

Spokane River Regional Toxics Task Force Monitoring Objectives Meeting

July 24, 2013



Agenda

- Background and Status
- Monitoring Plan Design
 - Up-front specification of objectives
- Data Quality Objectives for Other Tasks
- Discussion
 - Consensus on primary objectives
 - Discussion of required certainty of data



Background

- Provide technical support to the SRRTTF in developing a plan to bring the Spokane River into compliance with applicable water quality standards for toxic pollutants
- Work being conducted in four phases
 - Phase 1: Gather existing data, identify data gaps, prepare a monitoring plan
 - Phase 2: Collect new data
 - Phase 3: Analyze data and characterize sources
 - Phase 4: Assess potential BMPs and develop Comprehensive Plan



Phase 1 Tasks and Status

- Work Plan ✓ Completed
- Data Request Memo ✓ Completed
- Review SOPs ✓ Completed
- Collection of Existing Data ✓ Completed
- Data Review and Evaluation – July 31, 2013
- Data Gap Identification – August 31, 2013
- Review of Modeling Tools – September 15, 2013
- Data Collection Strategy – November 15, 2013
- QAPP/SAPP – January 15, 2014
- Scoping for Future Phases – February 15, 2014



Monitoring Plan Design

- Goal of monitoring is to produce information needed for effective environmental management
- Management information needs should be expressed as *clear objectives* to guide design and implementation of monitoring program



Hierarchy of Monitoring Objectives

Broad Objectives
(management-oriented)



Detailed Sampling Plans
(technically-oriented)



Hierarchy of Monitoring Objectives



- **Level I – Public/Management Concerns**
 - Broadest-level questions
- **Level II – Management/Scientific Objectives**
 - Combination of management and technical issues
- **Level III – Measurement Goals**
 - Broad-level technical planning
- **Level IV – Technical Plans and Methods**
 - Detailed technical planning



Example SRRTTF Objectives

I. Overall management goals

- What needs to be done to bring the Spokane River in compliance with water quality standards for toxics?

II. Combined management and technical issues

- What degree of certainty/precision is required?

III. Broad-level technical planning

- What agencies will be responsible for the monitoring?

IV. Technical details

- Sampling parameters, locations, frequency, protocols



Today's Goals

- Obtain consensus on Level I Objectives
- Conduct discussion of Level II Objectives

Note: Level III and IV Objectives will not be addressed until Level I and II Objectives are finalized



Stated SRRTTF Level I Objectives

- Develop a comprehensive plan to bring the Spokane River into compliance with applicable water quality standards for toxic pollutants
 - Can be divided into two monitoring-related objectives
 1. Define the nature and magnitude of existing pollutant loads
 2. Define the relationship between loads and resulting environmental concentration



Stated SRRTTF Level I Objectives

- Other objectives listed in the draft SRRTTF Work Plan also include:
 - Establish the baseline conditions for PCBs and the other identified toxics
 - Monitor and assess the effectiveness of toxic reduction measures
 - Be adaptable to take into account newly generated data and sampling techniques



Questions on Level I Objectives

- How much emphasis should be given to dioxins/furans relative to PCBs?
 - Some documents mention PCBs only; some mention “toxic pollutants”
- How forward-looking does the initial monitoring plan need to be?
 - Current scope of work is for one year of monitoring
 - Some objectives are suited for long-term monitoring
- Are there other Level I Objectives not stated here?



Level II Objectives

- Level II combines management and scientific objectives
 - Level II objectives are defined for each Level I objective
- Questions that can be used to help define Level II objectives:
 - What are acceptable levels?
 - What degree of certainty/precision is required?
 - What monitoring strategy is appropriate?
 - What spatial scale is appropriate?
 - What temporal scale is appropriate?



Level II: Define Existing Pollutant Loads

- Acceptable levels/required certainty
 - Water quality standards in Spokane are very low
 - Monitoring costs depends on required certainty
 - How much effort should be devoted to accurately quantifying very small sources? Options include:
 - Measure all sources, regardless of size, with the level of accuracy typically provided by TMDL studies.
 - Measure all *significant* sources with the level of accuracy typically attributed to TMDL studies, and accept much larger uncertainty for very low-level sources.



Level II: Define Existing Pollutant Loads

- Monitoring strategy
 - Combination of direct measurement, literature values and model simulation
- Spatial scale
 - Define loads at a sub-watershed scale
 - Understand origin of sources
- What temporal scale is appropriate?
 - Annual scale is acceptable



Level II: Define Relationship between Loads and Resulting Concentration

- Acceptable levels/required certainty
 - Similar to defining loads – how low do we go?
- Monitoring strategy
 - Monitoring data will be used to calibrate water quality model
- What spatial scale is appropriate?
 - Laterally/vertically averaged is acceptable, but finer detail may be used
- What temporal scale is appropriate?
 - Annual scale is acceptable, but finer time scale may be needed to provide accurate annual results



