



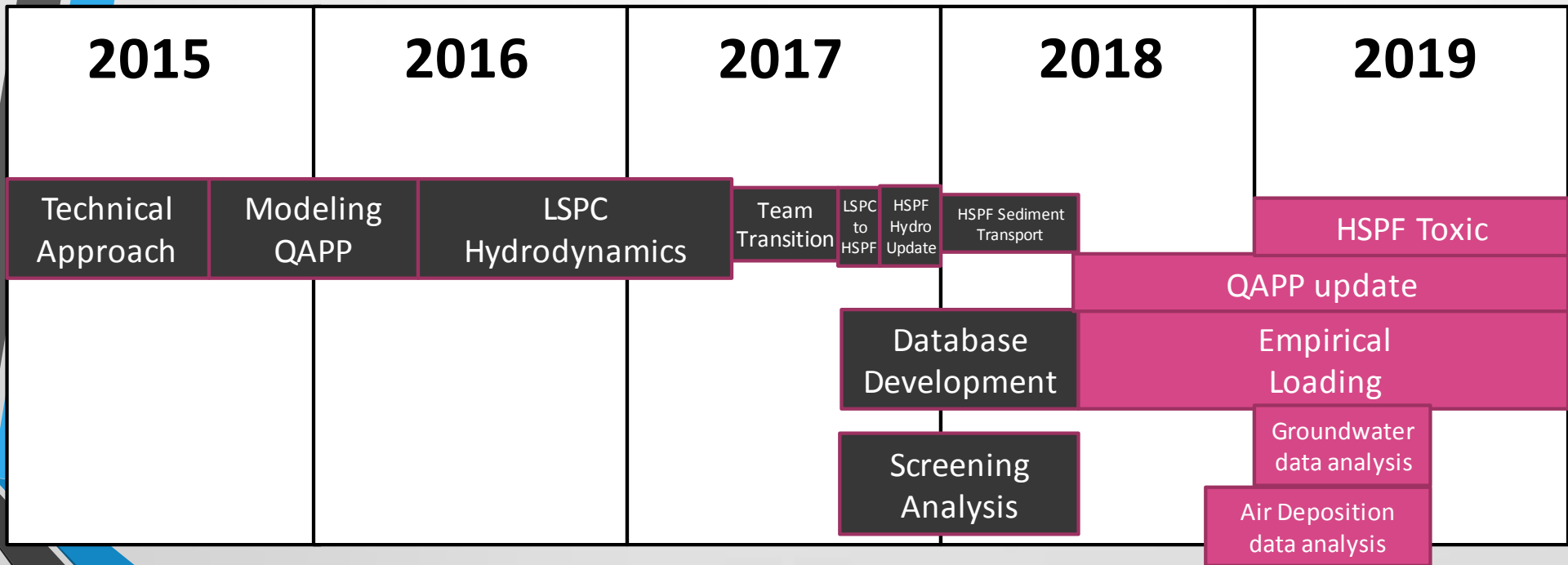
Project update



Bo Li

Department of Ecology
NWRO Water Quality Program

PLA Project Phasing



PLA Project Phasing

2020	2021	2022	2023	2024
Receiving Water Model			Evaluate Management Scenario	
		Food Web Model		

Management Questions

- Collected 30 management questions from 7 managers from EPA and Ecology.
- Modelers team provided comments and categorized them into different types.

LDWG model	Other tools developed by PLA team			Pollutant Loading Assessment (PLA)		
Bed Composition Model	Screening analysis	Mass Balance Box Model	Empirical Analysis	Receiving Water (EFDC or SSM)	Watershed Modeling (HSPF)	Linked Models

WATERSHED MODEL (HSPF) QUESTIONS:

- Rank the biggest source contributor to the smallest source contributor to the river by type.
- What is the contribution from groundwater?
- What is the contribution from air deposition and can it alone cause recontamination above the RAL?

RECEIVING WATER MODEL (EFDC OR SSM) QUESTIONS:

- For the loading to water column, how much are contributed by each source? (Stormwater, CSO, groundwater, air deposition and etc..)
- For the loading to water column, how much will be reduced by sediment clean up?
- What effect will cleaning up the upper 2 miles (RM 3-5) have on RM 2-3? Inversely, will the contaminated sediment potentially re-contaminate the upstream portion of the river due to tidal reversal?
- After cleanup, for the cleaned up area, what are the load contributions from the adjoining sediment and lateral loads?
- If the upstream sediment loading is half of what originally assumed, what will be the effect on the natural recovery area?

LINKED WATERSHED AND RECEIVING WATER MODEL QUESTIONS:

- After the cleanup, how much load contribution from each loading source to the water column and sediment?

PLA won't answer these questions....

- Some site/discharger – specific questions
- Cleanup scenarios
- Erosion
- Groundwater pathway
- ...

QAPP update

- **Toxics parameters**
- **HSPF objectives**
- **HSPF toxics**

Toxics

- Simulate Total PCBs and use the physicochemical properties from the selected group of homologs (tetra-, penta-, hexa- and hepta- homologs) for modeling.
- Based on empirical analysis, Total PCBs has similar distribution as other individual homologs.
- All the endpoints are based on Total PCBs.

Receiving Water Models Options

King County EFDC

King County's hydrodynamic, sediment transport and contaminant model in support of food web model simulated PCBs.

QEA EFDC-SEDZLJ Model

QEA's extensive EFDC-SEDZLJ hydrodynamic and sediment transport model in support of sediment bed contaminant study.

Dynamic Solution EFDC

Commercially licensed EFDC developed by Dynamic Solution LLC. Most updated version of EFDC.

PNNL SSM-Toxi (or FVCOM-Toxi) Model

Hydrodynamic, sediment transport and water quality model for Salish Sea. EPA will support the toxic module development for PCBs.

Modeling Framework

	King County EFDC Model	QEA EFDC- SEDZLJ Model	Dynamic Solution Version EFDC	PNNL SSM-Toxi (or FVCOM-Toxi) Model
Hydrodynamic	EFDC Hydrodynamic	EFDC Hydrodynamic	EFDC Hydrodynamic	FVCOM Hydrodynamics
Sediment Transport	with internally direct linked Sediment Transport	with indirect linked Sediment Transport ((EFDC + SEDZLJ)	with internally direct linked Sediment Transport	with internally direct linked Sediment Transport
Toxic Fate and Transport	with internally direct linked Toxic Fate and Transport	Need Linkage for Toxic Fate and Transport	with internally direct linked Toxic Fate and Transport	Externally coupled toxics fate and transport (9/30/20)
Water Quality	with internally direct linked water quality	Need Linkage for Water Quality	with internally direct linked water quality	with internally direct linked water quality (calibrated)
Wind-wave	No Wind-wave sub-model	No Wind-wave sub-model	No Wind-wave sub-model	Could add wind-wave sub-model if needed

Receiving Water Models Options

**King County
EFDC**



**2009
Mercedes**

**QEA EFDC-
SEDZLJ Model**



**2009
Mercedes
with QEA
upgrade**

**Dynamic
Solution
EFDC**



**2019
Mercedes
(Framework)**

**PNNL SSM-Toxi
(or FVCOM-Toxi)
Model**



Tesla Model Y

Wrap Up

- Send any proposed management questions and feedback of EFDC vs. SSM by May 10th (Friday). (Bo Li: boli461@ecy.wa.gov)
- We will have another TAC meeting in late fall this year.