WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Wyoming Surface Water Quality Standards

Designated Uses and Classifications

Triennial Review Stakeholder Group
April 9, 2021

Outline

- Review of Designated Use Requirements
- Wyoming's Designated Uses and Classification System
- Examples of Designated Uses and Classifications from Other States
- Ideas for Potential Changes to Wyoming's Standards

	Drinking Water	Game Fish	Non-Game Fish	Fish Consumption	Other Aquatic Life	Recreation	Wildlife	Agriculture	Industry	Scenic Value
1*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2AB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2A	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
2B	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2C	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2D	No	When Present	When Present	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3A	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3B	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3C	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3D	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
4A	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
4B	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
4C	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes

Surface Water Quality Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Designated Uses

Implementation

Water Quality Criteria

Antidegradation

Designated Uses

- Uses specified in the water quality standards, even though they may not currently be attained


South Fork Shoshone River

Scenic Value

Recreation

Aquatic Life

Drinking Water

Designated Uses: Clean Water Act

40 CFR 131.2 and 131.10

- Must designate all waters for swimmable and fishable uses (primary contact recreation, aquatic life, fish consumption)

Designated Uses: Clean Water Act

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

40 CFR 131.2 and 131.10

- Consider use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, and also taking into consideration their use and value for navigation

Designated Uses: Clean Water Act

40 CFR 131.2 and 131.10

- Take into consideration the water quality standards of downstream waters
- Can adopt subcategories of designated uses to reflect varying needs (e.g., warmwater fisheries, coldwater fisheries)
- Can adopt seasonal uses

Designated Uses: Clean Water Act

40 CFR 131.2 and 131.10

- May remove or modify fishable swimmable uses
  - Must complete a use attainability analysis to demonstrate that the use is not attainable based on one of six factors
  - Cannot remove an existing use
  - Must designate the *highest attainable use

*Highest attainable use is the use that can be achieved after imposing technology based effluent limits for point sources and cost-effective and reasonable best management practices for nonpoint source

Chapter 1, Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 1, Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 1, Section 3, Water Uses

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Section 3. Water Uses. The objectives of the Wyoming water pollution control program are described in W.S. 35-11-102. These objectives are designed to serve the interests of the state and achieve the related goals, objectives and policies of the Clean Water Act. The objectives of the Wyoming program are to provide, wherever attainable, the highest possible water quality commensurate with the following uses:

(a) Agriculture. For purposes of water pollution control, agricultural uses include irrigation and/or livestock watering.

(b) Fisheries. The fisheries use includes water quality, habitat conditions, spawning and nursery areas, and food sources necessary to sustain populations of cold water game fish, warm water game fish and nongame fish. This use does not include the protection of aquatic invasive species or other fish which may be considered "undesirable" by the Wyoming Game and Fish Department or the U.S. Fish and Wildlife Service within their appropriate jurisdictions.

(c) Industry. Industrial use protection involves maintaining a level of water quality useful for industrial purposes.

(d) Drinking water. The drinking water use involves maintaining a level of water quality that is suitable for potable water or intended to be suitable after receiving conventional drinking water treatment.

Chapter 1, Section 3, Water Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

(e) Recreation. Recreational use protection involves maintaining a level of water quality which is safe for human contact. It does not guarantee the availability of water for any recreational purpose. The recreation designated use includes primary contact recreation and secondary contact recreation subcategories.

(f) Scenic value. Scenic value use involves the aesthetics of the aquatic systems themselves (odor, color, taste, settleable solids, floating solids, suspended solids and solid waste) and is not necessarily related to general landscape appearance.

(g) Aquatic life other than fish. This use includes water quality and habitat necessary to sustain populations of organisms other than fish in proportions which make up diverse aquatic communities common to the waters of the state. This use does not include the protection of human pathogens, insect pests, aquatic invasive species or other organisms which may be considered "undesirable" by the Wyoming Game and Fish Department or the U.S. Fish and Wildlife Service within their appropriate jurisdictions.

(h) Wildlife. The wildlife use includes protection of water quality to a level which is safe for contact and consumption by avian and terrestrial wildlife species.

(i) Fish consumption. The fish consumption use involves maintaining a level of water quality that will prevent any unpalatable flavor and/or accumulation of harmful substances in fish tissue.

Summary of Wyoming Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

No.	Designated Use	Subcategory
1	Agriculture	
2	Drinking Water	
3	Aquatic Life Other Than Fish	
4	Fisheries	Coldwater Game Fish
		Warmwater Game Fish
		Nongame Fish
5	Fish Consumption	
6	Industry	
7	Recreation	Primary contact
		Secondary contact
8	Scenic Value	
9	Wildlife	

Chapter 1, Section 4, Classifications

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Intro

Section 4. Surface Water Classes and Uses. The following water classes are a hierarchical categorization of waters according to existing and designated uses. Except for Class 1 waters, each classification is protected for its specified uses plus all the uses contained in each lower classification. Class 1 designations are based on value determinations rather than use support and are protected for all uses in existence at the time or after designation. There are four major classes of surface water in Wyoming with various subcategories within each class (see *Wyoming Surface Water Classification List* for current classifications).

Class 1

(a) Class 1, Outstanding Waters. Class 1 waters are those surface waters in which no further water quality degradation by point source discharges other than from dams will be allowed. Nonpoint sources of pollution shall be controlled through implementation of appropriate best management practices. Pursuant to Section 7 of these regulations, the water quality and physical and biological integrity which existed on the water at the time of designation will be maintained and protected. In designating Class 1 waters, the Environmental Quality Council (council) shall consider water quality, aesthetic, scenic, recreational, ecological, agricultural, botanical, zoological, municipal, industrial, historical, geological, cultural, archaeological, fish and wildlife, the presence of significant quantities of developable water and other values of present and future benefit to the people.

Class 2

(b) Class 2, Fisheries and Drinking Water. Class 2 waters are waters, other than those designated as Class 1, that are known to support fish and/or drinking water supplies or where those uses are attainable. Class 2 waters may be perennial, intermittent or ephemeral and are protected for the uses indicated in each subcategory listed below. There are five subcategories of Class 2 waters.

Class 2AB

(i) Class 2AB. Class 2AB waters are those known to support game fish populations or spawning and nursery areas at least seasonally and all their perennial tributaries and adjacent wetlands and where a game fishery and drinking water use is otherwise attainable. Class 2AB waters include all permanent and seasonal game fisheries and can be either "cold water" or "warm water" depending upon the predominance of cold water or warm water species present. All Class 2AB waters are designated as cold water game fisheries unless identified as a warm water game fishery by a "ww" notation in the *Wyoming Surface Water Classification List*. Unless it is shown otherwise, these waters are presumed to have sufficient water quality and quantity to support drinking water supplies and are protected for that use. Class 2AB waters are also protected for nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value uses.

Class 2A

(ii) Class 2A. Class 2A waters are those that are not known nor have the potential to support fish but are used for public or domestic drinking water supplies, including their perennial tributaries and adjacent wetlands. Uses designated on Class 2A waters include drinking water, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value.

Class 2B

(iii) Class 2B. Class 2B waters are those known to support or have the potential to support game fish populations or spawning and nursery areas at least seasonally and all their perennial tributaries and adjacent wetlands and where it has been shown that drinking water uses are not attainable pursuant to the provisions of Section 33. Class 2B waters include permanent and seasonal game fisheries and can be either "cold water" or "warm water" depending upon the predominance of cold water or warm water species present. All Class 2B waters are designated as cold water game fisheries unless identified as a warm water game fishery by a "ww" notation in the *Wyoming Surface Water Classification List*. Uses designated on Class 2B waters include game and nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value.

Chapter 1, Section 4, Classifications

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Class 2C

(iv) Class 2C. Class 2C waters are those known to support or have the potential to support only nongame fish populations or spawning and nursery areas at least seasonally including their perennial tributaries and adjacent wetlands. Class 2C waters include all permanent and seasonal nongame fisheries and are considered warm water. Uses designated on Class 2C waters include nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value.

Class 2D

(v) Class 2D. Effluent dependent waters which are known to support fish populations and where the resident fish populations would be significantly degraded in terms of numbers or species diversity if the effluent flows were removed or reduced. Class 2D waters are protected to the extent that the existing fish communities and other designated uses are maintained and that the water quality does not pose a health risk or hazard to humans, livestock or wildlife. Uses designated on Class 2D waters include game or nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value.

Class 3

(c) Class 3, Aquatic Life Other than Fish. Class 3 waters are waters, other than those designated as Class 1, that are intermittent, ephemeral or isolated waters and because of natural habitat conditions, do not support nor have the potential to support fish populations or spawning, or certain perennial waters which lack the natural water quality to support fish (e.g. geothermal areas). Class 3 waters provide support for invertebrates, amphibians, or other flora and fauna which inhabit waters of the state at some stage of their life cycles. Uses designated on Class 3 waters include aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value. Generally, waters suitable for this classification have wetland characteristics, and such characteristics will be a primary indicator used in identifying Class 3 waters. There are four subcategories of Class 3 waters.

Class 3A

(i) Class 3A. Class 3A waters are isolated waters including wetlands that are not known to support fish populations or drinking water supplies and where those uses are not attainable.

Class 3B

(ii) Class 3B. Class 3B waters are tributary waters including adjacent wetlands that are not known to support fish populations or drinking water supplies and where those uses are not attainable. Class 3B waters are intermittent and ephemeral streams with sufficient hydrology to normally support and sustain communities of aquatic life including invertebrates, amphibians, or other flora and fauna which inhabit waters of the state at some stage of their life cycles. In general, 3B waters are characterized by frequent linear wetland occurrences or impoundments within or adjacent to the stream channel over its entire length. Such characteristics will be a primary indicator used in identifying Class 3B waters.

Class 3C

(iii) Class 3C. Class 3C waters are perennial streams without the natural water quality potential to support fish or drinking water supplies but do support wetland characteristics. These may include geothermal waters and waters with naturally high concentrations of dissolved salts or metals or pH extremes.

Class 3D

(iv) Class 3D. Effluent dependent waters which are known to support communities of aquatic life other than fish and where the existing aquatic habitat would be significantly reduced in terms of aerial extent, habitat diversity or ecological value if the effluent flows are removed or reduced. Class 3D waters are protected to the extent that the existing aquatic community, habitat and other designated uses are maintained and the water quality does not pose a health risk or hazard to humans, livestock or wildlife.

Class 4

(d) Class 4, Agriculture, Industry, Recreation and Wildlife. Class 4 waters are waters, other than those designated as Class 1, where it has been determined that aquatic life uses are not attainable pursuant to the provisions of Section 33 of these regulations. Uses designated on Class 4 waters include recreation, wildlife, industry, agriculture and scenic value.

Class 4A

(i) Class 4A. Class 4A waters are artificial canals and ditches that are not known to support fish populations.

Class 4B

(ii) Class 4B. Class 4B waters are intermittent and ephemeral stream channels that have been determined to lack the hydrologic potential to normally support and sustain aquatic life pursuant to the provisions of Section 33(b)(ii) of these regulations. In general, 4B streams are characterized by only infrequent wetland occurrences or impoundments within or adjacent to the stream channel over its entire length. Such characteristics will be a primary indicator used in identifying Class 4B waters.

Class 4C

(iii) Class 4C. Class 4C waters are isolated waters that have been determined to lack the potential to normally support and sustain aquatic life pursuant to the provisions of Section 33(b)(i), (iii), (iv), (v) or (vi) of these regulations. Class 4C includes, but is not limited to, off-channel effluent dependent ponds where it has been determined under Section 33(b)(iii) that removing a source of pollution to achieve full attainment of aquatic life uses would cause more environmental damage than leaving the source in place.

Classification System/Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

	Drinking Water	Cold Water / Game Fish / Warm Water	Non-Game Fish	Fish Consumption	Other Aquatic Life	Primary Contact / Recreation / Secondary Contact	Wildlife	Agriculture	Industry	Scenic Value
1*	Yes	CW Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2AB	Yes	CW Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2A	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
2B	No	CW Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2C	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2D	No	When Present	When Present	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3A	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3B	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3C	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3D	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
4A	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
4B	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
4C	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes

Chapter 1, Section 4, Classifications

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

(e) Specific stream segment classifications are contained in a separate document entitled *Wyoming Surface Water Classification List* which is published by the department and periodically revised and updated according to the provisions of Sections 4, 33, 34, 35 and Appendix A of this chapter. Class 1 waters are those waters that have been specifically designated by the council. Class 2AB, 2A, 2B and 2C designations are based upon the fisheries information contained in the Wyoming Game and Fish Department's *Streams and Lakes Database* submitted to the department in June 2000. This database represents the best available information and is considered conclusive. Class 2D and 3D designations are based upon use attainability analyses demonstrating that the waters are effluent dependent and do not pose a hazard to humans, wildlife or livestock. Class 4 designations are based upon knowledge that a water body is an artificial, man-made conveyance, or has been determined not to support aquatic life uses through an approved use attainability analysis. All other waters are designated as Class 3A, 3B or 3C. Section 27 of these regulations describes how recreation use designations are made for specific water bodies.

Designated Uses: Wyoming

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

WYOMING SURFACE WATER CLASSIFICATION LI

WYOMING

Water Quality Division
Surface Water Standards

June 21, 2001
Updated March 26, 2020

525 pages

Table A

BELLE FOURCHE DRAINAGE

BELLE FOURCHE R 2ABWW					
	OWL CR 3B				
	CROW CR 3B				
		BULL CR 3B			
		CHICAGO CR 3B			
	MIDDLE CR 3B				
	HAY CR 3B				
		N FK HAY CR 3B			
		S FK HAY CR 3B			
	REDWATER CR 2AB				
		SAND CR (ABOVE HWY 14) 1			
		SAND CR (REMAINDER) 2AB			
			COLD SPRINGS CR 2AB		
				LOST CANYON CR 3B	
			RED CANYON CR 3B		
			SPOTTED TAIL CR 2AB		
		S REDWATER CR 2AB			
			SUNDANCE CR (AB FAIR GROUND POND) 2AB		
			SUNDANCE CR (BL FAIR GROUND POND) 3B		
			ROCKY FORD CR 3B		
	OAK CR 3B				
		ALUM CR 3B			
	KILPATRICK CR 3B				
	PINE CR 3B				
		DEEP CR 3B			
	HORSE CR 3B				
	SPRING CR 3B				
	BOGGY CR 3B				
	BRUSHY CR 3B				
	DEER CR 3B				
	SOURDOUGH CR 3B				
	BLACKTAIL CR 2AB				

A-3

Designated Uses: Wyoming

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Table A

BELLE FOURCHE DRAINAGE

BELLE FOURCHE R 2ABWW					
	OWL CR 3B				
	CROW CR 3B				
		BULL CR 3B			
		CHICAGO CR 3B			
	MIDDLE CR 3B				
	HAY CR 3B				
		N FK HAY CR 3B			
		S FK HAY CR 3B			
	REDWATER CR 2AB				
		SAND CR (ABOVE HWY 14) 1			

Water Quality Division
Surface Water Standards

June 21, 2001
Updated March 26, 2020

Designated Uses: Wyoming

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

WYOMING SURFACE WATER CLASSIFI

WYOMING

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June 21, 2001
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Table B

WATER NAME	TRIBUTARY TO	COUNTY	TWP	RANGE	SEC	CLASS	NOTE	G&F ID
LOWER SILAS LAKE	SILAS CREEK	FREMONT	31	101	33	2AB		LR120326FT
LOWER SNOWBANK LAKE	SNOWBANK CREEK	FREMONT	36	106	28	3B		LR121410FT
LOWER SUNSHINE RESERVOIR	SUNSHINE CREEK	PARK	47	101	33	2AB		CY421028PK
LOWER TAYO LAKE	TAYO CREEK	SUBLETTE	31	103	35	3B		LR120008SE
LOWER TOWN DRAW RES	CLEAR CREEK	SHERIDAN	54	80	11	2C		SN030075SN
LOWER TP RESERVOIR	TEEPEE CREEK	SHERIDAN	54	85	32	3B		SN430350SN
LOWER WEST RES	MIDDLE BEAR CREEK	PLATTE	28	68	20	3B		CR550534PE
LOWER WHAM RESERVOIR	DEER CREEK	CROOK	51	67	23	3B		SN060344CK
LOWER WOODS POND	LITTLE GOOSE CREEK	SHERIDAN	54	84	8	2AB		SN530216SN
LOZIER POND #2	WILLOW CREEK	SUBLETTE	35	109	8	3B		PE540853SE
LOZIER POND #3	WILLOW CREEK	SUBLETTE	35	109	8	3B		PE541853SE
LT IND PAINTBRUSH LK	PAINTBRUSH CREEK	FREMONT	37	105	31	3B		LR121014FT
LT LOUIS LAKE #1	LOUIS CREEK	FREMONT	30	101	1	3B		LR020258FT
LT LOUIS LAKE #2	LOUIS LAKE	FREMONT	30	101	1	3B		LR020262FT
LT LOUIS LAKE #3	LOUIS CREEK	FREMONT	30	101	1	3B		LR020266FT
LT LOUIS LAKE #4	LOUIS CREEK	FREMONT	30	100	6	3B		LR020226FT
LT LOUIS LAKE #5	LOUIS CREEK	FREMONT	30	100	6	3B		LR020230FT
LT LOUIS LAKE #6	LOUIS CREEK	FREMONT	30	100	6	3B		LR020234FT
LT PRINCE ALBERT LK	PRINCE ALBERT CREEK	FREMONT	37	105	31	3B		LR121022FT
LUCAS POND	GROS VENTRE RIVER	TETON	42	116	34	2AB		JN510308TN
LUCAS POND	SHELL CR, >BEAVER CR	BIG HORN	52	92	6	2AB		CY620080BN
LUCAS RES 1	CEDAR CR	CARBON	17	83	29	2AB		LE550377CN
LUCAS RES 2	CEDAR CR	CARBON	17	83	28	2AB		LE550379CN
LUCAS RES 3	CEDAR CR	CARBON	17	83	28	2AB		LE550381CN
LUCE CREEK	MAY CREEK	PARK	47	101	10	3B		CY822440PK
LUCE RESERVOIR	PAINT CREEK	PARK	55	103	3	2AB		CY480180PK

Chapter 1, Section 4, Classifications

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

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Chapter 1, Appendix A, Classifications

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Appendix A

Wyoming Surface Water Classifications

All surface waters in Wyoming are classified as follows:

(a) Class 1 Waters. The following waters are designated Class 1:

(i) All surface waters located within the boundaries of national parks and congressionally designated wilderness areas as of January 1, 1999;

(ii) The main stem of the Snake River through its entire length above the U.S. Highway 22 Bridge (Wilson Bridge);

(iii) The main stem of the Green River, including the Green River Lakes from the mouth of the New Fork River upstream to the wilderness boundary;

(iv) The main stem of the Wind River from the Wedding of the Waters upstream to Boysen Dam;

(v) The main stem of the North Platte River from the mouth of Sage Creek (approximately 15 stream miles downstream of Saratoga, Wyoming) upstream to the Colorado state line;

(vi) The main stem of the North Platte River from the headwaters of Pathfinder Reservoir upstream to Kortes Dam (Miracle Mile segment);

(vii) The main stem of the North Platte River from the Natrona County Road 309 bridge (Goose Egg bridge) upstream to Alcova Reservoir;

(viii) The main stem of Sand Creek above the U.S. Highway 14 bridge;

(ix) The main stem of the Middle Fork of the Powder River through its entire length above the mouth of Buffalo Creek;

(x) The main stem of the North Fork of the Tongue River, the main stem of the South Fork of the Tongue River and the main stem of the Tongue River above the U.S. Forest Service boundary;

(xi) The main stem of the Sweetwater River above the mouth of Alkali Creek;

(xii) The main stem of the Encampment River from the northern U.S. Forest Service boundary upstream to the Colorado state line;

(xiii) The main stem of the Clarks Fork River from the U.S. Forest Service boundary upstream to the Montana state line;

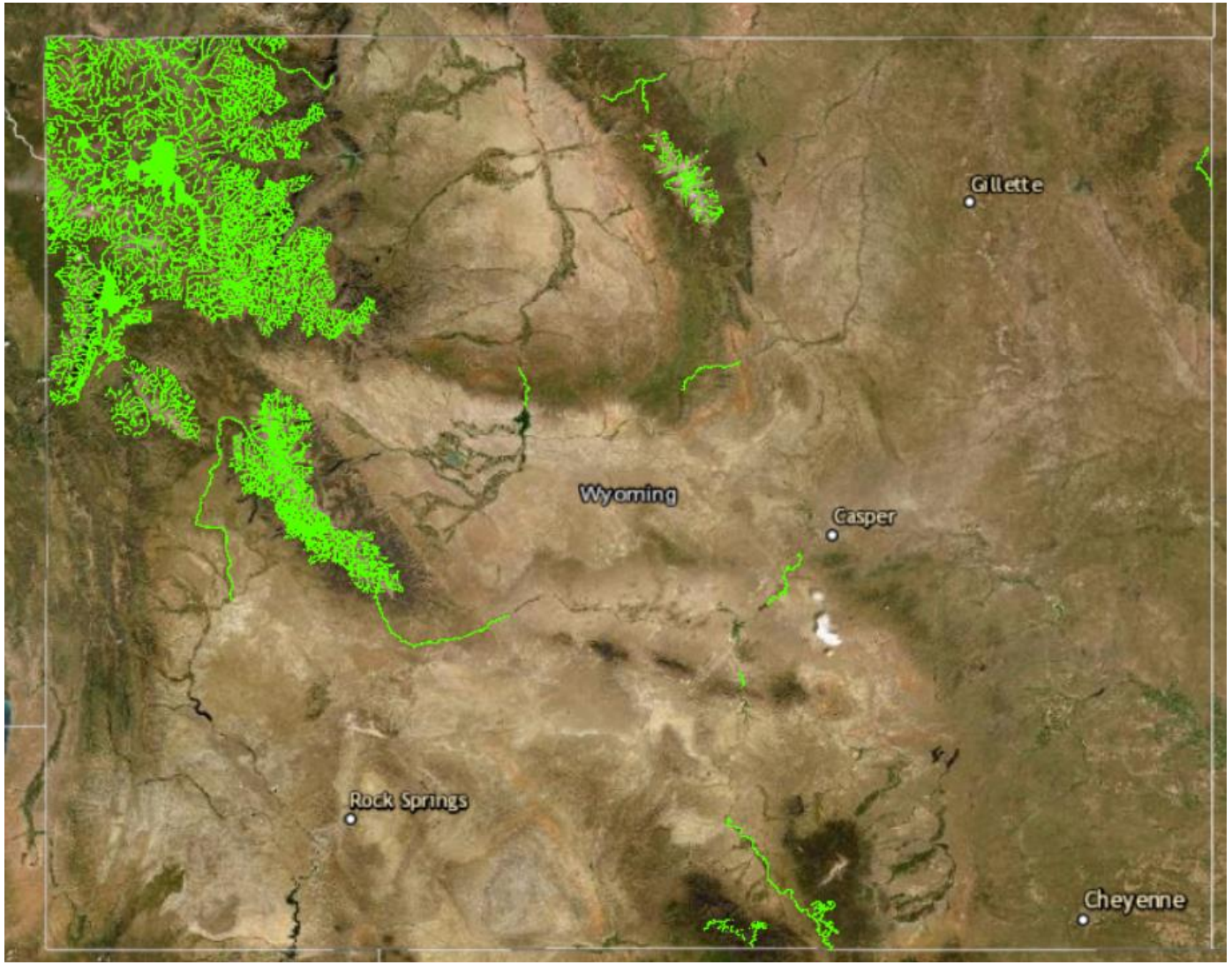
(xiv) All waters within the Fish Creek (near Wilson, Wyoming) drainage;

(xv) The main stem of Granite Creek (tributary of the Hoback River) through its entire length;

(xvi) Fremont Lake;

(xvii) Wetlands adjacent to the above listed Class 1 waters.

