



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 8

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September 27, 2006

Ref: 8-MO

Mr. Art Compton, Director  
Planning, Prevention and Assistance Division  
Department of Environmental Quality  
P.O. Box 200901  
Helena, MT 59620-0901

**RECEIVED**  
OCT - 2 2006  
DEQ  
Planning Division

Re: TMDL Approvals  
Lake Helena TPA

Dear Mr. Compton:

We have completed our review of the total maximum daily loads (TMDLs) as submitted by your office for the Lake Helena TMDL Planning Area (TPA). The TMDLs are included in the document entitled Framework Water Quality Restoration Plan and Total Maximum Daily Loads for the Lake Helena Planning Area - Volume II transmitted to us for review and approval in correspondence dated September 15, 2006 and signed by you. In accordance with the Clean Water Act (33 U.S.C. 1251 *et. seq.*), we approve all aspects of the TMDLs as developed for the Lake Helena TPA. Enclosure 1 to this letter provides a summary of the elements of the TMDLs and Enclosure 2 provides details of our review of the TMDLs.

Based on our review, we feel the separate TMDL elements listed in Enclosure 2 adequately address the pollutants of concern, taking into consideration seasonal variation and a margin of safety. In approving this TMDL, EPA affirms that the TMDLs have been established at a level necessary to attain and maintain the applicable water quality standards and has the necessary components of an approvable TMDL.

EPA has been in contact with the United States Fish and Wildlife Service (FWS) regarding whether and, if so, how the EPA's approval of the Lake Helena TPA TMDLs may affect the continued existence of any endangered or threatened species listed under the Endangered Species Act (ESA) or the designated critical habitat of any such species. EPA has not determined that today's approval may have such an affect. Therefore, consistent with the terms of a consent decree in the lawsuit of Friends of the Wild Swan, *et al.*, v. U.S. Environmental Protection Agency, *et al.*, Civil Action No. CV99-87-M-LBE, United States District Court for the District of Montana, Missoula Division, EPA has decided to approve these TMDLs contingent upon the outcome of consultation with the FWS.



Thank you for your submittal. If you have any questions concerning this approval, feel free to contact Ron Steg of my staff at (406) 457-5024.

Sincerely,



Max H. Dodson  
Assistant Regional Administrator  
Office of Ecosystems Protection and  
Remediation

Enclosures

cc: Claudia Massman, Attorney  
Montana Department of Environmental Quality  
P.O. Box 200901  
Helena, MT 59620-0901

Dean Yashan  
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**APPROVED TMDLS**  
**Lake Helena Planning Area**

103 pollutant TMDLs completed  
16 Determinations made that no pollutant TMDL was needed

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

Waterbody Name	TMDL Parameter/Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation
<b>Clancy Creek, MT41I006_120</b>	Siltation	<ul style="list-style-type: none"> <li>• % of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines &lt; 2.0 mm: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	2,486 tons/yr	WLA: 0 LA: 2,486 tons/yr	Volume I; Volume II – Appendix A, C, and D
	Nutrients	No nutrient TMDL needed, not exceeding the narrative nutrient standards.			Volume I
	Arsenic	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 340 µg/L</li> <li>• Aquatic Life (chronic): 150 µg/L</li> <li>• Human Health: 10 µg/L</li> </ul>	279.4 lbs/yr	WLA: 0 LA: 279.4 lbs/yr	Volume I; Volume II – Appendix A and F
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 2.3 µg/L at 105.6 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.3 µg/L at 105.6 mg/L hardness</li> <li>• Human Health: 5 µg/L</li> </ul>	13.2 lbs/yr	WLA: 0 LA: 13.2 lbs/yr	Volume I; Volume II – Appendix A and F
	Copper	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 14.6 µg/L at 105.6 mg/L hardness</li> <li>• Aquatic Life (chronic): 9.6 µg/L at 105.6 mg/L hardness</li> <li>• Human Health: 1,300 µg/L</li> </ul>	517.6 lbs/yr	WLA: 0 LA: 517.6 lbs/yr	Volume I; Volume II – Appendix A and F
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 86.3 µg/L at 105.6 mg/L hardness</li> <li>• Aquatic Life (chronic): 3.3 µg/L at 105.6 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	155.8 lbs/yr	WLA: 0 LA: 155.8 lbs/yr	Volume I; Volume II – Appendix A and F
	Mercury	Insufficient data, not addressed in Volume II.			

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation
	Zinc	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 126.5 µg/L at 105.6 mg/L hardness</li> <li>Aquatic Life (chronic): 126.5 µg/L at 105.6 mg/L hardness</li> <li>Human Health: 2,000 µg/L</li> </ul>	10,613.3 lbs/yr	WLA: 0 LA: 10,613.3 lbs/yr	Volume I; Volume II – Appendix A and F
<b>Corbin Creek, MT41I006_090</b>	pH	No TMDL needed, not exceeding the standards.			Volume I
	Suspended Solids	<ul style="list-style-type: none"> <li>% of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>% of surface fines &lt; 2.0 mm: 0.2</li> <li>Width/depth ratio: Comparable to reference values.</li> <li>BEHI: Comparable to reference values.</li> <li>D50: Comparable to reference values.</li> <li>PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>Macro IBI: To be determined</li> </ul>	368 tons/yr	WLA: 0 LA: 368 tons/yr	Volume I; Volume II – Appendix A, C, and D
	Arsenic	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 340 µg/L</li> <li>Aquatic Life (chronic): 150 µg/L</li> <li>Human Health: 10 µg/L</li> </ul>	36.2 lbs/yr	WLA: 0 LA: 36.2 lbs/yr	Volume I; Volume II – Appendix A and F
	Cadmium	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 8.95 µg/L at 400 mg/L hardness</li> <li>Aquatic Life (chronic): 0.75 µg/L at 400 mg/L hardness</li> <li>Human Health: 5 µg/L</li> </ul>	2.8 lbs/yr	WLA: 0 LA: 2.8 lbs/yr	Volume I; Volume II – Appendix A and F
	Copper	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 51.0 µg/L at 400 mg/L hardness</li> <li>Aquatic Life (chronic): 29.8 µg/L at 400 mg/L hardness</li> <li>Human Health: 1,300 µg/L</li> </ul>	114.6 lbs/yr	WLA: 0 LA: 114.6 lbs/yr	Volume I; Volume II – Appendix A and F
	Lead	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 468.3 µg/L at 400 mg/L hardness</li> <li>Aquatic Life (chronic): 18.2 µg/L at 400 mg/L hardness</li> <li>Human Health: 15 µg/L</li> </ul>	33.2 lbs/yr	WLA: 0 LA: 33.2 lbs/yr	Volume I; Volume II – Appendix A and F
	Zinc	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 392.6 µg/L at 400 mg/L hardness</li> <li>Aquatic Life (chronic): 392.6 µg/L at 400 mg/L hardness</li> <li>Human Health: 2,000 µg/L</li> </ul>	1,660.7 lbs/yr	WLA: 0 LA: 1,660.7 lbs/yr	Volume I; Volume II – Appendix A and F

