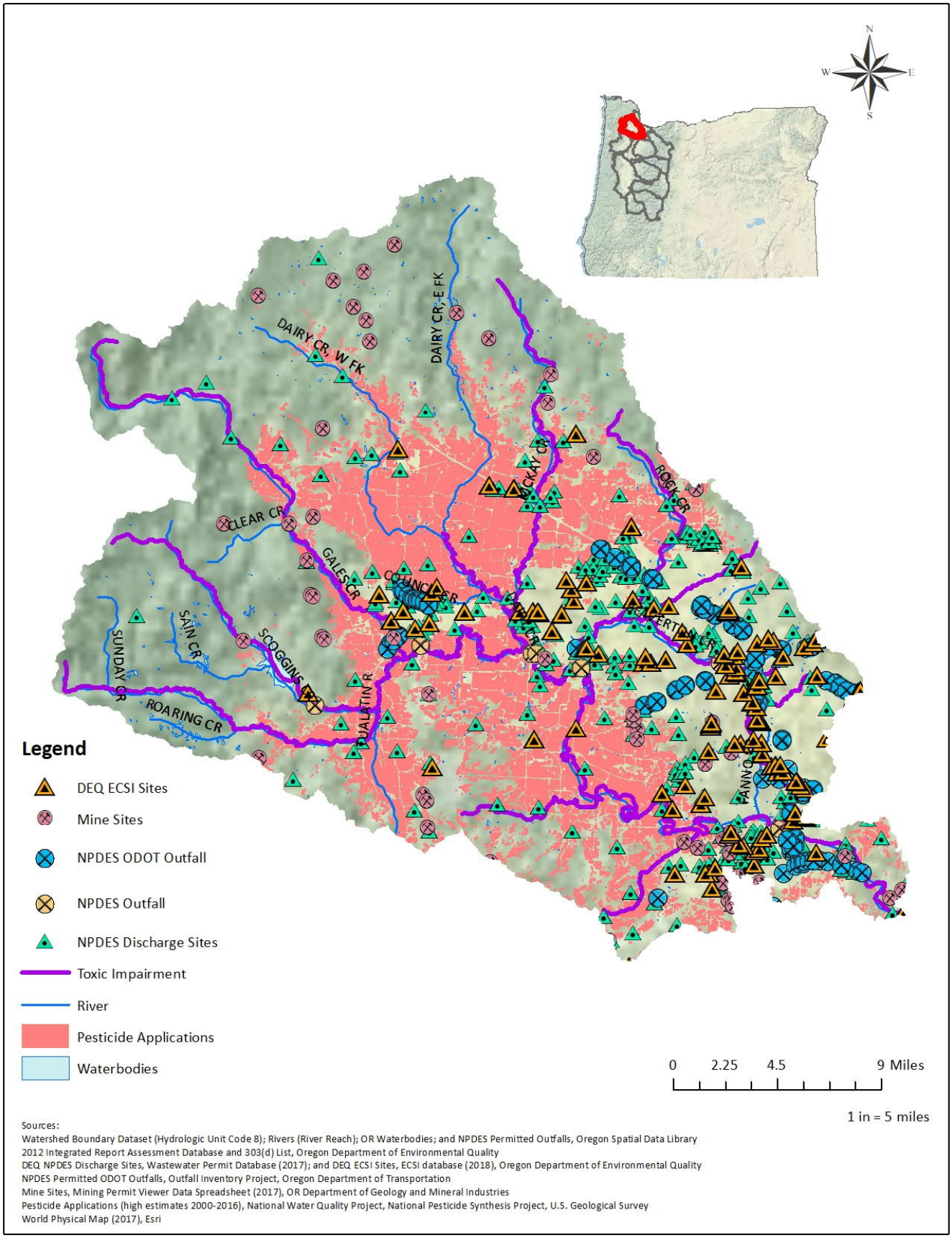


Figure B. Land Cover and Toxic Pollutant Impairments of the Tualatin Subbasin



Sources:
Watershed Boundary Dataset (Hydrologic Unit Code 8); Rivers (River Reach); OR Waterbodies; and NPDES Permitted Outfalls, Oregon Spatial Data Library
2012 Integrated Report Assessment Database and 303(d) List, Oregon Department of Environmental Quality
DEQ NPDES Discharge Sites, Wastewater Permit Database (2017); and DEQ ECSI Sites, ECSI database (2018), Oregon Department of Environmental Quality
NPDES Permitted ODOT Outfalls, Outfall Inventory Project, Oregon Department of Transportation
Mine Sites, Mining Permit Viewer Data Spreadsheet (2017), OR Department of Geology and Mineral Industries
Pesticide Applications (high estimates 2000-2016), National Water Quality Project, National Pesticide Synthesis Project, U.S. Geological Survey
World Physical Map (2017), Esri

Figure C. Toxic Pollutant Sources and Impairments of the Tualatin Subbasin

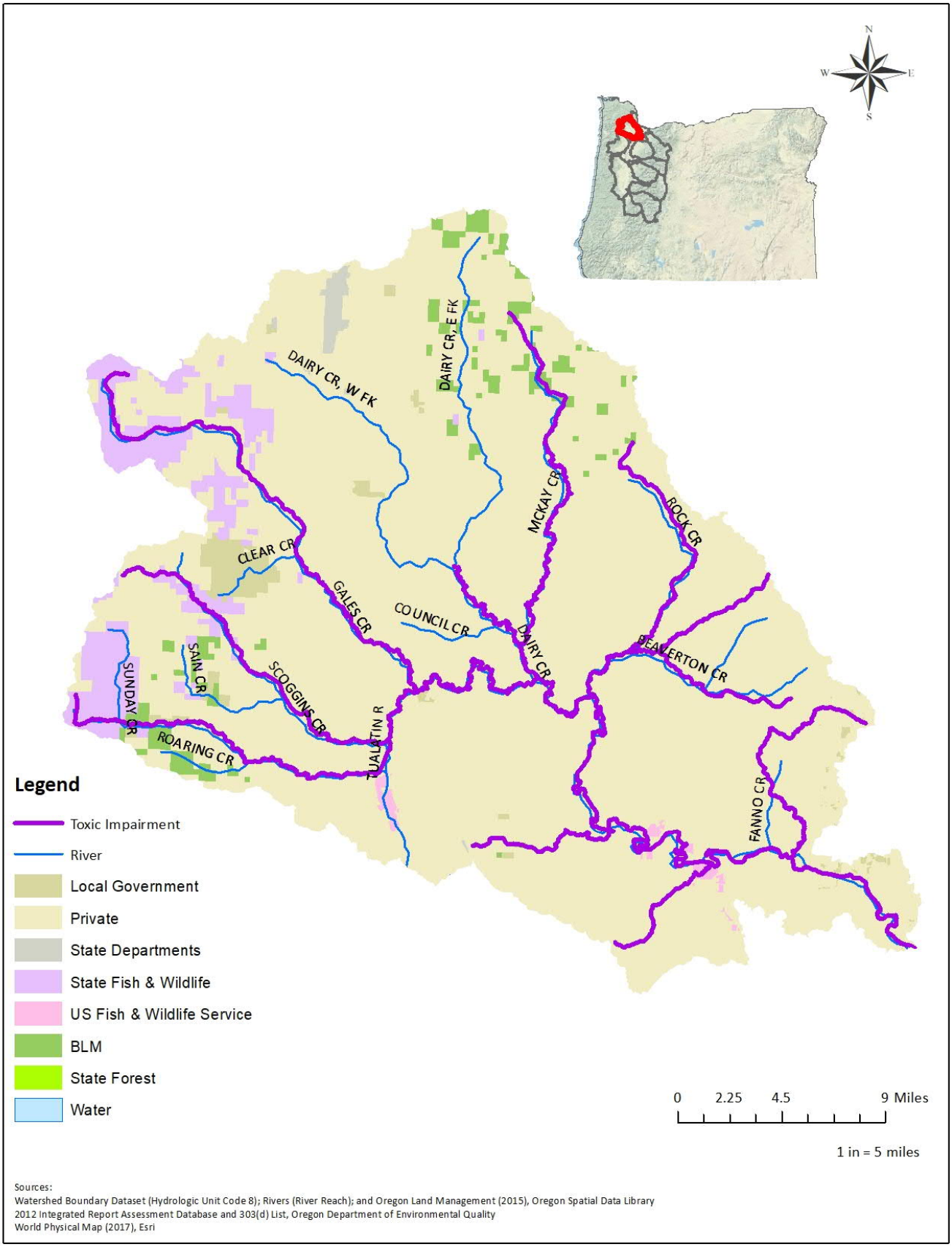


Figure D. Land Management and Toxic Pollutant Impairments of the Tualatin Subbasin