Class 1 Waters



- National Parks
- Wilderness Areas
- Snake River Upstream of HGWY 22
- Wind River Boysen to Wedding of Waters
- North Platte near Saratoga
- North Platte Miracle Mile
- North Platte Near Alcova Reservoir
- Sand Creek above US 14
- Middle Fork Powder River Above Buffalo Creek
- Mainstem of North Fork Tongue River, mainstem of South Fork Tongue River, mainstem of Tongue River upstream USFS boundary
- Sweetwater River above Alkali Creek
- Encampment River from USFS boundary to Colorado line
- Clarks For River from USFS boundary upstream to Montana state line
- All waters in Fish Creek Watershed
- Granite Creek
- Fremont Lake
- Wetlands adjacent to Class 1 waters

Chapter 1, Section 4, Classifications

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

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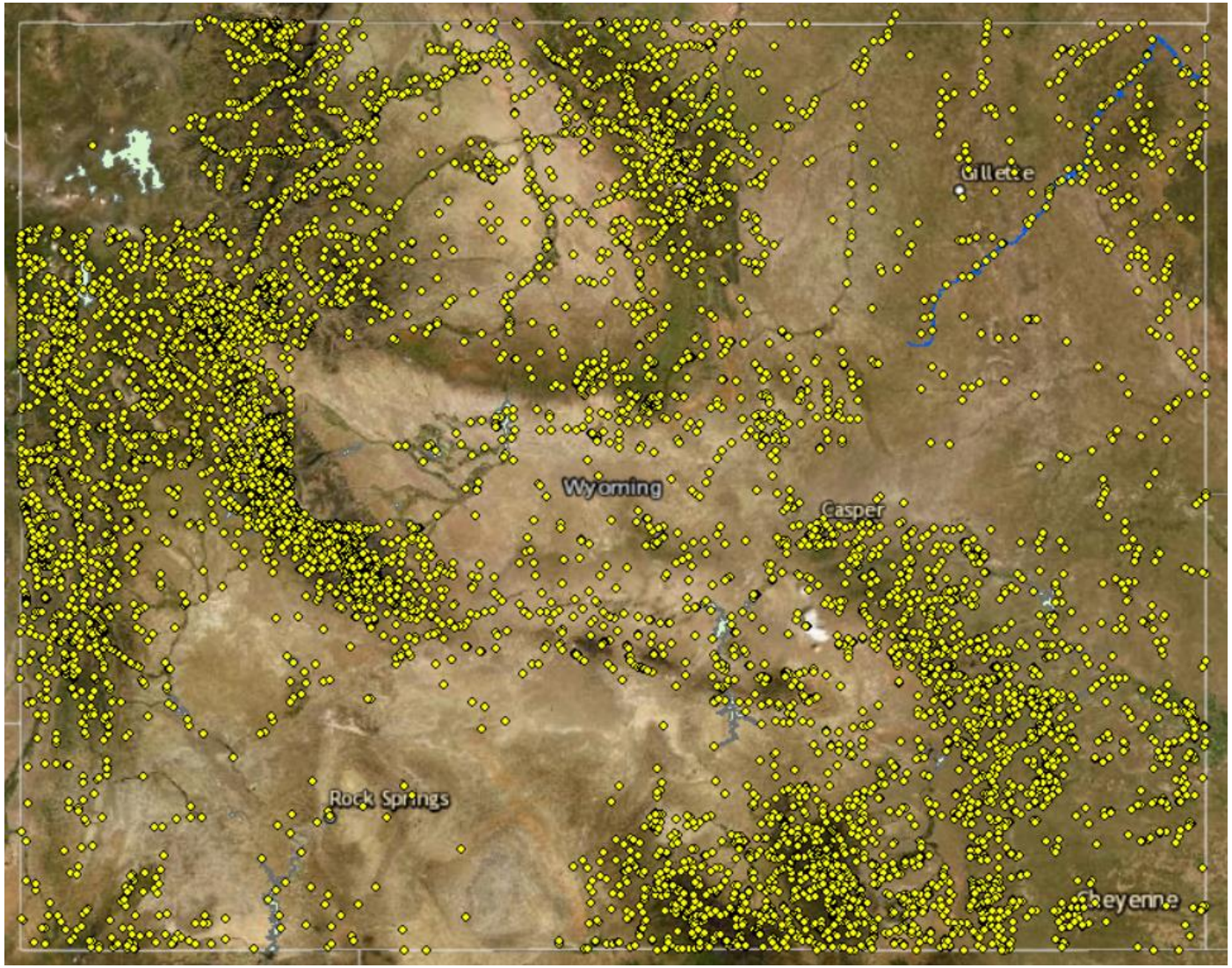
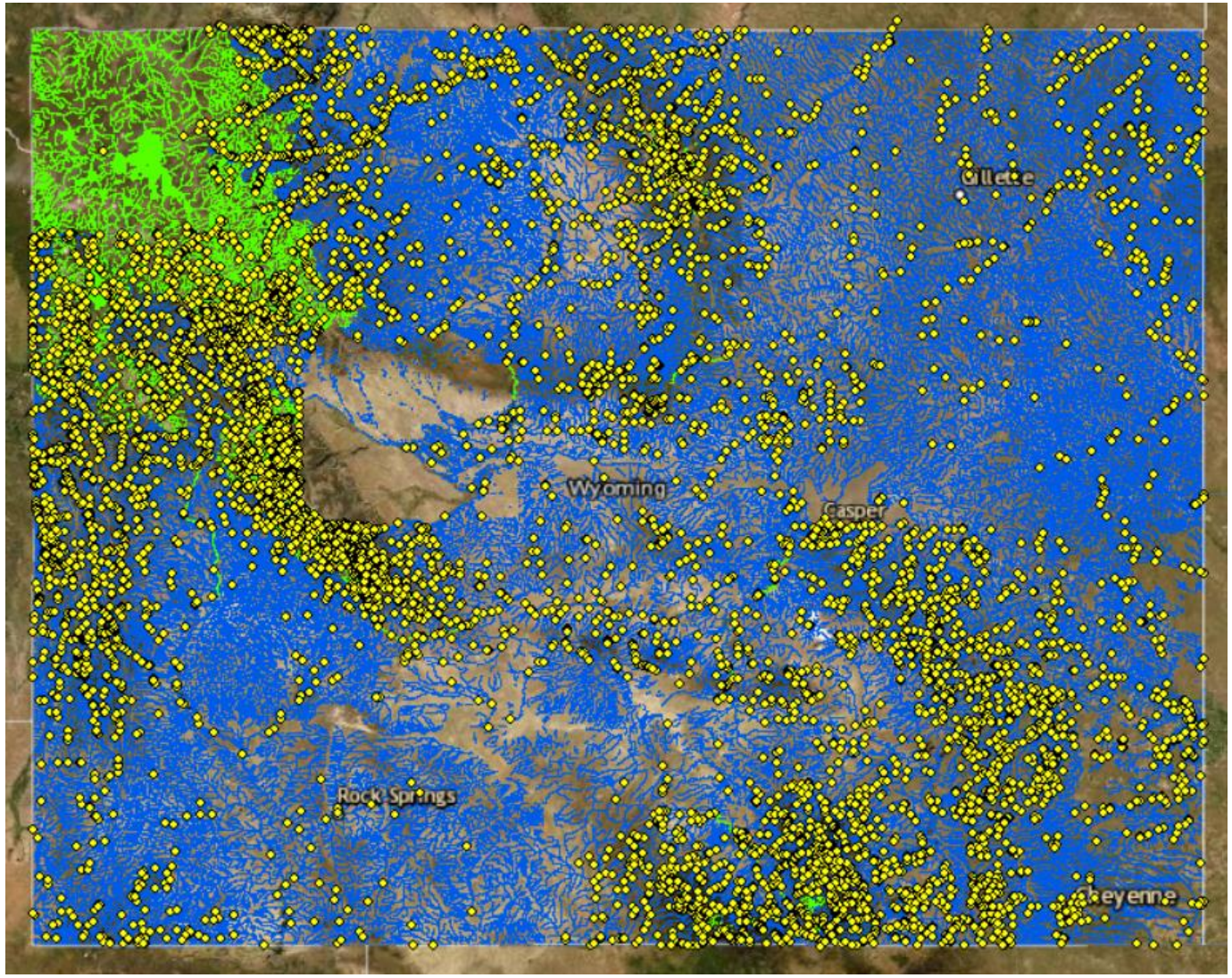
Wyoming Game and Fish Database



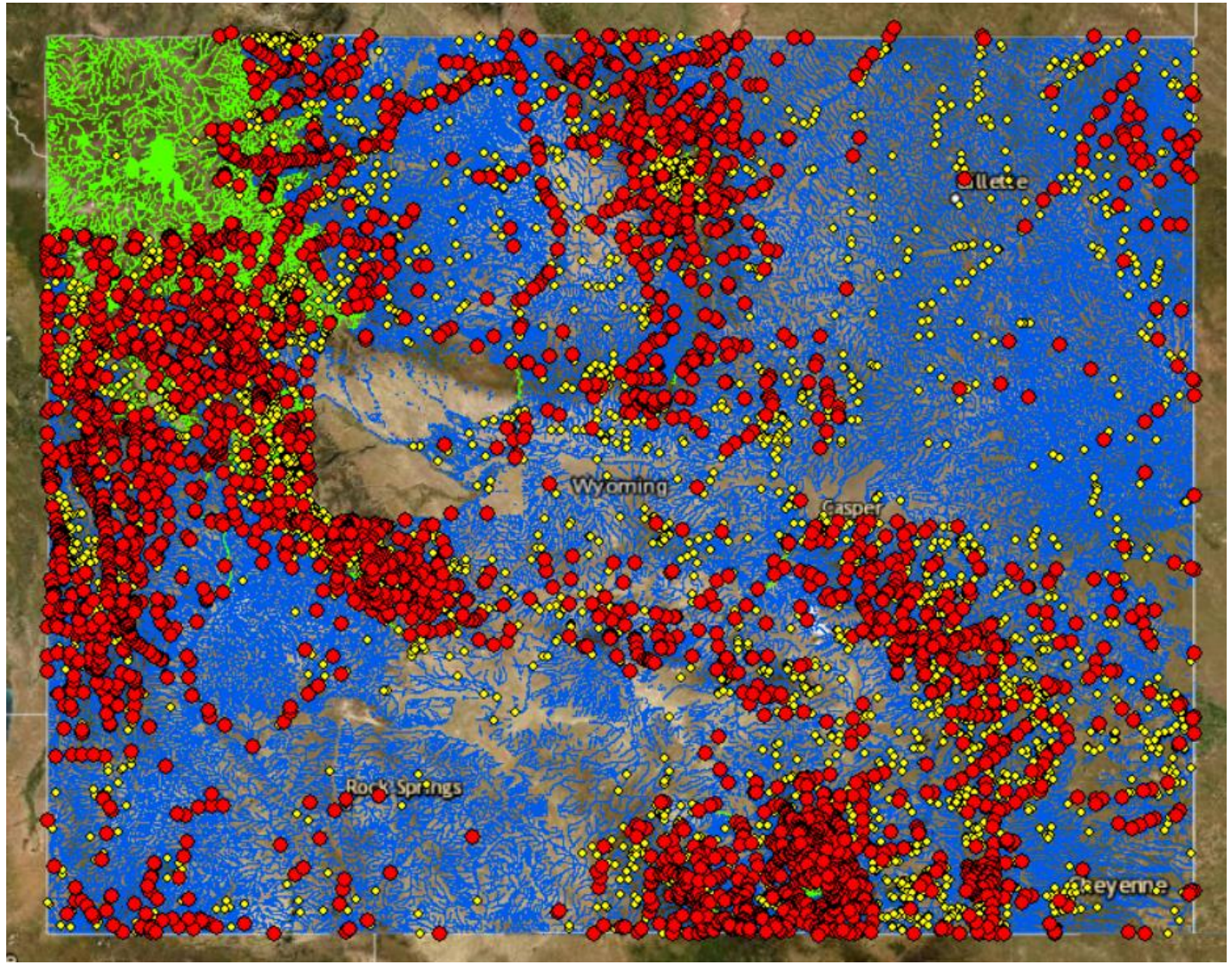
Sites in the Wyoming Game and Fish Database 2009

Wyoming Game and Fish Database



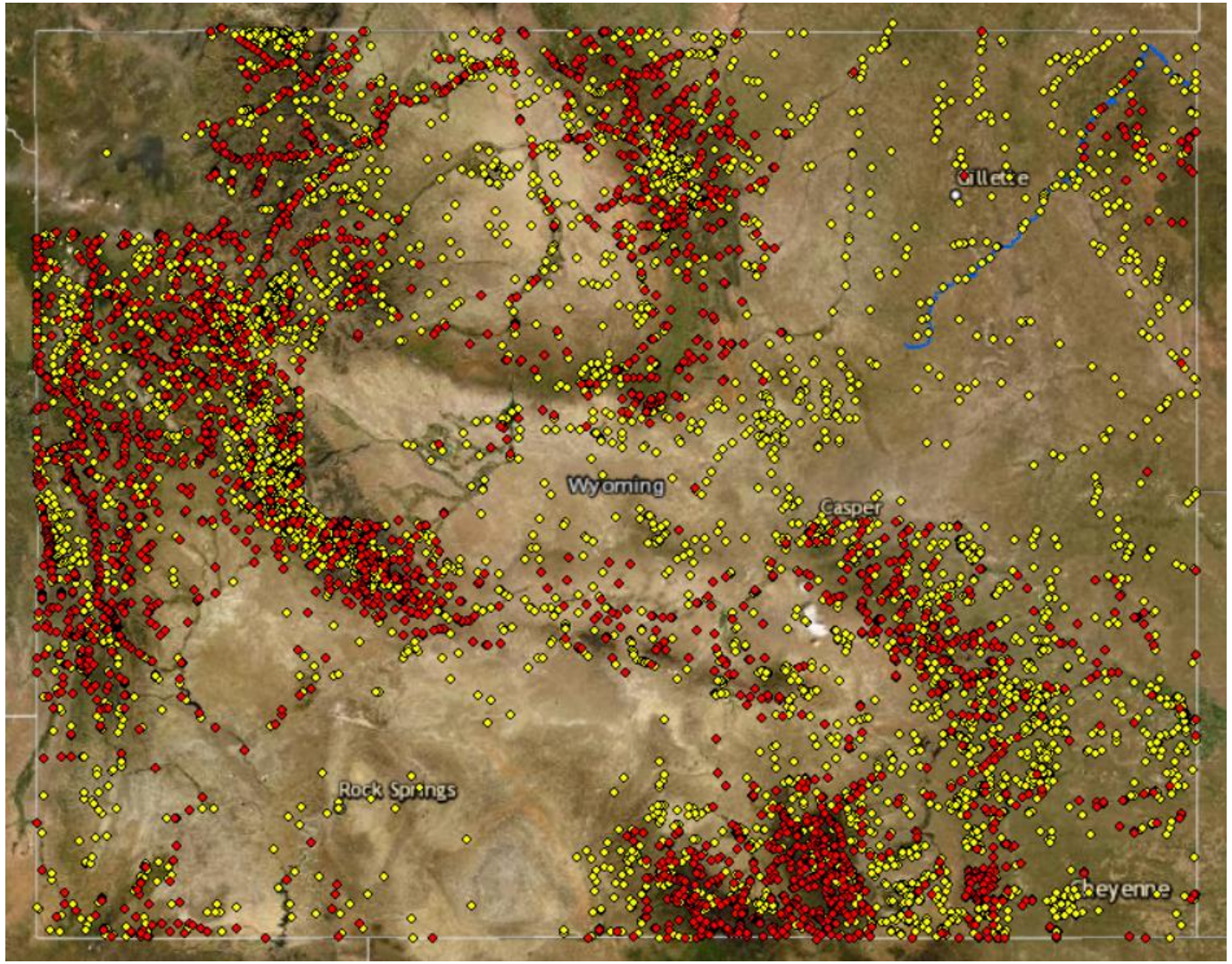
- Sites in the Wyoming Game and Fish Database 2009

Wyoming Game and Fish Database



- Sites in the Wyoming Game and Fish Database 2009
- Sites with fish species present in the Wyoming Game and Fish Database

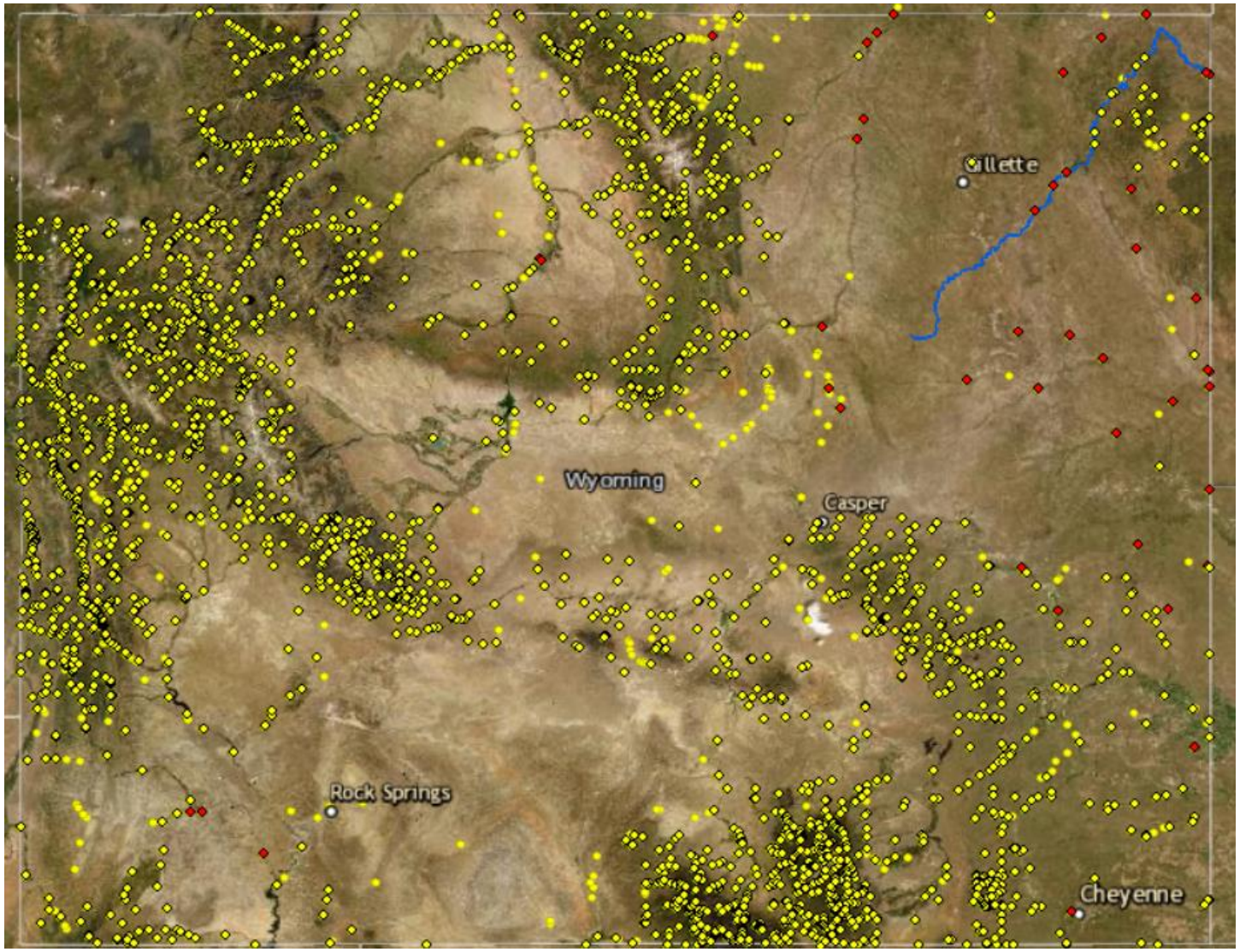
Wyoming Game and Fish Database



- Sites in the Wyoming Game and Fish Database 2009
- Sites with coldwater game fish present in the Wyoming Game and Fish Database

2AB

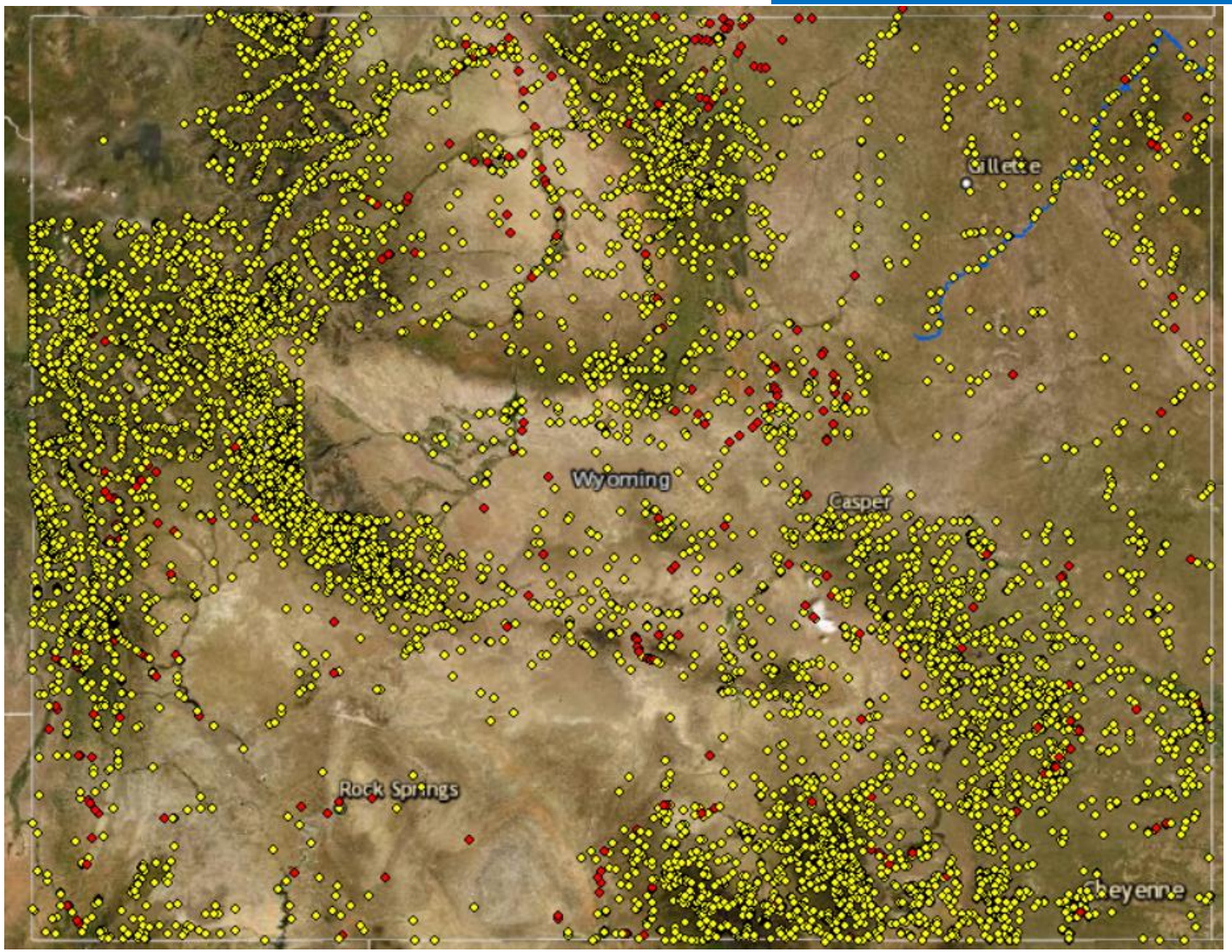
Wyoming Game and Fish Database



- Sites in the Wyoming Game and Fish Database 2009
- Sites with warmwater game fish and no coldwater game fish present in the Wyoming Game and Fish Database

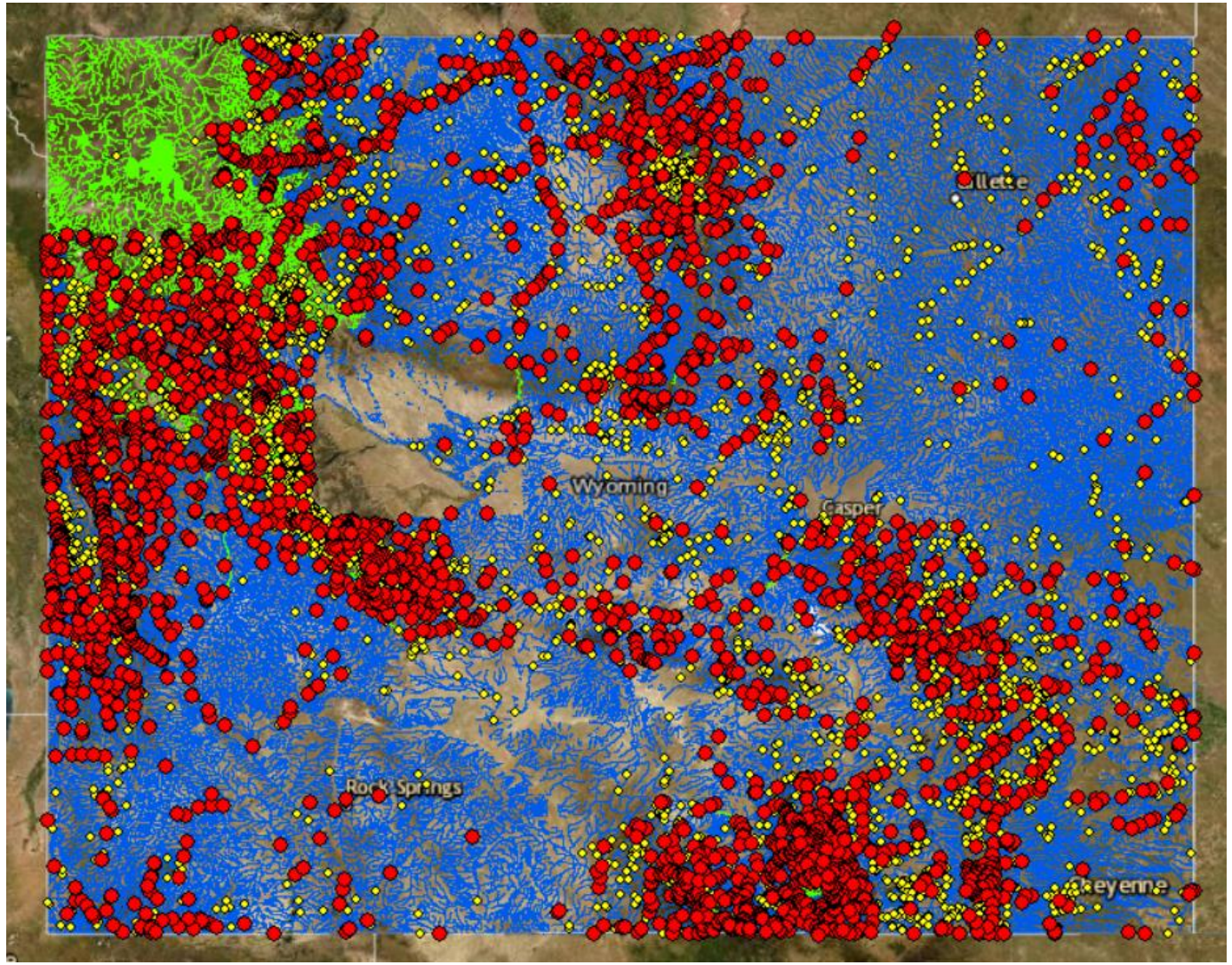
2AB ww

Wyoming Game and Fish Database



- Sites in the Wyoming Game and Fish Database 2009
- Sites with only nongame fish present in the Wyoming Game and Fish Database

