

# SRRTTF

## Update on Completed and Upcoming Activities

### September 25, 1013

# Agenda

- Recent Activities
  - Collection of existing data
  - Data review and evaluation
  - Data gap identification
  - Review of modeling tools
- Upcoming activities
  - Data collection strategy



# Collection of Existing Data

- Potential sources of data were identified
- Online data sources identified
- Twenty-five people contacted
- Data contact log prepared



# Data Contact Log



## Spokane River Regional Toxics Task Force PCB Implementation Plan Contacts Log

Phase 1, Task A: Collection of Existing Data  
August 10, 2011

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Contact Name	Agency/Company	Phone	Email	Data to Ask About	Notes on Contact, Data Available, etc.
Daniel Redline	Idaho DEQ	208-666-4621	daniel.redline@ideq.idaho.gov	Wastewater treatment plant loads Stormwater loads Water column measurement of PCB and dioxin concentrations Wastewater treatment plant loads Results of survey of industrial practices Spokane River and tribo water column measurements (temp, TSS, POC and DOC) Hydrodynamic and/or WQ models River/lake bed sediment PCB and dioxin concentrations Sediment trap measurements Sediment isotope profiles Pollutant specific degradation rates in bed sediments	Spoke to Dan 5/24. EPA issues permits and has just started to require monitoring of PCBs/dioxins in WWTP effluent so there will be no historic data. contact for NPDES permitting in EPA is Brian Nickel Ecology has PCB fish and sediment data from Priest Lake in Idaho (Bonner County); collected by Toxics/RCRA unit out of Olympia (report saved on network under Task 2 (Ecology 2011); goal was to establish background data for NE WA and Priest Lake was a reference site; no sites in Spokane river watershed Avery Landing remediation site on St. Joe River (trib to Lake Cour d'Alene) EPA study solids data? No info on DEQ site but contact is: Michael McCurdy (General Remediation 208-373-0188 michael.mccurdy@deq.idaho.gov)
Doug Krapas	Inland Empire Paper	509-924-1911	douglkrapas	Wastewater treatment plant loads Number and size of paper recyclers	Called Doug on 6/3 while he was on vacation and followed up on 6/11. Doug provided effluent data in July.
Ellie Key	Washington Department of Ecology; Eastern Regional Office (Spokane)	509-329-3219	ellie.key@ecy.wa.gov	Wastewater treatment plant loads Results of survey of industrial practices	Spoke to Ellie on 6/4. She provided the analytical results associated with the permits from the City of Spokane, Spokane County, and Liberty Lake.
Fred Bergdorf	Washington State Department of Transportation	360-570-6648	bergdorf@wsdot.wa.gov	Stormwater loads	Talked to Fred on 5/21. WSDOT is just developing a monitoring program and have a monitoring location at I-90 and Pines. They will be submitting a report to Ecology in October, however it will not include PCBs.
Ginny Darrell	Washington State Department of Ecology; Toxic Cleanup Program	509-329-3431	gdarrell@ecy.wa.gov	Soil PCB and dioxin concentration Other hydrodynamic and/or water quality models River/lake bed sediment, PCB and dioxin concentrations	Spoke with Ginny on 6/10. We sent Ginny a list of state and federal cleanup sites from the Ecology Facility/Sites database. She noted which sites have PCBs and the cleanup status of each of the sites.
Greg Fibbert	Washington State Department of Ecology; Air Quality Program	509-329-3432	gregory.fibbert@ecy.wa.gov	Atmospheric gas phase PCB concentrations Measured atmospheric deposition rates for dioxin Yard waste burning studies PCB and Dioxin emissions from incineration activities Number and size of incinerators	Greg says he doesn't have jurisdiction over Spokane area so he recommended people to contact for everything next to his name.
Greg Lahti	Washington State Department of Transportation	509-324-6138	lahti@wsdot.wa.gov	Stormwater loads	Talked to Greg on 5/14. He directed me to Dick Gersib, the head of the monitoring group at WSDOT.
Guy Gregory	Washington State Department of Ecology; Water Resources Division	509-329-3562	ggre461@ecy.wa.gov	Dam release information Stream flow information USGS (2007) groundwater/flow model Other groundwater flow/information/models PCB/dioxin concentrations in groundwater	Talked to Guy on 5/28. He passed along several relevant hydrology studies related surface water/groundwater interface, instream flows, and directed me to an Avista website regarding the Spokane River. He also indicated a willingness to help us track down additional data as needed.
Holly Davies	Clean Action Plan for PCBs	360-407-7398	holly.davies@ecy.wa.gov	Number of commercial buildings constructed between 1950 and 1980 waiting to hear back from Spokane county assessor; focus is on caulk PCB content of caulk on commercial buildings (and streets?) focus will likely be on masonry, not inside or in streets/bridges, etc.; through study in Duwamish shows 50% of commercial bldgs contain PCBs in masonry caulk Large scale transformers and capacitors still waiting on dataset; working with electric company; EPA only has a few in database; possibly schools contain light ballasts with PCBs in them but not a priority for Holly right now	Talked to Holly 5/24. She doesn't have any data, but mentioned some datasets she is working on but does not have yet: Motor oil Long term auto fluff project but having trouble sampling Spills Ink (Inland Empire pulp mill) Titanium dioxide generation Also see notes in bold to the left Miriam Diamond lab at U of Toronto has modeling data MUM model Looks like it's only in Toronto/Lake Ontario
Kary Peterson	Ecology; Agricultural burning	509-329-3523	kape461@ecy.wa.gov	Yard waste burning studies	State has no jurisdiction over air quality for Spokane County. It's all handled by the SRCAA.
Kevin Booth	Avista		kevin.booth@avistacorp.com	Large Scale Transformers and Capacitors	Left message for Kevin regarding PCB transformers. Kevin replied with a voicemail on 6/26, indicating that Avista has removed all large transformers in EPA database.
Lynne Schmidt	City of Spokane Wastewater Management	509-625-7908	lschmidt@spokane-city.org	WWTP loads Stormwater loads PCBs in stormwater	Lynn provided a CD of data at SRRITF meeting on 4/3. Talked to Lynn again on 5/8. She provided additional GIS data for catch basin delineation.
Meghan Lunney	Avista	509-495-4843	meghan.lunney@avista.com	River/Lake Bed sediment properties Dam release information	Spoke with Megan in April 2013. She briefly described dam information and noted that Steve Ashe would be available to discuss in detail the operation of the dams. USGS has flow data. Avista does not have core data, and all of their analytical results are in the Ecology EIM database. May follow up with Steve Ashe as needed.

