Exhibit A

Seattle Public Utilities
2015-2018 Northwest Wheeling Rate Study
Olympic View W&SD and Shoreline WD Wheeling Agreements

August 4, 2014

Summary

The Northwest Wheeling Rate is updated every five years as outlined in the Wheeling Agreements. This process updates 1) customer consumption, 2) operations and asset costs, and 3) the allocation of assets between wheeling and distribution functions. This document details these calculations behind the proposed 2014-2018 Wheeling rate of $0.07/ccf.

Northwest Wheeling Rate Background and Assumptions

1. The Wheeling Rate is based on the assets listed and shown in the attached Exhibits from the Wheeling Agreements.
2. All of the assets provide a wheeling function to all customers (retail and wholesale) in the pressure zone. Some of the assets also provide distribution functions to retail customers.
3. The allocations listed in the Exhibits are the allocation between transmission (wheeling) and distribution functions, not between wholesale and retail.
4. The Wheeling Agreements apply to Olympic View Stations 107, 108, 109, and 192 and Shoreline Stations 193 and 194.
5. The Wheeling Rate is updated every five years, and there is no provision for a true up in the interim. Instead, the agreements allow interim rate reviews if needed.
6. Rate reviews are conducted in consultation with Olympic View and Shoreline.

Demand

Section III.A.2 of the Wheeling Agreement states that the wheeling rate is calculated by dividing wheeling costs (described in detail in sections below) by the total amount of water delivered to Seattle's retail and wholesale customers through the Northwest Sub-regional system, calculated as an average of the three most recent years. Actual consumption for the last three years was:

	Total Consumption (ccf)
2010	2,129,973
2011	2,157,892
2012	2,430,412
Average	2,239,426

Exhibit A

Wheeling O&M Costs

Under section III.A.1.a of the Wheeling Agreements, operations and maintenance costs include two items:
1. the cost of power used at the pumping stations listed in Exhibit A, and
2. the proportionate share of extraordinary maintenance or repairs on items in Exhibit A in accordance with the allocation percentages listed.

Electricity Costs

Electricity costs are the actual 2010-2012 bills for the North City and Foy pump stations. To some degree, these bills underestimate the costs going forward, as electricity rates tend to increase over time.

Extraordinary Maintenance or Repairs

There has been no extraordinary maintenance or repairs that are not included in the capital projects below.

Wheeling Capital Costs

Capital costs are calculated on a utility basis, and consist of two components:
1. the annual depreciation expense for each asset, and
2. the product of the net book value of the asset and the rate of return on investment, which is defined as 1.5% plus Seattle's cost of debt as calculated at year end.

The wheeling agreements do not specify which year is to be used for the annual capital costs, so the future depreciation and net book value of the assets have been calculated for 2014-2018, and the wheeling rate is based on the average values over this rate period. For the average cost of debt, the most recent calculation is 4.6% as of 12/31/2012, making the rate of return 6.1%.

Assets in existence as of the last rate setting period

The assets in the table below are the Exhibit A assets that have been in place since the initial Agreement was created in 2003. Note that this is the entire cost for these assets, before application of wheeling allocation percentages in Exhibit A.

Exhibit A

Historic Exhibit A assets as of December 31, 2012

		Original Cost	Accumulated depreciation 12/31/2012	Net Book Value 12/31/2012	Depreciation Rate
Pipelines					
1a	N 185th St Feeder, 30" from North City PS to 24" (1b)	$ 182,764	$ 182,764	$ -	
1b	N 185th St Feeder, 24" from 30" (1a) to Aurora Ave N	9,897	8,577	1,320	2.0%
2	N 185th St Feeder, 20" from Aurora Ave N to Fremont Ave N	7,054	7,054	-	
3	Fremont Ave N Feeder, from N 185th St to N 205th St	28,262	28,262	-	
4	N 205th St Feeder, from Fremont Ave N to OVWSD services	125,291	95,397	29,894	2.0%
5	Aurora Ave N Feeder from 185th St to N 145th St	69,703	69,703	-	
6	Aurora Ave N Feeder	36,310	36,310	-	
7	N/NE 145th St Feeder (incl Foy PS suction line)	10,345	8,966	1,379	2.0%
Pump Stations					
1	**North City Pump Station**				
	Land	-	-	-	
	Bldg, Fixtures & Grounds	99,254	70,460	28,794	1.9%
	Equipment	60,028	60,028	-	
2	**Foy Pump Station**				
	Land	1,032	-	1,032	0.0%
	Bldg, Fixtures & Grounds	26,210	22,766	3,444	1.9%
	Equipment	442,849	371,305	71,544	4.0%
Tanks					
1	**Richmond Highlands Tanks**				
	Land	23,052	-	23,052	0.0%
	Bldg, Fixtures & Grounds	2,391	2,391	-	
	Equipment	3,220,233	1,137,220	2,083,013	1.5%
2	**Foy Standpipe**				
	Land	1,378	-	1,378	0.0%
	Bldg, Fixtures & Grounds	429	429	-	
	Equipment	29,575	29,575	-	