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation
	Thermal Modifications	<ul style="list-style-type: none"> <li>• <math>\leq 1^{\circ}\text{F}</math> change when water temperature is <math>&lt; 67^{\circ}\text{F}</math></li> <li>• No significant disturbance of riparian vegetation; Riparian vegetation approaching the maximum potential.</li> <li>• MFISH rating of "best" or "substantial"</li> <li>• Maintain recommended MFWP flows</li> </ul>	Volume I stated that, "The available data suggest that impairments due to metals and siltation currently far outweigh any concerns posed by thermal modifications. Fisheries data suggest that the stream is not inhabited by fish. It is not recommended that a TMDL for temperature be prepared at this time. Once pollutant levels are reduced in the stream, Corbin Creek should be able to sustain a fish population and the application of the B-1 temperature targets would be appropriate."		
	Salinity/ TDS/Cl	Addressed as part of the metals goals and TMDLs. Volume I found that, "The impairment is likely associated with extremely high trace metals concentrations rather than high concentrations of sulfates, sodium, or chlorides. The project team finds that a specific TMDL to address salinity and total dissolved solids issues is not warranted pending implementation of a metals TMDL."			
<b>Golconda Creek, MT41006_070</b>	Unknown Toxicity	The 1996 list did not have more specific details about the "unknown toxicity." Investigations performed during the Volume I report revealed that the unknown toxicity was most likely due to metals. The impairment is addressed as part of the cadmium and lead TMDLs.			Volume I
	Suspended Solids/ Turbidity	No sediment TMDL needed, not exceeding the narrative standards.			Volume I
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 0.8 <math>\mu\text{g/L}</math> at 38.5 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.1 <math>\mu\text{g/L}</math> at 38.5 mg/L hardness</li> <li>• Human Health: 5 <math>\mu\text{g/L}</math></li> </ul>	0.7 lbs/yr	WLA: 0 LA: 0.7lbs/yr	Volume I; Volume II – Appendix A and F
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 23.9 <math>\mu\text{g/L}</math> at 38.5 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.9 <math>\mu\text{g/L}</math> at 38.5 mg/L hardness</li> <li>• Human Health: 15 <math>\mu\text{g/L}</math></li> </ul>	6.3 lbs/yr	WLA: 0 LA: 6.3 lbs/yr	Volume I; Volume II – Appendix A and F
<b>Granite Creek MT41006_179 (Tributary to Austin Creek)</b>	No pollutants	No TMDLs necessary.			Volume I
<b>Granite Creek, MT41006_230 (Tributary to Sevenmile Creek)</b>	Arsenic	No flow was observed in Granite Creek. Therefore, insufficient information is available to determine impairment status.			Volume I
	Cadmium	No flow was observed in Granite Creek. Therefore, insufficient information is available to determine impairment status.			Volume I
	Lead	No flow was observed in Granite Creek. Therefore, insufficient information is available to determine impairment status.			Volume I
<b>Jackson Creek, MT41006_190</b>	Siltation	No siltation TMDL needed, not exceeding the narrative standards.			Volume I

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<b>Waterbody Name</b>	<b>TMDL Parameter/ Pollutant</b>	<b>Water Quality Goal/Endpoint</b>	<b>TMDL</b>	<b>WLA LA</b>	<b>Supporting Documentation</b>
<b>Jennie's Fork, MT41I006_210</b>	Siltation	<ul style="list-style-type: none"> <li>• % of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines &lt; 2.0 mm: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	306 lbs/yr	WLA: 0 LA: 306 lbs/yr	Volume I; Volume II – Appendix A, C, and D
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 118.7 µg/L at 135.8 mg/L hardness</li> <li>• Aquatic Life (chronic): 4.6 µg/L at 135.8 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	8.4 lbs/yr	WLA: 0 LA: 8.4 lbs/yr	Volume I; Volume II – Appendix A and F
<b>Lake Helena, MT41I007_010</b>	Suspended Solids	Impairment status unknown. Volume I states, "insufficient information is available to evaluate the degree of potential sediment impairment in Lake Helena, if any. A suitable reference lake would be needed to evaluate the sediment impairment of Lake Helena."			Volume I
	Nutrients	Insufficient data are currently available to establish nutrient targets for Lake Helena. A strategy to establish targets in the future is presented in Volume II, Section 3.2.3. TMDLs are presented based on % reductions for Prickly Pear Creek (the largest tributary to Lake Helena).	TN: 226.2 tons/yr TP: 20.7 tons/yr	<b>TN</b> WLA: 4.4 tons/yr LA: 221.8 tons/yr <b>TP</b> WLA: 1.8 tons/yr LA: 18.9 tons/yr	Volume I Appendix A, C, D, E, I, and K Volume II, Section 3.2.3 (Nutrient Strategy)
	Arsenic	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 340 µg/L</li> <li>• Aquatic Life (chronic): 150 µg/L</li> <li>• Human Health: 10 µg/L</li> </ul>	5,104.2 lbs/yr	WLA: 149.2 lbs/yr LA: 4,955.0 lbs/yr	Volume I; Volume II – Appendices A and F
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 157.6 µg/L at 169.7 mg/L hardness</li> <li>• Aquatic Life (chronic): 6.1 µg/L at 169.7 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	2,798.0 lbs/yr	WLA: 66.8 lbs/yr LA: 2,731.2 lbs/yr	Volume I; Volume II – Appendices A and F
	Thermal Modifications	Unknown impairment status.			Volume I

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation
<b>Lump Gulch, MT41I006_130</b>	Suspended Solids	<ul style="list-style-type: none"> <li>• % of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines &lt; 2.0 mm: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	1,780 tons/yr	WLA: 0 LA: 1,780 tons/yr	Volume I; Volume II – Appendix A, C, and D
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 1.1 µg/L at 51.4 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.2 µg/L at 51.4 mg/L hardness</li> <li>• Human Health: 5 µg/L</li> </ul>	10.4 lbs/yr	WLA: 0 LA: 10.4 lbs/yr	Volume I; Volume II – Appendix A and F
	Copper	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 7.4 µg/L at 51.4 mg/L hardness</li> <li>• Aquatic Life (chronic): 5.2 µg/L at 51.4 mg/L hardness</li> <li>• Human Health: 1,300 µg/L</li> </ul>	452.8 lbs/yr	WLA: 0 LA: 452.8 lbs/yr	Volume I; Volume II – Appendix A and F
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 34.6 µg/L at 51.4 mg/L hardness</li> <li>• Aquatic Life (chronic): 1.3 µg/L at 51.4 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	135.3 lbs/yr	WLA: 0 LA: 135.3 lbs/yr	Volume I; Volume II – Appendix A and F
	Zinc	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 68.6 µg/L at 51.4 mg/L hardness</li> <li>• Aquatic Life (chronic): 68.6 µg/L at 501.4mg/L hardness</li> <li>• Human Health: 2,000 µg/L</li> </ul>	8,485.9 lbs/yr	WLA: 0 LA: 8,485.9 lbs/yr	Volume I; Volume II – Appendix A and F
	Mercury	Insufficient data, not addressed in Volume II.			
<b>Middle Fork Warm Springs Creek, MT41I006_100</b>	Siltation	<ul style="list-style-type: none"> <li>• % of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines &lt; 2.0 mm: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	Load allocations are presented as part of the Warm Springs Creek watershed TMDL.		Volume I; Volume II – Appendix A, C, and D

