

Pesticides in Ground and Surface Water Quality in the Treasure Valley

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Topics

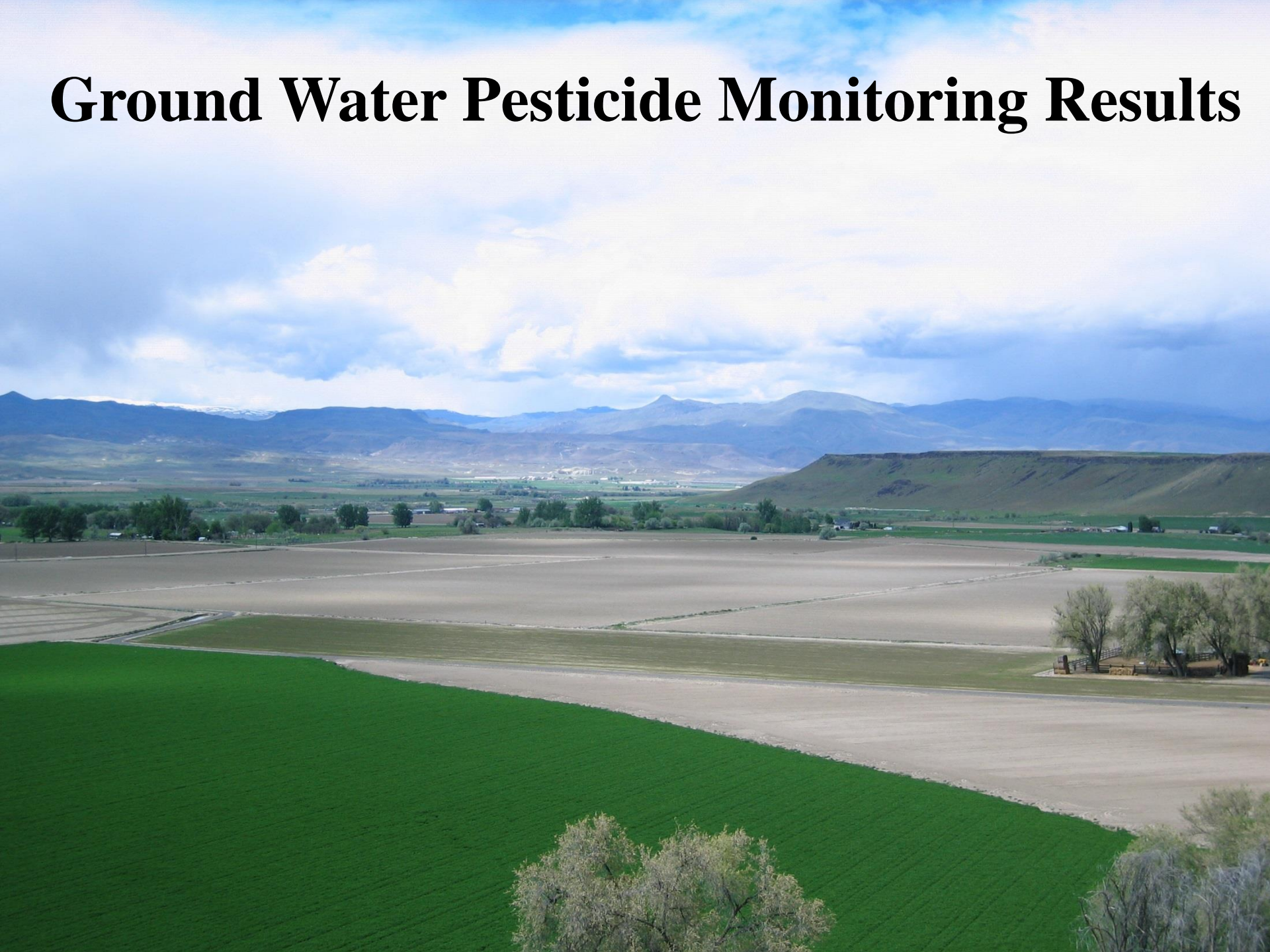
- Ground & Surface water programs
- Monitoring results
- Pesticides of Concern
- USGS Report
- BMPs & Label Language
- Summary

