

Refined Scopes and Budgets for Priority Projects

**Spokane River Toxics Task Force
Technical Track Work Group
May 18, 2022 Meeting**

Scopes and Budgets for Priority Projects

- Data synthesis workshop identified several projects for consideration
 - In addition to previously identified activities
- Staged plan for approval
 1. Develop scopes and rough budgets for interim approval by TTWG and Task Force✓
 - Needed in short term to incorporate funding in the Ecology contract
 2. Develop scopes and final budgets for the projects receiving interim approval
 - Subsequent review by TTWG and Task Force prior to final approval

Scopes and Budgets for Priority Projects

- Previously identified projects
 - Synoptic survey from Spokane USGS gage to Nine Mile
 - Long term water column trend analysis
 - Long term fish tissue trend analysis
- New priority projects
 - Expanded synoptic survey
 - Springfield stormwater catch basin sampling
 - Artesian well sampling
 - Next level historical review
 - Additional sampling at Mirabeau
 - Mission Reach sediment/biofilm sampling
 - Expanded object detection survey
 - Deeper dive into Mission Reach groundwater/surface water interaction

Scopes and Budgets for Priority Projects

- Completed
 - Expanded object detection survey
- Refined scopes and budgets
 - Five projects merged into two for sake of efficiency
 - Combined expanded synoptic survey/ Springfield stormwater catch basin/ artesian well sampling
 - Combined long term water column trend analysis/additional sampling at Mirabeau
- Meriting further discussion
 - Mission Reach sediment/biofilm sampling
 - Next level historical review
 - Long term fish tissue trend analysis
 - Deeper dive into Mission Reach groundwater/surface water interaction

Expanded Synoptic Survey/Catch Basin/Artesian Well Sampling

- Background/Purpose

- Information could be gained by expanding spatial scope of previously approved synoptic survey from USGS gage to Nine Mile Dam
 - Better detail on where loads enter downstream of USGS gage
 - Mass balance assessment specific to Mission Reach
 - Understanding of observed homolog shift downstream of Plantes Ferry
- PCB detection dog identified several areas of interest in Springfield stormwater basin
 - Intent of sampling is to gain quantitative confirmation of PCB presence
- Ecology temperature float identified continuous inflow to Mission Reach
 - Single sample collected in 2021 showed PCB concentrations roughly 10x those seen in the river
 - Intent is to collect confirmatory sampling

Expanded Synoptic Survey/Catch Basin/Artesian Well Sampling

- Scope

- Expanded synoptic survey

- Sample at expanded number of river stations
 - Conduct mass balance assessments on all seven reaches
 - Assess specific fate processes downstream of Plantes Ferry

- Springfield stormwater catch basin sampling

- Sample PCB content in solids at 3 to 5 catch basins near observed contamination
 - Compare observed PCB concentrations to those previously observed in other catch basins

- Artesian well

- Collect two more samples to confirm elevated concentration

Expanded Synoptic Survey/Catch Basin/Artesian Well Sampling

- Schedule

- Survey late summer, 2022
- Completion winter 2023

Deliverable	Completion Date
Draft QAPP	June 3, 2022
Final QAPP	July 29, 2022
Sample collection	August 31, 2022
Laboratory results	October 31, 2022
Draft technical report	December 16, 2022
Final technical report	January 21, 2023
Data loaded to Ecology's EIM	February 28, 2023

- Budget

Item	Budget
Scopes of Work	\$6000
Draft QAPP	\$4000
Final QAPP	\$4000
Field planning and coordination	\$10,000
Field labor	\$48,000
Laboratory analyses	\$73,000
Data validation	\$10,000
Mass balance assessment	\$12,000
Reporting	\$10,000
Data uploading	\$8,000
Total	\$185,000

- If conducted separately

- Expanded Synoptic Survey: \$160,000
- Catch Basin: \$23,850
- Artesian Well Sampling: \$15,650

Water Column Trend/Mirabeau Park Sampling

- Background/Purpose

- Task Force has committed to long term trend monitoring of water column PCBs to demonstrate “reasonable progress” towards attaining water quality standards
 - Monitoring with SPMDs initiated in 2020/2021
 - SPMD results showed high variability in estimated concentration
- Water column grab samples at Mirabeau Park have shown infrequent high PCB concentrations
 - If real, they would indicate a groundwater PCB source entering the river above Kaiser
 - SPMDs with month-long exposure can identify if sporadic spikes are occurring