Wyoming Game and Fish Database



- Sites in the Wyoming Game and Fish Database 2009 — 3B
- Sites with fish species present in the Wyoming Game and Fish Database

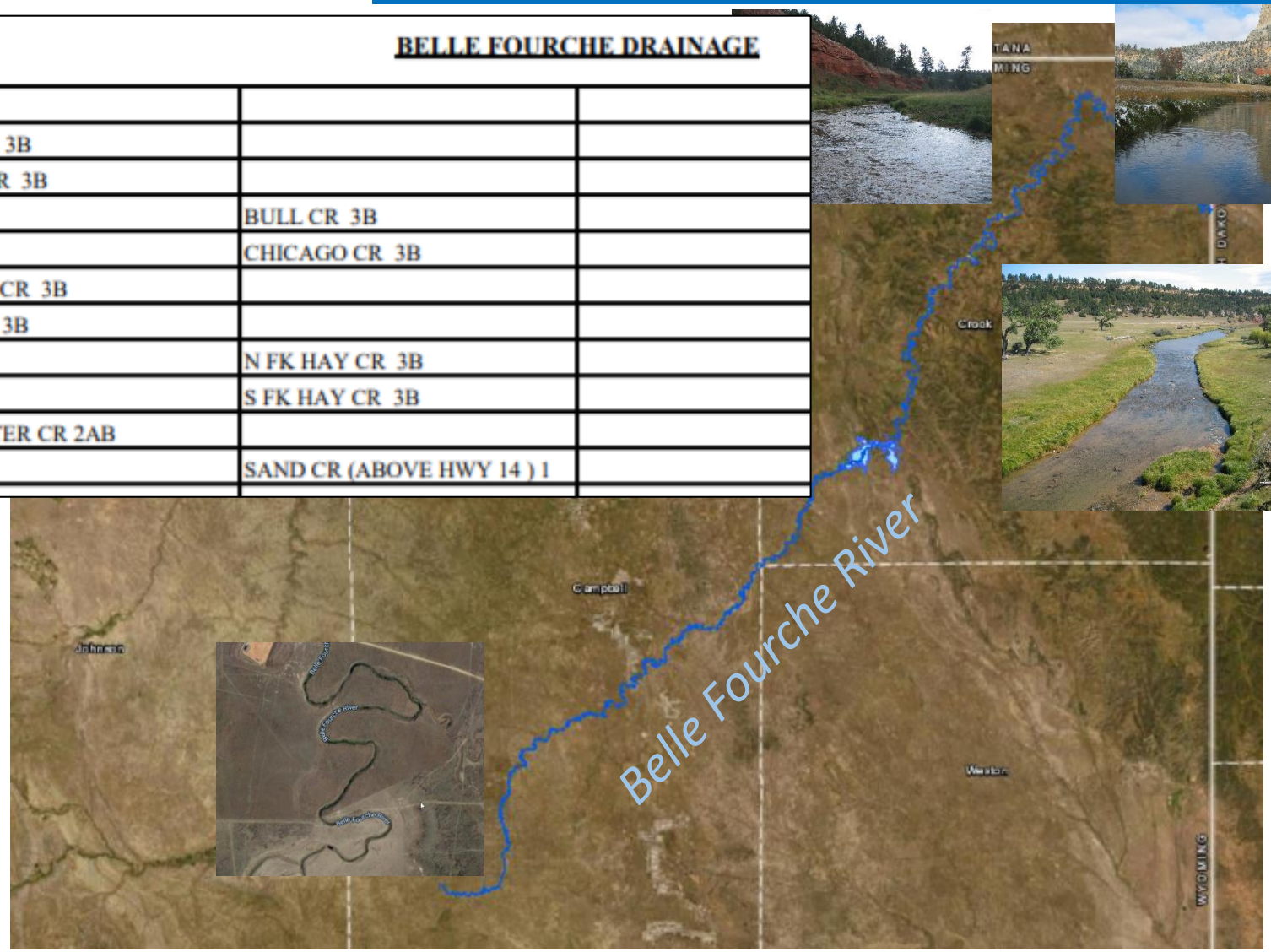
Belle Fourche River

Belle Fourche River Classification

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

BELLE FOURCHE DRAINAGE

BELLE FOURCHE R 2ABWW			
	OWL CR 3B		
	CROW CR 3B		
		BULL CR 3B	
		CHICAGO CR 3B	
	MIDDLE CR 3B		
	HAY CR 3B		
		N FK HAY CR 3B	
		S FK HAY CR 3B	
	REDWATER CR 2AB		
		SAND CR (ABOVE HWY 14) 1	



Belle Fourche River Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

	Drinking Water	Game Fish Warm Water	Non-Game Fish	Fish Consumption	Other Aquatic Life	Primary Contact Recreation Secondary Contact	Wildlife	Agriculture	Industry	Scenic Value
1*	Yes	Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2AB	Yes	Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2A	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
2B	No	Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2C	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2D	No	When Present	When Present	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3A	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3B	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3C	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3D	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
4A	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
4B	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
4C	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes

Chapter 1, Section 4, Classifications

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

(i) Class 2AB. Class 2AB waters are those known to support game fish populations or spawning and nursery areas at least seasonally and all their perennial tributaries and adjacent wetlands and where a game fishery and drinking water use is otherwise attainable. Class 2AB waters include all permanent and seasonal game fisheries and can be either "cold water" or "warm water" depending upon the predominance of cold water or warm water species present. All Class 2AB waters are designated as cold water game fisheries unless identified as a warm water game fishery by a "ww" notation in the *Wyoming Surface Water Classification List*. Unless it is shown otherwise, these waters are presumed to have sufficient water quality and quantity to support drinking water supplies and are protected for that use. Class 2AB waters are also protected for nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value uses.

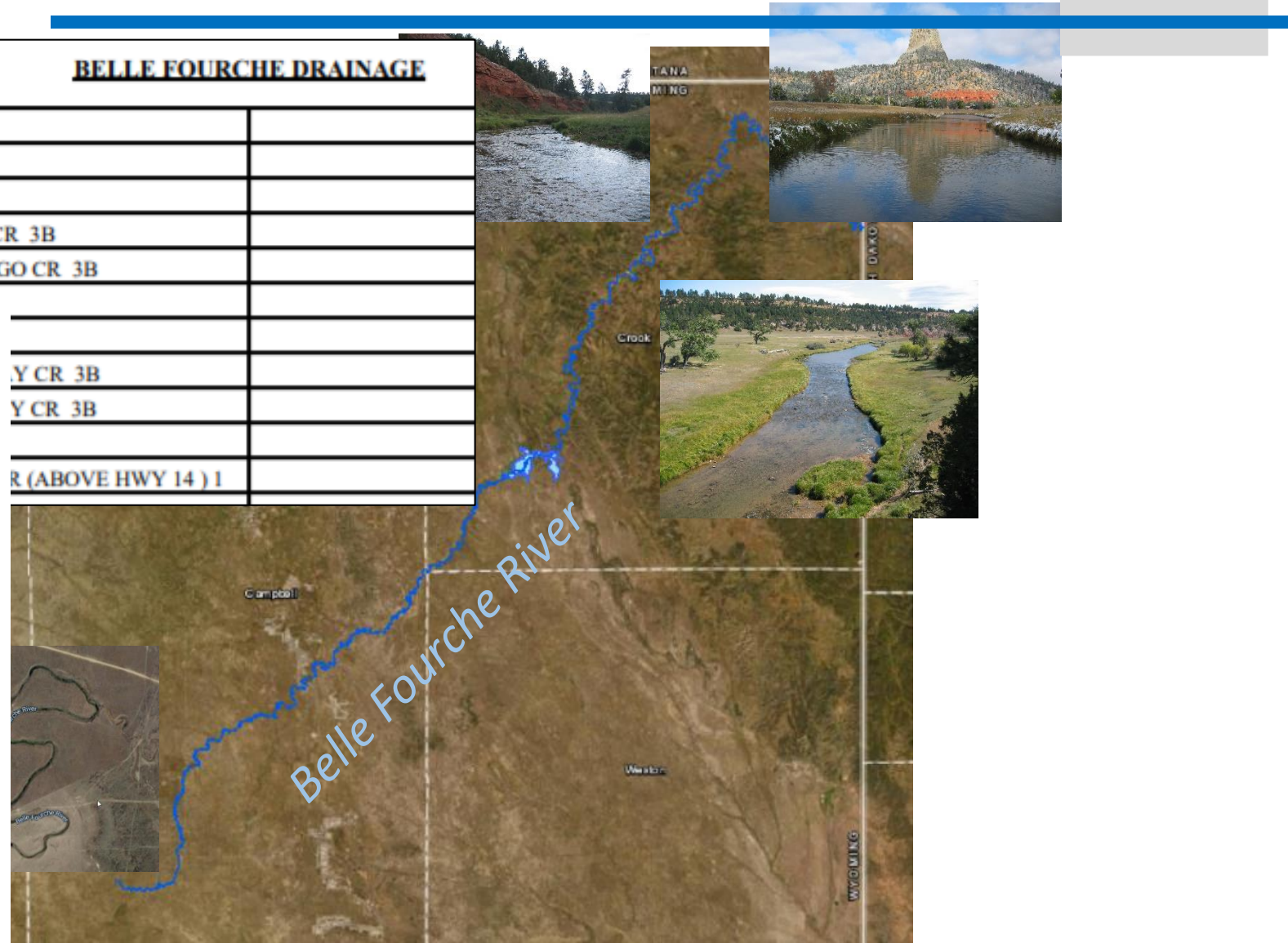
Belle Fourche River

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

BELLE FOURCHE DRAINAGE

BELLE FOURCHE R 2ABWW			
	OWL CR 3B		
	CROW CR 3B		
		BULL CR 3B	
		CHICAGO CR 3B	
	MIDDLE CR 3B		
		Y CR 3B	
		Y CR 3B	
		R (ABOVE HWY 14) 1	

- Drinking Water
- Warmwater Game Fish
- Nongame Fish
- Aquatic Life Other Than Fish
- Fish Consumption
- Recreation
- Industry
- Agriculture
- Wildlife
- Scenic Value



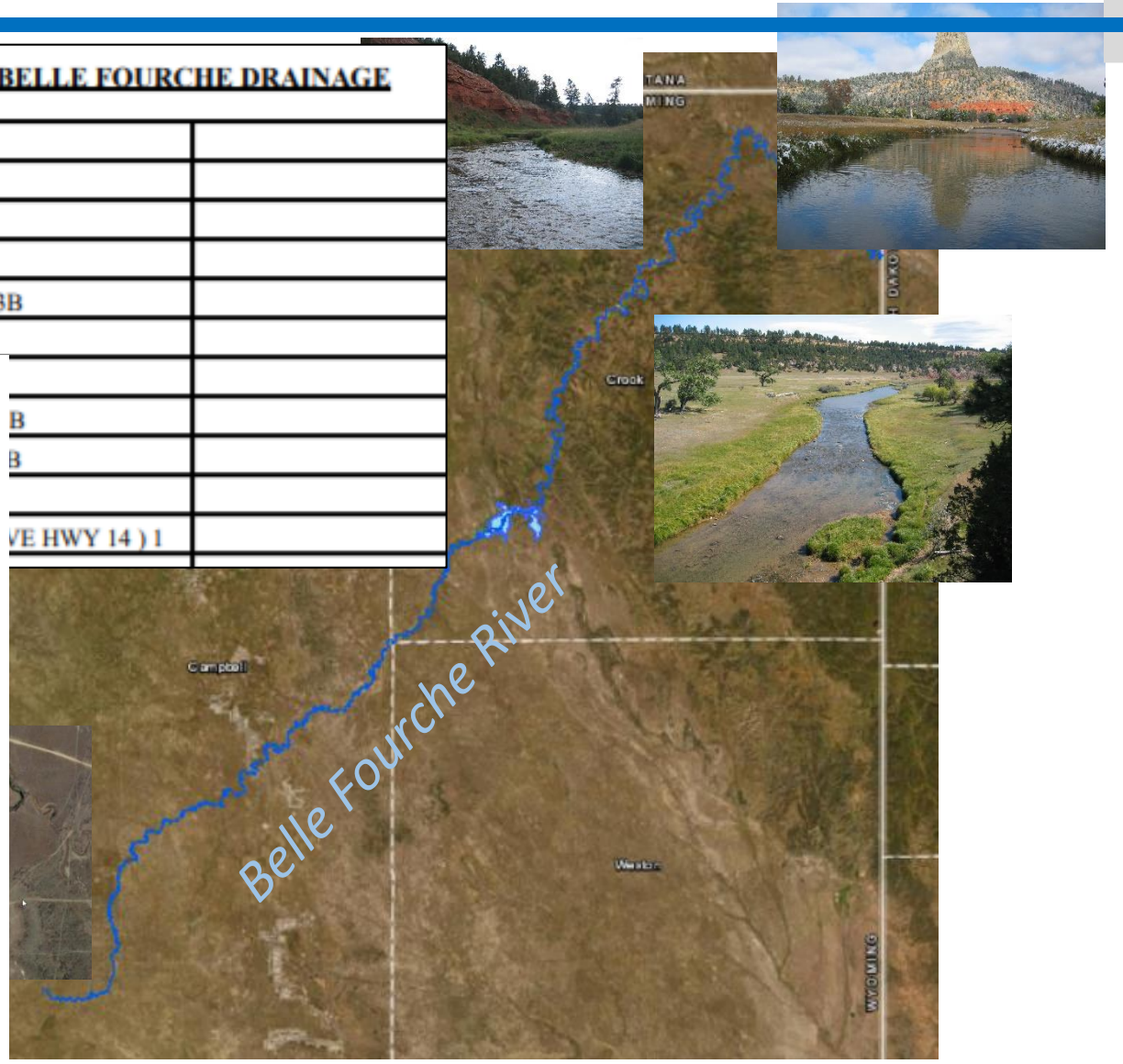
Belle Fourche River

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

BELLE FOURCHE DRAINAGE

BELLE FOURCHE R 2ABWW			
	OWL CR 3B		
	CROW CR 3B		
		BULL CR 3B	
		CHICAGO CR 3B	
	MIDDLE CR 3B		

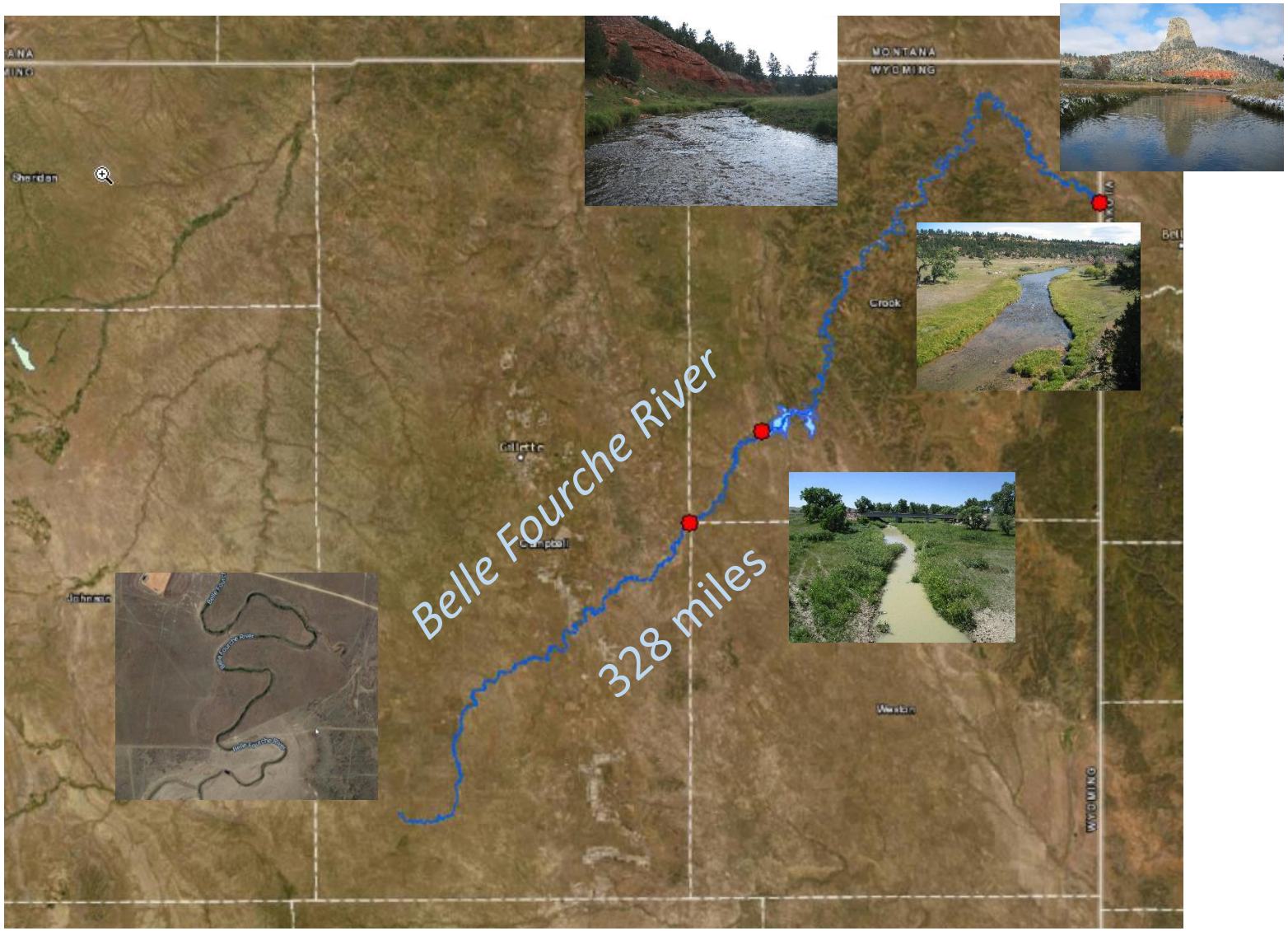
- Drinking Water
- **Warmwater Game Fish**
- **Nongame Fish**
- **Aquatic Life Other Than Fish**
- Fish Consumption
- Recreation
- Industry
- Agriculture
- Wildlife
- Scenic Value



Wyoming Game and Fish Database

- Sites with fish present in the Wyoming Game and Fish Database

Wyoming Game and Fish Database



- Sites with fish species present in the Wyoming Game and Fish Database

Wyoming Game and Fish Database

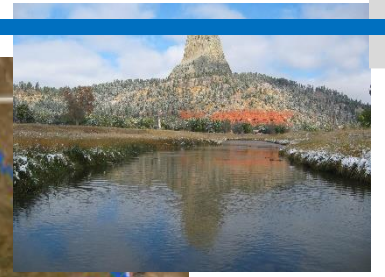
- Sites with fish species present in the Wyoming Game and Fish Database

Wyoming Game and Fish Database

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

BELLE FOURCHE DRAINAGE

BELLE FOURCHE R 2ABWW			
	OWL CR 3B		
	CROW CR 3B		
		BULL CR 3B	
		CHICAGO CR 3B	
	MIDDLE CR 3B		
		Y CR 3B	
		Y CR 3B	
		R (ABOVE HWY 14) 1	



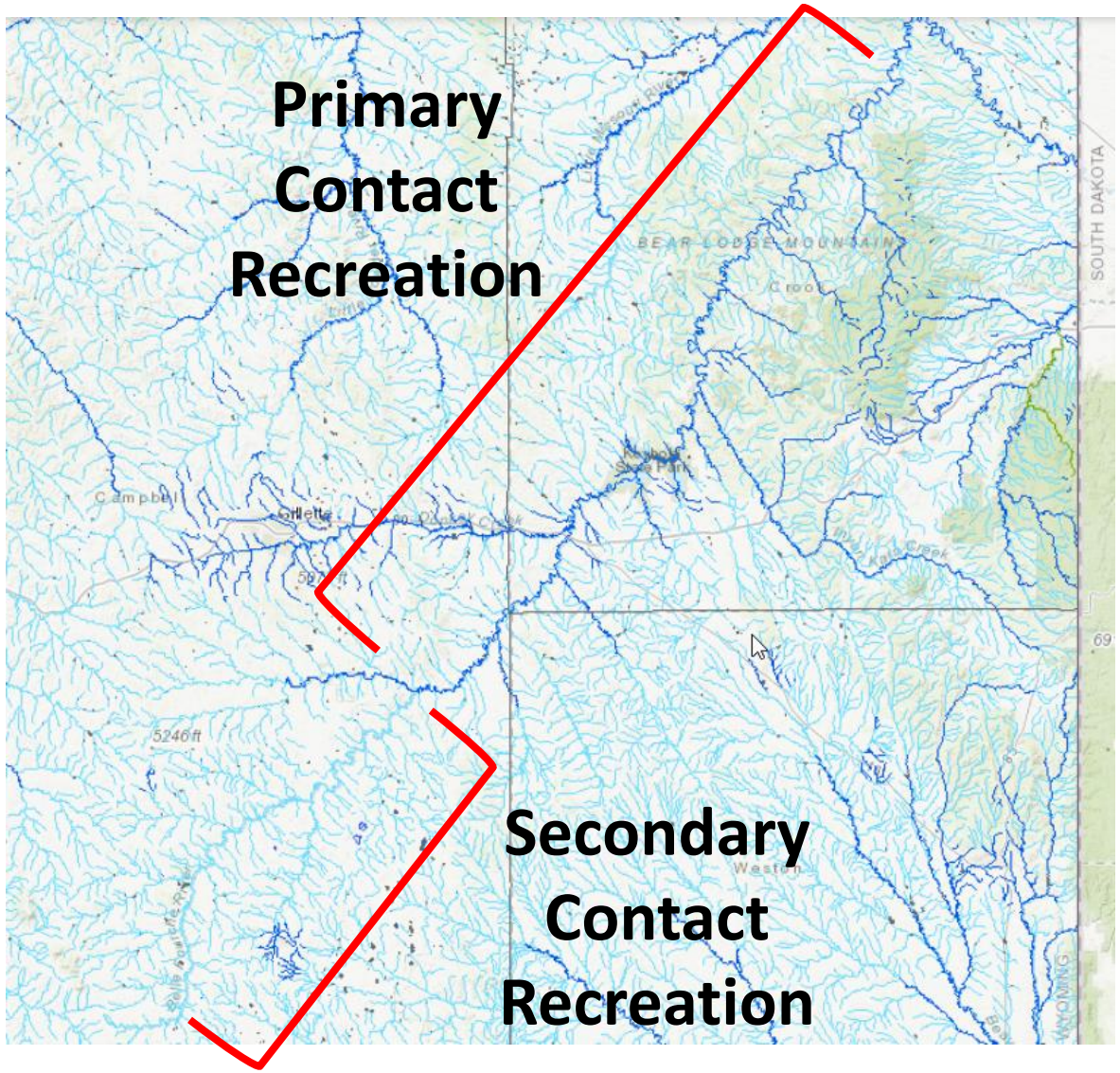
- **Drinking Water**
- Warmwater Game Fish
- Nongame Fish
- Aquatic Life Other Than Fish
- Fish Consumption
- Recreation
- Industry
- Agriculture
- Wildlife
- Scenic Value

Chapter 1, Section 4, Classifications

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

(i) Class 2AB. Class 2AB waters are those known to support game fish populations or spawning and nursery areas at least seasonally and all their perennial tributaries and adjacent wetlands and where a game fishery and drinking water use is otherwise attainable. Class 2AB waters include all permanent and seasonal game fisheries and can be either "cold water" or "warm water" depending upon the predominance of cold water or warm water species present. All Class 2AB waters are designated as cold water game fisheries unless identified as a warm water game fishery by a "ww" notation in the *Wyoming Surface Water Classification List*. Unless it is shown otherwise, these waters are presumed to have sufficient water quality and quantity to support drinking water supplies and are protected for that use. Class 2AB waters are also protected for nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value uses.

Recreation Designated Uses



Chapter 1, Section 4, Classifications

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

(e) Specific stream segment classifications are contained in a separate document entitled *Wyoming Surface Water Classification List* which is published by the department and periodically revised and updated according to the provisions of Sections 4, 33, 34, 35 and Appendix A of this chapter. Class 1 waters are those waters that have been specifically designated by the council. Class 2AB, 2A, 2B and 2C designations are based upon the fisheries information contained in the Wyoming Game and Fish Department's *Streams and Lakes Database* submitted to the department in June 2000. This database represents the best available information and is considered conclusive. Class 2D and 3D designations are based upon use attainability analyses demonstrating that the waters are effluent dependent and do not pose a hazard to humans, wildlife or livestock. Class 4 designations are based upon knowledge that a water body is an artificial, man-made conveyance, or has been determined not to support aquatic life uses through an approved use attainability analysis. All other waters are designated as Class 3A, 3B or 3C. Section 27 of these regulations describes how recreation use designations are made for specific water bodies.

