

CHAPTER 4

EXISTING SYSTEM DATA

4.1 GENERAL

Valley View Sewer District serves approximately 8,600 connections, with a population of approximately 44,684 people and 19,460 employees within the District in 2020. These connections are served through a network of collector and interceptor lines ranging in size from 2 to 24 inches in diameter. There are approximately 134 miles of sanitary sewer lines and an estimated 39 miles of side sewers in the Valley View system and pipe materials include PVC (55%), concrete (15%), clay (16%), ductile iron (5%), HDPE (4%) and AC (3%). There are 11 primary drainage basins within Valley View Sewer District. These drainage basins have been determined based on topography as well as the actual facilities that serve each area. An additional 31 drainage sub-basins occur within the primary basins. Valley View currently maintains 16 pump stations and 1 dosing station to compensate for topography in the area and pump flows where gravity service cannot be provided.

The District does not own or maintain wastewater treatment facilities and instead relies on King County Wastewater Treatment Division (KCWWTD), Southwest Suburban Sewer District and Midway Sewer District for treatment and disposal of wastewater generated by the District's customers.

Detailed information regarding the primary features of the Valley View system is put forth in this Chapter and on the Comprehensive Plan Map included at the back of this document. Subsequent portions of the Plan identify the minimum design criteria used to evaluate the existing system, details of the system analysis and recommended system improvements.

4.2 DRAINAGE BASINS

The following provides a description of the primary drainage basins and sub-basins identified for Valley View Sewer District. Figure 4-1 provides an overview of the drainage basins within the District and is included on the Comprehensive Plan Map at the back of the document.

Drainage basins have been identified based on topography, direction of flow within the existing system, and the facilities to which the Valley View system discharges. Sanitary sewer drainage basins differ somewhat from the surface drainage basins identified by cities and King County for storm drainage purposes as described in Chapter 2. Sanitary sewer systems can provide greater flexibility due to the depth of the piping systems, and can encompass a larger area than surface water drainage basins. No attempt has been made to correlate the sanitary drainage basins of Valley View Sewer District with the surface water drainage basins of other jurisdictions.

The Valley View basins are primarily the same as the previous Sewer Plan Update in 2015. Minor changes to the sub basin boundaries in Val002, Val022, and Val018 are due to the sewer project on 152nd Ave that directs most of the Val022 basin to the Val002 basin through the new sewer main on 152nd rather than directing the flow to the north. And a shift of sub basin boundaries due to the failure of Peter Western Bridge.

A description of the primary basins and sub-basins within the Valley View area are presented below. Information regarding pumping facilities and connections to other systems for treatment/discharge is presented later in this Chapter.

4.2.1 McMicken Basin

The McMicken basin is located in the southeastern portion of the District. The area is generally bounded on the north by South 160th Street, on the west by 39th and 43rd Avenues South, on the east by the District's eastern boundary at Interstate Highway 5, and on the south by the District's southern boundary at South 182nd and 184th Streets. The McMicken basin includes the following King County sub-basins: VAL017, VAL019, VAL020 and VAL021.

Sub-basin VAL020, is in the northern portion of the McMicken basin and is served entirely by gravity flow to the north and east and discharges into the King County Wastewater Treatment Division system at two separate connections. Connections to the King County Wastewater Treatment Division system are located near the intersections of 51st Avenue South and South 160th Street, and State Route 518 and Interstate Highway 5.

Sub-basins VAL017 and VAL021 generally flow by gravity to Pump Station 2 (McMicken) where it is pumped through an 8-inch force main to sub-basin VAL020.

Sub-basin VAL019 is isolated by 2 steep ravines from the remainder of the basin. A dosing station and double siphon are located at approximately South 176th Street, adjacent to the Interstate 5 right-of-way, to facilitate flow across the ravines to Pump Station 2 (McMicken). A FEMA grant has been pursued to remove the dosing station and double siphon and connect into the Tukwila sewer system. The first attempt to obtain a grant was unsuccessful but pursuits in the future will be investigated.