Profile

Description

HUC 8 Subbasin 17090003
Land cover ..... 1,198,500 acres (16% of Willamette Basin)
Watersheds 6
Subwatersheds 55
Counties ..... Benton, Polk, Lane, Lincoln, and Lane

Impairments

Watersheds 5
River miles ..... 745 (20% of Willamette Basin)

2012 Category 5 303(d)-listed Toxic Pollutants

Metals	VOCs
Copper	Dichloroethylenes
Iron	Tetrachloroethylene
Lead	Trichloroethylene
Mercury	

Beneficial Uses

Aquatic Life, Human Health, Drinking Water, Fishing, Resident Fish and Aquatic Life, Anadromous Fish Passage, and Salmonid Fish Rearing

Sources: (DEQ, 2012; OSDL, 2011, 2015a, 2017)

Impairments

Watershed (HUC 10)	Subwatershed (HUC 12)		City
1709000301 Long Tom River	170900030101	Upper Coyote Creek	
	170900030102	Spencer Creek	Eugene
	170900030103	Lower Coyote Creek	Veneta
1709000302 Marys River	170900030104	Headwaters Long Tom River	
	170900030105	Elk Creek	
	170900030106	Amazon Diversion Canal-Amazon Creek	Eugene
	170900030107	Fern Ridge Lake-Long Tom River	Veneta
	170900030108	Amazon Creek	Eugene
	170900030109	Bear Creek-Long Tom River	Junction City
	170900030110	Ferguson Creek-Long Tom River	Monroe
	170900030201	Headwaters Marys River	
	170900030202	Tumtum River	
	170900030203	Upper Marys River	
	170900030204	Greasy Creek	
	170900030205	Middle Marys River	Corvallis, Philomath
	170900030206	Upper Muddy Creek	
	170900030207	Oliver Creek	
	170900030208	Middle Muddy Creek	
	170900030209	Beaver Creek	
	170900030210	Lower Muddy Creek	
1709000302 Marys River	170900030211	Lower Marys River	Corvallis, Philomath

1709000303 Upper Calapooia River	170900030301	Hands Creek-Calapooia River	
	170900030302	Bigs Creek-Calapooia River	
	170900030303	Pugh Creek-Calapooia River	
	170900030304	Brush Creek-Calapooia River	
	170900030305	Sodom Ditch-Calapooia River	Brownsville
	170900030306	Butte Creek	Brownsville
	170900030307	Courtney Creek-Calapooia River	Brownsville
	170900030308	Shedd Slough-Calapooia River	
1709000304 Lower Calapooia River	170900030401	Upper Oak Creek	Lebanon, Sodaville
	170900030402	Lower Oak Creek	Albany, Tangent
	170900030403	Calapooia River	Albany, Tangent
1709000305 Luckimaute River	170900030501	Headwaters Luckiamute River	
	170900030502	Vincent Creek-Luckiamute River	
	170900030503	Maxfield Creek-Luckiamute River	
	170900030504	Pedee Creek-Luckiamute River	
	170900030505	Jont Creek-Luckiamute River	
	170900030506	Upper Little Luckiamute River	
	170900030507	Middle Little Luckiamute River	Falls City
	170900030508	Lower Little Luckiamute River	
	170900030509	Upper Soap Creek	
	170900030510	Berry Creek	
	170900030511	Lower Soap Creek	
	170900030512	Nisly Reservoir-Luckiamute River	Albany
1709000306 Muddy Creek-Willamette River	170900030601	Sring Creek-Willamette River	Coburg, Eugene, Springfield
	170900030602	Curtis Slough-Willamette River	Harrisburg
	170900030603	Flat Creek	Eugene, Junction City
	170900030604	Lake Creek-Willamette River	Harrisburg
	170900030605	Booneville Channel-Willamette River	Corvallis
	170900030606	Dry Muddy Creek-Muddy Creek	Coburg
	170900030607	Little Muddy Creek	
	170900030608	Fischer Island-Muddy Creek	Halsey
	170900030609	Frazier Creek-Willamette River	Adair Village, Albany, Corvallis
	170900030610	Truax Creek-Willamette River	Albany, Lebanon, Millersburg
	170900030611	McCarthy Slough-Willamette River	Albany, Millersburg

Note: Bold text indicates toxic pollutant impairment

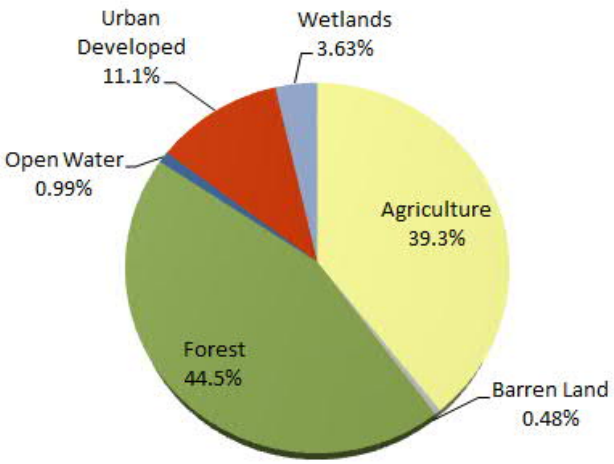
Subwatershed	Toxic Pollutant	Impaired River Miles by Pollutant	Impaired River Miles by Subwatershed
Amazon Creek	Arsenic	22.6	135.6
	Copper	22.6	
	DCE	22.6	
	Lead	22.6	
	PCE	22.6	
	TCE	22.6	
Amazon Creek Diversion Canal	Arsenic	6.6	26.4
	Copper	6.6	
	Lead	6.6	
	Mercury	6.6	
Amazon Creek Diversion Canal (A3 Drain)	Arsenic	3.9	15.6
	DCE	3.9	
	Mercury	3.9	
	PCE	3.9	
Calapooia River	Iron	78	156
	Lead	78	
Long Tom River	Iron	57.3	114.6
	Lead	57.3	
Marys River	Iron	41.1	41.1
Willamette River	Copper	29.1	107.7
	Iron	78.6	
Willow Creek	Arsenic	2.8	2.8
Total			600

Impaired River Miles	
Toxic Pollutant	by Pollutant
Arsenic	35.9
Copper	58.3
DCE	26.5
Iron	255
Lead	164.5
Mercury	10.5
PCE	26.5
TCE	22.6

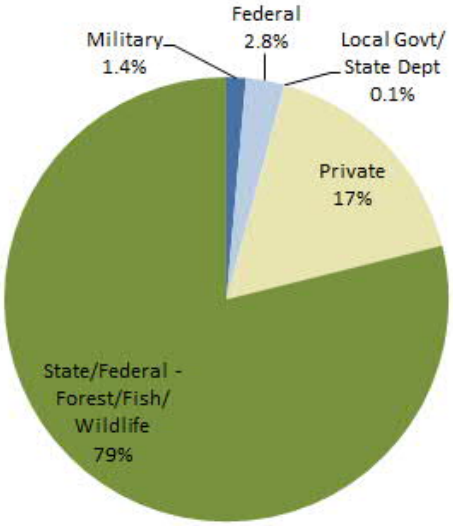
Sources: (DEQ, 2012; OSDL, 2017)

Land

Land Cover	Area (acres)
Agriculture	470,866
Barren Land	5,778
Forest	532,995
Open Water	11,843
Perennial Snow/Ice	0
Urban Developed	132,945
Wetlands	43,510
Total	1,197,937



