Strategy Paper Discussion

Spokane River Metals TMDL WAG meeting

By: Robert Steed,

IDEQ , Surface Water Ecologist

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Spokane River Metals Strategy Paper

Spokane River Metals TMDL
WAG Review Draft April 2016 Strategy Paper

Introduction

This document outlines the strategy for development of metals TMDLs (cadmium, lead, and zinc) for the Spokane River using the Load Duration Approach as outlined by the EPA (2007). Currently there are no metals TMDLs for the Spokane River. Idaho's water quality standards limit the total load of a causative pollutant to remain constant or decrease within the watershed until a TMDL is developed (IDAPA 58.01.02.055.04). The City of Coeur d'Alene, the Hayden Area Regional Sewer Board, and the City of Post Falls' NPDES permits and their Clean Water Act Section 401 certification requires water quality-based effluent limits for lead, cadmium, and zinc to meet Idaho's water quality criteria at the end-of-pipe. No mixing zone may be authorized for cadmium, lead, or zinc. As such, any increase in the volume of wastewater discharged will increase the load of metals to the river, which is not allowed under Idaho's water quality standards. Metals TMDL development has been classified as high priority in Idaho's draft 2012 Integrated Report for the Spokane River. The TMDL will determine an upper limit on discharge of metals from both point and nonpoint sources to assure both the chronic and acute metals criteria are met in the river. An approved TMDL is necessary for the next NPDES permit cycle for the City of Coeur d'Alene, the Hayden Area Regional Sewer Board, and the City of Post Falls.

Background

Lead and silver mining began in the South Fork Coeur d'Alene River in 1885, when lead-bearing rock was discovered in the drainage. In the early mining operation, ore was sorted from waste rock by hand and shipped out to smelters. In later years, concentrators were established within the mining district and tailings were produced. In most cases, tailings were disposed directly in the stream channels. This practice resulted in extensive deposits of metals-contaminated sediments (lead, cadmium, zinc) along the bed, banks, and floodplain of the North and South Forks of the Coeur d'Alene River, the mainstem, the 11 lateral lakes, numerous wetlands along the lower Coeur d'Alene River, the lakebed of Coeur d'Alene Lake, and into the Spokane River. Annual precipitation and spring snowmelt runoff events continue to redistribute these contaminated sediments throughout the entire system. As a result, Idaho water quality standards for dissolved metals (cadmium, lead, zinc) are exceeded in affected surface waters in the Coeur d'Alene basin from the South Fork Coeur d'Alene River downstream through Coeur d'Alene Lake and into the Spokane River to the Idaho/Washington border. Lead and cadmium criteria exceedances in the Spokane River to the Idaho/Washington have also been observed. For a summary of historical data on the Spokane River refer to DEQ (2000b).

- www.deq.idaho.gov
  - Home
  - Regional Offices & Issues
  - Coeur d'Alene
  - Basin-Watershed Advisory Groups
  - Spokane River WAG

- http://www.deq.idaho.gov/media/60178416/spokane-river-metals-tmdl-wag-review-draft-april-2016-strategy-paper.pdf