Chapter 1, Appendix A, Classifications

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

(b) Individual water classifications for major water bodies and recreational use designations are listed in the most current version of the *Wyoming Surface Water Classification List*. The list is published by the department and periodically revised and updated according to the provisions of Sections 4, 33, 34 and 35. In addition to the listings contained in that document, the following provisions apply:

(i) National Parks and Wilderness Areas. All surface waters located within the boundaries of Yellowstone and Grand Teton National Parks and congressionally designated wilderness areas as of January 1, 1999 are Class 1 waters. A Class 1 designation always takes precedence over the classification given in the listing. For example, Dinwoody Creek is shown as a Class 2 water; however, the upper portions are within a wilderness area and those portions are Class 1. The portion below the wilderness boundary is Class 2.

(ii) Unlisted Waters. The waters contained in the *Wyoming Surface Water Classification List* are all waters which are named on the USGS 1:500,000 hydrologic map of Wyoming and those otherwise classified by the department. The classification list does not contain an exhaustive listing of all the surface waters in the state. Waters which are not listed are classified as follows:

(A) All waters shown as having any species of game fish present in the Wyoming Game and Fish Department's *Streams and Lakes Database* as submitted to the department in June 2000 are classified as 2AB;

(B) All waters shown as having only nongame fish species present in the Wyoming Game and Fish Department's *Streams and Lakes Database* as submitted to the department in June 2000 are classified as 2C;

(C) All other waters shall be classified as follows:

(I) Those waters supported by an approved UAA containing defensible reasons for not protecting aquatic life uses shall be 4A, 4B or 4C. This category includes isolated, effluent dependent waters;

(II) Effluent dependent waters that support resident fish populations shall be 2D;

(III) Effluent dependent waters that do not support resident fish populations shall be 3D;

(IV) The remaining waters shall be 3A, 3B or 3C.

(iii) Wetlands. All adjacent wetlands shall have the same classification as the water to which they are adjacent.

Examples from Other States

- Colorado
- Idaho
- Ohio

Colorado Water Quality Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

- Colorado
- Idaho
- Ohio

Colorado Standards and Classifications

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Surface water quality classifications and standards:

- Regulation 31: The Basic Standards and Methodologies for Surface Water
- Regulation 32: Classifications and Numeric Standards for Arkansas River Basin
- Regulation 33: Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River (Planning Region 12)
- Regulation 34: Classifications and Numeric Standards for San Juan River and Dolores River Basins
- Regulation 35: Classifications and Numeric Standards for Gunnison and Lower Dolores River Basins
- Regulation 36: Classifications and Numeric Standards for Rio Grande Basin
- Regulation 37: Classifications and Numeric Standards for Lower Colorado River Basin
- Regulation 38: Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin
- Regulation 39: Colorado River Salinity Standards.

- Basic Standards
- Classifications and Numeric Standards for 7 Basins

Colorado Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

31.13 STATE USE CLASSIFICATIONS

Waters are classified according to the uses for which they are presently suitable or intended to become suitable. In addition to the classifications, one or more of the qualifying designations described in section 31.13(2), may be appended. Classifications may be established for any state surface waters, except that water in ditches and other manmade conveyance structures shall not be classified.

(1) Classifications

(a) Recreation

(i) Class E Existing Primary Contact Use

These surface waters are used for primary contact recreation or have been used for such activities since November 28, 1975.

(ii) Class P - Potential Primary Contact Use

These surface waters have the potential to be used for primary contact recreation. This classification shall be assigned to water segments for which no use attainability analysis has been performed demonstrating that a recreation class N classification is appropriate, if a reasonable level of inquiry has failed to identify any existing primary contact uses of the water segment, or where the conclusion of a UAA is that primary contact uses may potentially occur in the segment, but there are no existing primary contact uses.

(iii) Class N - Not Primary Contact Use

These surface waters are not suitable or intended to become suitable for primary contact recreation uses. This classification shall be applied only where a use attainability analysis demonstrates that there is not a reasonable likelihood that primary contact uses will occur in the water segment(s) in question within the next 20-year period.

(v) Class U - Undetermined Use

These are surface waters whose quality is to be protected at the same level as existing primary contact use waters, but for which there has not been a reasonable level of inquiry about existing recreational uses and no recreation use attainability analysis has been completed. This shall be the default classification until inquiry or analysis demonstrates that another classification is appropriate.

(b) Agriculture

These surface waters are suitable or intended to become suitable for irrigation of crops usually grown in Colorado and which are not hazardous as drinking water for livestock.

(c) Aquatic Life

These surface waters presently support aquatic life uses as described below, or such uses may reasonably be expected in the future due to the suitability of present conditions, or the waters are intended to become suitable for such uses as a goal:

(i) Class I - Cold Water Aquatic Life

These are waters that (1) currently are capable of sustaining a wide variety of cold water biota, including sensitive species, or (2) could sustain such biota but for correctable water quality conditions. Waters shall be considered capable of sustaining such biota where physical habitat, water flows or levels, and water quality conditions result in no substantial impairment of the abundance and diversity of species.

(ii) Class 1 - Warm Water Aquatic Life

These are waters that (1) currently are capable of sustaining a wide variety of warm water biota, including sensitive species, or (2) could sustain such biota but for correctable water quality conditions. Waters shall be considered capable of sustaining such biota where physical habitat, water flows or levels, and water quality conditions result in no substantial impairment of the abundance and diversity of specifies.

(iii) Class 2- Cold and Warm Water Aquatic Life

These are waters that are not capable of sustaining a wide variety of cold or warm water biota, including sensitive species, due to physical habitat, water flows or levels, or uncorrectable water quality conditions that result in substantial impairment of the abundance and diversity of species.

Colorado Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

(d) Domestic Water Supply

These surface waters are suitable or intended to become suitable for potable water supplies. After receiving standard treatment (defined as coagulation, flocculation, sedimentation, filtration and disinfection with chlorine or its equivalent) these waters will meet Colorado drinking water regulations and any revisions, amendments, or supplements thereto.

(i) Direct Use Water Supply Lakes and Reservoirs Sub-classification

(A) For the purpose of this section, "plant intake" means the works or structures at the head of a conduit through which surface water is diverted from a source (e. lake) into the treatment plant.

(B) Direct Use Water Supply Lakes and Reservoirs (DUWS) are those water suppl lakes and reservoirs where:

(I) There is a plant intake located in the lake or reservoir or a man-made conveyance from the lake or reservoir that is used regularly to provide raw water directly to a water treatment plant that treats and disinfects raw water, or

(II) The Commission, based on evidence in the record, determines that reservoir will meet the criteria in 31.13(1)(d)(i)(B)(I) in the future.

(e) Wetlands

(i) The provisions of this section do not apply to constructed wetlands.

(ii) Compensatory wetlands shall have, as a minimum, the classifications of the segment in which they are located.

(iii) Created wetlands shall be considered to be initially unclassified, and shall be subject only to the narrative standards set forth in section 31.11, unless and until the Commission adopts the "wetlands" classification described below and appropriate numeric standards for such wetlands.

(iv) Tributary wetlands shall be considered tributaries of the surface water segment to which they are most directly connected and shall be subject to interim classifications as follows: such wetlands shall be considered to have the same classifications, except for drinking water supply classifications, as the segment of which they are a part, unless the "wetlands" classification and appropriate site-specific standards have been adopted to protect the water quality dependent functions of the wetlands. Interim numeric standards for these wetlands are described in section 31.7(1)(b)(iv).

(v) The Commission may adopt a "wetlands" classification based on the functions of the wetlands in question. Wetland functions that may warrant site-specific protection include groundwater recharge or discharge, flood flow alteration, sediment stabilization, sediment or other pollutant retention, nutrient removal or transformation, biological diversity or uniqueness, wildlife diversity or abundance, aquatic life diversity or abundance, and recreation. Because some wetland functions may be mutually exclusive (e.g., wildlife abundance, recreation), the functions to be protected or restored will be determined on a wetland-by-wetland basis, considering natural wetland characteristics and overall benefits to the watershed. The initial adoption of a site-specific wetlands classification and related standards to replace the interim classifications and standards described above shall not be considered a downgrading.

Colorado Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

31.13 STATE USE CLASSIFICATIONS

Waters are classified according to the uses for which they are presently suitable or intended to become suitable. In addition to the classifications, one or more of the qualifying designations described in section 31.13(2), may be appended. Classifications may be established for any state surface waters, except that water in ditches and other manmade conveyance structures shall not be classified.

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These surface waters are not suitable or intended to become suitable for primary contact recreation uses. This classification shall be applied only where a use attainability analysis demonstrates that there is not a reasonable likelihood that primary contact uses will occur in the water segment(s) in question within the next 20-year period.

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(ii) Class 1 - Warm Water Aquatic Life

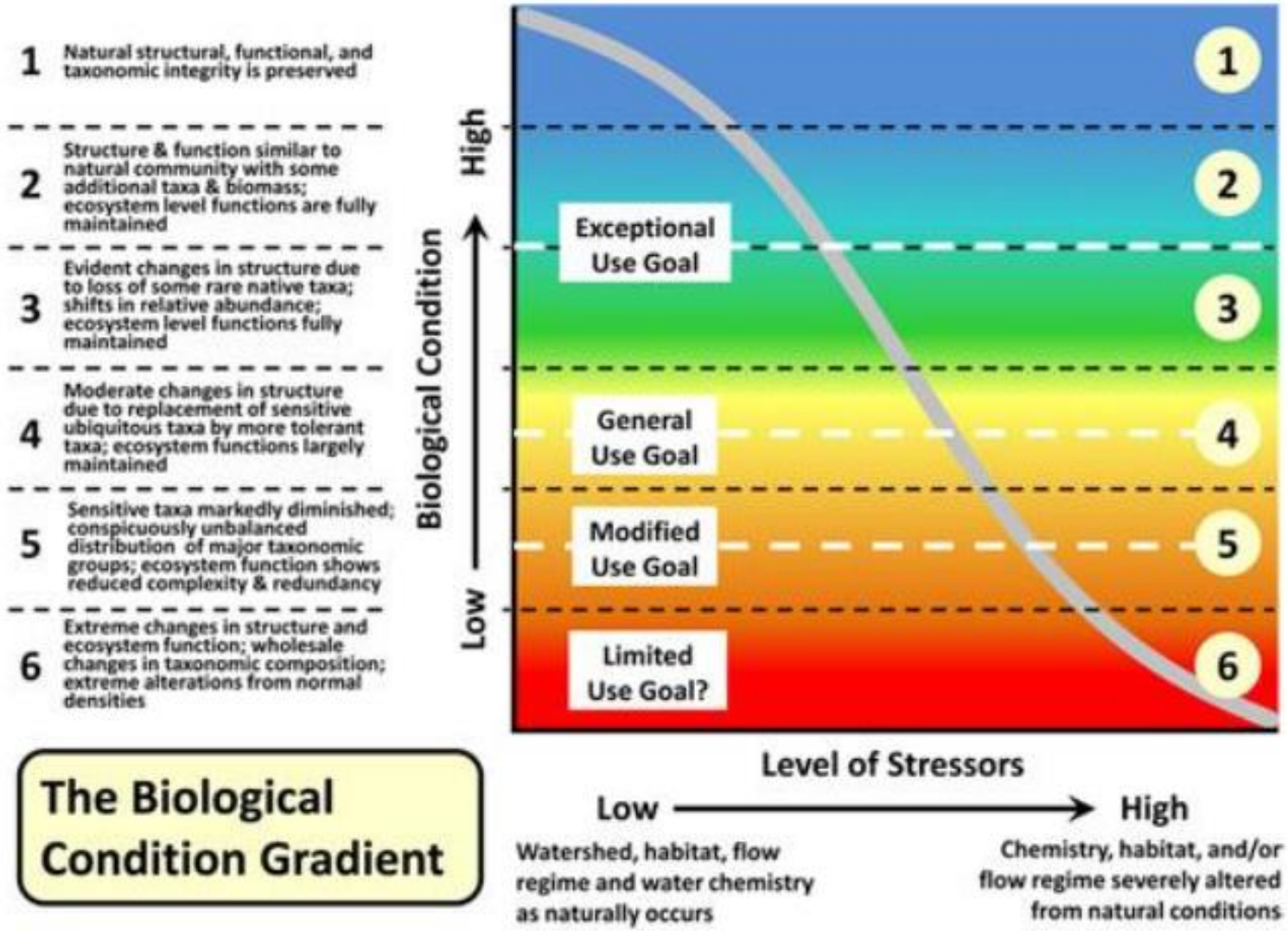
These are waters that (1) currently are capable of sustaining a wide variety of warm water biota, including sensitive species, or (2) could sustain such biota but for correctable water quality conditions. Waters shall be considered capable of sustaining such biota where physical habitat, water flows or levels, and water quality conditions result in no substantial impairment of the abundance and diversity of specifies.

(iii) Class 2- Cold and Warm Water Aquatic Life

These are waters that are not capable of sustaining a wide variety of cold or warm water biota, including sensitive species, due to physical habitat, water flows or levels, or uncorrectable water quality conditions that result in substantial impairment of the abundance and diversity of species.

Tiered Aquatic Life Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY



Minnesota

Tiered Aquatic Life Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

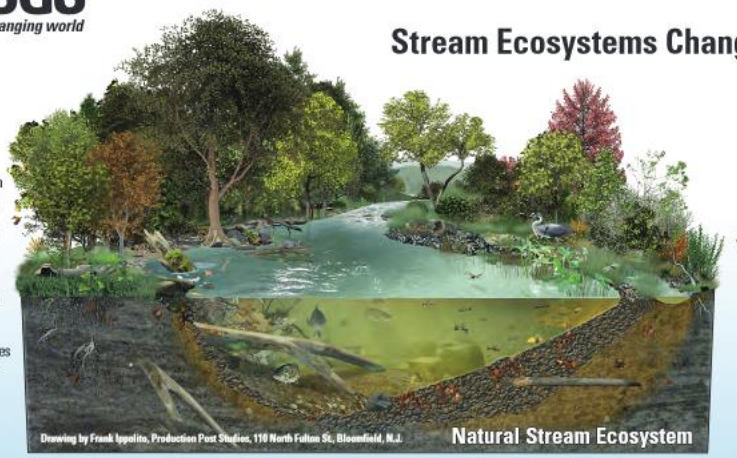
USGS
science for a changing world

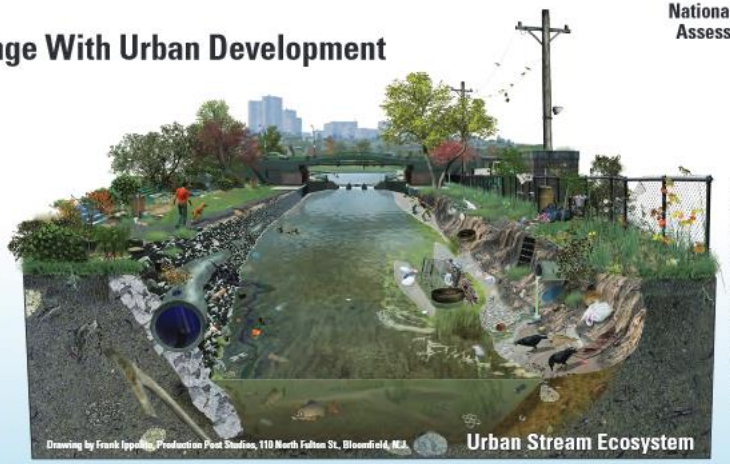
Stream Ecosystems Change With Urban Development

National Water-Quality Assessment Program

Natural Stream Ecosystem

The healthy condition of the physical living space in a natural stream—defined by unaltered hydrology (streamflow), high diversity of habitat features, and natural water chemistry—supports diverse biological communities with aquatic species that are sensitive to disturbances.





Urban Stream Ecosystem

In a highly degraded urban stream, the poor condition of the physical living space—streambank and tree root damage from altered hydrology, low diversity of habitat, and inputs of chemical contaminants—contributes to biological communities with low diversity and high tolerance to disturbance.

What is a stream ecosystem? A stream ecosystem is defined by the hydrology, habitat, and chemistry conditions and the biological communities within the stream, all of which are influenced by activities in the surrounding watershed. A complex and well-balanced ecosystem provides recreation, aesthetics, food, water, nutrients, and many other valuable assets to humans, animals, and plants that live in the area. Natural stream ecosystems are well adapted to seasonal environmental changes, such as annual flooding and drought cycles.

Every stream is connected downstream to other water bodies including rivers, reservoirs, and ultimately coastal waters. Inputs of chemical contaminants or sediments at any point along the stream can cause degradation downstream with adverse effects on biological communities and on economically valuable resources, such as fisheries and tourism.

Urban development is associated with changes in the natural environment such as alterations to the hydrology, habitat, and chemistry of a stream, which result in stressors to biota in stream ecosystems. Impervious surfaces, such as parking lots, roads, and rooftops, limit the amount of rainwater seeping into the ground, which increases stormwater runoff. Urban areas often experience a rapid rise in streamflow after a rainfall, which can erode streambanks and bottoms and degrade fish spawning and feeding habitats. Stream channels are often reinforced with concrete or large rock to minimize erosion and control flooding. Water temperature increases when tree cover is removed along the banks, thus exposing the stream to more sunlight. Chemicals, wastes, and sediment—from industry, animal production, water treatment, and runoff from impervious surfaces—increase in the stream and can be toxic to biological communities. Biological communities have different life cycles and requirements for food, shelter, and reproduction; consequently, their responses also vary with changes in physical and chemical conditions related to urban development.

Understanding how algal, invertebrate, and fish communities respond to physical and chemical stressors associated with urban development can provide important clues on how multiple stressors can be managed to protect stream health as a watershed becomes increasingly urbanized.

Natural Stream Ecosystem Hydrology, Habitat, Chemistry Conditions

Photographs by Alan M. Cleaver

Rainfall gradually reaches a stream in a natural or undeveloped setting by flowing over the land surface into the stream and by seeping into the soil and flowing underground (as groundwater) toward the stream. These natural seasonal patterns of **hydrology**, together with seasonal changes in light and temperature, serve as life cycle cues to the biological communities.

Stream **habitat** is the physical living space of aquatic biota and includes the channel size and shape, water depth and velocity, and structures within the stream, such as woody debris and boulders. Slow moving, deeper areas of a stream are called pools, and faster flowing shallow areas are referred to as riffles. A natural stream with multiple habitats generally will have a diverse biological community.

Some **chemicals** and nutrients, such as nitrogen and phosphorous, are required for all stream life. Nutrients are incorporated into algae, which are then consumed by other biota, such as invertebrates and fish, thus introducing the nutrients into the aquatic food web. Oxygen dissolved in water is essential for all biological communities, and adequate amounts of oxygen are necessary to support a diverse biological community.

Videos, podcasts, articles, and fact sheets describing the USGS assessment of the effects of urban development on stream ecosystems in nine metropolitan areas of the United States are available at *http://water.usgs.gov/nawqa/urban/*

Natural Stream Ecosystem Biological Communities

Smallmouth bass

Greenside darter

Dragonfly larvae

Cymbella

Epithemia

Fish have life cycles that can span years and are affected by stream hydrology, habitat, chemistry, and other biological communities. Fish are relatively mobile along the stream as they search for food. Smallmouth bass can hide under logs or undercut banks, along stream edges or in pools, and emerge to feed on crayfish and small fish. Greenside darters live in riffle habitats of streams, where they feed on aquatic invertebrates, such as dragonfly larvae.

Invertebrates have complex life cycles that occur over time spans of weeks to years. Most aquatic insects spend nearly all their life in the water as eggs and larvae, and then leave the water and develop wings as adults. This dragonfly larva lives in areas of slower streamflow, where it preys on other invertebrates and even some small fish. Many species of dragonflies are sensitive to pollution, as are mayflies and stoneflies. These invertebrates crawl on the surfaces of rocks and feed by gathering and shredding leaf debris, scraping off algae, or preying on other insects.

Algae, such as these diatoms, are microscopic plants and are the foundation of aquatic foodwebs. Algae have short life cycles of days to weeks, and they can respond rapidly to changes in sunlight, water chemistry, and streamflow. The most common algae reported in natural streams of small-to-moderate size are diatoms, which attach to underwater surfaces, such as rocks and aquatic plants. *Cymbella* is found in riffles, while *Epithemia* is found in both pools and riffles.

Urban Stream Ecosystem Hydrology, Habitat, Chemistry Conditions

Urban development in a watershed alters the **hydrology** or movement of water through a watershed. As the amount of impervious surface and artificial drainage systems (for example, storm drains) increases with urban development, stormwater runoff from developed sites occurs more quickly. The higher streamflows that often result can alter stream channels through streambank erosion and can increase the magnitude of seasonal floods to a level that damages homes and property near the stream and in the flood plain.

Urban development can alter **habitats** that provide living spaces for the biota in and around the stream. Plants and trees near a stream can be removed to increase the amount of light reaching streams, and cement or rock can be added to the channel to protect it from high streamflow. Sediment from erosion can fill spaces between rocks on the stream bottom, thus reducing living space or habitat for the biological communities.

Urban development might increase the inputs of **chemicals** to levels that greatly exceed those that occur naturally in streams and can be toxic to the biological communities. For example, excess amounts of nutrients from fertilizers can lead to an abundance of algae and might result in extreme high and low levels of dissolved oxygen in a stream. Pesticides from lawn care or insect control and heavy metals from industry and vehicles can be ingested or absorbed by the biological communities.

Urban Stream Ecosystem Biological Communities

Fathead minnow

Common carp

Isopod

Leech

Green algae

Blue-green algae

Native **fishes** that are sensitive to changes in the stream ecosystem generally become less abundant with increased urban development, while tolerant fishes can thrive. The fathead minnow, although native to streams in the United States, tolerates muddy, low-oxygen water that is typical of many urban streams. Fish that are more tolerant to urban stressors are often non-native species, such as the common carp, that prefer slow or still water and silty stream sediments.

Urban development leads to a loss of **invertebrate** species that are sensitive to pollution, such as mayflies and stoneflies, and an increase in more tolerant species, such as leeches and isopods. The loss of species that are sensitive to pollution can begin at very low levels of urban development. Tolerant species, such as leeches are most common in warm, protected shallow areas of streams. Isopods prefer slower moving streams with relatively low dissolved oxygen levels.

An increase in urban development often results in a high abundance of **algae** that are tolerant of pollution. Diatom algae tend to decrease and non-diatom algae tend to increase with urban development. Some non-diatom algae, such as green or blue-green algae that appear as a green coating on the surface of the water and rocks, are in low abundance in natural streams but might increase in abundance to nuisance levels from open sunlight- and nutrient-rich conditions in many urban streams.

U.S. Department of the Interior
U.S. Geological Survey

By Amanda H. Bell, James F. Coles, and Gerard McMahon

General Information Product 143
October 2012

Colorado Designated Uses

Designated Use	Subcategory
Recreation	Exiting Primary Contact Use
	Potential Primary Contact Use
	Not Primary Contact Use
	Undetermined Use
Agriculture	
Aquatic Life	Class I - Cold Water Aquatic Life
	Class 1 - Warm Water Aquatic Life
	Class 2- Cold and Warm Water Aquatic Life
Domestic Water Supply	
	Direct Use Water Supply Lakes and Reservoirs Sub-classification
Wetlands	

Colorado

Colorado Standards and Classifications

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Surface water quality classifications and standards:

- Regulation 31: The Basic Standards and Methodologies for Surface Water
- Regulation 32: Classifications and Numeric Standards for Arkansas River Basin
- Regulation 33: Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River (Planning Region 12)
- Regulation 34: Classifications and Numeric Standards for San Juan River and Dolores River Basins
- Regulation 35: Classifications and Numeric Standards for Gunnison and Lower Dolores River Basins
- Regulation 36: Classifications and Numeric Standards for Rio Grande Basin
- Regulation 37: Classifications and Numeric Standards for Lower Colorado River Basin
- Regulation 38: Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin
- Regulation 39: Colorado River Salinity Standards.

- Basic Standards
- Classifications and Numeric Standards for 7 Basins

Colorado Classification Example – Upper Gunnison River Basin

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

REGULATION #35 STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS
Upper Gunnison River Basin

1. All tributaries to the Gunnison River, including and wetlands, within the La Garita, Powderhorn, West Elk, Collegiate Peaks, Maroon Bells, Raggeds, Fossil Ridge, or Uncompahgre Wilderness Areas.

