



Ad Hoc Stormwater, Wastewater and Water Citizens Advisory Committee
Thursday, January 7, 2021 - 6:00 PM
Newberg City Hall
414 E First Street (teleconference meeting)

Join from a PC, Mac, iPad, iPhone or Android device:
Please click this URL to join.

<https://zoom.us/j/92207105608?pwd=T21KQjV1ejhWbTVPakgzcmtaQ1BJZz09>

Or join by phone:

Dial (for higher quality, dial a number based on your current location):
+1 669 900 6833, +1 253 215 8782, +1 346 248 7799, +1 929 205 6099,
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Webinar ID: 922 0710 5608

Passcode: 349286

Email any comments to Brett.Musick@newbergoregon.gov

I. CALL MEETING TO ORDER - 6:00 PM

II. ROLL CALL

Maryl Kunkel	Bill Rourke	Casey Creighton	Connie Woodberry
Peter Siderius	Denise Bacon	Jeremiah Horton	Leonard Rydell
Mike Gougler			

III. APPROVAL OF MINUTES – DECEMBER 2, 2020

IV. NEW BUSINESS

- Wastewater Master Plan Technical Update Consultant *Information Only Presentation*, Keller – 6:15 PM to 7:00 PM
 - i. Additional background information prior to review of full draft Water Master Plan Technical Update.

V. OLD BUSINESS – 7:00 PM to 7:40 PM

- Rydell Letter of 12/17/2020 – Storm Drainage Plan Recommendations
- Staff Memo – Stakeholders for Determination of Stormwater Drainage Policy Changes

ACCOMMODATION OF PHYSICAL IMPAIRMENTS: In order to accommodate persons with physical impairments, please notify the Engineering Department of any special physical or language accommodations you may need as far in advance of the meeting as possible, and no later than two business days prior to the meeting. To request these arrangements, please contact the Engineering Department at (503) 537-1273. For TTY services please dial 711.



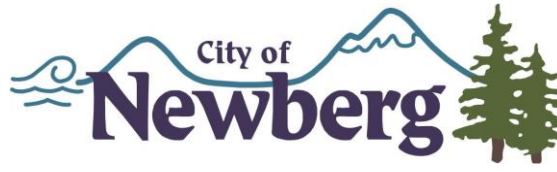
VI. PUBLIC COMMENTS – 7:40 PM to 7:45 PM

VII. ITEMS FROM STAFF – 7:45 PM to 7:50 PM

VIII. ITEMS FROM COMMITTEE MEMBERS – 7:50 PM to 7:55 PM

IX. ADJOURNMENT

ACCOMMODATION OF PHYSICAL IMPAIRMENTS: In order to accommodate persons with physical impairments, please notify the Engineering Department of any special physical or language accommodations you may need as far in advance of the meeting as possible, and no later than two business days prior to the meeting. To request these arrangements, please contact the Engineering Department at (503) 537-1273. For TTY services please dial 711.



ENGINEERING SERVICES

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**TO: AD HOC STORMWATER, WASTEWATER AND WATER CITIZENS
ADVISORY COMMITTEE**

FROM: BRETT MUSICK, PE, SENIOR ENGINEER

SUBJECT: CAC Meeting #2A - Wastewater

DATE: DECEMBER 31, 2020

This memorandum is to provide a summary of materials in the meeting packet for the January 7, 2021 meeting of the Ad Hoc Stormwater, Wastewater and Water Citizens Advisory Committee. This is the second meeting related to the Wastewater Master Plan Technical Update.

In addition to the Agenda, the meeting packet includes the following:

- New Business Item
 - Wastewater Master Plan Technical Update Presentation – *Background information*
 - A first draft of the Wastewater Master Plan Technical Update – *Chapters 1-2*
- Old Business Item
 - Rydell Letter of 12/17/2020 – Storm Drainage Plan Recommendations
 - Staff Memo – Stakeholders for Determination of Stormwater Drainage Policy Changes

CITY OF NEWBERG STORMWATER, WASTEWATER, AND WATER CAC MINUTES
WEDNESDAY, December 2, 2020 6:00 PM
City Hall, 414 E. First Street, Newberg (teleconference meeting)

I. CALL MEETING TO ORDER

The meeting was called to order at 6:00 PM.

II. ROLL CALL

Members Present:	Jeremiah Horton	Denise Bacon	Casey Creighton
	Mike Gougler	Meryl Kunkel	Leonard Rydell
	Connie Woodberry	Peter Siderius	

Staff Present: Brett Musick, Senior Engineer
Doug Rux, Community Development Director

III. COMMITTEE INTRODUCTIONS

Everyone present introduced themselves.

IV. ELECTION OF COMMITTEE CHAIR AND VICE CHAIR

Meryl Kunkel was nominated for Chair and Committee Member Peter Siderius was nominated for Vice Chair.

V. COMMITTEE PURPOSE AND GENERAL BACKGROUND

Senior Engineer Musick gave a background and purpose of the Committee which was to update the various master plans to implement the Riverfront Master Plan.

VI. NEW BUSINESS

A. Water Master Plan Technical Update

Heidi Springer from Murray Smith gave a presentation on the Water Master Plan technical update. She discussed the project goals, Riverfront area water service, HB 2001 and middle housing impacts to the water system, seismic resilience evaluations, adequate water capacity and pressure, analysis process, water demand, criteria for good water service, and fire flow analysis results. There was insufficient fire flow at some of the dead end facilities in the Riverfront area and looping them would improve available fire flow. For the area south of downtown, the small diameter pipe grid could not support the 2,000 gallons per minute fire flow.

There was discussion regarding where the looping system would be located and seismic resiliency.

B. Wastewater Master Plan Technical Update

Emily Flock from Keller Associates provided a presentation on the Wastewater Master Plan technical update. She explained the drivers for the update, goals/objectives, project overview with scope and schedule, Hydraulic Grade Line (HGL) and surcharge, evaluation threshold vs. design criteria, impacts of the evaluation threshold adjustment, and planning criteria.

There was discussion regarding the evaluation threshold, size and lifetime of the pipes, growth projections, infiltration study, and projects to reduce Inflow & Infiltration.

SE Musick asked which was acceptable, the evaluation criteria proposed at 2 feet below rim or design criteria proposed at 85% full pipe.

CDD Rux said at the last master plan update there were questions about how the two feet below rim might affect those with basements.

Ms. Fleck said if the evaluation threshold was reduced, that would expand the scope and mean more projects for different areas. They would prioritize the projects, and the first concern would be overflows.

Committee Member Connie Woodberry asked what would be the concern if it was left as is. SE Brett Musick said if they left the threshold as it was, it would resolve some of the issues and in a future master plan update it would be reevaluated to address additional issues. If the threshold was modified, they would still prioritize the projects in the current alignment. The concern was impacts to the funding availability. The end result would be the same over time for what projects would be able to be completed.

Committee Member Peter Siderius asked what thresholds were used by surrounding cities. Ms. Flock said there were a few who used 1 foot above the top of pipe, but a lot looked at preventing any surcharging. The end goal would be not to have any surcharging in the system.

Peter Olsen from Keller Associates gave an example of the city of Stayton who as they progressed with making improvements changed their threshold to 85% full pipe to be more aggressive in their improvements. It would not change how much money was available, but it would make the Capital Improvement Plan larger.

Committee Member Peter Siderius was a proponent of maintaining infrastructure and supporting what they had before expansion. If it lengthened the projects, that was the wise way to go.

Chair Meryl Kunkel asked about the issues with people's basements. CDD Rux said these were areas north and south of downtown where there were many homes that had basements. The question came up for the 2 feet below the rim and if there was a surcharge if overflows would go into basements. At that time, it was left at 2 feet below the rim, but since they were doing this update staff thought the topic could be revisited.

Mr. Olsen said it was a lengthy discussion and debate. Staff at the time said if there were overflows and backups in basements it was due to maintenance issues and blockages, not the Hydraulic Grade Line. That was why the 2 feet below the rim was maintained.

Committee Member Peter Siderius asked if they would be replacing pipes that would keep them at that level. If that was the case, he would rather go with the 85% full pipe.

Mr. Olsen said they would not design a new project to surcharge anything above 85% full pipe.

Committee Member Peter Siderius was comfortable keeping it at the 2 feet below the rim until the next update in 10 years.

Committee Member Leonard Rydell thought if they changed one pipe at a time between two manholes, they might get rid of several problems upstream. Mr. Olsen said that was correct. As they made improvements, the Hydraulic Grade Line would drop.

CDD Rux said adjusting the threshold could add additional costs which might correlate to increased SDC charges.

Chair Meryl Kunkel asked what the difference in cost would be if they adjusted the threshold. Mr. Olsen said they had not evaluated that yet as they were waiting to get direction from the Committee on the threshold. It would add to the contract if they wanted a comparison.

There was discussion regarding population projections and growth and how the new numbers showed a decreased growth rate from what it was in 2017.

Mr. Olsen said the consultants were comfortable with leaving it at 2 feet below the rim even though it would add extra projects. It most likely would not change what projects would be accomplished due to the amount of funding.

Committee Member Connie Woodberry said the question was if the methodology they were using now would be adequate for the next 7 to 10 years. Mr. Olsen said the threshold provided more than enough projects for the City to work on in the next 7 to 10 years.

Committee Member Connie Woodberry asked if there would be an event that would trigger a review of this decision before the standard 7 to 10 years. Mr. Olsen said this update was due to a change in conditions due to the Riverfront Master Plan. They did not know what other event might trigger a review.

Committee Member Peter Siderius asked about the development that might occur north of town. CDD Rux said that was taken into account in the growth projections.

Chair Meryl Kunkel was comfortable moving forward with the 2 foot below the rim given it would not change the funding situation.

Committee Member Casey Creighton thought the same. It looked like most of the major trunk issues were being upsized so that everything up higher would flow better.

Committee Member Leonard Rydell thought due to what people were going through this year it was not a good time to try to solve all the problems at once. It might be better to try to fix the worst situations rather than adopt a new standard, however he did not know enough to make a decision right now. Each of the options had a cost and he would like a comparison of those costs.

Committee Member Peter Siderius said it was not in the scope of the project to get comparisons. He asked if they changed the threshold, did the State require the City to make the improvements by a certain time period. Mr. Olsen said it was up to the City.

Committee Member Peter Siderius said since the City was already replacing pipe at the 85%, what was the harm of changing the threshold to 85%? Mr. Olsen said there was no harm in it.

Committee Member Peter Siderius thought if there was no harm in it and the City would still make the decision about the costs, the 85% should be the threshold they were looking at.

Committee Member Connie Woodberry agreed. She thought it should be the standard they were trying to reach. How they managed the roll out of the improvements was not the same as setting the standard.

Committee Member Leonard Rydell was concerned about the rates going up if they adopted a new standard.

Committee Member Bacon wanted to know the numbers before a decision was made. They needed to be cautious about raising rates.

There was discussion regarding the process for rates which was performed by the Citizens Rate Review Committee.

Committee Member Peter Siderius asked about the timeframe for the improvements at the current threshold given today's budgetary constraints. SE Musick stated they were to be done over a 20 year horizon. The projects that did not get done were moved into the next round of the master plan update. CDD Rux clarified they were sizing the infrastructure based on the population forecasts they were required to follow. They were not allowed to plan past the 20 year horizon.

There was discussion regarding the improvements in the master plan that were chosen to alleviate the bottlenecks and problem areas. They were on most major trunklines.

Ms. Flock said if the threshold was changed, additional bottlenecks would have to be addressed with Capital Improvement Projects and some would have to expand in their length in terms of reducing flow all the way up the line.

SE Musick clarified if they stayed with the 2 feet below the rim, the projects in the current CIP would be maintained and they would add the Riverfront Master Plan projects in. If they changed the threshold, the consultants would do more analysis to add more projects to the current CIP. They would be increasing the amount of improvements needed.

Committee Member Leonard Rydell said his concern was there would be more work to be done than citizens had the money to do. They needed to get the most bang for the buck and they would make the most impact by improving the worst problems first. The worst problems would not be found by changing the threshold.

Mr. Olsen said the projects on the list represented the worst problems. If the threshold was changed, they would be looking at phasing those projects in and an entire line would not be improved in one project because there were higher priorities in other areas. The highest risk areas were overflow areas and would be addressed first even if more projects were added.

Committee Member Peter Siderius said the threshold would not change the priority list, but it would expand the list of priorities.

Committee Member Leonard Rydell was still concerned about rates and SDCs going up. They had not been told what the chances were of the standard resulting in a major problem down the road. It was currently working and he did not think they needed to fix it right now.

MOTION: Peter Siderius/Leonard Rydel moved to maintain the threshold at 2 feet below the rim. Motion carried (8 Yes/0 No).

VII. PUBLIC COMMENTS

None

VIII. ITEMS FROM STAFF

SE Musick reminded the Committee to check their City email addresses and to finish the security training by December 12. He would send out links to the existing master plans.

IX. ITEMS FROM COMMITTEE MEMBERS

None

X. ADJOURNMENT

The meeting was adjourned at 8:22 PM.

DRAFT

Technical Update to the Wastewater Master Plan - CAC #2A

January 7, 2021

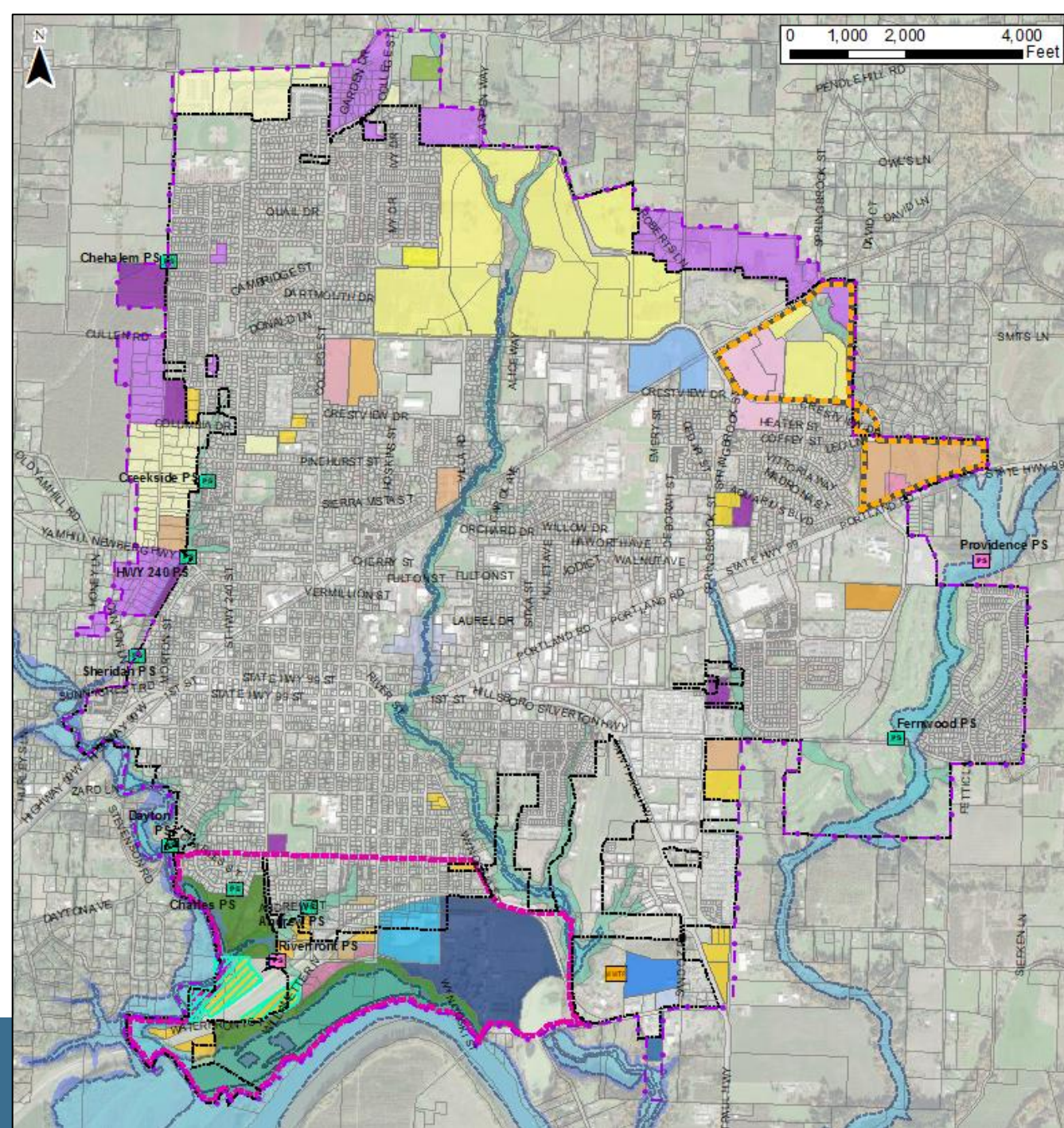
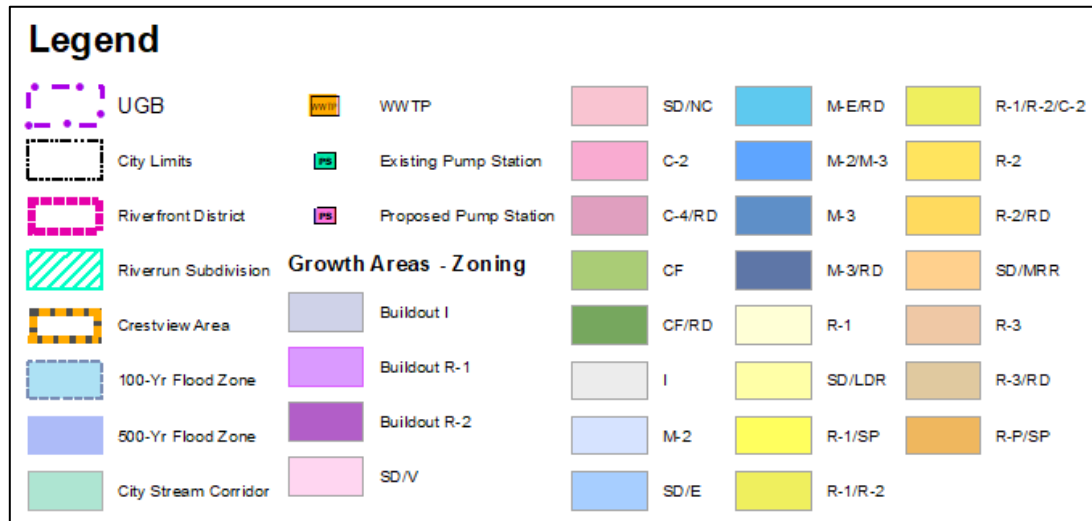