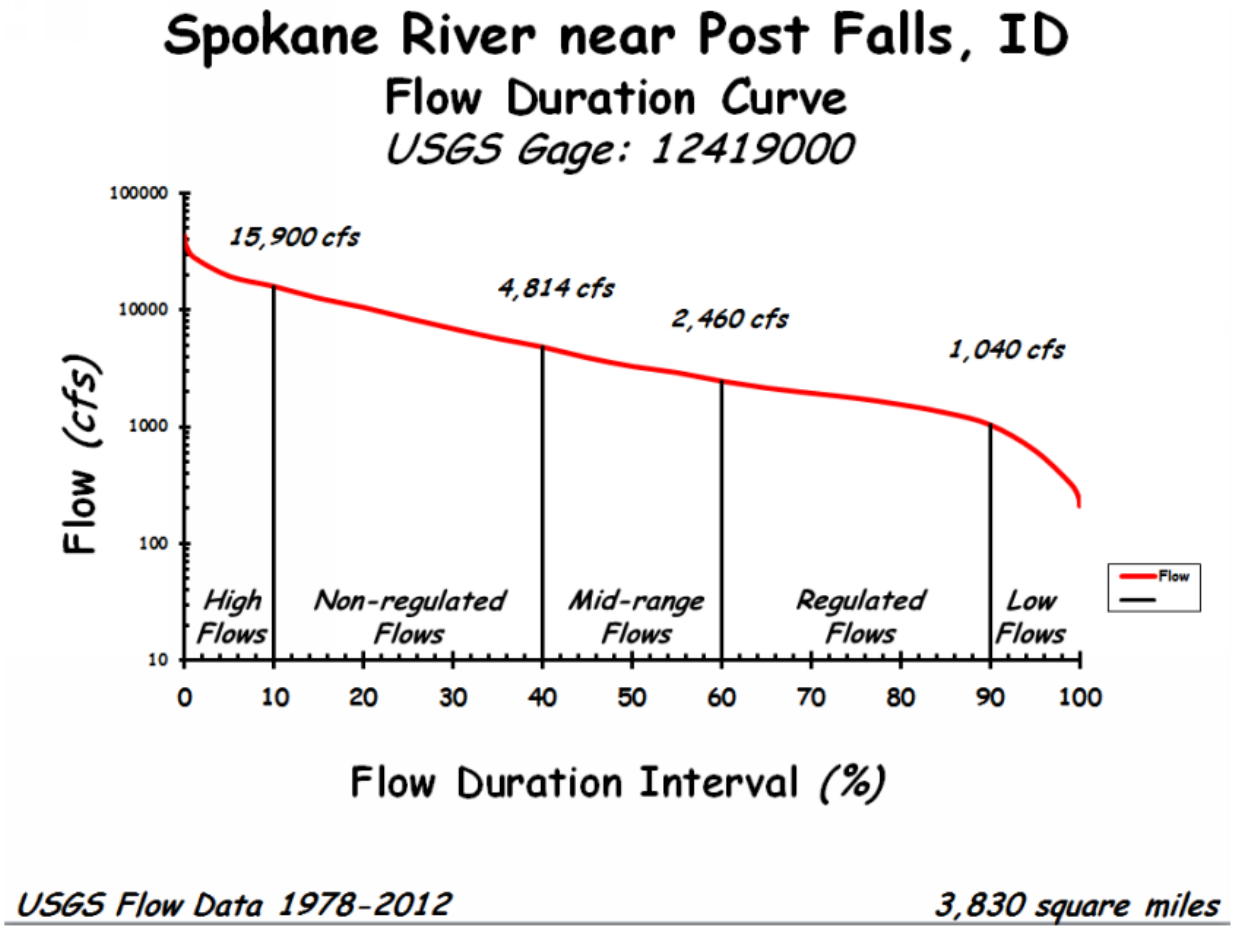
Spokane River Metals Strategy Paper

- Introduction
- Background
- Project Objectives
- Existing Data and Data Gaps
- Monitoring Strategy
- TMDL Development
- Stakeholder Consultation
- Special Considerations