Land Management	Area (acres)
DOD/DOE/USACE	12,189
Federal	-
Local Government	3
Private	147,104
State Departments	686
Tribal	-
State Fish & Wildlife	-
US Fish & Wildlife Service	-
BLM	24,595
State Forest	652
US Forest Service	689,265
Total	874,495



Sources: (OSDL, 2011, 2015b)

Pollutant Sources

Point Sources

Total	Stormwater/Wastewater Discharges					
	DEQ NPDES Facilities	EPA NPDES Reporting Facilities	DOGAMI Mining Sites	NPDES Outfalls	ODOT Outfalls	NPDES Pesticide Applications
289	24	3	147	3	112	0
7%	1%	2%	14%	2%	21%	n/a

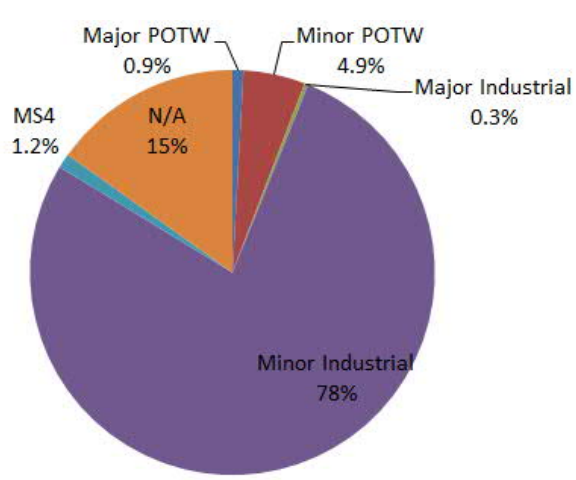
Nonpoint Sources

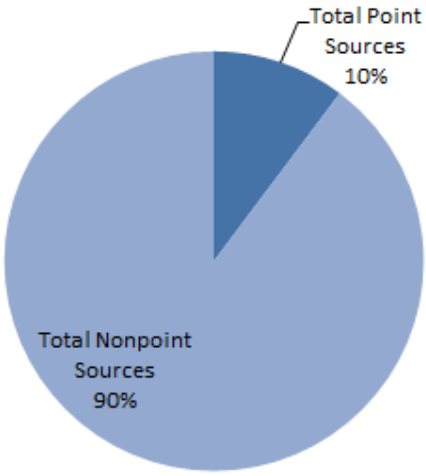
Total	Pesticide Applications (pounds)	Farms Harvesting Crops	DEQ ECSI Sites	EPA Superfund Sites
4,036	1,104,639	4,030	4	2
29%	34%	31%	n/a	18%

Mining Sites

Permit Status			
County	Closed	Permitted	New
Benton	24	17	0
Lane	29	12	1
Linn	39	20	0
Polk	5	0	0
Total	97	49	1

Permit Type		
NPDES 1200-A (offsite discharge)	WPCF 10000 (no discharge)	Unidentified
16	4	127
Total		147
Percent of Basin		21%
Percent of Basin - offsite discharge		2%





Sources:
(DEQ, 2009, 2017, 2018; DOGAMI, 2017; EPA, 2011, 2016, 2017, 2018; ODOT, 2016; USDA, 2012; USGS, 2017)

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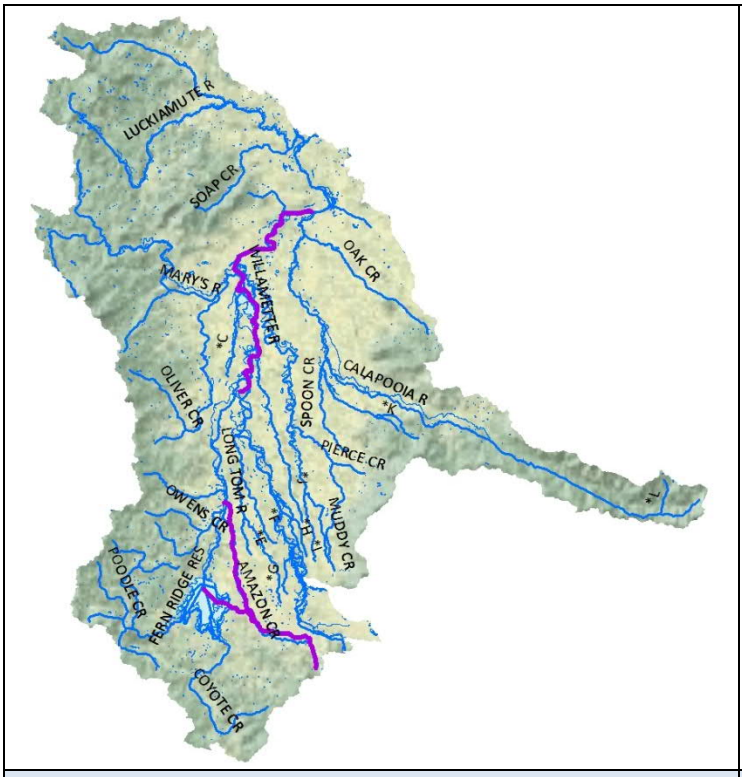
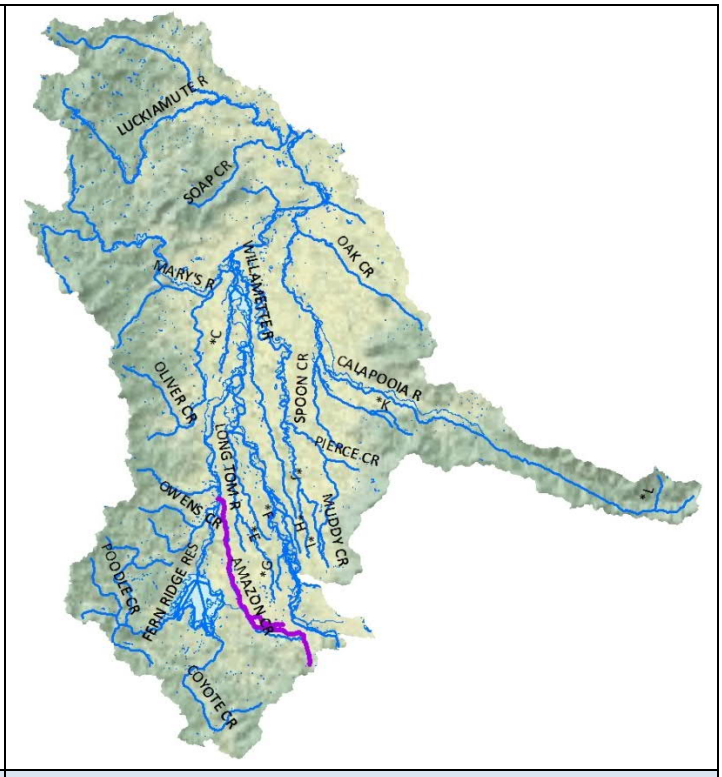
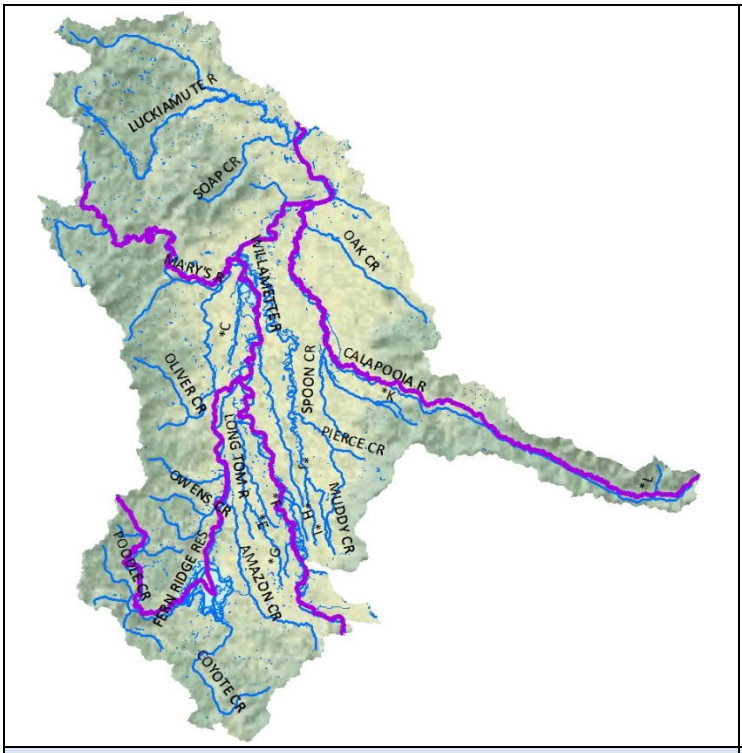
	http://spatialdata.oregonexplorer.info/geoportal/details;id=4b1b008d5a764a209b2df040689c0779 USDA. (2012). Census of Agriculture Table 8 Farms, Land in Farms, Value of Land and Buildings, and Land Use: 2012 and 2007. Retrieved from https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Oregon/ USGS. (2017). National Water Quality Assessment Project, Pesticide National Synthesis Project. Retrieved July 8, 2018, from https://water.usgs.gov/nawqa/pnsp/usage/maps/county-level/
Acronyms	BLM – Bureau of Land Management DCE – dichloroethylene DEQ – (Oregon) Department of Environmental Quality DOD – Department of Defense DOE – Department of Energy DOGAMI – (Oregon) Department of Geology and Mineral Industries EPA – (United States) Environmental Protection Agency HUC – Hydrologic Unit Code n/a – not available / not analyzed NPDES – National Pollution Discharge Elimination System NLCD – National Land Cover Dataset ODOT – Oregon Department of Transportation PCE - tetrachloroethylene TCE - trichloroethylene USACE – United States Army Corps of Engineers
Limitations	The compilation of point and nonpoint sources was retrieved from publicly available information on the Internet, from state and federal regulatory databases. Therefore, the status of facilities identified in this subbasin as of the date of this report may change.