Idaho's Pesticides Water Program

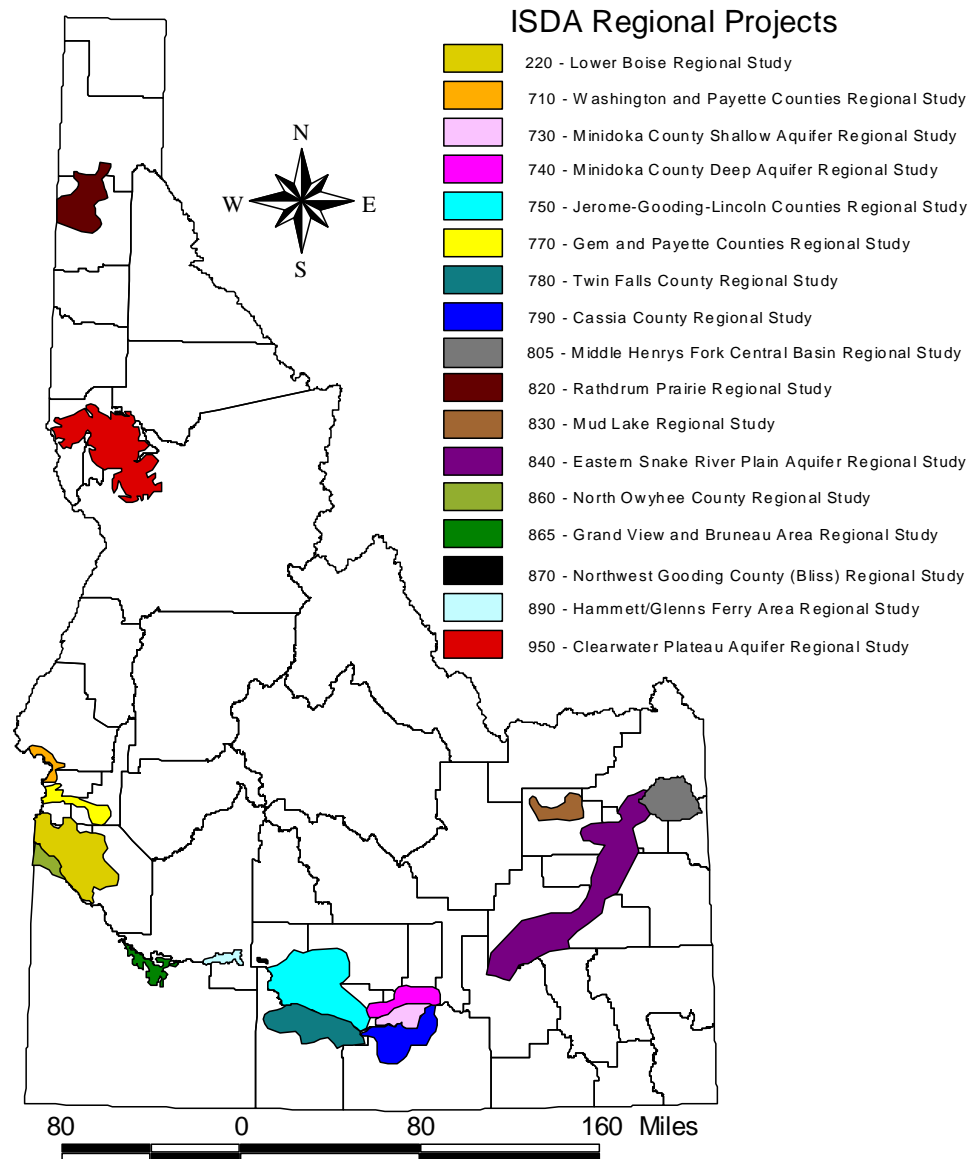
Ground & Surface Water

- Implement Idaho Pesticide Management Plan (PMP) and Idaho PMP Rule
- Ground water monitoring based on:
 - Regional, local, PMP Rule monitoring
 - Trend monitoring is important
- Surface water monitoring based on watersheds where pesticides are used
- Determine Pesticides of Interest and Concern
- Conduct education, management actions, BMPs
- One ground water prohibition area, near Homedale, Dacthal (DCPA), established in 2007

Ground Water Pesticide Monitoring Results



Ground Water Monitoring Project Areas



Pesticides Detected in Ground Water

Pesticides Most Frequently Detected in Idaho Ground Water

Atrazine, Atrazine Desethyl	Diuron
Aldicarb Sulfone	EPTC
Bentazon	Hexazinone
Bromacil	Metolachlor
Bromoxynil	Metribuzin
Carbaryl	Picloram
Carbofuran	Prometon
Clopyralid	Simazine
Cycloate	Tebuthiuron
Dacthal (DCPA)	Terbacil
Dicamba	Triallate
Dinoseb	2,4-D, & 2,4-DCBA

Pesticides Most Frequently Detected in Ada and Canyon County Ground Water

Pesticides Most Frequently Detected in Ada and Canyon County Ground Water	
Atrazine	Atrazine Desethyl
Aldicarb Sulfone	
Bentazon	
Bromacil	
Dacthal (DCPA)	
Diuron	
Metolachlor	
Metribuzin	
Simazine	
Terbacil	
Tebuthiuron	
1,2,3-Trichloropropane	

Pesticides Detected in Owyhee County Ground Water Near Homedale and Marsing

Pesticides Most Frequently Detected in Owyhee County Ground Water near Homedale and Marsing

Atrazine, Atrazine Desethyl

Bentazon

Bromacil

Dacthal (DCPA)

Picloram

Simazine

2,4-D

Pesticides Detected in Payette and Gem Counties Ground Water

Pesticides Most Frequently Detected in Payette and Gem Counties Ground Water

Atrazine, Atrazine Desethyl

Bentazon

Carbofuran

Chloromethane

Dacthal (DCPA)

Simazine

Terbacil

Pesticides Detected in Washington County Ground Water near Weiser

Pesticides Most Frequently Detected in Washington County Ground Water near Weiser

Atrazine, Atrazine Desethyl	Hexazinone
Aldicarb	Metribuzin
Bentazon	Prometon
Bromacil	Simazine
Carbofuran	Tebuthiuron
Chloromethane	2,4-D
Dacthal (DCPA)	2,4-DCBA

Pesticides of Concern and Interest

Ground Water, POC \geq 20% of Reference Point

- ❖ 2,4-D (Chaser, Crossbow, Trimec, Triplet, Weed-B-Gone)

❖ Atrazine (Atrex)

❖ DCPA (Dacthal)

❖ Triallate (Fargo)

❖ Aldicarb (Temik)