COGUUG01	Classifications
Designation	Agriculture
OW	Aq Life Cold 1
	Recreation E
	Water Supply

Qualifiers:

Other:

Temporary Modification(s):

Arsenic(chronic) = hybrid

Expiration Date of 12/31/2024

Physical and Biological	DM	MWAT
Temperature °C	CS-I	CS-I
	acute	**chronic**
D.O. (mg/L)	---	6.0
D.O. (spawning)	---	7.0
pH	6.5 - 9.0	---
chlorophyll a (mg/m^2)	---	150
E. Coli (per 100 mL)	---	126

Inorganic (mg/L)	acute	chronic
Ammonia	TVS	TVS
Boron	---	0.75
Chloride	---	250
Chlorine	0.019	0.011
Cyanide	0.005	---
Nitrate	10	---
Nitrite	0.02	---
Phosphorus	---	0.11
Sulfate	---	WS
Sulfide	---	0.002

Metals (ug/L)	acute	chronic
Aluminum	---	---
Arsenic	340	---
Arsenic(T)	---	0.02
Beryllium	---	---
Cadmium	TVS	TVS
Cadmium(T)	5.0	---
Chromium III	---	TVS
Chromium III(T)	50	---
Chromium VI	TVS	TVS
Copper	TVS	TVS
Iron	---	WS
Iron(T)	---	1000
Lead	TVS	TVS
Lead(T)	50	---
Manganese	TVS	TVS/WS
Mercury	---	0.01(t)
Molybdenum(T)	---	150
Nickel	TVS	TVS
Nickel(T)	---	100
Selenium	TVS	TVS
Silver	TVS	TVS(tr)
Uranium	---	---
Zinc	TVS	TVS

- 230 Pages

Colorado Classification Example – Upper Gunnison River Basin

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

REGULATION #35 STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS
Upper Gunnison River Basin

6a. All tributaries to the East River from a point immediately above its confluence with the Slate River to its confluence with the Gunnison River, except for specific listings in Segments 6b and 6c

COGUUG06A	Classifications
Designation	Agriculture
Reviewable	Aq Life Cold 2
	Recreation U
Qualifiers:	
Other:	

Physical and Biological	DM	MWAT
Temperature °C	CS-I	CS-I
	acute	**chronic**
D.O. (mg/L)	---	6.0
D.O. (spawning)	---	7.0
pH	6.5 - 9.0	---
chlorophyll a (mg/m^2)	---	150
E. Coli (per 100 mL)	---	126

Inorganic (mg/L)	acute	chronic
Ammonia	TVS	TVS
Boron	---	0.75
Chloride	---	---
Chlorine	0.019	0.011
Cyanide	0.005	---
Nitrate	100	---
Nitrite	0.5	---
Phosphorus	---	0.11
Sulfate	---	---
Sulfide	---	0.002

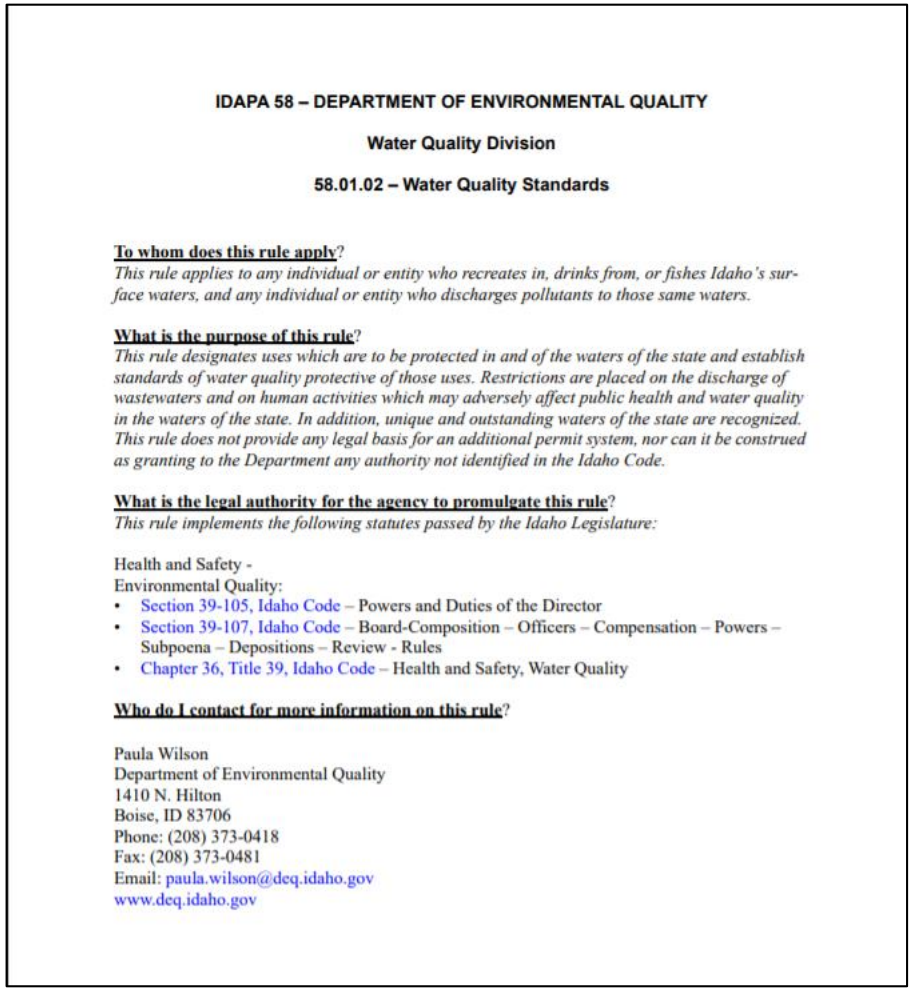
Metals (ug/L)	acute	chronic
Aluminum	---	---
Arsenic	340	---
Arsenic(T)	---	100
Beryllium	---	---
Cadmium	TVS	TVS
Chromium III	TVS	TVS
Chromium III(T)	---	100
Chromium VI	TVS	TVS
Copper	TVS	TVS
Iron(T)	---	1000
Lead	TVS	TVS
Manganese	TVS	TVS
Mercury	---	0.01(t)
Molybdenum(T)	---	150
Nickel	TVS	TVS
Selenium	TVS	TVS
Silver	TVS	TVS(tr)
Uranium	---	---
Zinc	TVS	TVS

Examples from Other States

- Colorado
- Idaho
- Ohio

Idaho Water Quality Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY



IDAPA 58 – DEPARTMENT OF ENVIRONMENTAL QUALITY

Water Quality Division

58.01.02 – Water Quality Standards

To whom does this rule apply?
This rule applies to any individual or entity who recreates in, drinks from, or fishes Idaho's surface waters, and any individual or entity who discharges pollutants to those same waters.

What is the purpose of this rule?
This rule designates uses which are to be protected in and of the waters of the state and establish standards of water quality protective of those uses. Restrictions are placed on the discharge of wastewaters and on human activities which may adversely affect public health and water quality in the waters of the state. In addition, unique and outstanding waters of the state are recognized. This rule does not provide any legal basis for an additional permit system, nor can it be construed as granting to the Department any authority not identified in the Idaho Code.

What is the legal authority for the agency to promulgate this rule?
This rule implements the following statutes passed by the Idaho Legislature:

Health and Safety -
Environmental Quality:
- Section 39-105, Idaho Code – Powers and Duties of the Director
- Section 39-107, Idaho Code – Board-Composition – Officers – Compensation – Powers – Subpoena – Depositions – Review - Rules
- Chapter 36, Title 39, Idaho Code – Health and Safety, Water Quality

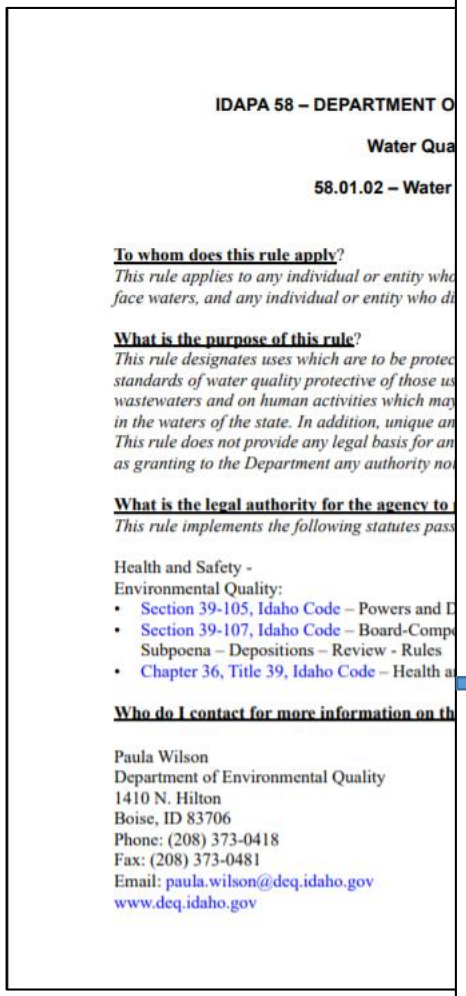
Who do I contact for more information on this rule?

Paula Wilson
Department of Environmental Quality
1410 N. Hilton
Boise, ID 83706
Phone: (208) 373-0418
Fax: (208) 373-0481
Email: paula.wilson@deq.idaho.gov
www.deq.idaho.gov

- 191 Pages

Idaho Water Quality Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY



IDAPA 58 – DEPARTMENT O

Water Qua

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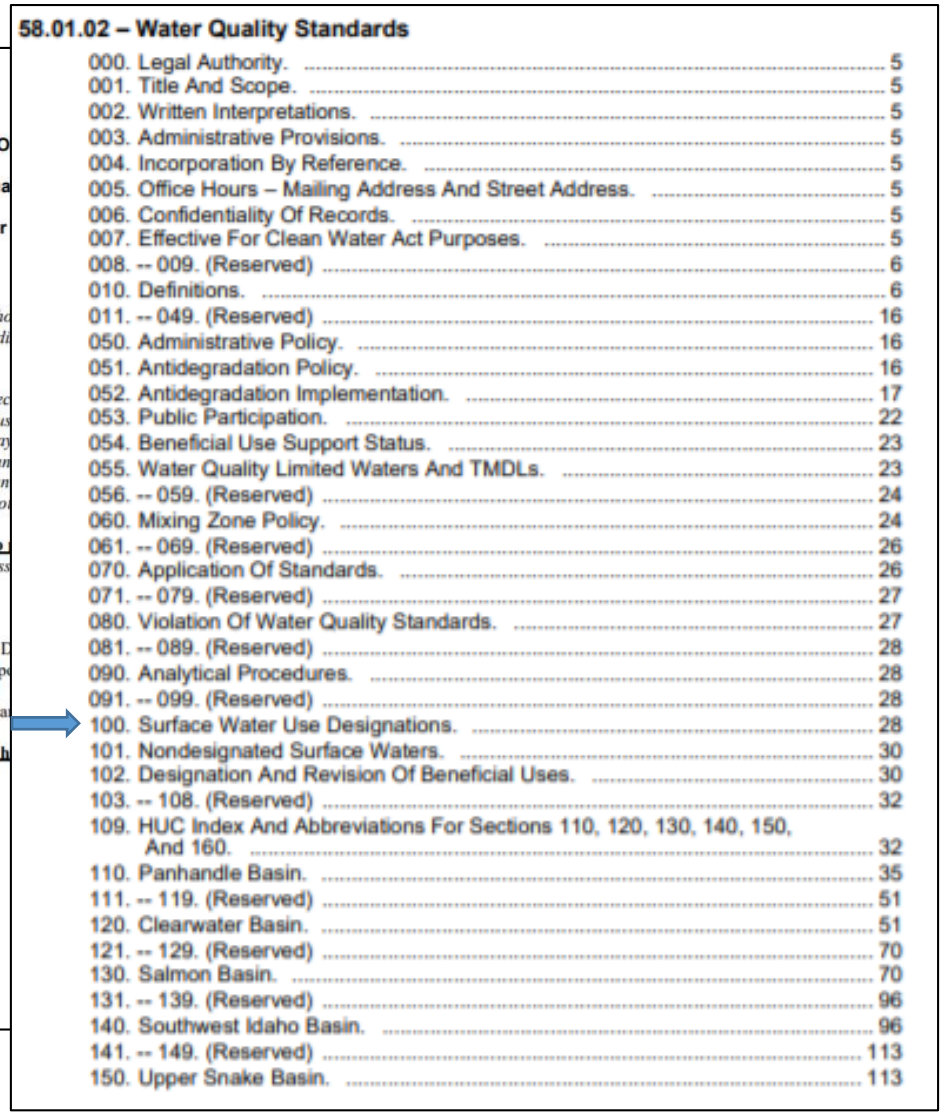


58.01.02 – Water Quality Standards

Idaho Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

100. SURFACE WATER USE DESIGNATIONS.
Waterbodies are designated in Idaho to protect water quality for existing or designated uses. The designated use of a waterbody does not imply any rights to access or ability to conduct any activity related to the use designation, nor does it imply that an activity is safe. For example, a designation of primary or secondary contact recreation may occur in areas where it is unsafe to enter the water due to water flows, depth or other hazardous conditions. Another example is that aquatic life uses may be designated in areas that are closed to fishing or access is not allowed by property owners. Wherever attainable, the designated beneficial uses for which the surface waters of the state are to be protected include: (3-15-02)

01. Aquatic Life. (7-1-93)

a. Cold water (COLD): water quality appropriate for the protection and maintenance of a viable aquatic life community for cold water species. (4-5-00)

b. Salmonid spawning (SS): waters which provide or could provide a habitat for active self-propagating populations of salmonid fishes. (3-30-07)

c. Seasonal cold water (SC): water quality appropriate for the protection and maintenance of a viable aquatic life community of cool and cold water species, where cold water aquatic life may be absent during, or tolerant of, seasonally warm temperatures. (4-5-00)

d. Warm water (WARM): water quality appropriate for the protection and maintenance of a viable aquatic life community for warm water species. (4-5-00)

e. Modified (MOD): water quality appropriate for an aquatic life community that is limited due to one (1) or more conditions set forth in 40 CFR 131.10(g) which preclude attainment of reference streams or conditions. (4-5-00)

Idaho Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

02. Recreation. (7-1-93)

a. Primary contact recreation (PCR): water quality appropriate for prolonged and intimate contact by humans or for recreational activities when the ingestion of small quantities of water is likely to occur. Such activities include, but are not restricted to, those used for swimming, water skiing, or skin diving. (4-5-00)

Effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-1802 have been approved.

a. Primary contact recreation (PCR): water quality appropriate for prolonged and intimate contact by humans or for recreational activities when the ingestion of small quantities of water is likely to occur. Such activities include, but are not restricted to, those used for swimming, water skiing, or skin diving. PCR includes all activities associated with secondary contact recreation (SCR). (4-11-19)

Not effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-1802 have been approved.

b. Secondary contact recreation (SCR): water quality appropriate for recreational uses on or about the water and which are not included in the primary contact category. These activities may include fishing, boating, wading, infrequent swimming, and other activities where ingestion of raw water is not likely to occur. (4-5-00)

03. Water Supply. (7-1-93)

a. Domestic (DWS): water quality appropriate for use as untreated raw water (as defined under IDAPA 58.01.08, "Idaho Rules for Public Drinking Water Systems") for public drinking water. (4-11-19)

b. Agricultural: water quality appropriate for the irrigation of crops or as drinking water for livestock. This use applies to all surface waters of the state. (4-5-00)

c. Industrial: water quality appropriate for industrial water supplies. This use applies to all surface waters of the state. (4-5-00)

04. Wildlife Habitats. Water quality appropriate for wildlife habitats. This use applies to all surface waters of the state. (4-5-00)

05. Aesthetics. This use applies to all surface waters of the state. (7-1-93)

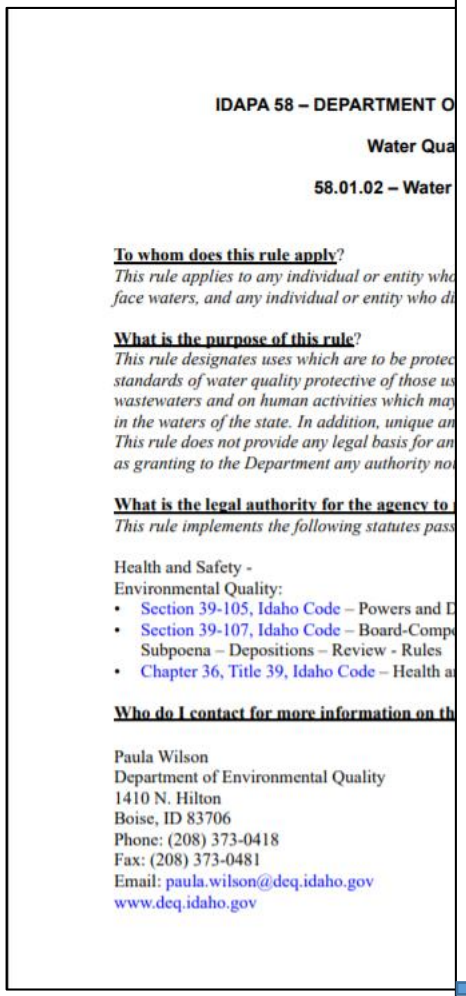
Idaho Designated Uses

Designated Use	Subcategory
Recreation	Primary Contact
	Secondary Contact
Aquatic Life	Cold Water
	Salmonid Spawning
	Seasonal Cold Water
	Warm Water
	Modified
Water Supply	Domestic Water Supply
	Agricultural
	Industrial
Wildlife Habitats	
Aesthetics	

Idaho

Idaho Water Quality Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY



IDAPA 58 – DEPARTMENT O

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58.01.02 – Water

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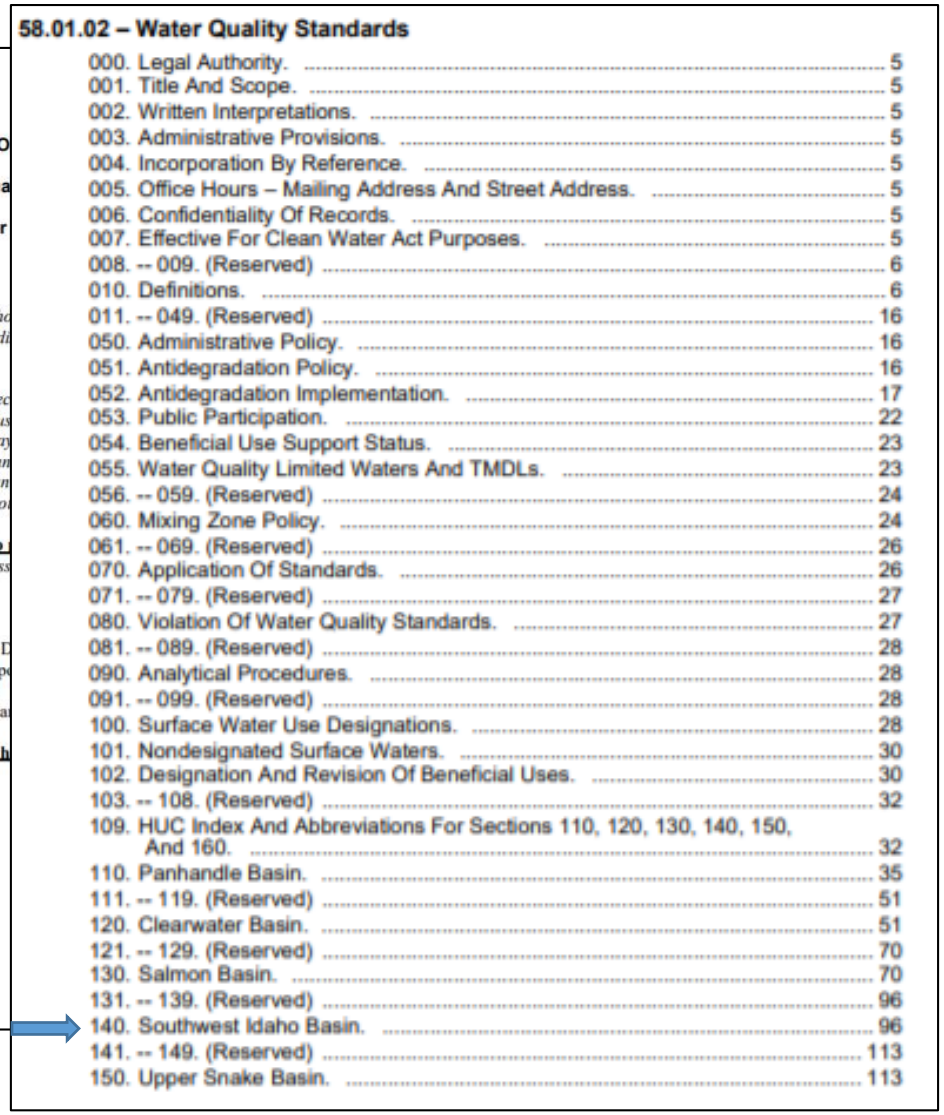


58.01.02 – Water Quality Standards

Idaho Classification Example

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

18. Birch Subbasin. The Birch Subbasin, HUC 17040216, is comprised of sixteen (16) water body units.

Unit	Waters	Aquatic Life	Recreation	Other
US-1	Birch Creek - Reno Ditch to playas	COLD SS	PCR	DWS
US-2	Birch Creek - Pass Creek to Reno Ditch	COLD SS	PCR	DWS
US-3	Birch Creek - Unnamed Tributary (T11N, R11W, Sec. 35) to Pass Creek	COLD SS	PCR	DWS
US-4	Unnamed Tributary - source to mouth; includes Timber Canyon to Worthing Canyon Creeks (T11N, R11W, Sec. 35)			
US-5	Birch Creek - confluence of Mud and Scott Canyon Creeks to Unnamed Tributary (T11N, R11W, Sec. 35)	COLD SS	PCR	DWS
US-6	Scott Canyon Creek - source to mouth			
US-7	Mud Creek - Willow Creek to Scott Canyon Creek	COLD SS	PCR	DWS
US-8	Cedar Gulch and Irish Canyon - source to mouth			
US-9	Willow Creek - source to mouth			
US-10	Mud Creek - Unnamed Tributary (T12N, R11W, Sec. 29) to Willow Creek			
US-11	Mud Creek - source to Unnamed Tributary (T12N, R11W, Sec. 29)			
US-12	Unnamed Tributary - source to mouth (T12N, R11W, Sec. 29)			
US-13	Meadow Canyon Creek - source to mouth			
US-14	Rocky Canyon Creek - source to mouth			
US-15	Pass Creek - source to mouth			
US-16	Eightmile Canyon Creek - source to mouth			

(3-29-12)

03. Abbreviations. (4-5-00)

a. COLD -- Cold Water Communities. (4-5-00)

b. SS -- Salmonid Spawning. (4-5-00)

c. SC -- Seasonal Cold Water Communities. (4-5-00)

d. WARM -- Warm Water Communities. (4-5-00)

e. MOD -- Modified Communities. (4-5-00)

f. PCR -- Primary Contact Recreation. (4-5-00)

g. SCR -- Secondary Contact Recreation. (4-5-00)

h. DWS -- Domestic Water Supply. (4-5-00)

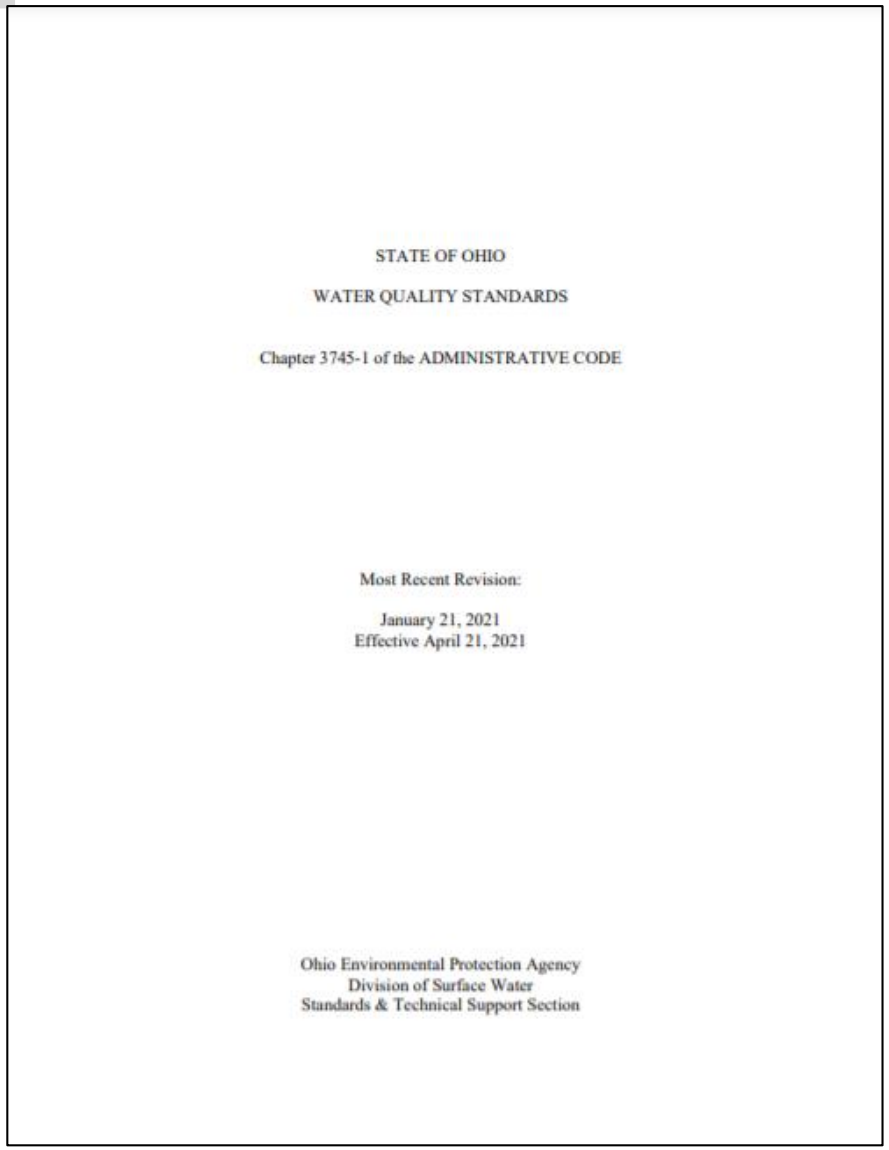
i. NONE -- Use Unattainable. (4-5-00)

j. No entry in the Aquatic Life or Recreation columns -- nondesignated waters for those uses. (3-15-02)

Examples from Other States

- Colorado
- Idaho
- Ohio

Ohio Water Quality Standards



STATE OF OHIO

WATER QUALITY STANDARDS

Chapter 3745-1 of the ADMINISTRATIVE CODE

Most Recent Revision:

January 21, 2021
Effective April 21, 2021

Ohio Environmental Protection Agency
Division of Surface Water
Standards & Technical Support Section

- 548 Pages

Ohio Water Quality Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

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continued

Ohio Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Ohio

(B) Use designations are defined as follows:

(1) Aquatic life habitat.