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

<b>Waterbody Name</b>	<b>TMDL Parameter/ Pollutant</b>	<b>Water Quality Goal/Endpoint</b>	<b>TMDL</b>	<b>WLA LA</b>	<b>Supporting Documentation</b>
	Arsenic	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 340 µg/L</li> <li>• Aquatic Life (chronic): 150 µg/L</li> <li>• Human Health: 10 µg/L</li> </ul>	Load allocations are presented as part of the Warm Springs Creek watershed TMDL.		Volume I; Volume II – Appendix A and F
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 1.3 µg/L at 61.2 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.2 µg/L at 61.2 mg/L hardness</li> <li>• Human Health: 5 µg/L</li> </ul>	Load allocations are presented as part of the Warm Springs Creek watershed TMDL.		Volume I; Volume II – Appendix A and F
	Copper	No copper TMDL needed, not exceeding the standards.			
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 43.2 µg/L at 61.2 mg/L hardness</li> <li>• Aquatic Life (chronic): 1.7 µg/L at 61.2 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	Load allocations are presented as part of the Warm Springs Creek watershed TMDL.		Volume I; Volume II – Appendix A and F
	Zinc	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 79.7 µg/L at 61.2 mg/L hardness</li> <li>• Aquatic Life (chronic): 79.7 µg/L at 61.2 mg/L hardness</li> <li>• Human Health: 2,000 µg/L</li> </ul>	Load allocations are presented as part of the Warm Springs Creek watershed TMDL.		Volume I; Volume II – Appendix A and F
	Mercury	Insufficient data, not addressed in Volume II.			
<b>North Fork Warm Springs Creek, MT41I006_180</b>	Siltation	<ul style="list-style-type: none"> <li>• % of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines &lt; 2.0 mm: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	Load allocations are presented as part of the Warm Springs Creek watershed TMDL.		Volume I; Volume II – Appendix A, C, and D
	Low DO, organic enrichment	No DO TMDL needed, not exceeding the standards.			Volume I
	Arsenic	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 340 µg/L</li> <li>• Aquatic Life (chronic): 150 µg/L</li> <li>• Human Health: 10 µg/L</li> </ul>	Load allocations are presented as part of the Warm Springs Creek watershed TMDL.		Volume I; Volume II – Appendix A and F
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 1.3 µg/L at 61.2 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.2 µg/L at 61.2 mg/L hardness</li> <li>• Human Health: 5 µg/L</li> </ul>	Load allocations are presented as part of the Warm Springs Creek watershed TMDL.		Volume I; Volume II – Appendix A and F



**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation
	Zinc	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 79.7 µg/L at 61.2 mg/L hardness</li> <li>• Aquatic Life (chronic): 79.7 µg/L at 61.2 mg/L hardness</li> <li>• Human Health: 2,000 µg/L</li> </ul>	Load allocations are presented as part of the Warm Springs Creek watershed TMDL.		Volume I; Volume II – Appendix A and F
Prickly Pear Creek, MT411006_060	Suspended Solids	<ul style="list-style-type: none"> <li>• % of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines &lt; 2.0 mm: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A, C, and D
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 238.5 µg/L at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 9.2 µg/L at 235.1 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F
Prickly Pear Creek, MT411006_050	Siltation	<ul style="list-style-type: none"> <li>• % of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines &lt; 2.0 mm: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A, C, and D
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 5.2 µg/L at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.5 µg/L at 235.1 mg/L hardness</li> <li>• Human Health: 5 µg/L</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 238.5 µg/L at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 9.2 µg/L at 235.1 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation
	Zinc	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 249.9 µg/L at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 249.9 µg/L at 235.1 mg/L hardness</li> <li>• Human Health: 2,000 µg/L</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F
<b>Prickly Pear Creek, MT411006_040</b>	Siltation	<ul style="list-style-type: none"> <li>• % of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines &lt; 2.0 mm: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A, C, and D
	Arsenic	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 340 µg/L</li> <li>• Aquatic Life (chronic): 150 µg/L</li> <li>• Human Health: 10 µg/L</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 5.2 µg/L at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.5 µg/L at 235.1 mg/L hardness</li> <li>• Human Health: 5 µg/L</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F
	Copper	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 31.0 µg/L at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 18.9 µg/L at 235.1 mg/L hardness</li> <li>• Human Health: 1,300 µg/L</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 238.5 µg/L at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 9.2 µg/L at 235.1 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F
	Zinc	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 249.9 µg/L at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 249.9 µg/L at 235.1 mg/L hardness</li> <li>• Human Health: 2,000 µg/L</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation
	Thermal Modifications	<ul style="list-style-type: none"> <li>• <math>\leq 1^\circ\text{F}</math> when water temperature is <math>&lt; 67^\circ\text{F}</math></li> <li>• 60 Percent Riparian Shade</li> <li>• MFISH rating of "best" or "substantial"</li> <li>• Maintain minimum MFWP recommended flows</li> </ul>	67 °F	WLA: LA: 67 °F	Volume I; Volume II – Appendix A, Appendix G, Appendix E
<b>Prickly Pear Creek, MT411006_030</b>	Siltation	<ul style="list-style-type: none"> <li>• % of subsurface fines <math>&lt; 6.4\text{ mm}</math>: <math>&lt; \text{or} =</math> to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines <math>&lt; 2.0\text{ mm}</math>: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A, C, and D
	Nutrients	TN: 0.33 mg/L TP: 0.04 mg/L (A strategy to revise these targets is presented in Volume II and Appendix I)	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Appendix A, C, D, E, I, and K Volume II, Section 3.2.3 (Nutrient Strategy)
	Arsenic	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 340 <math>\mu\text{g/L}</math></li> <li>• Aquatic Life (chronic): 150 <math>\mu\text{g/L}</math></li> <li>• Human Health: 10 <math>\mu\text{g/L}</math></li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 5.2 <math>\mu\text{g/L}</math> at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.5 <math>\mu\text{g/L}</math> at 235.1 mg/L hardness</li> <li>• Human Health: 5 <math>\mu\text{g/L}</math></li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F
	Copper	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 31.0 <math>\mu\text{g/L}</math> at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 18.9 <math>\mu\text{g/L}</math> at 235.1 mg/L hardness</li> <li>• Human Health: 1,300 <math>\mu\text{g/L}</math></li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 238.5 <math>\mu\text{g/L}</math> at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 9.2 <math>\mu\text{g/L}</math> at 235.1 mg/L hardness</li> <li>• Human Health: 15 <math>\mu\text{g/L}</math></li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F
	Zinc	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 249.9 <math>\mu\text{g/L}</math> at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 249.9 <math>\mu\text{g/L}</math> at 235.1 mg/L hardness</li> <li>• Human Health: 2,000 <math>\mu\text{g/L}</math></li> </ul>	Load allocations are presented as part of the Prickly Pear Creek watershed TMDL (Segment MT411006_020).		Volume I; Volume II – Appendix A and F