# Data Review and Evaluation

## Two primary activities

1. Creation of database
2. Data evaluation



# SRRTTF Database

Format consistent with Ecology's Environmental Information Management (EIM) system

- Table designs from the EIM have been incorporated directly into the SRRTTF database
- Additional analytical data was processed to be consistent with this database structure



# SRRTTF Database

- Additional tables added to store the various types of data collected as part of the SRRTTF data acquisition
  - WWTP data
  - USGS stage and flow data from five gages
  - National Climatic Data Center climate data from Spokane Airport
  - PCB sites identified by personnel at Ecology
  - Reported spills based on queries of Ecology's Environmental Reporting Tracking System





# SRRTTF Database

- Database will be continuously updated
  - Will be updated to include data collected as part of future monitoring efforts
- First database iteration was made available via ShareFile
  - Additional iterations will be made available quarterly, if new data has been added
- Future phases may include dynamic data sharing with spatial interface
  - LimnoTech is currently working on other projects using both ArcGIS server and open source programs that allow for real-time data sharing





# Data Review

- Evaluate data's quality and credibility with respect to satisfying project data needs.
- Data quality objectives and associated criteria
  - Data are from a known and reliable source
  - Data are appropriate for the intended use
  - Data are of known quality



# Secondary Data Quality Objectives

- Our inclination is to use all data, taking a graded approach
  - Amount of weight placed on data depends on quality
- Four categories of data quality
  - A. Data were generated under an approved QAPP or other sampling document;
  - B. Data were not generated under an approved QAPP, but include quality assurance statements or associated QC data that allows evaluation
  - C. Data come from peer-reviewed publications; and
  - D. Data quality is limited or unknown, but come from a reliable source



# Data Review



Item Number	Data Category	Dataset	Data Source (agency)	Reliable Source	Data Quality Category	Aroclor Only Flag	Data Appropriateness	Quality/Appropriateness Notes
21	Wastewater treatment plant loads	Spokane County influent and effluent flows and PCB results	Ellie Key (Washington Department of Ecology; Eastern Regional Office (Spokane), Rob Lindsay (Spokane County))	x	A		Appropriate	Data verification requirements included in QAPP
22	PCBs in fish tissue	Washington State Toxics Monitoring Program: Exploratory Monitoring 2006	Ecology--Downloaded from EIM	x	A		Appropriate	EIM note: Level 5 - Data Verified and Assessed for Usability in a Peer-Reviewed Study Report
23	PCBs in fish tissue	1999 Spokane River fish and crayfish PCBs and METALS	Ecology--Downloaded from EIM	x	B	x	Appropriate	EIM note: Level 4 - Data Verified and Assessed for Usability in a Formal Study Report. Limited congener data available.
24	PCBs in stormwater/Water column measurements of PCB and dioxin concentrations	Spokane River PCB and Source Survey, August 2000	Ecology--Downloaded from EIM	x	B		Appropriate	EIM note: Level 5 - Data Verified and Assessed for Usability in a Peer-Reviewed Study Report
25	PCBs in fish tissue	Metals and PCBs in Long Lake Fish	Ecology--Downloaded from EIM	x	B		Appropriate	EIM note: Level 5 - Data Verified and Assessed for Usability in a Peer-Reviewed Study Report
26	Wastewater treatment plant	Spokane Area Point Source PCB	Ecology--Downloaded from EIM	x	B		Appropriate	EIM note: Level 4 - Data Verified and Assessed for

# Conceptual Models

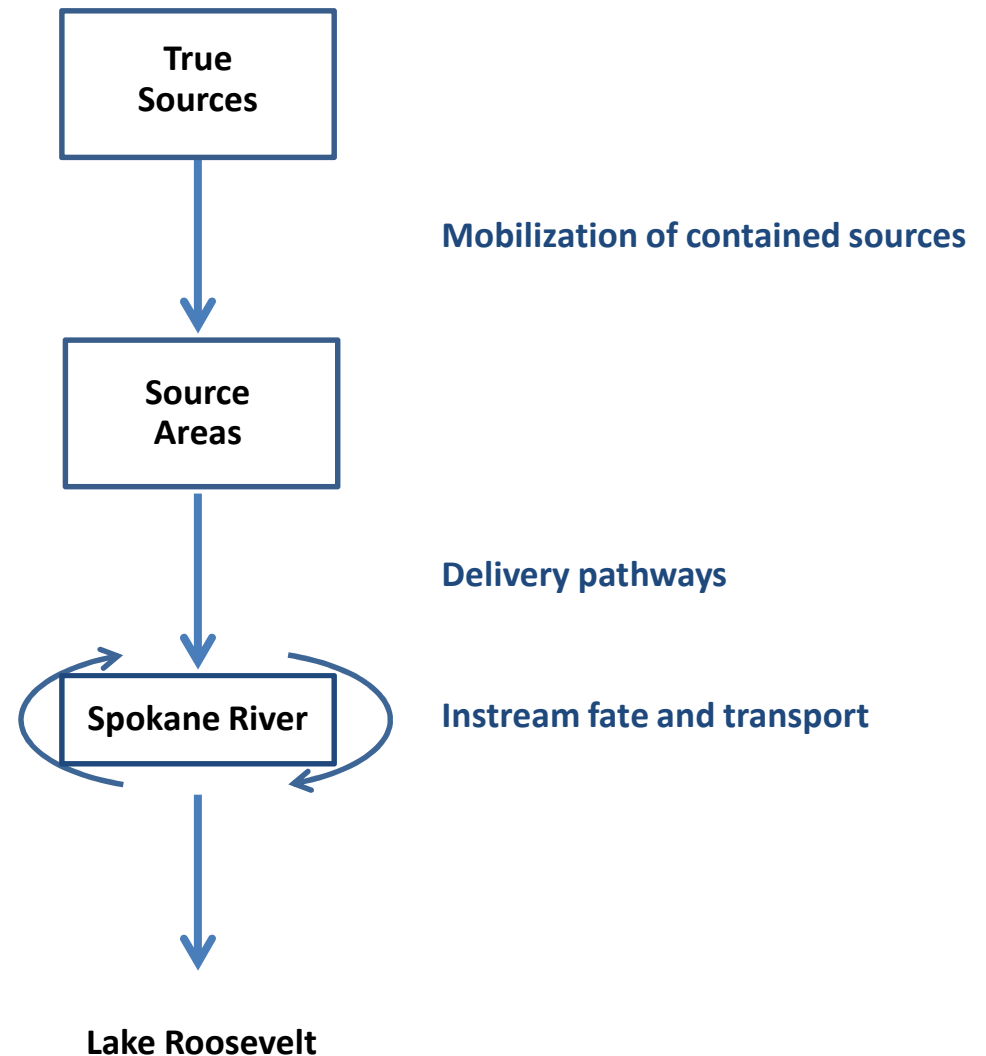
- Graphic “box and arrow” diagram depicting all processes believed to be potentially significant in affecting pollutant concentrations
- Serves several purposes:
  - Provides a means to convey complicated in a simplified manner to a wide audience
  - Provides a framework for assessing data gaps
  - Facilitates a determination of which processes should or should not be included in the final model



