

**HIGHLINE WATER DISTRICT
King County, Washington**

RESOLUTION 17-12-20B

RESOLUTION ADOPTING THE 2018 CAPITAL IMPROVEMENT PROGRAM

WHEREAS, the Capital Improvement Program (CIP) is a resource document to help plan directions the District will consider for the future; and

WHEREAS, Staff and the Board of Commissioners hold annual workshop meetings to establish an Operating Budget, a Capital Improvement Program and set Goals for the upcoming year; and

WHEREAS, the Capital Improvement Program is not a permanent fixed plan, but is a guideline or tool to help reflect future goals and future resources at the time budgets are being planned; and

WHEREAS, the commitment of funds and resources can only be made through the budget process.

NOW, THEREFORE, BE IT RESOLVED:

The Board of Commissioners hereby adopts the 2018 Capital Improvement Program, attached as Exhibit A and incorporated herein by this reference.

ADOPTED BY THE BOARD OF COMMISSIONERS of Highline Water District, King County, Washington, at an open public meeting held this **20th** day of **December 2017**.

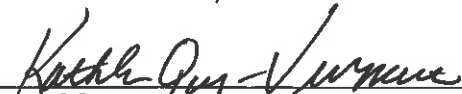
BOARD OF COMMISSIONERS



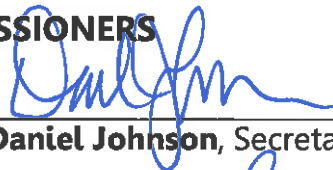
Todd Fultz, President




Vince Koester, Commissioner



Kathleen Quong-Vermeire, Commissioner



Daniel Johnson, Secretary



George Landon, Commissioner

2018

EXHIBIT A



CAPITAL IMPROVEMENT PROGRAM



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EXECUTIVE SUMMARY

The District's Goal is to provide high quality and reliable water service to all customers in accordance with the regulations governing water purveyors. The District's Capital Improvement Program (CIP) is an on-going effort with the primary mission of improving the District's aging infrastructure with modern, more efficient, reliable technology and materials.

In the fall of each year, District staff prepares a draft CIP plan for review by management and the Board of Commissioners. The plan includes budgets and narratives for the proposed Capital Additions for the upcoming year. Each narrative includes a project description; the purpose; a budget allocation and/or estimated project costs (if known from preliminary engineering at the time of budget preparation); a breakdown of funding sources; and an estimated project schedule.

Staff presents the draft CIP to the Commissioners at a regularly scheduled Board meeting. Management makes changes based on the Board's input and prepares a final draft. Typically, the Board considers the final draft of the CIP simultaneously with the District's annual Operations and Maintenance Budget for approval simultaneously at a regularly scheduled meeting in December of each year.

The 2018 CIP includes ten projects in various phases of planning, design and construction. Two projects involve accommodating District infrastructure for the Federal Way Link Light Rail Project by Sound Transit. The list of CIP projects for 2018 includes:

- *Project 14-2 560 Zone Lakehaven South Supply Study and Design*
- *Project 16-2 Pump Station No 8 (Crestview)*
- *Project 16-3 Mansion Hill Reservoir Relocation*
- *Project 16-4 Mansion Hill Transmission Main Relocation*
- *Project 17-1 2017 AC Water Main Replacement (Various Locations)*
- *Project 17-2 2018 AC Water Main Replacement (SeaTac 12th Pl S – 13 Ave S, S 200th St)*
- *Project 18-1 S 223rd St Water Main Replacement (Des Moines 16th Ave S – 24th Ave S)*
- *Project 18-2 International Blvd S at SR 509 Road Improvements*
- *Project 18-3 Mansion Hill 600 Pressure Zone Improvements*
- *Project 18-4 McMicken Well Repair*

The estimated Total Capital Additions for 2017, which includes CIP Expenditures, Small Works/Emergency Projects, Mitigation Improvements, Meters, Hydrants and Services, and Capital Asset Purchases, is \$4.2 million. Debt service for 2017 is \$1.09 million.

For 2018, the proposed capital expenditure is \$14.6 million. The District will fund the CIP through a combination of water rates, development connection charges and Sound Transit developer reimbursements. The effective Capital Additions based on District contributions (rates, connection charges and capital reserves) is \$8.9 million. The remaining funding is from Sound Transit. Debt service for 2018 reduces to \$1.01 million, as the District continues to retire existing loans.

See **Page 3** for overall capital addition funding and the body of this report for project narratives, budgets and locations.

2017 CIP - OUTSTANDING FUNDING & DEBT SERVICE (2017-2021)
CAPITAL PROJECTS

CAPITAL PROJECTS		Prior						
CIP #	Project Title	Years	2017	2018	2019	2020	2021	Totals
13-3	Seatac 24th/28th Ave S Water Main Extension	\$ 160,438	\$ 15,000					\$ 175,437.74
14-2	560 Zone LUD South Supply	\$ 51,438	\$ -	\$ 25,000	\$ 50,000	\$ 515,000		\$ 641,438.36
16-1	Emergency Power-Angle Lake Well and Des Moines Treatment Plant						\$ 100,000	\$ 100,000.00
16-2	Pump Station No 8 (Crestview)	\$ 280,947	\$ 305,779	\$ 1,439,587	\$ 2,090,700			\$ 4,117,013.12
16-3	Mansion Hill Reservoir Relocation	\$ 320,595	\$ 339,000	\$ 3,286,300	\$ 5,421,300			\$ 9,367,194.92
16-4	Mansion Hill 30" Transmission Main Relocation		\$ 243,796	\$ 4,028,300				\$ 4,272,096.00
16-5	S 268th St Water Main Replacement	\$ 532,878	\$ 69,802					\$ 602,680.33
16-6	Mansion Hill Pump Station Project				\$ 200,000	\$ 550,000	\$ 1,810,000	\$ 2,560,000.00
17-1	2017 Water Main Replacement Project (Various Locations)	\$ 93,756	\$ 1,578,800	\$ 1,065,000				\$ 2,737,556.15
17-3	2018 Water Main Replacement Project (SeaTac 12th Pl S -13th Ave S/S 200th St)		\$ 94,500	\$ 1,411,500				\$ 1,506,000.00
18-1	S 223rd St Water Main Replacement (Des Moines 16th Ave S-24th Ave S)		\$ 61,590	\$ 1,000,560				\$ 1,062,150.00
18-2	International Blvd at SR 509 Road Improvements (Budget Allocation)			\$ 75,000	\$ 380,000	\$ 400,000		\$ 855,000.00
18-3	Mansion Hill 600 Pressure Zone Improvements (Budget Allocation)			\$ 150,000	\$ 200,000	\$ 3,300,000		\$ 3,650,000.00
18-4	McMicken Well Repair			\$ 275,000				\$ 275,000.00
	McMicken Tank Upgrades				\$ 400,000	\$ 2,500,000		\$ 2,900,000.00
	Asset Management Plan Update					\$ 50,000		\$ 50,000.00
	2020 AC Water Main Replacement Project (Budget Allocation)					\$ 200,000	\$ 4,000,000	\$ 4,200,000.00
Subtotal of Capital Projects		\$ 1,440,053	\$ 2,708,267	\$ 12,756,247	\$ 8,742,000	\$ 7,515,000	\$ 5,910,000	\$ 39,071,566.62

*Developer Reimbursed

	Small Works/Emergency Projects		\$ 157,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 1,557,000
	Mitigation Improvements		\$ 40,000	\$ 55,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 215,000
	Meters/Hydrants/Services (Refer to O&M Budget)		\$ 1,089,316	\$ 1,245,000	\$ 1,245,000	\$ 950,000	\$ 400,000	\$ 4,929,316
	Capital Asset Purchases (Refer to O&M Budget)		\$ 248,000	\$ 251,545	\$ 225,000	\$ 230,000	\$ 230,000	\$ 1,184,545
	Total Capital Additions	\$ 1,440,053	\$ 4,242,583	\$ 14,657,792	\$ 10,602,000	\$ 9,085,000	\$ 6,930,000	\$ 46,957,428

Less: Outside Funding Sources	Prior Years	2017	2018	2019	2020	2021	Totals
Sound Transit Reimbursement (Projects 16-3; 16-4; 16-6)	\$ 320,595	\$ 482,796	\$ 5,554,134	\$ 5,246,300	\$ 550,000	\$ 1,810,000	\$ 13,963,825
General Facility Charges		\$ 1,030,000	\$ 700,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 3,230,000
Total Outside Funding	\$ 320,595	\$ 1,512,796	\$ 6,254,134	\$ 5,746,300	\$ 1,050,000	\$ 2,310,000	\$ 17,193,825

Debt Service	2017	2018	2019	2020	2021	Totals
	\$ 1,088,649	\$ 1,013,370	\$ 713,060	\$ 708,087	\$ 585,024	\$ 4,108,190
Total Debt Service	\$ -	\$ 1,088,649	\$ 1,013,370	\$ 713,060	\$ 708,087	\$ 4,108,190

Capital Additions + Debt Service (Total)	\$ 1,440,053	\$ 5,331,232	\$ 15,671,162	\$ 11,315,060	\$ 9,793,087	\$ 7,515,024	\$ 51,065,618
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CAPITAL IMPROVEMENT PROGRAM GOALS AND OBJECTIVES

The District's Mission Statement is:

"Our mission is to provide high quality water and excellent customer service while effectively managing District infrastructure for a reliable water system today and for future generations."