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

<b>Waterbody Name</b>	<b>TMDL Parameter/ Pollutant</b>	<b>Water Quality Goal/Endpoint</b>	<b>TMDL</b>	<b>WLA LA</b>	<b>Supporting Documentation</b>	
	Thermal Modifications	<ul style="list-style-type: none"> <li>• ≤ 1° F when water temperature is &lt; 67° F</li> <li>• 60 Percent Riparian Shade</li> <li>• MFISH rating of "best" or "substantial"</li> <li>• Maintain minimum MFWP recommended flows</li> </ul>	No TMDL is presented at this time. This segment is completely dewatered during critical summer low flow conditions. Reassessment should occur once the stream meets recommended minimum summer flows.		Volume I; Volume II – Appendix A, Appendix G, Appendix E	
<b>Prickly Pear Creek, MT41I006_020</b>	Siltation	<ul style="list-style-type: none"> <li>• % of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines &lt; 2.0 mm: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	24,186 tons/yr	WLA: 54 tons/yr LA: 24,132 tons/yr	Volume I; Volume II – Appendix A, C, and D	
	Nutrients	TN: 0.33 mg/L TP: 0.04 mg/L (A strategy to revise these targets is presented in Volume II and Appendix I)	TN: 111.7 tons/yr TP: 13.6 tons/yr	<b>TN</b> WLA: 3.7 tons/yr LA: 108.0 tons/yr  <b>TP</b> WLA: 1.6 tons/yr LA: 12.0 tons/yr	Volume I; Appendix A, C, D, E, and I; Volume II, Section 3.2.3 (Nutrient Strategy)	
	Ammonia	No ammonia TMDL needed, not exceeding the standards.				Volume I
	Arsenic	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 340 µg/L</li> <li>• Aquatic Life (chronic): 150 µg/L</li> <li>• Human Health: 10 µg/L</li> </ul>	3,943 lbs/yr	WLA: 149 lbs/yr LA: 3,794 lbs/yr	Volume I; Volume II – Appendix A and F	
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 5.2 µg/L at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.5 µg/L at 235.1 mg/L hardness</li> <li>• Human Health: 5 µg/L</li> </ul>	171 lbs/yr	WLA: 12 lbs/yr LA: 159 lbs/yr	Volume I; Volume II – Appendix A and F	
	Copper	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 31.0 µg/L at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 18.9 µg/L at 235.1 mg/L hardness</li> <li>• Human Health: 1,300 µg/L</li> </ul>	5,969 lbs/yr	WLA: 149 lbs/yr LA: 5,820 lbs/yr	Volume I; Volume II – Appendix A and F	
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 238.5 µg/L at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 9.2 µg/L at 235.1 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	2,082 lbs/yr	WLA: 67 lbs/yr LA: 2,015 lbs/yr	Volume I; Volume II – Appendix A and F	

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

<b>Waterbody Name</b>	<b>TMDL Parameter/ Pollutant</b>	<b>Water Quality Goal/Endpoint</b>	<b>TMDL</b>	<b>WLA LA</b>	<b>Supporting Documentation</b>
	Zinc	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 249.9 µg/L at 235.1 mg/L hardness</li> <li>• Aquatic Life (chronic): 249.9 µg/L at 235.1 mg/L hardness</li> <li>• Human Health: 2,000 µg/L</li> </ul>	118,617 lbs/yr	WLA: 1,977 lbs/yr LA: 116,640 lbs/yr	Volume I; Volume II – Appendix A and F
	Thermal Modifications	<ul style="list-style-type: none"> <li>• ≤ 1° F when water temperature is &lt; 67 ° F</li> <li>• 60 Percent Riparian Shade</li> <li>• MFISH rating of “best” or “substantial”</li> <li>• Maintain minimum MFWP recommended flows</li> </ul>	No TMDL is presented at this time. This previous segment is completely dewatered during critical summer low flow conditions. Reassessment should occur once the stream meets recommended minimum summer flows.		Volume I; Volume II – Appendix A, Appendix G, Appendix E
<b>Prickly Pear Creek, MT41I006_010</b>	Metals	This segment of Prickly Pear Creek is located downstream of Lake Helena, and is therefore outside the scope of this assessment. Segment MT41I006_010 will be assessed at a future date as part of the Hauser Lake/Missouri River Planning Area.			
<b>Sevenmile Creek, MT41I006_160</b>	Siltation	<ul style="list-style-type: none"> <li>• % of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines &lt; 2.0 mm: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	3100 tons/yr	WLA: 0 LA: 3100 tons/yr	Volume I; Volume II – Appendix A, C, and D
	Nutrients	TN: 0.33 mg/L TP: 0.04 mg/L (A strategy to revise these targets is presented in Volume II and Appendix I)	TN: 12.26 tons/yr TP: 1.59 tons/yr	<b>TN</b> WLA: 0 LA: 12.26 tons/yr  <b>TP</b> WLA: 0 ton/yr LA: 1.59 tons/yr	Volume I; Appendix A, C, D, E, I, and K Volume II, Section 3.2.3 (Nutrient Strategy)
	Arsenic	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 340 µg/L</li> <li>• Aquatic Life (chronic): 150 µg/L</li> <li>• Human Health: 10 µg/L</li> </ul>	578.7 lbs/yr	WLA: 0 LA: 578.7 lbs/yr	Volume I; Volume II – Appendix A and F
	Copper	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 33.6 µg/L at 256.4 mg/L hardness</li> <li>• Aquatic Life (chronic): 20.4 µg/L at 256.4 mg/L hardness</li> <li>• Human Health: 1,300 µg/L</li> </ul>	828.0 lbs/yr	WLA: 0 LA: 828.0 lbs/yr	Volume I; Volume II – Appendix A and F

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation
	Lead	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 266.2 µg/L at 256.4 mg/L hardness</li> <li>Aquatic Life (chronic): 10.3 µg/L at 256.4 mg/L hardness</li> <li>Human Health: 15 µg/L</li> </ul>	283.7 lbs/yr	WLA: 0 LA: 283.7 lbs/yr	Volume I; Volume II – Appendix A and F
<b>Silver Creek, MT41I006_150</b>	Arsenic	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 340 µg/L</li> <li>Aquatic Life (chronic): 150 µg/L</li> <li>Human Health: 10 µg/L</li> </ul>	968.3 lbs/yr	WLA: 0 LA: 968.3 lbs/yr	Volume I; Volume II – Appendix A and F
	Priority organics	No TMDL needed, not exceeding standards.			Volume I
<b>Skelly Gulch, MT41I006_220</b>	Siltation	<ul style="list-style-type: none"> <li>% of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>% of surface fines &lt; 2.0 mm: 0.2</li> <li>Width/depth ratio: Comparable to reference values.</li> <li>BEHI: Comparable to reference values.</li> <li>D50: Comparable to reference values.</li> <li>PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>Macro IBI: To be determined</li> </ul>	1,097 tons/yr	WLA: 0 LA: 1,097 tons/yr	Volume I; Volume II – Appendix A, C, and D
	Metals	No TMDL needed, not exceeding standards.			Volume I
<b>Spring Creek, MT41I006_080</b>	Suspended Solids	<ul style="list-style-type: none"> <li>% of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>% of surface fines &lt; 2.0 mm: 0.2</li> <li>Width/depth ratio: Comparable to reference values.</li> <li>BEHI: Comparable to reference values.</li> <li>D50: Comparable to reference values.</li> <li>PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>Macro IBI: To be determined</li> </ul>	1,954 tons/yr	WLA: 0 LA: 1,954 tons/yr	Volume I; Volume II – Appendix A, C, and D
	Nutrients	TN: 0.33 mg/L TP: 0.04 mg/L (A strategy to revise these targets is presented in Volume II and Appendix I)	TN: 5.84 tons/yr TP: 0.95 tons/yr	<b>TN</b> WLA: 0 LA: 5.84 tons/yr  <b>TP</b> WLA: 0 LA: 0.95 tons/yr	Volume I; Appendix A, C, D, E, I, and K Volume II, Section 3.2.3 (Nutrient Strategy)
	Arsenic	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 340 µg/L</li> <li>Aquatic Life (chronic): 150 µg/L</li> <li>Human Health: 10 µg/L</li> </ul>	294.6 lbs/yr	WLA: 81.2 lbs/yr LA: 213.4 lbs/yr	Volume I; Volume II – Appendix A and F