# Broad Conceptual Model

Full conceptual model too detailed to easily present

- Start broadly
- Add detail at each level



# True Sources

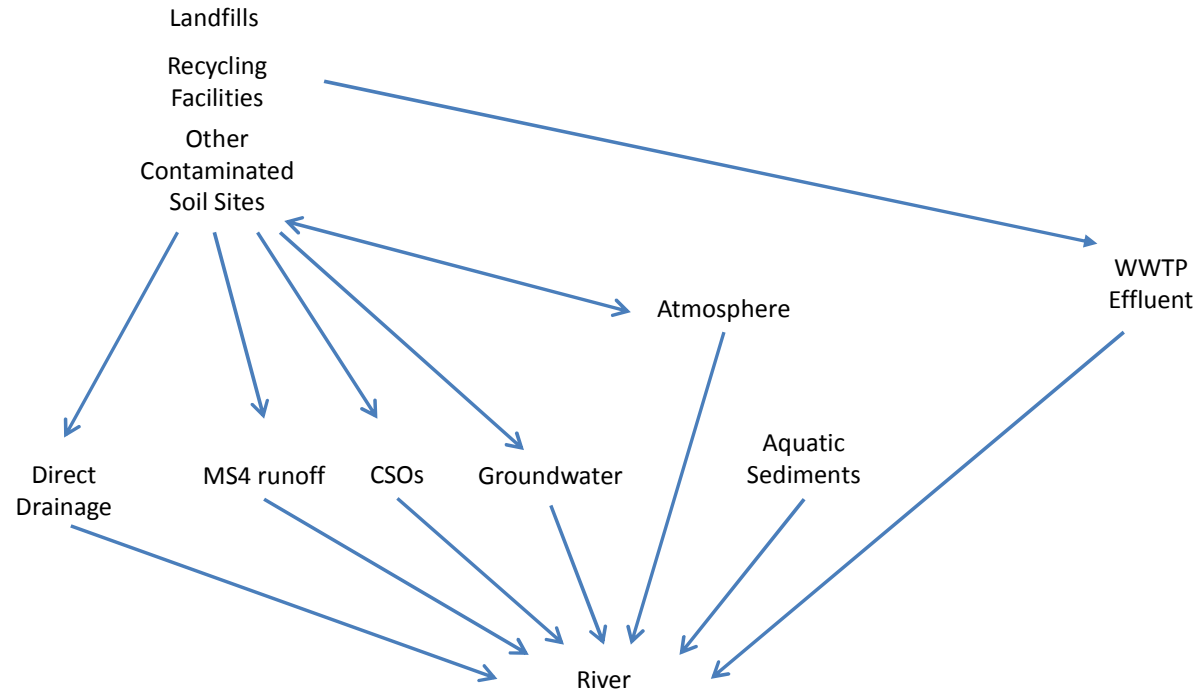
Divided into several categories

Legacy Sources		Ongoing Sources		
Buildings	Environmental	Industrial Uses	Global Atmosphere	Contaminants in Pigments/Dyes
Fixed Non-Fixed	Landfills Recycling Facilities Other Contaminated Soil Sites Aquatic Sediments	Electrical Equipment Hydraulic Equipment		Consumer Products Recycled Newsprint