❖ Bentazon

❖ Bromacil

❖ Bromoxynil

❖ Carbaryl

❖ Carbofuran

❖ Clopyralid

❖ Cycloate

❖ Dicamba

❖ Diuron

❖ EPTC

❖ Hexazinone

❖ Metolachlor

❖ Metribuzin

❖ Picloram

❖ Prometon

❖ Simazine

❖ Tebuthiuron

❖ Terbacil

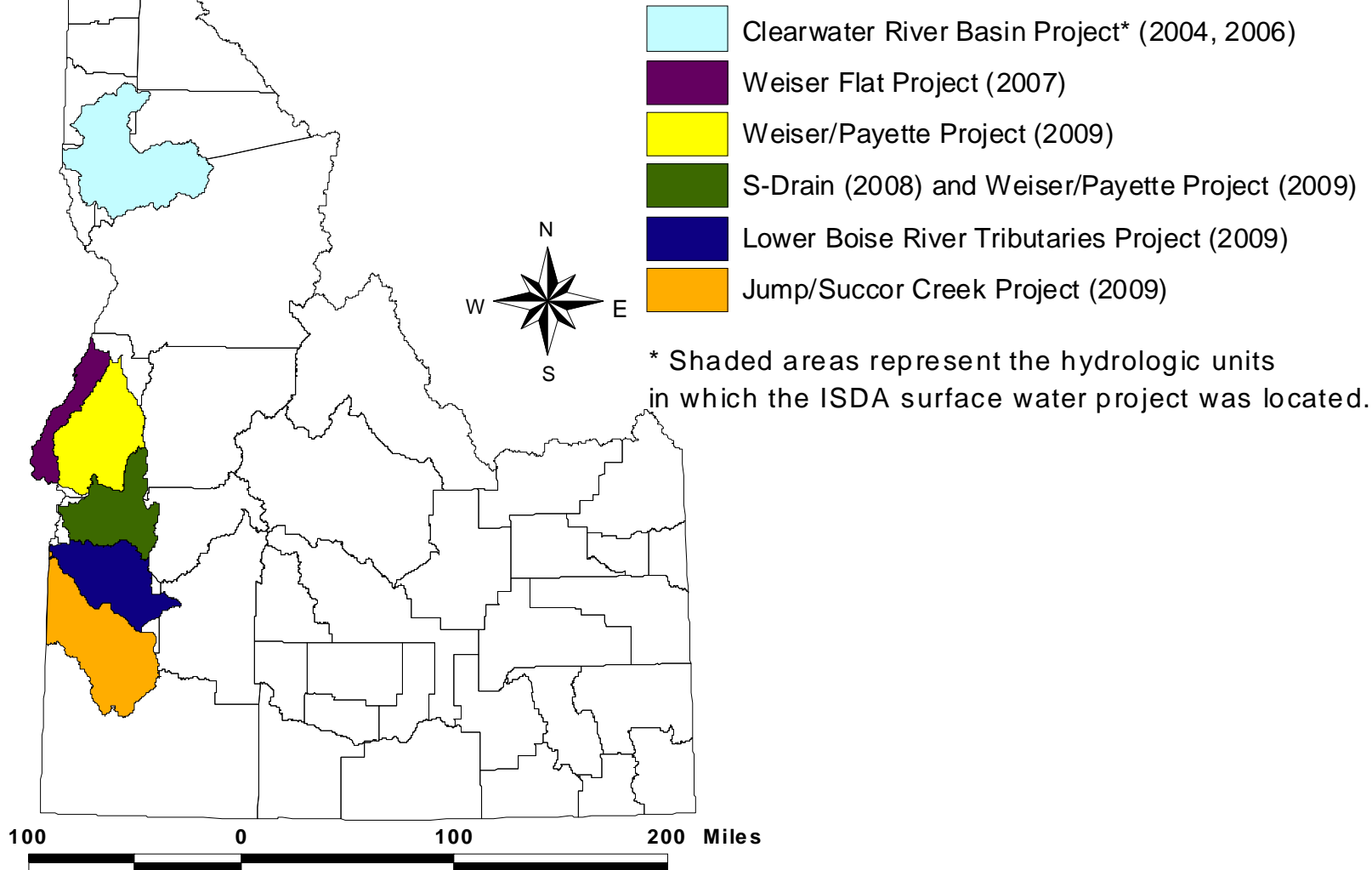
❖ Triallate

❖ 2,4-DCBA

Surface Water Pesticide Monitoring Results



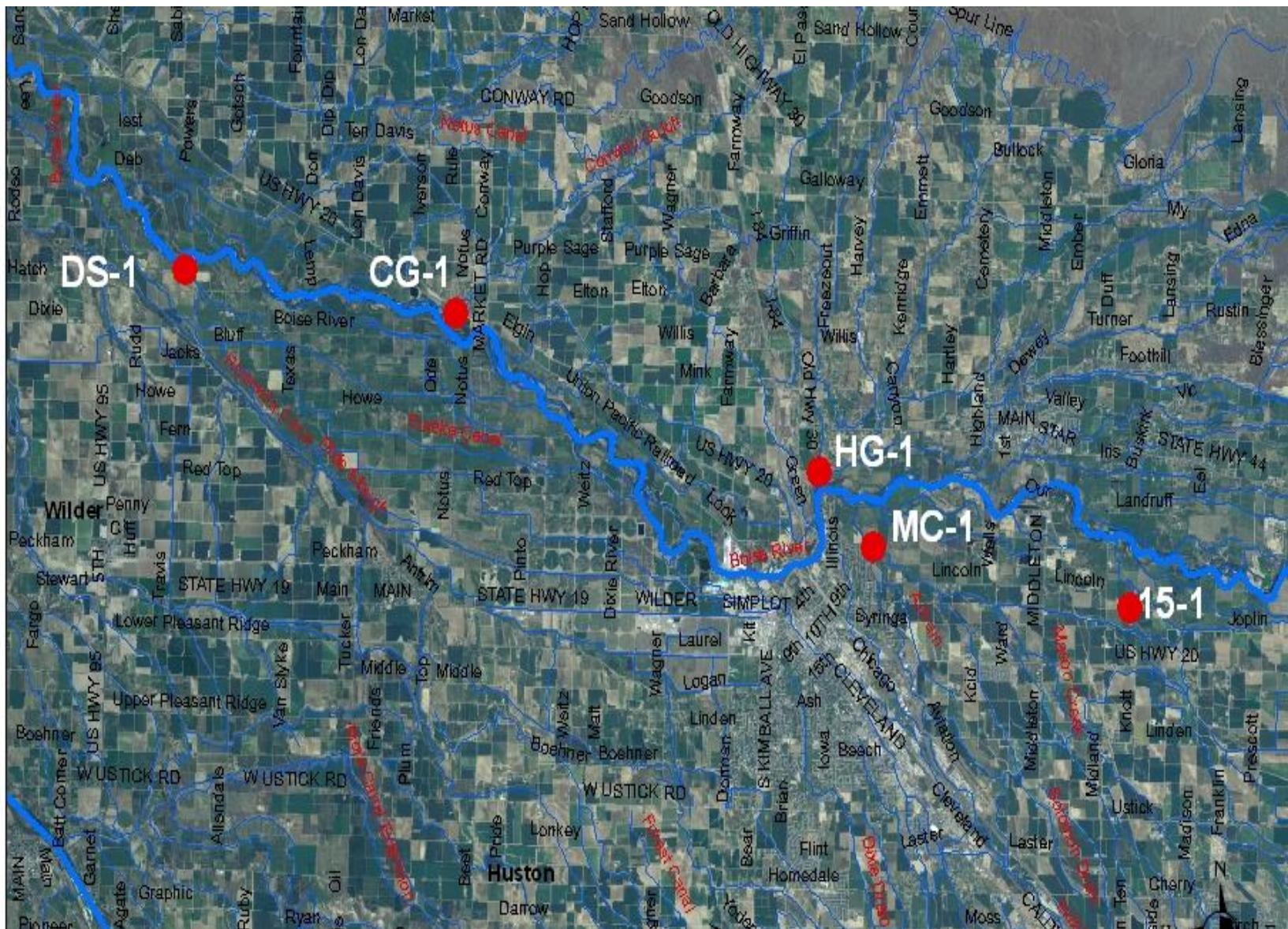
Surface Water Monitoring Projects



Southwest Idaho Surface Water Pesticide Monitoring Projects

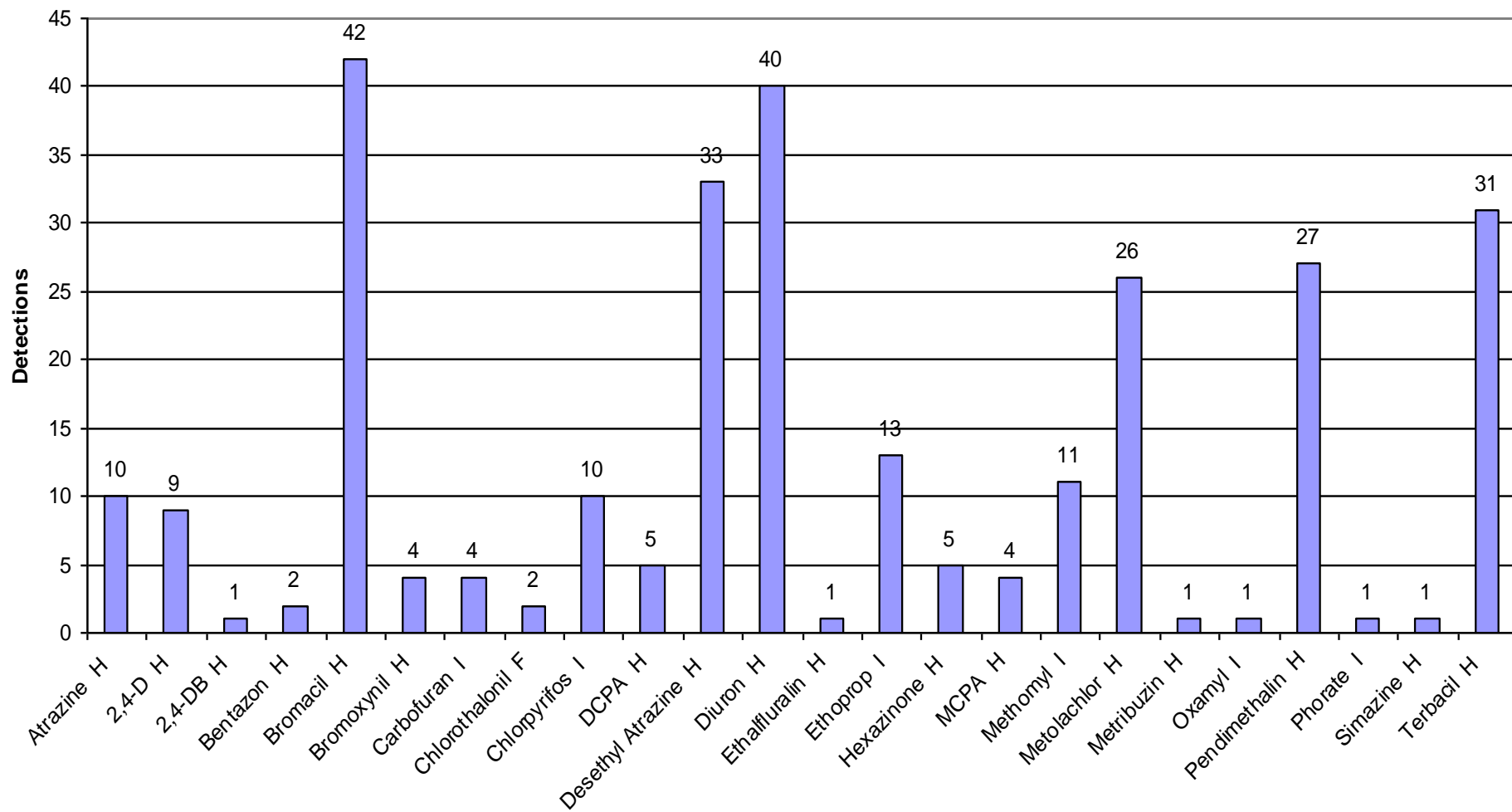
- Weiser River and Weiser Flat Drains (2007)
- Lower Payette S Drains (2008)