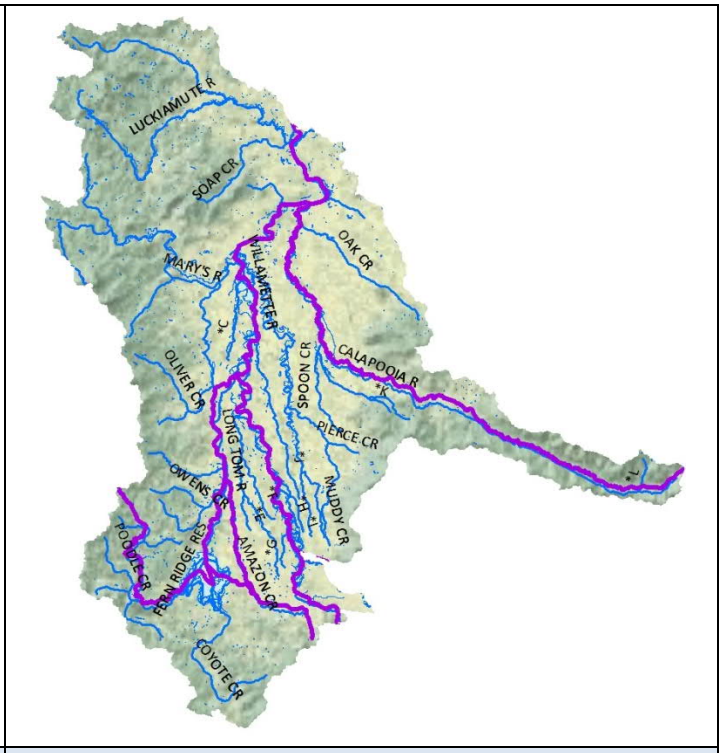
Copper Impairments



Dichloroethylenes, Tetrachloroethylene (PCE), Trichlorotheylene (TCE) Impairments



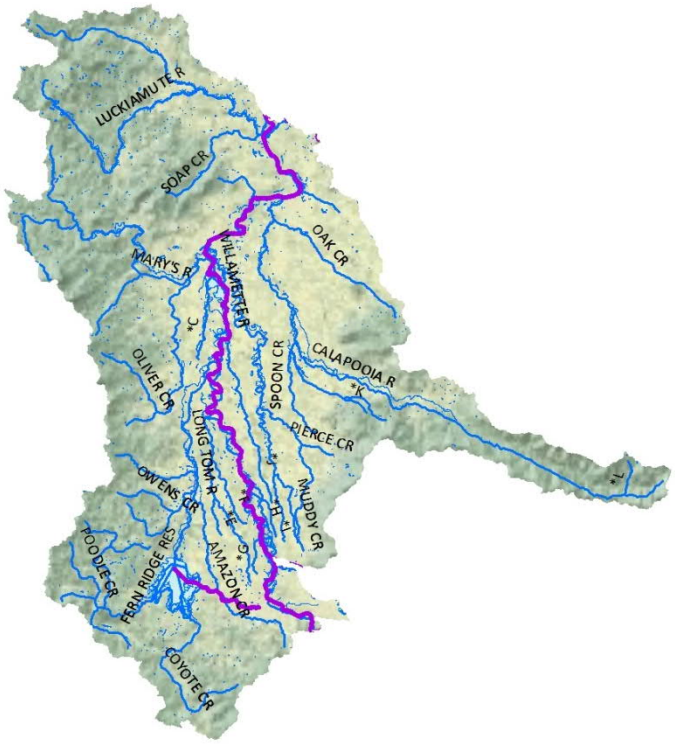
Iron Impairments



Lead Impairments

Note: impairments identified in purple

Figure A. Toxic Pollutant Impairments of the Upper Willamette Subbasin



Mercury Impairments

Note: impairments identified in purple

Figure A. Toxic Pollutant Impairments of the Upper Willamette Subbasin (cont'd)

