

# REGULATION #38 STREAM CLASSIFICATIONS AND WATER QUALITY STANDARDS

REGION: 3 AND 4 BASIN: ST. VRAIN CREEK Stream Segment Description	DESIG	CLASSIFICATIONS	PHYSICAL and BIOLOGICAL	NUMERIC STANDARDS		TEMPORARY MODIFICATIONS AND QUALIFIERS			
				INORGANIC mg/l	METALS µg/l				
1. All tributaries to St. Vrain Creek, including all wetlands, which are within the Indian Peaks Wilderness Area and Rocky Mountain National Park.	OW	Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS(CS-I) °C D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH <sub>3</sub> (acch)=TVS C <sub>2</sub> (ac)=0.019 C <sub>2</sub> (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO <sub>2</sub> =0.05 NO <sub>3</sub> =10 Cl=250 SO <sub>4</sub> =WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CuI(acch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(acch)=TVS Mn(acch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS	
2a. Mainstem of St. Vrain Creek, including all tributaries and wetlands, from the boundary of the Indian Peaks Wilderness Area and Rocky Mountain National Park to the eastern boundary of Roosevelt National Forest.		Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS(CS-I) °C D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH <sub>3</sub> (acch)=TVS C <sub>2</sub> (ac)=0.019 C <sub>2</sub> (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO <sub>2</sub> =0.05 NO <sub>3</sub> =10 Cl=250 SO <sub>4</sub> =WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CuI(acch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(acch)=TVS Mn(acch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS	
2b. Mainstem of St. Vrain Creek, including all tributaries and wetlands, from the eastern boundary of Roosevelt National Forest to Hygiene Road.		Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS(CS-II) °C D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH <sub>3</sub> (acch)=TVS C <sub>2</sub> (ac)=0.019 C <sub>2</sub> (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO <sub>2</sub> =0.05 NO <sub>3</sub> =10 Cl=250 SO <sub>4</sub> =WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CuI(acch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(acch)=TVS Mn(acch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS	Temporary modification: CuI(ch)=6.0 µg/l (dis), (Type II). Expiration date of 12/31/2015.
3. Mainstem of St. Vrain Creek from Hygiene Road to the confluence with the South Platte River.		Aq Life Warm 1 Recreation E Agriculture	T=TVS(WS-I) °C D.O.=5.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH <sub>3</sub> (acch)=TVS C <sub>2</sub> (ac)=0.019 C <sub>2</sub> (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO <sub>2</sub> =0.5 NO <sub>3</sub> =100	As(ac)=340 As(ch)=7.6(Trec) Cd(acch)=TVS CrIII(acch)=TVS CuI(acch)=TVS	Fe(ch)=1000(Trec) Pb(acch)=TVS Mn(acch)=TVS Hg(ch)=0.01(Tot)	Ni(acch)=TVS Se(acch)=TVS Ag(acch)=TVS Ag(ch)=TVS Zn(acch)=TVS	Temporary modifications: NH <sub>3</sub> (ac)=TVS(Old) NH <sub>3</sub> (ch)=0.06 (Type I). Expiration date of 12/31/2011.
4a. Mainstem of Left Hand Creek, including all tributaries and wetlands, from the source to a point immediately below the confluence with James Creek, except for specific listings in Segment 4b.		Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS(CS-I) °C D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH <sub>3</sub> (acch)=TVS C <sub>2</sub> (ac)=0.019 C <sub>2</sub> (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO <sub>2</sub> =0.05 NO <sub>3</sub> =10 Cl=250 SO <sub>4</sub> =WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CuI(acch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(acch)=TVS Mn(acch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS	
4b. Mainstem of James Creek, including all tributaries and wetlands, from the source to the confluence with Left Hand Creek.		Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS(CS-I) °C D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH <sub>3</sub> (acch)=TVS C <sub>2</sub> (ac)=0.019 C <sub>2</sub> (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO <sub>2</sub> =0.05 NO <sub>3</sub> =10 Cl=250 SO <sub>4</sub> =WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CuI(acch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(acch)=TVS Mn(acch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS	
4c. Mainstem of Left Hand Creek, including all tributaries and wetlands, from a point immediately below the confluence with James Creek to Highway 36.		Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS(CS-I) °C D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH <sub>3</sub> (acch)=TVS C <sub>2</sub> (ac)=0.019 C <sub>2</sub> (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO <sub>2</sub> =0.05 NO <sub>3</sub> =10 Cl=250 SO <sub>4</sub> =WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CuI(acch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(acch)=TVS Mn(acch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(acch)=TVS Se(acch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(acch)=TVS	
5. Mainstem of Left Hand Creek, including all tributaries and wetlands from Highway 36 to the confluence with St. Vrain Creek.		Aq Life Warm 2 Recreation E Water Supply Agriculture	T=TVS(WS-I) °C D.O.=5.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH <sub>3</sub> (acch)=TVS C <sub>2</sub> (ac)=0.019 C <sub>2</sub> (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO <sub>2</sub> =0.5 NO <sub>3</sub> =10 SO <sub>4</sub> =WS	As(ac)=340 As(ch)=0.02- 10(Trec) Cd(acch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CuI(acch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(acch)=TVS Mn(acch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(acch)=TVS Se(acch)=TVS Ag(acch)=TVS Ag(ch)=TVS Zn(acch)=TVS	