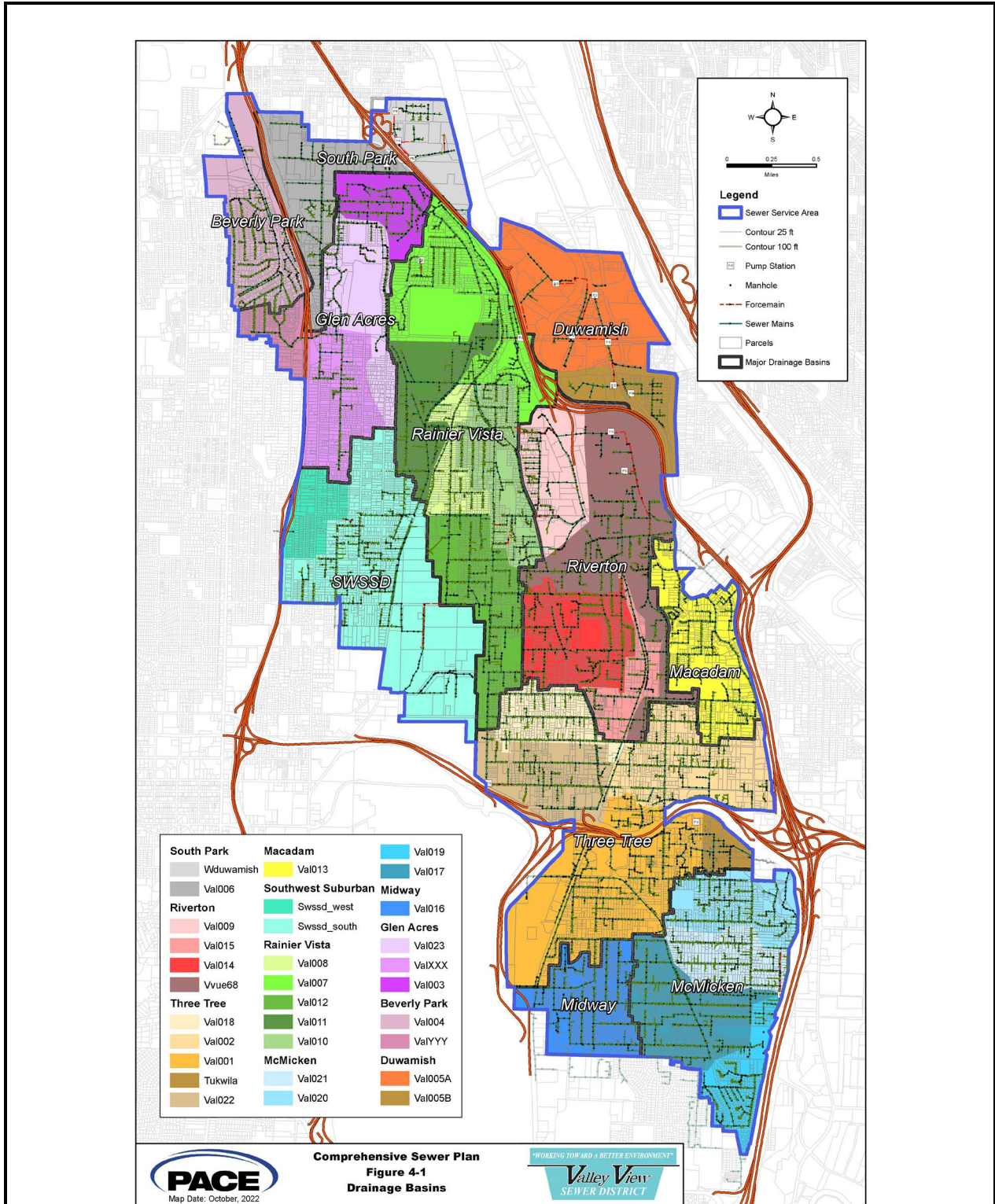


Figure 4-1

Drainage Basins

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4.2.2 Midway Basin

The Midway drainage basin is located in the southwestern portion of the District and is included in drainage sub-basin VAL016. The Midway basin is designated as such because wastewater flows generated in this area are directed to Midway Sewer District for treatment and disposal. The Midway basin currently flows by gravity to Midway Sewer District, and includes areas, which were previously part of the Three Tree basin. There are two connections to Midway Sewer District: one located at 172nd Street and Pacific Highway South; and, one located at approximately 2900 South 176th Street.