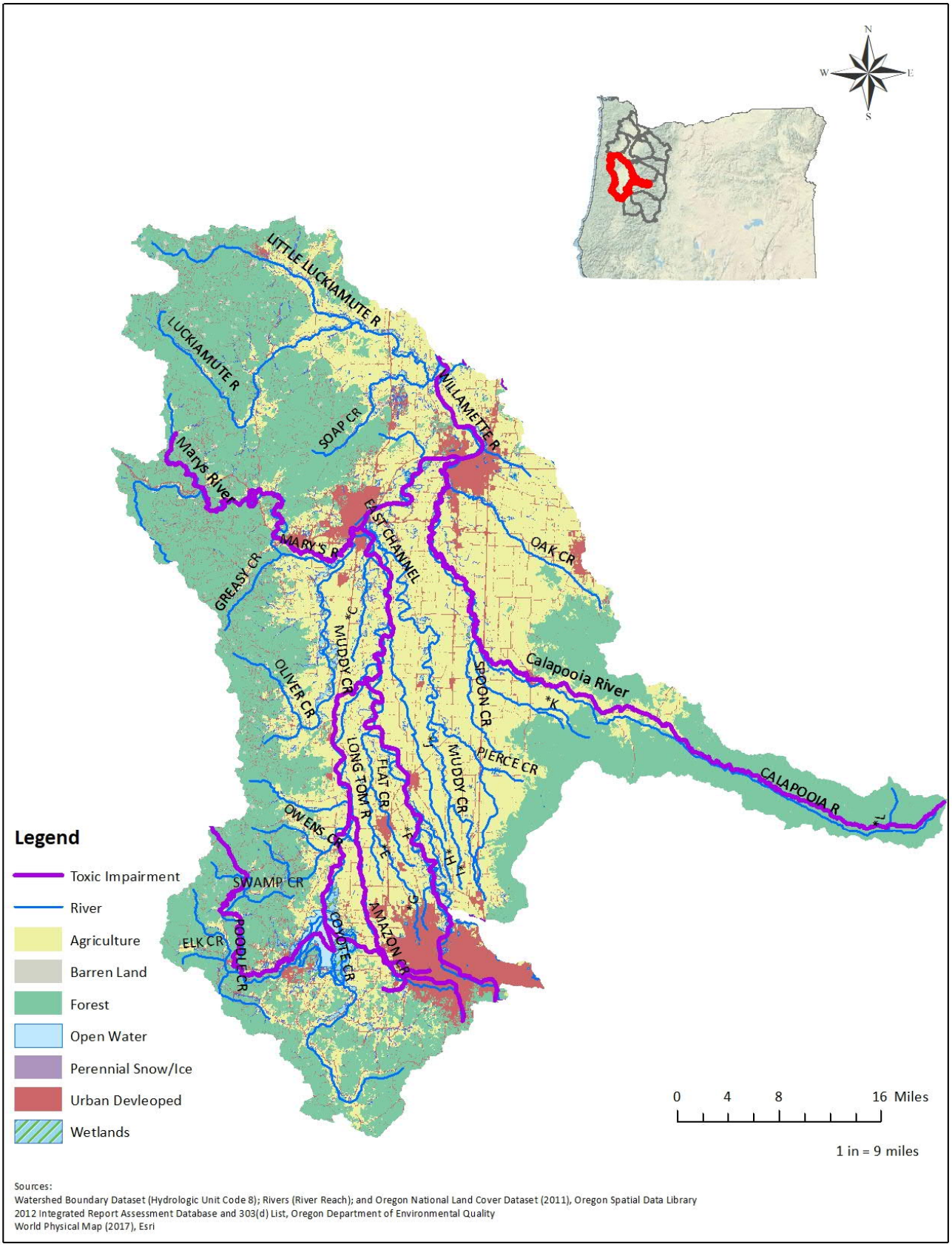


Figure B. Land Cover and Toxic Pollutant Impairments of the Upper Willamette Subbasin

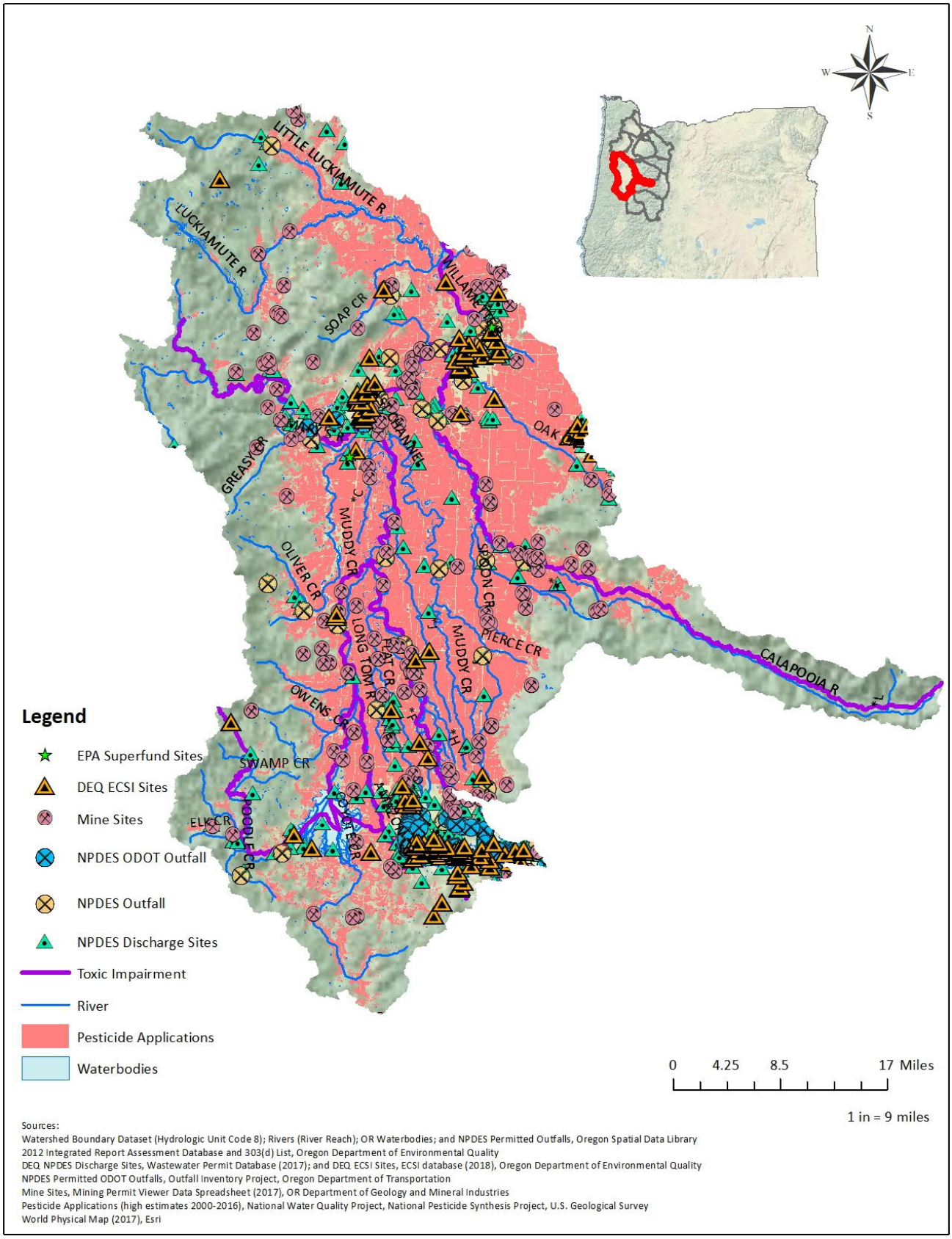


Figure C. Toxic Pollutant Sources and Impairments of the Upper Willamette Subbasin