- Lake Lowell Drains (2010)
- Jump and Succor Creeks (2009)
- Lower Boise River
 - Five Mile Creek, Fifteen Mile Creek (2011)
 - Mason Creek (2009, 2010, 2011, 2012)
 - Indian Creek (2012)
 - Sand Hollow Creek (2009)
 - Conway Gulch, Dixie Slough (2009)

2009 Lower Boise Project



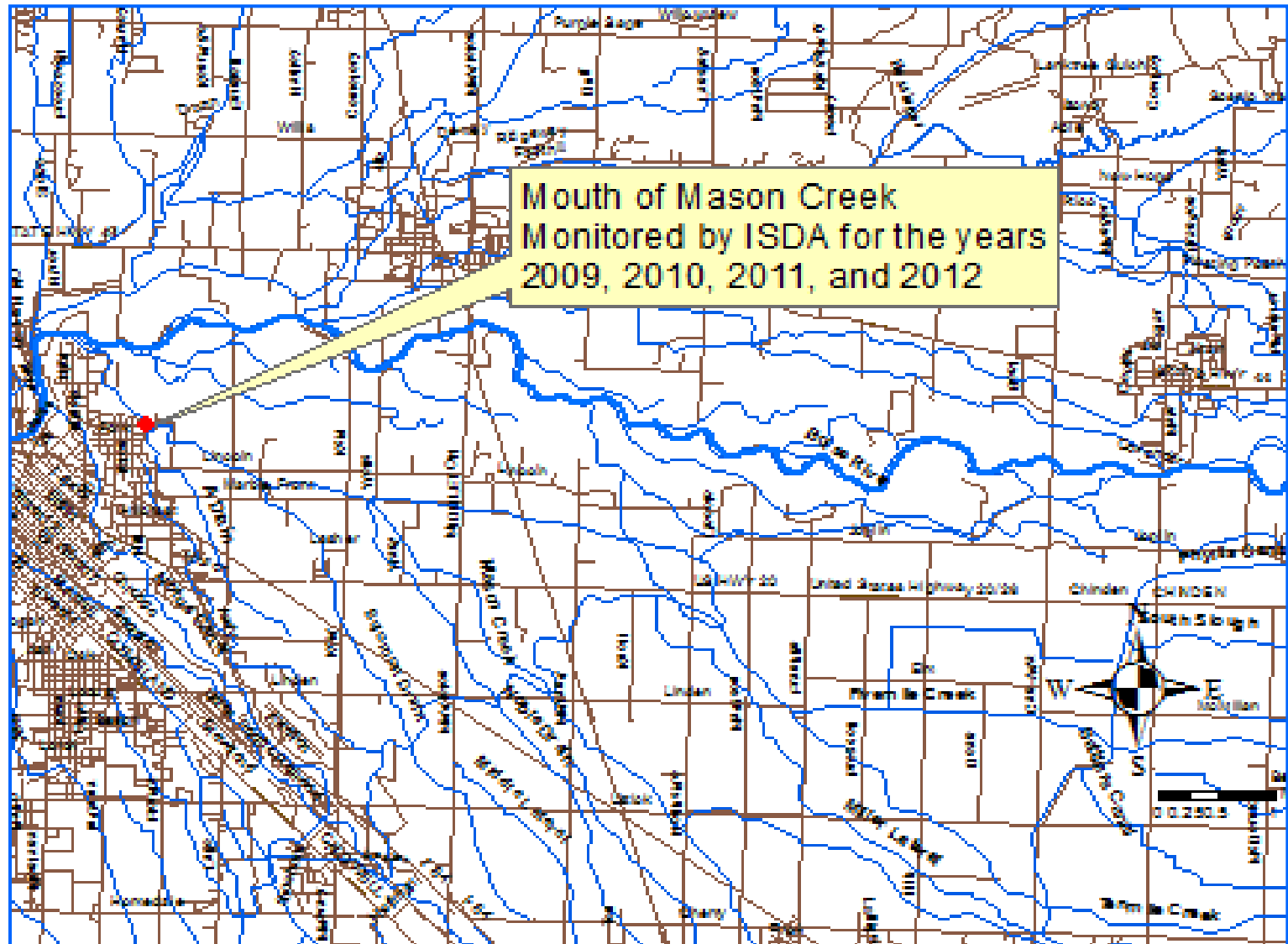
2009 Lower Boise Detections

24 different pesticides and 284 detections



Mason Creek Monitoring

2009 - 2012



Mason Creek Pesticide Detections

Year	Total Detections	Herbicides	Insecticides
2009	80	56	17
2010	80	51	17
2011	83	60	13
2012	73	60	5