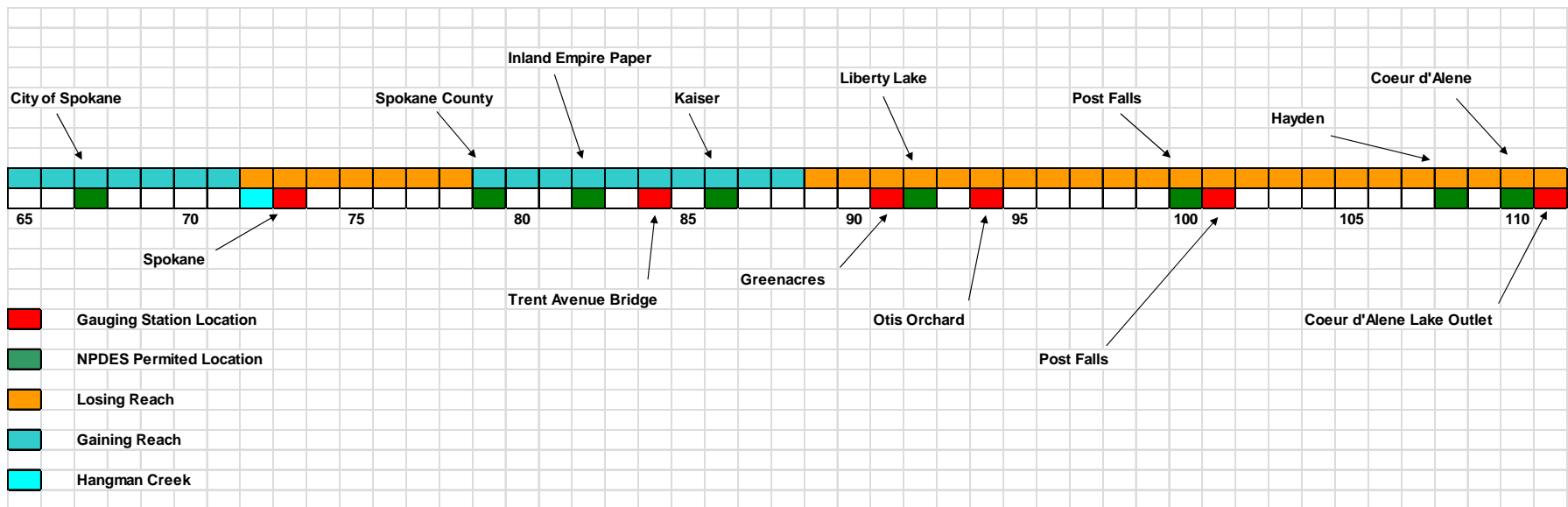
Level II: Define Baseline Conditions

- Acceptable levels/required certainty
 - Is the level of detail/certainty provided by prior objectives sufficient, or do we want to define baseline conditions in greater detail?
 - If greater detail is desired, how much?



Level II: Define Baseline Conditions

- Do we better define baseline loading prior to monitoring in the watershed to find sources?
 - Routine dry weather monitoring at gaging stations
 - Use this data to more accurately define monitoring needs



Data Quality Objectives for Other Tasks

- TMDL QAPPs require specification of Data Quality Objectives
 - Define qualities that data must possess to be considered in the TMDL
- Issue of “How accurate do data need to be?” extends into other tasks, as well
 - Review of existing data (i.e. “secondary” data)
 - Existing and future SOPs



Secondary Data Quality Objectives

- Different categories of secondary data quality
 - a. Data were generated under an approved QAPP or other sampling document and fully validated;
 - b. Data generated under a QAPP but documentation of validation not provided;
 - c. Data come from peer-reviewed publications; and
 - d. Data collected without an approved QAPP, but come from a reliable source



Secondary Data Quality Objectives

- Several existing data sources are not “a” quality
 - Some data collected as part of a QAPP, but no documentation provided of evaluation of QA/QC data (i.e. Category “b”)
 - Some data were collected outside of a QAPP, but from reliable sources (i.e. Category “d”)
- What data do we use/exclude?



Secondary Data Quality Objectives

- Current plan for considering secondary data
 - Perform data validation for Category “b” sources
 - Exclude those data that don’t meet validation criteria
- Consider all remaining data using a graded approach
 - Significance of decision to be supported by data depends on data category
 - Category “a” and screened category “b” data given full consideration
 - Category “c” and “d” data used more to support weight of evidence approach



Data Quality Objectives and Ongoing Monitoring

- Our review of existing SOPs identified variability in QA/QC procedures
 - Scope of SOP review task was not designed to define data quality objectives
- Data quality objectives will need to be defined moving forward
 - Plan to work with Ecology to define consistent QA/QC protocols for ongoing monitoring



Questions for Discussion: Level I

- How much emphasis should be given to dioxins/furans relative to PCBs?
- How forward-looking does the monitoring plan need to be?
- Are there other Level I Objectives not stated here?



Questions for Discussion: Level II

- How much effort should be devoted to accurately quantifying very small sources?
- Does the objective “Define Baseline Conditions” require more detail than what is necessary to support the model?
- Should the monitoring plan be staged?
 - Better data, but delays completion of comprehensive plan
 - Tradeoff between schedule/accuracy/budget