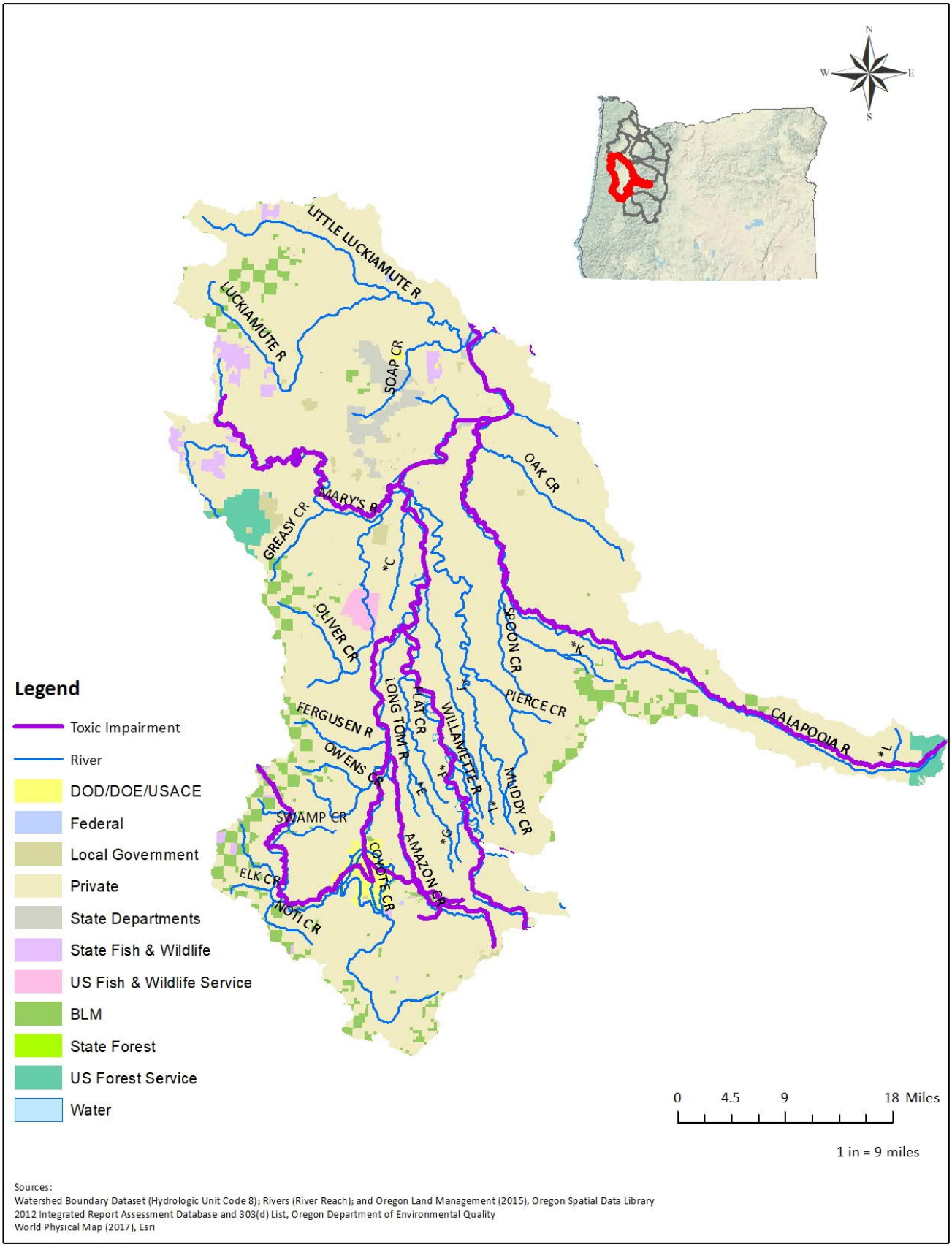


Figure D. Land Management and Toxic Pollutant Impairments of the Upper Willamette Subbasin

Profile

Description
HUC 8 Subbasin 17090008
Land cover ..... 493,872 acres (7% of Willamette Basin)
Watersheds 7
Subwatersheds 31
Counties ..... Lincoln, Marion, Polk, Tillamook, Washington, and Yamhill

Impairments
Watersheds 4
River miles ..... 213 (5.7% of Willamette Basin)

2012 Category 5 303(d)-listed Toxic Pollutants

Metals	Organophosphorus Insecticide
Copper Iron Lead Mercury	Chlorpyrifos

Beneficial Uses
Aquatic Life, Human Health, Drinking Water, Resident Fish and Aquatic Life, and Anadromous Fish Passage

Sources: (DEQ, 2012; OSDL, 2011, 2015a, 2017)

Impairments

Watershed (HUC 10)	Subwatershed (HUC 12)		City
1709000801 Willamina Creek	170900080101	Upper Willamina Creek	
	170900080102	Coast Creek	
	170900080103	Lower Willamina Creek	Willamina
1709000802 Agency Creek-South Yamhill River	170900080201	Headwaters South Yamhill River	
	170900080202	Agency Creek	
	170900080203	Rock Creek	
	170900080204	Rogue River-South Yamhill River	
	170900080205	Gold Creek-South Yamhill River	Willamina
1709000803 Mill Creek	170900080301	Upper Mill Creek	
	170900080302	Lower Mill Creek	
1709000804 Deer Creek-South Yamhill River	170900080401	Rock Creek-South Yamhill River	Sheridan, Willamina
	170900080402	Town of Ballston	
	170900080403	Upper Deer Creek	
	170900080404	Muddy Creek	
	170900080405	Lower Deer Creek	
	170900080406	Blue Heron Reservoir-South Yamhill River	
1709000805 Salt Creek	170900080501	Upper Salt Creek	
	170900080502	Upper Ash Swale	
	170900080503	Lower Ash Swale	Amity
	170900080504	Lower Salt Creek	Amity

1709000806 North Yamhill River	170900080601	Haskins Creek	
	170900080602	Upper North Yamhill River	
	170900080603	Turner Creek	
	170900080604	Middle North Yamhill River	Yamhill
	170900080605	Yamhill Creek	Yamhill
	170900080606	Baker Creek	McMinnville
	170900080607	Panther Creek	
	170900080608	Lower North Yamhill River	Carlton, McMinnville
1709000807 Yamhill River	170900080701	South Yamhill River	McMinnville
	170900080702	Palmer Creek	Dayton
	170900080703	Hawn Creek-Yamhill River	Carlton, Dayton, Lafayette, McMinnville

Note: Bold text indicates toxic pollutant impairment

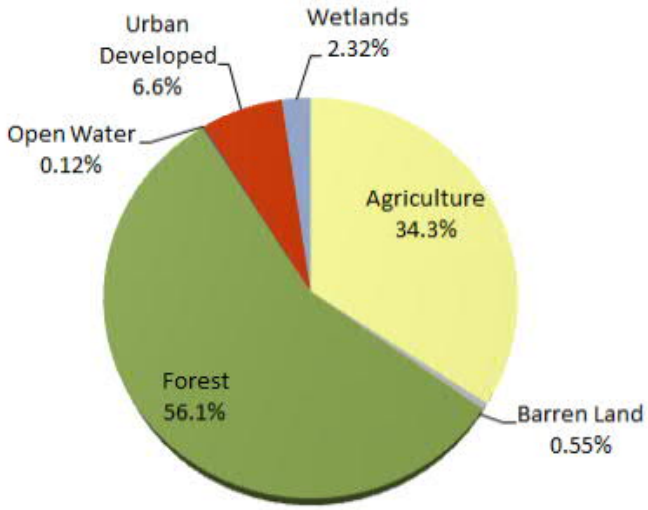
Subwatershed	Toxic Pollutant	Impaired River Miles by Pollutant	Impaired River Miles by Subwatershed
North Yamhill River	Copper	32.4	64.9
	Iron	32.5	
South Yamhill River	Copper	18.1	97.9
	Iron	18.1	
	Lead	61.7	
West Fork Palmer Creek	Chlorpyrifos	5.2	5.2
Yamhill River	Copper	11.2	44.8
	Iron	11.2	
	Lead	11.2	
	Mercury	11.2	
Total			212.8

Total Impaired River Miles	
Toxic Pollutant	by Pollutant
Chlorpyrifos	5.2
Copper	61.7
Iron	61.8
Lead	72.9
Mercury	11.2

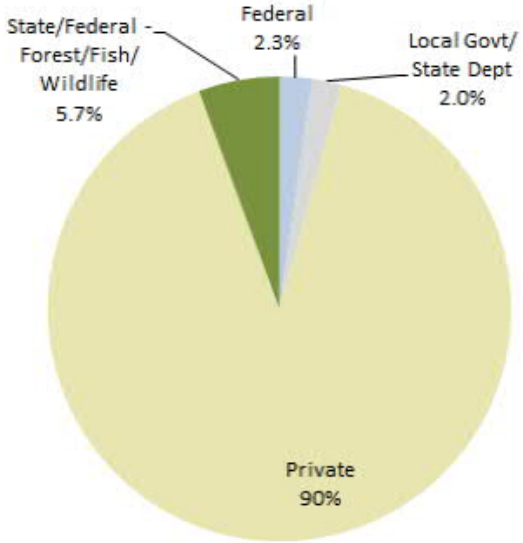
Sources: (DEQ, 2012; OSDL, 2017)

Land

Land Cover	Area (acres)
Agriculture	169,164
Barren Land	2,696
Forest	277,204
Open Water	580
Perennial Snow/Ice	-
Urban Developed	32,656
Wetlands	11,459
Total	493,759



Land Management	Area (acres)
DOD/DOE/USACE	-
Federal	-
Local Government	7,264
Private	408,485
State Departments	2,012
Tribal	-
State Fish & Wildlife	-
US Fish & Wildlife Service	2,095
BLM	10,286
State Forest	23,544
US Forest Service	-
Total	453,687



Sources: (OSDL, 2011, 2015b)

Pollutant Sources

Point Sources

Total	Stormwater/Wastewater Discharges					
	DEQ NPDES Facilities	EPA NPDES Reporting Facilities	DOGAMI Mining Sites	NPDES Outfalls	ODOT Outfalls	NPDES Pesticide Applications
662	307	10	336	9	0	0
17%	15%	8%	33%	5%	n/a	n/a