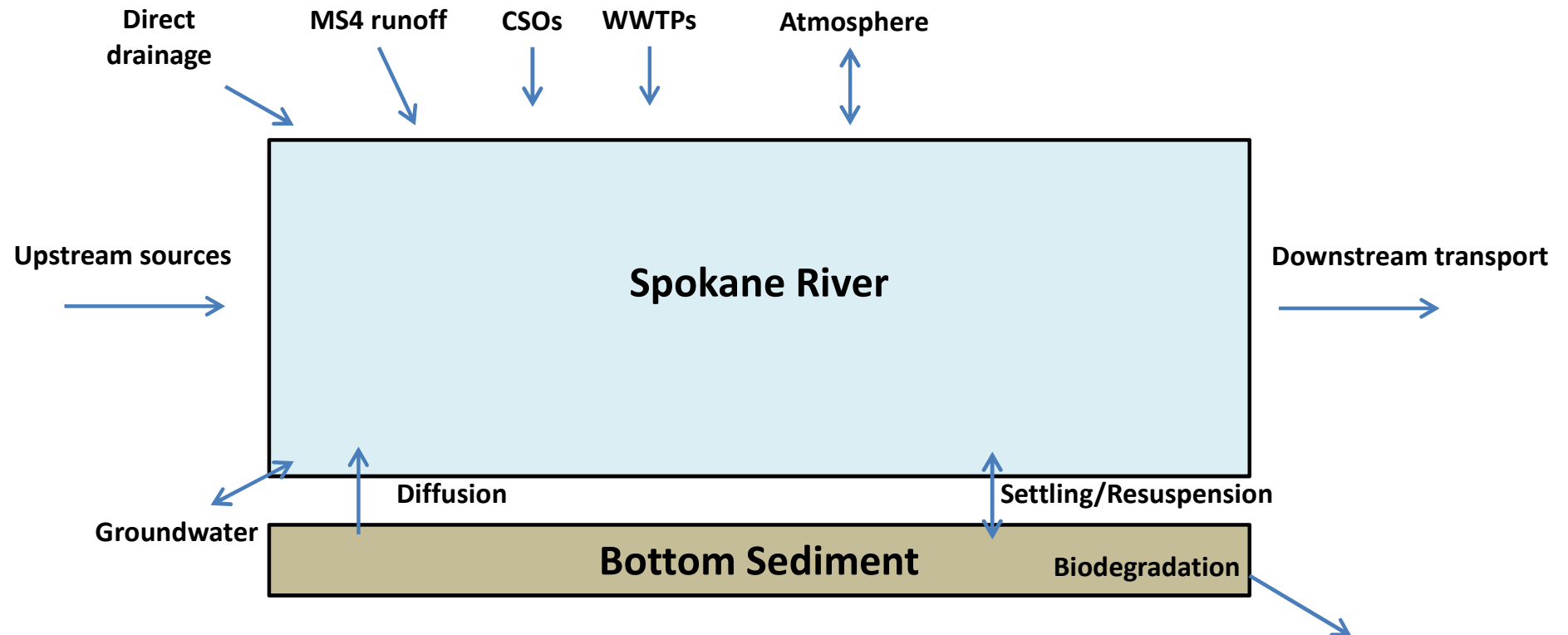
# Delivery Pathways

Many potentially important processes





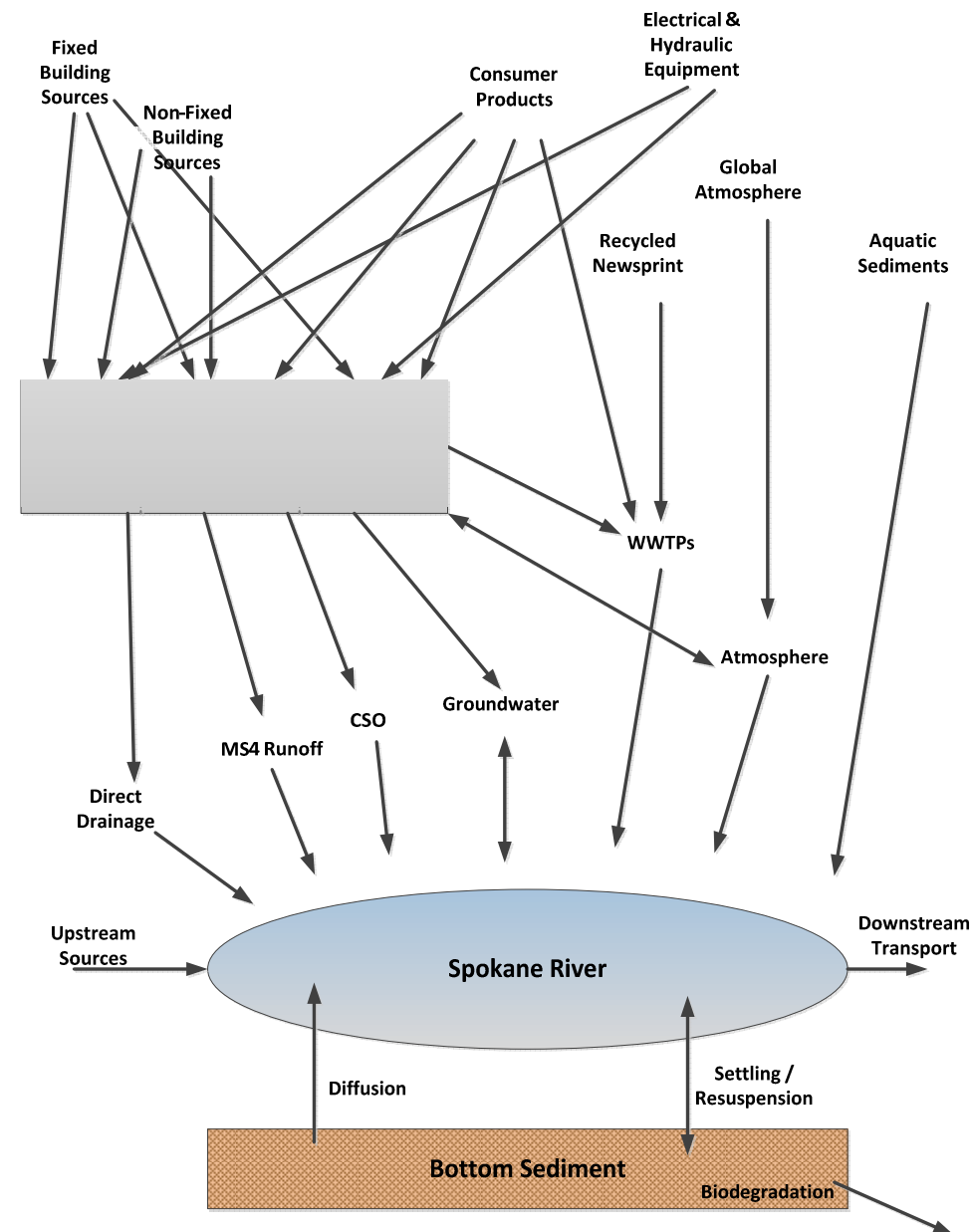
# Fate and Transport in Spokane River



# Combined PCB Conceptual Model



- There are many processes potentially affecting PCB concentrations
- Next step is to try to simplify process as much as possible



# Data Gap Assessment

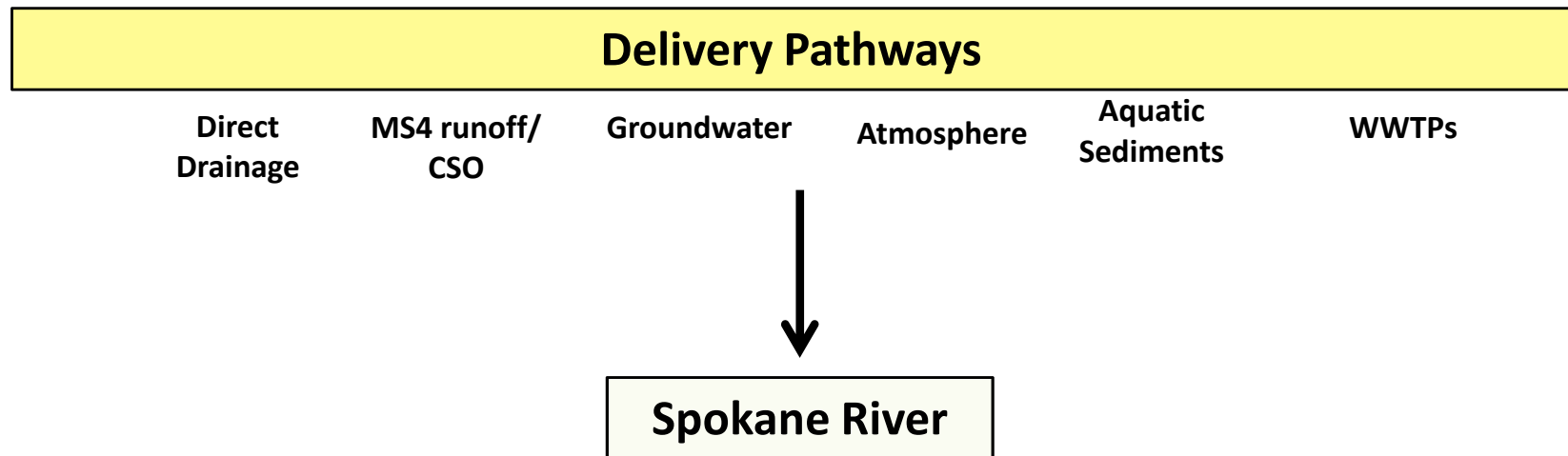
- Review available data with the intent of
  - Assess data gaps
    - What processes can we quantify?
    - Where do we need more data?
  - Determine which processes should be included in the final model