(a) "Warmwater" - these are waters capable of supporting and maintaining a balanced, integrated, adaptive community of warmwater aquatic organisms having a species composition, diversity, and functional organization comparable to the twenty-fifth percentile of the identified reference sites within each of the following ecoregions: the interior plateau ecoregion, the Erie/Ontario lake plains ecoregion, the western Allegheny plateau ecoregion and the eastern corn belt plains ecoregion. For the Huron/Erie lake plains ecoregion, the comparable species composition, diversity and functional organization are based upon the ninetieth percentile of all sites within the ecoregion. For all ecoregions, the attributes of species composition, diversity and functional organization will be measured using the index of biotic integrity, the modified index of well-being and the invertebrate community index as defined in "Biological Criteria for the Protection of Aquatic Life: Volume II, Users Manual for Biological Field Assessment of Ohio Surface Waters," as cited in paragraph (B) of rule 3745-1-03 of the Administrative Code. In addition to those water body segments designated in rules 3745-1-08 to 3745-1-32 of the Administrative Code, all

Ohio Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

(b) "Limited warmwater" - these are waters that were temporarily designated in the 1978 water quality standards as not meeting specific warmwater habitat criteria. Criteria for the support of this use designation are the same as the criteria for the support of the use designation warmwater habitat. However, individual criteria are varied on a case-by-case basis and supersede the criteria for warmwater habitat where applicable. Any exceptions from warmwater habitat criteria apply only to specific criteria during specified time periods or flow conditions. The adjusted criteria and conditions for specified stream segments are denoted as comments in rules 3745-1-08 to 3745-1-30 of the Administrative Code. Stream segments currently designated limited warmwater habitats will undergo use attainability analyses and will be redesignated other aquatic life habitats. No additional stream segments will be designated limited warmwater habitats.

(c) "Exceptional warmwater" - these are waters capable of supporting and maintaining an exceptional or unusual community of warmwater aquatic organisms having a species composition, diversity, and functional organization comparable to the seventy-fifth percentile of the identified reference sites on a statewide basis. The attributes of species composition, diversity and functional organization will be measured using the index of biotic integrity, the modified index of well-being and the invertebrate community index as defined in "Biological Criteria for the Protection of Aquatic Life: Volume II, Users Manual for Biological Field Assessment of Ohio Surface Waters," as cited in paragraph (B) of rule 3745-1-03 of the Administrative Code. In addition to those water body segments designated in rules 3745-1-08 to 3745-1-32 of the Administrative Code, all lakes and reservoirs, except upground storage reservoirs, are designated exceptional warmwater habitats. Attainment of this use designation (except for lakes and reservoirs) is based on the criteria in table 7-1 of this rule. A temporary variance to the criteria associated with this use designation may be granted as described in paragraph (F) of rule 3745-1-01 of the Administrative Code.

(d) "Modified warmwater" - these are waters that have been the subject of a use attainability analysis and have been found to be incapable of supporting and maintaining a balanced, integrated, adaptive community of warmwater organisms due to irretrievable modifications of the physical habitat. Such modifications are of a long lasting duration (i.e., twenty years or longer) and may include the following examples: extensive stream channel modification activities permitted under sections 401 and 404 of the act or Chapter 6131. of the Revised Code, extensive sedimentation resulting from abandoned mine land runoff, and extensive permanent impoundment of free flowing water bodies. The attributes of species composition, diversity and functional organization will be measured using the index of biotic integrity, the modified index of well-being and the invertebrate community index as defined in "Biological Criteria for the Protection of Aquatic Life: Volume II, Users Manual for Biological Field Assessment of Ohio Surface Waters," as cited in paragraph (B) of rule 3745-1-03 of the Administrative Code. Attainment of this use designation is based on the criteria in table 7-1 of this rule. Each water body designated modified warmwater habitat will be listed in the appropriate use designation rule (rules 3745-1-08 to 3745-1-32 of the Administrative Code) and will be identified by ecoregion and type of physical habitat modification as listed in table 7-1 of this rule. The modified warmwater habitat designation can be applied only to those waters that do not attain the warmwater habitat biological criteria in table 7-1 of this rule because of irretrievable modifications of the physical habitat. All water body segments designated modified warmwater habitat will be reviewed on a triennial basis (or sooner) to determine whether the use designation should be changed. A temporary variance to the criteria associated with this use designation may be granted as described in paragraph (F) of rule 3745-1-01 of the Administrative Code.

Ohio Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

(e) "Seasonal salmonid" - these are rivers, streams and embayments capable of supporting the passage of salmonids from October to May and are water bodies large enough to support recreational fishing. This use will be in effect the months of October to May. Another aquatic life habitat use designation will be enforced the remainder of the year (June to September). A temporary variance to the criteria associated with this use designation may be granted as described in paragraph (F) of rule 3745-1-01 of the Administrative Code.

(f) "Coldwater" - these are waters that meet one or both of the characteristics described in paragraphs (B)(1)(f)(i) and (B)(1)(f)(ii) of this rule. A temporary variance to the criteria associated with this use designation may be granted as described in paragraph (F) of rule 3745-1-01 of the Administrative Code.

(i) "Coldwater habitat, inland trout streams" - these are waters which support trout stocking and management under the auspices of the Ohio department of natural resources, division of wildlife, excluding waters in lake run stocking programs, lake or reservoir stocking programs, experimental or trial stocking programs, and put and take programs on waters without, or without the potential restoration of, natural coldwater attributes of temperature and flow. The director shall designate these waters in consultation with the director of the Ohio department of natural resources.

(ii) "Coldwater habitat, native fauna" - these are waters capable of supporting populations of native coldwater fish and associated vertebrate and invertebrate organisms and plants on an annual basis. The director shall designate these waters based upon results of use attainability analyses.

(g) "Limited resource water" - these are waters that have been the subject of a use attainability analysis and have been found to lack the potential for any resemblance of any other aquatic life habitat as determined by the biological criteria in table 7-1 of this rule. The use attainability analysis must demonstrate that the extant fauna is substantially degraded and that the potential for recovery of the fauna to the level characteristic of any other aquatic life habitat is realistically precluded due to natural background conditions or irretrievable human induced conditions. For water bodies in the lake Erie drainage basin, the designation of water bodies as limited resource waters shall include demonstrations that the "Outside Mixing Zone Average" water quality criteria and values and chronic whole effluent toxicity levels are not necessary to protect the designated uses and aquatic life pursuant to rule 3745-1-39 of the Administrative Code. All water body segments designated limited resource water will be reviewed on a triennial basis (or sooner) to determine whether the use designation should be changed. Limited resource waters are also termed nuisance prevention for some water bodies designated in rules 3745-1-08 to 3745-1-30 of the Administrative Code. A temporary variance to the criteria associated with this use designation may be granted as described in paragraph (F) of rule 3745-1-01 of the Administrative Code. Waters designated limited resource water will be assigned one or more of the following causative factors. These causative factors will be listed as comments in rules 3745-1-08 to 3745-1-30 of the Administrative Code.

(i) "Acid mine drainage" - these are surface waters with sustained pH values below 4.1 s.u. or with intermittently acidic conditions combined with severe streambed siltation, and have a demonstrated biological performance below that of the modified warmwater habitat biological criteria.

(ii) "Small drainageway maintenance" - these are highly modified surface water drainageways (usually less than three square miles in drainage area) that do not possess the stream morphology and habitat characteristics necessary to support any other aquatic life habitat use. The potential for habitat improvements must be precluded due to regular stream channel maintenance required for drainage purposes.

(iii) Other specified conditions.

Ohio Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

(2) Water supply.

(a) "Public" - these are waters that, with conventional treatment, will be suitable for human intake and meet federal regulations for drinking water. Criteria associated with this use designation apply within five hundred yards of surface water intakes. Although not necessarily included in rules 3745-1-08 to 3745-1-30 of the Administrative Code, the bodies of water with one or more of the following characteristics are designated public water supply:

(i) All publicly owned lakes and reservoirs, with the exception of Piedmont reservoir.

(ii) All privately owned lakes and reservoirs used as a source of public drinking water.

(iii) All surface waters within five hundred yards of an existing public water supply surface water intake.

(iv) All surface waters used as emergency water supplies.

(b) "Agricultural" - these are waters suitable for irrigation and livestock watering without treatment.

(c) "Industrial" - these are waters suitable for commercial and industrial uses, with or without treatment. Criteria for the support of the industrial water supply use designation will vary with the type of industry involved.

(3) Recreation.

These use designations are in effect only during the recreation season, which is the period from May first to October thirty-first. The director may require effluent disinfection, as a term or condition of a national pollutant discharge elimination system (NPDES) permit, administrative findings and orders or a judicial order, during the months outside the recreation season if necessary to protect an unusually high level of water based recreation activity such as, but not limited to, canoeing, kayaking, scuba diving, or sport fishing during spawning runs and, in the normal pursuit of the recreation activity, there is a strong likelihood of exposure to water borne pathogens through ingestion of water or from dermal exposure through fresh cuts or abrasions.

(a) "Bathing waters" - these are waters that, during the recreation season, are heavily used for swimming. The bathing water use applies to all waters in areas where a lifeguard or bathhouse facilities are present, and to any additional water bodies designated bathing waters in rules 3745-1-08 to 3745-1-32 of the Administrative Code.

(b) "Primary contact" - these are waters that, during the recreation season, are suitable for one or more full body contact recreation activities such as, but not limited to, wading, swimming, boating, water skiing, canoeing, kayaking, and scuba diving. All surface waters of the state are designated as primary contact recreation unless otherwise designated as bathing waters or secondary contact recreation.

(c) "Secondary contact" - these are waters that result in minimal exposure potential to water borne pathogens because the waters are: rarely used for water based recreation such as, but not limited to, wading; situated in remote, sparsely populated areas; have restricted access points; and have insufficient depth to provide full body immersion, thereby greatly limiting the potential for water based recreation activities. Waters designated secondary contact recreation are identified in rules 3745-1-08 to 3745-1-30 of the Administrative Code.

Ohio Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Designated Use	Subcategory
Recreation	Bathing Waters
	Primary Contact
	Secondary Contact
Aquatic Life	Warm Water
	Limited Warm Water
	Exceptional Warm Water
	Warm Water
	Modified Warm Water
	Seasonal Salmonid
	Cold Water
	Limited Resource Water
Water Supply	Public
	Agricultural
	Industrial

Ohio

Ohio Water Quality Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE OF OHIO

WATER QUALITY STANDARDS

Chapter 3745-1 of the ADMINISTRATIVE CO

Most Recent Revision:

January 21, 2021
Effective April 21, 2021

Ohio Environmental Protection Agency
Division of Surface Water
Standards & Technical Support Section

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continued

Ohio Classification Examples

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Table 8-1. Use designations for water bodies in the Hocking river drainage basin.

Water Body Segment	Use Designations													Comments
		Aquatic Life Habitat						Water Supply			Recreation			
	SRW	WWH	EWH	MWH	SSH	CWH	LRW	PWS	AWS	IWS	BW	PCR	SCR	
Hocking river - Lithopolis rd. (RM 94.9) to Baldwin-Ewing run (RM 89.02)				+					+	+		+		EOLP ecoregion - channel modification
- bordering Rockbridge nature preserve	o	+							+	+		+		
- all other segments		+							+	+		+		
McGill run		*							*	*		*		

SRW = state resource water; WWH = warmwater habitat; EWH = exceptional warmwater habitat; MWH = modified warmwater habitat; SSH = seasonal salmonid habitat; CWH = coldwater habitat; LRW = limited resource water; PWS = public water supply; AWS = agricultural water supply; IWS = industrial water supply; BW = bathing water; PCR = primary contact recreation; SCR = secondary contact recreation.

Tar creek		*							*	*		*		
Skunk run		+							+	+		+		
Frost run		+							+	+		+		
Jordan run - headwaters to intersection of twp. rd. 153 and co. rd. 65 (RM 3.59)	*	+							+	+		+		
- within Marie J. Desonier nature preserve	o	+							+	+		+		
- all other segments		+							+	+		+		

Ohio Classification Examples

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

SRW = state resource water; WWH = warmwater habitat; EWH = exceptional warmwater habitat; MWH = modified warmwater habitat; SSH = seasonal salmonid habitat; CWH = coldwater habitat; LRW = limited resource water; PWS = public water supply; AWS = agricultural water supply; IWS = industrial water supply; BW = bathing water; PCR = primary contact recreation; SCR = secondary contact recreation.

Table 8-1. Use designations for water b

Water Body Segment	Use Designations													Comments
		Aquatic Life Habitat						Water Supply			Recreation			
	SRW	WWH	EWH	MWH	SSH	CWH	LRW	PWS	AWS	IWS	BW	PCR	SCR	
Hocking river - Lithopolis rd. (RM 94.9) to Baldwin-Ewing run (RM 89.02)				+					+	+		+		EOLP ecoregion - channel modification
- bordering Rockbridge nature preserve	o	+							+	+		+		
- all other segments		+												
McGill run		*												
Ross run		*												
Fourmile creek	*	+												
East Fourmile creek	*	+												
Wolfpen creek		*												
Tar creek		*												
Skunk run		+												
Frost run		+												
Jordan run - headwaters to intersection of twp. rd. 153 and co. rd. 65 (RM 3.59)	*	+												
- within Marie J. Desonier nature preserve	o	+												
- all other segments		+							+	+		+		

(D) The following symbols are used throughout this rule:

* Designated use based on the 1978 water quality standards;

\+ Designated use based on the results of a biological field assessment performed by the Ohio environmental protection agency;

o Designated use based on justification other than the results of a biological field assessment performed by the Ohio environmental protection agency; and

L An L in the warmwater habitat column signifies that the water body segment is designated limited warmwater habitat.

Summary of Other States Designated Uses

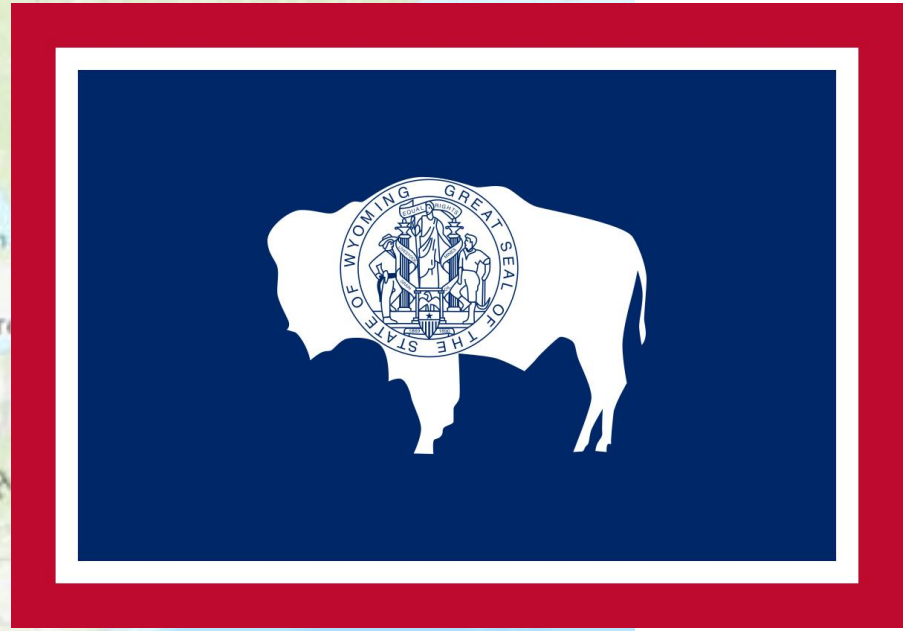
- Aquatic Life
  - Colorado and Ohio assign one aquatic life use per waterbody
    - Idaho assigns salmonid spawning and cold water uses to some waters
  - Colorado, Idaho, and Ohio have “modified” aquatic life uses for waters that are identified through use attainability analyses
- Drinking Water
  - Colorado, Ohio, and Idaho have domestic water supply or public water supply uses
- Recreation
  - Colorado, Idaho, and Ohio have different recreational uses

Summary of Other States Designated Uses

- Agriculture
  - Colorado, Ohio, and Idaho have agricultural uses
- Other uses vary by states
  - Aesthetic
  - Wildlife
  - Industry
- Colorado, Ohio, and Idaho do not have a separate “fish consumption” or “consumption of aquatic organisms” use

Wyoming Water Quality Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY



Ideas for Wyoming's Standards

- Conceptual
- Chapter 1 and Other Documents
- Potential Implications

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

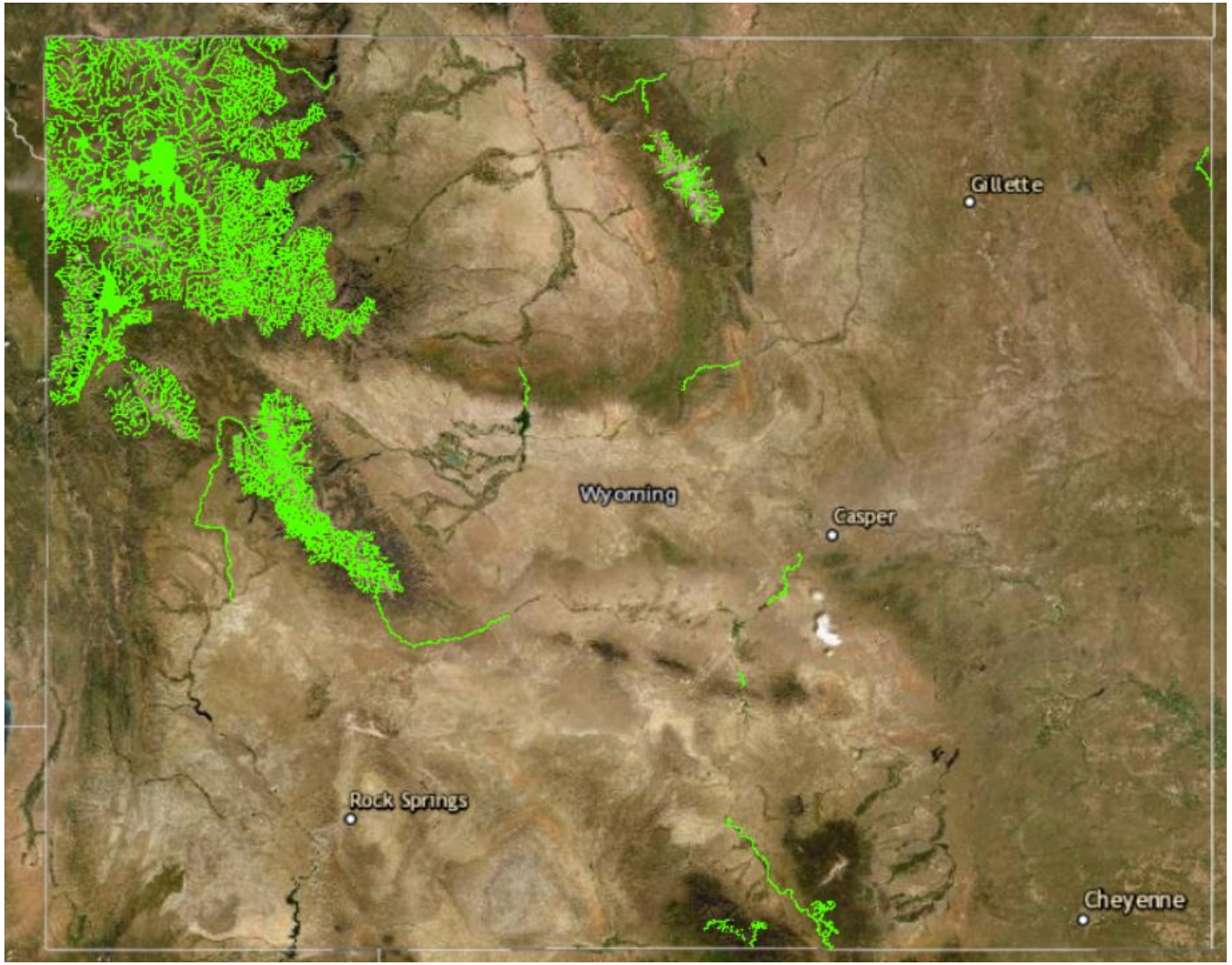
	Drinking Water	Cold Water / Game Fish / Warm Water	Non-Game Fish	Fish Consumption	Other Aquatic Life	Primary Contact / Recreation / Secondary Contact	Wildlife	Agriculture	Industry	Scenic Value
1*	Yes	CW Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2AB	Yes	CW Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2A	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
2B	No	CW Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2C	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2D	No	When Present	When Present	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3A	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3B	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3C	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3D	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
4A	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
4B	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
4C	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

	Drinking Water	Cold Water / Game Fish / Warm Water	Non-Game Fish	Fish Consumption	Other Aquatic Life	Primary Contact / Recreation / Secondary Contact	Wildlife	Agriculture	Industry	Scenic Value
1*	Yes	CW Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2AB	Yes	CW Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2A	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
2B	No	CW Yes WW		Yes	Yes		Yes	Yes	Yes	Yes
2C	No	No		Yes	Yes		Yes	Yes	Yes	Yes
2D	No	When Present	When	Yes		Yes	Yes	Yes	Yes	Yes
3A	No	No	No			Yes	Yes	Yes	Yes	Yes
3B	No	No	No		Yes	Yes	Yes	Yes	Yes	Yes
3C	No	No	No		Yes	Yes	Yes	Yes	Yes	Yes
3D	No	No	No			Yes	Yes	Yes	Yes	Yes
4A	No	No				Yes	Yes	Yes	Yes	Yes
4B	No	No		No	No		Yes	Yes	Yes	Yes
4C	No	No		No	No		Yes	Yes	Yes	Yes

Class 1 Waters



- National Parks
- Wilderness Areas
- Snake River Upstream of HGWY 22
- Wind River Boysen to Wedding of Waters
- North Platte near Saratoga
- North Platte Miracle Mile
- North Platte Near Alcova Reservoir
- Sand Creek above US 14
- Middle Fork Powder River Above Buffalo Creek
- Mainstem of North Fork Tongue River, mainstem of South Fork Tongue River, mainstem of Tongue River upstream USFS boundary
- Sweetwater River above Alkali Creek
- Encampment River from USFS boundary to Colorado line
- Clarks For River from USFS boundary upstream to Montana state line
- All waters in Fish Creek Watershed
- Granite Creek
- Fremont Lake
- Wetlands adjacent to Class 1 waters

Ideas for Potential Changes to Standards

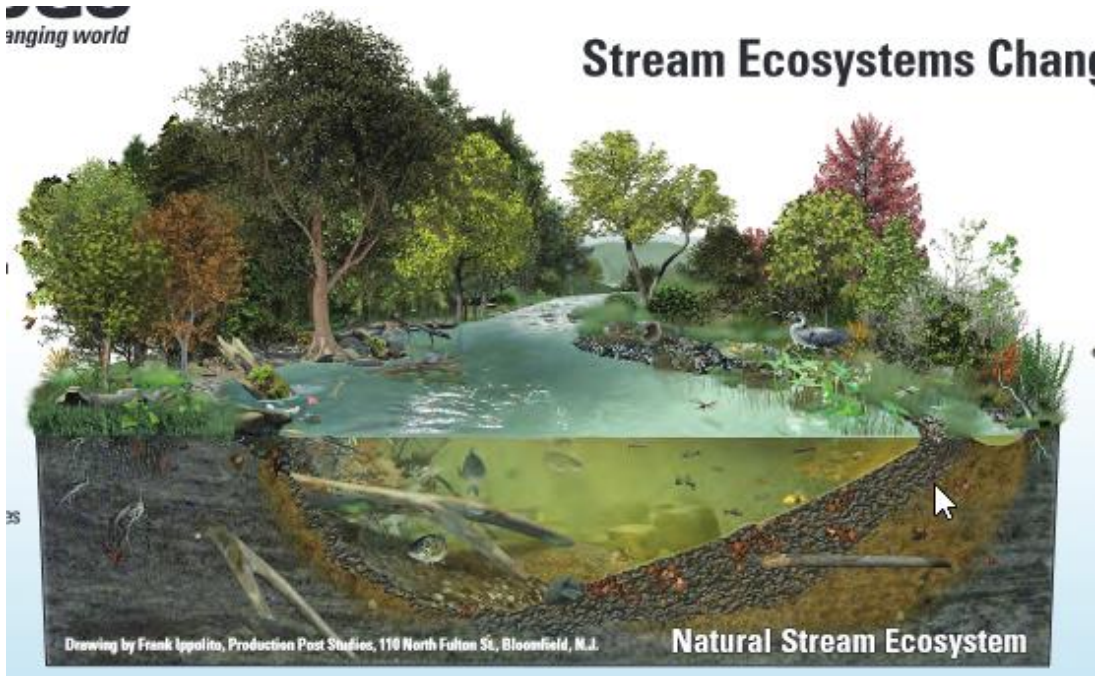
WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Drinking Water	Cold Water / Game Fish / Warm Water	Non-Game Fish	Fish Consumption	Other Aquatic Life	Primary Contact / Recreation / Secondary Contact	Wildlife	Agriculture	Industry	Scenic Value