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

<b>Waterbody Name</b>	<b>TMDL Parameter/ Pollutant</b>	<b>Water Quality Goal/Endpoint</b>	<b>TMDL</b>	<b>WLA LA</b>	<b>Supporting Documentation</b>
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 8.95 µg/L at 400 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.75 µg/L at 400 mg/L hardness</li> <li>• Human Health: 5 µg/L</li> </ul>	15.9 lbs/yr	WLA: 4.1 lbs/yr LA: 11.8 lbs/yr	Volume I; Volume II – Appendix A and F
	Copper	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 51.0 µg/L at 400 mg/L hardness</li> <li>• Aquatic Life (chronic): 29.8 µg/L at 400 mg/L hardness</li> <li>• Human Health: 1,300 µg/L</li> </ul>	668.0 lbs/yr	WLA: 77.6 lbs/yr LA: 590.4 lbs/yr	Volume I; Volume II – Appendix A and F
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 468.3 µg/L at 400 mg/L hardness</li> <li>• Aquatic Life (chronic): 18.2 µg/L at 400 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	219.8 lbs/yr	WLA: 51.1 lbs/yr LA: 168.7 lbs/yr	Volume I; Volume II – Appendix A and F
	Zinc	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 392.6 µg/L at 400 mg/L hardness</li> <li>• Aquatic Life (chronic): 392.6 µg/L at 400 mg/L hardness</li> <li>• Human Health: 2,000 µg/L</li> </ul>	14,399 lbs/yr	WLA: 1,770 lbs/yr LA: 12629 lbs/yr	Volume I; Volume II – Appendix A and F
	pH	No TMDL needed, not exceeding standards.			
<b>Tenmile Creek, MT411006_141</b>	Siltation	No TMDL needed, not exceeding standards.			Volume I
	pH	No TMDL needed, not exceeding standards.			Volume I
	Arsenic	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 340 µg/L</li> <li>• Aquatic Life (chronic): 150 µg/L</li> <li>• Human Health: 10 µg/L</li> </ul>	Load allocations are presented as part of the Tenmile Creek watershed TMDL (Segment MT411006_143).		Volume I; Volume II – Appendix A and F
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 2.3 µg/L at 106.5 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.3 µg/L at 106.5 mg/L hardness</li> <li>• Human Health: 5 µg/L</li> </ul>	Load allocations are presented as part of the Tenmile Creek watershed TMDL (Segment MT411006_143).		Volume I; Volume II – Appendix A and F
	Copper	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 14.7 µg/L at 106.5 mg/L hardness</li> <li>• Aquatic Life (chronic): 9.7 µg/L at 106.5 mg/L hardness</li> <li>• Human Health: 1,300 µg/L</li> </ul>	Load allocations are presented as part of the Tenmile Creek watershed TMDL (Segment MT411006_143).		Volume I; Volume II – Appendix A and F
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 87.2 µg/L at 106.5 mg/L hardness</li> <li>• Aquatic Life (chronic): 3.4 µg/L at 106.5 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	Load allocations are presented as part of the Tenmile Creek watershed TMDL (Segment MT411006_143).		Volume I; Volume II – Appendix A and F
	Mercury	Insufficient data, not addressed in Volume II.			

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

Waterbody Name	TMDL Parameter/Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation
	Zinc	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 127.5 µg/L at 106.5 mg/L hardness</li> <li>Aquatic Life (chronic): 127.5 µg/L at 106.5 mg/L hardness</li> <li>Human Health: 2,000 µg/L</li> </ul>	Load allocations are presented as part of the Tenmile Creek watershed TMDL (Segment MT411006_143).		Volume I; Volume II – Appendix A and F
<b>Tenmile Creek, MT411006_142</b>	pH	No TMDL needed, not exceeding standards.			Volume I
	Siltation	<ul style="list-style-type: none"> <li>% of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>% of surface fines &lt; 2.0 mm: 0.2</li> <li>Width/depth ratio: Comparable to reference values.</li> <li>BEHI: Comparable to reference values.</li> <li>D50: Comparable to reference values.</li> <li>PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>Macro IBI: To be determined</li> </ul>	Load allocations are presented as part of the Tenmile Creek watershed TMDL (Segment MT411006_143).		Volume I; Volume II – Appendix A, C, and D
	Arsenic	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 340 µg/L</li> <li>Aquatic Life (chronic): 150 µg/L</li> <li>Human Health: 10 µg/L</li> </ul>	Load allocations are presented as part of the Tenmile Creek watershed TMDL (Segment MT411006_143).		Volume I; Volume II – Appendix A and F
	Cadmium	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 2.3 µg/L at 106.5 mg/L hardness</li> <li>Aquatic Life (chronic): 0.3 µg/L at 106.5 mg/L hardness</li> <li>Human Health: 5 µg/L</li> </ul>	Load allocations are presented as part of the Tenmile Creek watershed TMDL (Segment MT411006_143).		Volume I; Volume II – Appendix A and F
	Copper	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 14.7 µg/L at 106.5 mg/L hardness</li> <li>Aquatic Life (chronic): 9.7 µg/L at 106.5 mg/L hardness</li> <li>Human Health: 1,300 µg/L</li> </ul>	Load allocations are presented as part of the Tenmile Creek watershed TMDL (Segment MT411006_143).		Volume I; Volume II – Appendix A and F
	Lead	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 87.2 µg/L at 106.5 mg/L hardness</li> <li>Aquatic Life (chronic): 3.4 µg/L at 106.5 mg/L hardness</li> <li>Human Health: 15 µg/L</li> </ul>	Load allocations are presented as part of the Tenmile Creek watershed TMDL (Segment MT411006_143).		Volume I; Volume II – Appendix A and F
	Zinc	<ul style="list-style-type: none"> <li>Aquatic Life (acute): 127.5 µg/L at 106.5 mg/L hardness</li> <li>Aquatic Life (chronic): 127.5 µg/L at 106.5 mg/L hardness</li> <li>Human Health: 2,000 µg/L</li> </ul>	Load allocations are presented as part of the Tenmile Creek watershed TMDL (Segment MT411006_143).		Volume I; Volume II – Appendix A and F
<b>Tenmile Creek, MT411006_143</b>	Mercury	Insufficient data, not addressed in Volume II.			
	pH	No TMDL needed, not exceeding standards.			Volume I



**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation
	Siltation	<ul style="list-style-type: none"> <li>• % of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines &lt; 2.0 mm: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	8,247 tons/yr	WLA: 0 LA: 8,247 tons/yr	Volume I; Volume II – Appendix A, C, and D
	Nutrients	TN: 0.33 mg/L TP: 0.04 mg/L (A strategy to revise these targets is presented in Volume II and Appendix I)	TN: 44.47 tons/yr TP: 4.39 tons/yr	<b>TN</b> WLA: 0 LA: 44.47 tons/yr <b>TP</b> WLA: 0 LA: 4.39 tons/yr	Volume I; Appendix A, C, D, E, I, and K Volume II, Section 3.2.3 (Nutrient Strategy)
	Arsenic	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 340 µg/L</li> <li>• Aquatic Life (chronic): 150 µg/L</li> <li>• Human Health: 10 µg/L</li> </ul>	1,912.6 lbs/yr	WLA: 0 LA: 1,912.6 lbs/yr	Volume I; Volume II – Appendix A and F
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 2.3 µg/L at 106.5 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.3 µg/L at 106.5 mg/L hardness</li> <li>• Human Health: 5 µg/L</li> </ul>	67.6 lbs/yr	WLA: 0 LA: 67.6 lbs/yr	Volume I; Volume II – Appendix A and F
	Copper	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 14.7 µg/L at 106.5 mg/L hardness</li> <li>• Aquatic Life (chronic): 9.7 µg/L at 106.5 mg/L hardness</li> <li>• Human Health: 1,300 µg/L</li> </ul>	2,232.4 lbs/yr	WLA: 0 LA: 2,232.4 lbs/yr	Volume I; Volume II – Appendix A and F
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 87.2 µg/L at 106.5 mg/L hardness</li> <li>• Aquatic Life (chronic): 3.4 µg/L at 106.5 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	734.1 lbs/yr	WLA: 0 LA: 734.1 lbs/yr	Volume I; Volume II – Appendix A and F
	Zinc	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 127.5 µg/L at 106.5 mg/L hardness</li> <li>• Aquatic Life (chronic): 127.5 µg/L at 106.5 mg/L hardness</li> <li>• Human Health: 2,000 µg/L</li> </ul>	43,706.0 lbs/yr	WLA: 0 LA: 43,706.0 lbs/yr	Volume I; Volume II – Appendix A and F