# Data Gap Assessment:

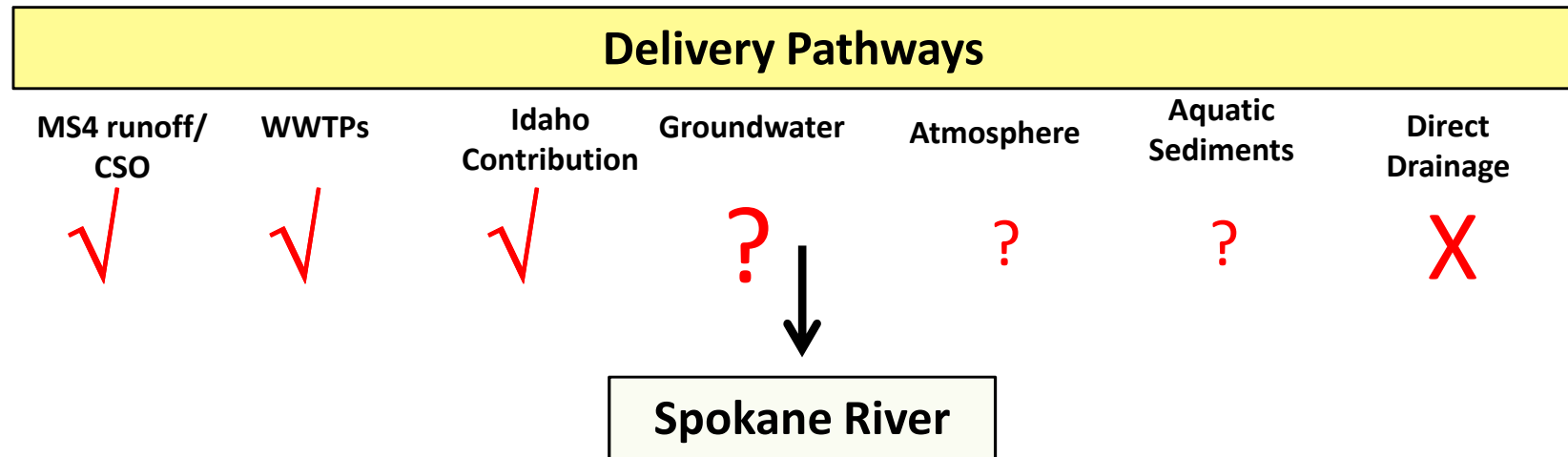
## What processes can we quantify?

Reasonable (but not perfect) understanding of which categories of source loading are important



# Data Gap Assessment:

## What processes can we quantify?



Key:

✓ = known significant contributor

? = unknown, potentially significant contributor

? = unknown, likely insignificant contributor

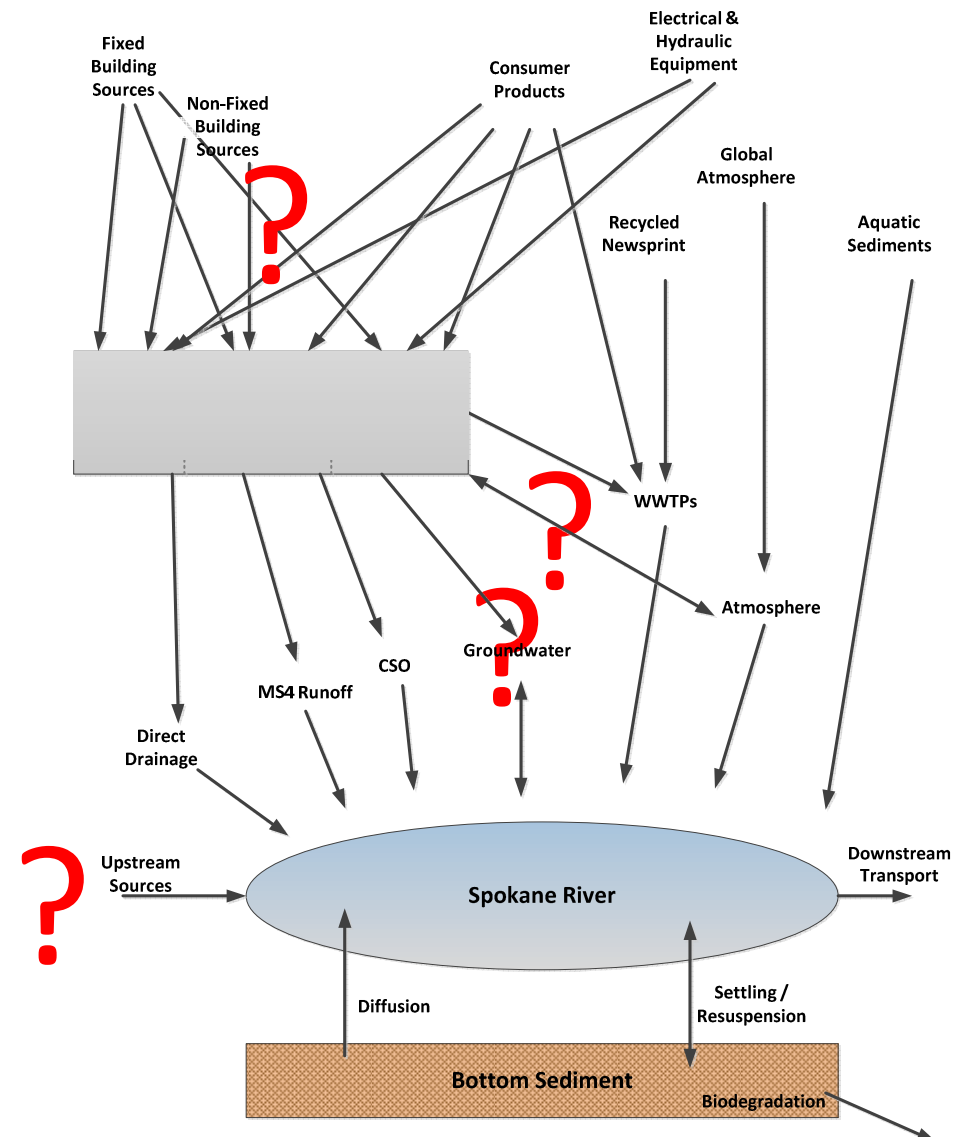
X = known insignificant contributor



# Data Gap Assessment: Where do we need more data?

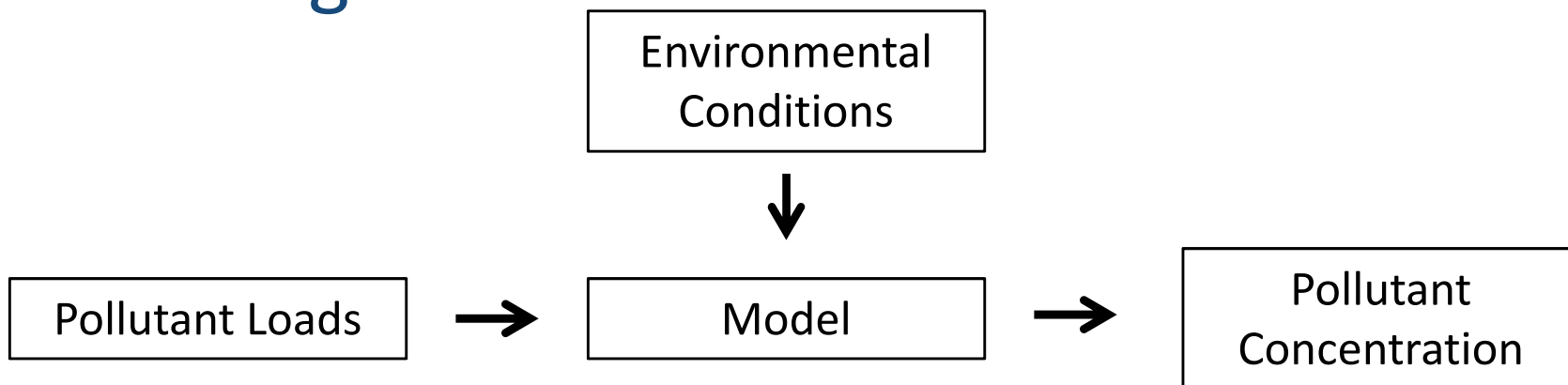


- Identifying “true sources” and their delivery route
- Sources upstream of the ID/WA border
- Groundwater contribution
- Significance of loading from atmosphere



# Review of Modeling Tools

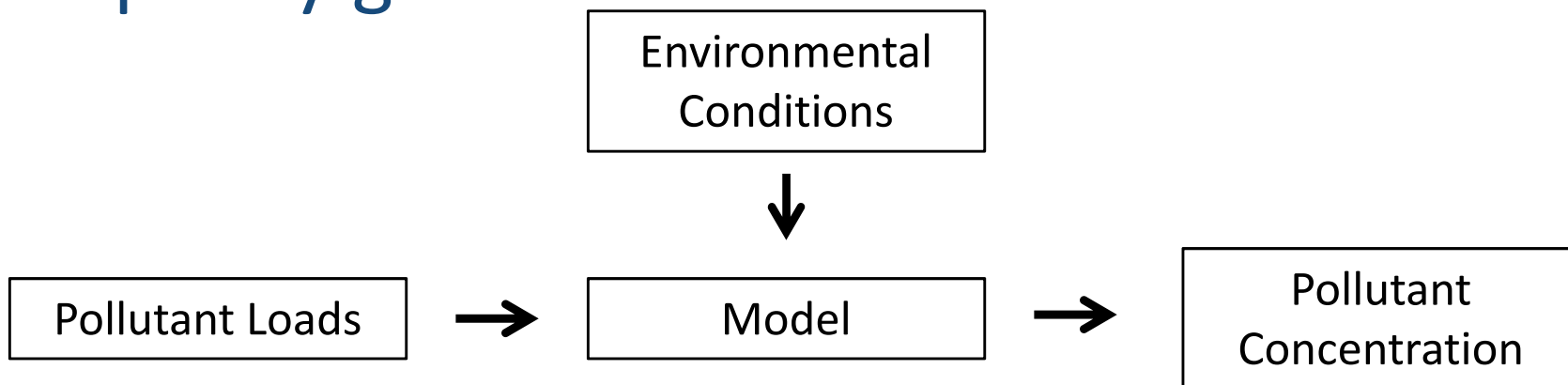
- Purpose of model is to predict instream concentrations pollutant based on pollutant loading rate