Agenda

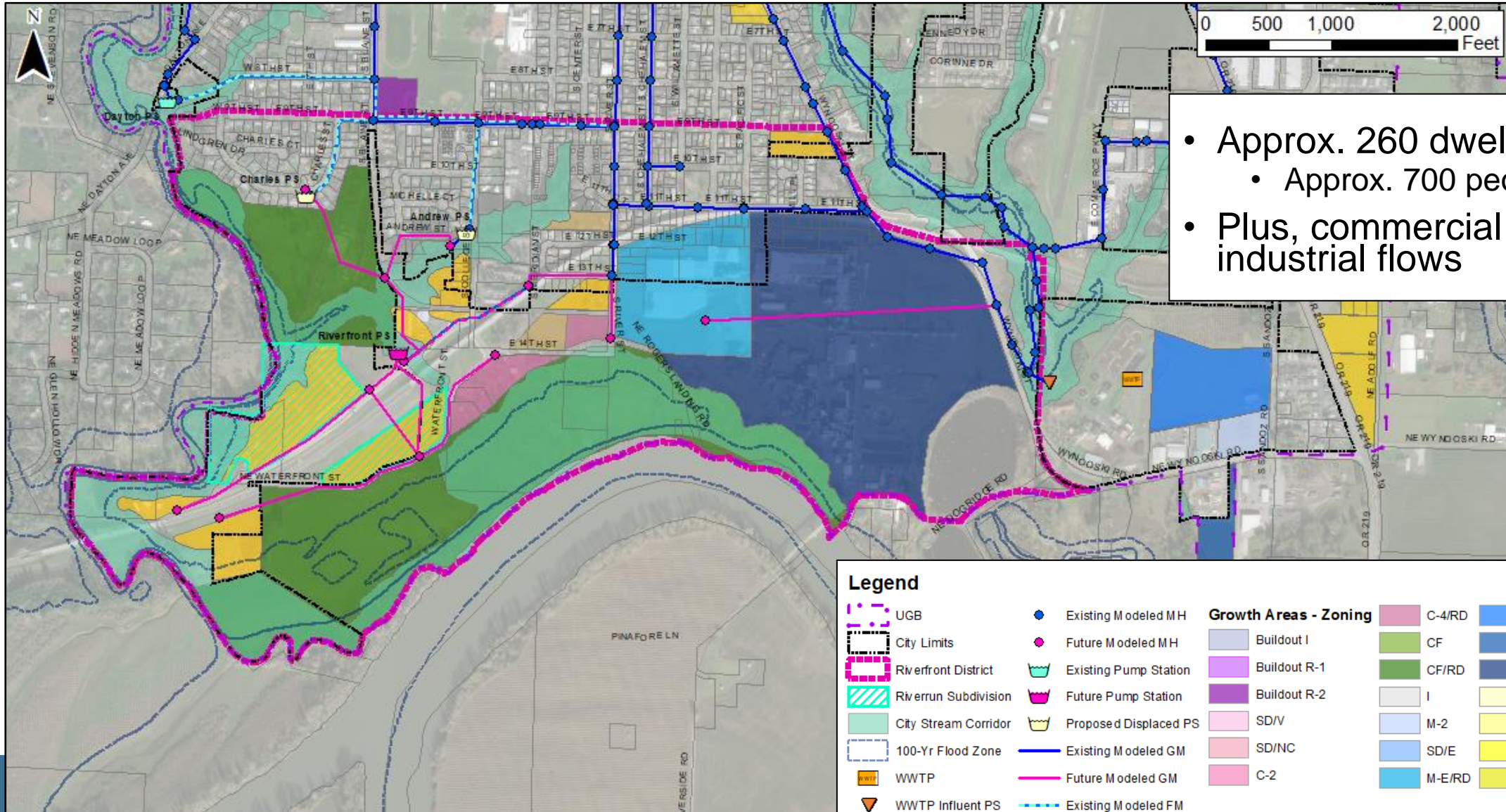
- System Update
 - Study Area
 - Infrastructure
 - Loading
- Planning Criteria
- Updated System Evaluation
- Next Steps

System Updates

- Buildout scenario
- Riverfront, including Riverrun subdivision
- Crestview area



Riverfront MP and Riverrun Subdivision



- Approx. 260 dwelling units
 - Approx. 700 people
- Plus, commercial & industrial flows

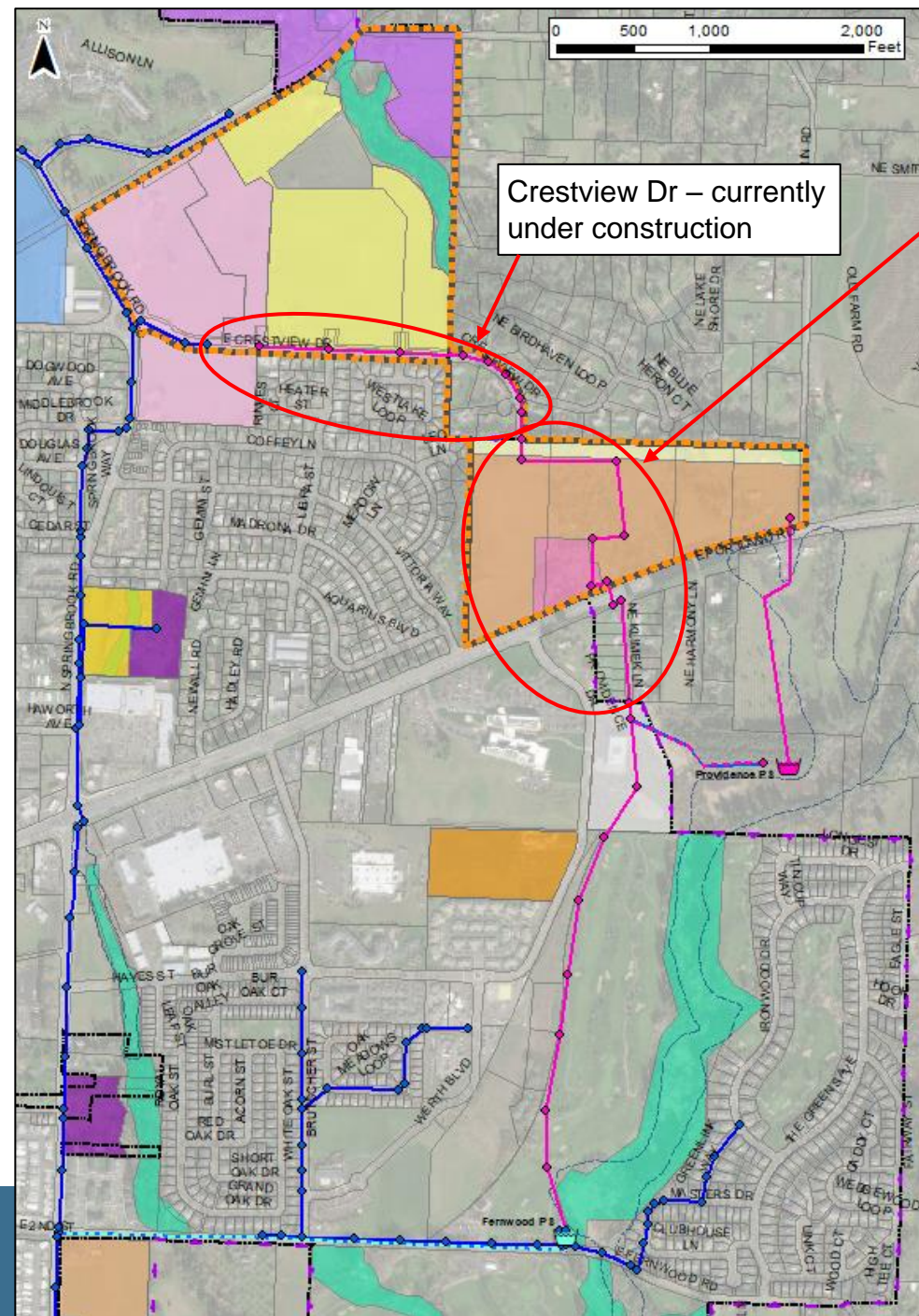
Legend

UGB	Existing Modeled MH	Growth Areas - Zoning	C-4/RD	M-2/M-3	R-1/R-2/C-2
City Limits	Future Modeled MH	Buildout I	CF	M-3	R-2
Riverfront District	Existing Pump Station	Buildout R-1	CF/RD	M-3/RD	R-2/RD
Riverrun Subdivision	Future Pump Station	Buildout R-2	I	R-1	SD/MRR
City Stream Corridor	Proposed Displaced PS	SD/V	M-2	SD/LDR	R-3
100-Yr Flood Zone	Existing Modeled GM	SD/NC	SD/E	R-1/SP	R-3/RD
WWTP	Future Modeled GM	C-2	M-E/RD	R-1/R-2	R-P/SP
WWTP Influent PS	Existing Modeled FM				
	Future Modeled FM				

Crestview Area

- Approx. 405 dwelling units
 - Approx. 1,100 people
- Plus, commercial & industrial flows from hospital growth

Growth Areas - Zoning									
	Buildout I		C-2		SD/E		SD/LDR		SD/MRR
	Buildout R-1		C-4/RD		M-E/RD		R-1/SP		R-3
	Buildout R-2		CF		M-2/M-3		R-1/R-2		R-3/RD
	SD/V		CF/RD		M-3		R-1/R-2/C-2		R-P/SP
	SD/NC		I		M-3/RD		R-2		
			M-2		R-1		R-2/RD		



Crestview Crossing (Pvt Development) – currently under construction

Legend

- UGB
- City Limits
- Crestview Area
- City Stream Corridor
- 100-Yr Flood Zone
- WWTP
- Existing Pump Station
- Future Pump Station
- Proposed Displaced PS
- Existing Modeled MH
- Future Modeled MH
- Existing Modeled GM
- Future Modeled GM
- Existing Modeled FM
- Future Modeled FM

Planning Criteria

- Collection system hydraulic evaluation
 - Evaluation storm: 5-year, 24-hour storm event peak flows
 - For Newberg, this would be 2.9 inches of rain in 24-hours (NOAA)
 - Sunday, 12/20 recorded approx. 1.5 inches of rain (NOAA)
 - Monday, 12/21 recorded approx. 1.0 inch of rain (NOAA)
 - Evaluation threshold
 - Four options considered (85% depth, top of pipe, 1-ft above top of pipe, 2-ft below rim)
 - Moving forward with 2-ft below rim per CAC recommendation
 - Design Criteria (Recommended)
 - 85% full depth at peak flows
 - Major trunk lines may be upsized one additional, nominal pipe size
 - Pump stations evaluated at firm capacity
 - Largest pump offline (Oregon DEQ standard)

Modeled System & Drainage Basins

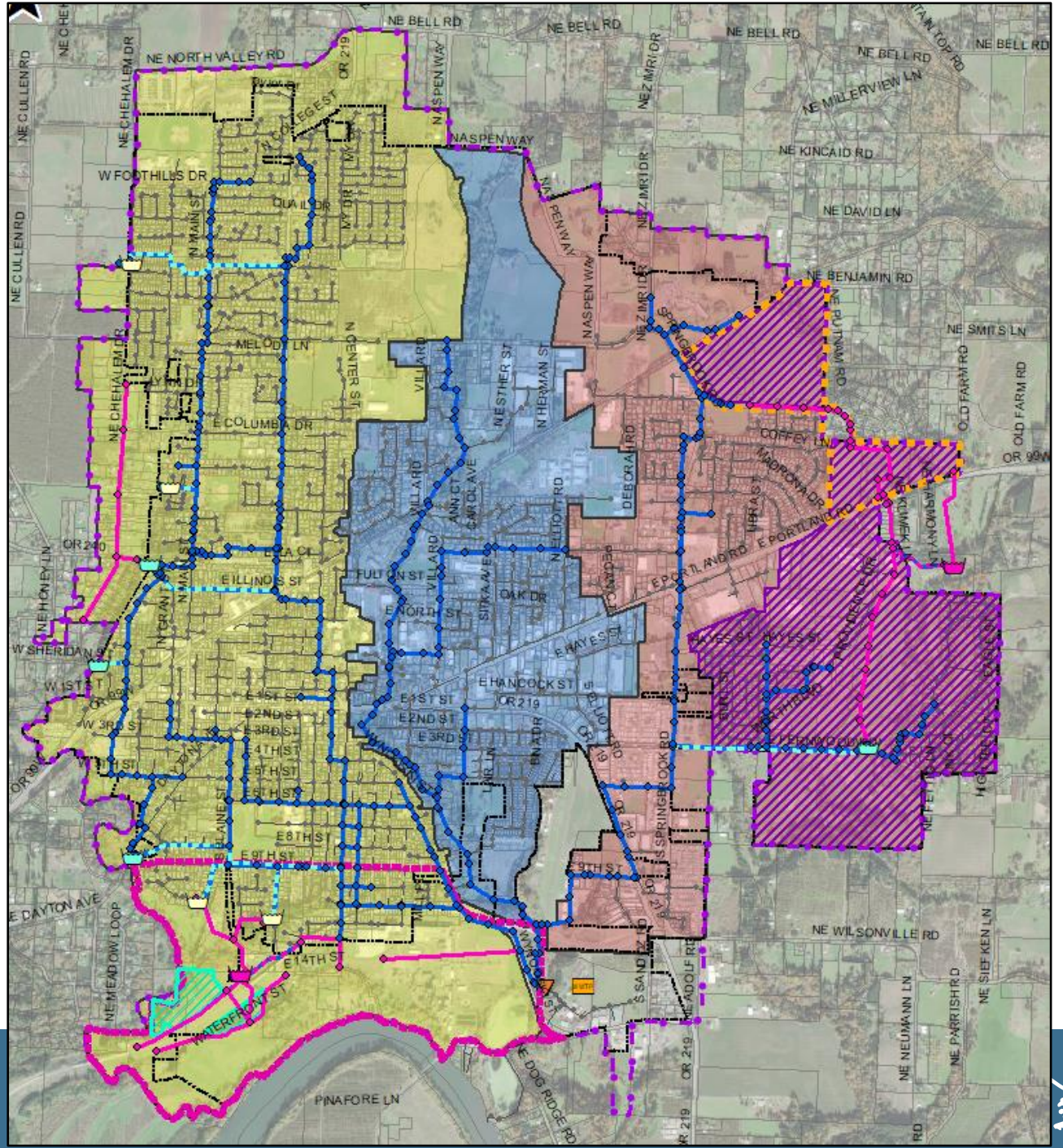
Legend

- UGB
- City Limits
- Riverfront District
- Riverrun Subdivision
- Crestview Area