In order to maintain the possibility to increase the area draining to Midway Sewer District consistent with the basin boundary shown, the District has constructed an additional connection to the Midway system. This connection is located just east of Pacific Highway South and on South 170th Street. It is currently in place, but not in use. The basin boundary has been changed to reflect this connection. The VAL016 sub-basin area includes a small area to the north of the basin that actually drains to the Three Tree Basin.

4.2.3 Three Tree Basin

Valley View's Three Tree basin is located in the south central portion of the District. Sub-basins Tukwila, VAL001, VAL002, VAL018 and VAL022 are included in the Three Tree basin and flow by gravity to two connections to King County Wastewater Treatment Division located northwest of the intersection of State Route 518 and Interstate Highway 5. This basin, as represented herein, have been modified to reflect the construction of the sewer main within 152nd Ave South which diverts flow from VAL022 to VAL002 through 152nd Ave South.

Located in the Northeast area of the basin is a pump station that is owned and maintained by the District, however it is located on private property. The pump station services 4 of the properties in that area, whose residents opted to connect to public sewer.

The Tukwila Loop project was a considerable large sewer project that was funded through Ecology grants to provide sewer to an unsewered area within this Basin. The area is just south of SR 518 and west of Interstate 5.

Some areas within the Three Tree basin are still currently unsewered, one being north of the intersection of State Route 518 on the west side of Interstate 5. This unsewered areas is outside of the District's legal boundary and within the City of Tukwila. This area is, however, included in the District's service area because they could logically be served by an extension of the District's system. The District would only serve this unsewered areas if it is determined to be the best alternative and extension of service is agreed to by Tukwila. The District has tried to enter discussions about these unsewered areas with the City of Tukwila but there has been lack of response in order to move forward. The District is willing to provide service to these properties but with no response from the city, the property owners can be annexed by carrying a petition. Otherwise, these properties will continue to be unsewered unless response from the City occurs.

Specific improvements required for extension of service to unsewered areas and other system improvements within the Three Tree basin are discussed in further detail in Chapter 7 of this document. FOR the undeveloped areas in the eastern portion of this

basin, flow can go either way but will depend on the timing and location of the development.

4.2.4 Macadam Basin

The Macadam basin serves the eastern portion of the District and includes sub-basin VAL013. This basin is generally bounded on the north by South 130th Street; on the east by the District boundary and I-5; on the south by South 148th Street. The westerly boundary is generally along 45th Avenue South in the southerly portion and 40th and 42nd Avenue South in the northerly portion of the basin.

Flows from this basin are directed to the north and east through a series of 6 and 8-inch gravity lines. In 1995, the District abandoned the Macadam Road Pump (or Tukwila) Station, which was previously required for discharge into KCWWTD's Interurban Interceptor located at 13300 Interurban Avenue South. Abandoning the pump station was possible because King County Wastewater Treatment Division upgraded the Interceptor at a greater depth. This allows for gravity flow directly to the King County Wastewater Treatment Division system.

Service to unsewered areas in the Macadam basin will require the construction of several small extension projects to accommodate future development. Gravity service could be provided to this area; however, since the area is outside of the District's legal boundary and within the City of Tukwila, the District would provide service to the unsewered area only through an agreement with Tukwila. Similar to the properties within the Three Tree basin, the District has entered discussions with the City but has yet to hear a response. The District is willing to provide service to these properties but with no response from the city, the property owners can be annexed by carrying a petition. Otherwise, these properties will continue to be unsewered unless a response from the City occurs.

4.2.5 Riverton Basin

The Riverton basin is located in the central area of the District and includes sub-basins VAL009, VAL014, VAL015, and VAL068 and includes the original Valley View District. This basin is generally bounded on the north by State Route 599; on the east by 40th and 42nd Avenue South; on the south by South 148th Street; and on the west by Military Road South and 26th Avenue S. Service to this area is provided by a combination of gravity flow and pumping stations as further described below by individual drainage sub-basins.

The mains in this area are older and need to be assessed to understand the conditions of the pipes. Also, a large multi-family residential development is planned within this basin added to the flows of these older pipes.