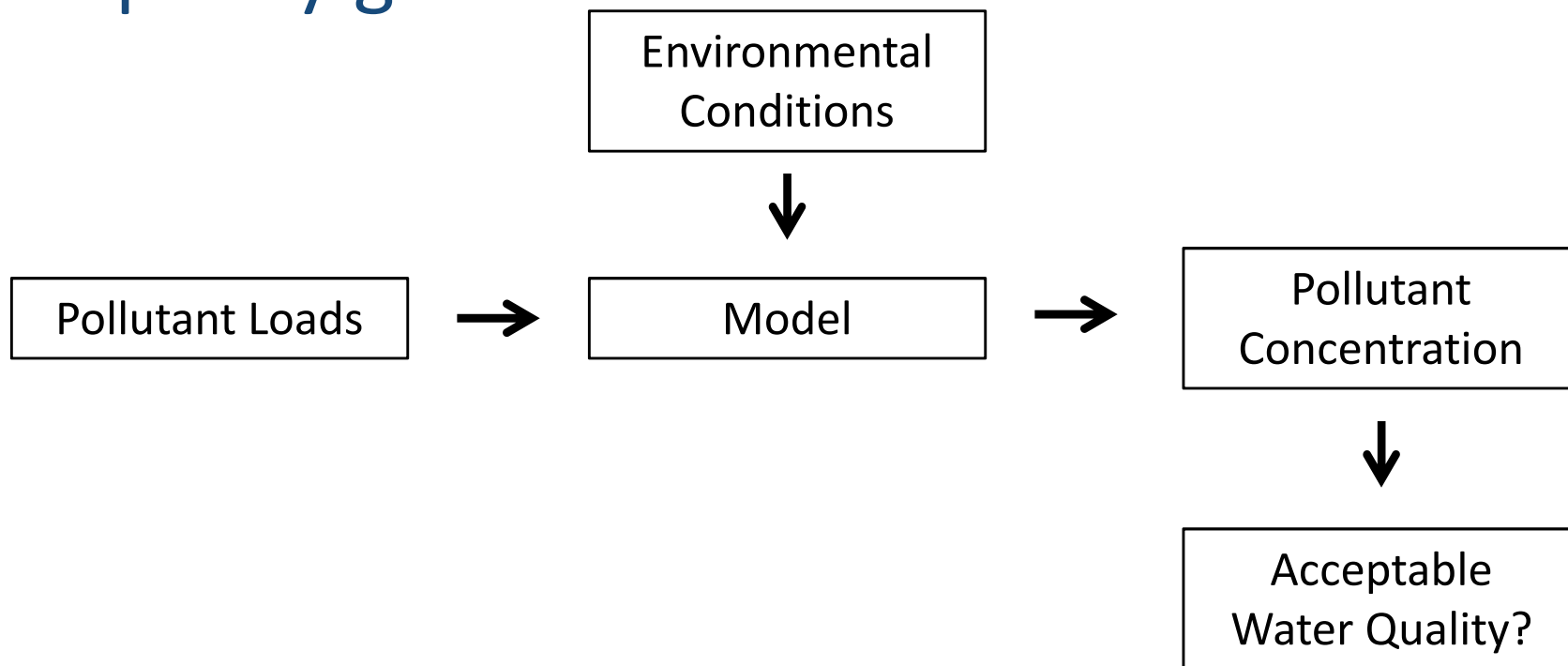
# Review of Modeling Tools

- Model is ultimately used to define maximum pollutant loading rate that meets water quality goals



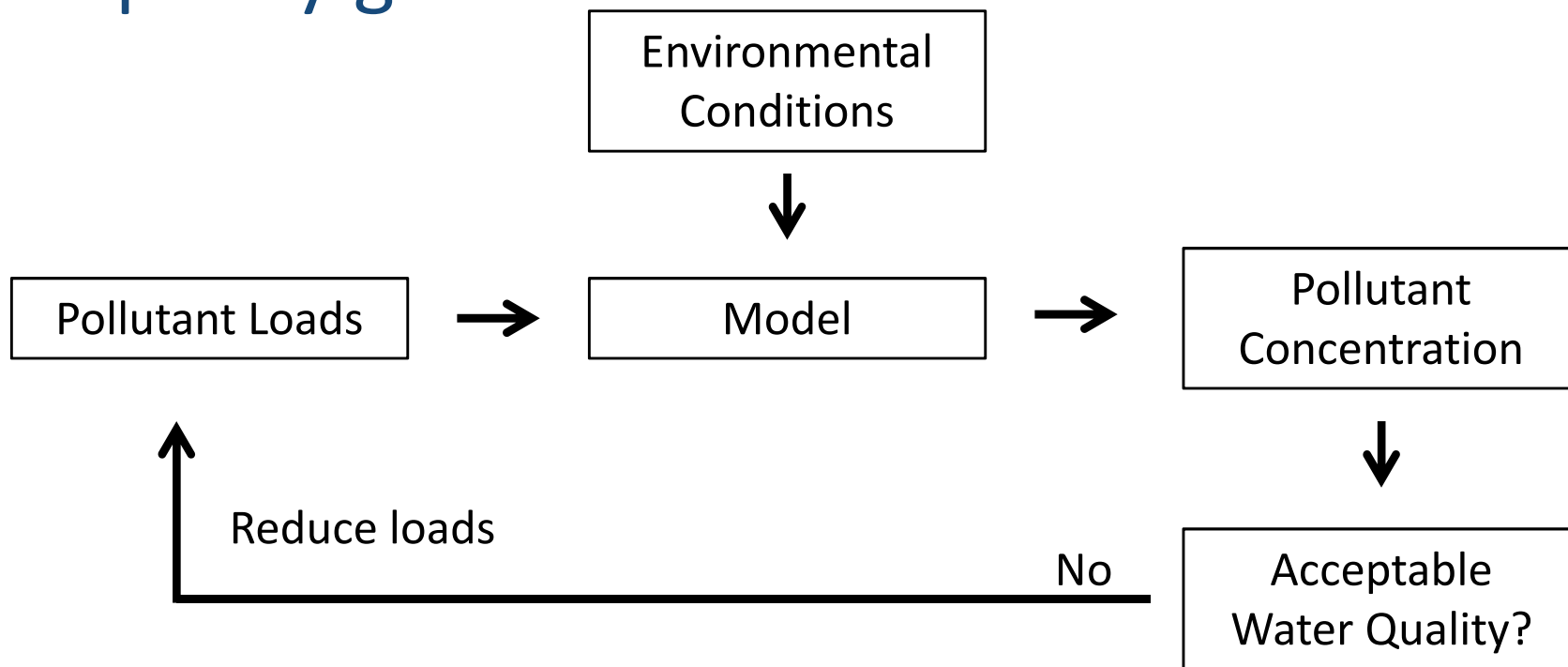
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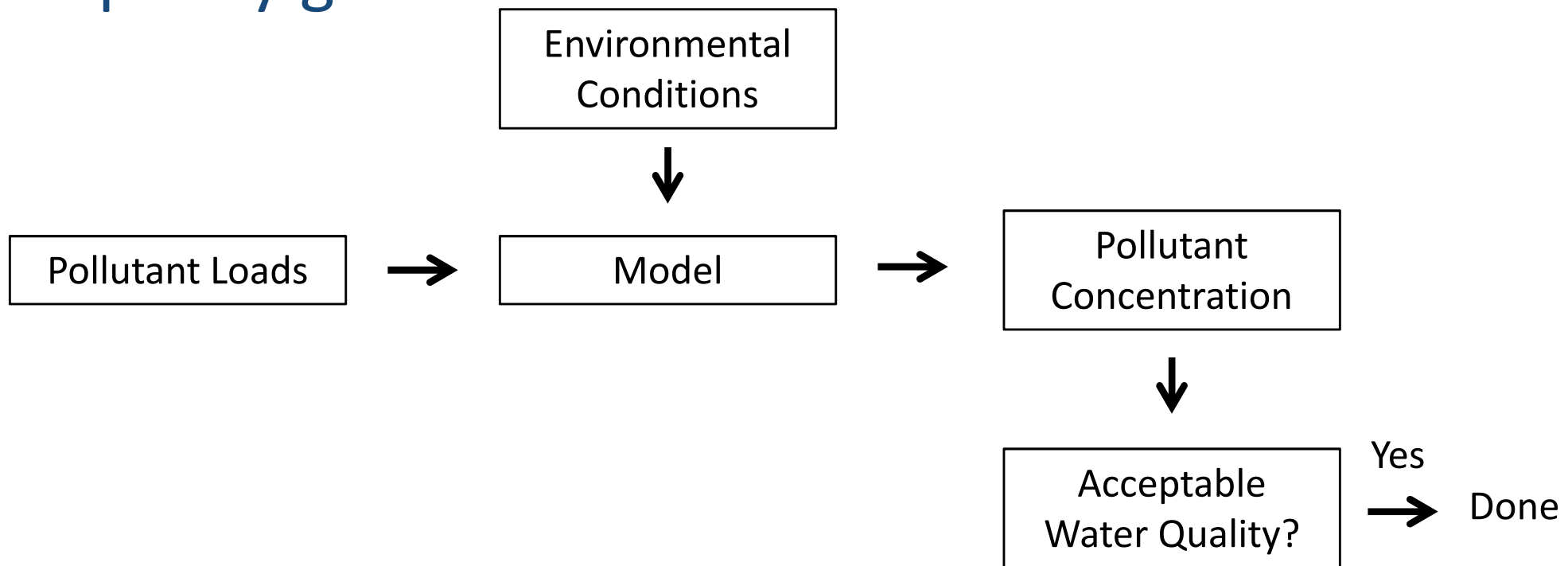
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# Review of Modeling Tools