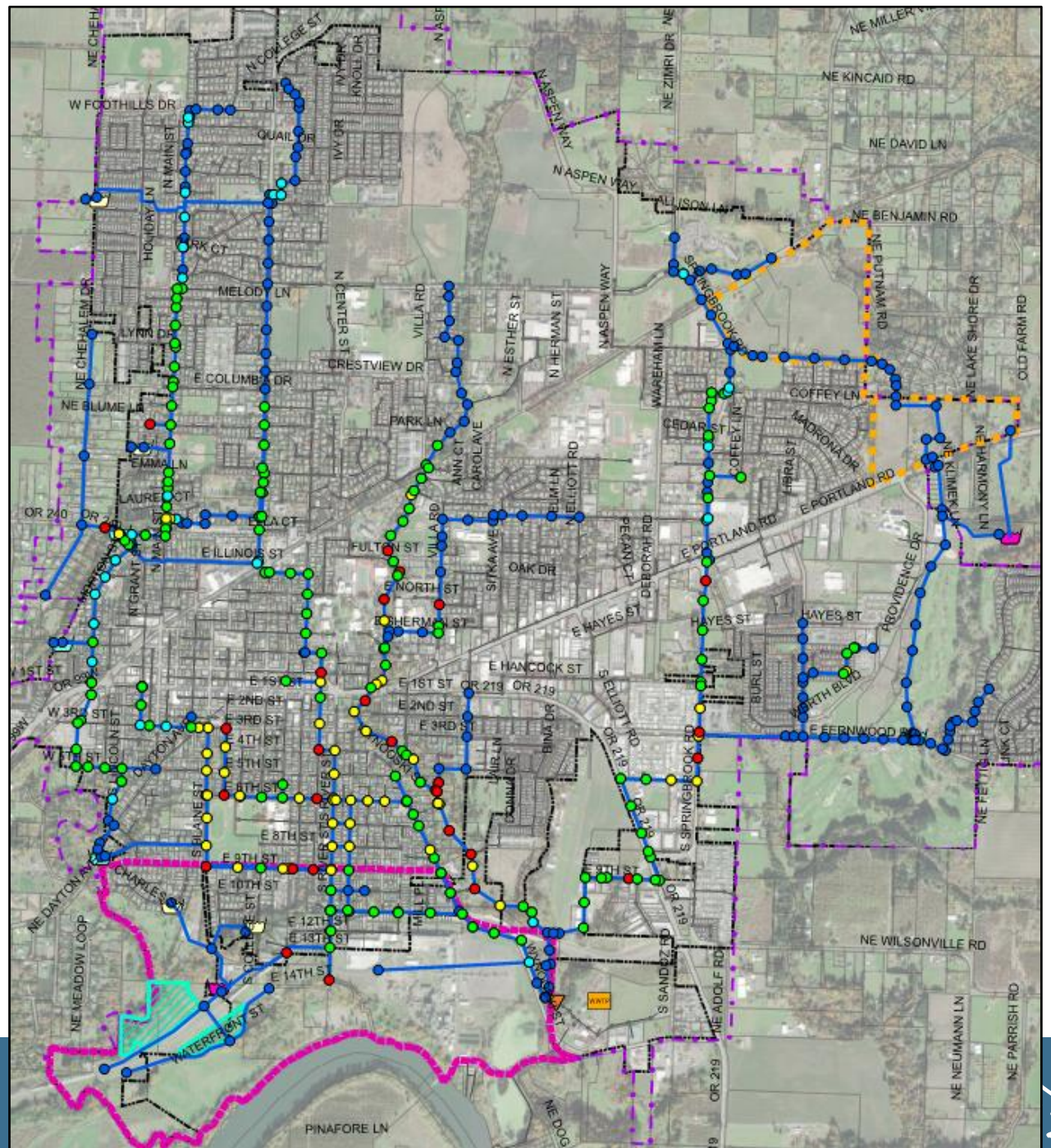
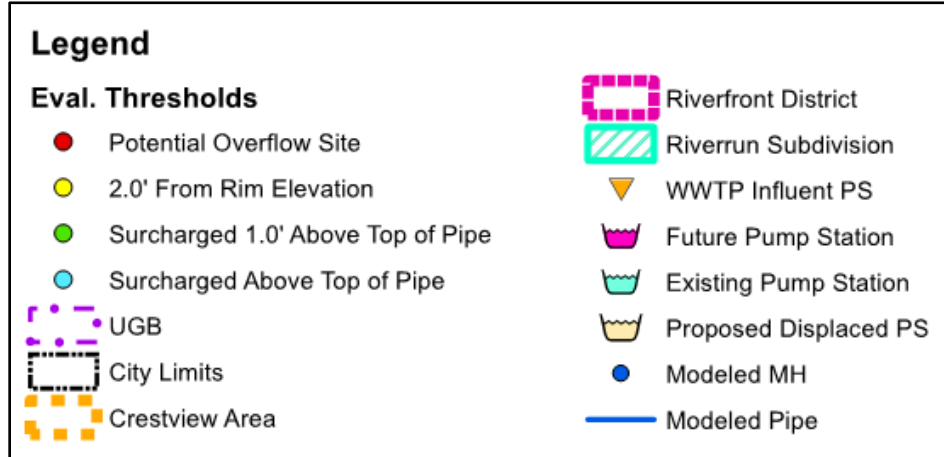
Sewer Basin

- Hess Creek
- River Street
- Springbrook Road
- Fernwood Subbasin

- WWTP Influent PS
- Existing Pump Station
- Future Pump Station
- Proposed Displaced PS
- Existing Modeled Manhole
- Future Modeled Manhole
- Existing Modeled Gravity Main
- Existing Modeled Force Main
- Future Modeled Gravity Main
- Future Modeled Force Main



Updated System Evaluation



Areas of Interest/Evaluation

- A - Pinehurst Ct, topographic low point
- B - N. Main St, downstream bottleneck
- C - Excess flows from HWY240
- D - HWY240 LS, undersized pumps
- E - S. River St, undersized
- F - Riverfront District, prop. infrastructure and backwater
- G - Wynooski St, undersized
- H - Villa Rd, downstream bottleneck
- I - Hess Creek, undersized and limited or no access to line
- J - S. Springbrook Rd, undersized and topographic low point
- K - Fernwood/Springbrook Rd, undersized
- L - Fernwood PS, undersized pumps
- M - Meadow Lp, undersized/low slope

Legend

Eval. Thresholds

- Potential Overflow Site
- 2.0' From Rim Elevation
- UGB
- City Limits
- Crestview Area

- Riverfront District
- Riverrun Subdivision
- ▼ WWTP Influent PS
- ▾ Future Pump Station
- ▾ Existing Pump Station
- ▾ Proposed Displaced PS

0 0.25 0.5 1 Miles



Next Steps



- Evaluate improvement alternatives
- Prioritization recommended alternatives
- Draft Capital Improvement Plan (CIP)
- Next Meeting (CAC #3A) – Wednesday, 2/10/2021 (proposed)

Questions or Comments?



CITY OF NEWBERG WASTEWATER MASTER PLAN UPDATE

CH. 1-2 DRAFT

DECEMBER 2020

PROJECT NO. 220045

PREPARED BY:



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Salem, OR 97301
(503) 364-2002

PREPARED FOR:



City of Newberg
414 E. First Street
Newberg OR 97132
(503) 554-1223

CHAPTER 1 – PROJECT PLANNING

The City of Newberg owns and operates a municipal wastewater collection system and a wastewater treatment plant (WWTP). In 2018, the City of Newberg completed a Wastewater Master Plan (WWMP) to assess the needs of the City for the wastewater system, evaluate if the existing collection system and WWTP could meet those needs, and provide a plan to implement improvements to the wastewater system so the City could continue to meet their level of service goals. Since the adoption of the WWMP, there have been a few planning, design, and construction projects that necessitate an update to the WWMP. The primary driver of this update is the Riverfront Master Plan that was accepted by the City in September 2019. The Riverfront Master Plan includes recommendations for wastewater infrastructure within the study area. The Riverrun Subdivision development within this area has also proposed some wastewater infrastructure and preliminary plats that should be reflected in the updated Master Plan. Additionally, the City has new information on the Crestview Drive and Crestview Crossing projects in the Springbrook Basin. These projects have resulted in the possibility of routing additional flow further east within the basin.

The City desires an update to the collection system portions of the WWMP. The update shall be a technical update to the current WWMP that serves as a planning guide for operating, maintaining, constructing, and expanding the City's wastewater system. The Master Plan Update (WWMPU) will incorporate the new information described above and provide updated recommendations to continue to meet the wastewater collection needs of the City. The update will reflect growth projections and design flows documented in the 2018 WWMP with updates specifically to the Riverfront and Springbrook basins. This update will not include an update to the evaluation of the WWTP.

1.1 STUDY AREA

The study area consists of all areas within the City of Newberg Urban Growth Boundary (UGB). Figure 1 Appendix A shows the existing City limits, UGB, as well as growth areas identified in the 2018 WWMP updated with current information available on the Riverfront and Crestview areas. Figure 2 shows the Riverfront Master Plan study area with proposed zoning and wastewater infrastructure. Figure 3 shows the Crestview area with proposed wastewater infrastructure. The portion on Crestview Drive is currently under construction.

1.2 POPULATION AND FLOWS

The update uses the population projections and flow analysis presented in the 2018 WWMP. No additional population or flow analyses were completed as part of this update. A summary of the population and flow projections from the 2018 WWMP are shown in Tables 1-1 and 1-2.

TABLE 1.1: POPULATION AND PROJECTIONS

Year	Population	Source
1980	10,394	U.S. Census, Population Research Center: PSU
1990	13,086	U.S. Census, Population Research Center: PSU
2000	18,064	U.S. Census, Population Research Center: PSU
2010	22,110	U.S. Census, Population Research Center: PSU
2017	23,480	PSU Preliminary Population (Nov. 2017)
2022	25,797	Projected Using Coordinated Growth Rate of 1.9%
2027	28,343	Projected Using Coordinated Growth Rate of 1.9%
2032	31,139	Projected Using Coordinated Growth Rate of 1.9%
2037	33,811	Projected Using Coordinated Growth Rate of 1.3%

Notes: PSU - Portland State University; Coordinated Growth Rates (AAGR) from PSU Coordinated Population Forecast 2017-2067 Yamhill County.

Source: City of Newberg 2018 WWMP

TABLE 1.2: FLOW PROJECTION SUMMARY

Year	Design Flow (MGD)	Design Unit Flow (gpcd)	Projected Unit Flow (gpcd) ²	Projected Design Flow (MGD)				
	2015	2015	-	2017	2022	2027	2032	2037
Population	22,900	22,900	-	23,480	25,797	28,343	31,139	33,811
ADWF	2.27	99	99	2.33	2.56	2.81	3.09	3.35
MMDWF ₁₀	4.48	196	196	4.60	5.05	5.55	6.09	6.62
AADF	3.32	145	145	3.40	3.74	4.11	4.51	4.90
AWWF	4.38	191	191	4.49	4.94	5.42	5.96	6.47
MMWWF ₅	9.66	422	250	9.81	10.4	11.0	11.7	12.4
PWkF	10.0	438	275	10.2	10.8	11.5	12.3	13.0
PDAF ₅	21.5	941	325	21.7	22.5	23.3	24.2	25.1
PIF ₅ ¹	28.0	1,223	425	28.2	29.2	30.3	31.5	32.6

Notes: 1. The DEQ method produces a design flow of 67.1 MGD. PIF5 flow was adjusted based on continuous flow data from peak days between 2012 and 2015.

2. Projected unit flow scaled down to reflect reduced I/I in future developments.

Source: City of Newberg 2018 WWMP

1.3 PLANNING CRITERIA

The City’s conveyance system will be sized for the projected buildout peak instantaneous flow rates associated with the 5-year, 24-hour storm event. Based on the Comprehensive Plan updated in September 2015, buildout for the UGB and URA are projected to occur at approximately the same time as the planning period for the 2018 WWMP (2037).

Evaluation Threshold

The evaluations performed as part of this master plan update are used to develop and prioritize recommended improvements to address deficiencies in the collection system. These improvements are organized into the Capital Improvement Plan (CIP) and included in the

subsequent System Development Charge (SDC) evaluation. The evaluation threshold is used to identify deficiencies in infrastructure and trigger improvement projects. Different thresholds can be used to help prioritize deficiencies in the system. Evaluation thresholds can progressively be lower in subsequent studies as a City makes progress on improvements. Some examples of evaluation thresholds for pipelines include 85% full depth of pipe, top of pipe, 1-foot above top of pipe, 2-feet below rim, at rim elevation. Part of this update was to reconsider different evaluation thresholds. A key component to this discussion was the Citizen Advisory Committee (CAC). This committee is made up of citizens of the City who were involved throughout the development of this update, reviewed draft documents, and provided feedback to be considered in this update. The committee was interested in looking more closely at the impacts to this update and subsequent recommended improvements of the various evaluation thresholds. Further discussion on the evaluation threshold and impacts to the system evaluation are in Chapter 2. It should be noted that the evaluation threshold is not a design standard (though they can align) and the CIP pipeline projects are all sized to conform to design criteria as described below.

Design Criteria

The design criteria govern the design of improvements and new infrastructure. Often many of the design criteria are included in the Public Works Design Standards (PWDS). For this update, gravity collection pipelines will be sized to carry peak design flows at 85% of the full capacity. Where appropriate, new lines will be sized one nominal pipe size larger than what is needed for areas that may not be at buildout by the end of the planning period. Additionally, it should be noted that efforts to reduce I/I in the collection system could further extend the service population. Pump stations will be designed to handle the peak flows with the largest pump out of service (defined as firm capacity). These are consistent with industry and the Oregon DEQ design guidelines.

Growth Areas

The future growth areas identified in the 2018 WWMP serve as the basis for the growth evaluated in this master plan update. The growth areas and assumptions were updated with information provided by the City, specifically for the Riverfront area including the Riverfront Subdivision and the Crestview area including the Crestview Drive and Crestview Crossing projects. Additional discussion of these areas is included in Chapter 2.

Residential flows were projected using growth area, average lot size, population density, and ADWF per capita attributed with residential contributions. Commercial, industrial, and institutional flows were projected using growth areas identified in the 2018 WWMP and typical flow per acre values (Metcalf and Eddie, 3rd Edition). Projected flows per zoning designation used in this update to estimate flows for growth areas are summarized in Table 1-3.

TABLE 1.3 PROJECTED FLOWS BY ZONING

Zoning	Dwelling Units per Acre	Average Lot Size ^A (sqft)	Average Lot Size ^A (ac)	Pop. Density ^{A, B} (people/ac)	Flow ^{C, D} (gpad)
R-1	4.4	9,900	0.227	12	880
R-2	9.0	4,840	0.111	24	1,800
R-3, R-4	16.5	2,640	0.061	44	3,301
M-1, M-2, M-3, M-E	N/A	N/A	N/A	N/A	1,250
C-1, C-2, C-3, C-4	N/A	N/A	N/A	N/A	1,250
I	Institutional (Providence, GFU, etc.)	N/A	N/A	N/A	2,000

^AAllocates 25% of area for roads and other public dedication, except on industrial and commercial area where 20% is allocated.

^BAssume 2.69 people/dwelling unit (2010 US Census).

^CResidential flows based on Design ADWF per capita from Table 1-2 (99 gpcd). Industrial, commercial, and institutional values from Metcalf and Eddie, 3rd Edition.

^DUtilizes average annual dry-weather flows.

CHAPTER 2 – MODEL UPDATE & SYSTEM EVALUATION

This chapter contains a description and evaluation of the model update for the collection system, including pump stations and pipelines, evaluation for the City of Newberg.

2.1 COLLECTION SYSTEM COMPUTER MODEL UPDATE

This section summarizes the updates to the wastewater collection system model. The computer model developed for the 2018 WWMP was used as the basis. The 2018 model used City GIS database as well as survey data collected as part of the project to update the elevation data in the model. The 2018 model was completed in InfoSWMM Suite 14.5, Update #9. InfoSWMM is a fully dynamic model which allows for evaluation of complex hydraulic flow patterns. This update was completed in InfoSWMM (Version 14.7, Update #2). Modeled infrastructure is shown in Figure 4. The three main trunkline basins area also shown on Figure 4. The following sections provide additional descriptions of the updated areas of the model.