Flows from the entire Riverton basin are directed through sub-basin VAL68. Facilities within sub-basin VAL68 all flow by gravity or pump station and include a network of 6 and 8-inch collector sewers and a 12 and 15-inch interceptor located on South 130th Street. This interceptor discharges to King County Wastewater Treatment Division through the District's primary connection to the regional system located at 42nd Avenue South and South 130th Street. This connection is referred to as the "Valley View" connection.

Sub-basin VAL009 is located in the northwest corner of the Riverton basin and serves an area, which was part of the Rainier Vista sewer system prior to merging into Valley View. It originally gravity fed to PS#17 and was then pumped west into the Rainier Vista Basin. However, pump station #17 has since been abandoned and VAL009 flows by gravity east to sub-basin VAL068. The sub-basin boundaries shown on the maps included in this document represent the realigned basins, which resulted from completion of the elimination of Pump Station # 17.

Sub-basin VAL68 includes the northeastern portion of the Riverton basin. Two pump stations, Pump Station Nos. 6 (Inco) and 7 (Metro) serve the area and direct flows southeasterly to South 130th and the Valley View connection. Pump Station No. 7 is located in the northern portion of the basin and takes flow from the area previously served by the recently abandoned Pump Station No. 17. Pump Station No. 7 also handles a small portion of the Metro South Flow and most of the flow from Metro South goes to Sta. No 6. Flows from this station are pumped south along East Marginal Way South and discharged into the force main from PS# 6 which continues south to S 130th. A 12-inch diameter gravity line carries flows along East Marginal Way South to Pump Station No. 6, which provides service to the remainder of the basin. Flows from Pump Station No. 6 are pumped through an 8-inch diameter force main located in East Marginal Way South and discharged to the gravity sewer in South 130th Street.

Sub-basins VAL014 and VAL015 are served by a network of 6 through 12-inch gravity lines which flow by gravity to sub-basin VAL68 and the previously discussed Valley View connection to King County Wastewater Treatment Division.

4.2.6 Duwamish Basin

The Duwamish basin is located in the northeastern most area of the District and generally includes the industrial areas along East Marginal Way South, West Marginal Way South and Pacific Highway South, as well as the area north of State Route 599 and south of the Duwamish River. The basin is bounded by State Route 599 on the south and west, and by the District boundary on the north and east. The Duwamish basin includes sub-basins VAL005A and VAL005B.

Drainage within the Duwamish basin is influenced by the Duwamish River, which bisects the basin into sub-basin VAL005A to the north and VAL005B to the south as well as the essentially flat topography of the area. Pump stations are required to accommodate service within this basin and flows are pumped to the District's connections to King County Wastewater Treatment Division located near the intersections of East Marginal Way South and the Boeing Access Road, and at South 112th Street and the Seattle Transmission Line right-of-way.

Flows from the western portion of the basin, which is west of the Duwamish River and east of West Marginal Way South, are transported across the Duwamish River through a new Ductile Iron force main under the river and is discharged directly to the King County transmission main and does not connect to the Pacific Highway Pump Station anymore. The Pump Station No. 11 is new and has a name change from Boeing to Oxbow and was shifted to the South to accommodate a new Amazon development. Pump Stations 8 (East Marginal), 9 (Pacific Highway), and 10 (Towing) serve that portion of the basin which is east of the Duwamish River.

The southern portion of the Duwamish basin is the sub-basin VAL005B and is the area located south of the Duwamish River and north of SR 599. The area east of East Marginal Way S. is an established residential area that has been recently sewered. The flows in this residential area gravity flow to Pump Station 17 (Duwamish) and are pumped to Pump Station 12 (Seagate). Service to the area west of East Marginal Way flows by gravity to Pump Station 12 which transports flows north across the river through a pipe hung on a bridge to the main portion of the basin.

4.2.7 South Park Basin

The South Park drainage basin is located in the northwestern portion of the District and includes the VAL 006 and Duwamish West sub-basins. The basin generally extends from SR 509 on the west to the Duwamish River on the east, and from the northern district boundary to a point along 8th avenue South in the western portion of the District extending to approximately South 112th St

Flows generated from sub-basin VAL006 customers are directed to the northeast, through Pump Station No. 14 (96th Street) to a connection with KCWWTD adjacent to the pump station.