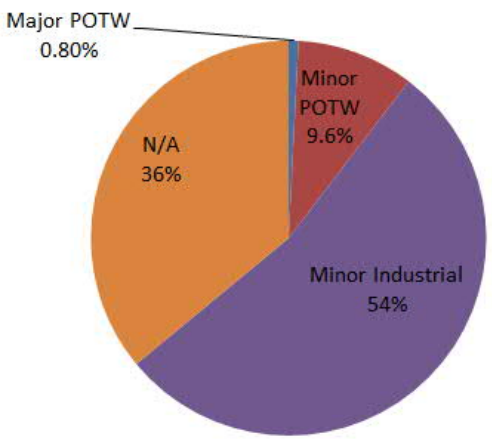
Nonpoint Sources

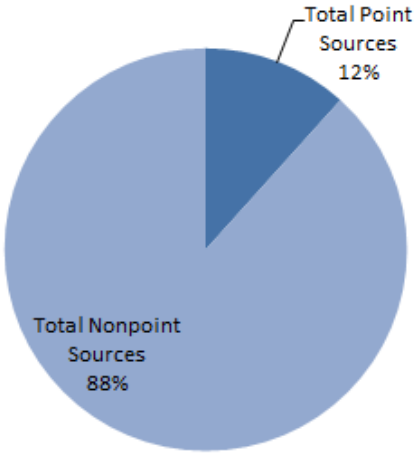
Total	Pesticide Applications (pounds)	Farms Harvesting Crops	DEQ ECSI Sites	EPA Superfund Sites
1,155	341,825	1,036	117	1
8%	10%	8%	13%	9%

Mining Sites

Permit Status			
County	Closed	Permitted	New
Polk	6	3	0
Yamhill	15	12	0
Total	21	15	0

Permit Type		
NPDES 1200-A (offsite discharge)	WPCF 10000 (no discharge)	Unidentified
9	1	26
Total		36
Percent of Basin		5%
Percent of Basin - offsite discharge		1%





Sources:
(DEQ, 2009, 2017, 2018; DOGAMI, 2017; EPA, 2011, 2016, 2017, 2018; ODOT, 2016; USDA, 2012; USGS, 2017)

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Acronyms	BLM – Bureau of Land Management DEQ – (Oregon) Department of Environmental Quality DOD – Department of Defense DOE – Department of Energy DOGAMI – (Oregon) Department of Geology and Mineral Industries EPA – (United States) Environmental Protection Agency HUC – Hydrologic Unit Code n/a – not available / not analyzed NPDES – National Pollution Discharge Elimination System NLCD – National Land Cover Dataset ODOT – Oregon Department of Transportation USACE – United States Army Corps of Engineers
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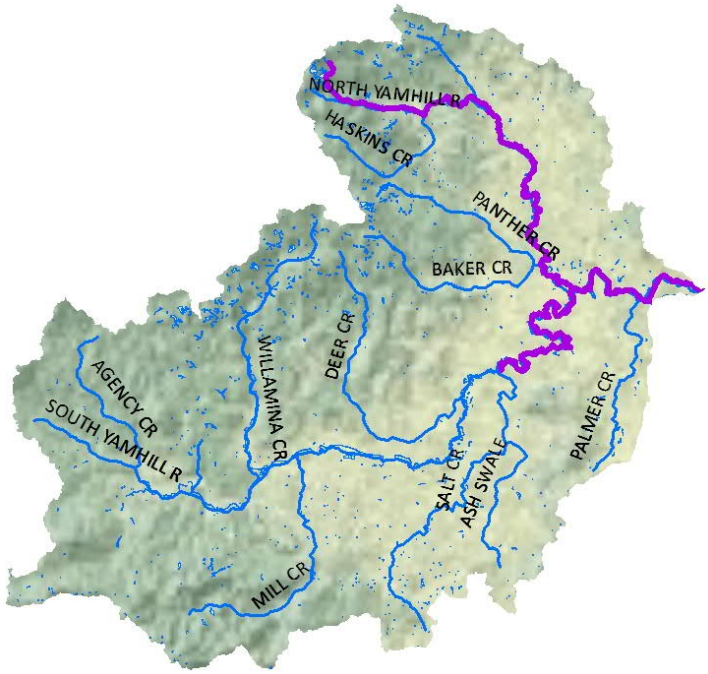