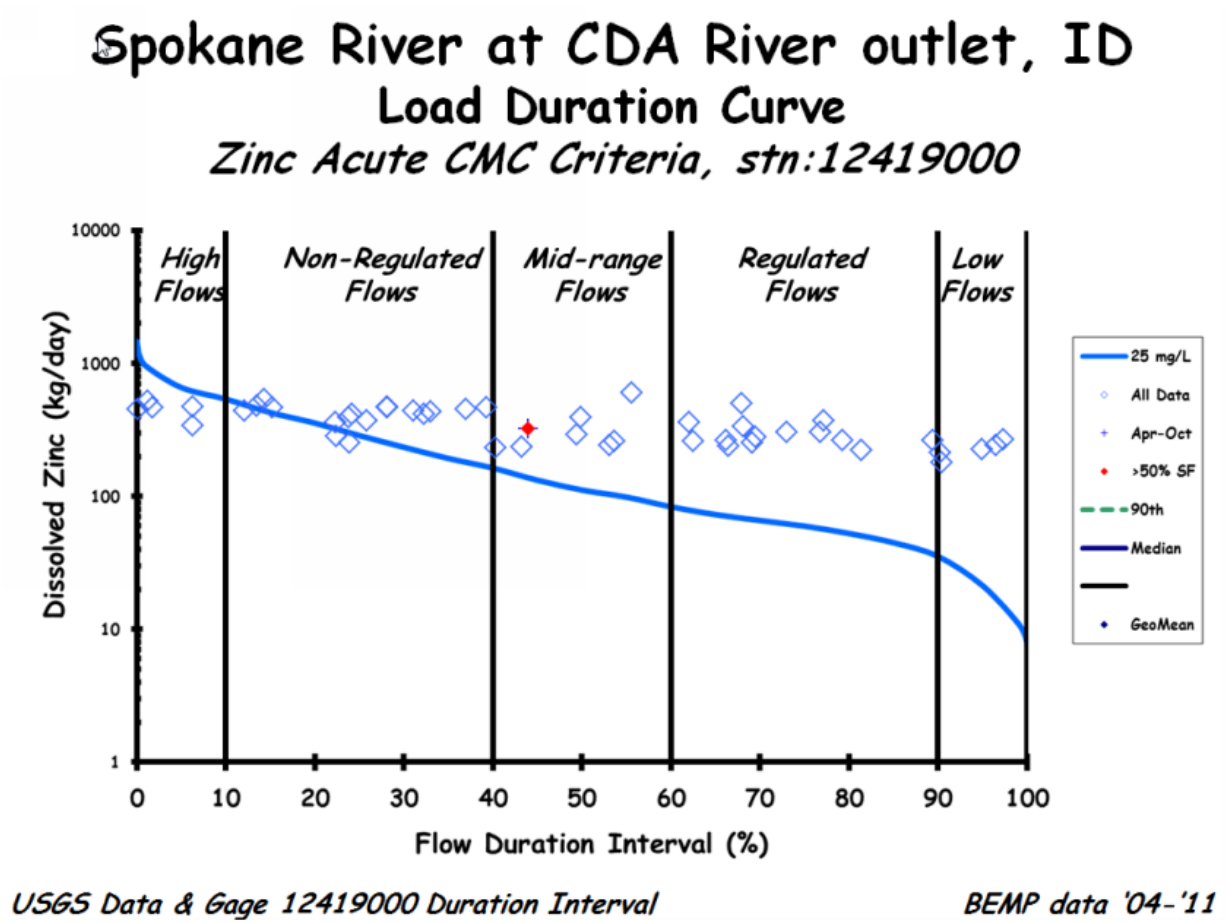
TMDL Development

- Load vs. Concentration
  - Load = mass/unit time (daily) i.e. pounds/day
  - Concentration = mass/volume i.e. mg/L