The Duwamish West sub-basin includes the area along the westerly banks of the Duwamish River in the northern portion of the District. Wastewater from the basin flows southeasterly and is discharged to the King County Wastewater Treatment Division's system through the District's Pump Station No. 15 (Delta Marine) which is located near the intersection of South 96th Street and West Marginal Way. Pump Station No. 18 (Union Hall) is located in the northwestern corner of the West Duwamish basin and discharges through a force main to Pump Station No. 15. Three additional privately owned pump stations (Duwamish Manor, PSF and Yacht Club stations) serve the West Duwamish basin and are shown on the Plan Map included at the back of this document.

4.2.8 Beverly Park Basin

The Beverly Park basin contains drainage sub-basin VAL004. Flows from the area, which is in the northwestern portion of the District, are directed to the northwest and a connection to KCWWTD at 1st Avenue South and Meyers Way South. Pump Station No. 13 (Aqua Way) is located within sub-basin VAL004 and provides service to a small area of the basin, which is just west of State Route 509.

4.2.9 Glen Acres Basin

The Glen Acres basin contains sub-basin VAL003, VAL023, and VAL XXX and are sewered by a network of 8-inch collector sewers flowing to a 12-inch trunk line along South 99th Street and ultimately connecting to KCWWTD. The southern portion of sub-basin VAL023 is currently unsewered. Service to this area, which is generally south of South 112th Street, will be accomplished by construction of gravity lines flowing north into the existing Glen Acres basin's system.

The Glen Acres drainage basin extends from the District's western boundary and 8th Avenue S. on the west to 14th and 16th Avenues South on the east; and from South 99th Street on the north to South 124th Street on the south. The Glen Acres basin operates entirely by gravity and flows to the north, then east. Discharge to the King County

Wastewater Treatment Division system is through a manhole connection located near the intersection of 17th Place South and Pacific Highway South SR 99 in the northeastern portion of the basin.

Further discussion of future improvements in this basin is included in Chapter 7, however, the mains within this basin are generally on the older side and further investigation of improvements will be required.

4.2.10 Rainier Vista Basin

The Rainier Vista drainage basin is a large basin, which runs from north to south through the central portion of the District. Sub-basins VAL 007, VAL008, VAL010, VAL011, and VAL012 are all within the Rainier Vista basin. The basin is served by gravity to the north through a network of 6 and 8-inch collector sewers. Trunk lines along 20th Avenue South, Roseburg Avenue South, and 24th Avenue South range in size from 10 to 21-inches in diameter and carry flows north to a connection with the King County Wastewater Treatment Division system near the intersection of Des Moines Way South and 17th Place South. Pump Station 5 (Hilltop) serves an isolated area of low topography within the Rainier Vista basin. Two major sewer extensions (Hilltop and Military Road South) occurred since the last plan within basin Val010 and the new sewers are reflected on the maps.

On February 9, 2017 it was reported of severe erosion below the Peter Western bridge which is in the Val010 subbasin. It was revealed that two columns had been completely undermined and a third column was partially supported. The bridge was declared structurally deficient, and the City of Burien began to construct a replacement bridge. The District routed the sewer main that went across the bridge to the north into Val007 which change the sub basin boundaries by shifting a portion of the Val010 subbasin to the Val007 subbasin.

4.2.11 Southwest Suburban Basin

The Southwest Suburban basin is located in the southwestern portion of the District and generally extends from 14th ,18th and 23rd Avenues South in the east to the District boundary at State Route 509 on the west and from South 120th Street on the north to the District boundary on the south at about S. 146th Street. This basin is named such because flows from the area are directed to Southwest Suburban Sewer District for treatment and disposal in accordance with an interlocal agreement between the two agencies.

The Southwest Suburban basin includes drainage from sub-basins Southwest Suburban Sewer District (SWSSD) West and SWSSD South (formerly sub-basins 24 and 25; there are no corresponding King County sub-basins). The majority of the area in this basin is currently unsewered, although as discussed in Chapter 7, conceptual plans for sewerage the entire basin are being developed. Sub-basin SWSSD-West includes the northwestern portion of the Southwest Suburban basin is currently all unsewered. Once service is provided in this area, the effluent will flow westerly by gravity to a boring (South 129th Street and State Route 509 crossing) under State Route 509 south of South 128th Street and a connection to the Southwest Suburban Sewer District's 4th Avenue Interceptor on the west side of State Route 509. Five properties have been connected so far to the boring, with other residents engaged in discussions with the District about potentially

connecting. Sub-basin SWSSD-South flows to the south and is currently connected to the Southwest Suburban Sewer District through three separate connections. The locations of the three SWSSD connections are at 8th Avenue South and South 136th Street, 16th Avenue South and South 144th Street and S. 138th Street and 10th Avenue S.