Water Column Trend/Mirabeau Park Sampling

- Scope
 - Conduct second iteration of SPMD monitoring
 - Maintain three month-long deployments at four stations
 - Supplement SPMD measurements with two grab samples per station per deployment
 - Deploy two SPMDs near Mirabeau
 - Summer low flow period only
 - Interpret data
 - Convert SPMD data to dissolved phase water column concentrations
 - Assess Mirabeau data regarding significance of groundwater load

Water Column Trend/Mirabeau Park Sampling

- Schedule

- Completion winter, 2023

Activity	Completion date
Draft QAPP	June, 2022
Final QAPP	July, 2022
Summer low flow sampling	September, 2022
Winter moderate flow sampling	March, 2023
Spring high flow sampling	June, 2023
Laboratory analyses	August, 2023
Laboratory data validation	October, 2023
Database entry and review	October, 2023
Draft report to Task Force	December, 2023
Final report on web	December, 2023

- Budget

Item	Budget
Scopes of Work	\$6000
Draft QAPP	\$3000
Final QAPP	\$3000
Field planning and coordination	\$4,000
SPMD preparation/rental	\$15,000
Field labor	\$7545,000
Laboratory analyses	\$62,000
Data validation	\$8,000
SPMD data assessment	\$12,000
Reporting	\$8,000
Data uploading	\$5,000
Total	\$186171,000

- Budgets for partial scopes

- No grab PCB sampling: \$136,000
- No Mirabeau sampling: \$161,000
- No grab PCB or Mirabeau sampling: \$125,000

Mission Reach Sediment/Biofilm Sampling

- Background/Purpose
 - PCBs in Mission Reach bed sediments/biofilm and are of interest because:
 - they can help identify the location where previously unidentified sources of PCBs
 - they represent PCB exposure to the base of the benthic food chain and can be informative in terms of describing bioaccumulation of PCBs in fish
- Scope (on hold until results of object detection survey are available)
 - Collect up to 50 bed sediments/biofilm PCB samples
 - Direct vicinity of all metallic objects identified during object detection survey
 - Targeted high spatial resolution sampling near areas of historical hot spots
 - Interpret data regarding
 - Location of PCB sources to the Mission Reach
 - Overall sediment characteristics related to bioaccumulation

Mission Reach Sediment/Biofilm Sampling

- Schedule
 - Completion winter, 2023
- Budget
 - Up to \$150,000

Deliverable	Completion Date
Draft QAPP	May 18, 2022
Final QAPP	July 22, 2022
Samples collected	August 31, 2022
Laboratory Results	October 31, 2022
Draft technical report	December 16, 2022
Final technical report	January 21, 2023
Data loaded to Ecology's EIM	February 28, 2023

Item	Budget	
	10 samples	50 samples
Scopes of Work	\$4000	\$5000
Draft QAPP	\$3000	\$3000
Final QAPP	\$3000	\$3000
Field labor and coordination	\$16,000	\$40,000
Laboratory analyses	\$12,000	\$60,000
Data validation	\$3000	\$9,000
Reporting	\$6000	\$12,000
Data uploading	\$4000	\$8,000
Project management	\$5000	\$10,000
Total	\$56,000	\$150,000

Historical Review

- Background/Purpose
 - Majority of PCBs in the river have been traced to legacy contamination
 - Review of historical land uses is a means to identify potential PCB sources
- Initial scope
 - Review up to 160 Sanborn fire insurance maps from 1952 to 1980 and identify features that were potential sources of PCB releases
 - Review relevant historical documents and associated monitoring data
 - Prioritize sites regarding their potential of being an ongoing PCB source

Sanborn Map Availability

- Initial estimate

- Provided to Ecology from Lightbox

Year	Map Count
1891	2
1902	24
1910	41
1950	40
1952	40
1955	22
1957	18
1959	18
1960	18
1965	17
1968	18
1969	18
1970	18
1980	39