Depreciating them over 2013 to 2018 produces the following Depreciation and Net Book Values.

Exhibit A

2013-2018 Depreciation for Historic Exhibit A assets

			Rate Setting Period					Average Annual Depreciation 2014-2018
		2013 Depreciation	2014 Depreciation	2015 Depreciation	2016 Depreciation	2017 Depreciation	2018 Depreciation	
Pipelines								
1a	N 185th St Feeder, 30" from North City PS to 24" (1b)							
1b	N 185th St Feeder, 24" from 30" (1a) to Aurora Av	$ 198	$ 198	$ 198	$ 198	$ 198	$ 198	$ 198
2	N 185th St Feeder, 20" from Aurora Ave N to Fremont Ave N							
3	Fremont Ave N Feeder, from N 185th St to N 205th St							
4	N 205th St Feeder, from Fremont Ave N to OVWS	2,506	2,506	2,506	2,506	2,506	2,506	2,506
5	Aurora Ave N Feeder from 185th St to N 145th St							
6	Aurora Ave N Feeder							
7	N/NE 145th St Feeder (incl Foy PS suction line)	207	207	207	207	207	207	207
Pump Stations								
1	**North City Pump Station**							
	Land							
	Bldg, Fixtures & Grounds	1,920	1,920	1,920	1,920	1,920	1,920	1,920
	Equipment							
2	**Foy Pump Station**							
	Land	-	-	-	-	-	-	-
	Bldg, Fixtures & Grounds	492	492	492	492	492	492	492
	Equipment	17,886	17,886	17,886	17,886	-	-	10,732
Tanks								
1	**Richmond Highlands Tanks**							
	Land	-	-	-	-	-	-	-
	Bldg, Fixtures & Grounds							
	Equipment	47,703	47,703	47,703	47,703	47,703	47,703	47,703
2	**Foy Standpipe**							
	Land	-	-	-	-	-	-	-
	Bldg, Fixtures & Grounds							
	Equipment							

Exhibit A

2013-2018 Net Book Value for Historic Exhibit A assets

			Rate Setting Period					
		2013 Net Book Value	2014 Net Book Value	2015 Net Book Value	2016 Net Book Value	2017 Net Book Value	2018 Net Book Value	Average Net Book Value 2014-2018
Pipelines								
1a	N 185th St Feeder, 30" from North City PS to 24" (1b)							
1b	N 185th St Feeder, 24" from 30" (1a) to Aurora Ave	$ 1,122	$ 924	$ 726	$ 528	$ 330	$ 132	$ 528
2	N 185th St Feeder, 20" from Aurora Ave N to Fremont Ave N							
3	Fremont Ave N Feeder, from N 185th St to N 205th St							
4	N 205th St Feeder, from Fremont Ave N to OVWSI	27,388	24,882	22,377	19,871	17,365	14,859	19,871
5	Aurora Ave N Feeder from 185th St to N 145th St							
6	Aurora Ave N Feeder							
7	N/NE 145th St Feeder (incl Foy PS suction line)	1,172	966	759	552	345	138	552
Pump Stations								
1	**North City Pump Station**							
	Land							
	Bldg, Fixtures & Grounds	26,875	24,955	23,035	21,116	19,196	17,277	21,116
	Equipment							
2	**Foy Pump Station**							
	Land	1,032	1,032	1,032	1,032	1,032	1,032	1,032
	Bldg, Fixtures & Grounds	2,952	2,460	1,968	1,476	984	492	1,476
	Equipment	53,658	35,772	17,886	-	-	-	10,732
Tanks								
1	**Richmond Highlands Tanks**							
	Land	23,052	23,052	23,052	23,052	23,052	23,052	23,052
	Bldg, Fixtures & Grounds							
	Equipment	2,083,013	1,987,608	1,939,905	1,892,202	1,844,500	1,796,797	1,892,202
2	**Foy Standpipe**							
	Land	1,378	1,378	1,378	1,378	1,378	1,378	1,378
	Bldg, Fixtures & Grounds							
	Equipment							

Additions since the last rate setting period

Since the last rate study, significant work has been done at the Richmond Highlands tank site. Work included structural repairs and coating the larger (Tank #2) of the two tanks, and reconfiguring the piping system. No significant work was done to the smaller (Tank #1) of the two tanks. These projects closed to the asset schedule in 2012. Depreciation and Net Book Values are shown below for 2014-2018.