The City of Burien is planning to improve 8th Ave from 128th to 136th and the District may participate in improving the sewer in this area.

4.3 PUMP STATIONS

Valley View Sewer District currently owns and operates 16 separate pump stations to compensate for the rolling topography of the area. Detailed information on the existing pump station is contained in Table 4-1. Analysis and recommendations concerning future pump station improvements is discussed in Chapter 7.

The District also owns the pump station located on the David Doll property along with four other E-One pumps in the loop project area.

4.4 WASTEWATER TREATMENT AND DISPOSAL

Valley View Sewer District does not own or operate a wastewater treatment facility and relies on the treatment and disposal facilities of other agencies. More than 90% of flows generated in the District are discharged into the King County Wastewater Treatment Division system for treatment and disposal. The remainder of flow from the District is discharged into either the Southwest Suburban Sewer District system or the Midway Sewer District system for treatment and disposal. The District maintains interlocal agreements with King County Wastewater Treatment Division, Southwest Suburban Sewer District, and Midway Sewer District to accomplish this and copies of these agreements are summarized in Chapter 2 and available at the District office for review. A summary of the District's connections to these other agencies is presented in Table 4-2.

TABLE 4-1: PUMP STATION CHARACTERISTICS

Sta.	Name/Address	Year	Manufacturer	Capacity (per Pump Design)	Estimated Retention Time (hr)	Elect.	Emergency Power	Primary & Secondary Basins/City
2	McMicken 17036 53rd Ave. S.	1996	Triangle Pump ABS Submersible	900 gpm 2 @ 33.5 HP	0.25 to 0.50	480V 3 Phase	Full Time Fixed Unit	McMicken/VAL021 & VAL017 Tukwila @SeaTac
3	24th Avenue 2400 S. 152nd St.	1981	Cornell/Ideal Duplex Wet Well Mounted	250 gpm 2 @ 15 HP	8 to 10	480V 3 Phase	Emergency Plug	Three Tree/VAL022 Tukwila & SeaTac
5	Hill Top 10432 17th Ave. S.	1996	Hydromatic Submersible Duplex	120 gpm 2 @ 5 HP	1 to 2	240V 1 Phase	Emergency Plug	Glen Acres/VAL007 King County & SeaTac
6	Inco 3702 S. 124th St.	1993	Meyers 4VHX150M4-43 Submersible Duplex	300 gpm 2 @ 15 HP	1	480V 3 Phase	Full Time Portable Unit	Riverton/VAL068 Tukwila
7	Metro 11911 E. Marginal Way	1999	Dakota Pump Duplex Wet Well Mounted	450 gpm 2 @ 33.5 HP	1	480V 3 phase	Full Time Fixed Unit	Riverton/VAL068 Tukwila
8	E. Marginal Way 11200 E. Marginal Way	1989	Cascade/Cornell Ideal Wet Well Mounted	200 gpm 2 @ 3 HP	1 to 2	240V 3 Phase	Full Time Fixed Unit	Duwamish/VAL005 Tukwila
9	Pacific Highway 11059 Tukwila Int. Blvd.	1988	Cascade Ideal Duplex ABS Submersible	520 gpm 2 @ 8 HP	0.5 to 1	240V 3 Phase	Fixed Unit Generator	Rainier Vista/VAL007 King County & SeaTac
10	Towing 10712 E. Marginal Way	1980	Cornell/Ideal Duplex Vacuum Lift	200 gpm 2 @ 3 HP	3 to 4	240V 3 Phase	Fixed Unit Generator	Duwamish/VAL005 Tukwila
11	Oxbow 10500 E. Marginal Way S	2021	Flygt Submersible Wet Well Mounted	425 gpm 2 @ 10 HP	0.5 to 1	480 3 Phase	Fixed Unit Generator	Duwamish/VAL005 Tukwila
12	Seagate 11600 E. Marginal Way	1990	Cascade Ideal Duplex ABS Submersible	200 gpm 2 @ 10 HP	1 to 2	240V 3 Phase	Full Time Potable Unit	Duwamish/VAL005B Tukwila
13	Aqua Way 10202 4th Ave. S.	1982	Duplex Submersible	200 gpm 2 @ 5 HP	2 to 3	480V 3 Phase	Full Time Fixed Unit	Beverly Park/VAL004 Seattle
14	96th Street 96th St. @ Des Moines Way	1996	Triangle Pump ABS Submersible	880 gpm 2 @ 9 HP	0.5	480V 3 Phase	Emergency Plug	Beverly Park/VAL006 King County
15	Delta Marine 1600 S. 96th Street	Rehab 2000	Duplex Submersible	200 gpm 2 @ 5 HP	2 to 3	240V 3 Phase	Full Time Fixed Unit	Duwamish-West King County
16	Union Hall S. 96th St. & 15th Ave. S.	Rehab 2000	Duplex Submersible	150 gpm 2 @ 3 HP	4 to 5	240V 3 Phase	Full Time Fixed Unit	Duwamish-West King County
17	Duwamish 3819 S. 117th St.	2002	Duplex Submersible	150 gpm 2 @ 5 HP	10 to 12	240V 3 Phase	Full Time Fixed Unit	Duwamish/VAL005B Tukwila
18	Freeway 11032 26th Ave. S.	1989	Aurora Pump Company	175 gpm 2 @ 10 HP	1.5 to 2	480V3 Phase	Full Time Fixed Unit	Rainier Vista/VAL007 King County