- Many potentially applicable models exist
- Decision criteria for evaluating models
  - Required
    - Public domain
    - Fully capable of simulating all of the environmental processes of concern
  - Desirable
    - Widely applied
    - EPA-supported



# Applicable Model Frameworks

- Two types of approaches for simulating toxics
  1. Separate models for hydrodynamics and water quality
  2. Single framework that does everything
- We recommend a linked application of EFDC and WASP models
  - EPA supported and widely used
  - More economical to apply than single framework



# Upcoming Monitoring Design

- Key information gained from data gap review
  - We are not going to be able to collect enough monitoring data in the next 1-2 years to fully understand:
    - True sources and their delivery to storm water
    - Atmospheric recycling of local
  - We can collect enough information to:
    - Bolster the mass balance assessment from major source categories
    - Determine groundwater contribution
    - Support water quality model





# Upcoming Monitoring Design

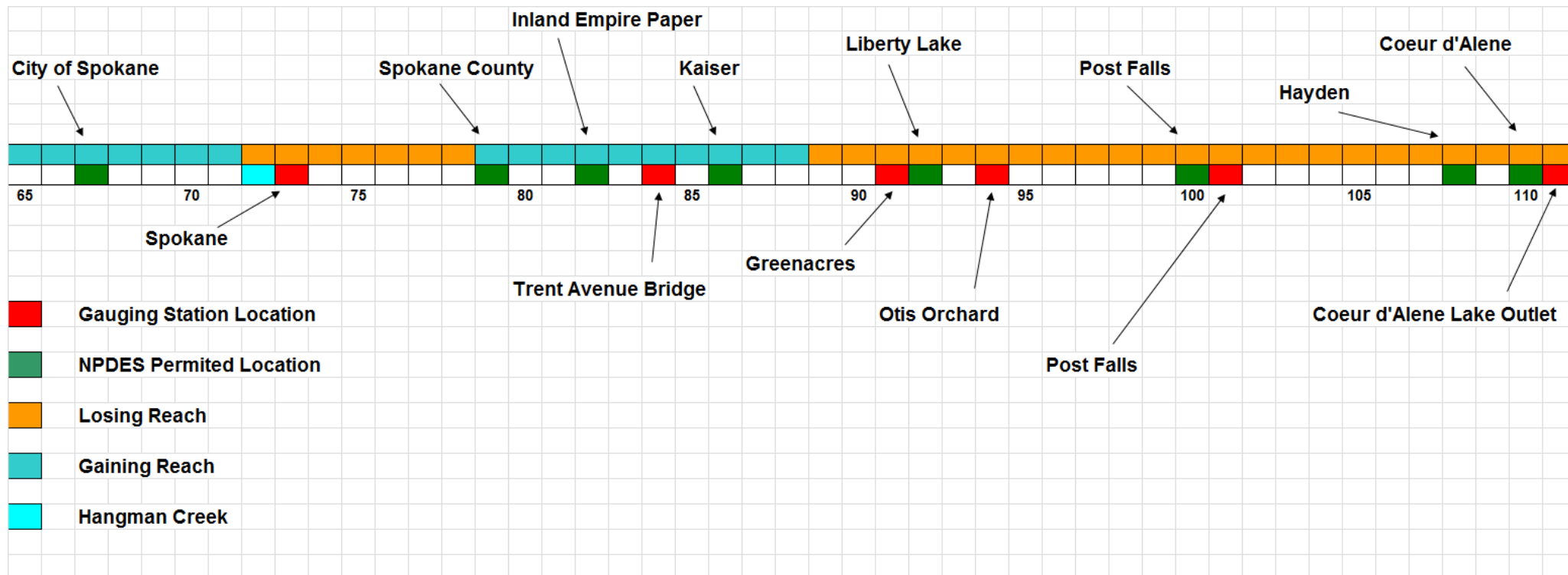
- Proposed elements
  - “Backbone” dry weather Spokane River monitoring
  - Lake Spokane monitoring to support water quality modeling
  - Special studies to help define true sources, pathways, and storm water loading





# “Backbone” Dry Weather Monitoring

- Routine dry weather sampling at:
  - River locations with gaging stations, NPDES permitted sources
- Addresses data gaps related to groundwater and upstream sources



# Lake Spokane Monitoring

- Routine water column monitoring to support water quality model calibration
- Allows determination of:
  - Volatilization
  - Settling loss
  - Sediment exchange



# Potential Special Studies

- Additional sampling within storm water system
  - Supplemented by additional pattern tracing?
- Expand “backbone” monitoring to include wet weather event
  - Estimate stormwater loading component from observed increase in river load
- Research on atmospheric cycling and contribution to watershed



# Next Steps/Discussion

- Draft data collection strategy due October 15
  - Current thinking
    - Four dry weather “backbone” monitoring events
    - Four Lake Spokane surveys
    - Two wet weather events
    - Coordinate with Urban Waters Initiative on stormwater sampling
    - Atmospheric research handled via separate mechanism and/or later
- Comments?