– 75 maps x \$80/map = \$6,000

- First refinement

- Maps for 1960, 1970 appeared to have partial coverage

Year	Map Count
1891	2
1902	24
1910	41
1950	40
1952	40
1955	22
1957	18
1959	18
1960	18
1965	17
1968	18
1969	18
1970	18
1980	39

– 120 maps x \$80/map = \$9,600

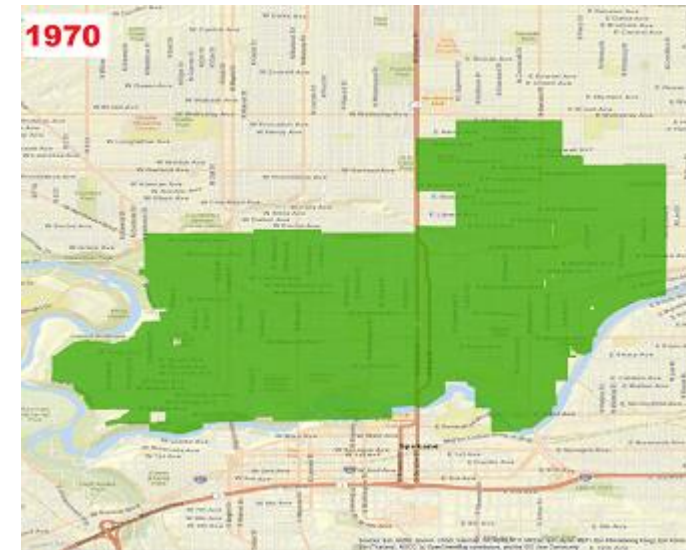
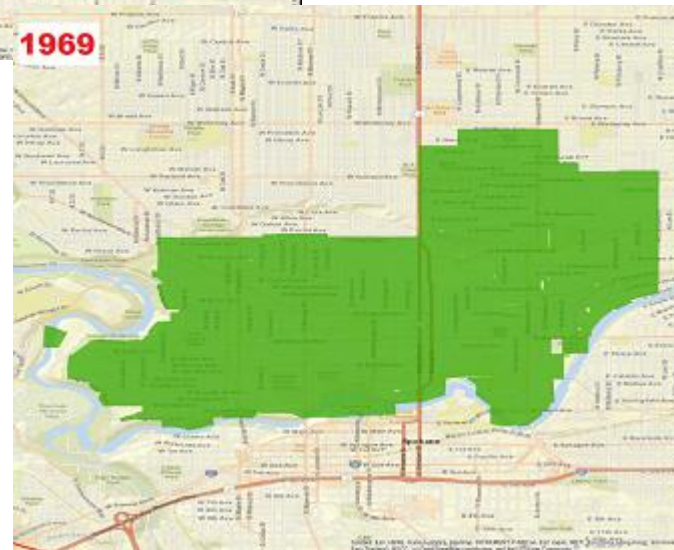
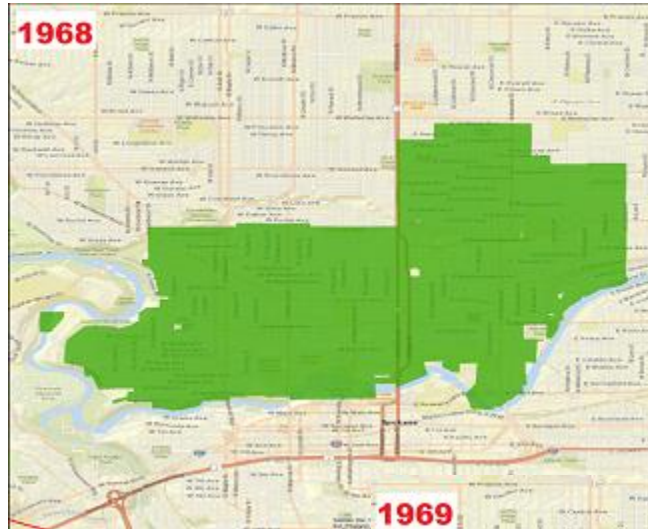
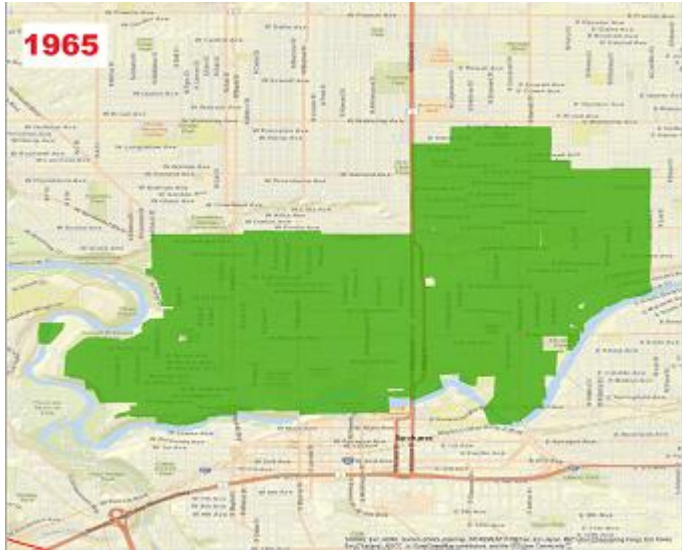
- Update