TABLE II INORGANIC PARAMETERS					
PARAMETER	AQUATIC LIFE			AGRICULTURE	DOMESTIC WATER SUPPLY
	CLASS 1 Cold Water Biota	CLASS 1 Warm Water Biota	CLASS 2		
<b>INORGANICS:</b>					
Ammonia (mg/l as N) Total	chronic = elsp or elsa <sup>(1)</sup> acute = sp <sup>(1)</sup> (N)	chronic = Apr 1-Aug 31=elsp <sup>(1)</sup> Sept 1-Mar 29=elsa <sup>(1)</sup> acute = sa <sup>(1)</sup> (N)	Class 2 Cold/Warm have the same standards as Class 1 Cold/Warm (N)		
Total residual Chlorine (mg/l)	0.019 (L) (1-day)	0.011 (L) (30-day)	0.011 (L) (30-day)		
Cyanide - Free (mg/l)	0.005(H) (1-day)	0.005(H) (1-day)	0.005(H) (1-day)	0.2(G) (1-day)	0.2(B,D <sup>m</sup> ) (1-day)
Fluoride (mg/l)					2.0 <sup>(3)</sup> (E) (1-day)
Nitrate (mg/l as N)				100 <sup>(2)</sup> (B)	10 <sup>(4)</sup> (K) (1-day)
Nitrite (mg/l as N)	TO BE ESTABLISHED ON A CASE BY CASE BASIS <sup>(3)</sup>			10 <sup>(2)</sup> (B) (1-day)	1.0(2) <sup>(4)</sup> (K) (1-day)
Sulfide as H <sub>2</sub> S (mg/l)	0.002 undissociated(A) (30-day)	0.002 undissociated(A) (30-day)	0.002 undissociated(A) (30-day)		0.05(F) (30-day)
Boron (mg/l)				0.75(A,B) (30-day)	
Chloride (mg/l)					250(F) (30-day)
Sulfate (mg/l)					250(F) (30-day)
Asbestos					7,000,000 fibers/L <sup>(6)</sup>

NOTE: Capital letters in parentheses refer to references listed 3.1.16(3); numbers in parentheses refer to table II footnotes.

**Table II – Footnotes**

(1)

Chronic:

For Fish Early Life Stage Present (elsp):

$$chronic\ elsp = \left( \frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) * MIN(2.85, 1.45 * 10^{0.028(25-T)})$$

For Fish Early Life Stage Absent (elsa):

$$chronic\ elsa = \left( \frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) * 1.45 * 10^{0.028*(25-MAX(T, 7))}$$

Acute:

For salmonids present (sp):

$$acute\ sp = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$$

For salmonids absent (sa):

$$acute\ sa = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

(2) In order to provide a reasonable margin of safety to allow for unusual situations such as extremely high water ingestion or nitrite formation in slurries, the NO<sub>3</sub>-N plus NO<sub>2</sub>-N content in drinking waters for livestock and poultry should be limited to 100ppm or less, and the NO<sub>2</sub>-N content alone be limited to 10ppm or less.

(3) Salmonids and other sensitive fish species present:

$$Acute = 0.10 (0.59 * [Cl^-] + 3.90) \text{ mg/l NO}_2\text{-N}$$

$$Chronic = 0.10 (0.29 * [Cl^-] + 0.53) \text{ mg/l NO}_2\text{-N}$$

(upper limit for Cl<sup>-</sup> = 40 mg/l)

Salmonids and other sensitive fish species absent:

$$Acute = 0.20 (2.00 * [Cl^-] + 0.73) \text{ mg/l NO}_2\text{-N}$$

$$Chronic = 0.10 (2.00 * [Cl^-] + 0.73) \text{ mg/l NO}_2\text{-N}$$

[Cl<sup>-</sup>] = Chloride ion concentration

(upper limit for Cl<sup>-</sup> = 22 mg/l)

- (4) The nitrate limit shall be calculated to meet the relevant standard in accordance with the provisions of Section 31.10 of this regulation, unless;
  - a. The permittee provides documentation that a reasonable level of inquiry demonstrates that there is no actual domestic water supply use of the waters in question or of hydrologically connected ground water, or
  - b. The combined total of nitrate plus nitrite at the point of intake to the domestic water supply will not exceed 10 mg/l as demonstrated through modeling or other scientifically supportable analysis
- (5) Asbestos standard applies to fibers 10 micrometers or longer.