**Summary of 303(d) listed streams, pollutants, and TMDLs in the Lake Helena watershed.**

Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation
<b>Warm Springs Creek, MT41I006_110</b>	Siltation	<ul style="list-style-type: none"> <li>• % of subsurface fines &lt; 6.4 mm: &lt; or = to the average value for all Helena National Forest reference stream core samples</li> <li>• % of surface fines &lt; 2.0 mm: 0.2</li> <li>• Width/depth ratio: Comparable to reference values.</li> <li>• BEHI: Comparable to reference values.</li> <li>• D50: Comparable to reference values.</li> <li>• PFC: Proper Functioning Condition or "Functional - at Risk" with an upward trend.</li> <li>• Macro IBI: To be determined</li> </ul>	1,030 tons/yr	WLA: 0 LA: 1,030 tons/yr	Volume I; Volume II – Appendix A, C, and D
	Arsenic	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 340 µg/L</li> <li>• Aquatic Life (chronic): 150 µg/L</li> <li>• Human Health: 10 µg/L</li> </ul>	195.0 lbs/yr	WLA: 0 LA: 195.0 lbs/yr	Volume I; Volume II – Appendix A and F
	Cadmium	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 1.3 µg/L at 61.2 mg/L hardness</li> <li>• Aquatic Life (chronic): 0.2 µg/L at 61.2 mg/L hardness</li> <li>• Human Health: 5 µg/L</li> </ul>	5.5 lbs/yr	WLA: 0 LA: 5.5 lbs/yr	Volume I; Volume II – Appendix A and F
	Lead	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 43.2 µg/L at 61.2 mg/L hardness</li> <li>• Aquatic Life (chronic): 1.7 µg/L at 61.2 mg/L hardness</li> <li>• Human Health: 15 µg/L</li> </ul>	70.0 lbs/yr	WLA: 0 LA: 70.0 lbs/yr	Volume I; Volume II – Appendix A and F
	Zinc	<ul style="list-style-type: none"> <li>• Aquatic Life (acute): 79.7 µg/L at 61.2 mg/L hardness</li> <li>• Aquatic Life (chronic): 79.7 µg/L at 61.2 mg/L hardness</li> <li>• Human Health: 2,000 µg/L</li> </ul>	3,970.5 lbs/yr	WLA: 0 LA: 3,970.5 lbs/yr	Volume I; Volume II – Appendix A and F

EPA REGION VIII TMDL REVIEW FORM

Document Name:	Framework Water Quality Restoration Plan and Total Maximum Daily Loads for the Lake Helena Watershed Planning Area: Volume II – Final Report
Submitted by:	Montana DEQ
Date Received:	September 18, 2006
Review Date:	September 22, 2006
Reviewer:	Ron Steg
Formal or Informal Review?	Formal

This document provides a standard format for the EPA Region VIII to provide comments to States on TMDL documents provided to the EPA for either official formal or informal review. All TMDL documents are measured against the following 12 review criteria:

1. Water Quality Impairment Status
2. Water Quality Standards
3. Water Quality Targets
4. Significant Sources
5. Total Maximum Daily Load
6. Allocation
7. Margin of Safety and Seasonality
8. Monitoring Strategy
9. Restoration Strategy
10. Public Participation
11. Endangered Species Act Compliance
12. Technical Analysis

Each of the 12 review criteria are described below to provide the rationale for the review, followed by EPA's summary and comments/questions. **Comments/questions that need to be addressed are presented in bold.** This review is intended to ensure compliance with the Clean Water Act and also to ensure that the reviewed documents are technically sound and the conclusions are technically defensible.

## 1. Water Quality Impairment Status

### *Criterion Description – Water Quality Impairment Status*

*documents must include a description of the listed water quality impairments. While the 303(d) list identifies probable causes and sources of water quality impairments, the information contained in the 303(d) list is generally not sufficiently detailed to provide the reader with an adequate understanding of the impairments. TMDL documents should include a thorough description/summary of all available water quality data such that the water quality impairments are clearly defined and linked to the impaired beneficial uses and/or appropriate water quality standards.*

- Satisfies Criterion
- Satisfies Criterion with stipulations provided below that must be addressed.
- Satisfies Criterion. Questions or comments provided below should be considered.
- Partially satisfies criterion. Questions or comments provided below need to be addressed.
- Criterion not satisfied. Questions or comments provided below need to be addressed.
- Not a required element in this case. Comments or questions provided for informational purposes.

It should be noted that the narrative in Section 15 of Volume II, Appendix A incorrectly reports that 131 water-body pollutant combinations were evaluated and that 118 have been addressed (either by completion of TMDLs or demonstrating that no TMDLs are necessary).

Based on EPA review, 134 303(d) listed waterbody-pollutant combinations were evaluated for the Lake Helena TMDL Planning Area. This evaluation is summarized in Volume I. Of these, 103 have been addressed through the completion of TMDLs, and 16 by providing documentation that water quality standards are currently met and no TMDL is necessary. The remaining 15 have not been addressed due to lack of sufficient data to determine the current impairment status or insufficient data to complete the necessary TMDLs. Enclosure 1 (adapted from Table 15-1 in Appendix A) provides a review of all of the 303(d) listed waterbodies described above, including their impairment status, targets/goals, TMDLs, and supporting documentation.



## 2. Water Quality Standards

### Criterion Description – Water Quality Standards

*The TMDL document must include a description of all applicable water quality standards for all affected jurisdictions. TMDLs result in maintaining and attaining water quality standards. Water quality standards are the basis from which TMDL's are established and the TMDL targets are derived, including the numeric, narrative, use classification, and antidegradation components of the standards.*

- Satisfies Criterion
- Satisfies Criterion with stipulations provided below that must be addressed.
- Satisfies Criterion. Questions or comments provided below should be considered.
- Partially satisfies criterion. Questions or comments provided below need to be addressed.
- Criterion not satisfied. Questions or comments provided below need to be addressed.
- Not a required element in this case. Comments or questions provided for informational purposes.

The applicable water quality standards are summarized in Appendix B of Volume I and reiterated, as necessary, in Appendix A of Volume II.