Pesticides Detected 2009 – 2012

Mason Creek

Detected Pesticide	Type	Trade Name	# of Detects
2,4-D	H	Curtail	35
Acephate	I	Orthene	1
Alachlor	H	Lasso	2
Atrazine	H	Aatrex	11
Bentazon	H	Basagran	4
Bromacil	H	Krovar	31
Bromoxynil	H	Buctril	10
Carbofuran	I	Furadan	2
Chlorpyrifos	I	Lorsban	17
Desethyl Atrazine	D	—	38
Diazinon	I	Diazinon	1

Pesticides Detected 2009 – 2012

Mason Creek

Detected Pesticide	Type	Trade Name	# of Detects
Dicamba	H	Bushmaster	12
Dimethoate	I	Cygon	1
Diuron	H	Karmex	29
EPTC	H	Eptam	3
Ethoprop	I	Mocap	10
Hexazinone	H	Velpar	7
Linuron	H	Lorox	1
Malathion	I	Malathion	4
MCPA	H	Banlene	7

Pesticides Detected 2009 – 2012

Mason Creek

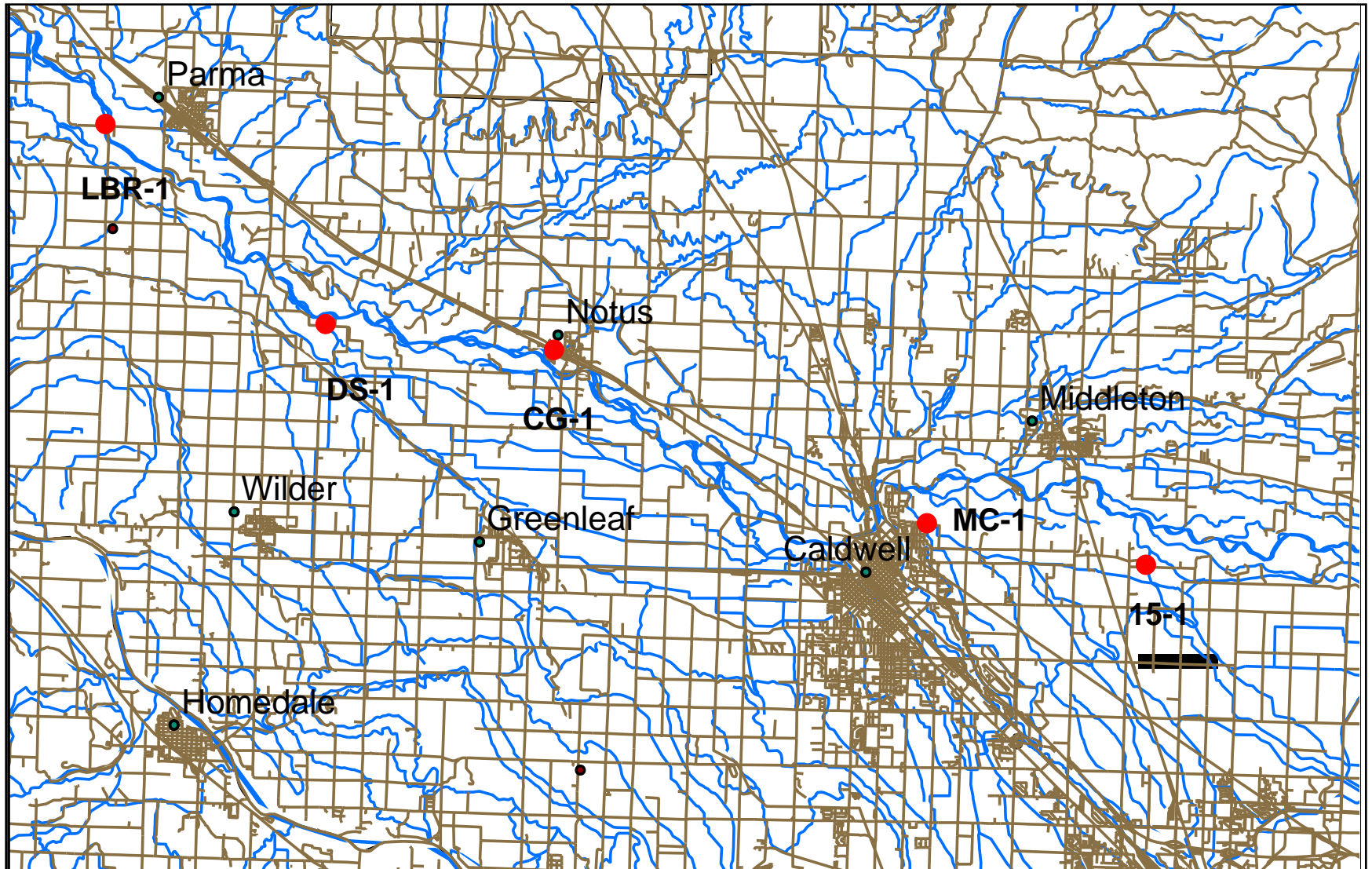
Detected Pesticide	Type	Trade Name	# of Detects
Methomyl	I	Lannate	13
Methyl Parathion	I	Bladan	1
Metolachlor	H	Dual	26
Metribuzin	H	Sencore	2
Oxamyl	H	Blade	1
Oxyfluorfen	H	Goal	3
Pendimethalin	H	Prowl	31
Terbacil	H	Sinbar	40

Pesticides Detected 2009 – 2012

Mason Creek

Detected Pesticide	Type	Trade Name	# of Detects
Dicamba	H	Bushmaster	12
Dimethoate	I	Cygon	1
Diuron	H	Karmex	29
EPTC	H	Eptam	3
Ethoprop	I	Mocap	10
Hexazinone	H	Velpar	7
Linuron	H	Lorox	1
Malathion	I	Malathion	4
MCPA	H	Banlene	7

