Capital Project Supplemental Information

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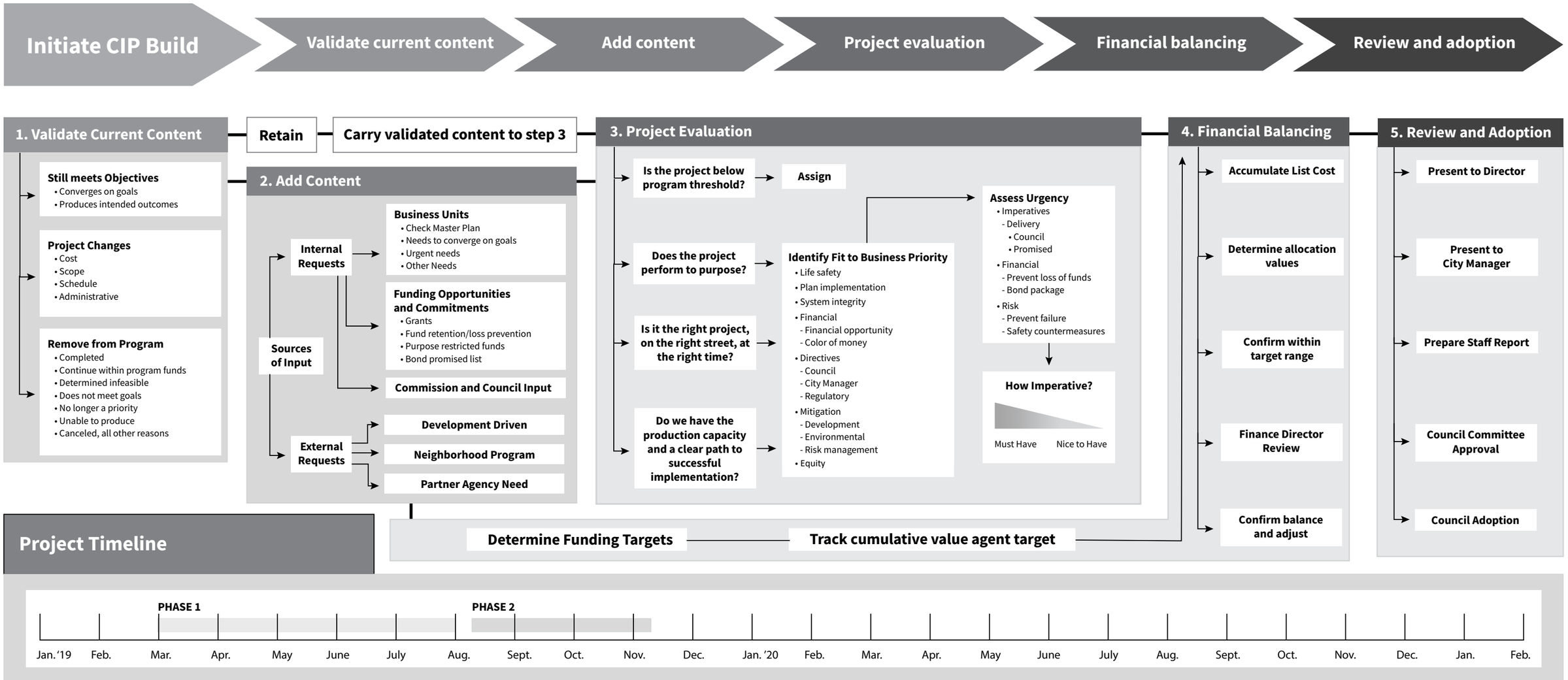
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Surface Water CIP Prioritization

Background and Goals

Prioritization methodology used by Surface Water Engineering needed to be updated to be simpler and easy to use and align better with Capital Projects Engineering processes. The primary goals for the CIP prioritization are:

- Develop prioritization tool that is easy for everyone to use and understand.
- Prioritize full list of funded, unfunded, and new CIP projects so that conceptual summary sheets and planning level cost estimates could be developed or updated for the highest priority projects.
- Provide a list of high priority projects for the Capital Projects Engineering group to choose from for the next budget cycle.
- Have a prioritization process in place to re-prioritize CIP projects when opportunities or emergency projects arise that bump other projects from the current list of funded projects.

Methodology

The following steps outline the prioritization methodology

1. Identify basic project information:
    a. Primary and secondary surface water issues/goals addressed (i.e., flooding, habitat, water quality or infrastructure).
    b. Estimated total cost. For implementation purposes, a portion of the total project cost (Phase 1- Preliminary Design) may be funded with future phases re-prioritized and funded at a later date with more accurate budget estimates.
    c. Design start date.

    Note: Estimated total cost and design start date are not prioritization criteria but are necessary pieces of information to be considered for CIP programming and project implementation.
2. Answer questions about how project addresses goals and surface water management considerations (see questions below).
3. Calculate scores based on how questions are answered.
4. Rank CIP projects for each category.

    Note: *Projects are prioritized against each other in the same Utility goal category (i.e., Infrastructure, Flooding, Habitat, Water Quality). The total possible points for each category are the same so if the City*

could rank all surface water projects based on points, however, in this Plan, they were ranked within their separate categories.

5. Determine desired allocation of projects (or funding) per Utility goal and identify top percentage of projects in each category that matches the desired allocation.
6. Develop CIP implementation plan based on CIP budget, and staffing, optimizing number and budget of highest priority projects.

CIP Prioritization Questions

Several prioritization questions are the same regardless of the Utility goal the project addresses, while others are goal-specific. The term "Project" refers to the project being proposed as a solution to the surface water issue.

General Questions for All Projects (Total possible points = 25)

Below are the following general questions that are included for all projects in the prioritization methodology.

Social Equity

Is this project located within area identified as an underserved community?

Explanation: Used King County's 2019 Equity Score

4.01-5 (less wealthy, more diverse) = 5 points

3.01-4 = 4 points

2.34-3= 3 points

1.68-2.33 = 2 points

1-1.67 (more wealthy, less diverse) = 0

Multi-benefit Project

Does this project support multiple surface water goals?

Explanation: based staff knowledge

3 other goals = 5

2 other goals = 3

1 other goal = 1

Opportunity

Is there an opportunity for the Project to be combined with another City project?

Neighborhood projects that could be implemented simultaneously or in combination would

illicit a "Yes" response because they could share resources and potentially limit disruption due to construction activities. Examples include transportation projects (road and Utility improvements in the same area), or park projects (opportunities for retrofit facilities with park improvements).

Funded CIP Project = 5 (use Active CIP layer to determine if funded CIP Project is nearby)

Study / Plan / overlay projects = 3

Opportunities exist = 1 (stakeholder conversations need to happen)

Mandate

Is there a mandate for completing the Project (i.e., federal, state, legal)?

Examples of projects that have a mandate for completion would include permit-required projects, mitigation projects, projects resulting from lawsuits, etc.

Yes = 5

No = 0

City Council

Is the Project directed by City Council or City Leadership?

Projects that have high interest or are the result of a directive by City Council or City Leadership would receive a "Yes" response.

Yes = 5

No = 0

Flooding Project-specific Questions (Total possible points = 15)

Flooding Frequency

At what storm event does this flooding occur?

Explanation: based on staff knowledge/project history

2-year storm event = 5

10-year storm event = 4

25-year storm event =3

50-year storm event (or any predicted event) = 2

100-year storm event = 1

Flooding Impact

Does the flooding cause structure damage and/or roadway flooding?

Explanation: based staff knowledge/project history and location of project

Structure or arterial roadway flooding = 5

Local street flooding or trails or parking lot flooding = 3

Landscape / yard flooding = 1

Flooding Claims

Has the City paid a claim for this flooding problem?

Explanation: based staff knowledge/project history

Yes = 5

No = 0

Water Quality Project-specific Questions (Total possible points = 15)

Area Treated

How many acres of pollution generated area is treated?

Explanation: most H2O projects had conceptual designs, used that data to answer this question

>10 acres = 5

7 – 10 = 4

4 –7 = 3

1 – 4 =2

<1 = 1

Type of Treatment

What type of treatment is provided?

Explanation: most H2O projects had conceptual designs, used that data to answer this question

Enhanced (Basic plus infiltration) / Oil Treatment = 5

Basic Treatment = 3

Pre-Treatment = 1

Downstream Water Quality Conditions

Does the downstream receiving water have a known 303(d) Category 5 issue?

Explanation: referenced Ecology's Water Quality Atlas Map

Yes = 5

No = 0

Habitat Project-specific Questions (Total possible points = 15)

Fish Barriers

Does the project remove a fish barrier?

Explanation: referenced WDFW's barrier map. Kirkland's barrier assessment does not match WDFW's in all places. When in conflict, used WDFW's.

Full Barrier = 5

Partial Barrier = 3

Culvert Assessment

If the project is a fish impassable culvert, where does this culvert fall in the City's culvert assessment analysis completed with the 2014 master plan?

Explanation: referenced Appendix E: Culvert Assessment Memorandum

4 = 1

3 = 2

2 = 3

1 = 5

Habitat or Restoration Plan (non-culvert replacement projects only)

If the project is **not** *a culvert replacement, has the project been identified in a habitat and/or restoration plan?*

Explanation: most likely options are the WRIA 8 4-year work plan or GKP 20-year Plan

Yes = 5

No = 0

Fish Presence

Is the project on a stream with known salmonid presence?

Explanation: based staff knowledge/monitoring results, community Salmon Watchers, or WDFW Salmonscapes

Yes = 5

No = 0

Infrastructure Project-specific Questions (Total possible points = 15)

Critical Pipes

What category has the pipe been identified within the critical pipe analysis?

Explanation: Used new Pipe Risk Tool

Extreme = 5

High = 3

Medium / Low = 1

No Pipe Exists = 0

Accessibility and Efficiency for Maintenance and Operations

Does project improve accessibility and efficiency for maintenance crews (either acquiring easements where we don't have any or shifting a line into ROW for easier access)?

Explanation: based staff knowledge/project history and talking with Storm Crew

Yes = 5

No = 0

Improve Storm System Gaps

Was this project identified within the gap analysis as a need for infrastructure to be placed?

Explanation: based staff knowledge and assessment of system on GIS map. Future gap analysis work may be included

Yes = 5

No = 0

CIP Prioritization Results

Flooding Projects Prioritization

CIP Number	Project Name	Closest Location	At what storm event does this flooding occur	Does the flooding cause structure damage and/or roadway flooding	Has the City paid a claim for this	Does this project provide infiltration	Equity Score (exact number above 1.67)	Opportunity? Yes/No	Does this project support multiple goals	Mandated? Yes/No	City Council Directive? Yes/No	Total	Rank
SDC 12900	NE Juanita Drive Storm Failure Near 86th Avenue NE	11004 86th AVE NE	5	5	0	0	2	3	0	0	0	15	High
SDC 16400	Silver Spurs Storm System Upgrade	6139 130th Ave NE	4	3	0	5	2	0	0	0	0	14	High
SDC 17200	98th and NE Juanita Drive Intersection Flooding Study		4	5	0	0	2.67	1	1	0	0	13.67	High
SDC 15600	Holmes Point Drive NE Pipe Installation	12923 HOLMES PT	5	5	0	0	0	3	0	0	0	13	High
SDC 15400	Stream Restoration at 128th Lane NE	12521 128TH LN NE	4	5	0	0	2.33	0	1	0	0	12.33	Medium
	Highlands Neighborhood (116th Ave NE and 115th Pl) Pipe Replacement	10532 115th Pl	4	3	0	0	2	0	1	0	0	10	Medium
SDC 15500	NE 141st St Pipe Installation	8630 NE 141ST ST	4	3	0	0	2	0	0	0	0	9	Medium
SDC 16300	Bridleview Estates Drainage Evaluation	6102 135TH AVE NE	3	3	0	0	2.33	0	0	0	0	8.33	Low
SDC 14700	131st Ave NE Storm Improvements	7803 131st Ave NE	4	1	0	0	2.33	0	1	0	0	8.33	Low
SDC 10300	Lakeview Drive Conveyance Modification	Lake View Drive and NE 63rd Street 6222 LAKEVIEW DR	1	0	0	0	2	0	1	0	0	4	Low
SDC 08100	Neighborhood Drainage Assistance Program	Fund category-throughout the city										0	

Infrastructure Projects Prioritization

CIP Number	Project Name	Closest Address	Primary Issue Addr	Secondary Issue Addressed (type)	Est. Cost	Critical Infrastructure ID	Critical Infrastructure (x2)	Improve accessibility and efficiency for maintenance?	gap analysis identified?	Does this project provide infiltration	Equity Score (exact number above 1.67)	Opportunity? Yes/No	Does this project support multiple goals	Mandated? Yes/No	City Council Directive? Yes/No	Total with Exact Equity	Rank
SDC 14100	Storm Line Rehabilitation on NE 136th Street	9714 NE 136th St	Infrastructure		$ 1,050,000	5	10	5	0	0	2.33	0	0	0	0	22.33	High
SDC 10100	Holmes Point Pipe Replacement at Champagne Creek Basin	11553 Holmes Point Drive	Infrastructure		$ 260,000	3	6	5	5	0	0	3	0	0	0	22	High
SDC 14400	NE 119th Ct Storm System Improv.	9910 NE 119TH ST	Infrastructure		$ 450,000	3	6	5	0	0	2.67	0	1	0	0	17.67	High
SDC 14400	Highlands Neighborhood- 116th Ave Storm Facility	10528 115TH PL NE	Infrastructure		$ 1,000,000	3	6	5	0	0	2	0	1	0	0	17	High
SDC 15900	108th Ave NE Pipe Installation	11855 108th Ave NE	Infrastructure		$ 250,000	1	2	5	5	0	2.67	0	0	0	0	15.67	High
SDC 12800	NE 85th Street/122nd Avenue NE Stormwater Improvements	12120 NE 85TH ST	Infrastructure		$ 375,000	3	6	0	0	0	0	5	0	0	0	14	High
SDC 16200	141st St Flow control Conveyance System	7848 NE 141st ST	Infrastructure			0	0	0	5	5	2	0	1	0	0	13	High
SDC 14800	105th Pl NE Pipe Replacement	12100 105th Pl NE	Infrastructure		$ 240,000	1	2	5	0	0	2.67	0	1	0	0	11.67	High
SDC 11600	NE 140th Street Pipe Replacement	9525 NE 140th Street	Infrastructure		$ 100,000	1	2	5	0	0	2.33	1	0	0	0	11.33	High
SDC 16100	NE 141st St and 125th Pl NE Pipe Repair	14100 125TH PL NE	Infrastructure		$ 650,000	1	2	5	0	0	3	0	0	0	0	11	Medium
SDC 11900	NE 58th Street Pipe Repair	10228 NE 58th Street	Infrastructure		$ 280,000	1	2	5	0	0	2	0	0	0	0	10	Medium
SDC 15700	6th Street Everest Creek Obstruction	212 6TH ST S	Infrastructure		$ 70,000	1	2	5	0	0	2	0	0	0	0	10	Medium
SDC 15800	Outlet to CKC at 110th Pl NE	9411 110TH PL NE	Infrastructure		$ 100,000	1	2	5	0	0	2	0	0	0	0	10	Medium
SDC 11200	112th Avenue NE Pipe Repair	14206 111TH AVE NE	Infrastructure		$ 60,000	1	2	5	0	0	2	0	0	0	0	10	Medium
SDC 11300	113th Avenue NE Pipe Repair	14004 113TH AVE NE	Infrastructure		$ 120,000	1	2	5	0	0	2	0	0	0	0	10	Medium
SDC 11400	124th Avenue NE Pipe Repair	12402 NE 141ST PL	Infrastructure		$ 160,000	1	2	0	0	0	3	3	0	0	0	9	Medium
SDC 14000	Holiday Drive Conveyance Improvement Study	between 12806 and 12810 Holiday Dr	Infrastructure		$ 350,000	1	2	5	0	0	0	0	0	0	0	8	Medium
SDC 11800	Champagne Point Drive NE Pipe Repair	11115 Champagne Point Road NE	Infrastructure		$ 270,000	1	2	5	0	0	0	0	0	0	0	8	Medium
SDC 13900	122nd Avenue NE Storm Replacement	8249 122ND AVE NE	Infrastructure		$ 992,500	1	2	0	0	0	0	5	0	0	0	8	Medium
	Station Area 85th Plan - 120th Pipe Replacement	11830 NE 90TH ST	Infrastructure			1	2	0	0	0	0	3	1	0	0	7	Low
SDC 16900	Lake Washington Blvd Groundwater Conveyance	10316 NE 52nd St	Infrastructure			0	0	0	5	0	2	0	0	0	0	7	Low
SDC 12000	Kingsgate Park Pipe Outfall Improvements	11532 NE 140th Street	Infrastructure		$ 80,000	1	2	0	0	0	3	0	1	0	0	7	Low
SDC 09400	NE 114th Place Stormline Replacement	11321 126TH AVE NE	Infrastructure		$ 405,000	1	2	0	0	0	2.67	1	0	0	0	6.67	Low
SDC 14200	93rd Avenue NE Hillside Improvements	14344 93rd Ave NE	Infrastructure	Flooding	$ 1,158,000	1	2	0	0	0	2.33	0	1	0	0	6.33	Low
SDC 13800	Outlet Path at 101st Pl NE	14140 101st PL NE	Infrastructure		$ 150,000	1	2	0	0	0	2	0	1	0	0	6	Low
SDC 11700	111th Avenue NE Pipe Repair	9811 111th Avenue NE	Infrastructure		$ 400,000	1	2	0	0	0	2	0	1	0	0	6	Low
SDC 15300	NE 138th St to 97th Ave NE Pipe Replacement	13739 97TH AVE NE	Infrastructure		$ 245,000	1	2	0	0	0	2.33	0	0	0	0	5.33	Low
SDC 16800	NE 112th St Stormwater Gap	10831 NE 112th St	Infrastructure			0	0	0	5	0	0	0	0	0	0	5	Low
SDC 14600	126th Ave NE Storm Pipe Replacement	12607 NE 95th ST	Infrastructure		$ 330,000	1	2	0	0	0	0	0	1	0	0	4	Low
SDC 12700	Storm Rehabilitation at Rose Point Lift Station	1805 10TH ST W	Infrastructure		$ 487,900	1	2	0	0	0	0	0	0	0	0	3	Low
	Annual Replacement of Aging/Failing Infrastructure	Annual Fund	Infrastructure		$ 500,000		0									0	

Habitat Projects Prioritization

CIP Number	Project Name	Closest Addresss	Primary Issue Addressed (type)	Secondary Issue Addressed (type)	Est. Cost	Does the project remove a fish barrier?	If yes, cuvlert assessment score?	If no, in a habitat and/or restroration plan?	Salmonid presence?	Infiltration?	Opportunity? Yes/No	Multi-benefit?	Equity Score (exact number above 1.67)	Mandated? Yes/No	City Council Directive? Yes/No	Total	Rank
SDC 10200	Juanita Drive Culvert Replacement	7721 NE 133RD PL	Habitat	Infrastructure	750000	5	5	0	5	0	3	0	2	0	0	20	high
SDC 16500	141st Culvert Replacement	14104 111TH AVE NE	Habitat			3	2	0	5	0	0	3	2	0	5	20	high
SDC 16600	Woodinville-Juanita Drive and Juanita Creek Culvert replacement	13810 JUANITA WOODINVILLE WAY NE	Habitat	Infrastructure	2284600	5	5	0	5	0	0	1	2	0	0	18	high
SDC 11500	Weavers Culvert Replacement	13430 109TH AVE NE				5	3	0	5	0	0	1	2	0	0	16	medium
SDC 16700	102nd Ave and Juanita Creek Culvert Replacement	14114 102ND AVE NE	Habitat	Infrastructure		3	5	0	5	0	0	1	2	0	0	16	medium
SDC 05400	Forbes Creek / Cross Kirkland Corridor Fish Passage	10830 117th Ave NE	Habitat		$ 1,696,500.00	5	2	0	5	0	0	1	0	0	0	13	medium
SDC 04900	Forbes Creek / 108th Avenue NE Fish Passage Improvements	10714 108TH AVE NE	Habitat		$ 1,523,100.00	0	2	0	5	0	0	3	0	0	0	10	low
SDC 10000	Brookhaven Pond Modifications	9911 NE 128TH ST	Habitat	Water quality	$ 700,000.00	0	0	0	5	0	0	3	2.33	0	0	10.33	Low
SDC 06300	Everest Creek - Slater Ave at Alexander St to 10th St S Stream Improvements	427 SLATER ST S	Habitat	Infrastructure	$ 1,050,000.00	0	0	0	0	0	0	1	2	0	0	3	Low
SDC 04500	Carillon Woods Erosion Control Measures	10421 NE 55TH ST				0	0	0	0	0	0	1	0	0	0	1	Low
	Property Acquisition Opportunity Fund		Habitat	Water Quality	$ 589,225.00												

Water Quality Projects Prioritization

CIP Number	Project Name	Closest Address	Primary Issue Addressed (type)	Secondary Issue Addressed (type)	Est. Cost	PGIS Treated?	Type of treatment provided	Downstream receiving water known 303 (d) listing?	Does this project provide infiltration?	Equity Score (exact number above 1.67)	Opportunity? Yes/No	Does this project support multiple goals	Mandated? Yes/No	City Council Directive? Yes/No	Total	Rank
SDC 12600	Spinney Homestead	11710 NE 100TH ST	Water Quality		$ 5,400,000	5	5	5	5	2	1	0	0	5	28	High
SDC 13100	NE 107th Pl Retention Pond Retrofit	10703 126TH AVE NE	Water Quality	Infrastructure	$ 1,187,000	5	5	5	0	2.67	1	1	0	0	19.67	High
SDC 13000	Bioretention, Water Quality Treatment & Storage at 126th Ave NE	11102 126TH AVE NE (raingarden location)	Water Quality		$ 4,259,000	5	5	5	0	2.67	0	1	0	0	18.67	Medium
SDC 08501	Cross Kirkland Corridor Water Quality Retrofit	8630 112TH LN NE (raingarden)	Water Quality		$ 1,000,000	3	3	5	0	2	0	0	0	0	13	Medium

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MEMORANDUM

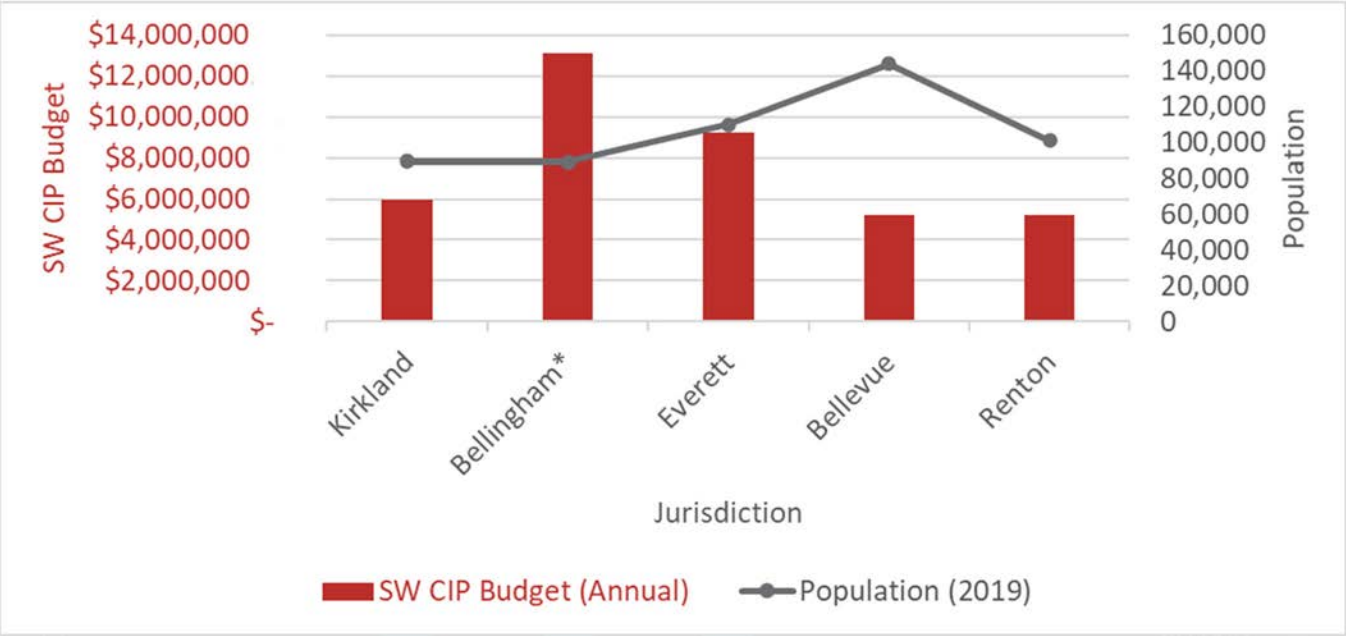
DATE:	June 25, 2021
TO:	Erin Nelson, PE, LG, Altaterra Consulting LLC
FROM:	Theo Prince, PE, Parametrix
SUBJECT:	CIP Delivery Model Evaluation Summary
CC:	Paul Fendt, PE, Parametrix
PROJECT NUMBER:	553-736-5001 Task 2.6
PROJECT NAME:	City of Kirkland Surface Water Master Plan Update

INTRODUCTION

As part of the City of Kirkland Surface Water Masterplan (SWMP) update, the project team has identified and interviewed municipalities to understand and identify delivery model elements from their programs that could be useful in applying to the Kirkland model. This memo summarizes noteworthy elements from the existing Kirkland model and elements could be beneficial to incorporate from other municipal models.

METHODOLOGY

Comparison cities were screened by looking at population size and stormwater capital improvement program (CIP) annual budgets. Figure 1 below shows these metrics for four cities in comparison with Kirkland. Ultimately, Bellevue and Renton were selected and interviewed based on these metrics.



**Bellingham CIP Budget does not break out budget by storm/surface water*

Figure 1. Potential Jurisdictions to Review CIP Delivery

With the goal of identifying key parts of the municipal CIP delivery and to provide a similar format for the interview across municipalities, the project team prepared a list of questions to ask CIP program management at Kirkland, Bellevue, and Renton. These questions were sent in advance of the interview. Refer to Attachment A for the list of questions.

PROGRAM OVERVIEW

Kirkland

To gain an understanding of the current CIP Program, Frank Reinart, the City's Capital Project's Planner was interviewed. Although Frank has since moved on from the City, he knows the City's process intimately and was able to thoroughly summarize their delivery program.

Kirkland's current Capital Program has evolved over the past few years and the current SWMP update will be focused on 2024 updates moving forward. Frank had identified several areas of the program that should be evaluated for modifications in the SWMP for changes to their program moving forward.

Project Risk Register in Budgeting

One issue that was identified in the project budgeting process was that projects that had higher risk elements (i.e. groundwater concerns, utility conflicts/clearances, cross-discipline involvement) were more likely to have cost opinions in the CIP list that did not reflect the true cost of the projects after initiation.

Clearly Identify Cost Assumptions

Currently, during the CIP updates, it has been challenging to understand the cost assumptions that were made for a project. Because of time constraints during the CIP update process, projects are often selected without being able to check the cost assumptions since they are not presented in a consistent way and it's unclear what soft costs are included, what year the dollar values represent, and other factors that may need to be accounted for when programming in the project.

Inter Department Coordination

One challenge that the surface water CIP program has had to face is that a significant portion of their budget has been used in projects that are initiated outside of the surface water group, mostly through transportation projects. These costs have not been planned for in the program and they limit the ability to deliver as many high priority projects as defined within the surface water program.

Balance Allocation by Project Size/Type

The structure of the current delivery model has been identified as prioritizing projects that are narrow in both their type and size, typically larger projects associated with flooding issues. While these projects are important, smaller projects that are more geared toward habitat improvements are continually pushed from the top of the list. The City would like to implement a surface water project prioritization that aligns the group desire of a range of project types and sizes.

Bellevue

To gain an understanding of the City of Bellevue's CIP delivery model, the project team interviewed Brian Landau, Water Resources Planning Manager at the City of Bellevue. He presented a model that was very systematic in its approach, with each step of the process being clearly defined. While the details of this process are important and could be a standalone report, the focus of this memo are the key takeaways from their model.

Alternative Analysis/Preliminary Design

After project initiation, the design goes through an alternatives analysis and preliminary design phases prior to final design. This early design work helps refine the project scope and allows for an opportunity to further develop and program in the project delivery budget.

Cost Estimating Template

One component of the project budgeting during the CIP budgeting and development that the City of Bellevue uses is a cost estimating spreadsheet template that was developed by a consultant for their planning level cost estimates. The template includes assumptions that identifies analysis of cash-flow over the duration of the project, the assumptions that were made, and the risks that are involved which are built into contingency assumptions. Although this estimating spreadsheet is new to the city, a key benefit of it is that it is consistent, defensible and provides documentation on how the costs were derived. It has yet to be seen how accurate these estimates will be, but they provide an understanding of what went into the budgeting of the project during the concept phases of the projects.

Gate System

The City of Bellevue has a process that oversees project delivery with a series of check-ins at critical milestones of the projects, called 'Gates'. This allows projects to be revisited, coordinated, and approved by the program executives which can provide for a more guided process for those that oversee the program. This benefits larger programs that have more departmental coordination and delegated decision-making than some smaller municipalities where a less formal system would be adequate. See Figure 2 below (Attachment B for full-sized version) for a flow chart showing the overall process for project delivery with the gate system at the bottom of the graphic.

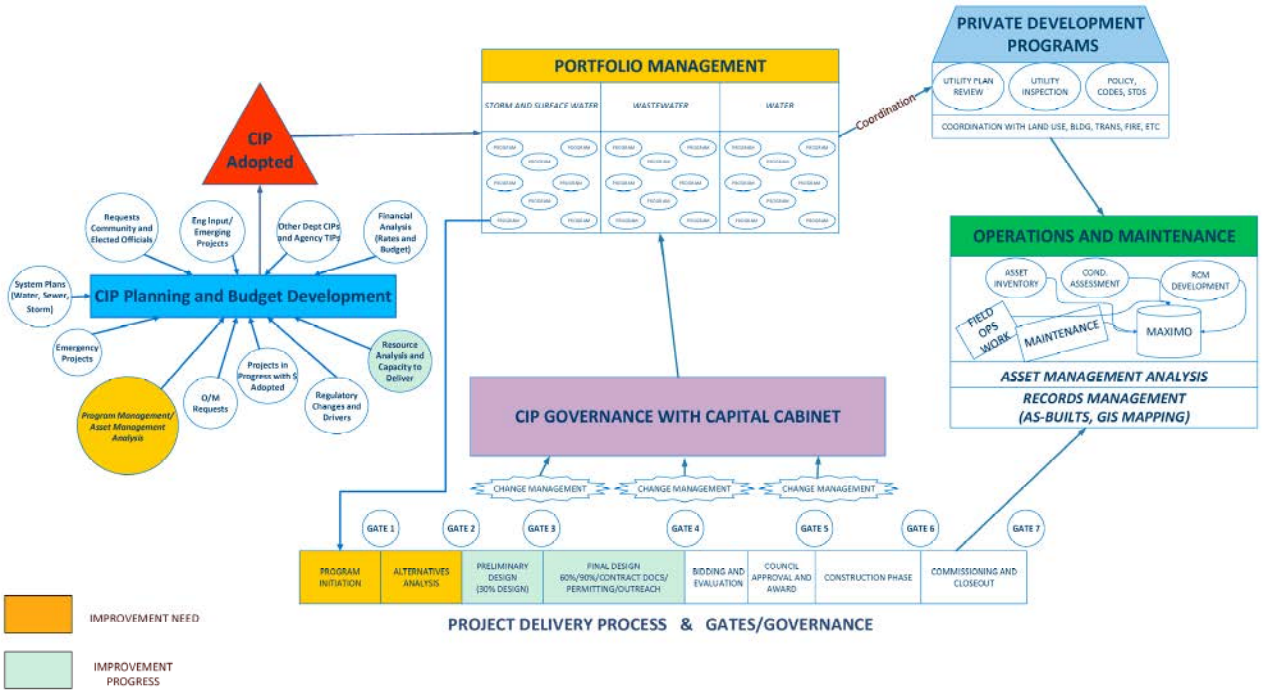


Figure 2. Project Delivery Process and Gates/Governance

Renton

The project team meet with Joe Farah, the Surface Water Engineering Manager at the City of Renton to ask questions and gain an understanding of their CIP delivery model. The City of Renton's model operates very differently than that of Bellevue's in that the project managers are involved in seeing a project from inception through construction which allows for a greater understanding from top to bottom in the entire process. This seems to work very well for the City and Joe seemed to be overall very happy with their delivery system and had few complaints. There are a few key items that are worth noting below with their delivery model.

Stormwater Associated with Transportation Projects

Unlike Kirkland, transportation projects that drive stormwater improvements are funded through the transportation program. If there are larger stormwater upgrades that are opportunistic because of the disruption of the project, those would be funded by the stormwater utility, but re-plumbing and re-piping to collect and convey drainage associated with the transportation upgrades are paid for by the transportation group.

CCTV Pipe Inspection/Overlay Program

The City has a program for video inspection of all their Concrete and CMP pipes that are 18-inch and larger, with a focus on arterials. Based on the results of these inspections, the pipe condition is ranked and prioritized and programmed in for the top 20 pipes with inspections over the next 5-years. Based on the locations and timing of these replacements, they are coordinated with the city overlay program and the overlay can be pushed to align with the trenching work of the pipe replacements.

Project Review

During the project design, project managers engage with the city's operations and maintenance, facilities, and structures groups to provide plan review. Signatures are collected from each group manager as approvals before the project is advanced. This formal review process has been successful for the city and demonstrates a level of review and buy-in that has resulted in successful long-term operations of built projects.

LESSONS LEARNED AND RECOMMENDATIONS

One valuable lesson that can be taken from Bellevue's model is the programming of projects initially only through alternative analysis and preliminary design phase. These phases of design then inform the scope of the project through final design which allows for a more accurate representation of the actual project costs to program into the CIP budget. This approach can help Kirkland's model both through being able to enter the project final design stages with a clear understanding of the project and also by not programming in costs that may be overrun or underspent due to the unknowns at the planning/initiation level.

Transportation Funding of Associated Stormwater

A key issue identified by the City of Kirkland staff with delivering the CIP program prioritized by the surface water group was the drawdown of funding by transportation projects. These costs can result from opportunistic upgrades to aging infrastructure or removal of fish barriers that are spawned through roadway work, or they can be related to drainage improvements that are required due to roadway upgrades. The costs associated with these transportation projects have been historically underestimated and draw heavily from the surface water program budget which has led to hampering of the delivery of the surface water program priorities. It is important and efficient to implement coordinated efforts to align projects between the two groups, but changes are needed to adequately capture the associated costs associated with transportation projects so that stormwater funding is allocated according to the priorities that originate within the group.

Cost Estimate Consistency

The project budgets developed during the project conception have been noted as lacking a clear basis of assumptions and have presented challenges during the design and construction initiation of these projects. Cost-estimating at the preliminary planning and design stage that informs CIP budgets are necessarily general with a potentially broad cost range. However, a clear and consistent approach of how estimates are developed will help managers know how budgets estimates should be applied in CIP programs. This should include what year dollars the estimate is set in, inflation assumptions, soft costs, contingency, and a list of project risks and unknowns. A key consideration for the estimates adjusting the contingencies for project risk, complexity, and size similar to the Bellevue cost estimating template model.

Program Oversight Staffing

One suggestion that could benefit the CIP program delivery would be staffing a PM to be involved from project conception through construction. This would provide continuity and act similar to the gate system Bellevue has while providing the understanding of the PM's of Renton's model. This topic should be discussed with the City of Kirkland CIP management to gauge the interest of adding this role.

Attachment A
Kirkland SWMP- Jurisdiction Interviews
CIP Delivery Questions

General

1. What elements from your Surface Water Comprehensive Plan/Utility Plan work well for identifying CIPs?
2. What elements from your Surface Water Comprehensive Plan/Utility Plan do not work well identifying CIPs?
3. What is the cycle of your CIP program?

Selection

4. What are the different ways that SW CIPs get added to the CIP work program?
    a. Surface Water Comprehensive Plan/Utility Plan
    b. Parts of other projects (transportation, opportunity projects, etc.)?
    c. Emergencies identified outside of the normal cycle of CIP development?
5. How are projects on your CIP prioritized?
    a. What criteria are used to prioritize SW CIPS?
    b. Are SW CIPs allocated between types of projects (i.e., flooding, WQ, habitat, infrastructure)
6. How are projects on your CIP list budgeted?
   Are certain PMs assigned to different types of projects? Surface water CIP PMs?
7. What is the current balance of projects by type (Water quality, Conveyance, Maintenance, Fish Passage, or other)?
8. Is project delivery risks or opportunities considered during the project selection phase?

Budgeting/Costs

9. What percentage does the City allocate for soft costs (City PM, design, permitting, construction inspection, admin, and documentation.
    a. Are projects that require corps permitting higher because of mitigation monitoring and establishment?
10. What are the typical percentages used for planning level costs for permitting, engineering, construction, and contingencies?
    a. What are the typical actual percentages once a project is completed?
    b. What do you use for inflation?
11. If projects are over budget, what are the most likely reasons?
12. What would you change in the review process or in coordination with the CIP update to ensure that the costs are fully understood and the right projects are incorporated?

Design

13. What percentage of design work is by a consultant vs. in-house?

14. Who implements SW CIP design? Is there a CIP group, or a group within the Surface Water Utility that does this work?
15. When a funded capital improvement project comes to the CIP group, what are the steps taken to implement preliminary design? What is the role of the CIP group or staff within the Utility who do this work? Who is involved in other parts of the preliminary design?
    a. Verification of the problem/field visit?
    b. Modeling?
    c. Survey?
    d. Geotechnical evaluation?
16. What is the typical design timeframe from 30% to final plan sets?
17. What are some of the problems that have come up in design of SW projects? How has the CIP group dealt with them?
18. Which City staff/departments are involved in evaluating long-term operations and maintenance of the project? Are those factors considered during design?
19. Who is involved in obtaining permits and approvals for the project? How is that coordinated?
20. If a consultant designs a project, who is involved in selection and management of the consultant through the design process?
21. If projects are not completed on-time, what are the most likely reasons?

Construction

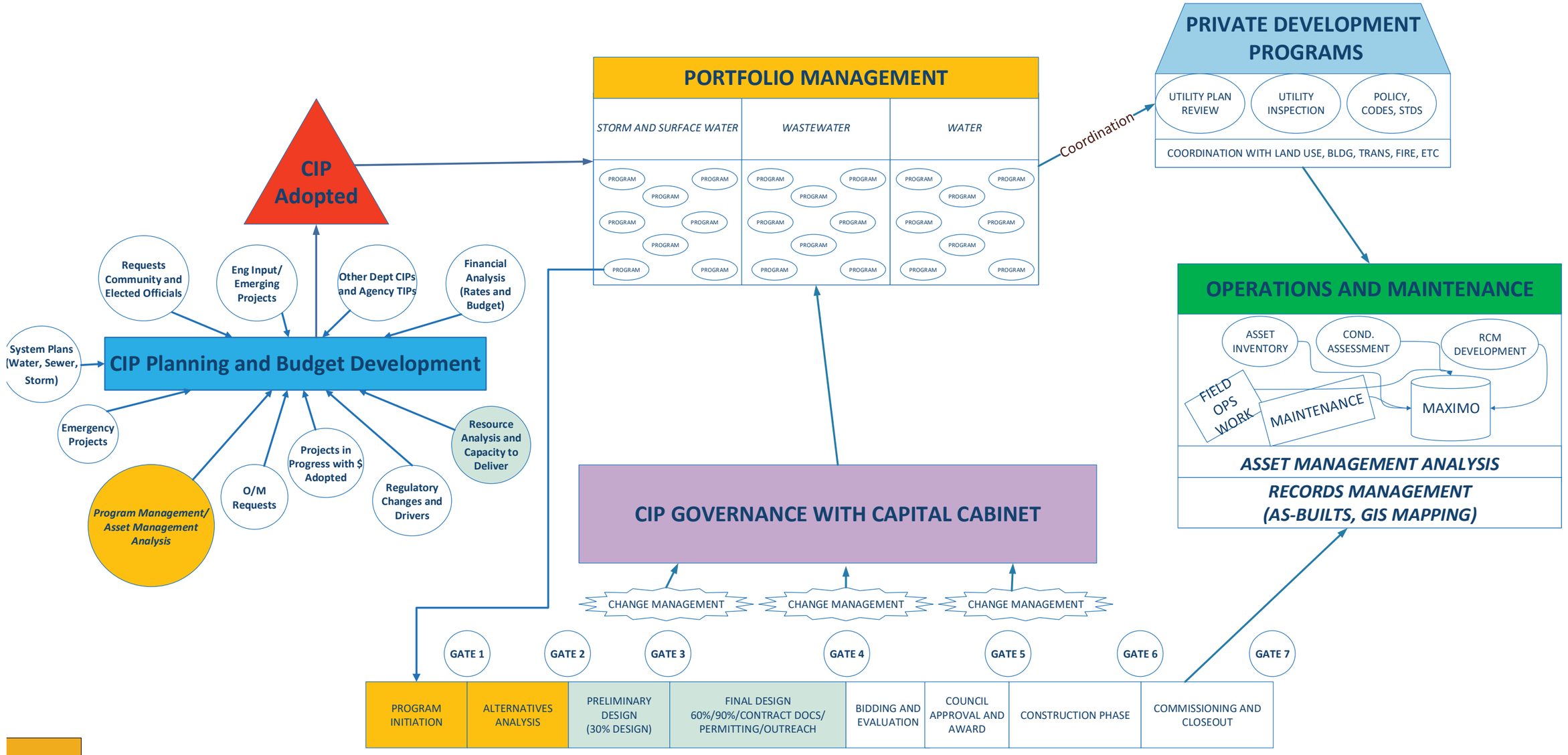
22. When a project goes to construction, who manages the construction contract? Are City personnel responsible for construction site inspection and monitoring?
23. What are some of the problems that have come up in the construction of SW projects? How could the design have avoided problems during construction?

Post Construction

24. When are as-builts developed after the project is complete? How long before new infrastructure is added to the City's GIS system and operations and maintenance program?
25. What are some of the problems that have come up with maintenance in newly constructed SW projects? How could these problems have been avoided through the design process?

Attachment B

CIP DEVELOPMENT AND DELIVERY PROCESS MAP



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MEMORANDUM

DATE:	June 15, 2021
TO:	Erin Nelson, PE, LG, Altaterra Consulting LLC
FROM:	Theo Prince, PE, Parametrix
SUBJECT:	CIP Project Evaluation Summary
CC:	Paul Fendt, PE, Parametrix
PROJECT NUMBER:	553-736-5001 Task 2.6
PROJECT NAME:	City of Kirkland Surface Water Master Plan Update

INTRODUCTION

As part of the City of Kirkland Surface Water Master Plan (Plan) update, the project team has revisited past projects that were delivered under the Capital Improvement Project (CIP) program to take away lessons learned that will be applied to the update, both in recommendations for the Plan, and in recommendations for individual project planning and delivery. This memorandum summarizes the findings of three reviewed projects that were selected by the city which were offered as a range of projects that would present differing examples to learn from moving forward.

METHODOLOGY

City staff were engaged on selection of three projects as examples that provide a representative sampling of the types of projects that are part of the city's CIP program. Current and former city staff that were involved as project managers in these projects were interviewed to gain an understanding of the project delivery from design through construction. The projects that were selected and the associated project managers are as follows:

- Comfort Inn Pond Stormwater Bypass (CIP No. SDC088), Rob O'Brien (City of Kirkland), Frank Reinart, (currently City of Mill Creek), Patrick Herbig (City of Kirkland)
- 141st Street / 111th Avenue Culvert Replacement Project (CIP No. CSD-0076) Frank Reinart
- Market Street Storm Main Rehabilitation Project (CIP No. CSD-0084) Aparna Khanal (currently Northshore Utility District)

RESULTS OF REVIEW

Table 1 below summarizes key information gathered from the project interviews.

Table 1. Key Information Gathered from the Project Interviews

Project	Project Details	
Comfort Inn Pond Stormwater Bypass	Overview	Reroute of peak flows from undersized system contributing to flooding issues along Totem Lake Blvd
	Project Challenges	• Long design phase with multiple hydrology and hydraulic studies • Several project managers • Project scope changes driven by changing planning goals for area • Large scope changes from CIP to final design
	Lessons learned	• Program in basin planning with specific project goals prior to project initiation • Identify and coordinate larger City goals and how projects might fit within planning needs for an area • If there are several projects based on area planning spanning multiple CIP groups, consider one program manager to manage them all.
141st Street / 111th Avenue Culvert Replacement Project	Overview	Culvert replacement with fish passable structure
	Project Challenges	• Regulatory changes and associated increase in culvert opening size • Proximity to sanitary sewer main • Private property impacts/negotiations • Recurring stream bypass failures during construction
	Lessons learned	• Incorporate more detailed stream bypass design into contract documents or change contracting approach • Review/update projects on CIP list for potential or recent regulatory changes
Market Street Storm Main Rehabilitation Project	Overview	Cured in place pipe (CIPP) lining of 3,000 LF 24/36-inch diameter storm main
	Project Challenges	• No bids on first request for proposals (RFP), one bidder on second • Due to large diameter, slip-lining option not viable • Required nighttime work due to traffic control closures
	Lessons learned	• Include recent pipe video inspections in RFP to give contractor as much background as possible • Consider breaking out work by contractor type (earthwork vs slip-lining) to get more interest and better bids • Have Operations and Maintenance (O&M) provide testing requirements for inclusion in specifications

RECOMMENDATIONS

Surface Water Master Plan CIPs

While there were many project specific lessons learned on the three projects, a few specific take-aways are recommended to be used when looking at the Surface Water Master Plan Capital Improvement Projects.

Align drainage needs with long-term economic revitalization planning

Understanding how individual projects may fit within larger, area-wide, improvements in infrastructure can inform the breadth of the project in scope and how it may fit within the context of adjacent improvements. This theme has emerged in the form of transportation improvements that have spawned new and upgraded stormwater infrastructure. The Comfort Inn pond started as a smaller scale flooding project at concept level but grew over the course of the project based on larger goals for improvements associated with the Totem Lake Gateway project. This led to more involved hydraulic analysis and alternative analysis that could have been better defined if the broader understanding of the project in the context of city goals for the improvements to Totem Lake Boulevard.

We recommend identifying drainage planning needs that align with economic revitalization goals and their associated infrastructure improvements. This early engagement and coordination can help provide a roadmap for future upgrades needed to support these long-term planning goals.

Recognize project risk at concept design level

There are inherent risks that are associated with specific elements of projects that need to be accounted for during the budgeting process. One of these greater risks of unknowns and the associated costs was identified during discussion of the 141st Street / 111th Avenue Culvert Replacement project. The stream bypass design was pushed onto the contractor and the project had four separate failures of the stream bypass system. This could have been avoided if more detailed design of the bypass system was included in the contract documents or with alternate contracting approaches. Having a higher contingency for stream projects and scoping the design work to include these elements is recommended as a placeholder for planning level costs. Additional considerations for project risks will be discussed in a separate memo comparing Kirkland's CIP delivery model with other municipalities.

Overall CIP Program

The key take-aways from these project reviews that should be considered in the overall program for CIP delivery in the Surface Water Master Plan are discussed below.

Single Program Manager assigned to area-wide improvements

Another lesson that was borne from the Comfort Inn pond relates to the Totem Lake Boulevard improvements that coincided with the Totem Lake Gateway project. Various project managers and CIP groups were involved in these improvements which required coordination. Efficiencies would have been gained through having a single project manager across all the projects, both in coordination and the overall project understanding.

We recommend this approach moving forward if there are similar large-scale geographical improvements.

Incorporate higher-level design review for Operations and Maintenance

Although the Market Street Storm Main Rehabilitation project went smoothly, there were a few takeaways that could be considered by the city moving forward. O&M currently provide less formal reviews in a single meeting or over-the-shoulder style of review. Because of this, the pipe testing identified in the contract documents for the CIPP work that was performed did not align with O&M's testing requirements.

We recommend requiring a more formal review and sign-off from key staff from the City's O&M group to ensure that the contract documents capture future needs for acceptance of the final product and set up systems for long-term success.

Structure Bid Packages for competitive bids

In addition to the lessons related to O&M input, the Market Street project also had lessons on preparing contract bid documents to make them more attractive to bidders. The first time this project was advertised, there was no contractor interest. This was mainly due to the project requiring an earthwork contractor for a vault/manhole improvement for what was largely a pipe rehabilitation project. This would have required the pipe rehabilitation contractor to sub-contract those improvements which were not large enough to make it desirable for any earthwork contractors. Ultimately, this portion of the project was removed. Also, alleviating contractor risk through providing as much information to contractor (in this case recent video of pipes) in the contract documents made the project more attractive. This can take the form of more outreach to contractors for specialized work and feedback during design, pre-bid conferences to address any contractor questions or concerns, or developing a robust list of contractors for solicitations.