## 3. Water Quality Targets

### Criterion Description – Water Quality Targets

*Quantified targets or endpoints must be provided to address each listed pollutant/water body combination. Target values must represent achievement of applicable water quality standards and support of associated beneficial uses. For pollutants with numeric water quality standards, the numeric criteria are generally used as the TMDL target. For pollutants with narrative standards, the narrative standard must be translated into a measurable value. At a minimum, one target is required for each pollutant/water body combination. It is generally desirable, however, to include several targets that represent achievement of the standard and support of beneficial uses (e.g., for a sediment impairment issue it may be appropriate to include targets representing water column sediment such as TSS, embeddeness, stream morphology, up-slope conditions, and a measure of biota).*

- Satisfies Criterion
- Satisfies Criterion with stipulations provided below that must be addressed.
- Satisfies Criterion. Questions or comments provided below should be considered.
- Partially satisfies criterion. Questions or comments provided below need to be addressed.
- Criterion not satisfied. Questions or comments provided below need to be addressed.
- Not a required element in this case. Comments or questions provided for informational purposes.

The water quality targets for every water body/pollutant combination addressed in Volume II are presented in Enclosure 1. For metals, the targets include the acute and chronic aquatic life, and human health criteria with appropriate adjustments for hardness. Temperature targets include a direct application of the standard (i.e., < 1-degree fahrenheit change from natural), percent shade, fisheries measures, and in-stream flow goals. It should be noted that the in-stream flow goals are voluntary. For sediment, a suite of physical and biological targets have been presented. For nutrients, numeric TN and TP targets representing the reference condition are presented based on the best available data and information. Given uncertainties associated with the nutrient targets, an adaptive management strategy has been proposed in Section 3.2.3.1. The adaptive management strategy allows for immediate action to address an identified nutrient problem while providing a mechanism to modify the targets in



the future in consideration of additional monitoring, potential adoption of numeric nutrient standards by MDEQ, and the feasibility of implementing them in wasteload allocations.

#### 4. Significant Sources

##### *Criterion Description – Significant Sources*

*TMDLs must consider all significant sources of the stressor of concern. All sources or causes of the stressor must be identified or accounted for in some manner. The detail provided in the source assessment step drives the rigor of the allocation step. In other words, it is only possible to specifically allocate quantifiable loads or load reductions to each significant source when the relative load contribution from each source has been estimated. Ideally, therefore, the pollutant load from each significant source should be quantified. This can be accomplished using site-specific monitoring data, modeling, or application of other assessment techniques. If insufficient time or resources are available to accomplish this step, a phased/adaptive management approach can be employed so long as the approach is clearly defined in the document.*

- Satisfies Criterion
- Satisfies Criterion with stipulations provided below that must be addressed.
- Satisfies Criterion. Questions or comments provided below should be considered.
- Partially satisfies criterion. Questions or comments provided below need to be addressed.
- Criterion not satisfied. Questions or comments provided below need to be addressed.
- Not a required element in this case. Comments or questions provided for informational purposes.

For a watershed as large as Lake Helena's, the level of source assessment conducted to support development of the TMDLs presented in Volume II is extensive and includes:

- A preliminary source assessment conducted in the first phase of this effort and summarized in Volume I (Appendix C). This involved a general characterization of the types, locations, and severity of pollution sources based on aerial photographic review and field reconnaissance.
- USFS source assessment survey of the Helena National Forest portion of the Lake Helena Watershed.
- Supplemental source assessment using remote and field based techniques for sediment (Volume II Appendix D)
- Field review of Helena's storm water management system during a runoff event (Volume II Appendix E)
- Temperature models were set-up and used to evaluate the affect of various sources (i.e., shade and flow as described in Volume II Appendix G).
- LSPC was set-up and used to quantify the relative importance of various metals sources (Volume II Appendix F)
- GWLF was set-up and used to quantify the relative importance of sediment and nutrient sources (Volume II Appendix C)

The level of source assessment that has been conducted is adequate for development of the TMDLs and development of a framework water quality restoration plan focusing on identification of the most significant sources of pollutants and solutions at the watershed scale.

As expected for any large watershed scale analysis, additional site-specific source assessment may be needed in the future prior to implementation. Volume II acknowledges this and some of the future monitoring needs have been identified and addressed in the Supplemental Monitoring and Assessment Strategy presented in Volume II, Appendix H.

5. TMDL

**Criterion Description – Total Maximum Daily Load**

*TMDLs include a quantified pollutant reduction target. According to EPA reg (see 40 C.F.R. 130.2(i)) TMDLs can be expressed as mass per unit of time, toxicity, % load reduction, or other measure. TMDLs must address, either singly or in combination, each listed pollutant/water body combination.*

- Satisfies Criterion
- Satisfies Criterion with stipulations provided below that must be addressed.
- Satisfies Criterion. Questions or comments provided below should be considered.
- Partially satisfies criterion. Questions or comments provided below need to be addressed.
- Criterion not satisfied. Questions or comments provided below need to be addressed.
- Not a required element in this case. Comments or questions provided for informational purposes.

The TMDLs are presented and described in Volume II, Appendix A. As described in # 1 above, 103 water body pollutant combinations have been addressed through completion of TMDLs (see Enclosure 1).



## 6. Allocation

### Criterion Description – Allocation

*TMDLs apportion responsibility for taking actions or allocate the available assimilative capacity among the various point, nonpoint, and natural pollutant sources. Allocations may be expressed in a variety of ways such as by individual discharger, by tributary watershed, by source or land use category, by land parcel, or other appropriate scale or dividing of responsibility. A performance based allocation approach, where a detailed strategy is articulated for the application of BMPs, may also be appropriate for non point sources.*

*In cases where there is substantial uncertainty regarding the linkage between the proposed allocations and achievement of water quality standards, it may be necessary to employ a phased or adaptive management approach (e.g., establish a monitoring plan to determine if the proposed allocations are, in fact, leading to the desired water quality improvements).*

*Allocating load reductions to specific sources is generally the most contentious and politically sensitive component of the TMDL process. It is also the step in the process where management direction is provided to actually achieve the desired load reductions. In many ways, it is a prioritization of restoration activities that need to occur to restore water quality. For these reasons, every effort should be made to be as detailed as possible and also, to base all conclusions on the best available scientific principles.*

- Satisfies Criterion
- Satisfies Criterion with stipulations provided below that must be addressed.
- Satisfies Criterion. Questions or comments provided below should be considered.
- Partially satisfies criterion. Questions or comments provided below need to be addressed.
- Criterion not satisfied. Questions or comments provided below need to be addressed.
- Not a required element in this case. Comments or questions provided for informational purposes.

Both the TMDLs and allocations are presented in tabular form in Volume II, Appendix A. The allocations have been presented in mass/year and percent reduction, as well as mass/day where appropriate and all appear to be adequate. However, the phased wasteload allocations and allocations to permitted stormwater discharges deserve special mention since they are not commonly applied.

#### Phased Wasteload Allocations

As described in the main Volume II document and Volume II, Appendix I, phased wasteload allocations are proposed for nutrient discharges from point sources. In summary, this phased approach acknowledges uncertainties, provides an adaptive management strategy to address the uncertainties, and provides approximately 8-years for the point source dischargers to adapt to more stringent discharge limits. The dischargers will have roughly 8-years to comply with the nutrient limits established in the wasteload allocation, and the limits presented in the TMDL document may be modified based on application of the adaptive management strategy. The TMDLs will need to be modified in the future if the nutrient targets are modified in the future.