2010 Lower Boise River Monitoring Locations
Lower Boise River (LBR-1), Dixie Slough (DS-1), Conway Gulch (CG-1),
Mason Creek (MC-1), and Fifteen Mile Creek (15-1)



Lower Boise Tributary Pesticide Detections, 2010

Pesticide	# of Detections	Pesticide Type
2,4-D	36	H
2,4-DB	2	H
Acephate	1	I
Alachlor	2	H
Aldicarb	1	H
Aldicarb Sulfoxide	1	H
Atrazine	7	H
Bentazon	4	H
Bromacil	39	H
Bromoxynil	2	H
Chlorpyrifos	11	I
Dacthal	5	H
Desethyl Atrazine	51	H
Diazinon	1	I

Lower Boise Tributary Pesticide Detections, 2010

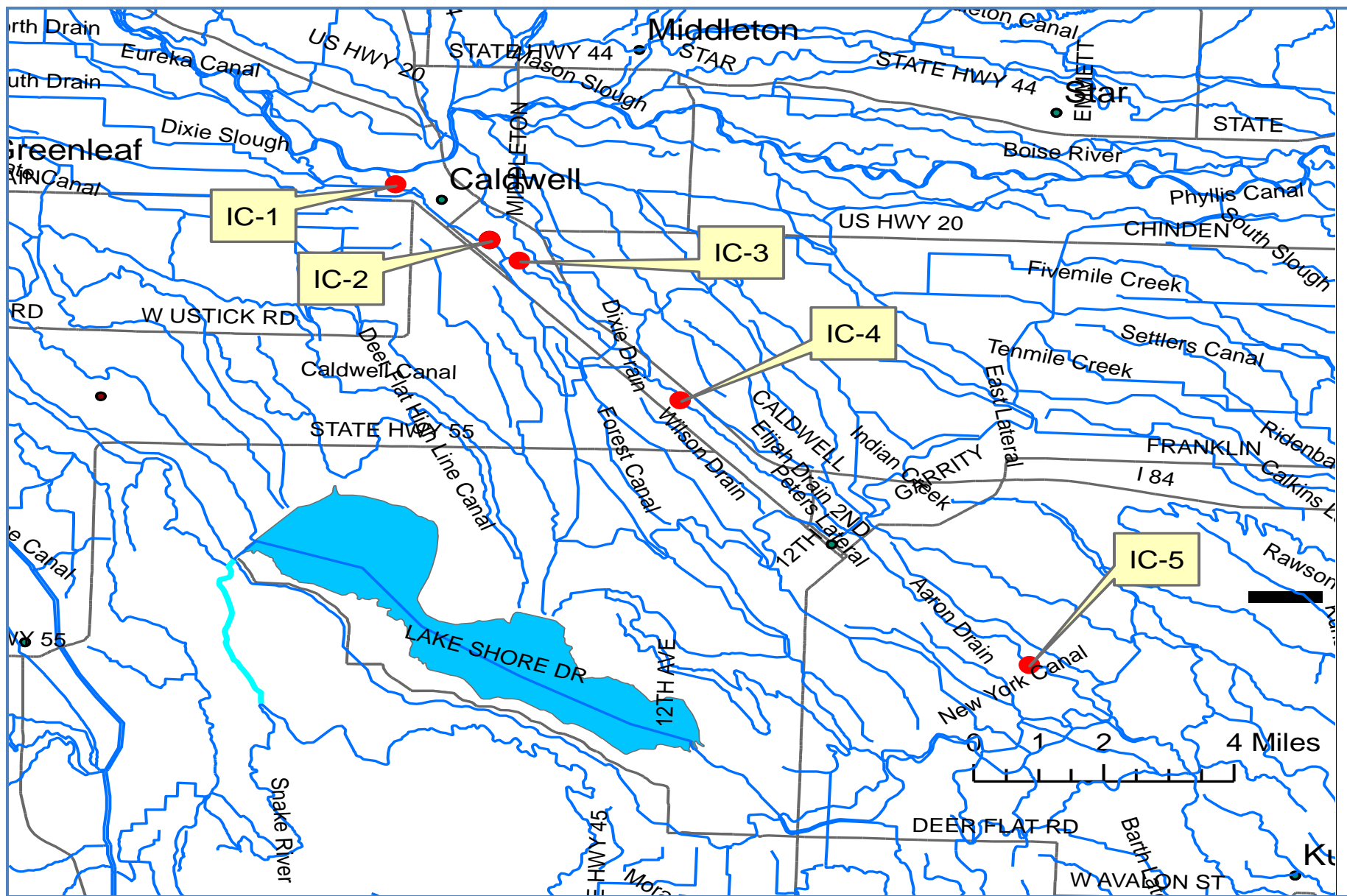
Pesticide	# of Detections	Pesticide Type
2,4-D	36	H
2,4-DB	2	H
Acephate	1	I
Alachlor	2	H
Aldicarb	1	H
Aldicarb Sulfoxide	1	H
Atrazine	7	H
Bentazon	4	H
Bromacil	39	H
Bromoxynil	2	H
Chlorpyrifos	11	I
Dacthal	5	H
Desethyl Atrazine	51	H
Diazinon	1	I

Surface Water Pesticide Detections for Mason Creek

Pesticides Most Commonly Detected

- ❖ 2,4-D - 49%
- ❖ Atrazine - 10%
- ❖ Bromacil - 54%
- ❖ Bromoxynil - 13%
- ❖ Chlorpyrifos - 19%
- ❖ Desethyl Atrazine – 75%
- ❖ Diuron – 51%
- ❖ Ethoprop – 13%
- ❖ Hexazinone – 13%
- ❖ MCPA – 10%
- ❖ Methomyl – 19%
- ❖ Metolachlor – 34%
- ❖ Pendimethalin - 36%
- ❖ Terbacil - 51%

Indian Creek Pesticide Monitoring Sites 2012



Pesticides Detected in Surface Water

Pesticides Detected in Indian Creek 2012

Atrazine, Atrazine Desethyl	Hexazinone
Bromacil	Lindane
Bromoxynil	MCPA
Chlorpropham	Methomyl
Chlorpyrifos	Metolachlor
Dacthal	Metribuzin
Diuron	Pendimethalin
EPTC	Terbacil
Ethoprop	2,4-D

Pesticides Detected 2012, Indian Creek

Detected Pesticide	Type	Trade Name	# of Detects
2,4-D	H	Curtail	35
Atrazine	H	Aatrex	11
Bromacil	H	Krovar	31
Bromoxynil	H	Buctril	10
Chlorpropham	H	Spud Guard	1
Chlorpyrifos	I	Lorsban	9
Dacthal	H	Dacthal W-75	1
Desethyl Atrazine	D	—	63
Diuron	H	Karmex	13
EPTC	H	Eptam	1