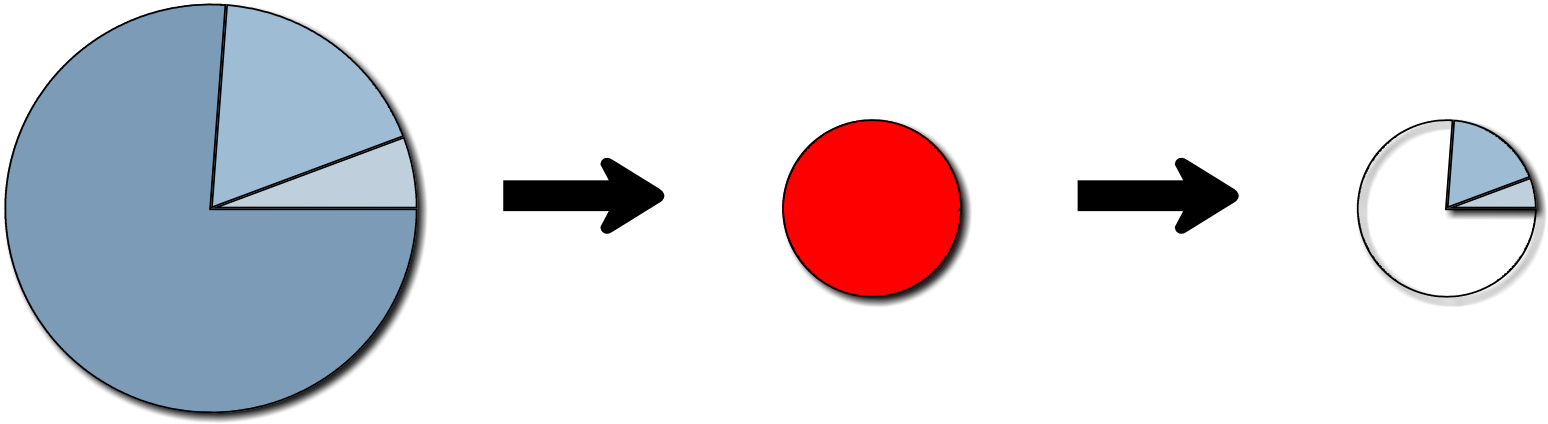
Flow Duration Curve



Load Duration Curve



What is a TMDL
(Total Maximum Daily Load)



Existing Load

Upstream Sources
Point Sources
Non-point Sources

Target Load

Idaho Water Quality Standards
Numeric Criteria

Load Allocations

Point Sources
Non-point Sources

EPA Options for Expression of Daily Loads in TMDLs

- Draft
- https://www.epa.gov/sites/production/files/2015-10/documents/2007_06_26_tmdl_draft_daily_loads_tech-2.pdf