The District's Goal is to provide high quality and reliable water service to all customers in accordance with the regulations governing water purveyors. The District's Capital Improvement Program (CIP) is an on-going effort with the primary mission of improving the District's aging infrastructure with modern, more efficient, reliable technology and materials.

In the fall of each year, District staff prepares a draft CIP plan for review by management and the Board of Commissioners. The plan includes budgets for the proposed Capital Additions for the upcoming year. The Capital Additions budget includes the following five components:

- **Capital Projects** – improvement projects identified in the approved Comprehensive Plan or other planning documents and capitalized over the life of the asset
- **Small Works/Emergency Projects** – funds allotted for improvement projects not identified or postulated during development of the annual CIP (e.g. a smaller main replacement project in advance of a city overlay project). If unused, these funds remain in capital reserves.
- **Mitigation Improvements** – funds allocated for improvements to District facilities to ward against man-made and natural disasters in support of the Hazard Mitigation Plan and the Security Vulnerability Assessment
- **Meters/Hydrants/Services** – funds for the purchase of materials for the installation of new pipe/meters/hydrants/services installed by District personnel and capitalized over the life of the asset
- **Capital Asset Purchases** – specific asset purchases greater than \$5,000 per item used to replace aging assets or to increase production and efficiency (e.g. vehicles or equipment)

The plan includes narratives for the Capital Projects, the Small Works/Emergency Project and the Mitigation Improvement budgets. Each narrative includes a project description; the purpose; a budget allocation and/or estimated costs (if known from preliminary engineering at the time of budget preparation); a breakdown of funding sources; and an estimated project schedule. The annual *Goals and Objectives* and the *Operation and Maintenance Budget*, provides narratives and descriptions for the Meters/Hydrants/Services and Capital Asset Purchases.

District staff presents the draft CIP to the Commissioners at a regularly scheduled Board meeting. Staff makes changes based on the Board's input and prepares a final draft. Typically, the Board considers the final draft of the CIP simultaneously with the annual Operations and Maintenance Budget for approval at a regularly scheduled meeting in December of each year.

Prioritization of Projects

Several issues confront a water system when evaluating and comparing which projects take precedence over others. When completing the District's Comprehensive Water System Plan, the Board of Commissioners, management, staff and consultants review the needs of the water

system. Specifically, per WAC 246-290, DOH requires water agencies to review the adequacy of its sources of supply, treatment facilities, storage, and distribution system. In addition, the District evaluates funding sources to ensure financial viability.

DOH places a priority on deficiencies in source, treatment and storage. Generally, distribution mains are only required to be upgraded if they cannot provide adequate fire flow to support future development. Highline Water generally follows this priority strategy; however, the District emphasizes the need to improve the distribution system. In addition to fire flow limitations, Highline also considers historical issues of the water mains (main repairs, leaks, dead ends, water quality complaints, location, safety, potential property damage, looping, land use issues, etc.) when prioritizing replacement projects.

The District must continually reprioritize the CIP for City-initiated road and redevelopment projects. Utilities must relocate their infrastructure to accommodate City-owned facilities. In addition, many cities issue a moratorium on pavement cuts for up to five years after completion of a City project. It makes good "business sense" to replace water facilities with road construction projects as it reduces overall impact to the public. Some projects included with the City work may not be the District's highest replacement priority. However, partnering helps lower overall project costs and achieve the District's goal of replacing aging infrastructure. The result is continued reinvestment into the system at a lower cost and impact to the ratepayers.

Capital Addition Funding

Project funding is an important component of the process. Because of limited resources, the District cannot fund all projects contemplated in the Comprehensive Water System Plan. Capital Additions are typically funded from rates or from other outside sources (General Facility Connection Charges [GFC], revenue bonds, low-interest loans, or developer contributions/reimbursements.)

GFC revenue exceeded the anticipated \$350,000 budget for 2017. The projected revenue by the end of the year is \$1,030,000. Several new projects in the area requested service that was not postulated during 2017 budget preparation. In addition, the effects of the Board approving a GFC increase from \$3,521 to \$4,000 per ERU on January 1, 2017 increased revenue. The 2018 budget for GFC revenue is \$500,000.

Public Works Trust Fund (PWTF) low interest loans are an excellent way to reinvest in infrastructure by reducing the financial burden to the ratepayers. Repayment periods are up to 30 years at interest rates as low as 0.25%, depending on the loan term, local funding match, and project completion incentives by the State. Typically, the District selects repayment schedules and local match funding to minimize interest over the life of the loan. However, as of late, the State Legislature eliminated funding for the PWTF. Future PWTF funding remains uncertain.

Grant money opportunities for infrastructure projects are extremely competitive. The District will pursue grant funding, if available. The District's association memberships help to inform agencies of possible grant opportunities.

Each year, staff works with the Board to determine availability of outside funding (PWTF loans, Federal grants, etc.) for CIP projects that do not have other funding sources. Staff evaluates the water system's needs and prioritizes projects for outside funding. Applications for outside funding sources are subject to approval by the Board of Commissioners.

CIP Project Implementation

As projects secure funding and accepted by the Board, the following general steps are taken to design and construct a scheduled CIP project. Please note that these steps do not necessarily apply to emergency repair work:

1. Staff may issue a Request For Proposals for more technically-challenging projects or may request information from consultants identified on the MRSC Consultant Roster.
2. Staff evaluates the consultant's general Statement of Qualifications (SOQ) or Request for Proposals (RFP), may request interviews, and will recommend to the Board the most competent consultant to complete the project design.
3. Staff negotiates the contract then takes the consultant's proposal to the Board for their review and approval.
4. Upon approval, the consultant begins working with staff to complete the design. At each regular meeting, the Board receives a status report for each project in the Manager's Report.
5. Upon completion of the design, staff informs the Board of the project's advertisement and bid opening dates for soliciting a construction contract.
6. District staff and the consultant review the bids and make a recommendation to the Board to award to the lowest responsive, responsible bidder, per State Law.
7. The contract is then brought before the Board to award at the next available Board meeting.
8. Construction of the project begins and the Board receives updates on the status of each project in the Manager's Report.
9. The Board must approve or deny any contract revisions over \$15,000 per contract that may occur.
10. Upon completion of the project, staff and the consultant make a recommendation to the Board to accept the project as complete. This recommendation is then approved or denied at the next available Board meeting.
11. If the project was an approved PWTF project or Federal grant, staff will complete the close-out of the project as required by the PWTF Board or Federal agency.
12. Staff completes the necessary closeout paperwork.

2018 Capital Addition Budget

For 2018, the District's anticipated Capital Addition expenditures are \$14.6 million. The figure includes budget to support all five Capital Addition components. The District will fund the 2018 CIP through water rates, capital reserves, connection charges, and developer reimbursements. Of the Capital Addition amount, the District contribution total of \$8.9 million includes existing rates, connection charges and capital reserves. The remaining amount is from Sound Transit reimbursement.

Please see **Page 3** for a breakdown of the overall capital additions and funding sources.

2018 CAPITAL PROJECT NARRATIVES

Each project narrative includes a project description; the purpose; a budget allocation and/or estimated project costs (if known from preliminary engineering at the time of budget preparation); a breakdown of funding sources; and an estimated project schedule. Not all projects will have specific breakdowns of project costs, only budget allocations. Upon completion of preliminary engineering, staff will refine these allocations into specific project costs and budgets.

The projects scheduled for work in 2018 include:

Project 14-2 560 Zone Lakehaven Utility District South Supply

Lakehaven Utility District (LUD), a regional partner in the Tacoma Treatment Plant, began receiving filtered water from the source in 2015. LUD approached the District to discuss selling an average of 2.0 MGD to Highline.

The benefit of purchasing water from LUD is to have a redundant source of supply at a lower cost than Seattle Public Utilities (SPU), to help boost the hydraulic grade line in the southern portion of HWD, and to give additional operational flexibility. The District gave a 5-year notice to SPU in August 2011 of its intention to purchase water from LUD in the future, as required by the Partial Services Contract between the agencies.

Prior to purchasing water from LUD, the District will require the approval from the Department of Health. Planning work, including a blending study will help determine the feasibility of the proposal. The District contracted with Confluence Engineering for the blending study. From the report, the District can determine the necessary capital improvements and the Board can evaluate whether to proceed with the project.

Due to limited staff resources and other priority projects, staff performed limited effort in 2017. The District allocated \$25,000 in the 2018 budget for studies and evaluations. The budget for 2019 includes \$50,000 for studies/evaluations/approvals and \$515,000 in 2019 for any needed capital improvements. Upon completion of the initial study effort, staff will prepare a more detailed budget of the necessary expenditures and a revised timeline of proposed improvements. The Board can then determine whether to proceed with the project and enter into contract negotiations with LUD. The initial funding for the project is by rates and capital reserves.

Project 16-2 Pump Station No 8 (Crestview)

Highline Water District's majority storage component serving the 560 Pressure Zone is the 7.6 MG Crestview Reservoir. Water stored in Crestview or source water from Seattle Public Utilities must pump through Pump Station 6 (PS6) to enter into the 560 zone.

The 2016 Comprehensive Water System Plan identified the need for a second pump station to serve the 560 zone from SPU and Crestview. The project would improve redundancy and resiliency in the overall water system in the event of a failure of PS6. The new pump station (PS8) will use modern equipment and receive electrical service from Puget Sound Energy, a different electric utility than PS6 (Seattle City Light).