Pesticides Detected 2012, Indian Creek

Detected Pesticide	Type	Trade Name	# of Detects
Ethoprop	I	Mocap	1
Hexazinone	H	Velpar	13
Lindane	I	Agrocide	2
MCPA	H	Banlene	5
Methomyl	I	Lannate	12
Metolachlor	H	Dual	15
Metribuzin	H	Sencore	1
Pendimethalin	H	Prowl	3
Terbacil	H	Sinbar	5

Surface Water Pesticides of Concern

Detections in SW Idaho streams at $\geq 50\%$ of an established EPA Aquatic Benchmark

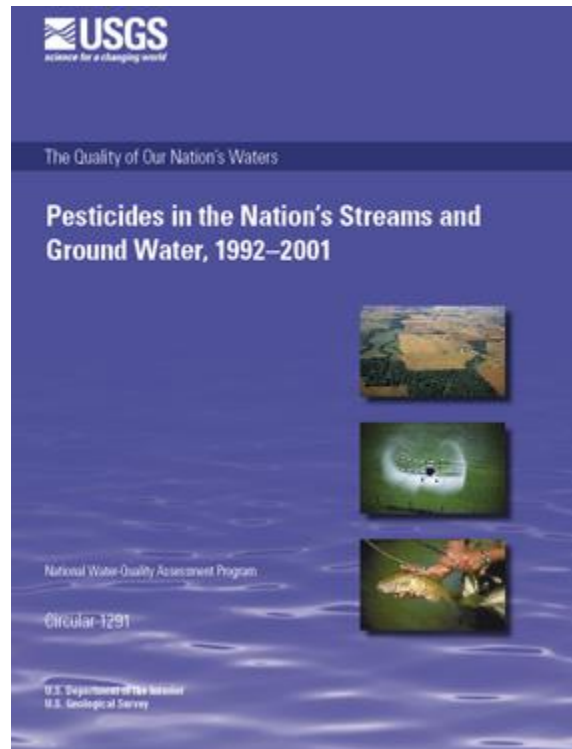
Bromoxynil, Carbofuran, Chlorpyrifos,
Dichlorvos, Dimethoate, Ethoprop,
Linuron, Malathion, Methomyl, Methyl
Parathion, Metolachlor, Oxyfluorfen

Surface Water Pesticide Detections

Pesticides of Concern & Interest

Bromoxynil	Acephate	Diuron	Oxamyl
Carbofuran	Alachlor	EPTC	Picloram
Chlorpyrifos	Aldicarb	Ethalfuralin	Pendimethalin
Dichlorvos	Atrazine	Hexazinone	Prometon
Dimethoate	Azoxystrobin	Lindane	Pronamide
Ethoprop	Bentazon	MCPA	Simazine
Linuron	Bromacil	Metalaxyl	Terbacil
Malathion	Carbaryl	Methidathion	Tralkoxydim
Methomyl	DCPA	Methamidophos	Triclopyr
Methyl Parathion	Desethyl Atrazine	Methiocarb	2,4-D
Metolachlor		Metribuzin	2,4-DB
Oxyfluorfen	Dicamba		

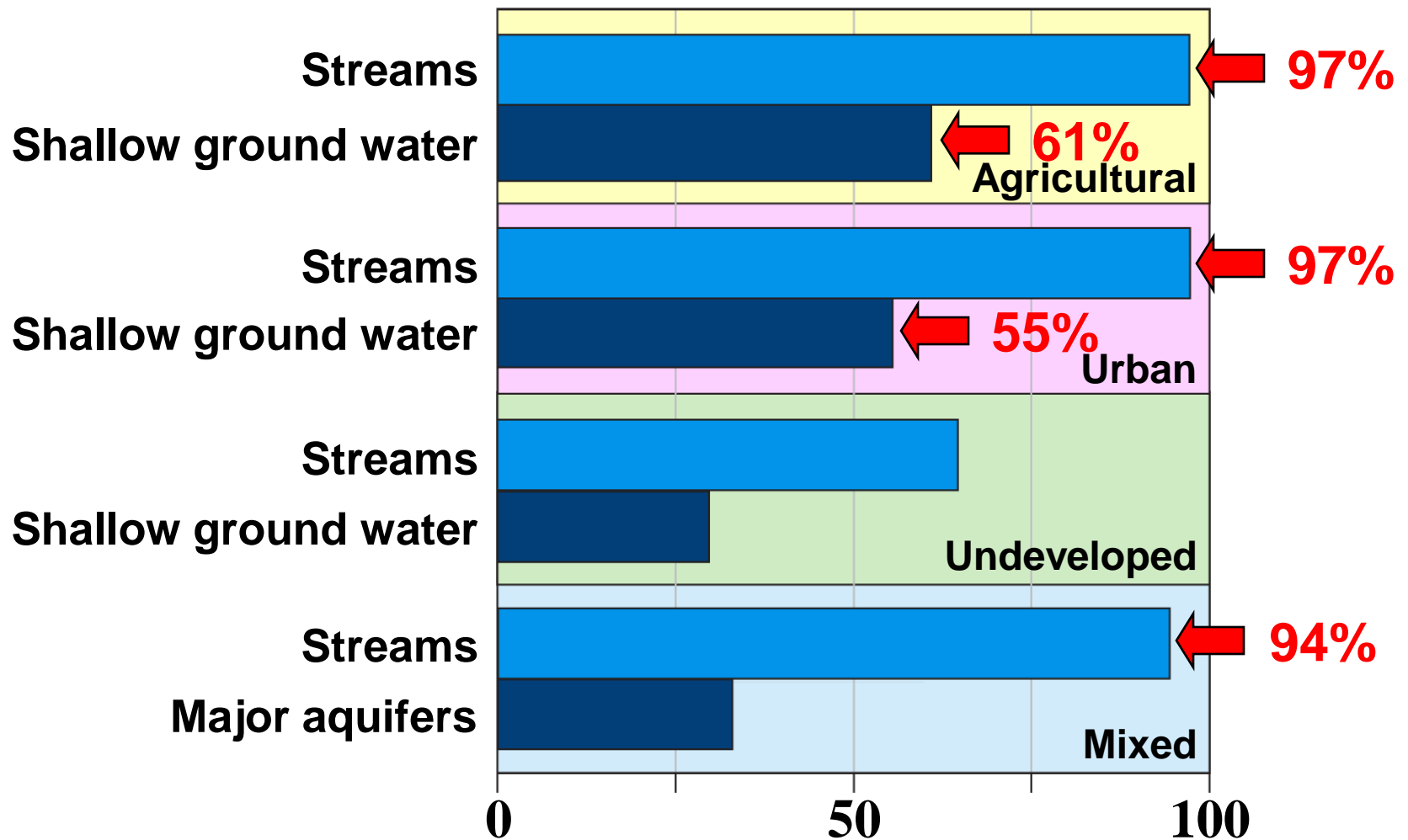
Highlights of USGS Pesticides



From: Gilliom and others, USGS, Pesticides in the Nation's Streams and Ground Water, 1992 – 2001