#### Stormwater Allocations

Although internal EPA guidance provided in a November 22, 2002 memorandum (Wayland, 2002) suggests that NPDES-regulated storm water discharges must be addressed by the Wasteload Allocation (WLA) component of TMDLs, no numeric wasteload allocations have been specifically provided for the permitted stormwater dischargers in the Lake Helena Watershed. This is appropriate in this case since: 1) permitted stormwater discharge does not currently constitute a significant portion of the pollutant load to the subject water bodies, and 2) the most



significant permitted stormwater source (i.e., the City of Helena) has just recently been authorized to discharge under Montana's General Permit for Small Municipal Separate Storm Sewer Systems and the general permit does not contain numeric pollutant load limits. It is recommended that Montana DEQ consider numeric pollutant load limits when this authorization to discharge is re-authorized in the future.

7. Margin of Safety and Seasonality

**Criterion Description – Margin of Safety/Seasonality**

*A margin of safety (MOS) is a required component of the TMDL that accounts for the uncertainty about the relationship between the pollutant loads and the quality of the receiving water body (303(d)(1)(c)). The MOS can be implicitly expressed by incorporating a margin of safety into conservative assumptions used to develop the TMDL. In other cases, the MOS can be built in as a separate component of the TMDL (in this case, quantitatively, a TMDL = WLA + LA + MOS). In all cases, specific documentation describing the rationale for the MOS is required.*

*Seasonal considerations, such as critical flow periods (high flow, low flow), also need to be considered when establishing TMDLs, targets, and allocations.*

- Satisfies Criterion
- Satisfies Criterion with stipulations provided below that must be addressed.
- Satisfies Criterion. Questions or comments provided below should be considered.
- Partially satisfies criterion. Questions or comments provided below need to be addressed.
- Criterion not satisfied. Questions or comments provided below need to be addressed.
- Not a required element in this case. Comments or questions provided for informational purposes.

An implicit margin of safety has been applied to the nutrient and sediment TMDLs and an explicit MOS has been applied to the metals and temperature TMDLs. Many of the allocations to individual source categories for sediment and nutrients assume that no BMPs have been applied to date and are expressed as the maximum attainable load reduction based on literature values, assuming full (100%) application of BMPs in the future. Basically, this represents the best case scenario for future implementation and is assumed to be an overestimate (all BMPs are applied to all sources and literature-based reductions are attained). Given that it is an overestimate, this provides a built-in margin of safety for the nutrient and sediment TMDLs. For metals, a 5% MOS has been applied. For temperature, a 0.5 degree Fahrenheit MOS has been applied.

## 8. Monitoring Strategy

### Criterion Description – Monitoring Strategy

*Many TMDL's are likely to have significant uncertainty associated with selection of appropriate numeric targets and estimates of source loadings and assimilative capacity. In these cases, a phased TMDL approach may be necessary. For Phased TMDLs, it is EPA's expectation that a monitoring plan will be included as a component of the TMDL documents to articulate the means by which the TMDL will be evaluated in the field, and to provide supplemental data in the future to address any uncertainties that may exist when the document is prepared.*

*At a minimum, the monitoring strategy should:*

- *Articulate the monitoring hypothesis and explain how the monitoring plan will test it.*
- *Address the relationships between the monitoring plan and the various components of the TMDL (targets, sources, allocations, etc.).*
- *Explain any assumptions used.*
- *Describe monitoring methods.*
- *Define monitoring locations and frequencies, and list the responsible parties.*

- Satisfies Criterion
- Satisfies Criterion with stipulations provided below that must be addressed.
- Satisfies Criterion. Questions or comments provided below should be considered.
- Partially satisfies criterion. Questions or comments provided below need to be addressed.
- Criterion not satisfied. Questions or comments provided below need to be addressed.
- Not a required element in this case. Comments or questions provided for informational purposes.

A monitoring strategy is outlined in Appendix H. The goals of the monitoring strategy are to:

- Obtain additional data to address information gaps and uncertainty in the current analysis
- Ensure that identified management actions are undertaken
- Ensure that management actions are having the desired effect.

The monitoring strategy is appropriate and funding has been obtained by EPA to begin implementing the monitoring/assessment intended to meet the first of the three above goals as early as 2006.



## 9. Restoration Strategy

### Criterion Description – Restoration Strategy

*At a minimum, sufficient information should be provided in the TMDL document to demonstrate that if the TMDL were implemented, water quality standards would be attained or maintained. Adding additional detail regarding the proposed approach for the restoration of water quality is not currently a regulatory requirement, but is considered a value added component of a TMDL document.*

- Satisfies Criterion
- Satisfies Criterion. Questions or comments provided below should be considered.
- Partially satisfies criterion. Questions or comments provided below need to be addressed.
- Criterion not satisfied. Questions or comments provided below need to be addressed.
- Not a required element in this case. Comments or questions provided for informational purposes.

A conceptual restoration strategy is presented in Volume II, Section 4.0. Although not a required element in this case, it appears to provide a reasonable big-picture strategy for implementation.

## 10. Public Participation

### Criterion Description – Public Participation

*The fundamental requirement for public participation is that all stakeholders have an opportunity to be part of the process. Public participation should fit the needs of the particular TMDL.*

- Satisfies Criterion
- Satisfies Criterion with stipulations provided below that must be addressed.
- Satisfies Criterion. Questions or comments provided below should be considered.
- Partially satisfies criterion. Questions or comments provided below need to be addressed.
- Criterion not satisfied. Questions or comments provided below need to be addressed.
- Not a required element in this case. Comments or questions provided for informational purposes.

Public involvement activities for this TMDL project are outlined in Volume II, Section 5.0 and have been extensive for a TMDL project. Responses to public comments are presented in Volume II, Appendix B.

## 11. Technical Analysis

### Criterion Description – Technical Analysis

*TMDLs must be supported by an appropriate level of technical analysis. It applies to all of the components of a TMDL document. It is vitally important that the technical basis for all conclusions be articulated in a manner that is easily understandable and readily apparent to the reader. Of particular importance, the cause and effect relationship between the pollutant and impairment and between the selected targets, sources, TMDLs, and allocations needs to be supported by an appropriate level of technical analysis.*

- Satisfies Criterion
- Satisfies Criterion with stipulations provided below that must be addressed.
- Satisfies Criterion. Questions or comments provided below should be considered.
- Partially satisfies criterion. Questions or comments provided below need to be addressed.
- Criterion not satisfied. Questions or comments provided below need to be addressed.
- Not a required element in this case. Comments or questions provided for informational purposes.

All TMDLs are supported by an appropriate level of technical analysis, uncertainties are acknowledged, and an adaptive management strategy is presented to provide a means for addressing the identified uncertainties.

## 12. Endangered Species Act Compliance

### Criterion Description – Endangered Species Act Compliance

*EPA's approval of a TMDL may constitute an action subject to the provisions of Section 7 of the Endangered Species Act ("ESA"). EPA will consult, as appropriate, with the US Fish and Wildlife Service (USFWS) to determine if there is an effect on listed endangered and threatened species pertaining to EPA's approval of the TMDL. The responsibility to consult with the USFWS lies with EPA and is not a requirement under the Clean Water Act for approving TMDLs. States are encouraged, however, to participate with FWS and EPA in the consultation process and, most importantly, to document in its TMDLs the potential effects (adverse or beneficial) the TMDL may have on listed as well as candidate and proposed species under the ESA.*

- Satisfies Criterion
- Satisfies Criterion with stipulations provided below that must be addressed.
- Satisfies Criterion. Questions or comments provided below should be considered.
- Partially satisfies criterion. Questions or comments provided below need to be addressed.
- Criterion not satisfied. Questions or comments provided below need to be addressed.
- Not a required element in this case. Comments or questions provided for informational purposes.

EPA will address ESA issues.