The project's first phase was preliminary engineering, feasibility and a station siting evaluation. The District selected RH2 Engineering to perform the preliminary services. RH2 evaluated ten local properties in the general area of S 160th St and 42nd Ave S. The designers narrowed the search based on elevations, proximity to Crestview Reservoir and PS6, cost and impacts to the neighborhood. RH2 completed the preliminary assessment in December 2016.

The District selected to site the station at the Harper property located at 16032 42nd Ave S. The property housed an existing derelict structure in foreclosure. The home housed criminal activity and was a nuisance for the surrounding properties. The District closed the sale on November 16, 2016. District staff subsequently demolished the structure in early 2017.



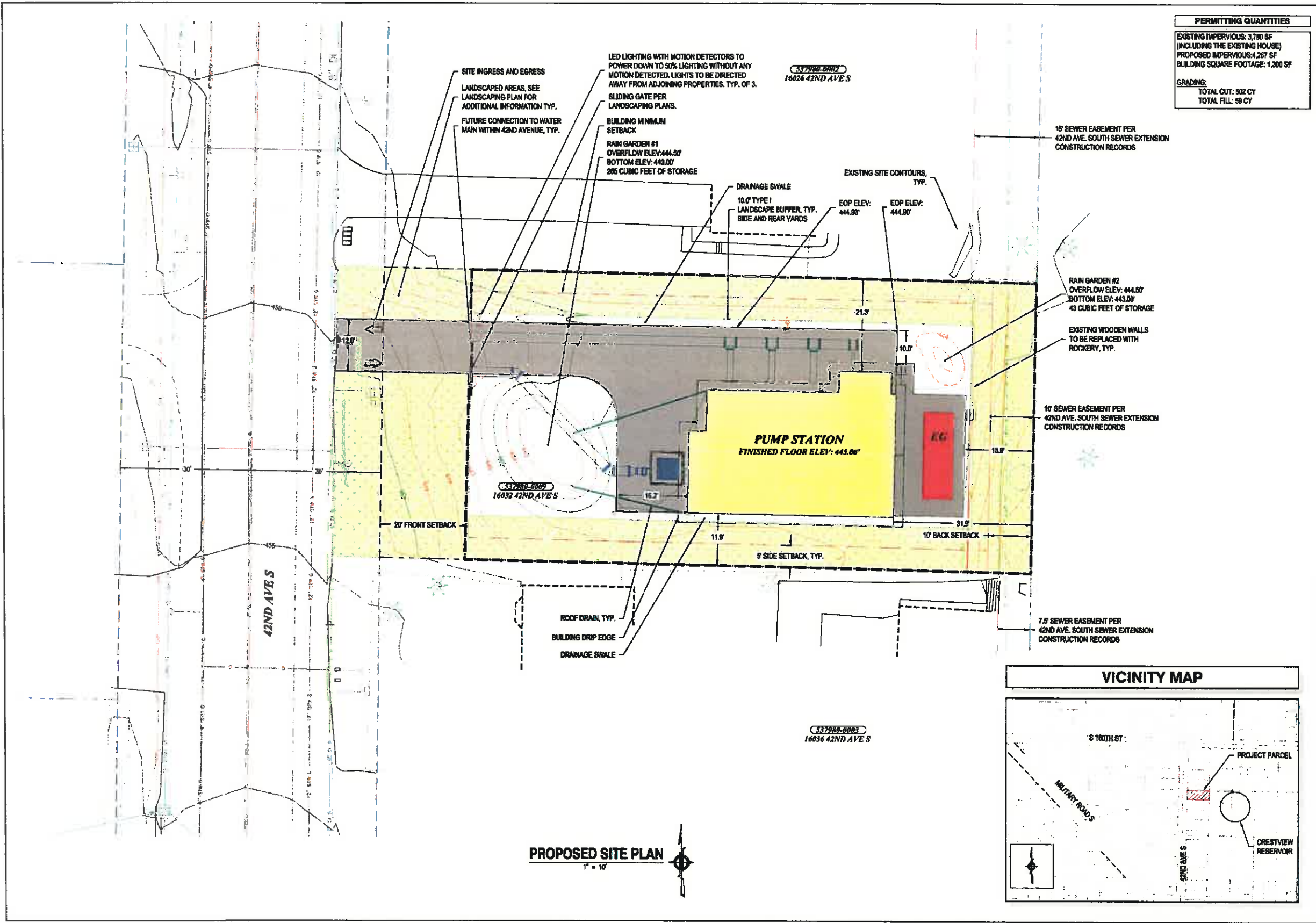
RH2 Engineering evaluated several design concepts. The preliminary design includes a 5,000 GPM split-level pump station; pumps and piping are below ground and electrical and equipment storage in an above ground building. RH2 retained Page and Beard Architects to design the above ground building to blend in with the surrounding properties.

Staff coordinated with the City of Tukwila to determine the preliminary requirements for the project. The District must obtain an Unspecified Use Permit (UUP), which requires approval by the City Council (Permit package deemed complete Nov. 1, 2017). Public comment will close in December 2017. The intake and outlet piping is within existing right-of-way within the City of SeaTac requiring additional permitting.

The District will negotiate for an easement with the property owner of Scott Plaza, located at 16256 Military Rd S. The easement will assist the District by making way for a less complex connection of the discharge piping to the existing pipeline on Military Road S.

The District allocated \$1.4 million and \$2.1 million in the 2018 and 2019 budgets, respectively. Construction will begin third quarter 2018. The total anticipated project cost is \$4.1 million and funded by existing water rates and capital reserves.





PERMITTING QUANTITIES

EXISTING IMPERVIOUS: 3,780 SF
 (INCLUDING THE EXISTING HOUSE)
 PROPOSED IMPERVIOUS: 4,267 SF
 BUILDING SQUARE FOOTAGE: 1,300 SF

GRADING:
 TOTAL CUT: 502 CY
 TOTAL FILL: 99 CY



HIGHLINE WATER DISTRICT
PUMP STATION NO. 8
PUMP STATION 8 SITE PLAN



NO.	DATE	DESCRIPTION

SCALE: 1"=10'

DRAWING IS FULL SCALE UNLESS OTHERWISE NOTED

DATE: 08/17/17

SHEET NO.: 10 OF 33

**16-2 PUMP STATION No. 8
ESTIMATED PROJECT COSTS**

CATEGORY	Prior Years	2017	2018	2019	TOTAL
Capitalized Interest	\$ 1,035				\$ 1,035
Engineering - Design	\$ 57,682	\$ 234,779	\$ 178,877	\$ -	\$ 471,338
Construction			\$ 1,111,000	\$ 1,870,000	\$ 2,981,000
Construction Administration	\$ -		\$ 122,210	\$ 205,700	\$ 327,910
Staff Labor and Benefits	\$ 5,365	\$ 14,000	\$ 15,000	\$ 10,000	\$ 44,365
Permitting		\$ 14,500	\$ 5,000		\$ 19,500
Property Acquisition	\$ 198,215	\$ 30,000			\$ 228,215
Miscellaneous / Other	\$ 1,661	\$ 10,000	\$ 5,000	\$ 5,000	\$ 21,661
Legal	\$ 16,990	\$ 2,500	\$ 2,500		\$ 21,990
TOTAL	\$ 280,947	\$ 305,779	\$ 1,439,587	\$ 2,090,700	\$ 4,117,013

FUNDING FOR PROJECT					
CATEGORY	Prior Years	2017	2018	2019	TOTAL
Rates/Reserves	\$ 280,947	\$ 305,779	\$ 1,439,587	\$ 2,090,700	\$ 4,117,013
TOTAL	\$ 280,947	\$ 305,779	\$ 1,439,587	\$ 2,090,700	\$ 4,117,013

ESTIMATED SCHEDULE FOR PROJECT COMPLETION	
Description	Date
Design Engineering (Complete)	April 2018
Award Construction Contract	July 2018
Begin Construction	September 2018
Project Final Completion	June 2019

Project 16-3 Mansion Hill Reservoir Relocation

In late 2015, Sound Transit (ST) selected the SR509/I-5 route for the Federal Way Link Light Rail Project. The proposed alignment passes adjacent to Highline Water District's 5.0 MG 490 Zone reservoir and 30-inch Transmission Main at the Mansion Hill Tank site. The close proximity of the light rail will require the relocation of the tank and transmission main.

The first phase of work included preliminary engineering, including survey, geotechnical investigation, planning, permitting and overall project scoping. The work also included contract negotiations with ST for cost reimbursement. In 2016, the District executed an Interlocal Agreement for preliminary engineering with ST and a separate consultant contract with Stantec to determine the impacts to the water system and the preferred mitigation options.