2.1.1 Riverfront Master Plan and Riverrun Subdivision

The Riverfront Master Plan proposed wastewater infrastructure and Riverrun Subdivision preliminary plans were incorporated into the model as part of this update. Appendix D in the Riverfront Master Plan provides recommended utility improvements to serve the Riverfront area as proposed in the master plan (included in Appendix B). Figure 2 shows the updated growth areas and model infrastructure to reflect the Riverfront Master Plan. The Riverfront Master Plan does not include wastewater flow estimations or evaluation. Base loads from the growth areas were estimated by zoning designations and area using flows presented in Table 1-3.

The Riverrun Subdivision is within the Riverfront area (as seen in Figure 2). The subdivision has three planned phases. Phases 1 and 2 are on the north side of the bypass and include 91 lots. Phase 3 is on the south side of the bypass and includes 41 lots. Wastewater loads for these two areas were estimated using the number of proposed lots in the subdivision, people per dwelling unit and the previously established unit flows.

2.1.2 Springbrook Basin

Crestview Drive and Crestview Crossing

Crestview Drive is currently under construction. Construction drawings for Crestview Drive were used to add manholes and pipelines along Crestview Drive. A preliminary wastewater report for Crestview Crossing PUD has previously been completed. This report was used to update growth areas and proposed infrastructure. Base loads for Crestview Crossing were provided in the report and used the 2018 WWMP unit flows as a basis. Infiltration and inflow (I/I) was added in the model rather than from the report as the model I/I is more conservative and has been calibrated to field conditions. Updated growth areas and infrastructure for the Crestview area are shown in Figure 3.

Updated Sanitary Sewer Subbasin

The new infrastructure on Crestview Drive redirects some future flows from growth areas north to the east and down to the Fernwood Pump Station (see northern portion of Crestview area on Figure 3). In the 2018 WWMP, the flow from these growth areas was directed west towards the Springbrook Road trunkline. The updated Fernwood Pump Station drainage basin is reflected in

Figure 4. The subbasin is still part of the larger Springbrook basin. The Fernwood Pump Station discharges flow to the Springbrook trunkline at the intersection of S. Springbrook Road and E. Fernwood Road.

2.2 UPDATED SYSTEM CAPACITY LIMITATIONS

After the updates described above were incorporated into the computer model, the model was exercised to perform an updated system evaluation and identify capacity limitations throughout the system. Figure 5 shows the results of this evaluation. Various evaluation thresholds, as introduced in Chapter 1, are shown by the different color manholes. The different colored manholes indicate at what evaluation threshold the area would trigger evaluation of improvements. The red manholes indicate potential overflow locations in the system. Overflows have been observed historically by the City staff on Hess Creek, Villa Road, and Springbrook Road. These locations are the highest priority and concern for the system as overflows pose public health risks, environmental concerns, and possible Oregon Department of Environmental Quality (DEQ) action.

Figure 6 shows the system evaluation with annotations on the areas of interest/evaluation based on the evaluation thresholds. Most of the capacity limitations impact a group of manholes as indicated by the areas of interest/evaluation. A summary of the areas identified is listed below along with the probable cause of capacity limitation.

- A. N. Main St, undersized pipes
- B. Pinehurst Ct, topographic low point
- C. HWY240 PS, undersized pumps
- D. Excess flows from HWY240 cause backups
- E. N. Morton St, undersized
- F. S. River St, undersized
- G. Wynooski St, undersized
- H. Riverfront District, MP proposed infrastructure and backwater
- I. Hess Creek, undersized and limited or no access to line
- J. Villa Rd, downstream bottleneck
- K. S. Springbrook Rd, undersized and topographic low point
- L. Fernwood PS, undersized pumps
- M. Fernwood/Springbrook Rd, undersized
- N. Springbrook Rd, undersized
- O. Meadow Lp, undersized/low slope

2.2.1 Springbrook Basin

As mentioned previously, the Crestview area updates result in redirecting some growth area flow away from the Springbrook trunk line north of the Fernwood Pump Station discharge in comparison to the 2018 WWMP. Comparing the model results of the updated system and the 2018 model, the flow redirection at Crestview Drive does not resolve any of the capacity limitations on the Springbrook trunk line that were identified in the 2018 WWMP.

2.2.2 Pipeline Conditions

In-field pipeline material condition inspection and review were not included as part of this update. However, it is important to note that one of the basic assumptions of the hydraulic model is that all the lines are free from physical obstructions such as roots and accumulated debris. Such

maintenance issues, which certainly exist, must be discovered and addressed through consistent maintenance efforts. The modeled capacities discussed in this chapter represent the capacity assuming the sewer lines are in good working order.

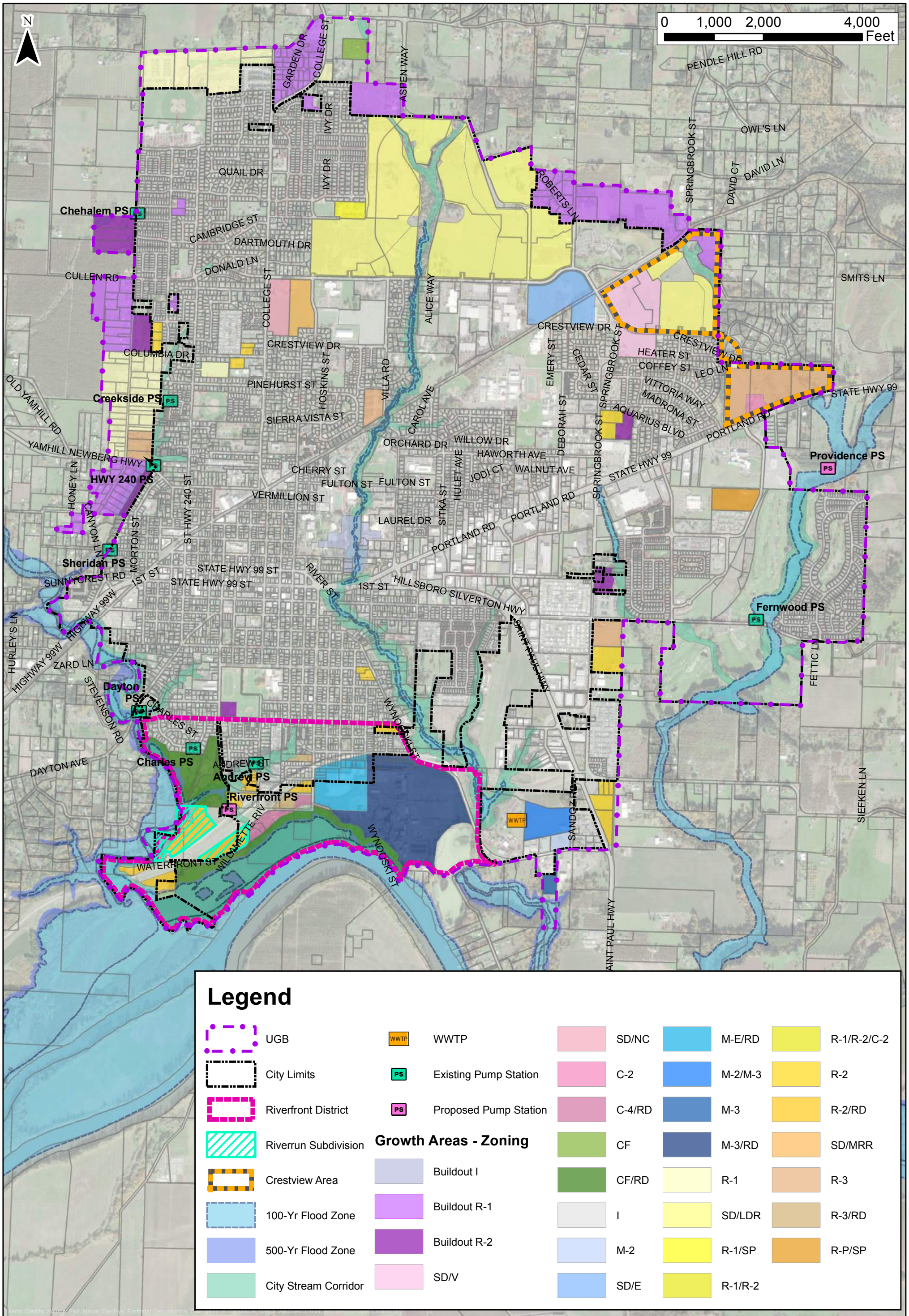


Report Appendices



Appendix A

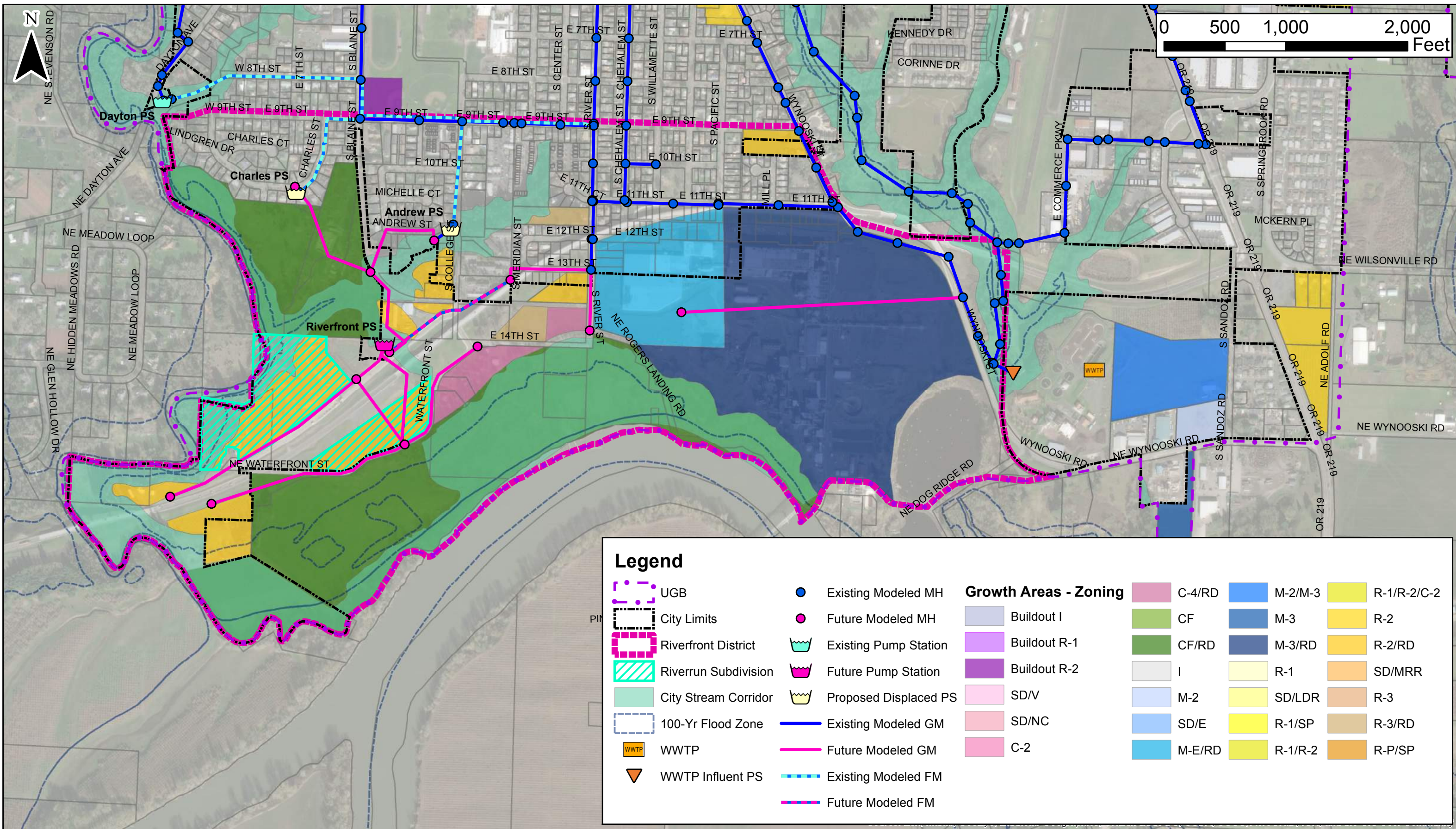
Figures



Study Area and Growth Areas

Wastewater Master Plan Update

Figure 1



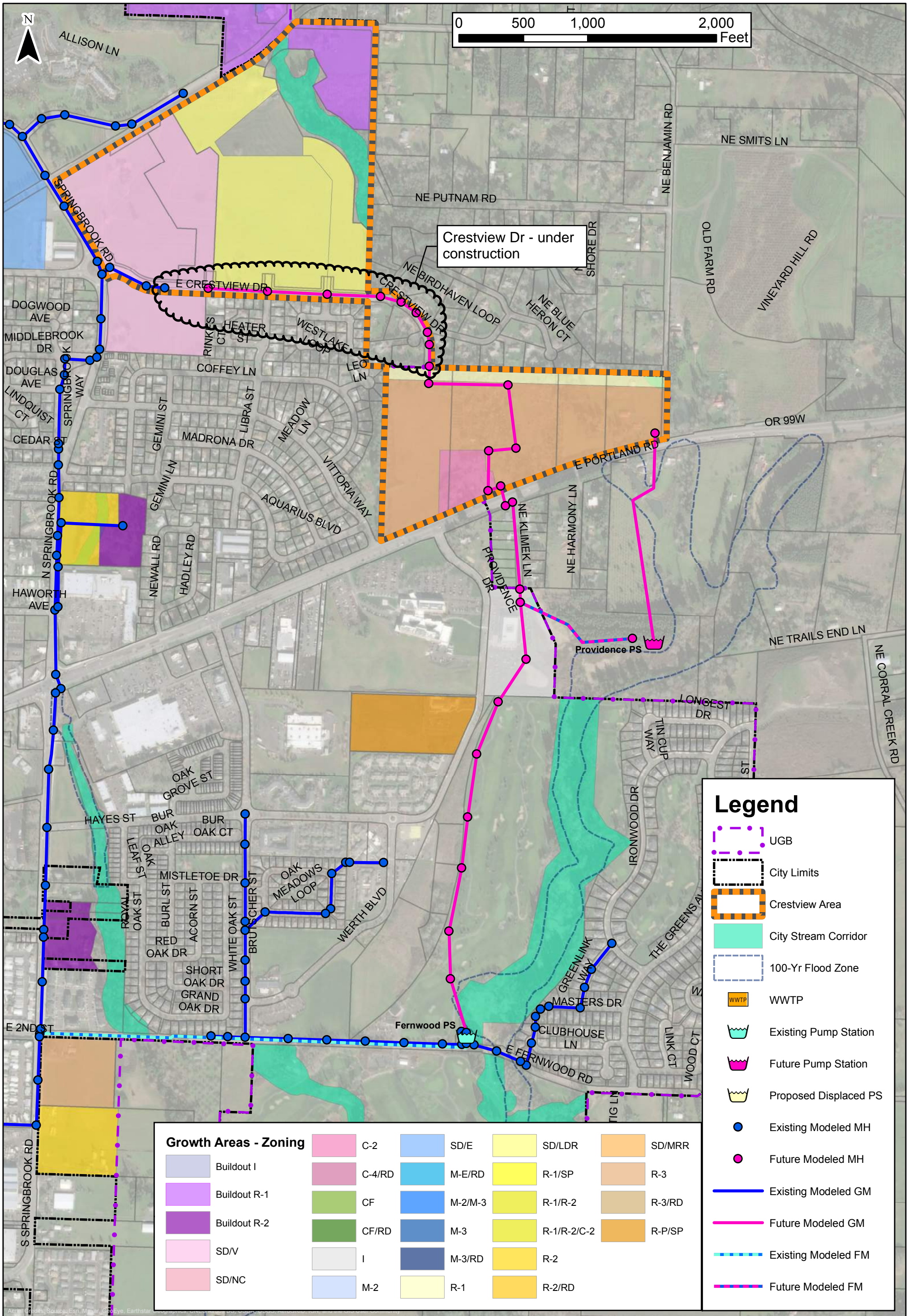
Riverfront and Riverrun Areas

Wastewater Master Plan Update



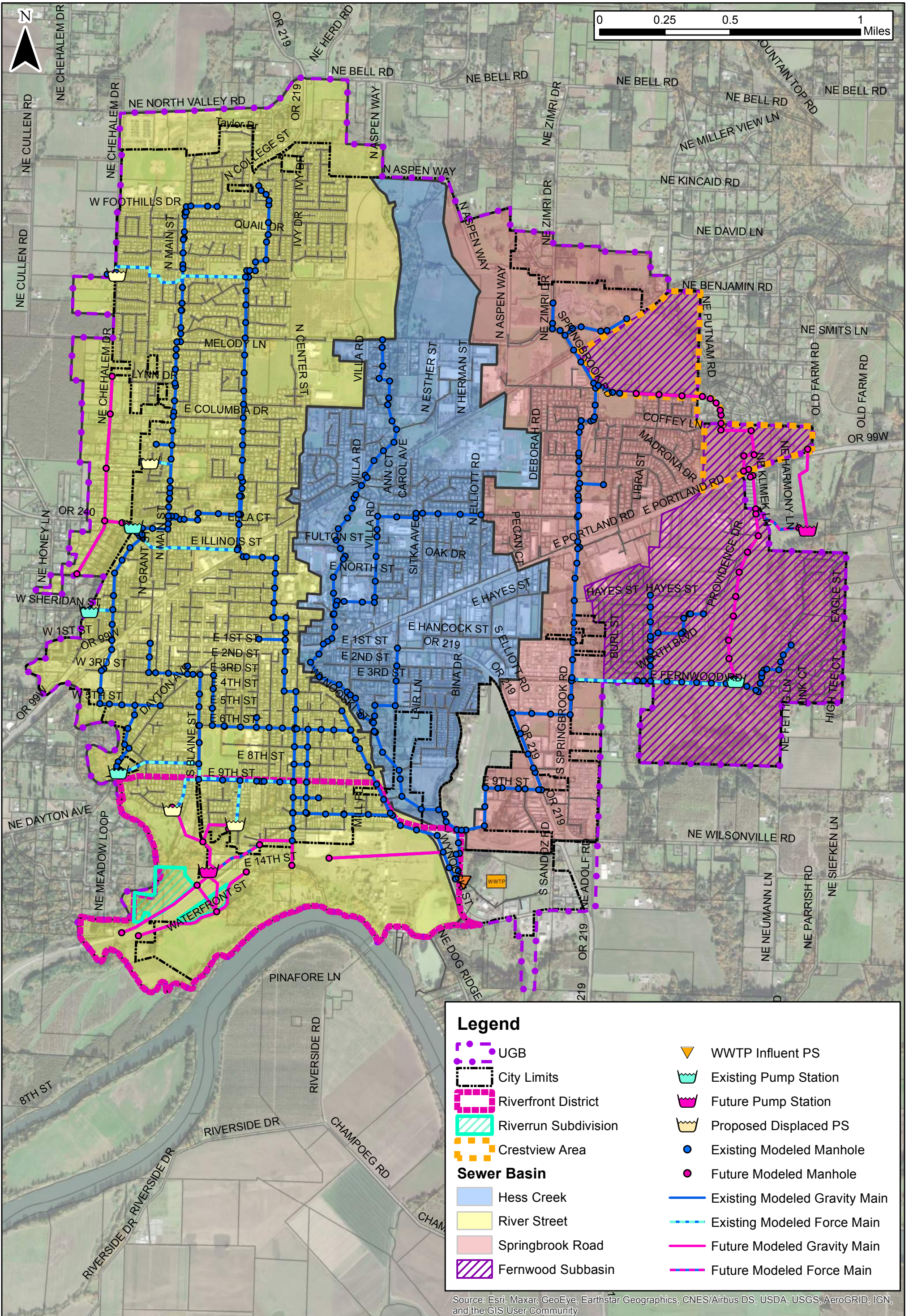
Figure 2

City of Newberg, OR
December 2020



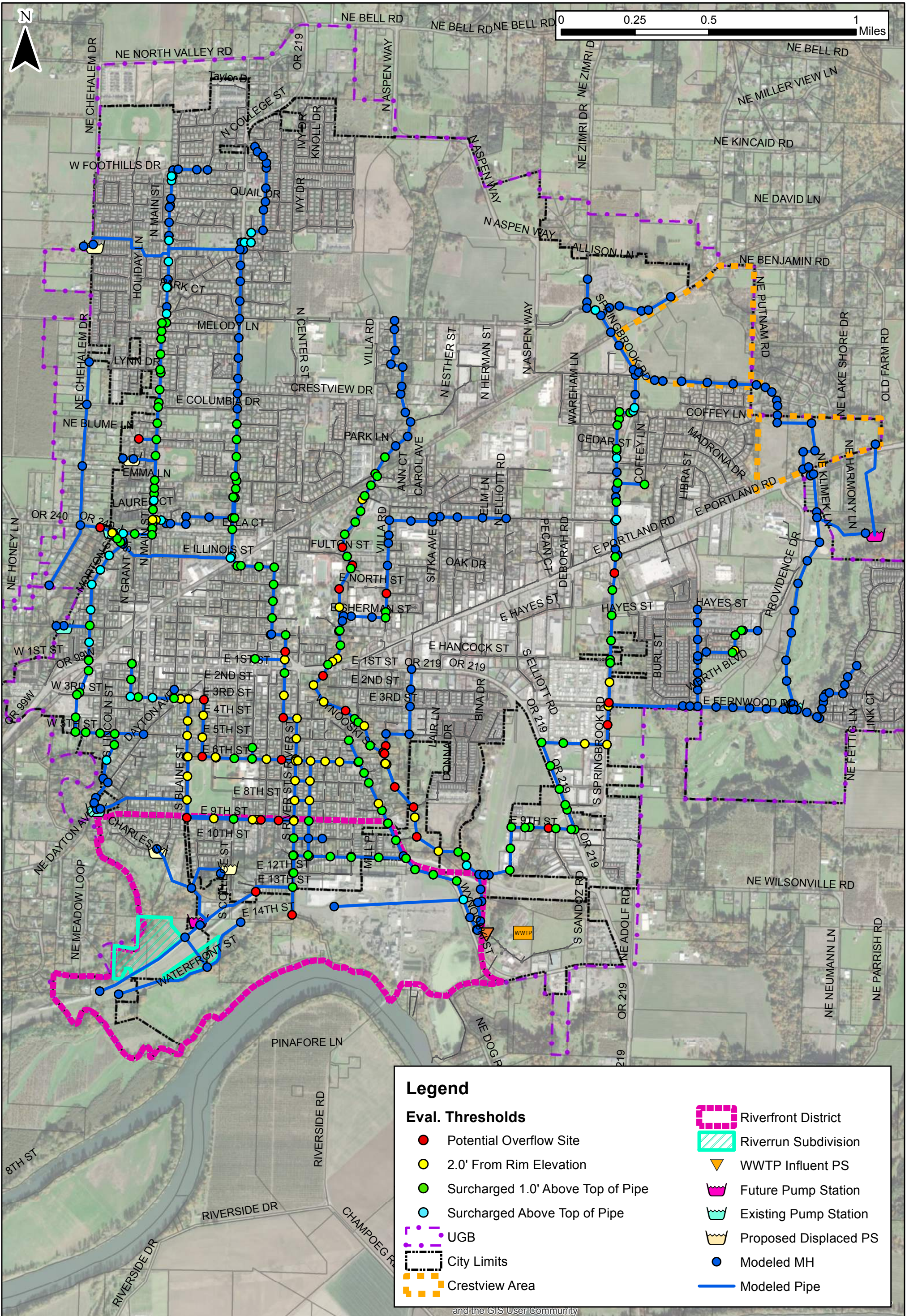
Crestview Area

Figure 3



Modeled Facilities and Basins

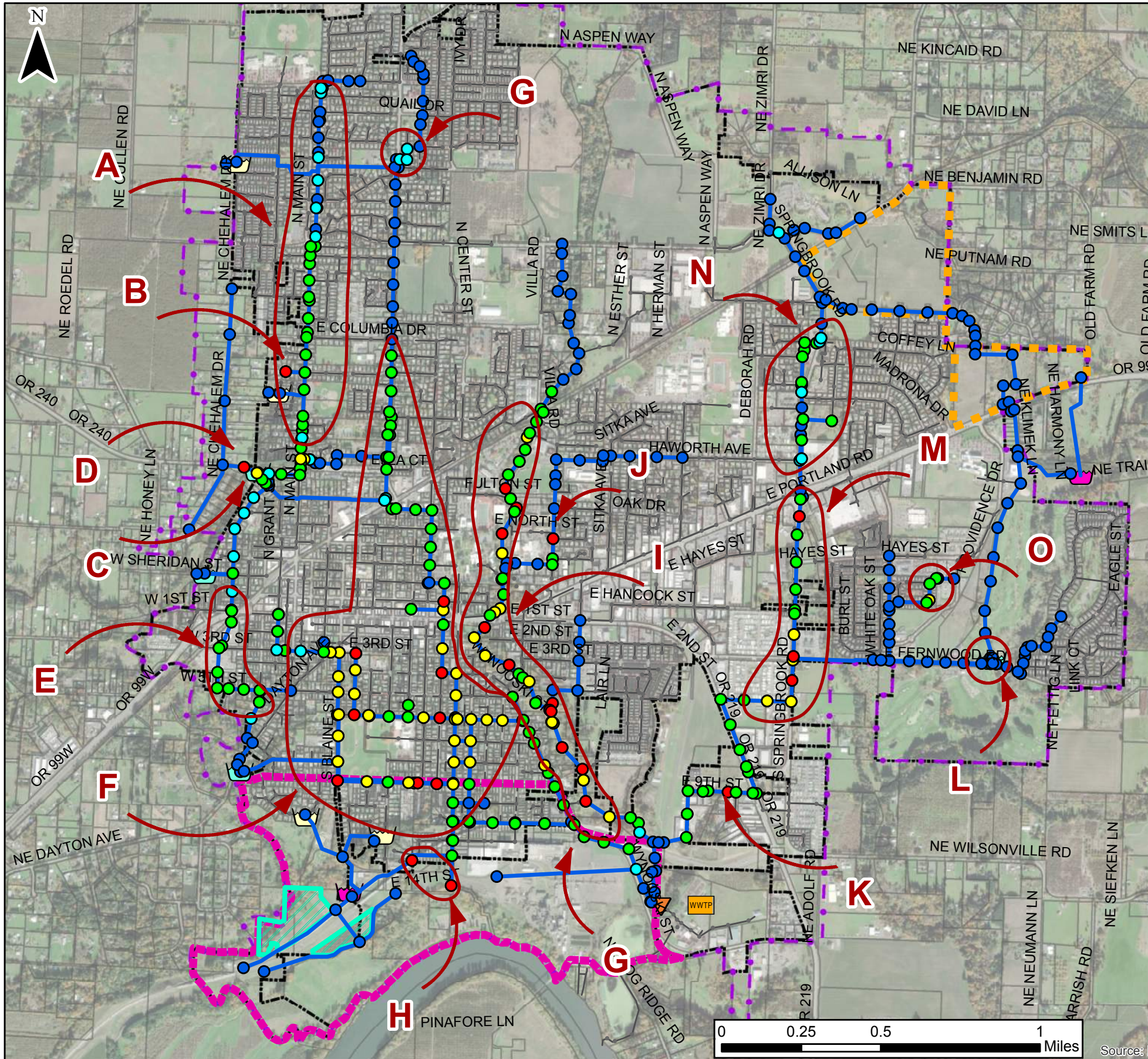
Figure 4



Updated System Evaluation

Wastewater Master Plan Update

Figure 5



Areas of Interest/Evaluation

- A** - N. Main St, undersized
- B** - Pinehurst Ct, topographic low point
- C** - HWY240 LS, undersized pumps
- D** - Excess flows from HWY240
- E** - N. Morton St, undersized
- F** - S. River St, undersized
- G** - Wyooski St, undersized
- H** - Riverfront District, prop. infrastructure and backwater
- I** - Hess Creek, undersized and limited or no access to line
- J** - Villa Rd, downstream bottleneck
- K** - S. Springbrook Rd, undersized and topographic low point
- L** - Fernwood PS, undersized pumps
- M** - Fernwood/Springbrook Rd, undersized
- N** - N. Springbrook Rd, undersized
- O** - Meadow Lp, undersized/low slope

Legend

Eval. Thresholds

- Potential Overflow Site
- 2.0' From Rim Elevation
- Surcharged 1.0' Above Top of Pipe
- Surcharged Above Top of Pipe
- UGB
- City Limits

- Riverfront District
- Riverrun Subdivision
- Crestview Area
- ▼ WWTP Influent PS
- ⌋ Future Pump Station
- ⌋ Existing Pump Station
- ⌋ Proposed Displaced PS

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Appendix B

Riverfront MP Excerpts

REGULATORY ACTIONS

Regulatory actions are an essential first step toward realizing the vision of the Riverfront Master Plan. Changing City regulations is also squarely within the City’s authority, whereas other actions described later require the City to work with other public agencies or private entities to effect change.

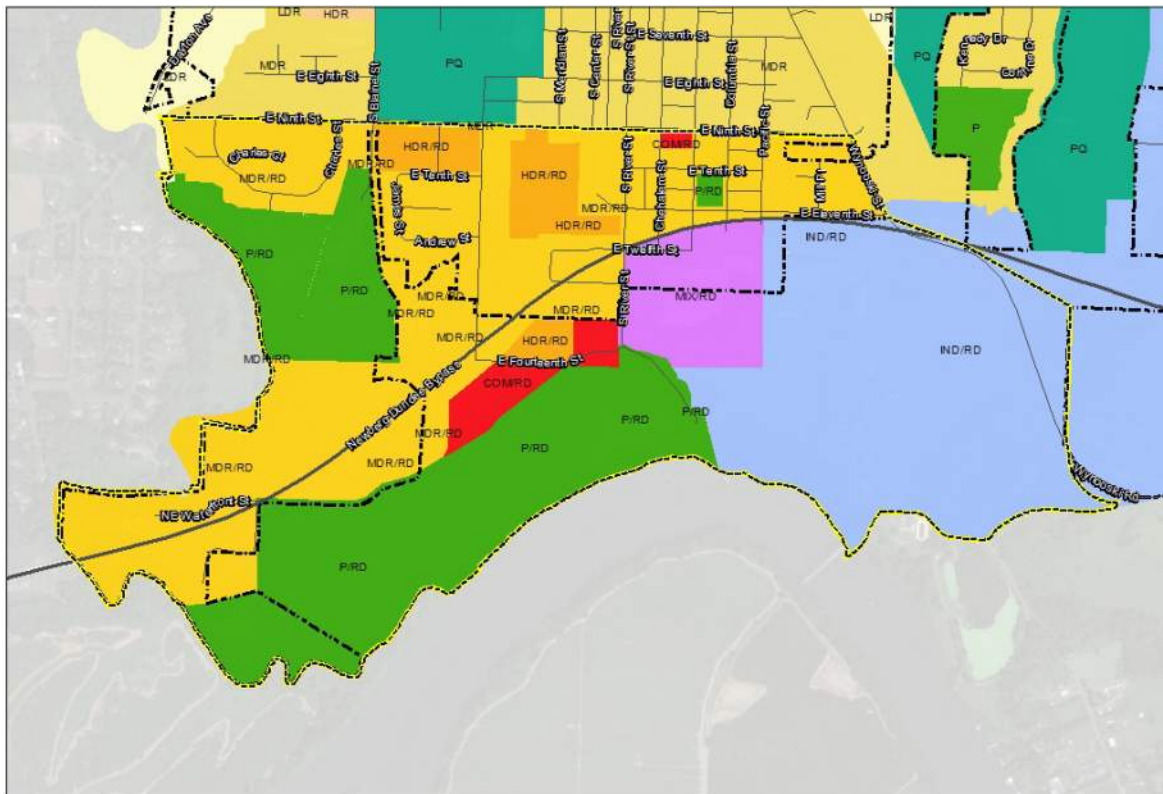
Amend the Comprehensive Plan to Reflect the Intent of the Riverfront Master Plan

The City of Newberg’s Comprehensive Plan is a set of policies and map of land use designations that guide growth and development within the Newberg Urban Growth Boundary (UGB). It includes several existing policies related to the Riverfront District, put into place by the 2002 Riverfront Master Plan, many of which need to be revised because they are out of date or inconsistent with the current vision for the area.

Updates include:

- Removing references to the “Smurfit Newsprint Processing Plant”
- Revising policies to more closely match the vision and goals of this plan
- Updating references to the Newberg-Dundee Bypass
- Amending the boundary of the Riverfront District classification to include the Riverfront Industrial Site and lands north of the Bypass.

Detailed changes to the Comprehensive Plan are provided in the Appendix F (TM6 - Comprehensive Plan Amendments).



Legend

- Riverfront Overlay Zone Boundary
- City Limits



FIGURE 38. PROPOSED COMPREHENSIVE PLAN DESIGNATIONS

APPENDIX D

Technical Memorandum 4:
Infrastructure Needs



MEMORANDUM

DATE: April 12, 2019

TO: Andrew Parish, AICP
Angelo Planning

FROM: Jane Vail, P.E.
Wallis Engineering

RE: Infrastructure Needs for Newberg Riverfront Master Plan Update
Job No. 1441A

EXHIBITS: *Exhibit A – Existing Water System Map*
Exhibit B – Existing Wastewater System Map
Exhibit C – Existing Storm Drainage Map
Exhibit D – Recommended Water System Improvements
Exhibit E – Wastewater System Sub-Basins
Exhibit F – Recommended Wastewater System Improvements

BACKGROUND

The City of Newberg's Riverfront Master Plan Update has included the creation and evaluation of several land use/transportation alternatives for the Riverfront Area. Through discussion with the project's advisory committees, stakeholders, and property owners in the Riverfront Area, the process has resulted in the selection of a preferred alternative, "Alternative E." This land use/transportation program includes a variety of uses in the study area, including single-family and multi-family residential developments, mixed-use nodes of activity, parks and passive open space, and employment uses.

This memorandum describes the existing utility infrastructure and previously-planned improvements to this infrastructure within the planning area. It also provides recommendations for improvements to the water, wastewater, and stormwater infrastructure as the area develops.

The current planning effort will update the 2002 Newberg Riverfront Master Plan. That previous plan made specific recommendations as to infrastructure improvements based on anticipated phasing and land use.

At the time of the 2002 Riverfront Master Plan, the riverfront industrial site (WestRock) was not included in the riverfront planning area, and the Newberg-Dundee Bypass was in the conceptual design phase - and at a different alignment than constructed. In other words, the 2002 Master Plan's recommended street and utility improvements were based on different conditions than the current existing conditions. However, from the perspective of total water demand and wastewater flow, there are few differences between the land uses shown in the 2002 Master Plan and Yamhill County zoning efforts and the preferred land use alternatives identified in the current planning effort. The overall water demand and projected wastewater flow values from past land use planning efforts are reflected in the City's 2017 Water Master Plan and 2018 Wastewater Master Plan. The recommendations made in these two utility master plans are still relevant to the current planning effort.

In the course of preparing this memorandum, the following planning documents were reviewed:

- 2002 Newberg Riverfront Master Plan
- 2002 City of Newberg Water Treatment Facilities Plan
- 2007 City of Newberg Wastewater Treatment Plant Facilities Plan Update
- 2007 City of Newberg Sewerage Master Plan Update
- 2014 City of Newberg Stormwater Master Plan Update
- 2015 Newberg Wastewater I&I Study
- 2016 City of Newberg Comprehensive Plan Text (Ordinance 1967)
- 2017 City of Newberg Water Master Plan
- 2018 City of Newberg Wastewater Master Plan
- 1996 Yamhill County Comprehensive Land Use Plan

EXISTING AND PLANNED UTILITY INFRASTRUCTURE

Existing utilities within the project area include wastewater, stormwater, potable water, and private utilities (electricity, natural gas, and telecommunications). Much of the project area is relatively underdeveloped, so utilities are limited in extent and size.

Water System

The existing water system is owned and operated by the City of Newberg. The study area is located within Zone 1, which is served by three reservoirs: the North Valley Reservoir Nos. 1 and 2 located on the north side of the City, and the Corral Creek Reservoir, located east of the City. These reservoirs are fed by transmission mains from the water treatment plant, which is located on the southeast corner of the study area. A well field south of the study area supplies a portion of the City's water, which is conveyed to their water treatment plant. A water transmission main conveys treated drinking water from the treatment plant north through the riverfront industrial site to the rest of the City.

The area north of the Bypass is served by an existing water distribution network, with distribution mains 2 to 8 inches in diameter. Several properties just south of the Bypass, including the riverfront industrial site, are also served by water main extensions from the distribution system north of the Bypass.

Non-potable water system elements were not reviewed as part of this memorandum effort. The City of Newberg has a re-use water system, which is currently confined to the City's Wastewater Treatment Plant. The riverfront industrial site property has water rights to water from the Willamette River, and this privately-owned non-potable water was used in the past

for mill operations. Additional details about this non-potable water system were not available.

A map of the existing potable water system within the project limits is included as *Exhibit A* on the following page.

No planned improvements to the water system within the planning area are described in the City's 2017 Water Master Plan. The 2002 Newberg Riverfront Master Plan proposed water distribution mains along the roads proposed and recommended for improvement by that planning effort.

Wastewater System

Existing wastewater infrastructure within the project limits is largely limited to the area north of the Bypass. The City of Newberg's wastewater treatment plant is located just east of the project study area.

The portion of the study area north of the Bypass is currently served by two lift stations (the Charles Lift Station and the Andrew Lift Station) and a network of gravity sewer mains and trunk lines, which ultimately convey wastewater west to the City's wastewater treatment plant. A small lift station also serves Rogers Landing, conveying wastewater to the gravity sewer system to the north. The riverfront industrial site is served by a single gravity sewer connection at the northwest corner of the site.

A map of the existing wastewater system within the project limits is included as *Exhibit B*.

The City's 2018 Wastewater Master Plan recommends improvements to the existing wastewater system within the planning area. The Wastewater Master Plan proposed abandoning the Charles Lift Station and Andrew Lift Station in the northeast portion of the study area, and replacing them with a single lift station (the Riverfront Lift Station) and a series of gravity mains (projects C4.b and C3.b in the Wastewater Master Plan). The Riverfront Lift Station would also serve a portion of the southeast portion of the study area with several gravity sewer extensions to the south and the east. The Wastewater Master Plan also recommended upsizing several gravity mains within the study area to convey future flows. No wastewater improvements are described for the eastern portion of the study area. The 2002 Riverfront Master Plan proposed some gravity mains along the roads proposed and recommended for improvement by that planning effort.

Stormwater System

The study area is drained by a system of natural drainages, open channels, and storm drain lines. Currently, the study area drains in three directions: west to Chehalem Creek, south to the Willamette River, and east to Hess Creek.

The southern portion of the site lies within the 100-year flood plain of the Willamette River, and Chehalem Creek.

Underground stormwater lines are few in number, and largely confined to the northern portion of the study area. A stormwater main bisects the study area, conveying stormwater from the drainage lines in the northern portion of the study area south to outfall at the Willamette River. This line was previously the wastewater outfall from the former wastewater treatment plant.

A map of the existing drainage and stormwater system within the project limits is included as *Exhibit C*.

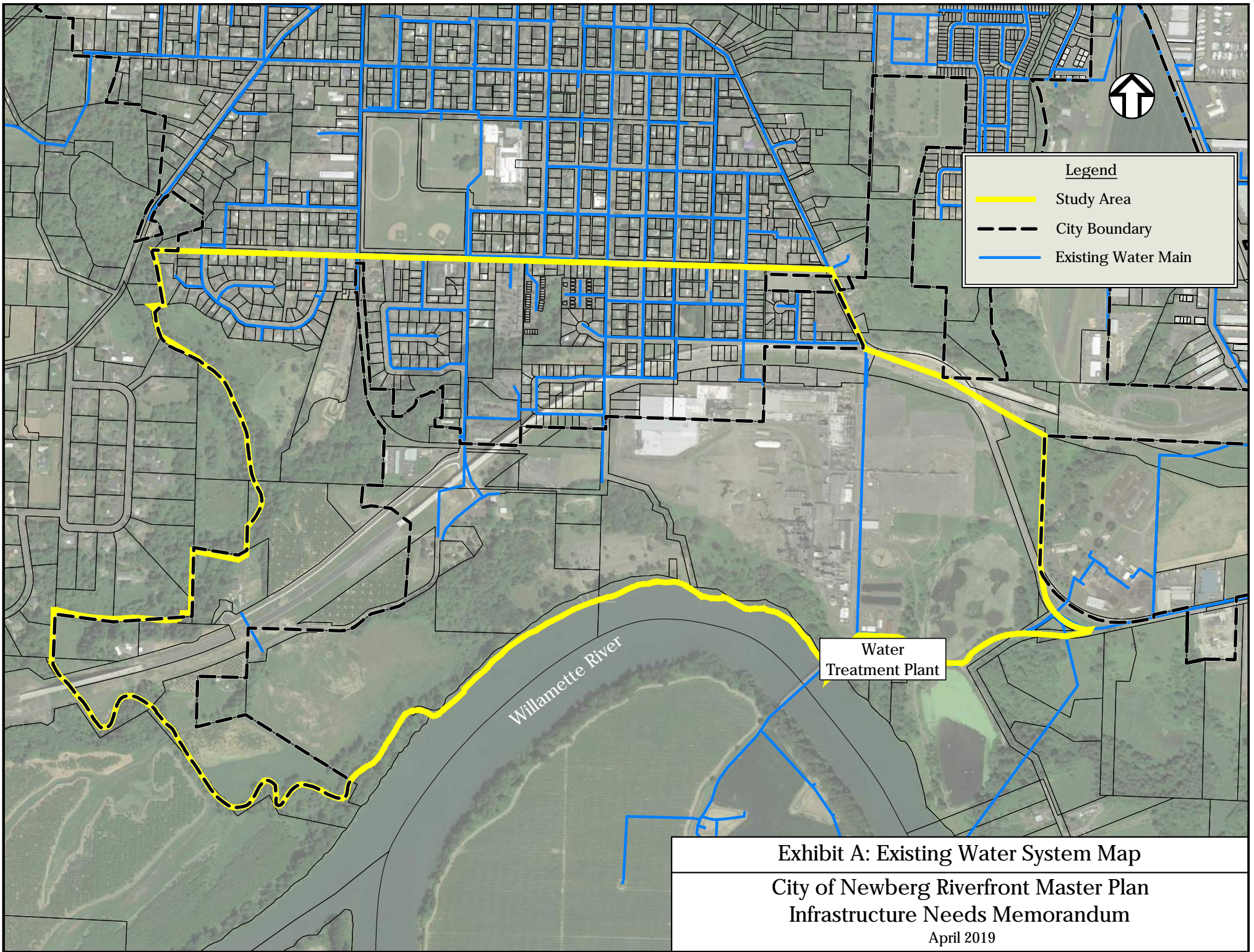


Exhibit A: Existing Water System Map
City of Newberg Riverfront Master Plan
Infrastructure Needs Memorandum
April 2019

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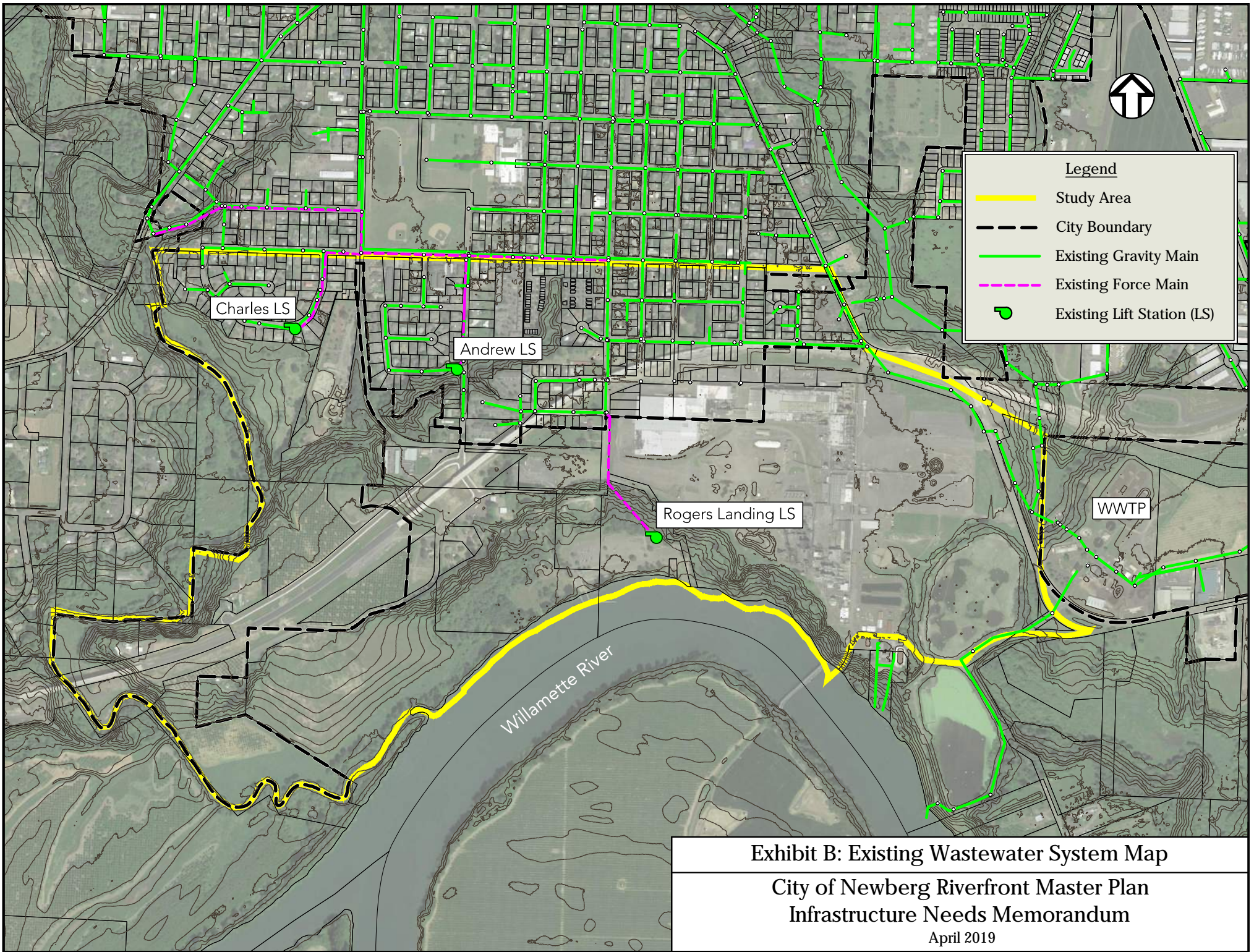
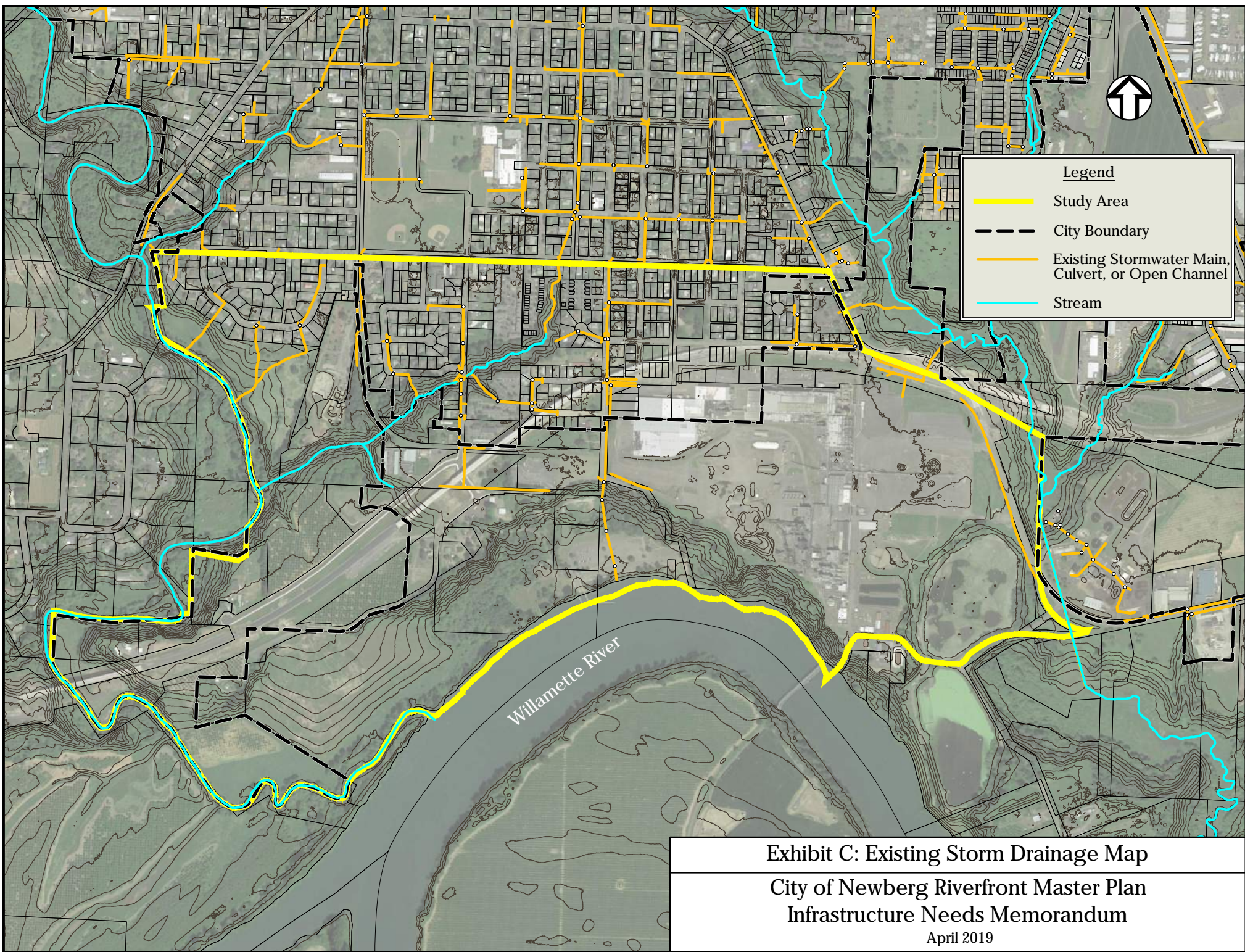


Exhibit B: Existing Wastewater System Map
City of Newberg Riverfront Master Plan
Infrastructure Needs Memorandum
April 2019

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Legend

- Study Area
- City Boundary
- Existing Stormwater Main, Culvert, or Open Channel
- Stream

Exhibit C: Existing Storm Drainage Map
City of Newberg Riverfront Master Plan
Infrastructure Needs Memorandum
April 2019

No improvements to the stormwater system within the planning area are currently included in the 2014 City of Newberg Stormwater Master Plan Update. The 2002 Riverfront Master Plan proposed stormwater lines along some of the roads proposed and recommended for improvement by that planning effort. It also proposed disposal of stormwater runoff into to the existing stormwater main outfalling to the Willamette River. The capacity of that existing stormwater main to accept additional flow was not discussed in the 2002 Plan.

Franchise Utilities

As part of this planning effort, the City of Newberg contacted privately-owned franchise utilities in order to generally ascertain the extent of their facilities within the planning area. These franchise utility companies currently provide electricity, gas, cable, and telephone services to customers within the planning area.

PGE provides electricity to Newberg, and has a substation on the riverfront industrial site. In contacting PGE, they were unaware of any known issues serving the area.

NW Natural provides natural gas within the planning area, though their mapped facilities appear to be largely located north of the Bypass. They do have a 12-inch high pressure gas line serving the riverfront industrial site. This line is also the primary feed for the City of Newberg.

Comcast and Frontier provide cable and telephone services within the planning area. Frontier has very little facilities within the planning area, and no facilities south of the Newberg-Dundee Bypass.

RECOMMENDED UTILITY INFRASTRUCTURE IMPROVEMENTS

Improvements to the existing water, wastewater, and stormwater infrastructure will be necessary in order to support the preferred land use alternative. Recommended improvements are described in the following paragraphs, organized according to the type of infrastructure. These recommendations are based on the City's standards, the City's GIS system, existing utility infrastructure plans, and engineering judgement. No water or wastewater modeling was completed as part of this planning effort.

It is important to note that recommendations are limited by the general nature of land use planning, and that further utility master planning will be necessary to confirm and elaborate on the recommendations made in this memorandum.

Water System

The area south of the Newberg-Dundee Bypass and a small area on the west side of the study area just north of the Bypass currently have no water distribution system. As this area develops, it will require an entirely new water distribution network. New water mains should be constructed within the footprint of proposed roadways. To serve new development south of the Bypass, a water distribution main can be extended west from the transmission main near the water treatment plant. This new water distribution main should extend to the western portion of the study area, and should connect to the existing water system to the north where possible to provide a fully looped system. To serve the north side of the Bypass, a water main could be extended from S College Street southwest along E Weatherly Way. This water main should also be connected to the water main serving the area south of the Bypass to provide a fully looped system.

The majority of the study area north of the Bypass is currently served by an existing water distribution network. The size of existing distribution mains are relatively small within this area, and will likely not provide sufficient fire flow for future connections as the area south of the Bypass develops. Some improvements will be necessary to the distribution system north of the Bypass in order to make distribution network connections to serve the planning area.

The minimum size of water distribution mains will be 8-inches, per City standards. Final sizing will require a more in depth analysis to ensure that minimum fire flow is maintained throughout the water system in accordance with City standards.

Recommended improvements to the existing potable water system are illustrated in *Exhibit D* on the following page and summarized in **Table 1** below.

Table 1 – Recommended Water Infrastructure Improvements

Description	Sub-basin	Minimum Size	Length
Water Main	B	8-Inch	8,200 ft

It should be noted that the developer of the riverfront industrial site has the capability of using the existing non-potable water system infrastructure, and water rights.

Wastewater System

The planning area currently lacks a complete wastewater system, and will require extensive sewer infrastructure improvements to serve new development. In order to determine these system improvements, the study area was broken into six sub-basins according to the existing collection system and topography. These sub-basins are shown in *Exhibit E*. The wastewater infrastructure necessary to serve these sub-basins is illustrated on *Exhibit F* and summarized in **Table 2** below.

Table 2 – Recommended Wastewater Infrastructure Improvements

Description	Sub-basin Served	Size/Capacity
Riverfront Lift Station	B	950 gpm ¹
Force Main B1	B	8-in ¹ , 1000 ft
Gravity Main B1	B	8-in, 2600 ft
Gravity Main B2	B	8-in, 1600 ft
Gravity Main B3	B	8-in, 3400 ft
Gravity Main B4	A, B, C, D	18-in ¹ , 1300 ft
Gravity Main C1	C	8-in, 500 ft
Gravity Main D1	D	10-in, 2400 ft

1. Capacity and size are from the City's 2018 Wastewater Master Plan

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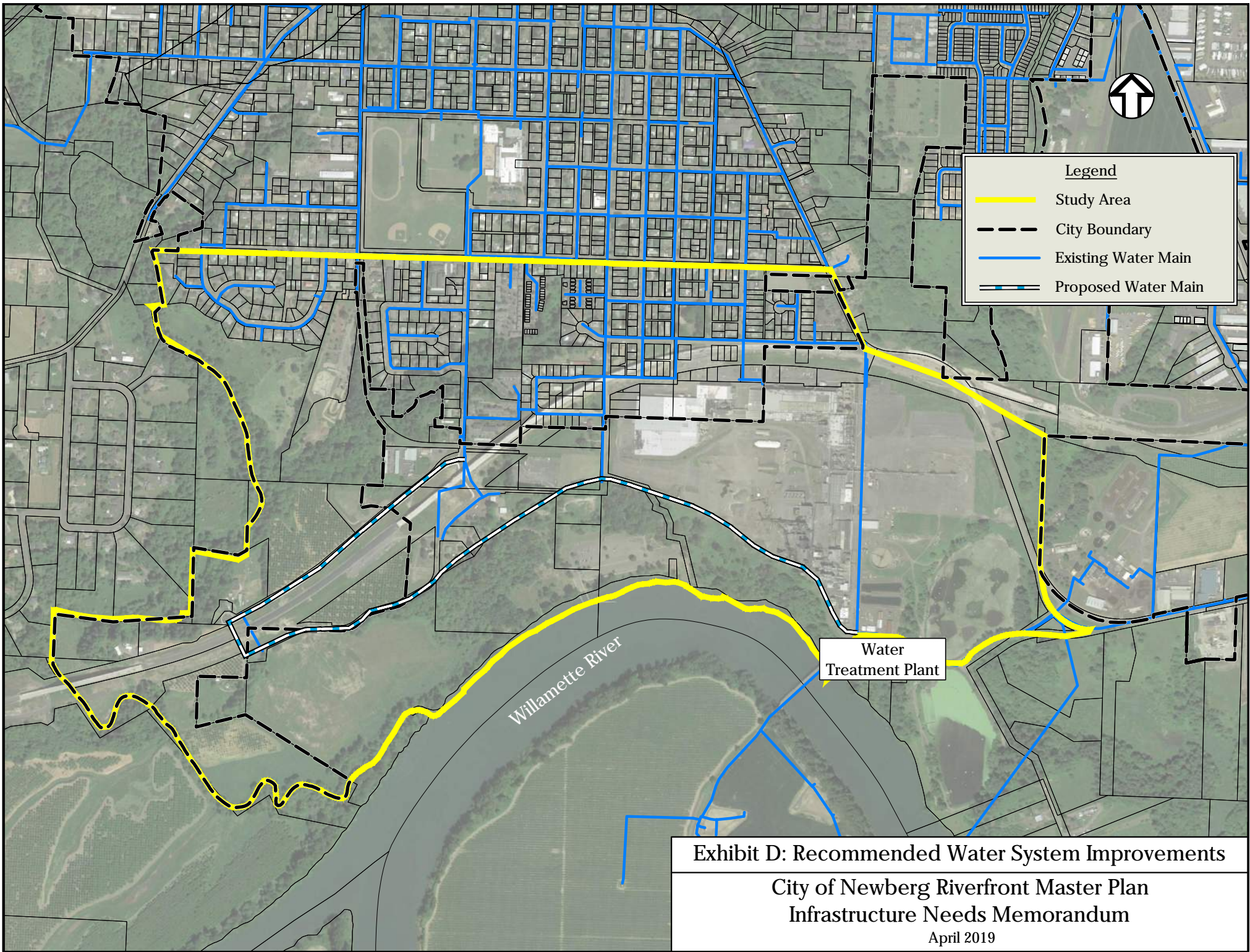


Exhibit D: Recommended Water System Improvements
City of Newberg Riverfront Master Plan
Infrastructure Needs Memorandum
April 2019

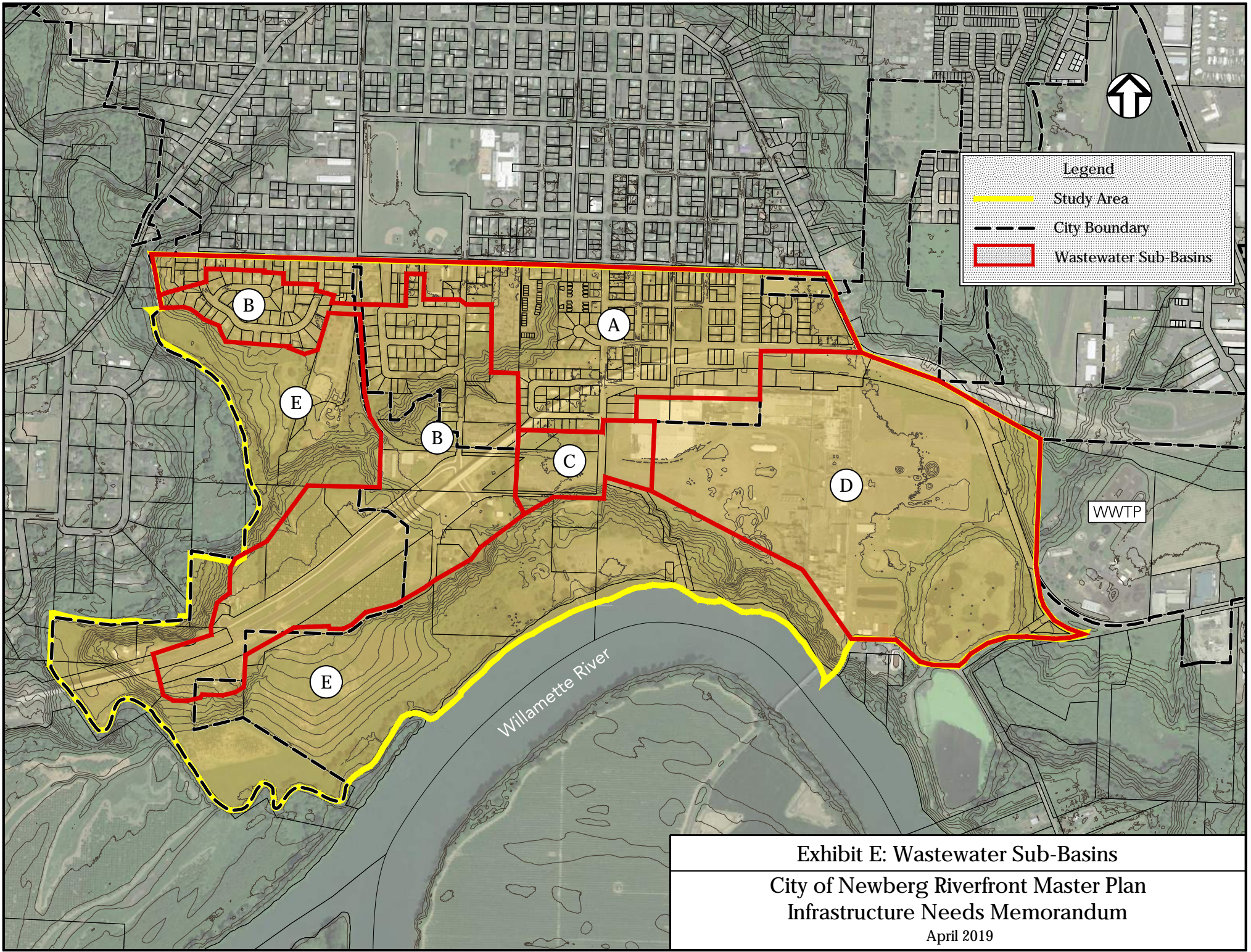


Exhibit E: Wastewater Sub-Basins
City of Newberg Riverfront Master Plan
Infrastructure Needs Memorandum
April 2019

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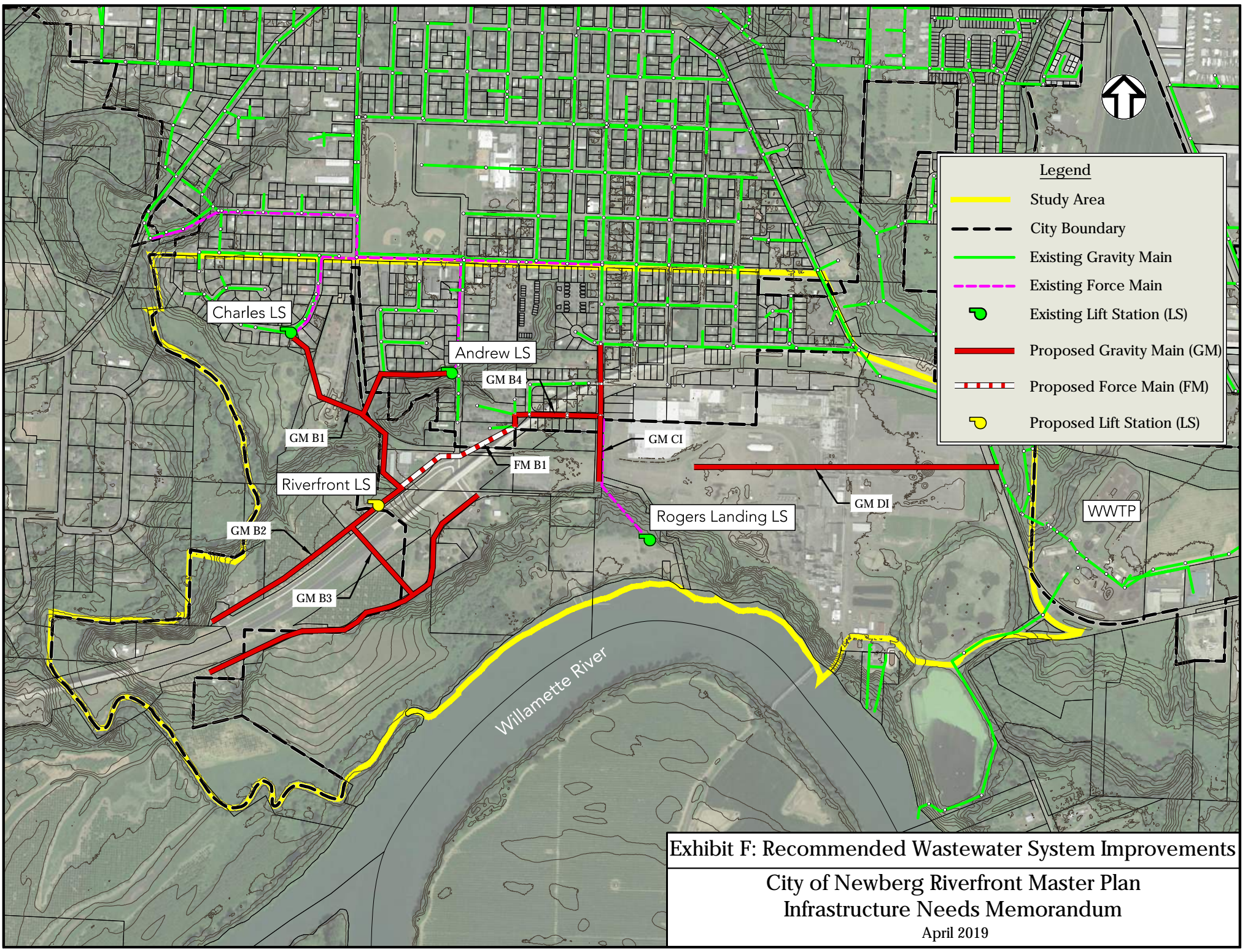


Exhibit F: Recommended Wastewater System Improvements
 City of Newberg Riverfront Master Plan
 Infrastructure Needs Memorandum
 April 2019

A detailed description of each sub-basin and the recommended improvement is described below.

Sub-Basin A. This sub-basin consists of the northern portion of the study area that is served by an existing network of gravity wastewater lines. Because this area is highly developed, and the proposed master plan does not significantly change land use, no new wastewater infrastructure is required beyond that recommended by the 2018 Wastewater Master Plan.

Sub-Basin B. This sub-basin consists of the western portion of the study area – currently served by the Charles Lift Station and Andrew Lift Station – and the additional area to be served by the proposed Riverfront Lift Station and associated collection system described in the Wastewater Master Plan. As discussed above, the Wastewater Master Plan recommended abandoning the Charles Lift Station and Andrew Lift Station. This will require upgrading the Riverfront Lift Station and force main, constructing several new gravity sewers, and upsizing one existing gravity sewer. No major changes are recommended to this proposed infrastructure, although minor adjustments to sewer alignments will be necessary to match proposed roads. This infrastructure is labeled as Gravity Main B1, B2, B3, and B4, and Force Main B1 on *Exhibit E*.

Sub-Basin C. This sub-basin consists of a mostly undeveloped land and a small portion of the riverfront industrial site in the vicinity of S River Street. Based upon the depth of the existing sewer in S. River Street (per City GIS), this area can be served by a gravity sewer extension, shown as Gravity Main C1 on *Exhibit E*.

Sub-Basin D. This area consists of the eastern portion of the riverfront industrial site. This sub-basin can be served by gravity lines flowing east into the existing trunk line on NE Wynooski Road, which currently conveys wastewater to the wastewater treatment plant. This line is labeled as Gravity Main D1 on *Exhibit E*.

Sub-Basin E. This sub-basin consists of the parks and open space within the study area, largely located within the flood plain and stream corridors. Rogers Landing is currently the only portion of this sub-basin with sewer service. Rogers Landing is served by a lift station, pumping wastewater to the collection system north of the Newberg-Dundee Bypass. Because most of this sub-basin lies within the flood plain, it is unlikely to see significant development. It has been suggested that the Rogers Landing area could be the future site of an amphitheater, as well as potential additional park improvements. Depending on the projected wastewater flows and the capacity of the existing lift station, improvements may be necessary to the lift station and potentially the force main. If new facilities are constructed outside of the Rogers Landing area, they will require new lift stations to convey flow to the collection system, because this sub-basin lies at a lower elevation than the rest of the City.

Final alignment and sizing of new sewer system infrastructure will be determined during final design of street infrastructure and development. Alignment and sizing will depend on the specific developments that are constructed, locations of roads, and exact depths of existing gravity lines.

Stormwater System

The existing stormwater system within the planning area consists of stormwater drainage collection and conveyance facilities north of the Bypass. All development will need to comply with the City's stormwater management requirements, as articulated in their Design Standards.

In accordance with these requirements, any development within the planning area will need to collect, treat, detain, convey, and dispose of the stormwater runoff generated by the development. This applies to public improvements that generate impervious surfaces – such as streets, sidewalks, and paths. It also applies to private developments, which construct roofs, streets, sidewalks, and parking lots.

Collection and conveyance of stormwater runoff will likely consist of a combination of underground structure and pipes, and low-impact development conveyance improvements, such as swales and flow-through planters. Treatment of stormwater runoff will likely consist of either mechanical or low-impact development treatment facilities. Detention of stormwater can take place using underground storage, ponds, and other methods. There is considerable flexibility as to the specific design of stormwater collection, conveyance, treatment, and detention facilities. A variety of factors will influence specific design solutions, such as site geography, available land surface, soil conditions, City preference, developer preference, construction cost, long-term maintenance costs, and aesthetics.

There may be some conveyance within the study area through underground stormwater pipes, which are often constructed within publicly-owned streets. Assuming the proposed and existing streets shown on the preferred alternative, we estimate a total of at least 12,000 linear feet of stormwater mains. This number does not account for the variation of street alignments that may occur as the City moves forward with planning and design, and does not include the construction of additional streets and associated storm conveyance.

Treated stormwater runoff is typically disposed of using infiltration into native soils or by conveyance into an adjacent stormwater facility or natural body of water. All methods of disposal have specific requirements and limitations. Disposal of stormwater runoff will depend on site-specific soil characteristics, the location of the site with respect to adjacent stormwater infrastructure, and the capacity of adjacent infrastructure.

Infiltration of treated stormwater runoff is often preferred over other methods because of its simplicity and relatively lower cost. However, native soils must be capable of infiltrating stormwater at or above a minimum rate for infiltration of runoff to be a viable disposal method. That capability can only be determined by onsite tests, and native soils can vary greatly in characteristics throughout an area.

According to the soils map included in the City's 2014 Stormwater Master Plan Update, native soils within the planning area are generally classified as having lower infiltration capability. This map is based on general information; the actual infiltration rates at specific locations within the planning area will vary. As each property develops, the developer will determine soil conditions and the viability of infiltration as a method of stormwater disposal. It should be noted that the Oregon Department of Environmental Quality requires registration of underground infiltration facilities such as drywells per their Underground Injection Control Program. It should also be noted that infiltration also requires consideration of existing groundwater levels and consideration of the environmental sensitivity of an area; infiltration of stormwater runoff into a floodplain or wetland is not typically acceptable.

If stormwater runoff cannot be disposed of by infiltration, it will need to be conveyed to another location, such as an adjacent stormwater pipe, pond, or infiltration facility. If an adjacent stormwater facility is available, the developer will need to demonstrate that it has capacity for disposing stormwater from the proposed development. If this adjacent stormwater facility is owned by other individuals or entities, rights to access, use, and maintenance will need to be negotiated between all parties.

Treated stormwater runoff can also be disposed of in an adjacent body of water. There are multiple stream corridors within the study area, including the Willamette River. It is important to note that disposal of stormwater runoff to these corridors may trigger additional permitting and engineering requirements according to the governing regulatory authorities. Disposal of stormwater runoff in these bodies of water should consider the hydraulic and erosion control implications of additional runoff, with the goal of protecting these existing stream corridors. They should also consider the characteristics of the treated runoff. The City's TDML Implementation Plan is the primary regulatory driver for stormwater management activities, and has specific parameters of concern for stormwater runoff, including bacteria, mercury, and water temperature. However, other regulatory authorities will have jurisdiction for disposal of treated stormwater runoff within stream corridors in the planning area. The developer will likely need to consult with an environmental permitting specialist in order to determine the specific regulatory requirements for their stormwater management improvements.

The construction of a regional stormwater facility for treatment, detention, and/or disposal may address many of the difficulties individual developers face with stormwater management. There are, however, very limited options for locating such a facility. Public ownership of land is limited within the project area to landfill property owned by Yamhill County to areas within the floodplain (such as Rogers Landing, leased by Yamhill County from the City and two private owners).

One area that might be considered for possible use as a regional stormwater facility are the existing lagoons at the southeast corner of the planning area, within the riverfront industrial site property. It could be feasible to repurpose these existing lagoons as stormwater detention ponds for treated stormwater runoff from the surrounding areas, with modifications to the existing outfall to allow controlled disposal of runoff to the Willamette River. These two lagoons currently hold water, and outfall to the Willamette River. In the past, the lagoons were used for disposal of paper mill process water; the degree of biological and/or chemical contamination, the dimensions, and the condition of the lagoons are relatively unknown.

Any use of these ponds for stormwater management will likely necessitate investigation of the condition of the lagoon basin floor for contaminants which might adversely affect the Willamette River. Depending on the degree of contamination and the requirements of regulatory authorities, cleanup might also be required. In addition, some agreement would need to be made for stormwater conveyance to the pond, pond use, access, and maintenance between the property owner, the City, and properties contributing stormwater.

Please note that we cannot recommend specific details as to proposed stormwater improvements. The sizing of stormwater facilities will depend entirely on development of each site, and how much onsite detention and/or infiltration is built.

Franchise Utilities

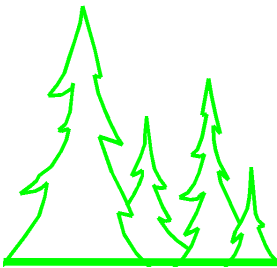
As part of this master planning effort, City staff spoke directly with franchise utilities within the planning area to elicit comments and concerns regarding the proposed plan.

When contacted for feedback, PGE noted that some industrial and commercial uses may have larger loads and require upgrades to their facilities. The extent of this work would be determined at the development phase. PGE was concerned that improvements protect their existing facilities in the area – particularly the substation on the riverfront industrial site.

In conversations with the City, NW Natural expressed concerns that their existing infrastructure is protected throughout future development, particularly the high pressure line serving Newberg (located on the riverfront industrial site).

Comcast had no concerns of note.

Frontier noted that they have minimal facilities within the planning area, and noted that with their current facilities they could serve around 200 new customers. Their facilities appear to be largely located north of the Bypass, so serving new customers south of the Bypass would require construction of new facilities – another 100 customers could be served with this work. Increasing service beyond that point would require more new facility construction and considerable expense on Frontier's part.



LEONARD A. RYDELL, P.E., P.L.S., W.R.E. Consulting Civil Engineer - Land Surveyor

**601 PINEHURST DRIVE, NEWBERG, OREGON 97132-1625
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17 December 2020

Newberg Ad-Hoc Committee
414 E. First Street
Newberg, Oregon 97132

Re: Storm Drainage Plan Recommendations

Dear Committee Members,

Our drainage plan that follows the philosophy that we keep 2, 5, 10 and 25 year storm runoffs to historic volumes fails to consider that while the flows for each event are designed to remain at historic levels, the duration increases due to more runoff from the impervious areas. The extended duration can be damaging as well.

The second whammy to our stream corridors is reduced flows during the summer months due to ground water not being recharged.

Therefore, we should have two goals:

1. Our first goal then would be to minimize impervious areas in new developments.
2. Retain storm water on site.

Therefore, I recommend that Newberg's Master Drainage plan include the following:

- A. All commercial parking lots to be designed using pavers for storm water infiltration.
- B. Rain infiltration gardens shall be the preferred method of storm water management and water quality treatment for all development.
- C. Narrow residential streets
 - 1) Twelve feet for partitions (up to three houses)
 - 2) Twenty feet for small developments (up twenty houses)
 - 3) Twenty four feet for larger developments. On street parking to be provided using parking bays perpendicular to the street. Note that this eliminates the extra street width fronting driveways.
- D. Remove bicycle lanes from "between the curbs". Used separated or combination bicycle-pedestrian ways.
- E. Revise zoning standards to allow more dense development to reduce demand for expansion and annexation of our undeveloped lands around Newberg.

Newberg Committee
17 December 2020

Page 2 of 2

I also recommend that the City of Newberg, as the second largest city in Yamhill County, maintains an active member of the Greater Yamhill Watershed Council.

Thank you.

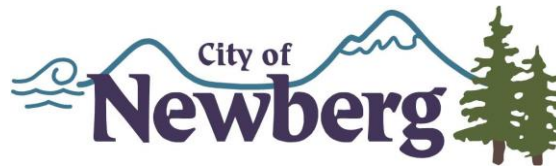
Sincerely yours,



Leonard A. Rydell, P.E., P.L.S., W.R.E., M.A.S.C.E.

LAR/lar

encl: as stated



ENGINEERING SERVICES

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**TO: AD HOC STORMWATER, WASTEWATER AND WATER CITIZENS
ADVISORY COMMITTEE**

FROM: BRETT MUSICK, PE, SENIOR ENGINEER

SUBJECT: Stakeholders for Determination of Stormwater Drainage Policy Changes

DATE: DECEMBER 31, 2020

As you continue your discussion about potential stormwater drainage policy changes that would impact private property and the public right-of-way within the City of Newberg, coordination and involvement of additional stakeholders will be necessary. Coordination with state and other agencies for compliance with state and federal regulations should also be included.

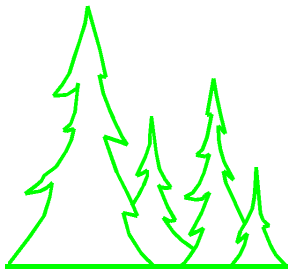
Policy changes that have an impact on private property, or developments, could include changes to development standards or zoning standards. This could include changes to off-street parking, shared driveway widths or other requirements.

Policy changes that have an impact on the public right-way, could include changes to public improvement standards. This could include changes to residential street widths, on-street parking, sidewalks, bike lanes and other public facilities

A list of stakeholders for determination of potential stormwater drainage policy changes includes, but is not limited to:

- Potential policy changes impacting development on private property or developments.
Among other items this could include changes to development or zoning standards.
 - Property owners
 - Business owners
 - Residents
 - Developers
 - Emergency responders (TVF&R, NDPD)
 - Planning Commission
 - City Council

- In addition to the above list, potential policy changes for improvements within the public right-of-way would include, but not be limited to:
 - Traffic Safety Commission
 - Public Work Maintenance



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4 January 2021

Newberg Ad-Hoc Committee
414 E. First Street
Newberg, Oregon 97132

Re: Committee Motion and Recommendations

Dear Committee Members,

At our last meeting, I noted that two committee members (Denise Bacon and Mike Gougler) were blocked, i.e. they could not make input.

After the meeting, Mike Gougler called me and said that he tried to second my motion, but as he was blocked, his second was not received.

In that he did second the motion, I hereby request that the motion be voted on as it did not die due to a lack of a second.

I encourage each member read the below and be prepared to vote on it at the next meeting.

I hereby move that the recommendation made last night be to adopt the two foot rule from the manhole rim for sewer manholes be withdrawn and that before we adopt any policies that we receive:

1. Completed copies of the consultant's studies and a reasonable period of time to review them.
2. A full description, prioritized list and costs of needed improvements
3. Four options with Projected Costs on system development and maintenance costs:
 - a. Do Nothing - Impacts
 - b. Minimal Improvements
 - c. Medium improvements
 - d. Full improvements
4. Recommendations from:
 - a. City Engineer
 - b. City Public Works Director
 - c. Community Development Director
 - d. Design Consultants

My letter also included a second motion that was not considered at the last meeting. It, and its explanation, follows:

My second concern is that I have served on numerous committees over the years, and that we have know who is on the committee, and how to contact them. Apparently, to do “security concerns”, the City no longer wants to do that. Furthermore, there seems to be a reluctance by the City of allow members to talk to each other. Therefore, I have a second motion:

I hereby move that a list of each committee member be provided to each member, and that each member provide an e-mail address or phone number at which they can be contacted by other committee members.

However, it individual member comments, if submitted to the City, are immediately forwarded to all committee members, I am willing to drop this motion. I get the impression that this is happening, but would like to receive a confirmation.

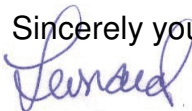
My third concern that we seem to be putting more weight on our sanitary sewer and storm calculations than is warranted for our limited funds. We can be much better at problem solving. While I did address this above in this letter, I offer the following:

Storm and sewer pipe flow calculations tell us where to look for potential problems. Due to the inherent assumptions made to do the calculations, they should not be the basis for budgeting and spending money on projects, they should be only the first step in the determination of areas that should be addressed. The next steps should be:

- a. City staff identify which projects on the list have had actual flooding/overflows occur.
- b. Should staff not have the local knowledge, staff or consultants should interview citizens in the area that could provide a historical perspective.
- b. The actual flooding should then be reviewed to determine the risk (public health and property damage). Sometimes, the best solution would be a “Road Closed, Flooding” sign for a couple of days.
- c. A priority list for budgeting and repairs can then be prepared.

Thank you.

Sincerely yours,



Leonard A. Rydell, P.E., P.L.S., W.R.E., M.A.S.C.E.
LAR/lar