Copper, Iron, Mercury Impairments

Chlorpyrifos Impairments

Lead Impairments

Note: impairments identified in purple

Figure A. Toxic Pollutant Impairments of the Yamhill Subbasin

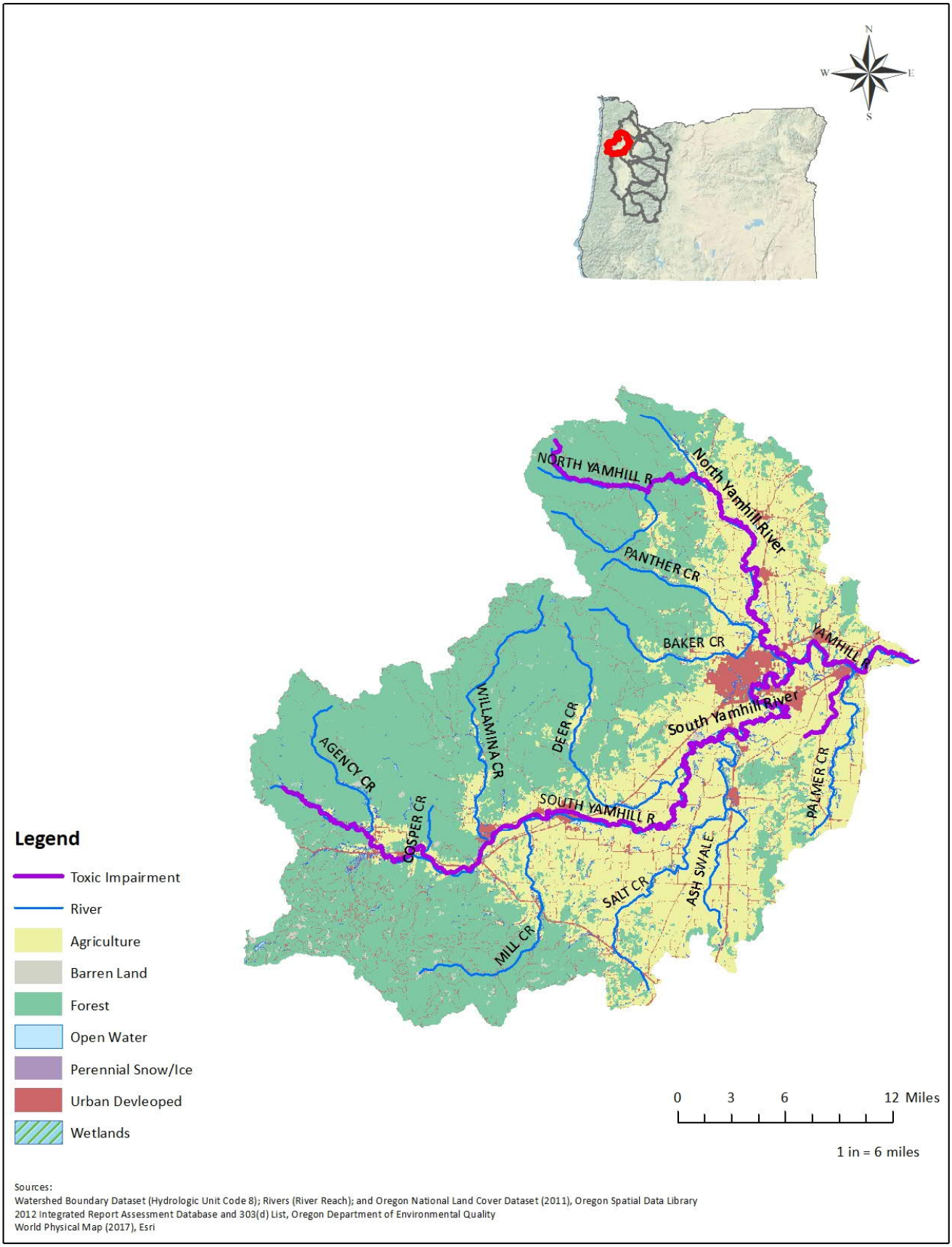

Figure B. Land Cover and Toxic Pollutant Impairments of the Yamhill Subbasin

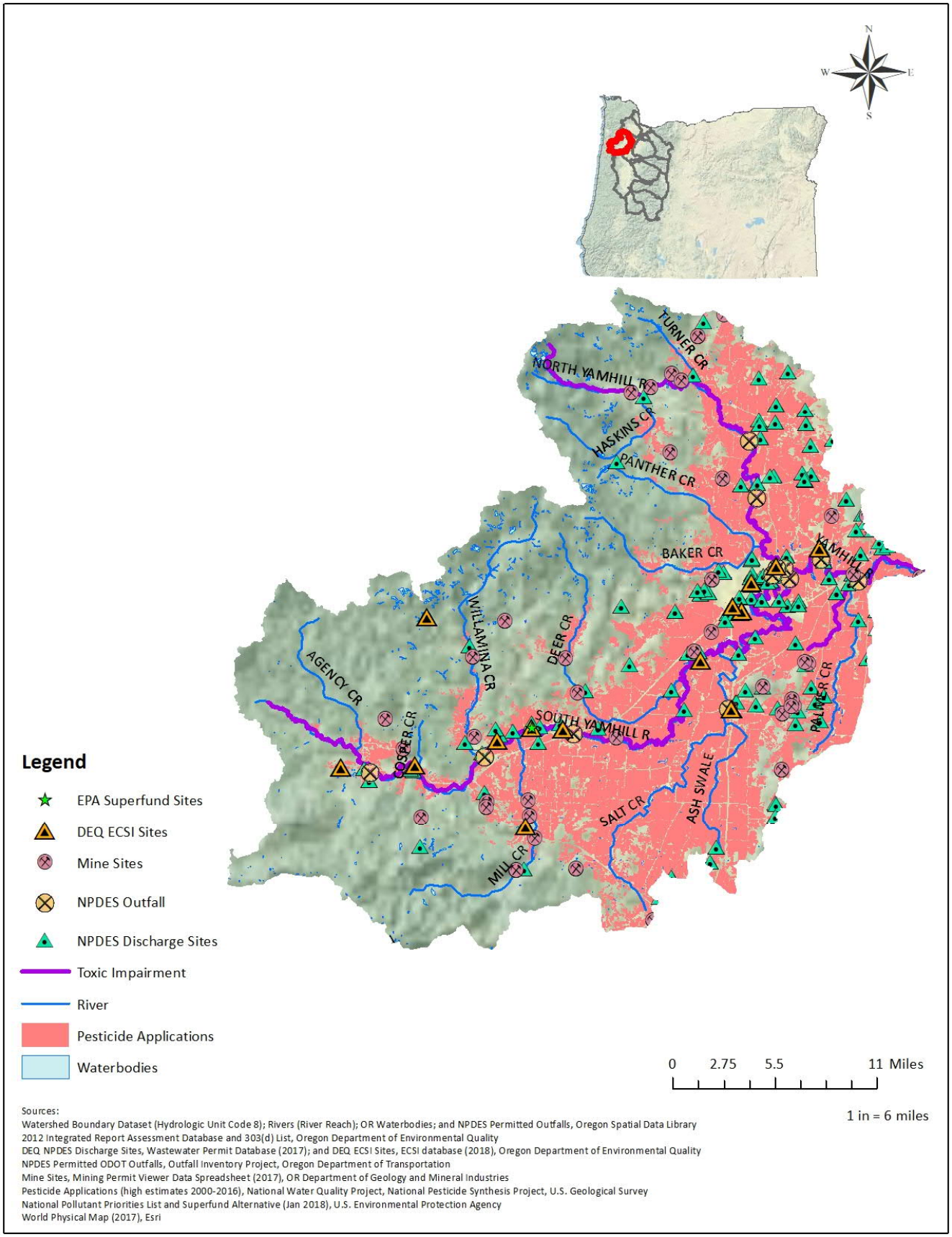

Figure C. Toxic Pollutant Sources and Impairments of the Yamhill Subbasin

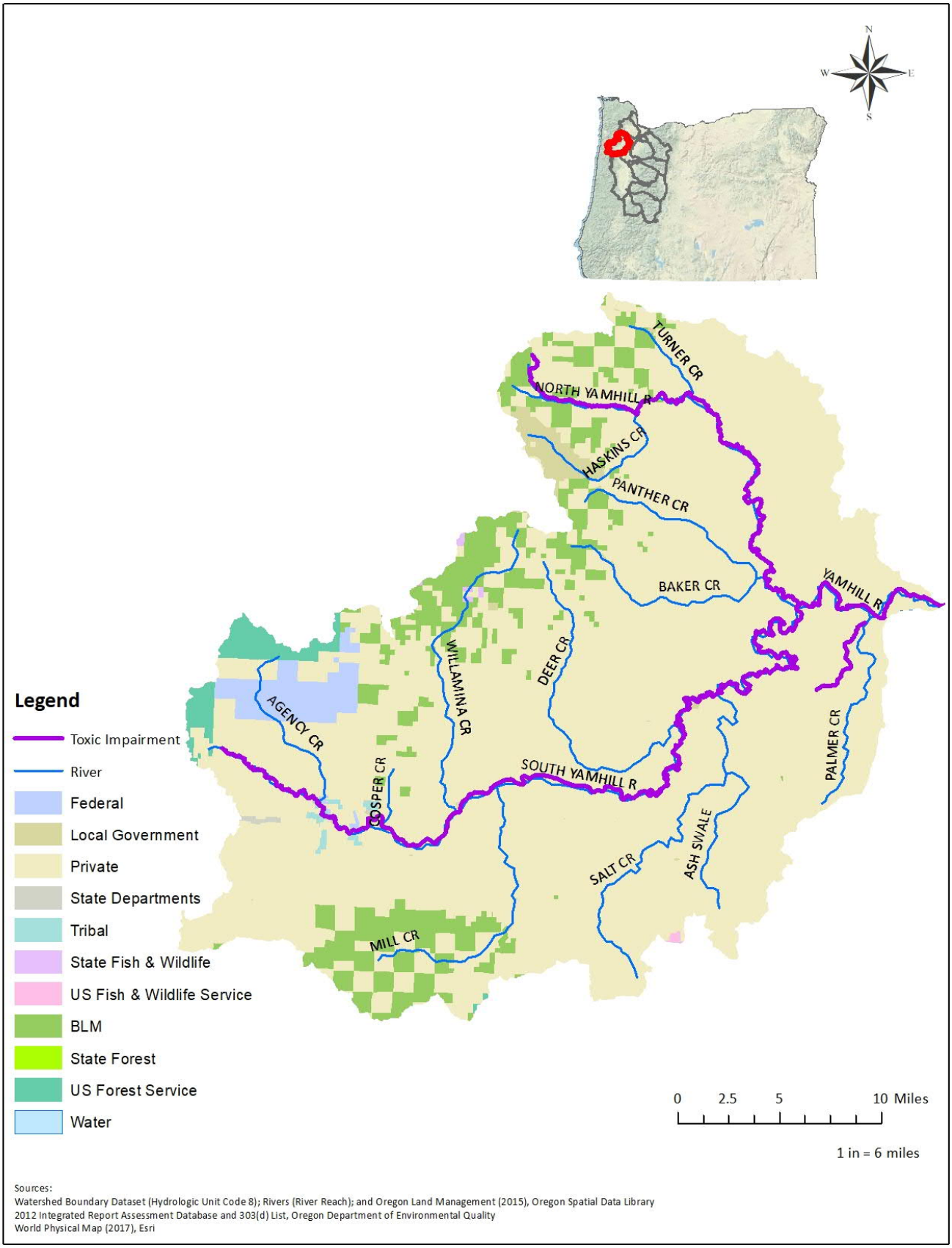

Figure D. Land Management and Toxic Pollutant Impairments of the Yamhill Subbasin