- Contacted Lightbox in response to Task Force request for tiered costs for different distances to river

Year	Map Count
1955	81
1957	87
1958	84
1959	247
1960	134
1961	127
1965	174
1968	175
1969	175
1970	173
1980	495

– 1133 maps x \$80/map = \$90,640

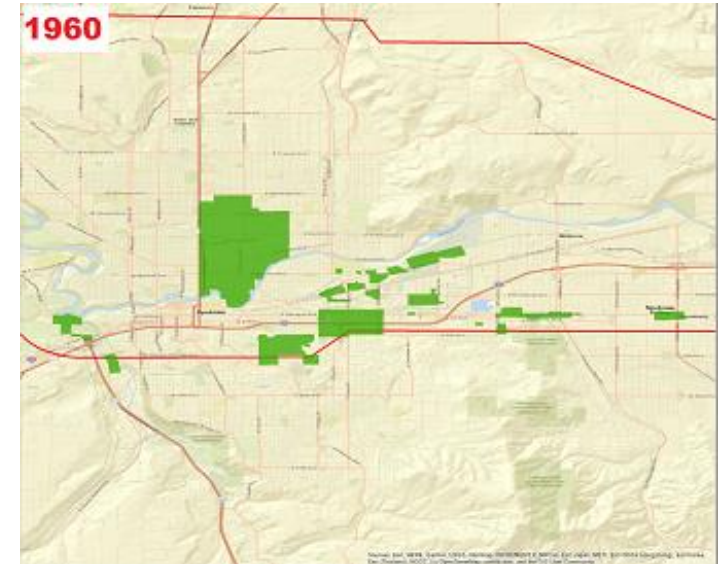
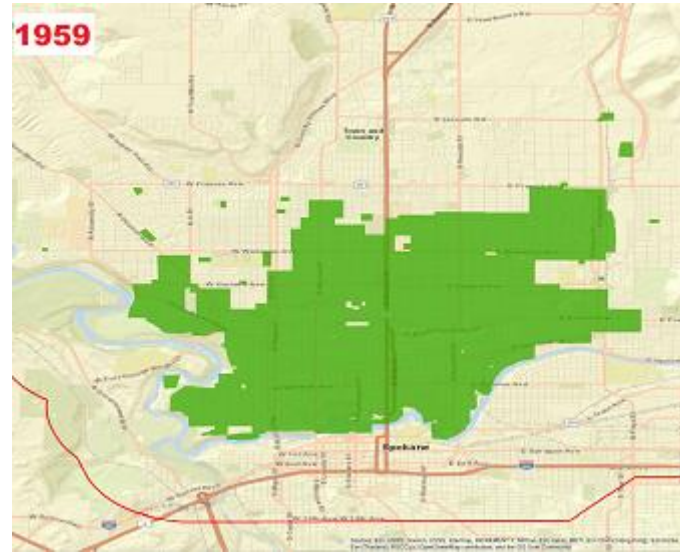
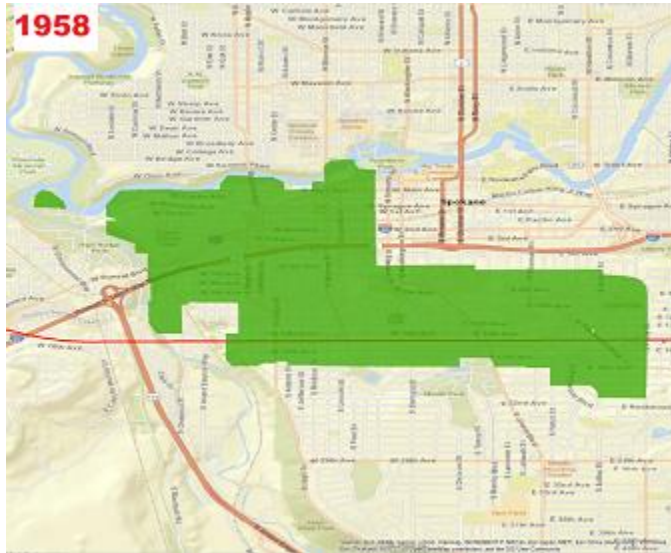
Sanborn Map Coverage



Many years have
essentially identical
coverages

Sanborn Map Coverage

- Other years have much less overlap

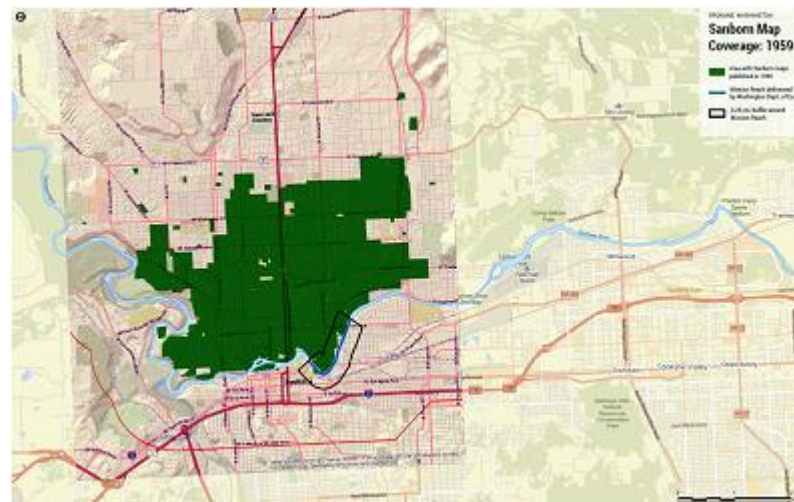


Sanborn Map Costs for Different Levels of Spatial Scope

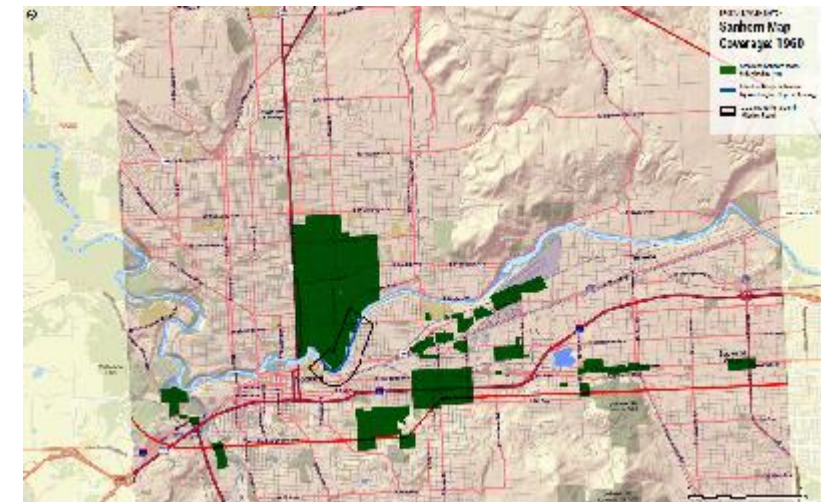
- 1958, 1959, 1960, 1970, and 1980 provide greatest coverage



- Mission Reach 0.25 mi
 - \$0
- Complete coverage
 - \$6,720

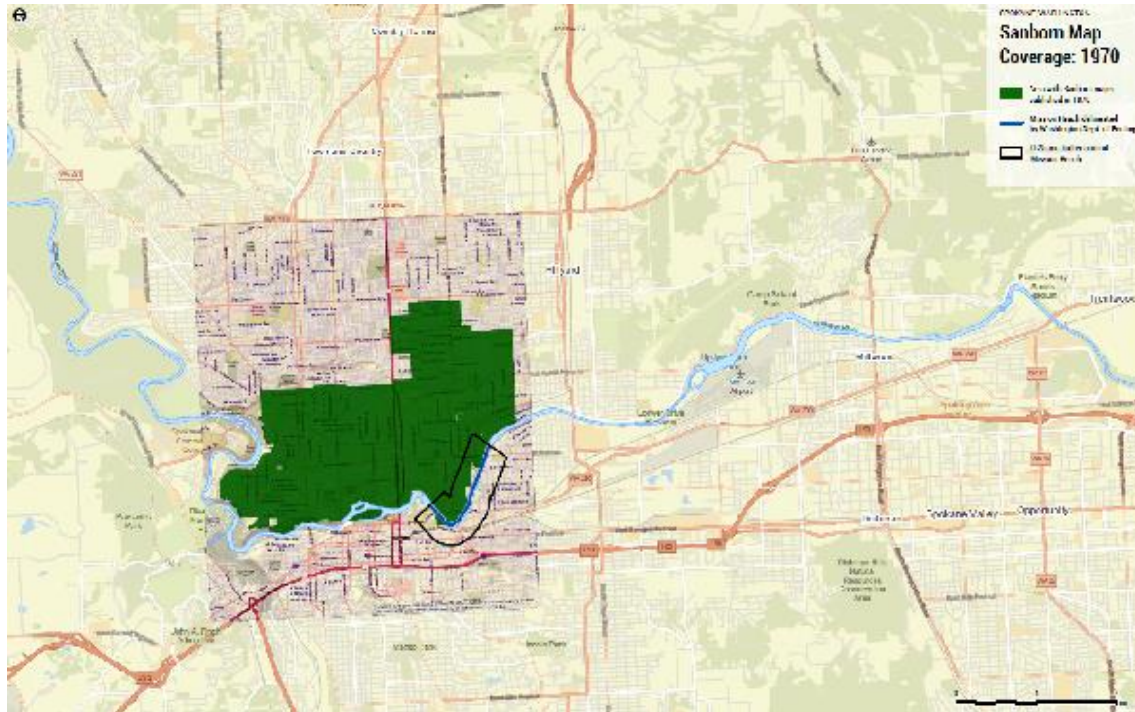


- Mission Reach 0.25 mi
 - \$1,440
- Complete coverage
 - \$19,760

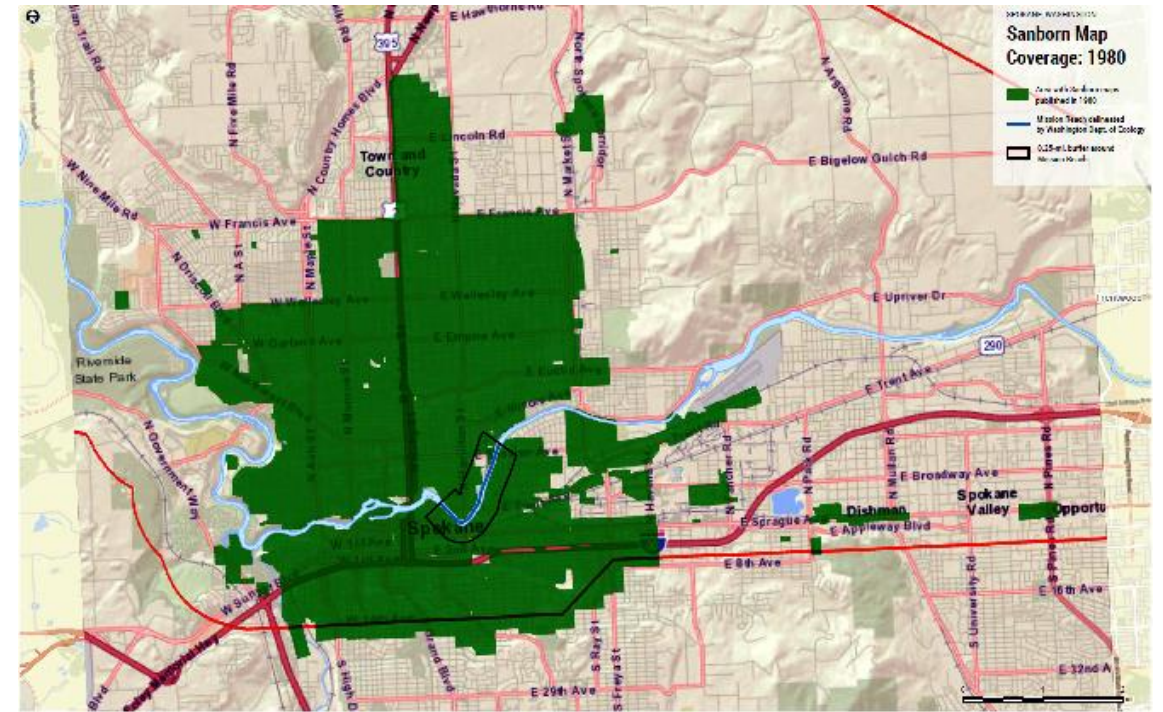


- Mission Reach 0.25 mi
 - \$0 (1959-60 redundant)
- Complete coverage
 - \$10,720

Sanborn Map Costs for Different Levels of Spatial Scope



- Mission Reach 0.25 mi
 - \$1,440
- Complete coverage
 - \$13,840



- Mission Reach 0.25 mi
 - \$3,120
- Complete coverage
 - \$39,600

Map/Analysis Costs for Different Levels of Spatial Scope

- Total cost of \$260 per map purchased and analyzed
 - \$80/map purchase price + \$180/map analysis
- Mission Reach only with 0.25 mile buffer: \$25,000
- Entire study area: \$312,000
- Questions
 - Do we want to extend beyond the Mission Reach?
 - If so, how far?
 - Do we want wider than a quarter mile buffer?
 - If so, how wide?

Trend Assessment for Fish Tissue

- Background/Purpose
 - Task Force has committed to long term trend monitoring of water column PCBs to demonstrate “reasonable progress” towards attaining water quality standards
- Scope
 - Conduct second iteration of fish tissue monitoring
 - Same as 2020, but drop State Line reach
- Current needs
 - Coordinate with WDFW
 - Prepare QAPP addendum

Deeper Dive into Mission Reach Groundwater Background

- PCB data in Mission Reach suggest presence of unknown source
 - Inflow of contaminated groundwater is a possible explanation
- Groundwater/surface water interaction in this reach is poorly understood
 - Spokane Valley-Rathdrum Prairie Aquifer Atlas shows Mission Reach as net losing
 - Concurrent aquifer level and river stage monitoring near Hamilton St. bridge shows potential for groundwater influx at times
 - Spokane County currently conducting continuous monitoring
 - Dry weather subsurface inflow identified during Ecology temperature float
- “Further our understanding of groundwater hydrology” was listed as a priority outcome of mini-data synthesis workshop
 - Consult with local experts to better understand what is known about hydrology
 - Determine appropriate next step after consultation

Deeper Dive into Mission Reach Groundwater

Initial Consultation Efforts

- John Covert, Ecology
 - Determination of Mission Reach as losing was based on data that spanned beyond the Mission Reach (Greene St. to USGS Gage)
 - Not aware of any finer resolution data describing groundwater interaction in Mission Reach
- Jeremy Schmidt, Ecology
 - Monitoring well elevations on south side of river indicate hydraulic gradient is towards the river
- Bill and Mike Yake (via Brandee Era-Miller)
 - Sources of subsurface water to Mission Reach could be coming from creeks flowing north from the South Hill area that have been paved over
 - Areas of subsurface contamination may have been developed without remediation

Deeper Dive into Mission Reach Groundwater

Next Steps

- Consultation with additional sources of local knowledge
 - John Covert suggested Stan Miller
 - Others?
- Review monitoring well elevations
- Review development history in Riverpoint/Spokane Falls Blvd. area
- Other?