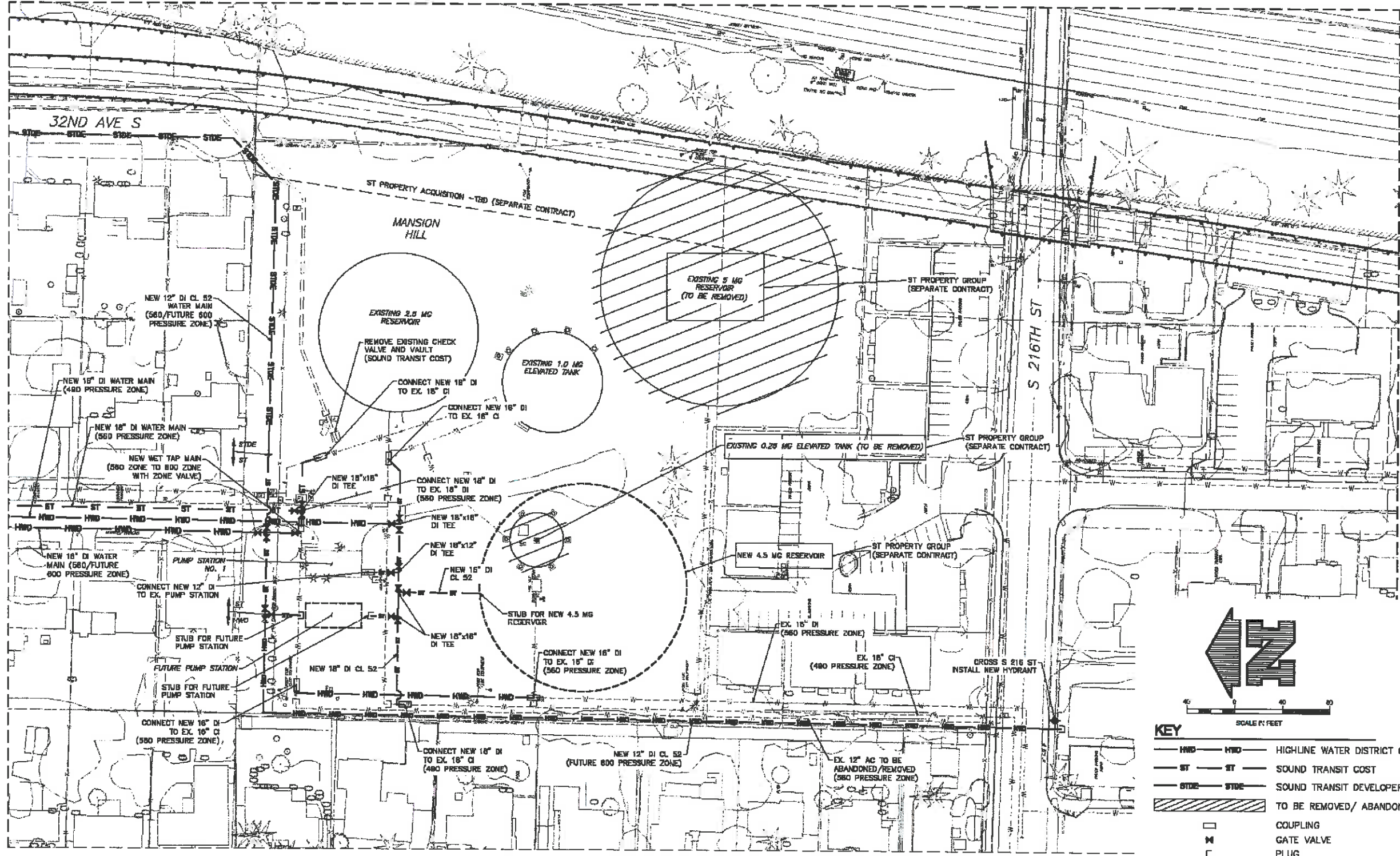
From the preliminary engineering effort, the District identified three significant impacts to the water system at Mansion Hill. Each impact became a separate project: Project 16-3 Mansion Hill Reservoir Relocation; Project 16-4 Mansion Hill 30" Transmission Main Relocation; and Project 16-6 Mansion Hill Pump Station Project (PS5). The District completed the preliminary engineering work in summer of 2017.

Project 16-3 includes the construction of a new, 4.5 MG 490 Zone reservoir to replace the existing 5.0 MG reservoir; however, the new location will conflict with the existing 0.25 MG elevated tank. The project includes the demolition of both tanks. Project 16-6 will replace the elevated tank with a new pump station (PS5) to serve a future 600 Mansion Hill Pressure Zone [slated for preliminary design in 2019 and construction in 2020.]



The District executed a contract amendment with Stantec to perform final design services for Project 16-3. This Phase 2 work includes preparation of construction contract documents and permitting services. A future amendment will include construction inspection and other administrative support to build the project. The District must complete the reservoir work by end of 2019 to avoid conflicts with ST light rail construction.

For Project 16-3 (Reservoir), the District budgeted \$9.4 million for the overall project, including \$500,000 for security, lighting, and other onsite betterments funded by the District. Sound Transit will reimburse the District for the remaining expense through their Property Acquisition Group and a Letter of Eligibility for Reimbursement process. ST must purchase District property for the alignment through separate negotiations.



KEY

- HIGHLINE WATER DISTRICT COST
- SOUND TRANSIT COST
- SOUND TRANSIT DEVELOPER EXTENSION
- TO BE REMOVED/ ABANDONED
- COUPLING
- GATE VALVE
- PLUG

NO.	DATE	BY	APPR.	REVISION

Stantec
 31100 NE 8th Place, Bellevue WA 98003
 phone: (425) 888-9948 www.stantec.com

DRK. LRP DSGN. JGARP CHKD. JG

HIGHLINE WATER DISTRICT
 22925 30th Avenue South, Kent, WA 98032
 Telephone: (206) 824-0876, Engineering

HIGHLINE WATER DISTRICT
MANSION HILL
RESERVOIR RELOCATION
HWD/ST COST BREAKDOWN

DATE: SCALE: AS NOTED JOB # 2032005081

SHEET NO:	2
1	2

**16-3 MANSION HILL RESERVOIR RELOCATION
ESTIMATED PROJECT COSTS**

CATEGORY	Prior Years	2017	2018	2019	TOTAL
Capitalized Interest	\$ 1,181	\$ 1,500	\$ 1,000	\$ 3,750	\$ 7,431
Engineering - Design	\$ 304,259	\$ 300,000	\$ 325,000		\$ 929,259
Construction			\$ 2,670,000	\$ 4,945,000	\$ 7,615,000
Construction Administration			\$ 240,300	\$ 445,050	\$ 685,350
Staff Labor and Benefits	\$ 6,850	\$ 16,500	\$ 25,000	\$ 15,000	\$ 63,350
Permitting	\$ 300	\$ 12,000	\$ 15,000	\$ 7,500	\$ 34,800
Miscellaneous / Other	\$ 133	\$ 1,500	\$ 5,000	\$ 5,000	\$ 11,633
Legal	\$ 7,873	\$ 7,500	\$ 5,000		\$ 20,373
TOTAL	\$ 320,595	\$ 339,000	\$ 3,286,300	\$ 5,421,300	\$ 9,367,195

FUNDING FOR PROJECT					
CATEGORY	Prior Years	2017	2018	2019	TOTAL
Rates/Reserves			\$ 125,000	\$ 375,000	\$ 500,000
Sound Transit Reimbursement	\$ 320,595	\$ 339,000	\$ 3,161,300	\$ 5,046,300	\$ 8,867,195
TOTAL	\$ 320,595	\$ 339,000	\$ 3,286,300	\$ 5,421,300	\$ 9,367,195

ESTIMATED SCHEDULE FOR PROJECT COMPLETION	
Description	Date
Design Engineering (Complete)	April 2018
Award Construction Contract	June 2018
Begin Construction	September 2018
Project Final Completion	September 2019

Project 16-4 Mansion Hill Transmission Main Relocation

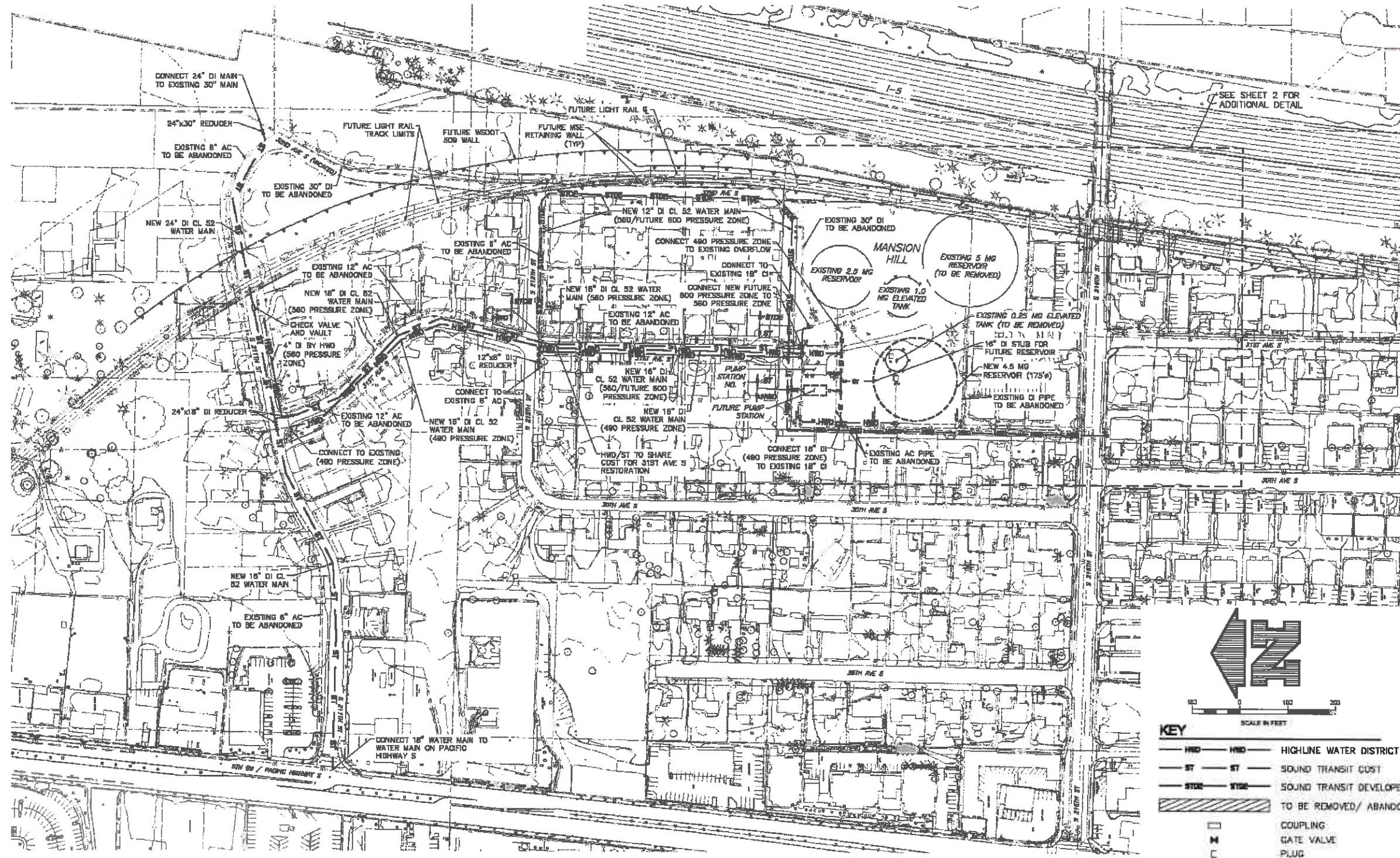
In 2017, the District created Project 16-4 from the preliminary engineering effort of Project 16-3, Mansion Hill Reservoir Relocation. This new project relocates the existing transmission main between the Bow Lake Reservoir to the Mansion Hill Reservoir in conflict with the proposed Sound Transit (ST) Light Rail alignment. The transmission main work predicated the reservoir relocation work on the Mansion Hill site.

The project includes the installation of approximately 3,000 LF of 24" and 18" water mains connecting the existing transmission main to the reservoir site and the distribution system at International Blvd and S 211th St. The new downsized main connected at two discharge locations will improve overall redundancy while maintaining capacity in the 560 Zone near Mansion Hill.

Because the project will disturb the road along 31st Ave S, the District will replace two existing AC water mains within the project limits. The work includes installing approximately 3,300 LF of new 18-inch and smaller sized pipe to serve the 490 pressure zone and future 600 pressure zone. (See Project 18-3 for additional information).

The District executed a contract with Stantec for final design on September 20, 2017. Staff is negotiating the final agreement for reimbursement with ST for approval by the Board by the end of the year. Staff anticipates completing the design and permitting in 2017 and advertise for construction in early 2018. Work will be complete by summer 2018.

The District will fund the project by a combination of existing rates/capital reserves and ST reimbursement. ST anticipated costs are \$2.53 million distributed over 2017 and 2018. HWD anticipated costs for the same years are \$1.74 million, respectively.



SCALE IN FEET
0 100 200

KEY	
	HIGHLINE WATER DISTRICT COST
	SOUND TRANSIT COST
	SOUND TRANSIT DEVELOPER EXTENSION
	TO BE REMOVED/ ABANDONED
	COUPLING
	GATE VALVE
	PLUG

NO.	DATE	BY	APPR.	REVISION



HIGHLINE WATER DISTRICT
MANSION HILL
RESERVOIR RELOCATION
HWD/ST COST BREAKDOWN

DATE: SCALE: AS NOTED JOB # 2002005061

SHEET NO
1

1 2

**16-4 MANSION HILL TRANSMISSION MAIN RELOCATION AND PIPING UPGRADES
ESTIMATED PROJECT COSTS**

CATEGORY	2017	2018	TOTAL
Capitalized Interest	\$ 1,000	\$ 3,500	\$ 4,500
Engineering - Design	\$ 220,296	\$ 67,000	\$ 287,296
Construction	\$ -	\$ 3,810,000	\$ 3,810,000
Construction Administration	\$ -	\$ 114,300	\$ 114,300
Staff Labor and Benefits	\$ 7,500	\$ 25,000	\$ 32,500
Permitting	\$ 10,000	\$ 3,500	\$ 13,500
Miscellaneous / Other	\$ 2,500	\$ 5,000	\$ 7,500
Legal	\$ 2,500	\$ -	\$ 2,500
TOTAL	\$ 243,796	\$ 4,028,300	\$ 4,272,096

FUNDING FOR PROJECT			
CATEGORY	2017	2018	TOTAL
Rates/Reserves	\$ 100,000	\$ 1,635,466	\$ 1,735,466
Sound Transit Reimbursement	\$ 143,796	\$ 2,392,834	\$ 2,536,630
TOTAL	\$ 243,796	\$ 4,028,300	\$ 4,272,096

ESTIMATED SCHEDULE FOR PROJECT COMPLETION	
Description	Date
Design Engineering (Complete)	December 2017
Award Construction Contract	March 2018
Begin Construction	April 2018
Project Final Completion	August 2018

Project 17-1 2017 AC Water Main Replacement

The Board of Commissioners authorized Project 17-1 in October 2016 for the 2017 construction season. The District selected Gray and Osborne for design and construction administration services. The four project locations include:

- 3rd Ave SW/3rd Pl SW at SW 200th St in Normandy Park
- S 232nd St & 14th Ave S in Des Moines
- 16th Ave S from S 240th St To KDM in Des Moines
- S 268th St from Military Rd S to 40th Ave S In Kent

This project replaces approximately 7,700 LF of existing AC water mains with new, ductile iron pipe, in addition to new services, hydrants, services and appurtenances. Staff selected the project locations due to recent water main breaks, proximity to sensitive environmental areas and in anticipation of future city overlay projects.

The District advertised and awarded the project to KarVel Construction on June 7, 2017. The bid price was \$1.87 million. Work commenced in August 2017 and scheduled for completion spring 2018.

On September 3, 2017, the District experienced the failure of an existing 6" AC water main on S 176th Street in the City of SeaTac causing significant damage to the road and adjacent properties. The condition, size and material type of the water main indicates a high likelihood of repeated failures in the near future. The Board of Commissioners declared an emergency pursuant to RCW 39.04.280(1)(e) and authorized Staff to retain KarVel through a change order to replace the failing main. The additional work includes approximately 1,100 LF of 12" DI water main.

The District allocated \$2.73 million for the total project costs in years 2017/2018, including the emergency work. The project is funded by existing rates and capital reserves.

**17-1 2017 AC WATER MAIN REPLACEMENT PROJECT
ESTIMATED PROJECT COSTS**

CATEGORY	2016	2017	2018	TOTAL
Capitalized Interest	\$ 345	\$ 2,500		\$ 2,845
Engineering - Design	\$ 93,411	\$ 83,000		\$ 176,411
Construction	\$ -	\$ 1,356,000	\$ 1,040,000	\$ 2,396,000
Construction Administration		\$ 55,300	\$ 25,000	\$ 80,300
Staff Labor and Benefits		\$ 52,000		\$ 52,000
Permitting		\$ 25,000		\$ 25,000
Miscellaneous / Other		\$ 2,500		\$ 2,500
Legal		\$ 2,500		\$ 2,500
TOTAL	\$ 93,756	\$ 1,578,800	\$ 1,065,000	\$ 2,737,556

FUNDING FOR PROJECT				
CATEGORY	2016	2017	2018	TOTAL
Rates/Reserves	\$ 93,756	\$ 1,578,800	\$ 1,065,000	\$ 2,737,556
TOTAL	\$ 93,756	\$ 1,578,800	\$ 1,065,000	\$ 2,737,556

ESTIMATED SCHEDULE FOR PROJECT COMPLETION	
Description	Date
Design Engineering (Complete)	May 2017
Award Construction Contract	July 2017
Begin Construction	August 2017
Project Final Completion	March 2018

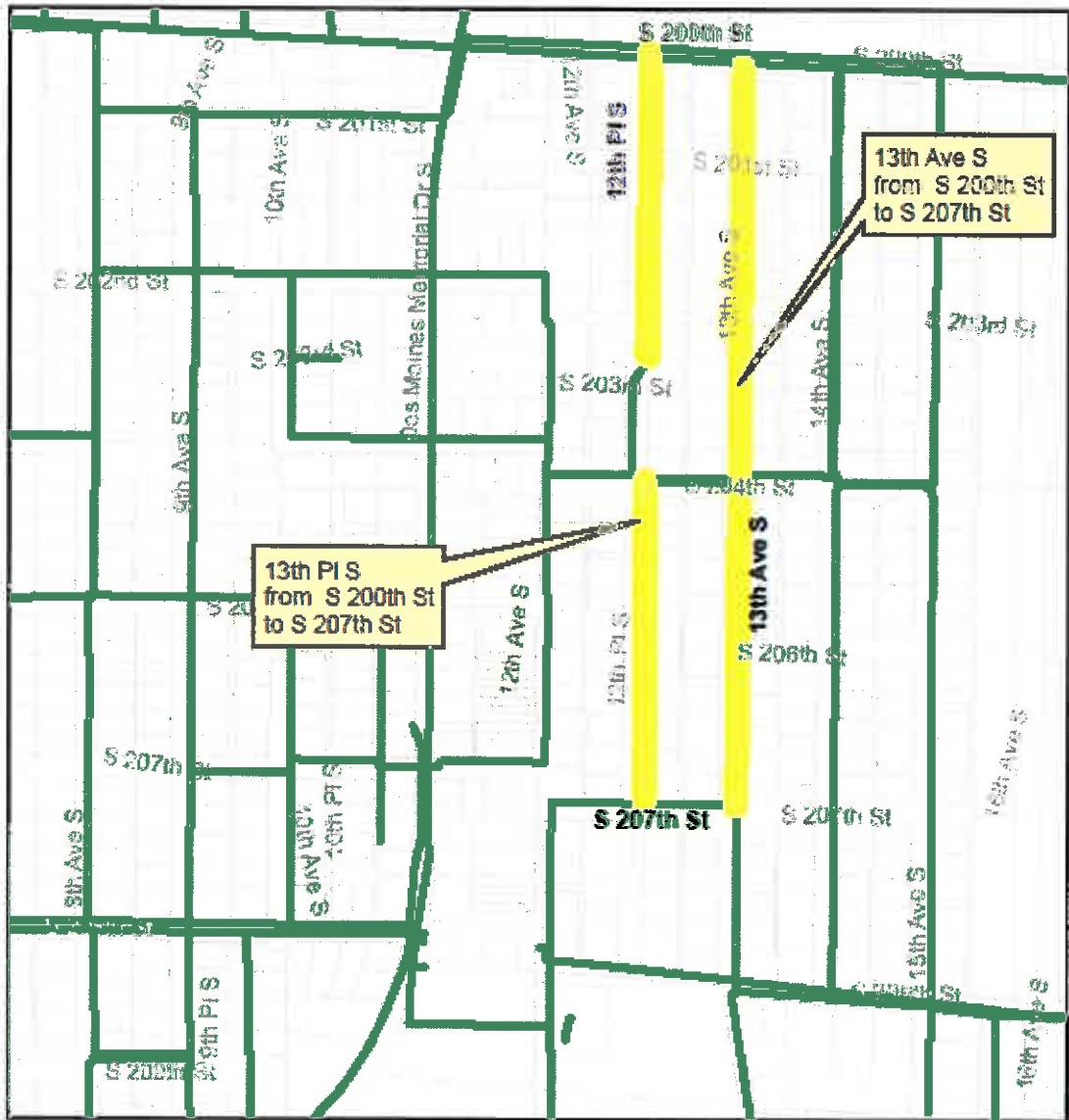
***Project 17-2 2018 AC Water Main Replacement
(SeaTac 12th Pl S and 13th Ave S; S 200th St to S 207th St.)***

In February 2017, the City of SeaTac identified the neighborhood bounded by S 200th St - S 207th St, and 12th Place S - 13th Ave S for their 2017 Asphalt Overlay Replacement Program. The District's infrastructure in the area is primarily small diameter AC water mains.

Upon discovery of the proposed project, the District discussed a partnership with the City to replace the existing water mains prior to the overlay. Understanding the District would perform excavation work, the City elected to increase their project scope to replace aging storm pipes and shift construction to spring 2018. The project is a model of two governmental agencies working together on a construction project to provide public value to the neighborhood and community.

The District selected Murray Smith, Inc. to perform design services. Work includes the replacement of 4,500 LF of 8-inch water main upsized to improve fire flow within the neighborhood. MSA will complete the design by the end of 2017 and the City slated the project for construction in early 2018. The City will be lead agency and the District will become a schedule on the City's contract. The District and City will formalize an Interlocal Agreement in late 2017.

The District budgeted \$1.54 million for design and construction, funded by rates and existing capital reserves.



17-2 WATERMAIN REPLACEMENT
 along 12th PI S & 13th Ave S
 from S 200th St to S 207th St
 replace 4,440 LF 4" & 6" AC

**17-2 2018 AC WATER MAIN REPLACEMENT PROJECT
ESTIMATED PROJECT COSTS**

CATEGORY	2017	2018	TOTAL
Capitalized Interest	\$ 1,000	\$ 3,500	\$ 4,500
Engineering - Design	\$ 80,000		\$ 80,000
Construction	\$ -	\$ 1,350,000	\$ 1,350,000
Construction Administration		\$ 35,000	\$ 35,000
Staff Labor and Benefits	\$ 5,000	\$ 18,000	\$ 23,000
Permitting	\$ 2,500	\$ -	\$ 2,500
Miscellaneous / Other	\$ 2,500	\$ 5,000	\$ 7,500
Legal	\$ 3,500	\$ -	\$ 3,500
TOTAL	\$ 94,500	\$ 1,411,500	\$ 1,506,000

FUNDING FOR PROJECT			
CATEGORY	2017	2018	TOTAL
Rates/Reserves	\$ 94,500	\$ 1,411,500	\$ 1,506,000
TOTAL	\$ 94,500	\$ 1,411,500	\$ 1,506,000

ESTIMATED SCHEDULE FOR PROJECT COMPLETION	
Description	Date
Design Engineering (Complete)	December 2017
Award Construction Contract	February 2018
Begin Construction	April 2018
Project Final Completion	August 2018

Project 18-1 S 223rd St Water Main Replacement (16th Ave S – 24th Ave S)

The City of Des Moines identified the need to improve the road surface of S 223rd St from Marine View Drive to 24th Ave S. The road is major east-west route to downtown with heavy use by transit busses, fire vehicles, DM Public Works and Highline School District. The road is severely damaged by alligator cracking and spalling of asphalt. Immediate repair is required.

The District identified the need to replace a small diameter AC water main between 16th and 24th Ave S. The project includes the installation of approximately 2,850 LF of 8-inch diameter DI main and other appurtenances.

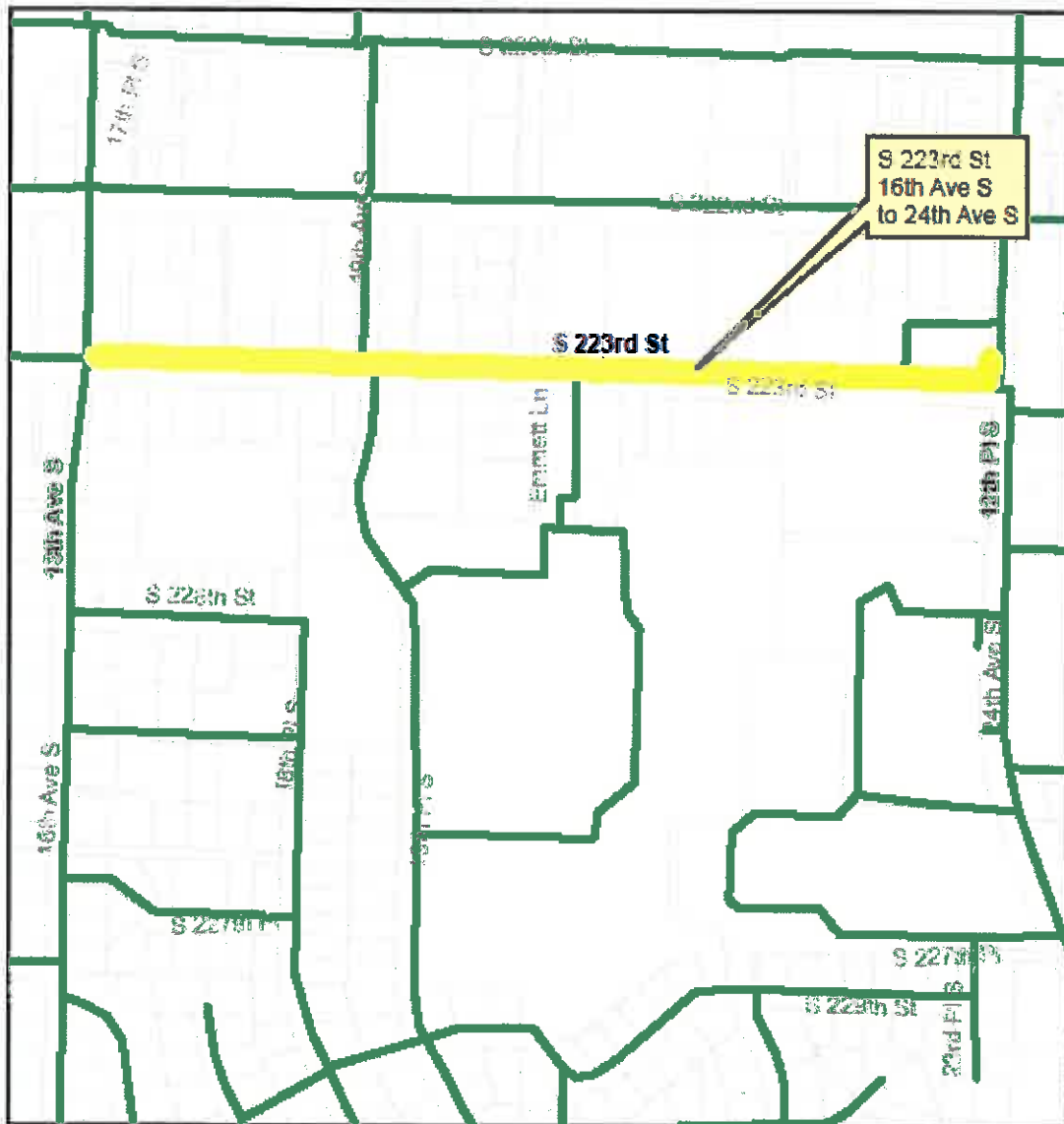
Pace Engineers designed the water portion of the project. Construction will begin in early 2018 based on the City's schedule. The City will be lead agency and Highline will enter into an Interlocal agreement with Des Moines to construct the water main. The City requests the District fund the cost of the overlay and trench patching in a lump sum payment and they would take responsibility for the surface restoration.



As a separate project, the City identified the need to improve their storm system on 24th Ave S between 224th St and 227th St. The proposed storm alignment conflicts with approximately 1,100 LF of existing 12-inch diameter AC water main. Because of the close proximity of the two locations, the District and City discussed including both projects into one construction contract. The City must make a final decision whether to combine the work.



The anticipated project cost is \$1.05 million, including the additional work. If the City elects to separate the projects, the District will need to reallocate funds from this project to create a new 24th Ave S project. Funding for the projects is from existing water rates and capital reserves.



**18-1 WATERMAIN REPLACEMENT
along S 223rd St from 16th Ave S to 24th Ave S
replace 2,600 LF 6" & 8" AC and 8" CI**

**18-1 S 223rd ST AC WATER MAIN REPLACEMENT PROJECT
ESTIMATED PROJECT COSTS**

CATEGORY	2017	2018	TOTAL
Capitalized Interest	\$ 1,000	\$ 3,500	\$ 4,500
Engineering - Design	\$ 49,590		\$ 49,590
Construction	\$ -	\$ 902,000	\$ 902,000
Construction Administration		\$ 72,060	\$ 72,060
Staff Labor and Benefits	\$ 3,500	\$ 18,000	\$ 21,500
Permitting	\$ 1,500	\$ -	\$ 1,500
Miscellaneous / Other	\$ 2,500	\$ 5,000	\$ 7,500
Legal	\$ 3,500	\$ -	\$ 3,500
TOTAL	\$ 61,590	\$ 1,000,560	\$ 1,062,150

FUNDING FOR PROJECT			
CATEGORY	2017	2018	TOTAL
Rates/Reserves	\$ 61,590	\$ 1,000,560	\$ 1,062,150
TOTAL	\$ 61,590	\$ 1,000,560	\$ 1,062,150

ESTIMATED SCHEDULE FOR PROJECT COMPLETION	
Description	Date
Design Engineering (Complete)	May 2017
Interlocal Agreement	December 2017
Award Construction Contract	February 2018
Begin Construction	April 2018
Project Final Completion	July 2018

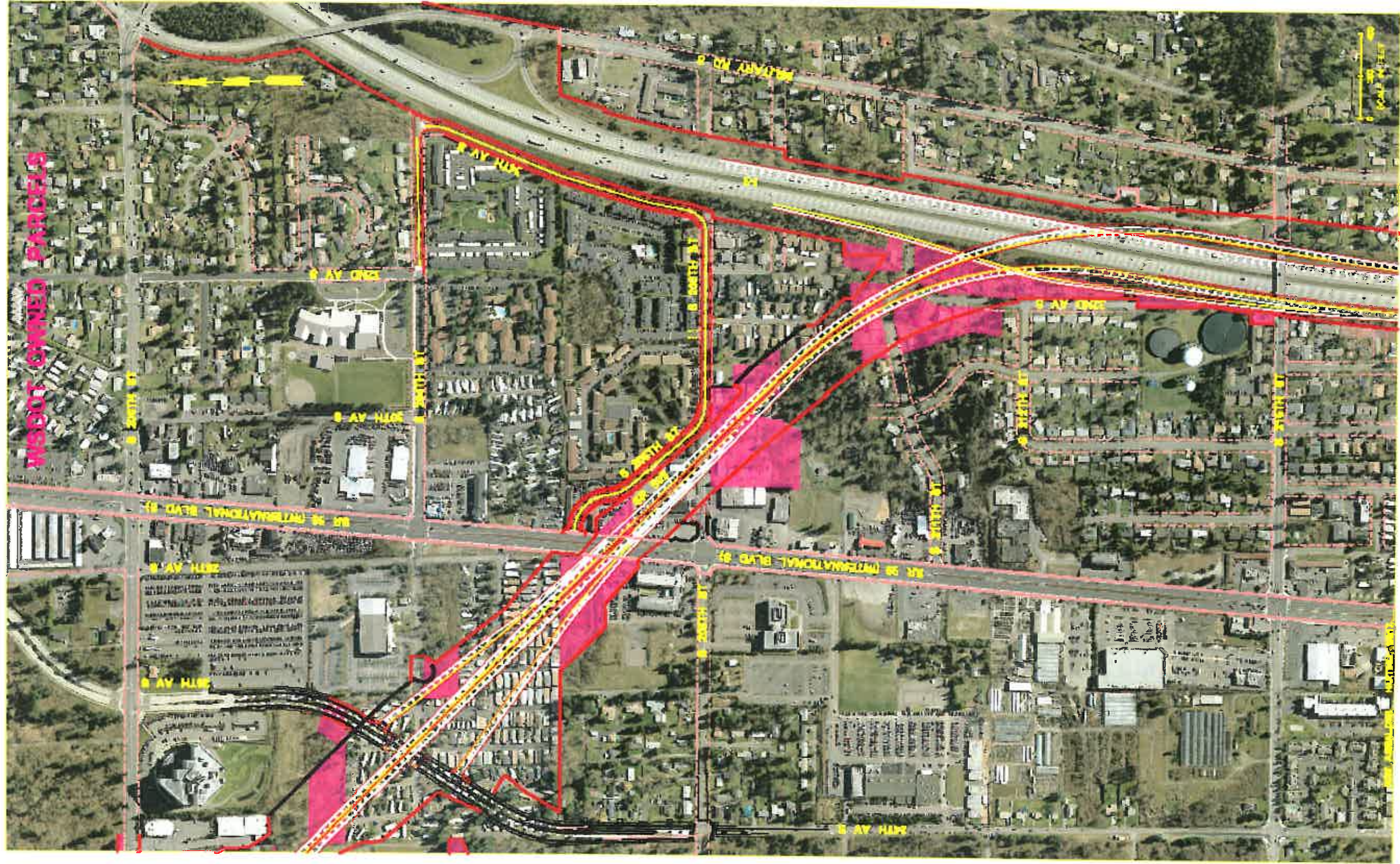
Project 18-2 International Blvd at SR509 Road Improvements

The Washington State Department of Transportation (WSDOT) proposes to extend the SR509 freeway from S 188th St to Interstate 5 as part of the Puget Sound Gateway project. WSDOT anticipates construction to begin in 2024 and completed by 2028.

WSDOT's design requires a freeway overpass for International Blvd S (ILB) at SR509 near S 206th St. Sound Transit (ST) simultaneously plans for the Federal Way Link Light Rail to cross ILB in the same general vicinity. Because ST will construct their infrastructure first, WSDOT desires ST to construct the overpass on their behalf during the light rail construction. The effort help avoid multiple contractors working in the same general area on separate Public Works contracts.

Highline Water has three water mains in the vicinity of the bridge. The District must design and relocate their infrastructure in advance of the bridge work and then affix the mains to the bridge after construction. The District will retain a consultant to determine the preliminary planning work to identify all potential impacts of the project.

Project 18-2 will include design and construction of the necessary improvements for the bridge work only. The other impacts caused by SR509 will be a separate project. The District allocated \$75,000 for the project in 2018 for evaluation and design alternatives. The budget includes a cost allotment of \$780,000 for the two subsequent years (2019/2020). Staff will amend the budget with updated costs and schedule upon completion of the preliminary planning work. Highline will coordinate with ST and WSDOT to meet their project schedule. Construction is tentatively scheduled for 2019/2020.



WOOD OWNED PARCELS

Project 18-3 Mansion Hill 600 Pressure Zone Improvements

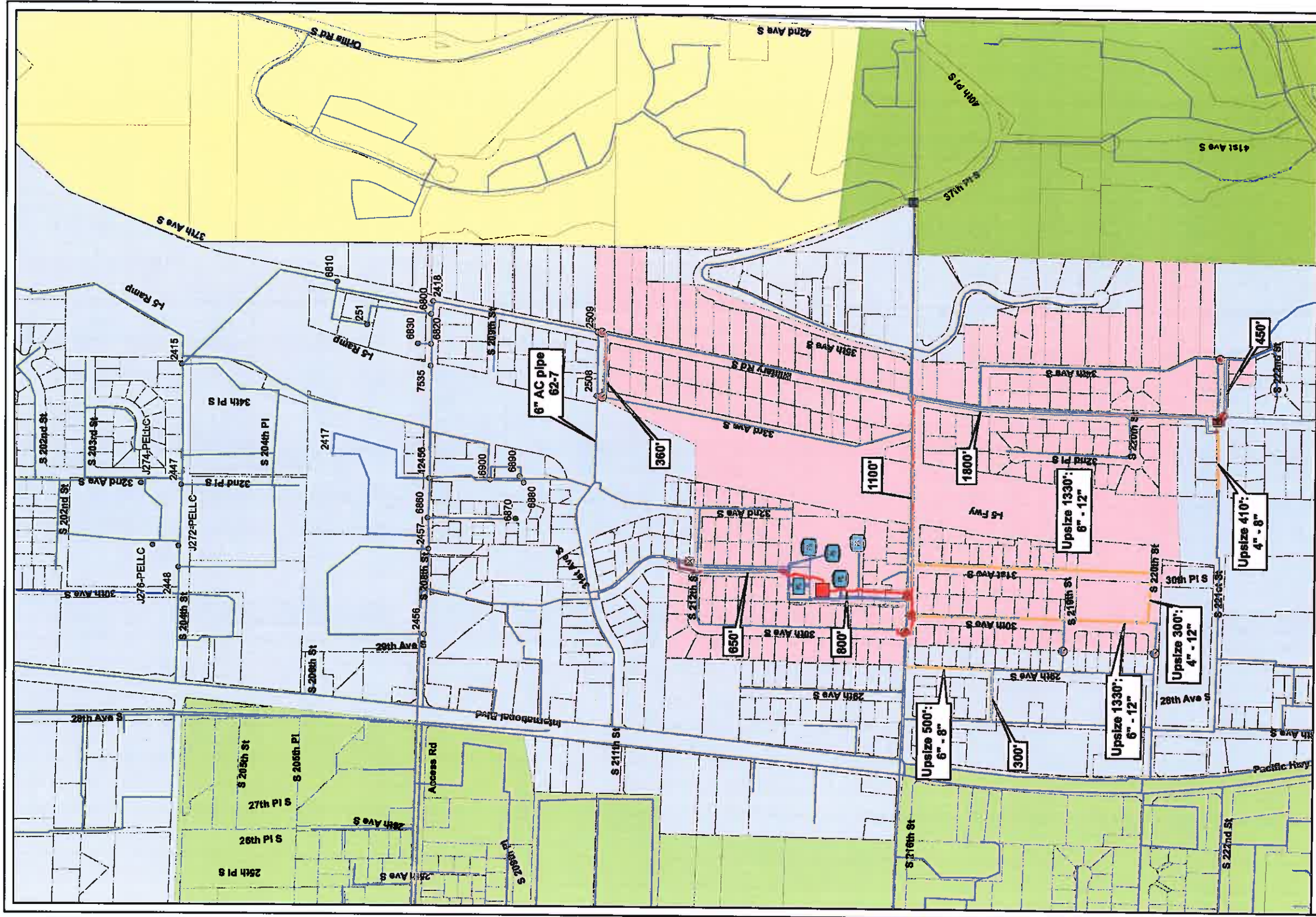
The 2016 Comprehensive Water System Plan identified several pressure deficiencies in the general area of the Mansion Hill water tanks. The 560 Pressure Zone serves the area and several properties are near the minimum allowable pressures during maximum day demand of 30 psi.

Project 18-3 will create the new 600 pressure zone to serve the Mansion Hill area. A new pump station (Project 16-6 and funded by Sound Transit) will serve the closed zone. The pump station will add approximately 17 psi to the existing static pressures making the minimum pressures greater than 45 psi. Pump station design will begin in 2019.

The overall pressure zone is generally depicted in the attached Figure (next page). Carollo Engineers performed a cursory review of the zone as part of Project 16-3 Mansion Hill Reservoir Relocation. The District will need to perform a detailed investigation to determine the piping and service configurations.

Phase 1 will include identifying infrastructure needs and service area boundaries for the new zone followed by subsequent phase for design, permitting approvals and construction. The District must complete this project prior to final completion of the pump station project.

The District budgeted \$150,000 in 2018 to begin the planning effort. For 2019 and 2020, the budget includes \$3.50 million for design and construction. The District will fund the project by existing water rates and capital reserves.



Legend

- Proposed Tank/PS or PS Only Existing Facilities
- Proposed PRV
- Proposed NCV
- Proposed Water Main
- Upsized Pipeline
- New 600 Zone Pipeline
- New 560 Zone Pipeline

Existing Facilities

- PRV
- Pump Station
- Storage Facility
- Existing Water Main
- Parcels

Existing Pressure Zones Residual Pressure Drop

- 345 Zone
- 365 Zone (Segale)
- 490 Zone
- 560 Zone
- Proposed 600 Zone

Residual Pressure Drop

- Drop from 2.1 - 3.3 psi
- Drop from 10.9 - 15.3 psi

Figure X
 2034 MDD and Fire Flow Residual Pressure Drop After Decommissioning 6-inch Pipe Alternatives Analysis
 Highline Water District

Scale: 0, 250, 500 Feet

Carroll's

Project 18-4 McMicken Well Repair



In 2012, the District completed construction of the McMicken Well and Treatment Plant project. The initial well production was 500 gpm on a continuous basis; however, over time, production began to decline. In September 2017, production was 375 gpm. The District elected to have PumpTech, Inc., the pump supplier, to remove and diagnose any problems the pump and motor.

The pump removal process involves pulling the pump and pipe column from within the well by crane to the surface. Each 20-ft length of pipe connects to the next section by way of a threaded coupler. The pump and motor connect the last section of pipe approximately 300-ft below the surface. The contractor pulls the pump column up to the surface, 20 feet at a time, and secures the column at the coupler, before unthreading the top section of pipe above ground. The pump is the final component removed.

During the removal process by PumpTech, the piping separated at a joint coupling causing the pump and motor to drop into the bottom of the well. The piping exhibited extensive corrosion on the pipe and threads along with the presence of iron-oxidizing bacteria.

PumpTech removed the pump on November 6th. Once examined, the District can determine its condition and root cause of the failure. The preliminary indication for the pipe separation is the bacteria corroded the threads resulting in the pipe to detach from the coupler. The pump appears severely corroded and damaged. The manufacture will examine to determine if it is salvageable.

The District budgeted \$275,000 in 2018 for replacement of the pump, motor and piping with corrosion resistant materials. The well will be offline for a minimum of six months. Staff will need to retain a consultant to assist in the process.



SMALL WORKS / EMERGENCY PROJECTS

The Small Works / Emergency Projects budget is an allocation of funds set aside for capital projects not specifically identified during the budgeting process but arise during the year. It is typically used for smaller sized projects, such as a short main replacement in anticipation of a City driven overlay project. In addition, the District can also use the budgeted money to fix facilities that have immediate maintenance issues or improve system efficiency.

For 2017, the District has allocated \$350,000 for the Small Works budget. The District will continue to work with the local Cities to determine the replacement of water mains in conjunction with road improvement projects.

FUTURE UNSCHEDULED IMPROVEMENTS

Per the District's 2015 Comprehensive Plan Update, the following needs were assessed:

1. Source/Treatment: The District's contract with SPU satisfactorily addresses source of supply needs through 2060.

The District will continue to explore the feasibility of purchasing water from Lakehaven Utility District (LUD). LUD is a stakeholder in the Tacoma Public Utilities filtration plant that became operational in 2015. LUD has approximately 2.0 MGD excess water supply available for purchase. The District allocated funding under Project 14-2 to further study the source, perform a blending study and to make capital improvements to the system in anticipation of purchasing LUD water.

2. Storage: There are no significant short-term storage deficits. The City of Tukwila expressed interest in purchasing or leasing additional storage from Highline.
3. Distribution System: The District will continue to use its 2008 Asset Management Plan to use as a guide to create prioritization strategies for future projects to evaluate water mains that will soon begin to meet the end of their useful life and need to be replaced. The next scheduled update of the Asset Management Plan is 2019.

In 2012, staff discussed with the Board the goal to replace AC water mains within in the District over the next 30 years. The District will focus efforts replacing small diameter mains adjacent to sensitive/critical areas like steep slopes or wetlands. In addition, the District will work to replace mains identified in the comprehensive plan to improve fire suppression. The District will continue to work with Cities to replace water mains in consort with City projects to reduce costs.


MITIGATION IMPROVEMENTS FOR 2017

The District allocates funding for improvements to District facilities to ward against man-made and natural disasters. Improvements include security cameras and technologies, fencing, security software, access control devices and other types of security improvements. The budget for 2018 includes \$40,000 for mitigation improvements.

METERS, HYDRANTS AND SERVICES BUDGET

The Meter, Hydrants and Services budget is an allocation of funds used for new or replaced capital assets performed by District personnel. Typically, the assets are pipe, meters, hydrants and/or water services. For example, the budget would fund a small water main replacement project by District crews. The costs will be capitalized over the life of the asset. The budget is evaluated annually by reviewing the goals and objectives for the subsequent year and comparing the figures with the overall annual budget.

For 2018, the budget includes \$1,245,000 for the meters, hydrants, and services. The budget includes the replacement of approximately 25 hydrants, 50 water services, and three (3) small water main replacement projects for the field crew. In 2018, the budget also includes funding to replace approximately 6,000 small diameter meters across the District. The small diameter meter replacement is the second of a three year project. The District replaced approximately 5,000 meters in 2017. Please see the *2018 Goals and Objectives* document for more specific information on specific goals by the field crews for capital improvements.

Agenda Item No.: 5.2
Agenda Date: 12/20/17
Reviewed By: 

Subject: Adopt 2018 Capital Improvement Program

CATEGORY	
<i>Executive</i>	<input type="checkbox"/>
<i>Administrative</i>	<input type="checkbox"/>
<i>Engineering/Operations</i>	<input checked="" type="checkbox"/>

FINANCIAL			
<i>Expenditures?</i>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
<i>Budgeted?</i>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
<i>Amount: \$ _____</i>			
<i>Plus WSST</i>			

- Attachments**
1. Resolution #17-12-20B
 2. Exhibit A – 2018 Capital Improvement Program

COMMENTS:

Each year staff and the Commissioners review the needs of the District and establish a Capital Improvement Program (attached to the resolution as Exhibit A).

Staff recommends approval of this resolution.