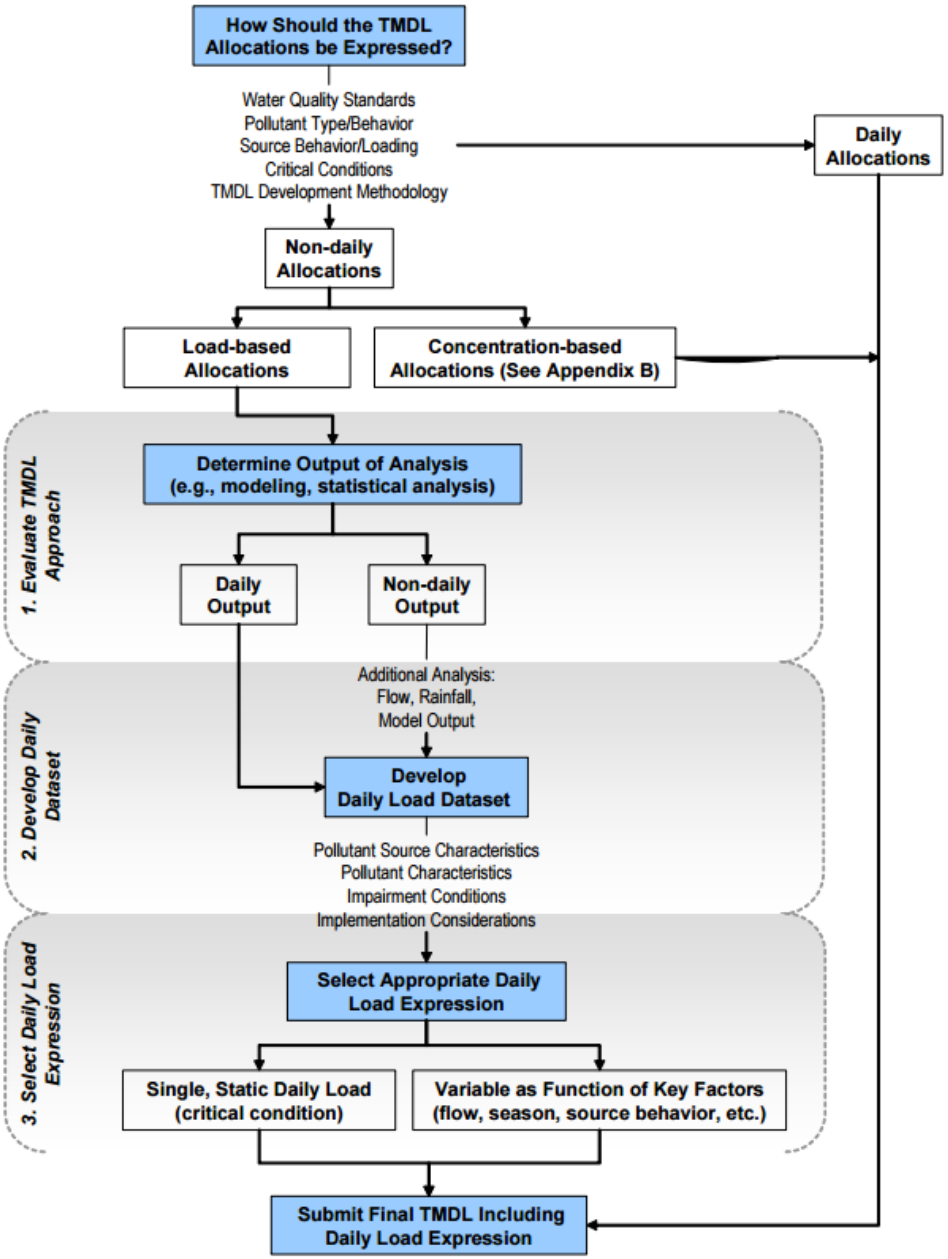


Figure E-1. Process for identifying daily load expressions from non-daily analysis.

Appendix B

Appendix B: Identifying Daily Expressions for Non-daily Concentration-based TMDLs

Some TMDLs rely on establishing a concentration-based loading capacity, often equivalent to an applicable numeric water quality criterion. As with load-based TMDLs, if the established concentration-based TMDL is not on a daily time step, the TMDL should also include a daily expression representing the non-daily allocation. This appendix presents an approach for identifying a daily expression corresponding to the non-daily allocations developed in concentration-based TMDLs.

Numeric water quality standards or other water quality targets (representing narrative water quality criteria) have a duration component. For some criteria or targets, the duration is expressed as a daily average or *never to exceed* value. As an example, waters designated for support of semi-permanent, warm-water fish life in South Dakota must not exceed a daily maximum of 158 mg/L TSS. For concentration-based TMDLs established to meet these targets, the TMDL is already expressed on a daily basis. However, many water quality criteria or representative TMDL targets are based on longer time steps, including monthly or even annual averages. Figure 25 illustrates an example TMDL developed to attain the water quality criterion of an annual average concentration of 25 mg/L TSS. For concentration-based TMDLs set equivalent to longer-term targets, the TMDLs should also include a daily expression.

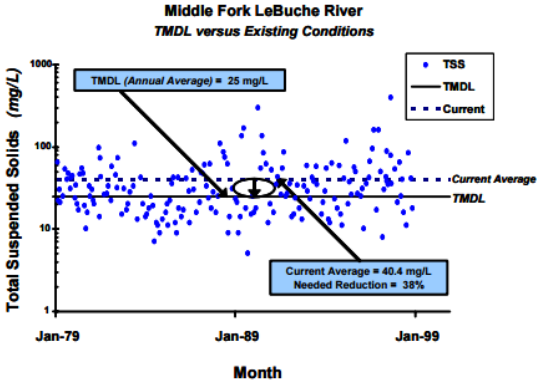


Figure 25. Example of a concentration-based TMDL.