<http://ca.water.usgs.gov/pnsp/pubs/circ1291/>

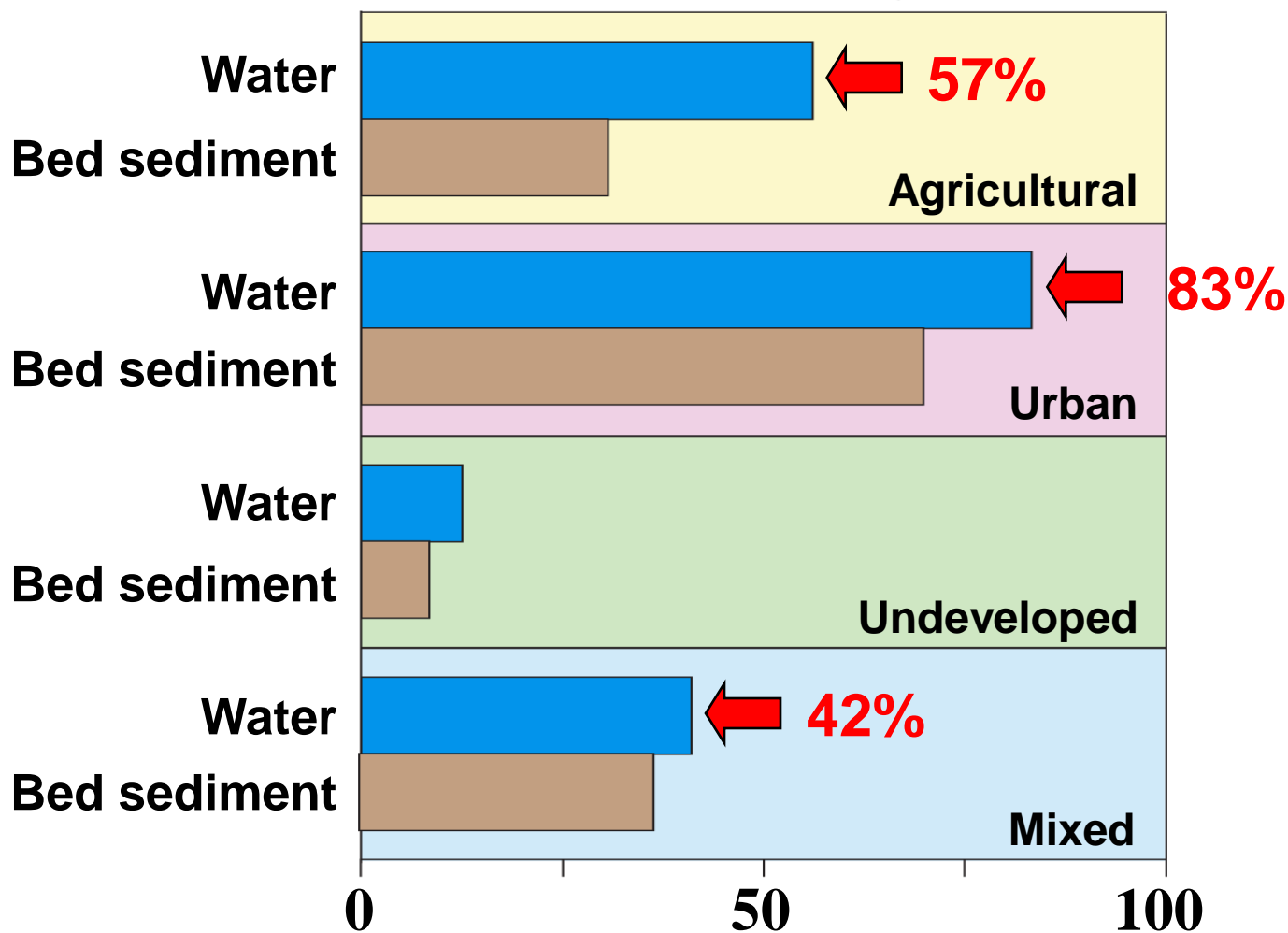
Occurrence in Water



Percentage of Samples with Detections

From: Gilliom and others, USGS, Pesticides in the Nation's Streams and Ground Water, 1992 - 2001

Potential to Affect Aquatic Life

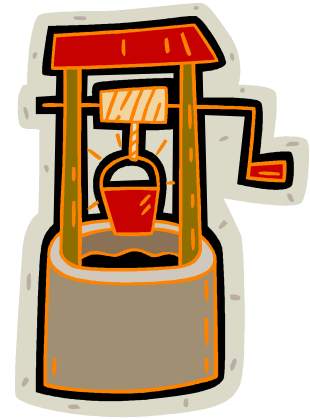


Percentage of Sites Exceeding Benchmarks

From: Gilliom and others, USGS, Pesticides in the Nation's Streams and Ground Water, 1992 - 2001

Environmental Assessment

- Identify vulnerable areas
 - Soil Characteristics
 - Soil Moisture
 - Depth of Soil
 - Sandy soils
 - Depth to ground water
 - Wells
 - Streams
 - Ponds
 - Runoff issues
 - Tailwater



Pesticide and Water BMPs

- Scout fields for pests regularly
- Determine soil type and depth to ground water
- Determine vulnerable areas for runoff
- Evaluate reduced pesticide application rates
- Rotate pesticide modes of action and/or chemistry
- Consider using precision applications of pesticides
- Develop an Irrigation Water Management Plan
- SWCD - Districts and NRCS on BMPs and structures to reduce pesticides, sediment and nutrients from entering river
- Properly calibrate and maintain all application equipment
- Minimize the impacts of mixing and loading
- Dispose of pesticides and pesticide containers properly

Diuron

Diuron 4L Label Statements

- Environmental Hazards
- Sensitive Areas
- Irrigation and Drainage Ditches
- Cleaning and Disposal
- General Concern
 - Drift, leaching and runoff issues

Diuron

Diuron 4L Label Statements

Sensitive Areas

❖ The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

Summary

- Monitoring has identified priorities
- Ground water detections are mostly low level
- Surface water detections are numerous, some are nearing an aquatic benchmark
- Focus on the Pesticides of Concern identified
- Education and management
- Be aware of vulnerable situations and drift
- Read the label for precautions
- Work on prevention and adjusting with BMPs

Thank You!

Questions?