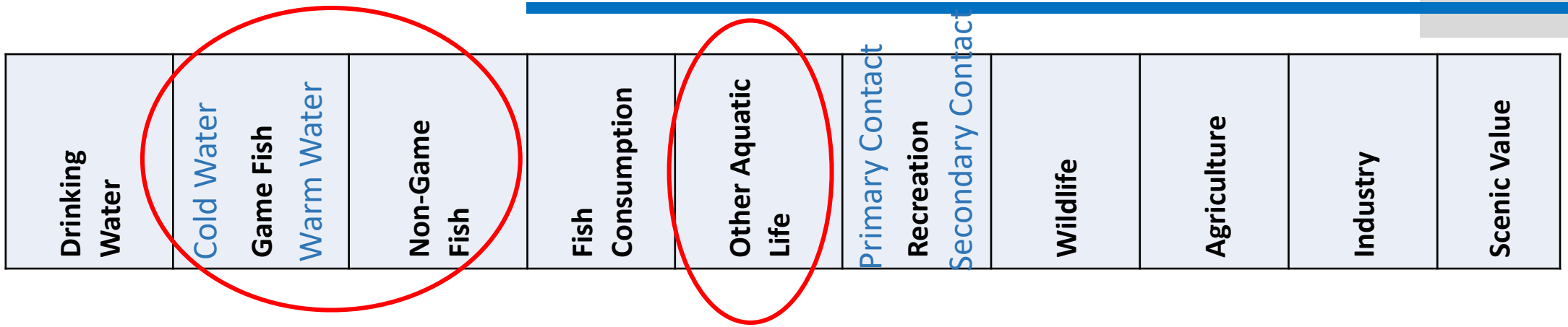
Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Drinking Water	Cold Water / Game Fish / Warm Water	Non-Game Fish	Fish Consumption	Other Aquatic Life	Primary Contact / Recreation / Secondary Contact	Wildlife	Agriculture	Industry	Scenic Value

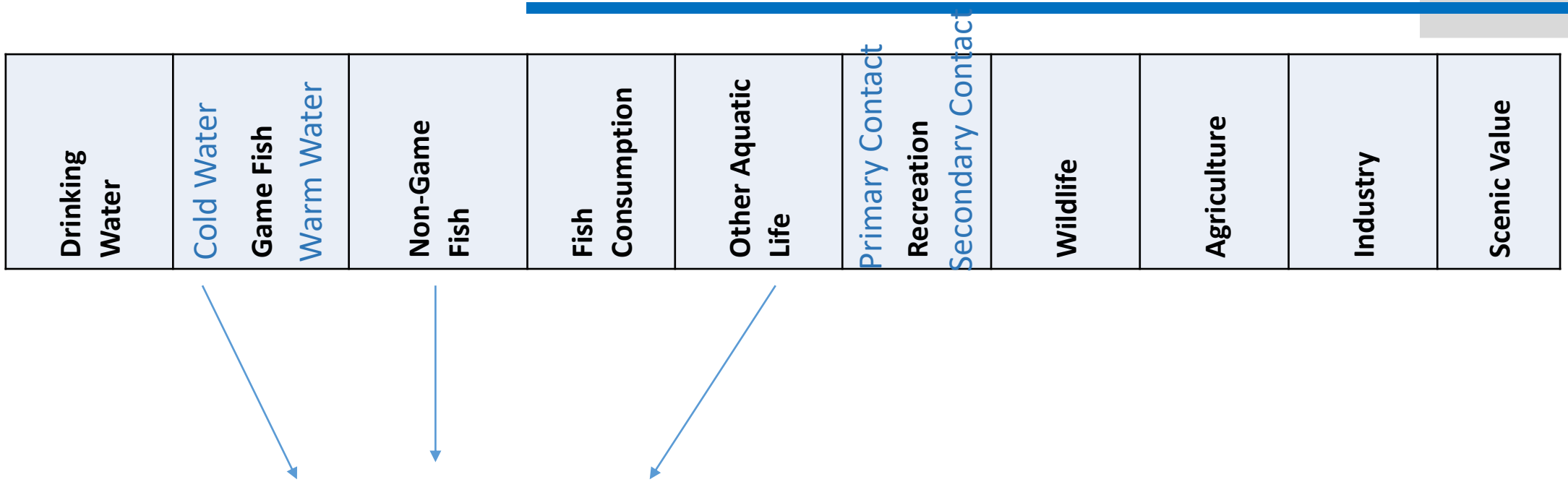


Ideas for Potential Changes to Standards



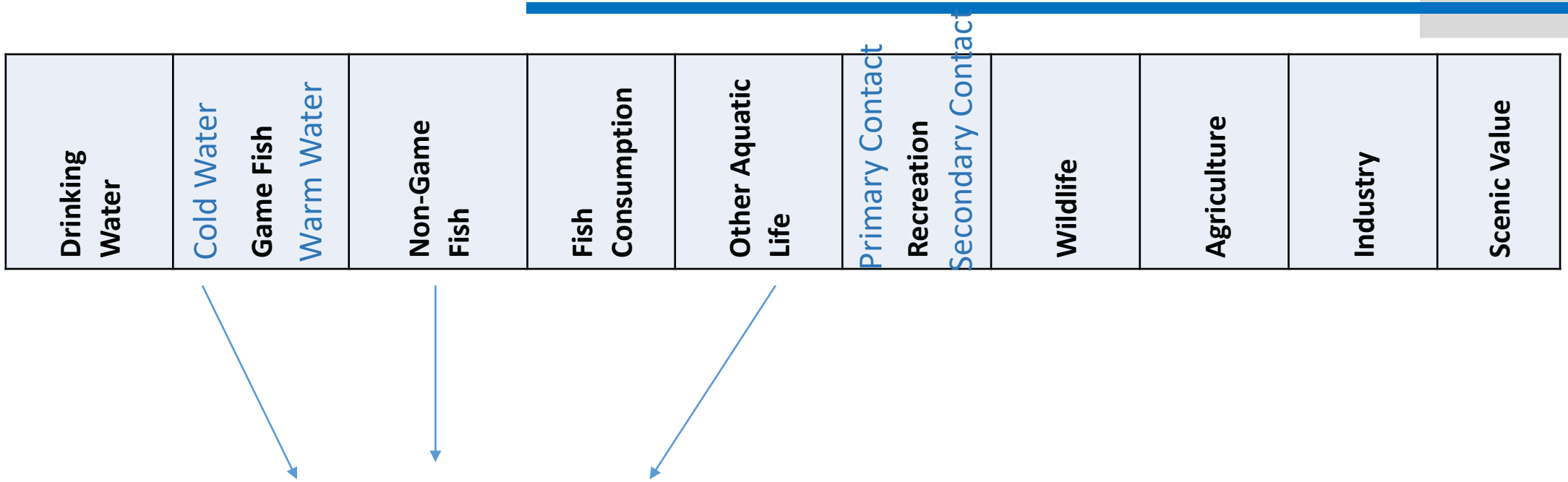
- Each surface water should have one aquatic life use, not up to three
- Need to combine aquatic life uses

Ideas for Potential Changes to Standards



Cold water aquatic life

Ideas for Potential Changes to Standards

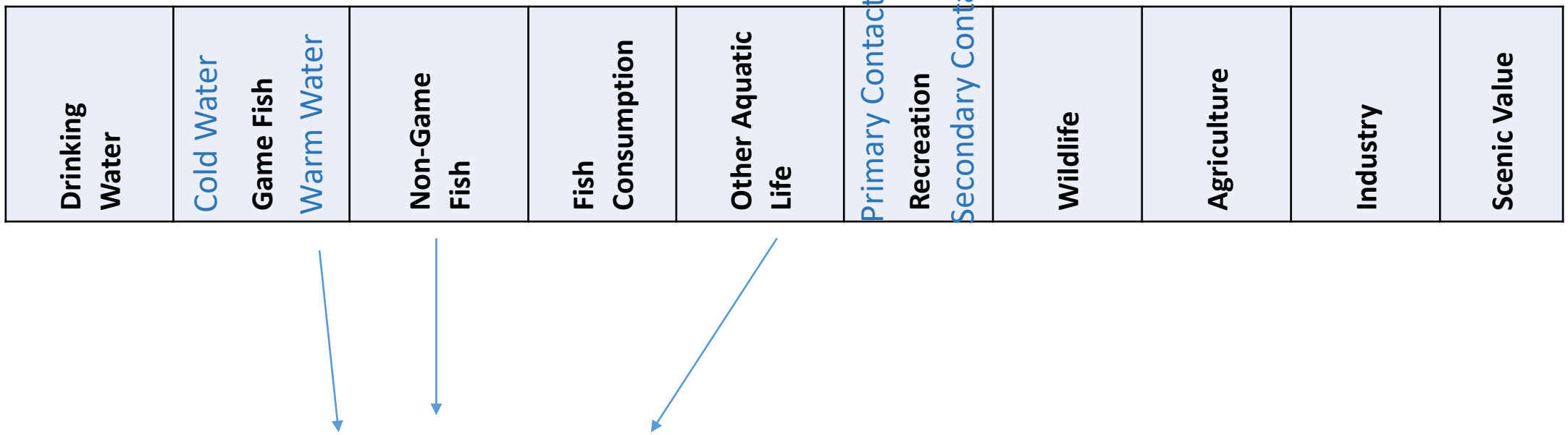


Cold water aquatic life

2AB cw

2B cw

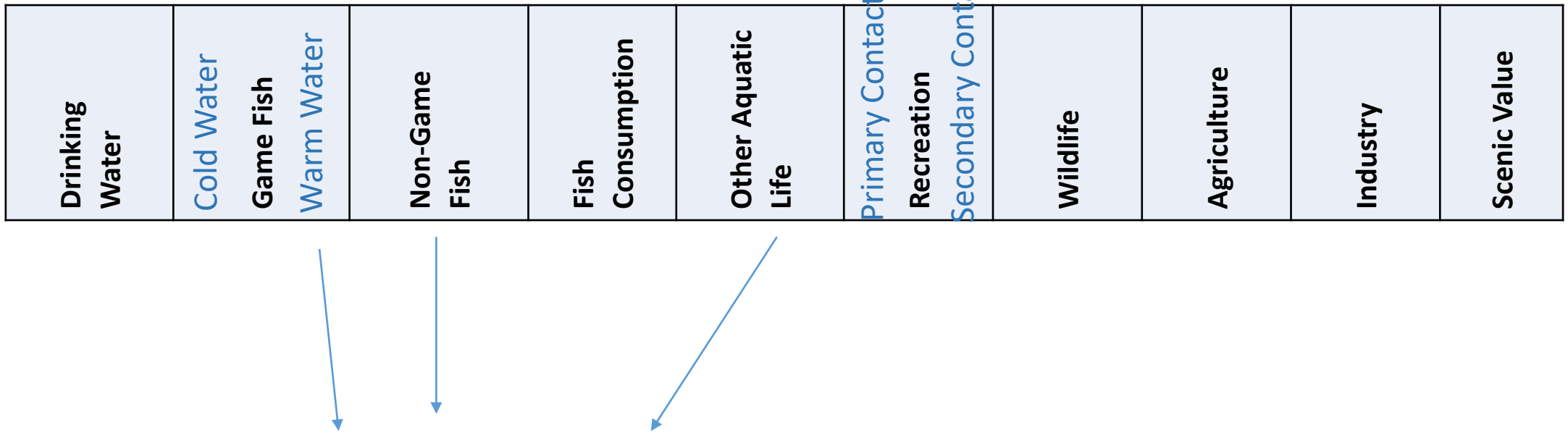
Ideas for Potential Changes to Standards



Warm water 1 aquatic life

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY



Warm water 1 aquatic life

2AB ww

2B ww

Ideas for Potential Changes to Standards

Drinking Water	Cold Water / Game Fish / Warm Water	Non-Game Fish	Fish Consumption	Other Aquatic Life	Primary Contact / Recreation / Secondary Contact	Wildlife	Agriculture	Industry	Scenic Value

Warm water 1 aquatic life

2AB ww
2B ww

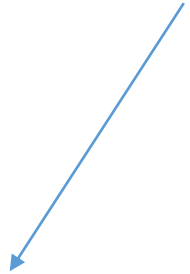
=

2C

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Drinking Water	Cold Water / Game Fish / Warm Water	Non-Game Fish	Fish Consumption	Other Aquatic Life	Primary Contact / Recreation / Secondary Contact	Wildlife	Agriculture	Industry	Scenic Value



Warm water 2 aquatic life

3B

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

No.	Designated Use	Subcategory
1	Agriculture	
2	Drinking Water	
3	Aquatic Life Other Than Fish	
4	Fisheries	Coldwater Game Fish
		Warmwater Game Fish
		Nongame Fish
5	Fish Consumption	
6	Industry	
7	Recreation	Primary contact
		Secondary contact
8	Scenic Value	
9	Wildlife	

No.	Designated Use	Subcategory
1	Agriculture	
2	Drinking Water	
3	Aquatic Life	Coldwater
		Warmwater 1
		Warmwater 2
4	Fish Consumption	
5	Industry	
6	Recreation	Primary contact
		Secondary contact
7	Scenic Value	
8	Wildlife	

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

	Drinking Water	Cold Water / Game Fish / Warm Water	Non-Game Fish	Fish Consumption	Other Aquatic Life	Primary Contact / Recreation / Secondary Contact	Wildlife	Agriculture	Industry	Scenic Value
1*	Yes	CW Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2AB	Yes	CW Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2A	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
2B	No	CW Yes WW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2C	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2D	No	When Present	When Present	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3A	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3B	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3C	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3D	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
4A	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
4B	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
4C	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Section 36. Effluent Dependent Criteria. In addition to the provisions of Section 33 of these regulations, the administrator may make modifications to the numeric criteria for pollutants listed in Appendix B on Class 2D and 3D waters. These modifications may be made on a categorical or site-specific basis by application of the following process:

(a) The adopted statewide numeric criteria may be modified on Class 2D and 3D waters to reflect ambient conditions by developing a UAA demonstrating that the water body is effluent dependent and that continued discharge of a permitted effluent to the water body has been shown to create a net environmental benefit. Criteria modification based on a finding of net environmental benefit is authorized where:

(i) The water body is effluent dependent;

(ii) The discharge has been shown to create an environmental benefit and removal of the discharge would cause more environmental harm than leaving it in place;

(iii) There is a credible threat to remove the discharge; and

(iv) Appropriate safeguards are in place, ensuring that downstream uses will be protected and the discharge will pose no health risk or hazard to humans, livestock or wildlife.

(b) Where the above factors have been satisfied, site-specific criteria may be set equal to the background concentration plus a margin of error for each parameter where the highest background concentration exceeds the statewide numeric criteria. Such site-specific criteria will be implemented as instantaneous maximum values.

(i) The background concentration shall be the highest concentration recorded over the course of a one year period where samples have been taken at least once in each month.

(ii) The margin of error shall be one standard deviation calculated from the same data set used to establish background.

(iii) In addition to water column values, aquatic life tissue criteria shall also be established for all parameters known to be bioaccumulating and where recommended criteria have been developed by EPA. Such criteria shall be at least equal to the nationally recommended tissue criteria published by EPA under Section 304(a) of the Clean Water Act.

(c) The procedures used to implement this section are described in the *Use Attainability Analysis Implementation Policy*.

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

No.	Designated Use	Subcategory
1	Agriculture	
2	Drinking Water	
3	Aquatic Life	Coldwater
		Warmwater 1
		Warmwater 2
		Effluent-Dependent
4	Fish Consumption	
5	Industry	
6	Recreation	Primary contact
		Secondary contact
7	Scenic Value	
8	Wildlife	

Ideas for Potential Changes to Standards

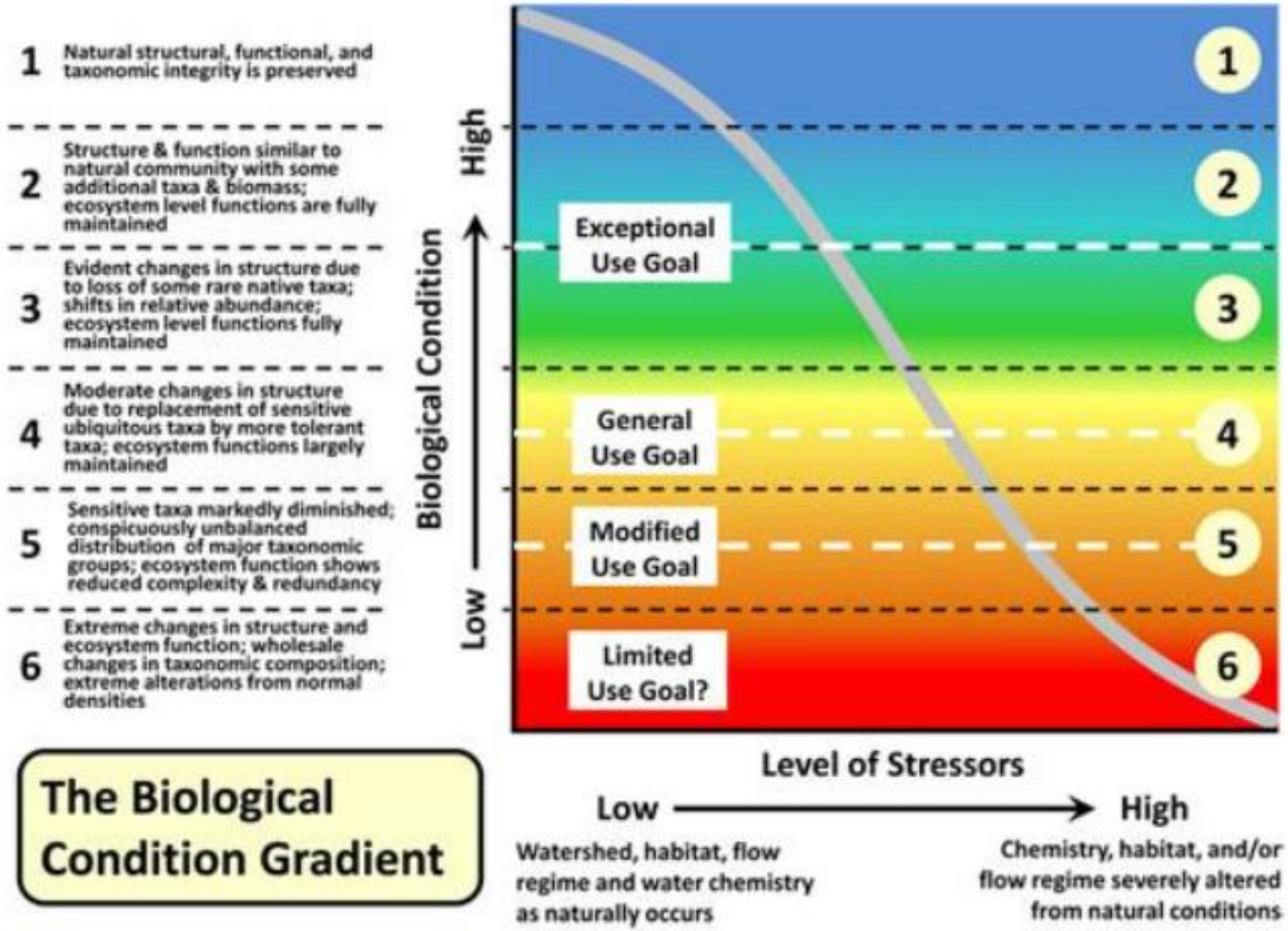
WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

No.	Designated Use	Subcategory
1	Agriculture	
2	Drinking Water	
3	Aquatic Life	Coldwater
		Warmwater 1
		Warmwater 2
		Effluent-Dependent
4	Fish Consumption	
5	Industry	
6	Recreation	Primary contact
		Secondary contact
7	Scenic Value	
8	Wildlife	

2D and 3D

Tiered Aquatic Life Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY



Minnesota

Tiered Aquatic Life Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Natural

Urban

USGS
science for a changing world

National Water-Quality Assessment Program

Stream Ecosystems Change With Urban Development

Natural Stream Ecosystem
The healthy condition of the physical living space in a natural stream—defined by unaltered hydrology (streamflow), high diversity of habitat features, and natural water chemistry—supports diverse biological communities with aquatic species that are sensitive to disturbances.

Drawing by Frank Ippolito, Production Post Studios, 110 North Fulton St., Bloomfield, N.J.
Natural Stream Ecosystem

Drawing by Frank Ippolito, Production Post Studios, 110 North Fulton St., Bloomfield, N.J.
Urban Stream Ecosystem

Urban Stream Ecosystem
In a highly degraded urban stream, the poor condition of the physical living space—streambank and tree root damage from altered hydrology, low diversity of habitat, and inputs of chemical contaminants—contributes to biological communities with low diversity and high tolerance to disturbance.

What is a stream ecosystem? A stream ecosystem is defined by the hydrology, habitat, and chemistry conditions and the biological communities within the stream, all of which are influenced by activities in the surrounding watershed. A complex and well-balanced ecosystem provides recreation, aesthetics, food, water, nutrients, and many other valuable assets to humans, animals, and plants that live in the area. Natural stream ecosystems are well adapted to seasonal environmental changes, such as annual flooding and drought cycles.

Every stream is connected downstream to other water bodies including rivers, reservoirs, and ultimately coastal waters. Inputs of chemical contaminants or sediments at any point along the stream can cause degradation downstream with adverse effects on biological communities and on economically valuable resources, such as fisheries and tourism.

Urban development is associated with changes in the natural environment such as alterations to the hydrology, habitat, and chemistry of a stream, which result in stressors to biota in stream ecosystems. Impervious surfaces, such as parking lots, roads, and rooftops, limit the amount of rainwater seeping into the ground, which increases stormwater runoff. Urban areas often experience a rapid rise in streamflow after a rainfall, which can erode streambanks and bottoms and degrade fish spawning and feeding habitats. Stream channels are often reinforced with concrete or large rock to minimize erosion and control flooding. Water temperature increases when tree cover is removed along the banks, thus exposing the stream to more sunlight. Chemicals, wastes, and sediment—from industry, animal production, water treatment, and runoff from impervious surfaces—increase in the stream and can be toxic to biological communities. Biological communities have different life cycles and requirements for food, shelter, and reproduction; consequently, their responses also vary with changes in physical and chemical conditions related to urban development.

Understanding how algal, invertebrate, and fish communities respond to physical and chemical stressors associated with urban development can provide important clues on how multiple stressors can be managed to protect stream health as a watershed becomes increasingly urbanized.

Natural Stream Ecosystem Hydrology, Habitat, Chemistry Conditions

Photographs by Alan M. Cressler

Rainfall gradually reaches a stream in a natural or undeveloped setting by flowing over the land surface into the stream and by seeping into the soil and flowing underground (as groundwater) toward the stream. These natural seasonal patterns of **hydrology**, together with seasonal changes in light and temperature, serve as life cycle cues to the biological communities.

Stream **habitat** is the physical living space of aquatic biota and includes the channel size and shape, water depth and velocity, and structures within the stream, such as woody debris and boulders. Slow moving, deeper areas of a stream are called pools, and faster flowing shallow areas are referred to as riffles. A natural stream with multiple habitats generally will have a diverse biological community.

Some **chemicals** and nutrients, such as nitrogen and phosphorous, are required for all stream life. Nutrients are incorporated into algae, which are then consumed by other biota, such as invertebrates and fish, thus introducing the nutrients into the aquatic food web. Oxygen dissolved in water is essential for all biological communities, and adequate amounts of oxygen are necessary to support a diverse biological community.

Videos, podcasts, articles, and fact sheets describing the USGS assessment of the effects of urban development on stream ecosystems in nine metropolitan areas of the United States are available at *http://water.usgs.gov/nawqa/urban/*.

Natural Stream Ecosystem Biological Communities

Smallmouth bass
Greenside darter
Dragonfly larvae
Cymbella
Epithemia

Fish have life cycles that can span years and are affected by stream hydrology, habitat, chemistry, and other biological communities. Fish are relatively mobile along the stream as they search for food. Smallmouth bass can hide under logs or undercut banks, along stream edges or in pools, and emerge to feed on crayfish and small fish. Greenside darters live in riffle habitats of streams, where they feed on aquatic invertebrates, such as dragonfly larvae.

Invertebrates have complex life cycles that occur over time spans of weeks to years. Most aquatic insects spend nearly all their life in the water as eggs and larvae, and then leave the water and develop wings as adults. This dragonfly larva lives in areas of slower streamflow, where it preys on other invertebrates and even some small fish. Many species of dragonflies are sensitive to pollution, as are mayflies and stoneflies. These invertebrates crawl on the surfaces of rocks and feed by gathering and shredding leaf debris, scraping off algae, or preying on other insects.

Algae, such as these diatoms, are microscopic plants and are the foundation of aquatic foodwebs. Algae have short life cycles of days to weeks, and they can respond rapidly to changes in sunlight, water chemistry, and streamflow. The most common algae reported in natural streams of small-to-moderate size are diatoms, which attach to underwater surfaces, such as rocks and aquatic plants. *Cymbella* is found in riffles, while *Epithemia* is found in both pools and riffles.

Urban Stream Ecosystem Hydrology, Habitat, Chemistry Conditions

Urban development in a watershed alters the **hydrology** or movement of water through a watershed. As the amount of impervious surface and artificial drainage systems (for example, storm drains) increases with urban development, stormwater runoff from developed sites occurs more quickly. The higher streamflows that often result can alter stream channels through streambank erosion and can increase the magnitude of seasonal floods to a level that damages homes and property near the stream and in the flood plain.

Urban development can alter **habitats** that provide living spaces for the biota in and around the stream. Plants and trees near a stream can be removed to increase the amount of light reaching streams, and cement or rock can be added to the channel to protect it from high streamflow. Sediment from erosion can fill spaces between rocks on the stream bottom, thus reducing living space or habitat for the biological communities.

Urban development might increase the inputs of **chemicals** to levels that greatly exceed those that occur naturally in streams and can be toxic to the biological communities. For example, excess amounts of nutrients from fertilizers can lead to an abundance of algae and might result in extreme high and low levels of dissolved oxygen in a stream. Pesticides from lawn care or insect control and heavy metals from industry and vehicles can be ingested or absorbed by the biological communities.