Richmond Highlands Tanks as of December 31, 2012

	Original Cost	Accumulated depreciation 12/31/2012	Net Book Value 12/31/2012	Depreciation Rate
Richmond Highlands Tank - Coating	$ 1,711,805	$ -	$ 1,711,805	5.0%
Richmond Highlands Tank Structural/Pipe/Valve	460,207	-	460,207	2.0%
Richmond Highlands Tank - SCADA	128,090	-	128,090	10.0%

Exhibit A

Depreciation for Richmond Highlands Tanks

		Rate Setting Period					Average Annual Depreciation 2014-2018
	2013 Depreciation	2014 Depreciation	2015 Depreciation	2016 Depreciation	2017 Depreciation	2018 Depreciation	
Richmond Highlands Tank - Coating	$ 85,590	$ 85,590	$ 85,590	$ 85,590	$ 85,590	$ 85,590	$ 85,590
Richmond Highlands Tank Structural/Pipe/Valve	9,204	9,204	9,204	9,204	9,204	9,204	9,204
Richmond Highlands Tank - SCADA	12,809	12,809	12,809	12,809	12,809	12,809	12,809

Net Book Value for Richmond Highlands Tanks

		Rate Setting Period					Average Net Book Value 2014-2018
	2013 Net Book Value	2014 Net Book Value	2015 Net Book Value	2016 Net Book Value	2017 Net Book Value	2018 Net Book Value	
Richmond Highlands Tank - Coating	$ 1,626,215	$ 1,540,625	$ 1,455,034	$ 1,369,444	$ 1,283,854	$ 1,198,264	$ 1,369,444
Richmond Highlands Tank Structural/Pipe/Valve	451,003	441,799	432,595	423,391	414,186	404,982	423,391
Richmond Highlands Tank - SCADA	115,281	102,472	89,663	76,854	64,045	51,236	76,854

There has also been considerable work around the Aurora Avenue N feeder (such as adding parallel distribution mains), but very little on the pipeline itself. The specific work on the feeder was to add valves to accommodate the distribution function of the system, so it is not included in the wheeling rate.

Northwest Sub-regional System Allocation

The work above determined total costs for the assets listed in Exhibit A, and this section examines the allocation of these assets to wheeling rather than distribution. This is not an allocation to wholesale; the wheeling portion is the capacity that serves all the customers who use the wheeling system, both wholesale and retail.

Pipelines

The allocation for pipelines is based on their dual use as transmission (wheeling) pipelines and distribution mains since there are individual customers attached directly to them. The actual percentage is based on the cost to install the pipes at their current diameter versus the cost to install 8" diameter pipes that would have been necessary for distribution only. This analysis was completed using 2000 installation costs per pipe diameter. No changes are being proposed to this allocation methodology, or the numbers in the pipeline section of Exhibit A of the Wheeling Agreements.

Exhibit A

The lengths and diameters of the pipelines are:

	Actual length of Pipe installed (feet)	Pipe Diameter						
		30"	24"	20"	16"	12"	8"	Total
1a	N 185th St Feeder, 30" from North City PS to 24" (1b)	5,846						5,846
1b	N 185th St Feeder, 24" from 30" (1a) to Aurora Ave N		287					287
2	N 185th St Feeder, 20" from Aurora Ave N to Fremont Ave N			1,314				1,314
3	Fremont Ave N Feeder, from N 185th St to N 205th St			5,182	99			5,281
4	N 205th St Feeder, from Fremont Ave N to OVWSD services				102	5,147		5,249
5	Aurora Ave N Feeder from 185th St to N 145th St		11,110			41		11,151
6	Aurora Ave N Feeder	731	4,843	17				5,591
7	N/NE 145th St Feeder (incl Foy PS suction line)		300					300
	Total	**6,577**	**16,540**	**6,513**	**201**	**5,188**		**35,019**

The cost to install pipelines of this diameter in 2000 would have been:

	As-if/Replacement cost for actual diameter	Pipe Diameter						
		30"	24"	20"	16"	12"	8"	Total
	As-if/Replacement cost per Lineal foot to install in 2000	$ 360	$ 280	$ 240	$ 200	$ 130	$ 100	
1a	N 185th St Feeder, 30" from North City PS to 24" (1b)	$ 2,104,560						$ 2,104,560
1b	N 185th St Feeder, 24" from 30" (1a) to Aurora Ave N		$ 80,360					$ 80,360
2	N 185th St Feeder, 20" from Aurora Ave N to Fremont Ave N			$ 315,360				$ 315,360
3	Fremont Ave N Feeder, from N 185th St to N 205th St			$ 1,243,680	$ 19,800			$ 1,263,480
4	N 205th St Feeder, from Fremont Ave N to OVWSD services				$ 20,400	$ 669,110		$ 689,510
5	Aurora Ave N Feeder from 185th St to N 145th St		$ 3,110,800			$ 5,330		$ 3,116,130
6	Aurora Ave N Feeder	$ 263,160	$ 1,356,040	$ 4,080				$ 1,623,280
7	N/NE 145th St Feeder (incl Foy PS suction line)		$ 84,000					$ 84,000

The cost to install 8" pipelines in 2000 would have been:

	As-if/Replacement cost using 8" pipe	Pipe Diameter						
		30"	24"	20"	16"	12"	8"	Total
	As-if/Replacement cost per Lineal foot to install in 2000	$ 360	$ 280	$ 240	$ 200	$ 130	$ 100	
1a	N 185th St Feeder, 30" from North City PS to 24" (1b)						$ 584,600	$ 584,600
1b	N 185th St Feeder, 24" from 30" (1a) to Aurora Ave N						$ 28,700	$ 28,700
2	N 185th St Feeder, 20" from Aurora Ave N to Fremont Ave N						$ 131,400	$ 131,400
3	Fremont Ave N Feeder, from N 185th St to N 205th St						$ 528,100	$ 528,100
4	N 205th St Feeder, from Fremont Ave N to OVWSD services						$ 524,900	$ 524,900
5	Aurora Ave N Feeder from 185th St to N 145th St						$ 1,115,100	$ 1,115,100
6	Aurora Ave N Feeder						$ 559,100	$ 559,100
7	N/NE 145th St Feeder (incl Foy PS suction line)						$ 30,000	$ 30,000

The allocation between distribution and wheeling functions is the ratio of these costs:

		Replacement cost for 8" pipe	Replacement cost for pipe as installed	Percentage for distribution only	NW Subregional System Allocation
1 & 2	N 185th St Feeder, 20", 24", and 30"	$ 744,700	$ 2,500,280	30%	70%
3	Fremont Ave N Feeder, from N 185th St to N 205th St	$ 528,100	$ 1,263,480	42%	58%
4	N 205th St Feeder, from Fremont Ave N to OVWSD services	$ 524,900	$ 689,510	76%	24%
5	Aurora Ave N Feeder from 185th St to N 145th St	$ 1,115,100	$ 3,116,130	36%	64%
6 & 7	Aurora Ave, 145th St Feeder, & Foy PS suction line	$ 589,100	$ 1,707,280	35%	65%

Exhibit A

Pump Stations
The pump stations are allocated at 100%, as all of the capacity is needed for transmission into the zone. For instance, even if the pipelines in the section above had actually been built as parallel separate pipes, the pump stations would be identical and would be needed "for the total amount of water delivered to Seattle's retail and wholesale customers through the Northwest Sub-regional System" (III.A.2.). No modifications are proposed to this allocation.

Tanks
The existing allocation considered the wheeling portion of the three tanks as the amount filled by the two largest of the five sub-regional pumps[1] running simultaneously for twenty minutes each hour, with the remainder as distribution storage. This type of system operation is unrealistic as it results in a 2.0 foot operating band in the tanks, and excessive pump on/off frequency. It is unclear what the presumed logic was behind such hypothetic system operation as historically established system operation uses a 12'-15' operating band in Richmond Highland's Tanks; however, a 10' band was used for SPU's 2013 Water System Plan so the smaller band has been used for the calculation. Also, the allocation needs to be updated as Seattle plans to decommission the Foy standpipe and Richmond Highland's Tank #1.

Updating the calculation for these conditions and then averaging the Highlands Tanks using their capacities results in the following allocations:

	Depth (ft)	Operating depth (ft)	Operating depth (%)	Capacity (MG)	Capacity (%)	Weighted Average (%)
Richmond Highlands Tk #1	25	-	0.0%	1.0	33%	0.0%
Richmond Highlands Tk #2	35	10	28.6%	2.0	67%	19.0%
Average						**19.0%**
Foy Standpipe	86	-	**0.0%**			

Calculation of Wheeling Rate

The following takes the flows, costs, and allocation above and develops the proposed wheeling rate of $0.07/ccf.

[1] There are three pumps at the Foy Pump Station, and two at the North City Pump Station

Exhibit A

		Average Annual Depreciation Expense	Average Year End Net Book Value	Utility Basis Cost @6.1%	Allocation Percentage to Wheeling	Wheeling Cost
Asset Costs						
Pipelines						
1a	N 185th St Feeder, 30" from North City PS to 24" (1b)	$ -	$ -	$ -	70%	$ -
1b	N 185th St Feeder, 24" from 30" (1a) to Aurora Ave N	198	528	230	70%	161
2	N 185th St Feeder, 20" from Aurora Ave N to Fremont Ave N	-	-	-	70%	-
3	Fremont Ave N Feeder, from N 185th St to N 205th St	-	-	-	58%	-
4	N 205th St Feeder, from Fremont Ave N to OVWSD services	2,506	19,871	3,718	24%	892
5	Aurora Ave N Feeder from 185th St to N 145th St	-	-	-	64%	-
6	Aurora Ave N Feeder	-	-	-	65%	-
7	N/NE 145th St Feeder (incl Foy PS suction line)	207	552	241	65%	156
Pump Stations						
1	North City Pump Station	1,920	21,116	3,208	100%	3,208
2	Foy Pump Station	11,224	13,240	12,031	100%	12,031
Tanks						
1	Richmond Highlands Tanks	155,306	3,784,943	386,188	19%	73,560
2	Foy Standpipe	-	1,378	84	0%	-
O&M Costs						
Electricity Costs for Pump Stations						75,154
Total Costs						$ 165,162
Flow in the NW Subregional System (3 year Average ccf)						2,239,426
Wheeling Rate						**$ 0.07**

Exhibit A

-EXISTING-

EXHIBIT A

NORTHWEST SUB-REGIONAL SYSTEM LIST OF ASSETS AND ALLOCATION

Pipelines	NW Sub-regional System Allocation
1. The N. 185 Street feeder, from North City Pump Station to Aurora Avenue N, 30-inch steel pipeline, 24-inch steel pipeline across I-5.	70%
2. The N. 185 Street feeder, from Aurora Avenue N to Fremont Avenue N, 20-inch steel pipeline.	70%
3. The Fremont Avenue N Feeder, from N 185 Street to N 205th Street, 20-inch steel pipeline.	58%
4. The N 205 Street Feeder, from Fremont Avenue N to Olympic View services, 12-inch ductile iron pipeline.	24%
5. The Aurora Avenue N feeder, from N 185 Street to N 145 Street, 24-inch steel pipeline.	64%
6. The N/NE 145 Street Feeder, from Foy Pump Station to Foy Standpipe connections near Dayton Avenue N, 24-inch steel pipeline.	65%
7. Foy Pump Station suction line in NE 145 Street from Foy Pump Station to 8th Avenue NE, including connections to the 550 pipeline and to the 430 zone.	65%
Pump Stations	
1. North City Pump Station, including the suction line from the pump station to the 66-inch pipeline, and the pump station bypass from the 66-inch pipeline to the pump station discharge.	100%
2. Foy Pump Station, including the 12-inch bypass between the suction and discharge lines.	100%
Tanks	
1. Richmond Highlands Tanks, and all associated appurtenances and connections to the 590 zone.	7.7%
2. Foy Standpipe, including its connections to the N 145 Street feeder, altitude valve, overflow, and drain.	5.6%