Table 4-2: Connections to Other Systems

Connection With	Approximate Location	Valley View		Into Pipe Size	Type
		Pipe Size	Drainage Basin		
KCWSTD	1st Avenue S. & Meyers Way	10-inch	Beverly Park	12-inch	Gravity
KCWSTD	S. 96th Street & Des Moines Way S.	8-inch FM	Beverly Park	36-inch	Pump Sta. 14
KCWSTD	S. 96th Street & W. Marginal Way	4-inch FM	W. Duwamish	30-inch	Pump Sta. 15
KCWSTD	East Marginal Way and S Boeing St.	6-inch FM	Duwamish	42-inch	Oxbow Pump Sta
KCWSTD	17th Pl. S. & W. Marginal Way	12-inch	Glen Acres	24-inch	Gravity
KCWSTD	W. of 17th Pl. S. & Des Moines Way S.	21-inch	Rainier Vista	24-inch	Gravity
KCWSTD	W. of Pacific Hwy. S. & E. Marginal Way	8-inch FM	Duwamish	42-inch	Pump Sta. 10
KCWSTD	S. 128th Street & 42nd Avenue S.	15-inch	Riverton	15-inch	Gravity
KCWSTD	Interurban Avenue S. & Gateway Dr.	12-inch	Macadam	12-inch	Gravity
KCWSTD	52nd Avenue S. & + Approx. S. 152nd Street	12-inch	Three Tree	24-inch	Gravity
KCWSTD	Renton Three Tree Rd. & 52nd Avenue S.	21-inch	Three Tree	24-inch	Gravity
KCWSTD	S. 160th Street & 51st Avenue S.	8-inch	McMicken	12-inch	Gravity
KCWSTD	N. of S. 160th Street @ Interstate 5	12-inch	McMicken	10-inch	Gravity
Midway	S. 176th Street & 38th Avenue S.	8-inch	Midway	8-inch	Gravity
Midway	S. 176th Street & 29th Avenue S.	8-inch	Midway	8-inch	Gravity
Midway	S. 171st Street & Pacific Hwy S.	8-inch	Midway	8-inch	Gravity
SWSSD	S. 144th Street & 16th Avenue S.	12-inch	SW Suburban	21-inch	Gravity
SWSSD	8th Avenue S. & S. 136th Street	8-inch	SW Suburban	8-inch	Gravity
SWSSD	7th Avenue S. & S. 136th Street	8-inch	SW Suburban	8-inch	Gravity
SWSSD	S. 129th Street W. of State Route 509	10-inch	SW Suburban	10-inch	Gravity (1998)