Urban Stream Ecosystem Biological Communities

Fathead minnow
Common carp
Isopod
Leech
Green algae
Blue-green algae

Native **fishes** that are sensitive to changes in the stream ecosystem generally become less abundant with increased urban development, while tolerant fishes can thrive. The fathead minnow, although native to streams in the United States, tolerates muddy, low-oxygen water that is typical of many urban streams. Fish that are more tolerant to urban stressors are often non-native species, such as the common carp, that prefer slow or still water and silty stream sediments.

Urban development leads to a loss of **invertebrate** species that are sensitive to pollution, such as mayflies and stoneflies, and an increase in more tolerant species, such as leeches and isopods. The loss of species that are sensitive to pollution can begin at very low levels of urban development. Tolerant species, such as leeches are most common in warm, protected shallow areas of streams. Isopods prefer slower moving streams with relatively low dissolved oxygen levels.

An increase in urban development often results in a high abundance of **algae** that are tolerant of pollution. Diatom algae tend to decrease and non-diatom algae tend to increase with urban development. Some non-diatom algae, such as green or blue-green algae that appear as a green coating on the surface of the water and rocks, are in low abundance in natural streams but might increase in abundance to nuisance levels from open sunlight- and nutrient-rich conditions in many urban streams.

U.S. Department of the Interior
U.S. Geological Survey

By Amanda H. Bell, James F. Coles, and Gerard McMahon

General Information Product 143
October 2012

Tiered Aquatic Life Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Monarch Irrigation Diversion Structure

Sheridan County, Wyoming

Irrigation diversion headgate structure after construction.

Tiered Aquatic Life Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

§ 35-11-302. Administrator's authority to recommend standards, rules, regulations or permits.

(a) The administrator, after receiving public comment and after consultation with the advisory board, shall recommend to the director rules, regulations, standards and permit systems to promote the purposes of this act. Such rules, regulations, standards and permit systems shall prescribe:

(i) Water quality standards specifying the maximum short-term and long-term concentrations of pollution, the minimum permissible concentrations of dissolved oxygen and other matter, and the permissible temperatures of the waters of the state;

(ii) Effluent standards and limitations specifying the maximum amounts or concentrations of pollution and wastes which may be discharged into the waters of the state;

(c) Nothing in this act shall be construed to supersede or abrogate any valid water right. It is recognized that diversion of water caused by the exercise of a valid water right is an allowable practice. The administrator shall:

(i) Develop water quality standards for surface waters where hydrologic modification resulting from the exercise of valid water rights precludes the attainment of existing water quality standards;

(ii) Prepare a schedule to develop appropriate water quality standards based on the completion of a use attainability analysis for any waters that have been identified pursuant to 33 U.S.C. § 1315(b) where dams, diversions or other types of hydrologic modification preclude the attainment of any existing water quality standard.

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

No.	Designated Use	Subcategory
1	Agriculture	
2	Drinking Water	
3	Aquatic Life	Coldwater
		Warmwater 1
		Warmwater 2
		Effluent-Dependent
		Habitat Limited
4	Fish Consumption	
5	Industry	
6	Recreation	Primary contact
		Secondary contact
7	Scenic Value	
8	Wildlife	

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

No.	Designated Use	Subcategory
1	Agriculture	
2	Drinking Water	
3	Aquatic Life	Coldwater
		Warmwater 1
		Warmwater 2
		Effluent-Dependent
		Habitat Limited
4	Fish Consumption	
5	Industry	
6	Recreation	Primary contact
		Secondary contact
7	Scenic Value	
8	Wildlife	

New

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

- Remove Chapter 1, Section 4, Surface Water Classes and Uses
  - Move portions of Class 1 waters to antidegradation section

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

- References to “classes” within water quality criteria would be changed to particular “designated uses”

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

- References to “classes” within water quality criteria would be changed to particular “designated uses”

Waters designated for aquatic life

Cold water aquatic life

Warm water 1 aquatic life

Section 25. Temperature.

(a) For Class 1, 2 and 3 waters, pollution attributable to the activities of man shall not change ambient water temperatures to levels which result in harmful acute or chronic effects to aquatic life, or which would not fully support existing and designated uses.

(b) When ambient temperatures are above 60 degrees Fahrenheit (15.6 degrees Celsius) in all Class 1, 2AB and 2B waters which are cold water fisheries, pollution attributable to the activities of man shall not result in an increase of more than 2 degrees Fahrenheit (1.1 degree Celsius) in existing temperatures.

(c) When ambient temperatures are above 60 degrees Fahrenheit (15.6 degrees Celsius) in all Class 1, 2AB, 2B and 2C waters which are warm water fisheries, pollution attributable to the activities of man shall not result in an increase of more than 4 degrees Fahrenheit (2.2 degrees Celsius) in existing temperatures.

(d) Except on Class 2D, 3 and 4 waters, the maximum allowable stream temperature will be the maximum natural daily stream temperature plus the allowable change, provided that this temperature is not lethal to existing fish life and under no circumstance shall pollution

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

- References to “classes” when assigning designated uses to particular waterbodies would be changed to “designated uses”

Ideas for Potential Changes to Standards

- References to “classes” when assigning designated uses to particular waterbodies would be changed to “designated uses”

Appendix A

(ii) Unlisted Waters. The waters contained in the *Wyoming Surface Water Classification List* are all waters which are named on the USGS 1:500,000 hydrologic map of Wyoming and those otherwise classified by the department. The classification list does not contain an exhaustive listing of all the surface waters in the state. Waters which are not listed are classified as follows:

(A) All waters shown as having any species of game fish present in the Wyoming Game and Fish Department's *Streams and Lakes Database* as submitted to the department in June 2000 are classified as 2AB;

Cold water aquatic life

Warm water 1 aquatic life

(B) All waters shown as having only nongame fish species present in the Wyoming Game and Fish Department's *Streams and Lakes Database* as submitted to the department in June 2000 are classified as 2C;

Warm water 1 aquatic life

(C) All other waters shall be classified as follows:

(I) Those waters supported by an approved UAA containing defensible reasons for not protecting aquatic life uses shall be 4A, 4B or 4C. This category includes isolated, effluent dependent waters;

No aquatic life use

(II) Effluent dependent waters that support resident fish populations shall be 2D;

Effluent dependent

Ideas for Potential Changes to Standards

- References to “classes” when assigning designated uses to particular waterbodies would be changed to “designated uses”

(III) Effluent dependent waters that do not support resident fish populations shall be 3D;

Effluent dependent

(IV) The remaining waters shall be 3A, 3B or 3C.

Warm water 2 aquatic life

(iii) Wetlands. All adjacent wetlands shall have the same classification as the water to which they are adjacent.

Designated uses

Ideas for Potential Changes to Standards

- Surface water classification list would be updated to designated use list

Ideas for Potential Changes to Standards

- Surface water classification list would be updated to designated use list

BEAR RIVER DRAINAGE

BEAR R C, DW, FC, A, I, W, S					
WOODRUFF NARROWS RES C, DW, FC, A, I, W, S					
	THOMAS FK C, DW, FC, A, I, W, S				
		SOUTH FK C, DW, FC, A, I, W, S			
	SMITHS FK C, DW, FC, A, I, W,S				
	MUDDY CR C, DW, FC, A, I, W, S				
		DRY FK C, DW, FC, A, I, W, S			
		HOBBLE CR C, DW, FC, A, I, W, S			
			COANTAG CR C, DW, FC, A, I, W, S		
			LAKE CR C, DW, FC, A, I, W, S		
				ALICE LK C, DW, FC, A, I, W, S	
	SUBLETTE CR C, DW, FC, A, I, W, S				
	TWIN CR C, DW, FC, A, I, W, S				
		ROCK CR C, DW, FC, A, I, W, S			
		NORTH FK WW2, A, I, W, S			

Aquatic Life Uses	Cold Water	C
	Warm Water 1	WW1
	Warm Water 2	WW2
	Effluent Dependent	ED
	Habitat Limited	HL
Other Uses	Drinking Water	DW
	Fish Consumption	FC
	Agriculture	A
	Industry	I
	Wildlife	W
	Scenic Value	S

Ideas for Potential Changes to Standards

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

- Could retain “Class 1” for antidegradation tier 3 or change to “Outstanding Waters”
- Could use “Class 2” for antidegradation tier 2 or continue to use “High Quality Waters”
- Could use “Class 3” for antidegradation tier 1 or continue to use “Existing Use Protection Waters”

Ideas for Potential Changes to Chapter 1

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Potential Implications

- With the exception of the combined aquatic life uses, all waters would be designated for the same uses they are currently
  - No changes to water quality criteria, so no changes to discharge permits or assessment s
- Would need to modify language from “classes” to “designated uses”
  - Discharge Permits
  - Integrated Report
  - Implementation policies and standards guidance documents
  - Other documents

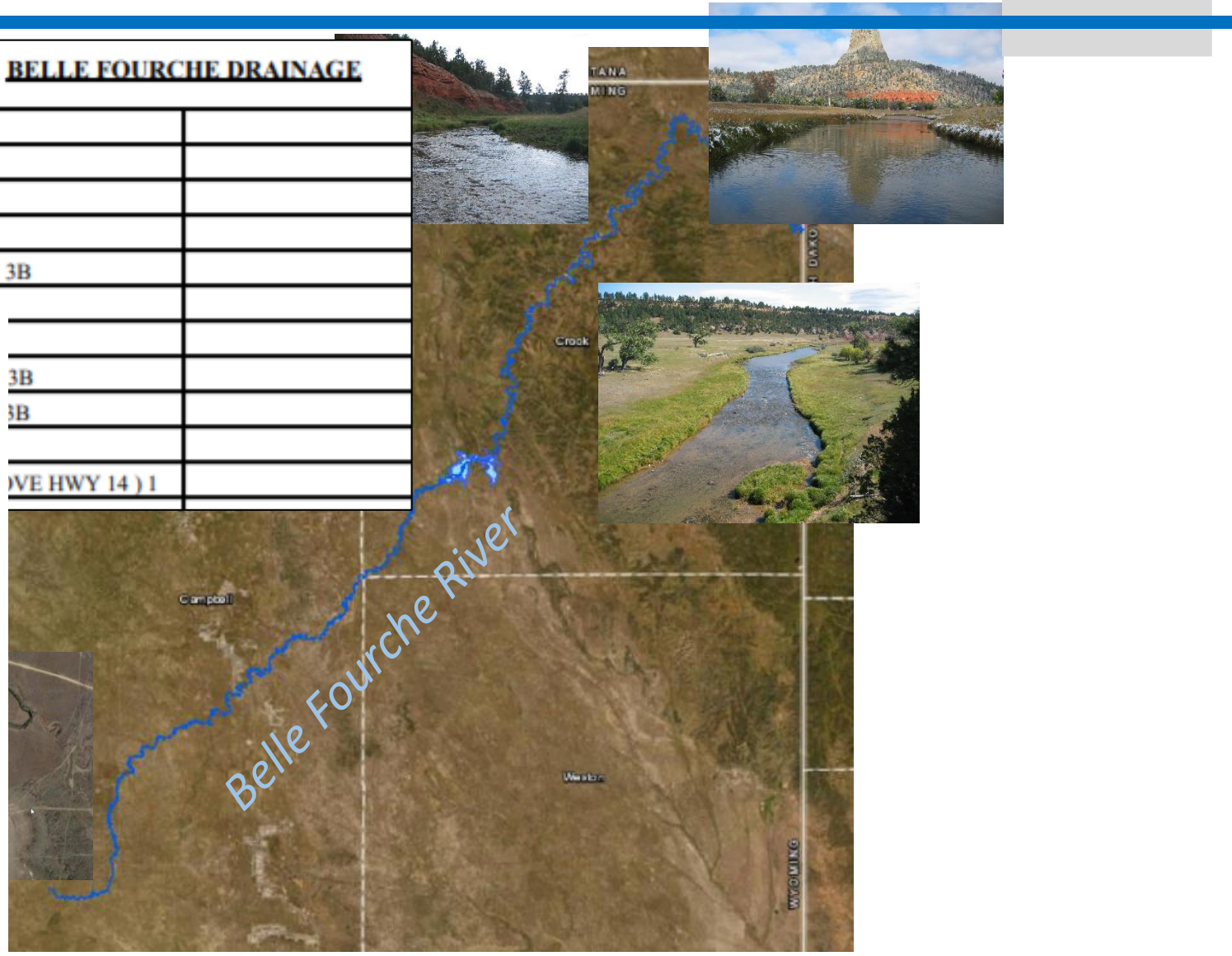
Belle Fourche River

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

BELLE FOURCHE DRAINAGE

BELLE FOURCHE R 2ABWW			
	OWL CR 3B		
	CROW CR 3B		
		BULL CR 3B	
		CHICAGO CR 3B	
	MIDDLE CR 3B		
			3B
			3B
			VE HWY 14) 1

- Drinking Water
- **Warmwater Game Fish**
- **Nongame Fish**
- **Aquatic Life Other Than Fish**
- Fish Consumption
- Recreation
- Industry
- Agriculture
- Wildlife
- Scenic Value

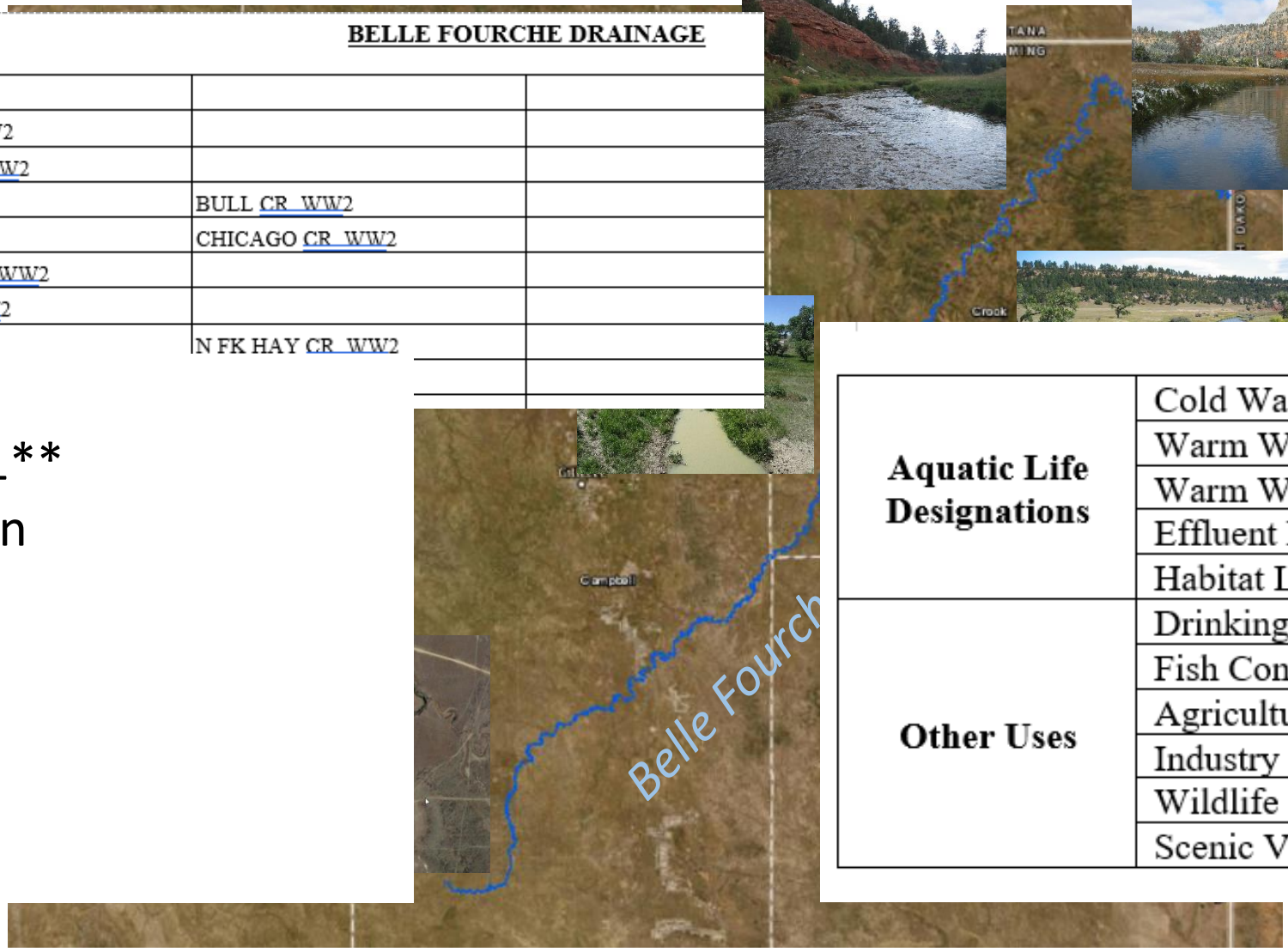


Belle Fourche River

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

BELLE FOURCHE DRAINAGE

BELLE FOURCHE R WW1, DW			
	OWL CR WW2		
	CROW CR WW2		
		BULL CR WW2	
		CHICAGO CR WW2	
	MIDDLE CR WW2		
	HAY CR WW2		
		N FK HAY CR WW2	

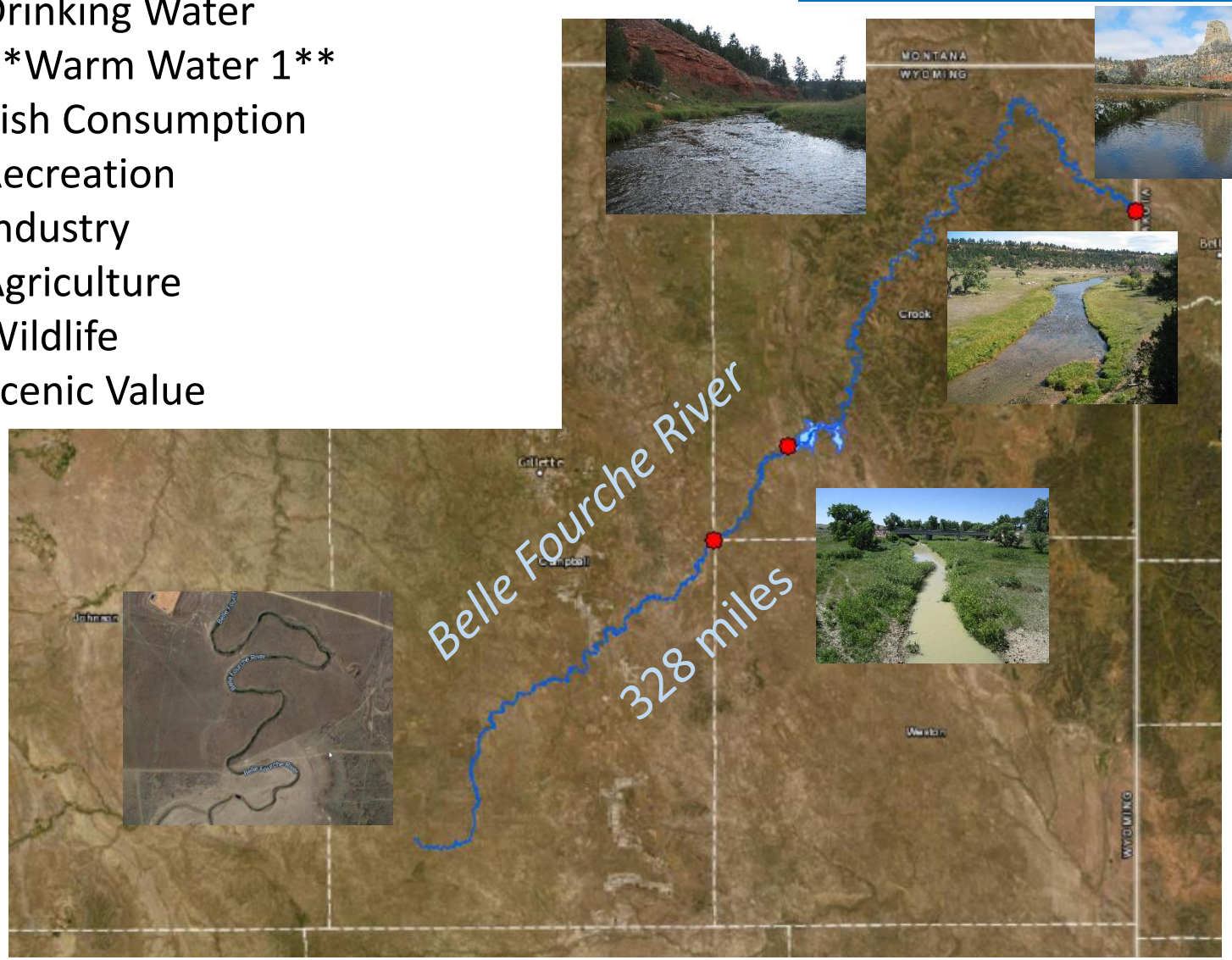


- Drinking Water
- **Warm Water 1**
- Fish Consumption
- Recreation
- Industry
- Agriculture
- Wildlife
- Scenic Value

Aquatic Life Designations	Cold Water	C
	Warm Water 1	WW1
	Warm Water 2	WW2
	Effluent Dependent	ED
	Habitat Limited	HL
Other Uses	Drinking Water	DW
	Fish Consumption	FC
	Agriculture	A
	Industry	I
	Wildlife	W
	Scenic Value	S

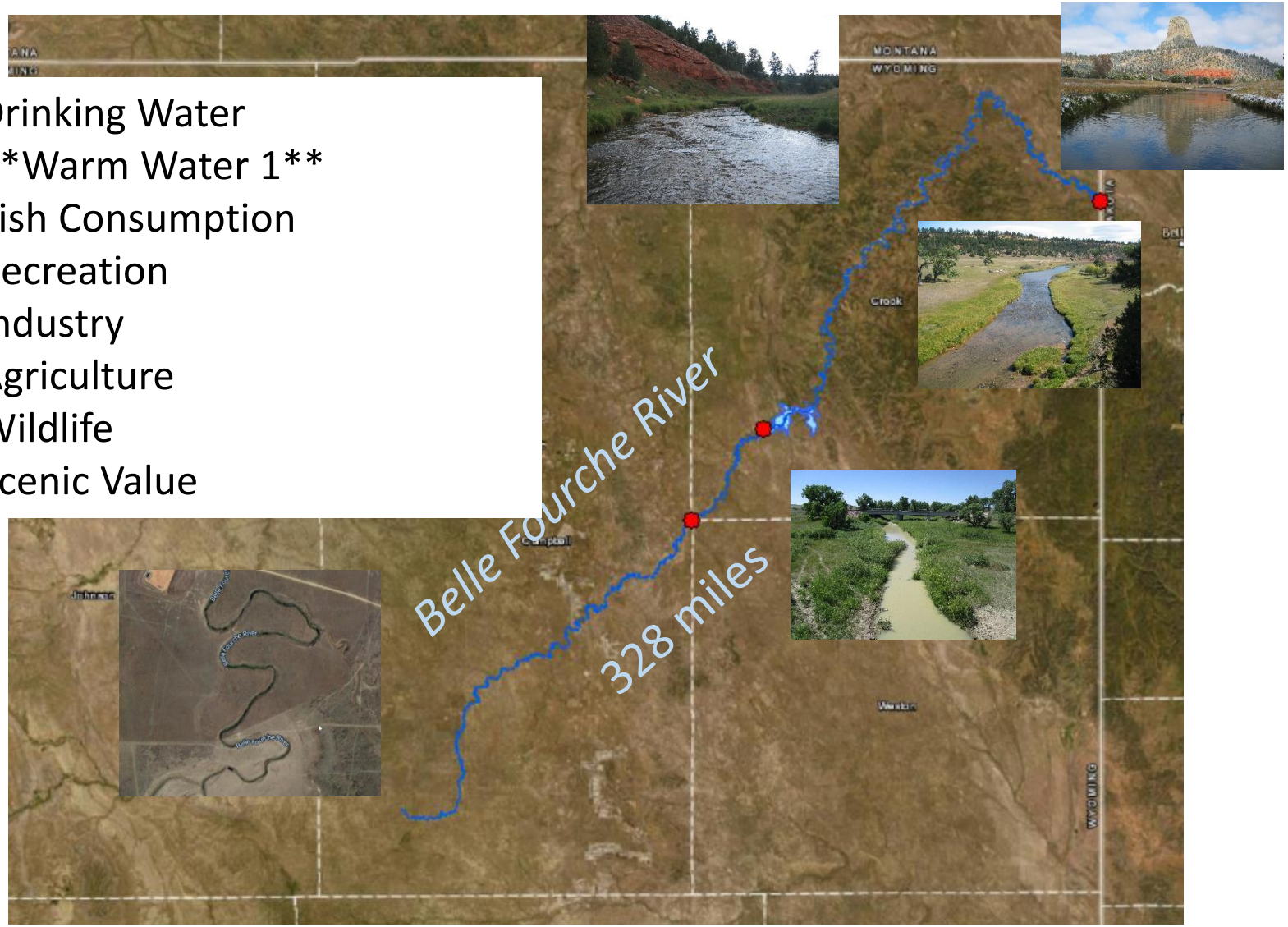
Wyoming Game and Fish Database

Drinking Water
Warm Water 1
Fish Consumption
Recreation
Industry
Agriculture
Wildlife
Scenic Value



- Sites with fish species present in the Wyoming Game and Fish Database

Wyoming Game and Fish Database



- Sites with fish species present in the Wyoming Game and Fish Database

Refine designated uses based on what is existing and attainable for that particular waterbody segment

Chapter 1, Designated Uses

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY