



**MONROE CITY COUNCIL
Transportation/Planning, Parks & Recreation,
and Public Works (P3) Committee Meeting**

Tuesday, February 25, 2020, 5 P.M.

City of Monroe Wastewater Treatment Plant
522 S. Sam Street, Monroe, WA 98272

2020 Committee
Councilmembers
Ed Davis
Jeff Rasmussen
Heather Rousey

AGENDA

- I. Call to Order**

- II. Special Orders of the Day**
 - A. Select 2020 P3 Committee Chair

- III. New Business**
 - A. Confirm Regular Meeting Date/Time
 - B. DRAFT 2020 P3 Committee Work Plan (Administration) [\[Page 2\]](#)
 - C. WWTP Engineering Report Alternatives Review (Public Works) [\[Page 4\]](#)
 - D. Urban Growth Area (UGA) Boundaries (Community Development) [\[Page 29\]](#)

- IV. Next Committee Meeting** (March 24, 2020, 6 p.m.)

Discussion Items: Review Draft Facility Use Policy & Procedure; 191st Street Trail; and 2021-2026 TIP.

- V. Adjournment**



MONROE CITY COUNCIL
Transportation/Planning, Parks & Recreation,
and Public Works (P3) Committee Meeting

Tuesday, February 25, 2020, 5 P.M.

2020 Committee
Councilmembers
Ed Davis
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SUBJECT:	<i>DRAFT 2020 Transportation/Planning, Parks & Recreation, and Public Safety (P3) Committee Work Plan</i>
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DATE:	DEPT:	CONTACT:	PRESENTER:	ITEM:
02/25/2020	Administration	Deborah Knight	Deborah Knight	New Business B.

Attachments: 1. 2020 Draft Work Plan

REQUESTED ACTION: Discuss the DRAFT 2020 Transportation/Planning, Parks & Recreation, and Public Safety (P3) Committee Work Plan.

POLICY CONSIDERATIONS

The City Council has established Legislative Committees in Section 14A of the "Council Rules of Procedure." The primary purpose of the P3 committee is to review and advise upon matters of policy assigned by the City Council involving the physical and economic development of the city as well as matters involving planning for transportation systems and facilities, as well as City infrastructure, and including water and sewer utilities, parks and recreation, and property management, sales, and acquisitions.

This is the opportunity for the Transportation/Planning, Parks & Recreation, and Public Works (P3) Committee to review the draft work plan proposed by City Staff. The Committee members may want to direct changes to the work plan prior to presenting the work plan to the full City Council for approval.

DESCRIPTION/BACKGROUND

The draft work plan is based on the 2020 annual work plans developed by City Staff to implement the 2020 budget adopted by the City Council.

The City Council may want to add, change or delete tasks proposed in the P3 Committee



MONROE CITY COUNCIL
Transportation/Planning, Public Works,
Parks & Recreation and Public Safety Committee
(P3) Committee

2020 Committee
 Councilmembers
 Ed Davis
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 Heather Rousey

2020 WORK PLAN*

Month	Lead Department	Agenda Item
January	CANCELLED	
February	Administration	2020 Work Plan
	Public Works	WWTP Engineering Report
	Community Dev.	Urban Growth Area Boundary
March	Public Works	2021- 2026 Six-Year TIP
	Parks & Rec.	191 st Ave Trail
	Community Dev.	Temporary Encampment Regulations
April	Parks & Rec.	Security Camera Policy
	Community Dev.	Floodplain Regulations
		UDR Housekeeping
May**	Community Dev.	Building Code Updates
		Small Cell Regulations
June	Community Dev.	Northwest and Northeast Annexation Areas
		Buildable Lands Report Update
	Public Works	2021-2027 CFP
July	Community Dev.	North Kelsey Planning and Design Guidelines/Enviro
	Parks & Rec.	PROS Plan Update
August	Parks & Rec. and Community Dev	Tree Regulations
	Community Dev.	Annual Comp Plan Amendments
September	Community Dev.	Affordable Housing Code
October	Public Works	Tour WWTP
November**	Community Dev.	Countywide Buildable Lands
	Parks & Rec.	PROS Plan Update
December**	Public Works	2022 – 2027 Six-Year TIP

**The work plan items are subject to change as needed; and Regular Meetings held the fourth Tuesday of each month at 6 p.m.; unless otherwise noted.*

***City Council Meetings have been cancelled on these dates; Committee Meetings TBD.*



MONROE CITY COUNCIL

Transportation/Planning, Public Works, and Parks
& Recreation Committee Meeting
Tuesday, February 24, 2020, 5 P.M.

2020 Committee
Councilmembers
Heather Rousey
Ed Davis
Jeff Rasmussen

SUBJECT:	<i>Wastewater Treatment Plant Engineering Report Alternatives Review</i>
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DATE:	DEPT:	CONTACT:	PRESENTER:	ITEM:
02/25/2020	Public Works	Brad Feilberg	John Lande	New Business C.

Discussion: 02/25/2020
Attachments: 1. Wastewater Treatment Plant Engineering Report Update
 2. PowerPoint Presentation

REQUESTED ACTION: Provide direction to City Staff regarding the liquid stream process and the solids handling process/management.

POLICY CONSIDERATIONS

Provide policy direction for both the liquid stream process and the solids handling process/management that Kennedy Jenks has developed with the Wastewater Treatment Plant Engineering Report. Decisions on these alternatives have impacts that should be taken into consideration that include:

- *Initial/Lifecycle Cost.*
- *Environmental Stewardship.*
- *Neighborhood/Community Impacts.*
- *Sustainability.*
- *Future Compliance Restrictions.*

DESCRIPTION

Kennedy Jenks has been working on the Wastewater Treatment Plant Engineering Report over the last year. Initially recommended in the current Utility Systems Plan (2015, BHC Consultants) and later required by NPDES, the Wastewater Treatment Plant Engineering Report identifies current plant needs, future capacity restraints, proposed compliance limitations, as well as six and twenty year capital improvement plans. The following describes the area of concerns and recommended or proposed modifications:

pH

The Department of Ecology has implemented more stringent effluent pH requirements becoming enforceable in January 2023. The current WWTP system cannot reliably meet the new effluent pH requirements and therefore modifications are required to ensure reliable compliance. This will be completed in CIP 1 scheduled for design in 2020.

Liquid Stream Limitations

The Wastewater Treatment Plant Engineering Report has identified current and future hydraulic capacity limitations. Specifically, current secondary clarification does not meet peak hydraulic capacity or redundancy requirements. Additionally, the current process does not meet proposed nutrient removal abilities and will require modifications to meet these proposed levels. Kennedy Jenks has identified two alternatives to address the capacity and nutrient shortfalls:

Alternative CIP 2

This liquid stream alternative keeps the same general operational process (conventional activated sludge) and adds several modifications to address the pending nutrient removal and

capacity limitations. This alternative has a reduced initial and lifecycle cost than CIP 3. This will create periods of limited operational control during seasonal variations. It will be able to meet anticipated nutrient levels, but will fall short of meeting any additional or more stringent restrictions. It will require expansion outside of the current facility footprint creating significant permitting challenges for the expansion footprint (see page 7 of handouts). This project will have a greater local impact during construction as well. This project can be phased as growth and capacity is required. This is because secondary clarifier construction can be spaced and built as needed helping with sewer CIP cash flow.

Alternative CIP 3 Recommended

This alternative would fit within the current footprint with no additional disruption to the community. This process produces the highest quality effluent under all operational ranges. The effluent from this process could be utilized for reuse if desired. This alternative would put the City in a better situation if increased effluent requirements were to be enforced. This liquid stream alternative has a higher construction and lifecycle cost. It would be a new treatment process (Membrane Bioreactor, MBR) compared to the existing, and would run as a parallel process with the existing plant.

Solids Stream Limitations

In the Wastewater Treatment Plant Engineering Report the current solids handling process does not meet the treatment requirements of the Washington State General Biosolids Rule. Treatment at the WWTP is insufficient to meet Class B requirements.

The City's contractor hauler/applicator must utilize additional steps to satisfy compliance requirements.

In addition, the City utilizes the former Department of Corrections Composting Facility for storage and loading. The availability of this site for City use is subject to the discretion of the Department of Correction.

Furthermore, Class B land application sites in central Washington are not a sustainable long term solution. Weather and travel conditions over Stevens Pass poses additional operational challenges. Considering the current management plan, the Wastewater Treatment Plant Engineering Report has identified two alternatives to the solids stream process:

Alternative CIP 4

This project addresses the solids handling process. This alternative will use the City's current Biosolids management practice of contract hauling and application to a Beneficial Use Facility, but will add additional digester capacity to meet basic Biosolids treatment limits for class B Beneficial Use. This alternative has a lower initial cost than Alternative CIP 5. It does not address the issues with the current process.

Alternative CIP 5 Recommended

This alternative would utilize a dryer technology to produce a Class A, Excellent Quality Biosolids at the plant. In addition, this new process would significantly reduce volume because of the dryer product significantly reducing handling and hauling costs. This product could be used locally by citizens, the City's Public Works and Parks & Recreation Departments, local businesses, or farms without any restrictions. It could also be marketed and sold commercially. This alternative addresses and eliminates the issues that CIP does not resolve.

Alternatives Comparison Table + = Best -- = Reduced/No benefit O = No Change

Considerations	Liquid Alternatives		Solids Alternatives	
	CIP 2 Conventional Activated Sludge	CIP 3 Membrane Bioreactor	CIP 4 Class B	CIP 5 Class A Dryer
Initial Cost	+	--	+	--
Lifecycle Cost (20 yr)	+	--	O	O
Space/Footprint	--	+	--	+
Treatment Quality	--	+	--	+
Future Compliance	--	+	--	+
Environmental Stewardship	--	+	--	+
Reuse Potential/Local Use	--	+	--	+
Best Available Technology	--	+	--	+
Flexibility	--	+	--	+
Efficiency	--	+	--	+
Complexity	+	--	+	--

Recommendation

Kennedy Jenks and staff has made the recommendation for the City to accept CIP 3 and CIP 5 as the preferred options adopted in the Wastewater Treatment Plant Engineering Report.

Future Hydraulic Capacity

This project addresses various hydraulic capacity deficiencies throughout the plant. Various pumps and UV systems will need hydraulic increases. This project is not estimated to be needed until approximately 2040. This improvements are identified in CIP 6.

Background

The Monroe Wastewater Treatment Plant is required to submit a pH Engineering Report to the Department of Ecology by December 31, 2019, per the recently issued NPDES to address upcoming effluent pH requirements. The current facility cannot consistently meet the new requirements and will need modifications to stay compliant with the new pH limits. The new modifications must be implemented by December 31, 2022, when the new pH limits will be enforced.

In addition to the NPDES requirement described above, the current Utility Systems Plan (2015, BHC Consultants) identified several studies be completed including a Wastewater Treatment Plant Engineering Report. The recommended reports include a Biosolids Management Study and Rerate Study in addition to the Wastewater Treatment Plant Engineering Report. Based on the NPDES requirements and Utility System Plan recommendations, the City issued a request for proposals to prepare a Wastewater Treatment Plant Engineering Report, Biosolids Management Study, and Mixing Zone Analysis (these reports were combined into one Wastewater Treatment Plant Engineering Report) on November 6, 2018. Two firms submitted and presented proposals. After review of submitted proposals and conducting interviews staff selected Kennedy Jenks as

the firm most qualified to provide the necessary documents for the Wastewater Treatment Plant Engineering Report.

The Monroe Wastewater Treatment Plant is required to comply with the conditions contained in the National Pollutant Discharge Elimination System (NPDES) permit issued by the Washington State Department of Ecology which expires November 30, 2023.

The current permit, issued October 31, 2019, contains new requirements related to the acidity (pH) of the effluent. We have also been advised, in writing, that the next permit will require the WWTP to plan for upcoming nutrient limits in the next permit cycle beginning in 2024. Currently, it is uncertain which nutrients or limits will be regulated, however the City will have total Nitrogen and potentially Phosphorus effluent limits in its next NPDES permit. It is unlikely that the current facility will not be able to consistently meet the anticipated Nitrogen or Phosphorus limit. The City will need to prepare for this.

Summary of Project Purpose

The purpose of this project is to address:

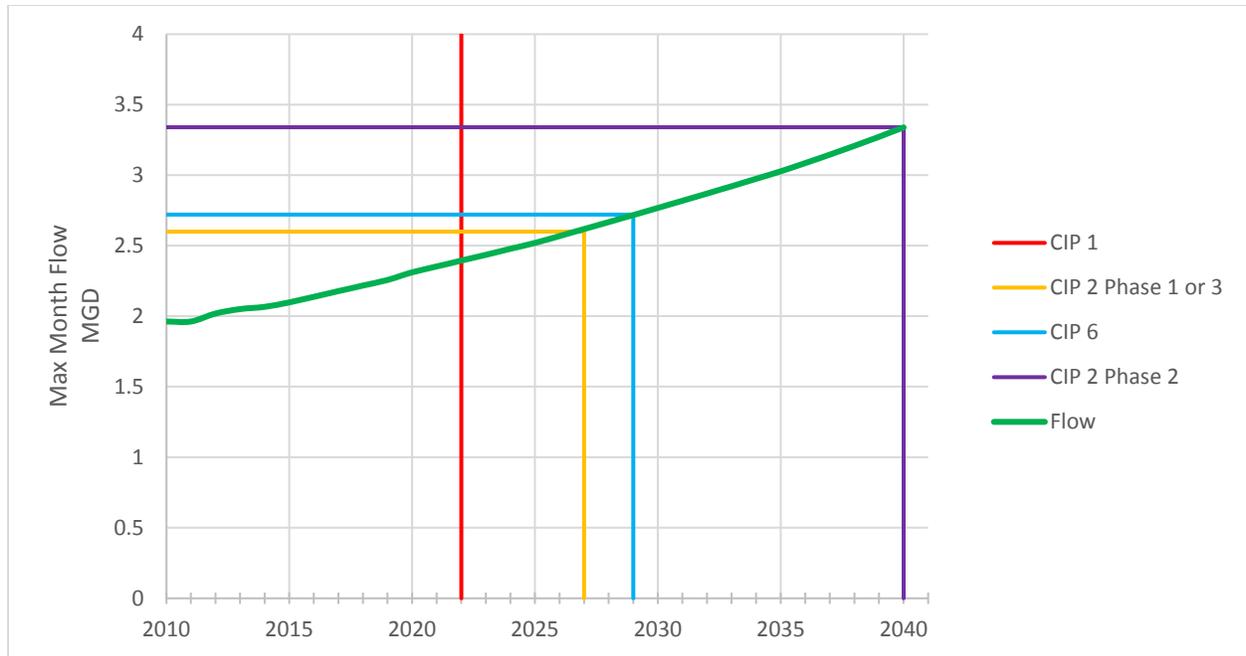
- Recommendation for an Engineering Report for the City’s Wastewater Treatment Plant (WWTP) per the City’s 2015 Utility Plan
- Regulatory changes, including the more stringent pH limits (new NPDES permit) and potential nutrient removal requirements (future) for discharges to the Skykomish River
- Current risks of existing biosolids program
- Future increased flows due to population growth

“A successful project is defined as one that provides a roadmap to efficient, achievable, reliable, and sustainable compliance.”

- Project Goal Statement, City Meeting, March 2019



WWTP Capital Improvement Trigger Chart & Summary Table



CIP No.	WWTP CIP Description	Anticipated Mid-point of Construction	Trigger(s)
1	pH and Filament Control	2021	NPDES permit requires pH control implemented by December 31, 2022
Secondary Treatment Alternatives (2 versus 3)			
2	Phase 1: Conventional Activated Sludge	2027	Class II reliability criteria exceeded for secondary clarifier capacity (2.6 MGD at MMF)
	Phase 2: Conventional Activated Sludge	2040	Class II reliability criteria exceeded for secondary clarifier capacity again (3.6 MGD at MMF)
3	Sidestream Membrane Bioreactor	2027	Class II reliability criteria exceeded for secondary clarifier capacity (2.6 MGD at MMF)
Solids Upgrades Alternatives (4 versus 5)			
4	Class B Solids Upgrades	2023	Risk related triggers, which include currently not meeting regulatory minimum digestion time and hence using disk-in-solids application method
5	Class A Solids Upgrades	2023	Risk related triggers, which include currently not meeting regulatory minimum digestion time; and several class B disposal risks (disk-in-solids, solids transport, contractual agreements)
6	Plantwide Pumps and Ultraviolet Disinfection Upgrades	2029	3W pump replacement (capacity) needed; Effluent pumps and UV capacity exceeded in 2034 at 10 MGD at PHF

Notes:

CIP 4 & CIP 5 are driven by current risk-related issues and therefore are not depicted at a specific flow rate.

Biological oxygen demand (BOD); Capital improvement project (CIP); Max month flow (MMF); Million gallons per day (MGD); National Pollutant Discharge Elimination System (NPDES); Peak hour flow (PHF); Ultraviolet (UV); Wastewater Treatment Plant (WWTP)

CIP No.	Project Elements	Secondary Treatment Alternatives			Solids Upgrades Alternatives		CIP 6 Plantwide Pumps and Ultraviolet Disinfection Upgrades	
		CIP 1	CIP 2		CIP 3	CIP 4		CIP 5
		pH and Filament Control	Phase 1 Conventional Activated Sludge	Phase 2 Conventional Activated Sludge	Sidestream MBR	Class B Solids Handling Upgrades		Class A Solids Handling Upgrades
1	1. Permanent RAS Chlorination	\$140,000						
	2. Upgraded Magnesium Hydroxide Feed System	\$270,000						
	3. Secondary Effluent Sodium Hydroxide Feed System	\$270,000						
	4. Baffling of Aeration Basins	\$350,000						
	5. Surface Wasting System	\$410,000						
	6. Mixed Liquor Return Optimization	\$320,000						
	CIP 1 Total (2020 Dollars)	\$1,760,000						
2 Phase 1	1. Add 3rd Secondary Clarifier		\$4,240,000					
	2. Aeration Basin Upgrades		\$3,780,000					
	3. Site Prep, Retaining Wall and Force Main Relocation		\$1,010,000					
CIP 2 Phase 1 Total (2020 Dollars)		\$9,030,000						
2 Phase 2	1. Add 4th Secondary Clarifier			\$4,140,000				
	CIP 2 Phase 2 Total (2020 Dollars)			\$4,140,000				
3	1. Sidestream MBR			\$20,030,000				
	CIP 3 Total (2020 Dollars)			\$20,030,000				
4	1. Construct New Digester Next to Primary Clarifiers				\$6,310,000			
	2. Install New Screw Press				\$3,310,000			
	3. Install New Flow Meters and TSS Meters				\$70,000			
	CIP 4 Total (2020 Dollars)				\$9,690,000			
5	1. Class A Sludge Dryer					\$12,040,000		
	2. Install New Screw Press					\$3,310,000		
	3. Install New Flow Meters and TSS Meters					\$70,000		
	CIP 5 Total (2020 Dollars)					\$15,420,000		
6	1. Upgrade Effluent Pumps						\$830,000	
	2. 3W System Upgrades						\$460,000	
	3. Upgrade Influent Pumps						\$640,000	
	4. Upgrade UV System						\$3,200,000	
	CIP 6 Total (2020 Dollars)						\$5,130,000	
Total Project Cost (2020 Dollars)		\$1,760,000	\$9,030,000	\$4,140,000	\$20,030,000	\$9,690,000	\$15,420,000	\$5,130,000
Total Lifecycle Costs¹ (2020 Dollars)		\$2,050,000	\$9,950,000	\$4,500,000	\$25,270,000	\$10,536,000	\$12,630,000	\$7,210,000
Lifecycle of Risk Costs (2020 Dollars)						\$1,941,294	\$0	
Total Lifecycle Costs plus Lifecycle of Risk Costs (2020 Dollars)						\$12,477,294	\$12,630,000	
Estimated Midpoint of Construction (Year)		2021	2027	2040	2027	2023	2023	2029
Total Project Cost Escalated to Midpoint of Construction (Escalated \$)		\$1,830,000	\$11,170,000	\$6,940,000	\$24,780,000	\$10,670,000	\$16,980,000	\$6,700,000
Escalation to Midpt of Construction² (Escalated \$)								
	Year^{3,4}	CIP 1	CIP 2 Phase 1	CIP 2 Phase 2	CIP 3	CIP 4	CIP 5	CIP 6
	2020	\$200,000						
	2021	\$1,630,000						
	2022					\$750,000	\$1,200,000	
	2023					\$6,000,000	\$9,500,000	
	2024					\$3,920,000	\$6,280,000	
	2025							
	2026		\$750,000		\$1,700,000			
	2027		\$6,500,000		\$14,000,000			
	2028		\$3,920,000		\$9,080,000			\$450,000
	2029							\$6,250,000
	2030							
	2031							
	2032							
	2033							
	2034							
	2035							
	2036							
	2037							
	2038							
	2039			\$475,000				
	2040			\$6,465,000				

NOTES:
 1. Total Lifecycle Cost includes costs that the City will incur over the lifetime of an improvement (typically 20 years). It includes the initial capital cost to build and/or install the improvement plus operations and maintenance cost over the expected lifetime of the improvement. The operations and maintenance costs are adjusted to represent its present value in order to determine the total lifecycle cost.
 2. Distribution of project costs assumes 12 month design phase followed by: A) 12 month construction phase for project less than \$10M, and B) 24 month construction phase for project exceeding \$10M.
 3. The 6-year period (2020 through 2025) is emphasized for the City's capital planning.
 4. The NPDES renewal is anticipated to occur in 2024 assuming no delays.
 Years within the 20-year planning period but not within the 6-year planning period Useful for financial comparison of alternatives.

	Costs Across CIP Packages			
	1, 2, 4, 6	1,3,4,6	1,2,5,6	1,3,5,6
Total Project Cost (2020 Dollars)	\$29,750,000	\$36,610,000	\$35,480,000	\$42,340,000
Total Lifecycle Costs¹ (2020 Dollars)	\$34,246,000	\$45,066,000	\$36,340,000	\$47,160,000
Total Lifecycle Costs plus Lifecycle of Risk Costs (2020 Dollars)	\$36,187,294	\$47,007,294	\$36,340,000	\$47,160,000

Escalation to Midpt of Construction ²	Annual Total Project Costs (Escalated \$\$) Across CIP Packages				
	Year ^{3,4}	1, 2, 4, 6	1,3,4,6	1,2,5,6	1,3,5,6
2020	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000
2021	\$1,630,000	\$1,630,000	\$1,630,000	\$1,630,000	\$1,630,000
2022	\$750,000	\$750,000	\$1,200,000	\$1,200,000	\$1,200,000
2023	\$6,000,000	\$6,000,000	\$9,500,000	\$9,500,000	\$9,500,000
2024	\$3,920,000	\$3,920,000	\$6,280,000	\$6,280,000	\$6,280,000
2025	\$0	\$0	\$0	\$0	\$0
2026	\$750,000	\$1,700,000	\$750,000	\$1,700,000	\$1,700,000
2027	\$6,500,000	\$14,000,000	\$6,500,000	\$14,000,000	\$14,000,000
2028	\$4,370,000	\$9,530,000	\$4,370,000	\$9,530,000	\$9,530,000
2029	\$6,250,000	\$6,250,000	\$6,250,000	\$6,250,000	\$6,250,000
2030	\$0	\$0	\$0	\$0	\$0
2031	\$0	\$0	\$0	\$0	\$0
2032	\$0	\$0	\$0	\$0	\$0
2033	\$0	\$0	\$0	\$0	\$0
2034	\$0	\$0	\$0	\$0	\$0
2035	\$0	\$0	\$0	\$0	\$0
2036	\$0	\$0	\$0	\$0	\$0
2037	\$0	\$0	\$0	\$0	\$0
2038	\$0	\$0	\$0	\$0	\$0
2039	\$475,000	\$0	\$475,000	\$0	\$0
2040	\$6,465,000	\$0	\$6,465,000	\$0	\$0

NOTES:

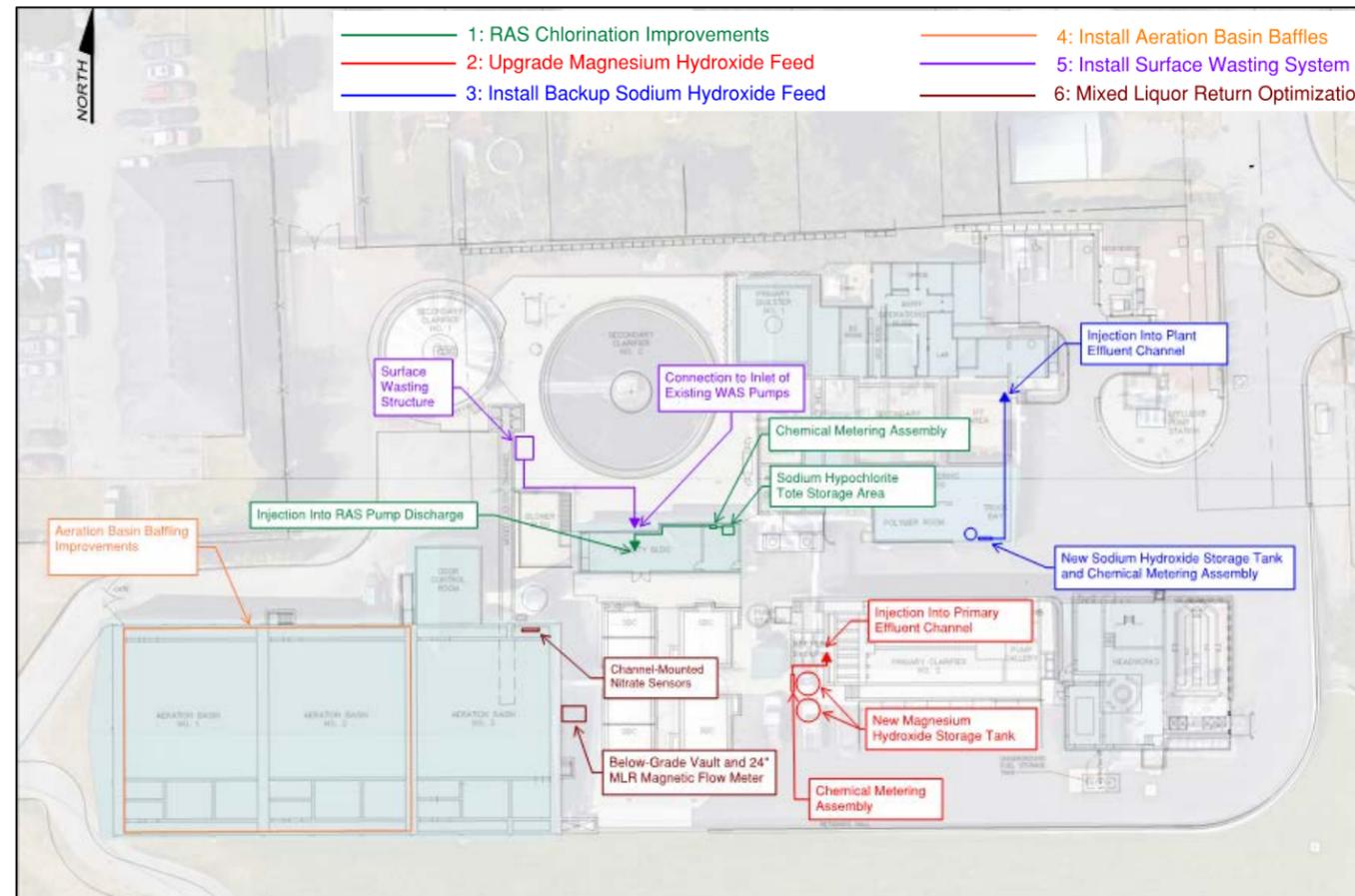
1. Total Lifecycle Cost includes costs that the City will incur over the lifetime of an improvement (typically 20 years). It includes the initial capital cost to build and/or install the improvement plus operations and maintenance cost over the expected lifetime of the improvement. The operations and maintenance costs are adjusted to represent its present value in order to determine the total lifecycle cost.
2. Distribution of project costs assumes 12 month design phase followed by: A) 12 month construction phase for project less than \$10M, and B) 24 month construction phase for project exceeding \$10M.
3. The 6-year period (2020 through 2025) is emphasized for the City's capital planning.
4. The NPDES renewal is anticipated to occur in 2024 assuming no delays.

Years within the 20-year planning period but not within the 6-year planning period.

Engineer's recommendation in January 2020. Engineers recommend reassessment of WWTP performance after completion of CIP1 and re-review of regulatory requirements as of 2022.

Capital Improvement Project 1: pH and Filament Control

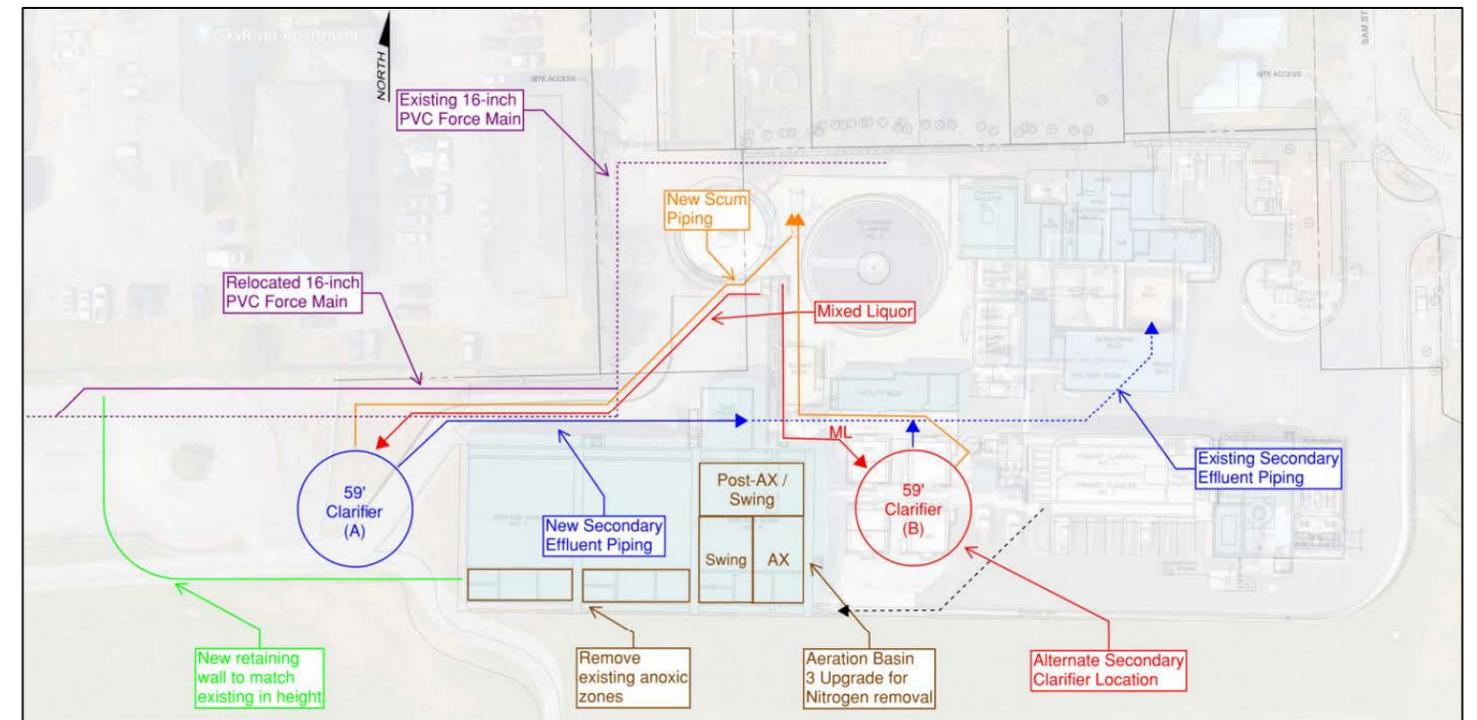
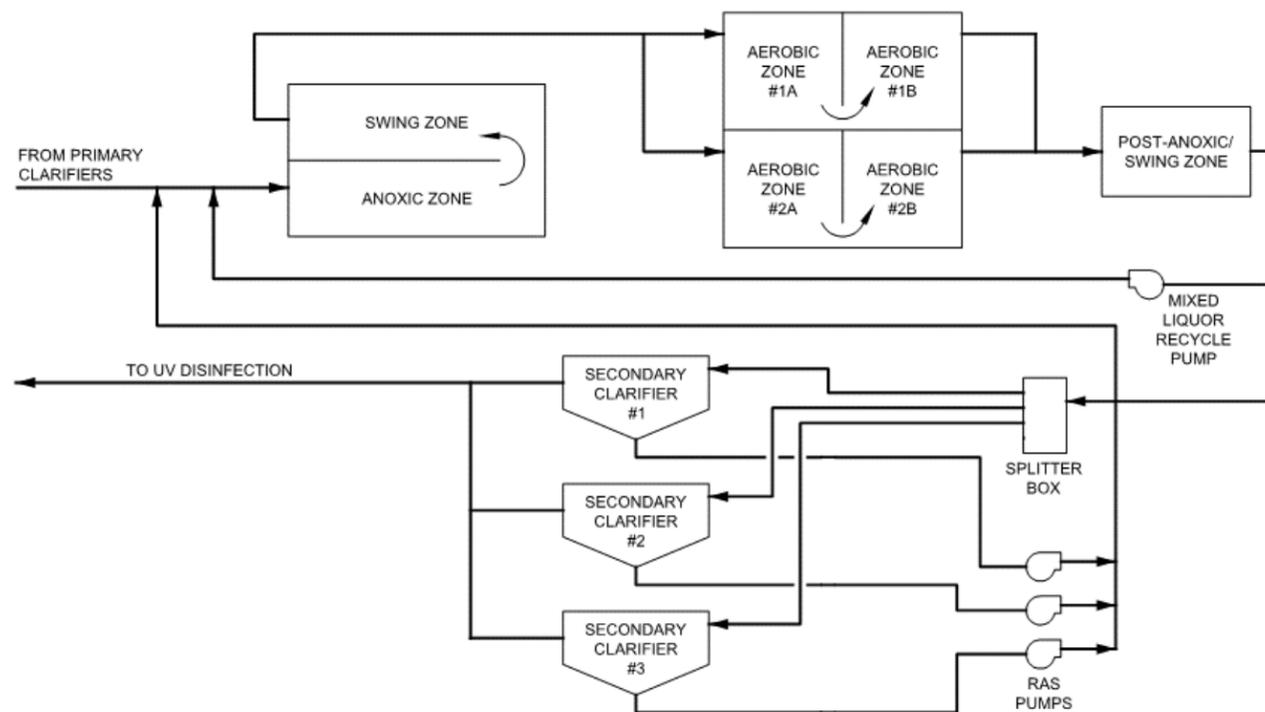
Project Element	Description of Improvements	Project Cost (2020 Dollars)	Additional Operations and Maintenance Cost (\$/yr, 2020 Dollars)
1. Permanent RAS Chlorination	Install a permanent sodium hypochlorite storage and metering system In the Facility Building Shop/Storage room. A chemical metering assembly will be installed adjacent to a tote storage area and will meter Sodium Hydroxide into the WAS pump discharge line to limit the growth of Filamentous organisms.	\$140,000	\$8,450
2. Upgraded Magnesium Hydroxide Feed System	Replace the existing Magnesium Hydroxide bulk storage and metering system located at the West end of the primary clarifiers. Include a second storage tank for redundancy and appropriate cold-weather protections. This improvement would provide more reliable pH buffering capacity in the secondary treatment process to help keep effluent pH within permit limits.	\$270,000	\$0
3. Secondary Effluent Sodium Hydroxide Feed System	Install a new Sodium Hydroxide storage tank and metering system in the solids handling building. Install a pipe from the solids handling building to the Plant's effluent channel located in the UV area. Include meters for pH monitoring. This improvement will give the Plant a backup pH control system to assure reliable permit compliance.	\$270,000	\$3,730
4. Baffling of Aeration Basins	Installation of fiberglass baffles, relocation of effluent weir openings, and relocation of dissolved oxygen probes to improve process control.	\$350,000	\$660
5. Surface Wasting System	Install a vault and automated weir to selectively waste filamentous organisms to the WAS pump station. This improvement would reduce the quantity of filamentous organisms in the secondary treatment process.	\$410,000	\$660
6. Mixed Liquor Return Optimization	Install a below-grade vault east of the aeration basins to house a flow meter on the mixed liquor return (MLR) pipe. Additionally, install channel-mounted nitrate sensors in the mixed liquor return channel. These improvements would give operators better control over MLR flow rate.	\$320,000	\$990



Capital Improvement Project 2 Phase 1 – Conventional Activated Sludge

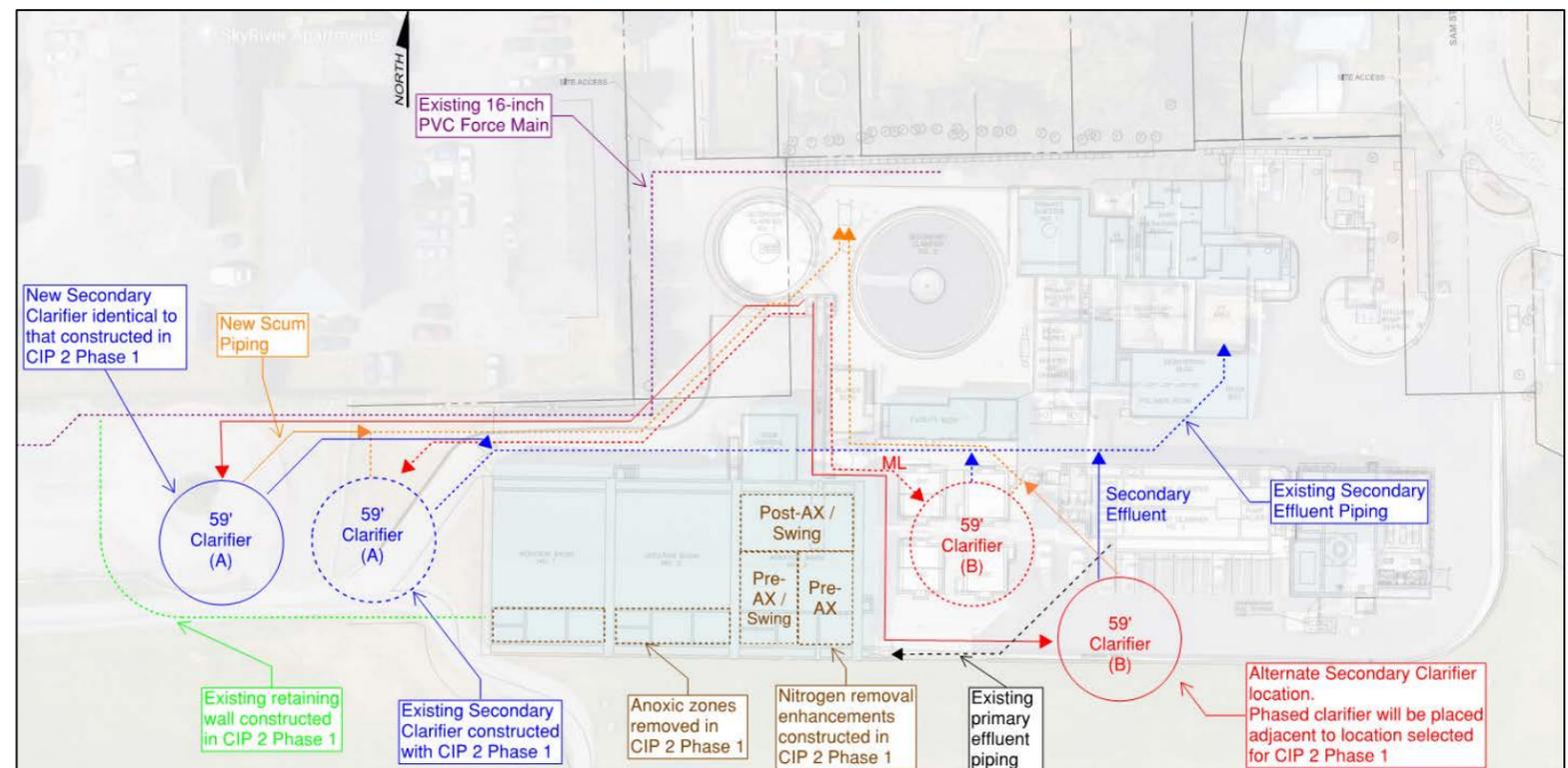
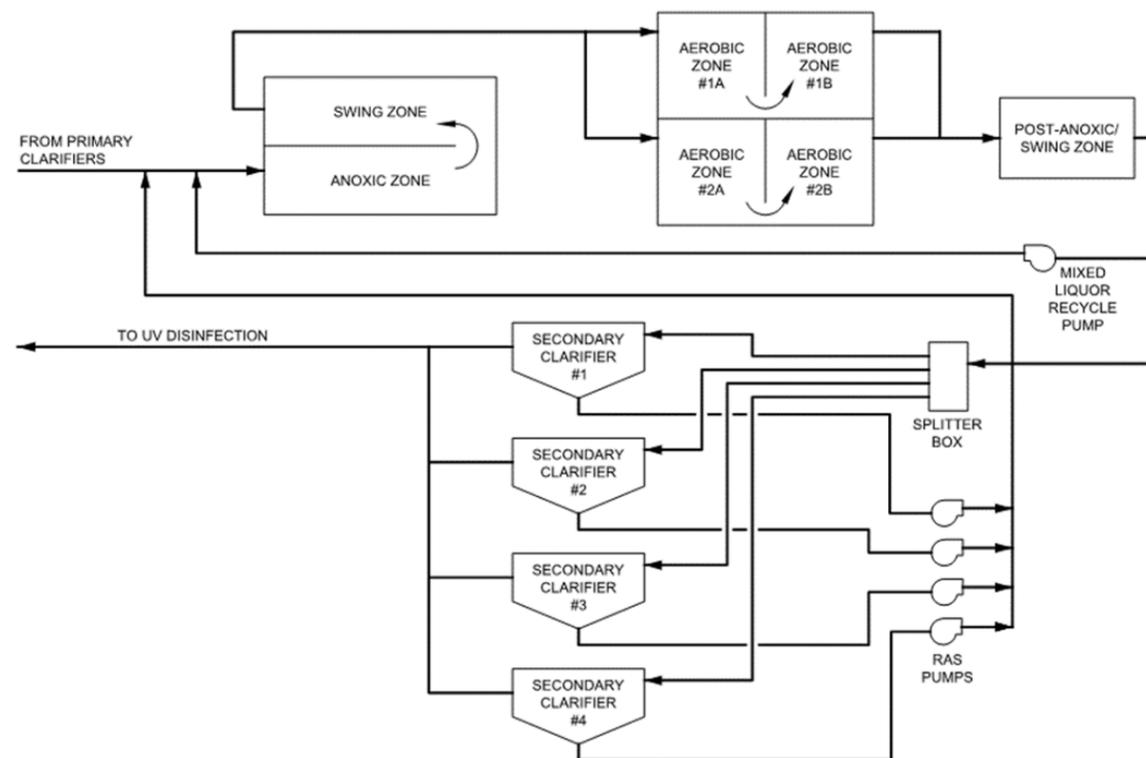
Project Element	Description of Improvements	Project Cost (2020 Dollars)	Additional Operations and Maintenance Cost (\$/yr, 2020 Dollars)	Pros	Cons
1. Add 3rd Secondary Clarifier	Add a single 59' secondary clarifier. An additional clarifier will be constructed as part of a separate phase (see CIP 2 Phase 2). Includes Secondary Clarifier #1 weir replacement. Two possible locations for the new clarifiers are shown below (see locations A & B in figure below).	\$4,240,000	\$18,000	<ul style="list-style-type: none"> Familiarity with this process Improves performance and solids capture Adds redundancy Allows for phasing of new clarifiers 	<ul style="list-style-type: none"> Large footprint May require construction outside current WWTP boundaries during phase 1 if location A is preferred More challenges regarding floodplain permitting if location A is preferred
2. Aeration Basin Upgrades	Convert Aeration Basin 3 into two pre-anoxic/swing zones, and one post-anoxic swing zone. Aeration Basins 1 and 2 will have existing anoxic zones demolished. The existing baffles, installed as a part of CIP 1, may require adjustment to ensure the two zones are equally sized after the demolition of the anoxic zones. These two aerobic zones will allow for tapered aeration (e.g., 3.0 mg/L target in the first zone and 1.5 mg/L target in the second zone) to lower the recycle of DO.	\$3,780,000	\$28,000	<ul style="list-style-type: none"> Optimizes denitrification and increases nitrogen removal Gain secondary treatment capacity Relatively high levels of denitrification would likely meet potential nitrogen limits 	<ul style="list-style-type: none"> Further expansion would require additional property and tankage
3. Site Prep, Retaining Wall, and Force Main Relocation*	Removal of asphalt, addition of retaining wall and fill to bring up to the same grade as existing WWTP facility. An allowance for park improvements is included.	\$1,010,000	\$0	<ul style="list-style-type: none"> SBC tanks location prevents encroachment of WWTP into park parking lot. Parking lot location reserves SBC tanks for other use. 	<ul style="list-style-type: none"> Loss of parking at park or loss of SBC tanks for future use. Cost for park improvements for parking lot location

*NOTE: Project Element 3 and the associated costs are reflective of the option to locate the 3rd secondary clarifier at the site labeled as "(A)", which is west of the existing aeration basins and outside of the existing WWTP.



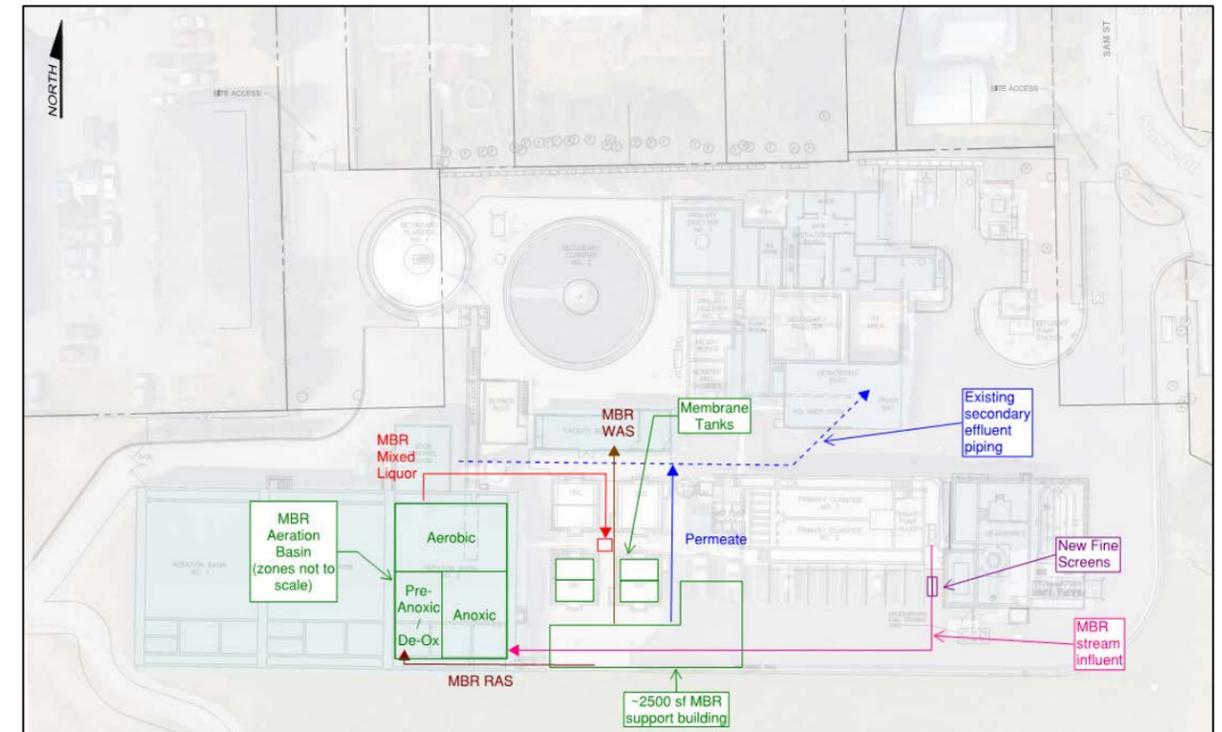
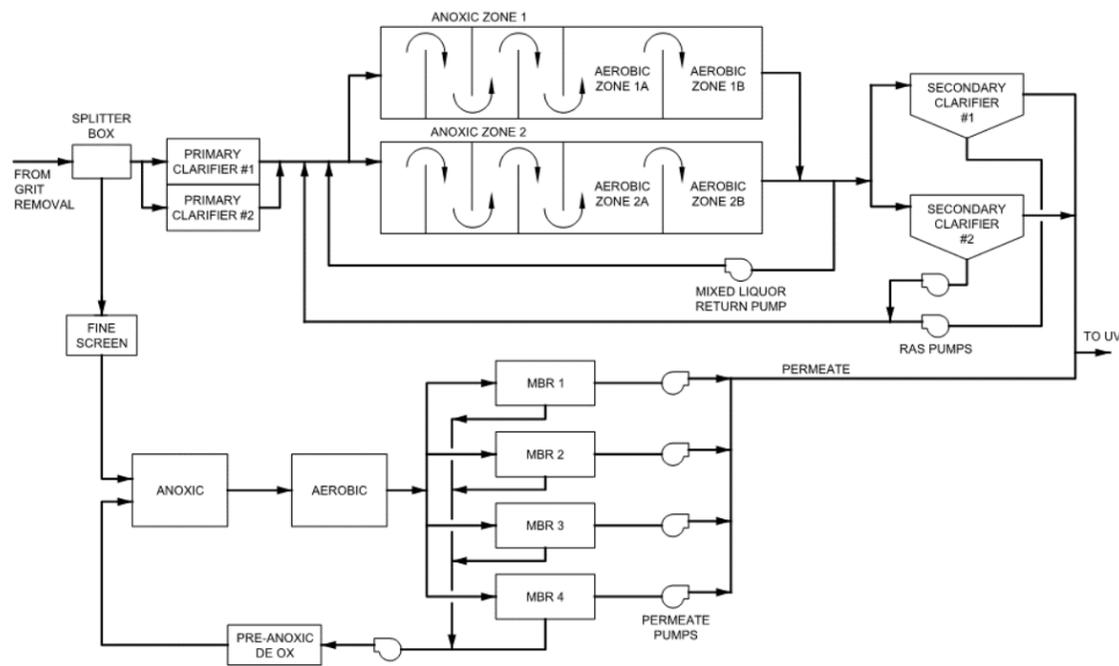
Capital Improvement Project 2 Phase 2 – Conventional Activated Sludge

Project Element	Description of Improvements	Project Cost (2020 Dollars)	Additional Operations and Maintenance Cost (\$/yr, 2020 Dollars)	Pros	Cons
1. Add 4th Secondary Clarifier	Add another identical 59' secondary clarifier as a second phase to CIP 2 Phase 1. The location of the fourth clarifier is dependent upon the location selected for the third clarifier in CIP 2 Phase 1. This cost estimate assumes most of the piping for this additional clarifier is installed and the splitter box improvements are constructed as part of CIP 2 Phase 1.	\$4,140,000	\$18,000	<ul style="list-style-type: none"> Familiarity with this process Further improves performance and solids capture Adds further redundancy Phasing of new clarifiers allows smaller capital outlay for CIP 2 Phase 1 	<ul style="list-style-type: none"> Large footprint Requires construction outside current site boundaries and encroachment into park area or parking lot Challenges regarding floodplain permitting when working outside of current site and within flood zone



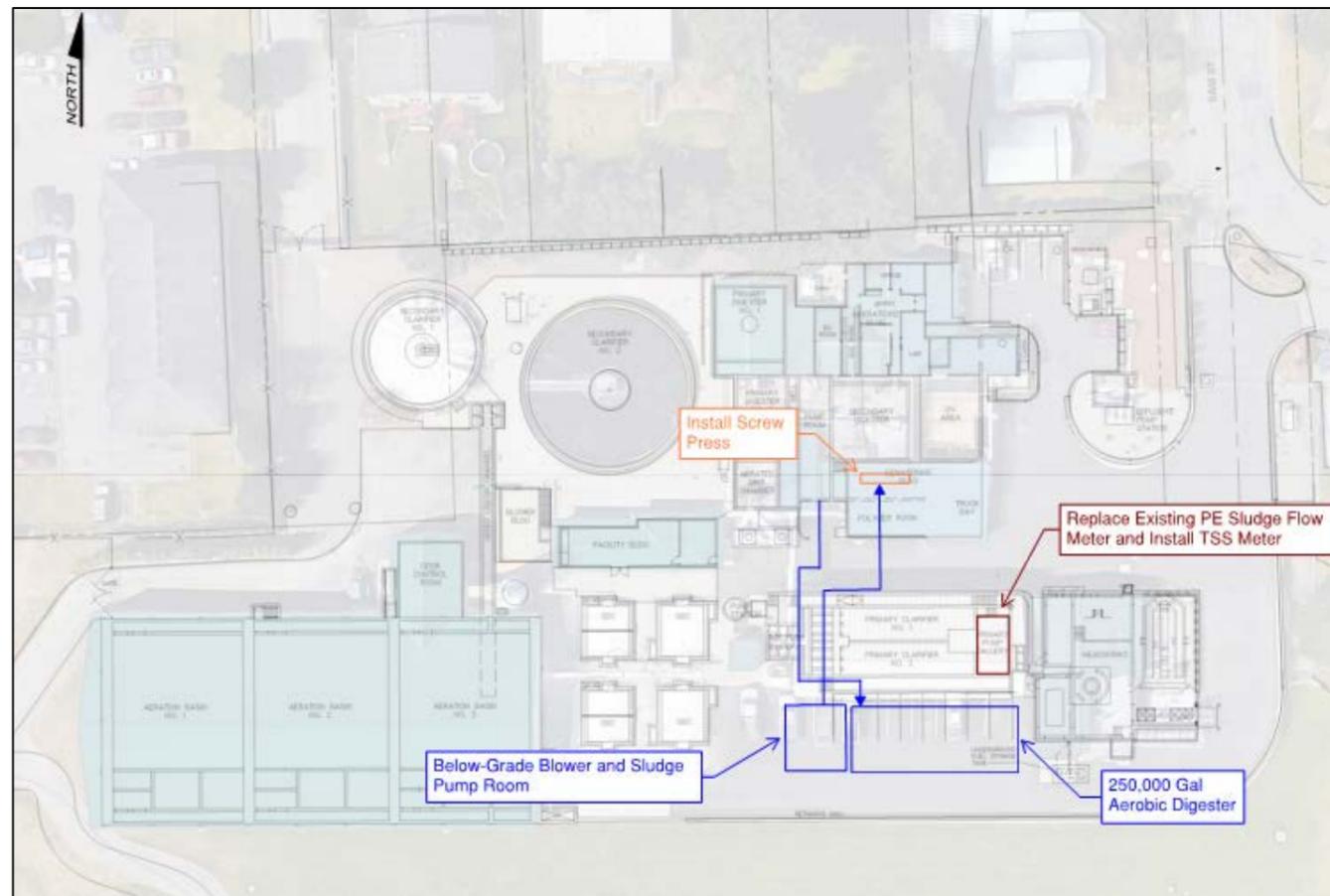
Capital Improvement Project 3 – Sidestream Membrane Bioreactor

Project Element	Description of Improvements	Project Cost (2020 Dollars)	Additional Operations and Maintenance Cost (\$/yr, 2020 Dollars)	Pros	Cons
1. Add a Sidestream MBR	Convert the existing SBC tanks into membrane bioreactors (MBRs). Aeration Basin 3 will be converted to pre-anoxic and aerobic zones for treatment prior to the MBRs. The MBRs will be operated in parallel with the existing conventional activated sludge (CAS) process utilizing Aeration Basins 1 and 2 and the existing clarifiers. This will prevent the CAS process from becoming overloaded but will yield two different microbial populations at the facility. This project also includes some minor improvements to Aeration Basins 1 and 2 for the conventional activated sludge system and replacement of the weir in Secondary Clarifier #1.	\$20,030,000	\$262,000	<ul style="list-style-type: none"> • Small footprint • Improvements fit within the existing WWTP site • No need for property acquisition or park encroachment • High quality effluent • Adequate denitrification • Potential for effluent reuse • Ability to repurpose secondary clarifier tanks if conversion of full plant to MBR is needed in the future to meet regulations • Improves efficiency of UV disinfection • Thicker WAS • More efficient phosphorus removal if required in the future • Best available technology may reduce additional investment to comply with future NPDES permit limits 	<ul style="list-style-type: none"> • High capital and operating expenses • Operational complexities with two treatment streams • Amount of equipment and instruments to maintain • City has no experience with MBRs



Capital Improvement Project 4: Class B Solids Upgrades

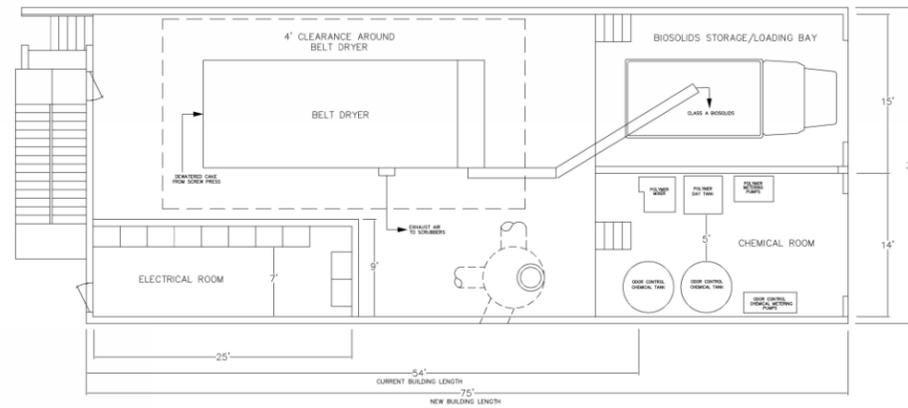
Project Element	Description of Improvements	Project Cost (2020 Dollars)	Additional Operations and Maintenance Cost (\$/yr, 2020 Dollars)	Pros	Cons
1. Construct New Digester Next to Primary Clarifiers	Increase total aerobic digester volume at the Plant by constructing a new digester tank (~250,000 gal) below the parking area south of the Primary Clarifiers. New digester tanks could be operated either in series or in parallel with existing digesters tanks. A new blower and digested sludge pump room would be constructed beneath the parking lot south of the primary clarifiers.	\$6,310,000	\$42,300	<ul style="list-style-type: none"> Existing SBC tanks remain available to be retrofitted to MBR tanks for secondary treatment upgrades as depicted in CIP3 Can meet full solids retention time (SRT) requirements for stabilization 	<ul style="list-style-type: none"> Loss of available space for primary clarifier expansion, if needed in the future Loss of available onsite parking Additional pumping and blower electricity cost Limited end use applications for class B Biosolids product
2. Install New Screw Press	Installation of a dewatering screw press in the space currently occupied by the Belt Filter Press. This project would include demolition of the existing Belt Filter Press.	\$3,310,000		<ul style="list-style-type: none"> Smaller footprint than existing Belt Filter Press New equipment with new equipment warranty 	<ul style="list-style-type: none"> Higher financial cost over refurbishment of existing Belt Filter Press
3. Install New Flow Meters and TSS Meters	Replace the existing primary effluent (PE) sludge flow meter and install a total suspended solids (TSS) meter downstream of PE sludge pumps.	\$70,000		<ul style="list-style-type: none"> Increased PE sludge monitoring capabilities 	<ul style="list-style-type: none"> None



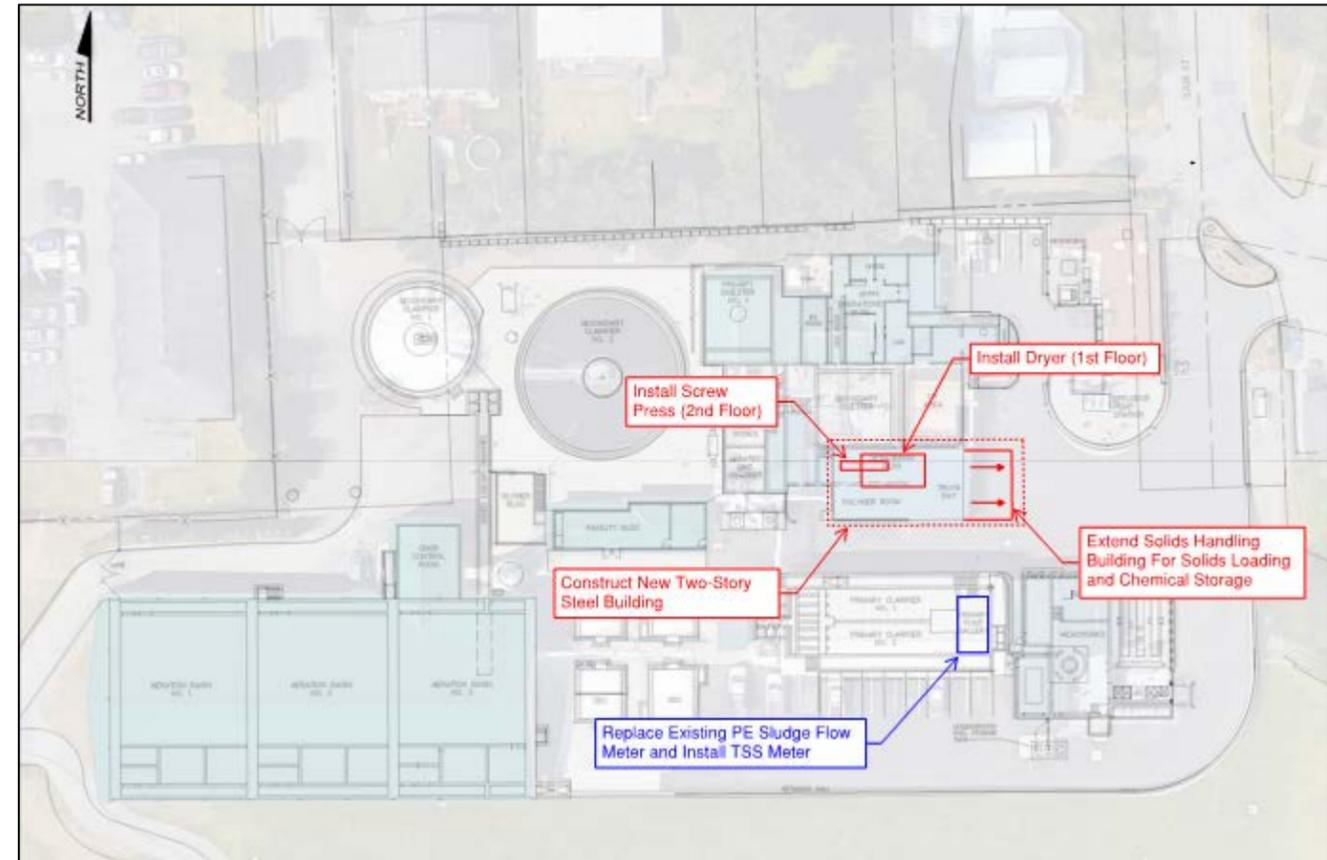
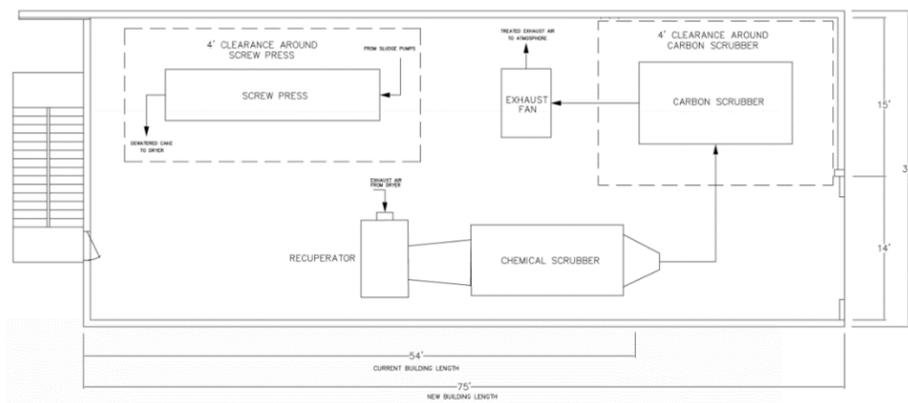
Capital Improvement Project 5: Class A Solids Handling Upgrades

Project Element	Description of Improvements	Project Cost (2020 Dollars)	Additional Operations and Maintenance Cost (\$/yr, 2020 Dollars)	Pros	Cons
1. Class A Sludge Dryer	Install Class A dryer and dryer odor control system. The existing solids handling building, and the belt filter press could be left in place and operational as a two-story steel frame building is constructed around the exterior of the existing building. A dryer could be installed on the first floor in the space occupied by the existing belt filter press.	\$12,040,000	-\$139,500	<ul style="list-style-type: none"> Upgrades do not spatially conflict with any future liquid stream upgrades Produces Class A biosolids product which could be used directly by the local community No hauling costs Reduction in volume of biosolids at the Plant Complete Aerobic Digestion would not be needed, and no future expansion of aerobic digesters would be needed Existing Digesters can be used as upstream equalization tanks which improves operational flexibility for the solids handling system 	<ul style="list-style-type: none"> Higher capital cost Uses natural gas Extensive structural modifications/construction needed
2. Install New Screw Press	Install a dewatering screw press on the second floor of the modified 2-story solids handling building	\$3,310,000		<ul style="list-style-type: none"> Smaller footprint than belt press New equipment with new equipment warranty 	<ul style="list-style-type: none"> Higher financial cost over refurbishment of existing Belt Filter Press
3. Install New Flow Meters and TSS Meters	Replace the existing PE sludge flow meter and install a TSS meter downstream of PE sludge pumps.	\$70,000		<ul style="list-style-type: none"> Increased PE sludge monitoring capabilities 	<ul style="list-style-type: none"> None

First Floor Conceptual Layout



Second Floor Conceptual Layout



Capital Improvement Project 6 – Plantwide Pump and Ultraviolet Disinfection Upgrades

Project Element	Description of Improvements	Project Cost (2020 Dollars)	Additional Operations and Maintenance Cost (\$/yr, 2020 Dollars)	Pros	Cons
1. Upgrade Effluent Pumps	Retrofit effluent pumps by adding a second stage and increasing the motor size to increase capacity.	\$830,000	\$9,000	<ul style="list-style-type: none"> Maintain firm capacity for projected peak flows 	<ul style="list-style-type: none"> Requires retrofit of all effluent pumps
2. 3W System Upgrades	Purchase new pumps sized for the same head, but about half the capacity of the existing pumps to provide adequate turndown, operate the 3W system more efficiently, and prevent unnecessary wear.	\$460,000	\$9,000	<ul style="list-style-type: none"> Optimize pumping of 3W Reduce pump maintenance by avoiding operation near shutoff head 	<ul style="list-style-type: none"> Requires replacement of existing 3W pumps, which are still functional but worn
3. Upgrade Influent Pumps	Replace the two smaller influent pumps with pumps that have twice the flow capacity to provide firm capacity for projected peak flows.	\$640,000	\$12,000	<ul style="list-style-type: none"> Maintain firm capacity for projected peak flows Replaces the pumps that experience the most use and wear 	<ul style="list-style-type: none"> Requires replacement of discharge piping to avoid excessive headloss
4. Upgrade UV System	Replaces the existing UV reactors to increase capacity of the UV disinfection system.	\$3,200,000	\$74,000	<ul style="list-style-type: none"> Provide firm capacity for disinfection of projected peak flows Reduce headloss through UV by increasing reactor and pipe size 	<ul style="list-style-type: none"> Requires new UV reactors, since existing reactors cannot be expanded and insufficient space to add reactors



Monroe WWTP Engineering Report

Public Works Committee

25 February 2020

WWTP – Current State

- Staff have been proactive in keeping the WWTP reliable and compliant
- Staff have kept cost low
- Minimal violations over the last decade



Reasons for WWTP Engineering Report

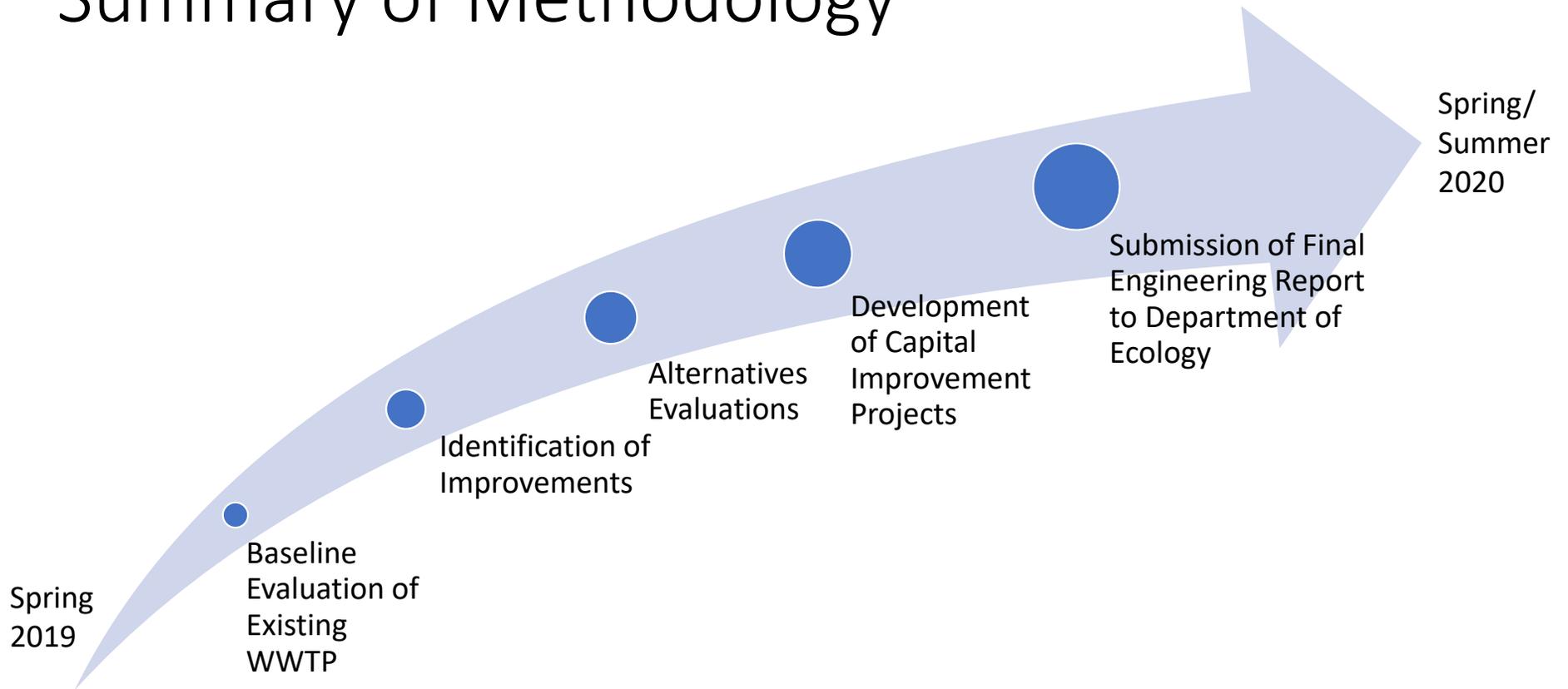
To address the following:

- Recommendation from 2015 Utility Plan
- Regulatory changes - more stringent pH limits (NPDES permit) and potential nutrient removal requirements (future) for discharges to the Skykomish River
- Current risks of existing biosolids program
- Future increased flows due to population growth

“A successful project is defined as one that provides a roadmap to efficient, achievable, reliable, and sustainable compliance.”

- Project Goal Statement, City Meeting, March 2019

Summary of Methodology



Summary of Capital Improvement Projects

- CIP 1 – pH control, process improvements (filament control)
- CIP 2/CIP 3 – Upgrades to biological/secondary process to address population growth and potential nutrient removal requirements (ALTERNATIVES)
- CIP 4/CIP 5 – Improvements to biosolids handling process to address risks of existing program (\$0.7M annually) (ALTERNATIVES)
- CIP 6 – Improvements to address hydraulic capacity limitations from population growth

Summary of Capital Improvement Project Costs

Note: Costs are in 2020-dollar value

CIP #	Description	Total Project Cost	20-yr Lifecycle Cost	20-yr Lifecycle Cost w/ Risk
CIP 1	pH Control and Process Improvements	\$1.76M	\$2.05M	N/A
CIP 2	Conventional Activated Sludge	\$13.17M	\$14.45M	N/A
CIP 3	Membrane Bioreactor	\$20.03M	\$25.27M	N/A
CIP 4	Class B Solids System	\$9.69M	\$10.54M	\$12.48M
CIP 5	Class A Solids System	\$15.42M	\$12.63M	\$12.63M
CIP 6	Hydraulics and Disinfection Improvements	\$5.13M	\$7.21M	N/A



Biological/Secondary Process Upgrades

Note: Costs are in 2020-dollar value (Total Project Cost, 20-yr Lifecycle Cost)

CIP 2 (\$13.17M, \$14.45M)

- Conventional treatment process (same as existing process)
- Limited capacity to address future regulations
- Additional clarifiers means expansion beyond the footprint of the WWTP

CIP 3 (\$20.03M, \$25.27M)

- Membrane bioreactor (MBR) treatment process
- Produces high quality water that can meet more stringent future regulatory limits
- Process can stay within the existing footprint of the WWTP

Biological/Secondary Process Upgrades

Comparison of Footprint for Expanding Existing Process versus Membrane Bioreactors

————— = Approximate Boundary of Existing WWTP

CIP 2

- Additional clarifiers means expansion beyond the footprint of the WWTP

CIP 3

- Process can stay within the existing footprint of the WWTP

Biosolids Program Upgrades

Note: Costs are in 2020-dollar value (Total Project Cost, 20-yr Lifecycle Cost, 20-yr Lifecycle Cost w/ Risk)

CIP 4 (\$9.69M, \$10.54M, \$12.48M)

- Existing Class B process
- Need for hauling sludge to Eastern WA
- Significantly higher volume to be transported

of trucks currently
hailed of Class B
biosolids per month
(~87 trucks annually)



CIP 5 (\$15.42M, \$12.63M, \$12.63M)

- Class A biosolids drying process
- Can utilize local demand for product
- Significant decrease in risk for the City
- Retains space within existing WWTP for future improvements

of trucks of
Class A
biosolids per
month



Engineer's Recommendations

Note: Costs are total project cost in 2020-dollar value

CIP #	Total Project Cost	Starting Year	Notes
CIP 1	\$1.76M	2020	<ul style="list-style-type: none"> Necessary for permitting and will help to optimize the WWTP Need to deliver project first
CIP 5	\$15.42M	2022	<ul style="list-style-type: none"> Decreased risk and decreased long-term O&M cost Deliver project in near term to reduce significant risk
CIP 3	\$20.03M	2026	<ul style="list-style-type: none"> Financially conservative method to account for future regulations Monitor future permitting requirements before starting process
CIP 6	\$5.13M	2028	<ul style="list-style-type: none"> Cost effective method for addressing hydraulic constraints by population growth Deliver project in the long-term



MONROE CITY COUNCIL
Transportation/Planning, Parks & Recreation,
and Public Works (P3) Committee Meeting

Tuesday, February 25, 2020, 5 P.M.

2020 Committee
Councilmembers
Ed Davis
Jeff Rasmussen
Heather Rousey

SUBJECT:	Urban Growth Area (UGA) Boundaries
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DATE:	DEPT:	CONTACT:	PRESENTER:	ITEM:
02/25/2020	Community Development	Ben Swanson	Ben Swanson	New Business D.

Discussion: 02/25/2020

- Attachments:**
1. Map of Potential UGA Expansion Areas
 2. Letter from Susan and Lonnie Davis to Mayor Thomas dated November 5, 2019
 3. 2015 – 2035 Comprehensive Plan FLUM

REQUESTED ACTION: Provide policy direction to City Staff regarding potential modifications to the City’s existing UGA boundaries.

POLICY CONSIDERATIONS

There are two main policy questions for the Committee to consider:

1. *Is there a desire for Monroe to accept additional growth?*
2. *If there is a desire for Monroe to accept additional growth, where should that growth be focused? The City may pursue modifications to the City of Monroe’s Urban Growth Area (UGA) boundaries, to maintain the existing UGA boundaries and increase the density contained therein.*

DESCRIPTION/BACKGROUND

Snohomish County processes proposed amendments to urban growth area boundaries every four years in association with the eight-year, state-mandated, periodic update to its comprehensive plan and the midpoints between those periodic reviews. The next deadline for submitting applications to the County to modify the UGA is October 30, 2020. Submittal of an application does not guarantee its approval. If the City’s decides to move forward with modifying the UGA boundaries, additional financial resources will be needed.

In 2019, City staff was approached by Susan and Lonnie Davis and their consultant, Clay White, from LDC. The Davis’ are requesting an amendment to the City’s UGA to allow for future annexation of four contiguous tax parcels into the City. The subject properties are located immediately contiguous to the City’s northern boundary and have a combined area of approximately 21.72 acres (Attachment 2). As the specified properties are not located within the City’s urban growth area, the Davis’s request includes amending the City’s UGA boundaries while concurrently annexing into the City.

Potential Scenarios

In consideration of the increased work required of staff to process the Davis’s request, City staff evaluated other areas contiguous to the existing UGA to include in the proposal to take advantage of potential economies of scale. City staff identified three additional areas located to the southwest of the existing city limits/UGA. These areas are identified in Attachment 1 as Areas 2, 3, and 4. A fifth scenario of “no action” of no action was also provided as an option. These scenarios are described below:

Scenario 1:

Scenario 1 proposes the modification of the UGA boundaries to only incorporate Area 1, which contains the four parcels identified by Susan and Lonnie Davis in Attachment 2.

Scenario 2:

Scenario 2 proposes to modify the City's UGA boundaries to include both Areas 1 and 2 identified in Attachment 1.

Scenario 3:

Under Scenario 3, the existing UGA boundaries would be amended to include Areas 1, 2, and 3.

Scenario 4:

Scenario 4 proposes amending the City's UGA boundaries to include all potential expansion areas - Areas 1, 2, 3, and 4.

Scenario 5:

This scenario provides a "no action" option for the Council for consideration. Scenario 5 does not propose any modifications to the existing UGA boundaries.

On February 4, 2020, staff presented these five (5) scenarios to the City Council for discussion. The Council requested that the Committee review the feasibility of pursuing Scenario 1 and assess its financial viability. Following this discussion with Council, the City was approached by Tom DeDonato of the DeDonato Group on behalf of Wade Edelbrock. Mr. Edelbrock's family is in possession of the parcels identified in Attachment 1 as Area 5, and he has expressed a desire to modify the City's UGA to incorporate the parcels. Consequently, staff requests that you consider the following sixth scenario in addition to the five (5) scenarios provided above:

Scenario 6:

Scenario 6 proposes to modify the City's UGA boundaries to include both Areas 1 and 5 identified in Attachment 1.

Regulatory Framework

The Growth Management Act (GMA) provides statutory authority for local governments to plan in Washington State. GMA establishes a framework for coordinated and comprehensive planning to help local communities manage their growth. A major goal of the Growth Management Act is to reduce urban sprawl by encouraging development in urban areas where adequate public facilities already exist or where such facilities can be more efficiently provided [RCW 36.70A.020(1-2)]. The GMA calls for the creation of urban growth areas (UGAs) where growth will be encouraged and supported with adequate facilities and urban services (RCW 36.70A.110). Essentially, the UGA is an area that has been identified for future expansion of a city. Areas outside the UGAs are reserved for non-urban uses such as rural and resource lands [RCW 36.70A.070(5)].

Process

Establishing a robust foundation on which to ground the application will necessitate a number of technical studies to be prepared by consultants. These studies are intended to evaluate the potential land use, environmental, and capital facilities impacts. Additional expenses will also be incurred from the increased staff time needed to prepare the application. Depending upon the scenario pursued, the expenditures are likely to range from \$100,000 to \$150,000. In addition the studies, City staff will need to justify to the County why the expansion is necessary. Basing the justification on existing conditions and Countywide Planning Policies, this will be difficult process for City staff as there are no obvious deficiencies in the City's population or growth rate.

The Snohomish County Council is the decision authority on UGA amendments and utilizes a docketing process to review proposed UGA boundary modifications every four years. Docketing is Snohomish County's public process for individuals, organizations, businesses, and outside

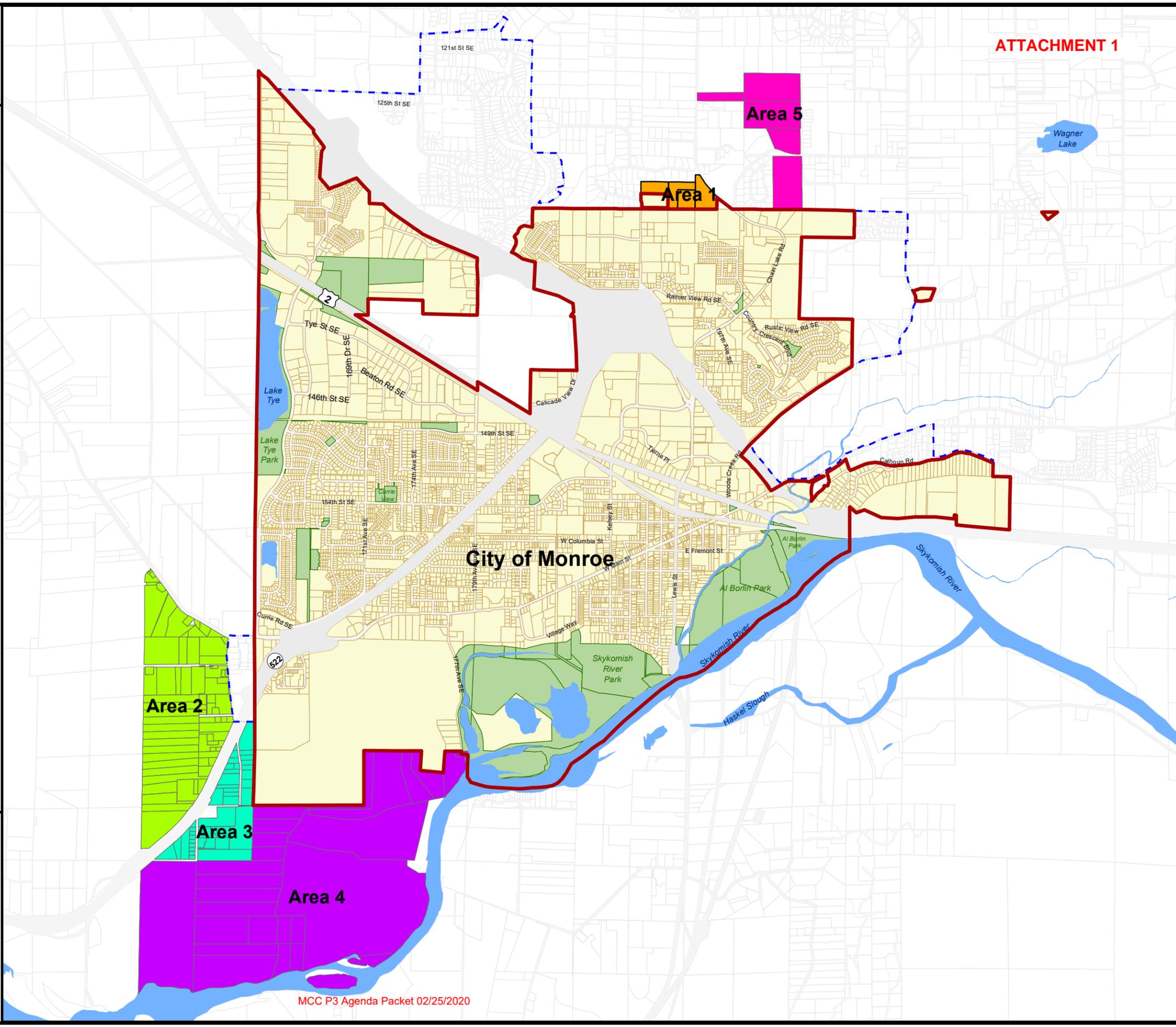
POTENTIAL UGA EXPANSION AREAS

-  **Area 1**
-  **Area 2**
-  **Area 3**
-  **Area 4**
-  **Area 5**

Boundaries
 Monroe City Limits
  Urban Growth Area



Map data shown is the property of the City of Monroe and Snohomish County. Inaccuracies may exist and the City of Monroe and Snohomish County imply no warranties or guaranties regarding any aspect of data depiction. No real estate decisions are to be made using this map. Please contact the City of Monroe Planning and Permitting Department to verify the designation(s).
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November 5th, 2019

Mayor Geoffrey Thomas
806 West Main Street
Monroe, WA 98272
Sent via email: gthomas@monroewa.gov

RE: Request to engage with the City of Monroe regarding docket application to expand the City of Monroe Urban Growth Area (UGA) and subsequent annexation

Dear Mayor Thomas:

It was a pleasure meeting with both you and Community Development Director Swanson on October 24th to discuss our desire to be included in the City of Monroe UGA and to annex our property into the city corporate boundaries. While we understand that it is ultimately Snohomish County that makes decisions about UGA expansions, we want to determine whether the City of Monroe has any desire to include this property in the City before we move forward with a submitting docket application at this time. Over the next 3-4 months, we would very much like to work with you, Director Swanson, and the City Council as you set your strategic direction for the coming Comprehensive Plan update process.

Background – why this is the right time to discuss

While we understand that the next Comprehensive Plan update won't be enacted until June of 2023, a docket application is due to Snohomish County in October of 2020 (should we decide to move our project forward). Further, we understand that the County is already in the early stages of the Comp Plan Update process. Our goal is to actively work with the City leaders and staff during this time.

In speaking with our consultant (Clay White with LDC) now is the right time for the City to be thinking about its goals as this process begins. How much population and employment growth do you want to plan for? What policy changes are necessary to support your goals? As the table below demonstrates, the Buildable Lands update process has already begun and both the initial population target setting process and Countywide Planning Policy (CPP) update will take place in 2020. The next few months are critically important, especially given how much the City has grown since the Comprehensive Plan was adopted four years ago.

2023 Update Timeline



Overview of our proposal

The Davis/Johnson properties have been in the same family since the late 30’s/early 40’s, and are approximately 21.72 acres combined (parcels 28062500407600, 28062500407700, 28062500300600, 2806250040800). These properties are in the North Hill Area, adjacent to Mainvue’s residential developments and City of Monroe water towers (which we believe Sue’s grandparents sold to the City back in the 80’s). Together, these properties span the entire distance between 191st Ave SE and 197th Ave SE, with 60% of our property boundary line being a common boundary with the City of Monroe. We also have a natural gas/water line easement running east/west from 197th to 191st, and believe this could be a great opportunity to create an east/west trail connection between the proposed Chain Lake Road Trail and the North Hill Park anticipated at the intersection of 191st Ave SE and 134th St SE.

It is our collective desire that these 4 properties be brought in the UGA and concurrently annexed into the City of Monroe. If the City believes this to be a logical expansion and agrees with making this docket application during the October 2020 docketing process, we would be happy to work with the City to put together an agreement to not further develop this property until the annexation takes place.

We understand that the City may want to focus future UGA expansion to the SW portion of the City. However, in speaking to Clay, this set of properties would provide a relatively small amount of new residential development and create a solid City limit boundary. Both goals could be accomplished.

Conclusion

Out of great respect for the City of Monroe, we are asking to engage with you first on this very important issue. We hope to have the opportunity to be part of a future City Council study session about future growth in the City and garner your support for this proposed project. Our family has been a part of this community for the past eight decades and would really love to be a part of the City. We would also enjoy having the opportunity to answer any questions you might have at this stage.

We look forward to hearing from you soon. If you need additional information, just let us know. We can be reach at realestatesue@comcast.net or at 425-344-1029

Best regards,

A handwritten signature in blue ink, appearing to read "Susan and Lonnie Davis". The signature is stylized and includes a long horizontal flourish extending to the right.

Susan and Lonnie Davis

Cc: Ben Swanson, Community Development Director

Davis & Johnson properties



COMPREHENSIVE PLAN MAP

COMP. PLAN DESIGNATIONS

- Downtown Commercial
- Tourist Commercial
- General Commercial
- Mixed Use
- Industrial
- Institutional
- Low Density SFR
- Medium Density SFR
- High Density SFR
- Multifamily
- Parks
- Limited Open Space
- Shoreline Industrial
- Transportation

BOUNDARIES

- Urban Growth Area
- Monroe City Limits

Official City of Monroe 2016 Comprehensive Plan Map
 This is to certify that this is the official comprehensive plan map of the City of Monroe, Washington.

Adopted December 8, 2015
 (Signed Copy in City Records)

Map data shown is the property of the City of Monroe & Snohomish County. Inaccuracies may exist and the City of Monroe & Snohomish County imply no warranties or guarantees regarding any aspect of data depiction. No real estate decisions are to be made using this map. Please contact the City of Monroe Planning and Permitting Department to verify the designation(s).