Exhibit A

-REVISED -

EXHIBIT A

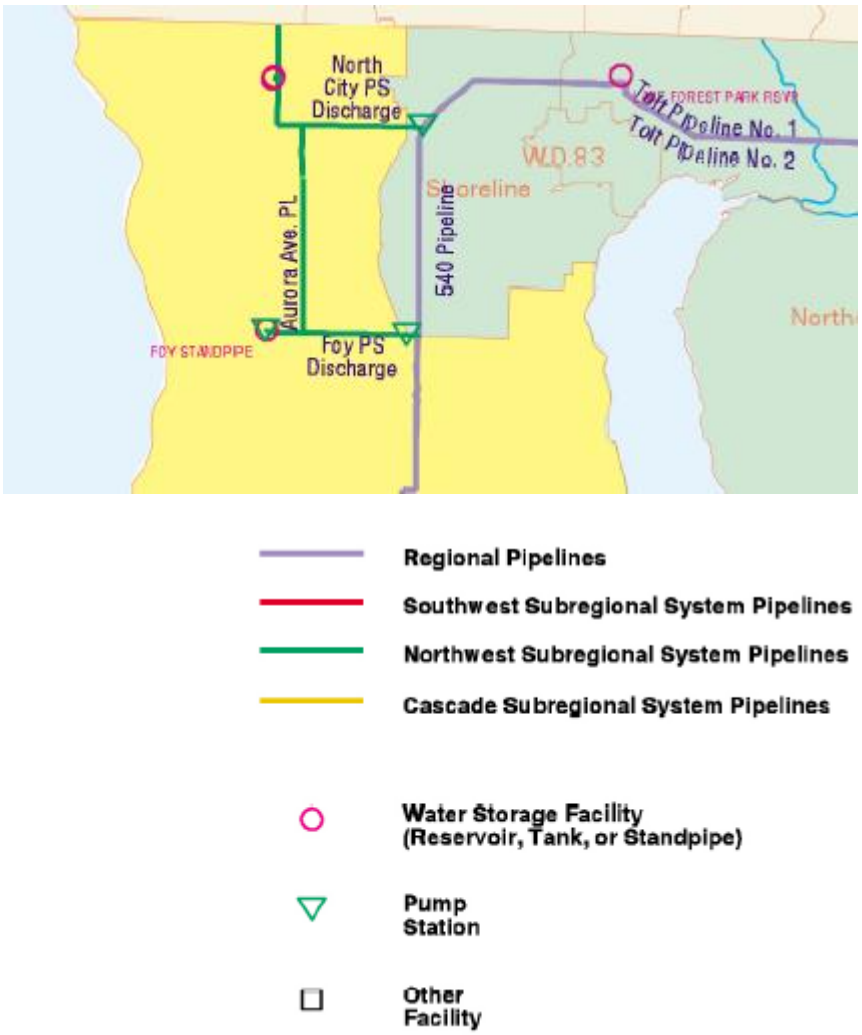
NORTHWEST SUB-REGIONAL SYSTEM LIST OF ASSETS AND ALLOCATION

Pipelines	NW Sub-regional System Allocation
1. The N. 185 Street feeder, from North City Pump Station to Aurora Avenue N, 30-inch steel pipeline, 24-inch steel pipeline across I-5.	70%
2. The N. 185 Street feeder, from Aurora Avenue N to Fremont Avenue N, 20-inch steel pipeline.	70%
3. The Fremont Avenue N Feeder, from N 185 Street to N 205th Street, 20-inch steel pipeline.	58%
4. The N 205 Street Feeder, from Fremont Avenue N to Olympic View services, 12-inch ductile iron pipeline.	24%
5. The Aurora Avenue N feeder, from N 185 Street to N 145 Street, 24-inch steel pipeline.	64%
6. The N/NE 145 Street Feeder, from Foy Pump Station to Foy Standpipe connections near Dayton Avenue N, 24-inch steel pipeline.	65%
7. Foy Pump Station suction line in NE 145 Street from Foy Pump Station to 8th Avenue NE, including connections to the 550 pipeline and to the 430 zone.	65%
Pump Stations	
1. North City Pump Station, including the suction line from the pump station to the 66-inch pipeline, and the pump station bypass from the 66-inch pipeline to the pump station discharge.	100%
2. Foy Pump Station, including the 12-inch bypass between the suction and discharge lines.	100%
Tanks	
1. Richmond Highlands Tanks, and all associated appurtenances and connections to the 590 zone.	19.0%
1. Foy Standpipe, including its connections to the N 145 Street feeder, altitude valve, overflow, and drain.	0.0%

Exhibit A

EXHIBIT B

NORTHWEST SUB-REGIONAL SYSTEM MAP



The Pump Station shown near the Foy Standpipe is not a NW Sub-regional asset