

**Southwood Park Water District**  
PRELIMINARY CIP Planning - Alternatives Analysis

## **Overview**

Southwood Park Water District (SPWD, the District) asked SDAO Consulting Services to conduct a preliminary review of alternatives for the District's Capital Improvement Program (CIP). Specific questions to considered in this analysis:

1. Are the costs of the CIP projects identified in 2010 still valid?
2. Would it be possible to phase in CIP projects over time to limit near-term rate impacts?
3. What are the potential rate impacts of the proposed projects?
4. Are there financing options available and how might loans be used to help limit rate impacts?
5. How would SPWD's resulting rates compare with other water providers in the region?

## **Summary of Analysis and Observations**

The SPWD Board Chair provided SDAO Consulting Services with extensive background material including: Background Information (December 2018), Infrastructure Rate Review email (April 30, 2019), correspondence from Highland Water (April 30, 2019), Capital Improvement Plan (TVWD, October 2010), and budget documents for the 2019-20 fiscal year.

Based on this information, SDAO Consulting Services updated cost estimates for the CIP project list using published inflation rates from 2010 to 2020. In addition, five CIP implementation scenarios were developed, with project costs spread over a five-year planning horizon. Costs were compiled, and annual debt service costs were estimated for assumed loans in an amount approximately equal to the anticipated costs of each scenario (assumed term of 20 years and interest rate of 2.5%). A preliminary calculation of rate impacts was prepared for each scenario and resulting typical monthly bills were compared to other water providers in the Portland region based on available published data.

SDAO Consulting Services offers the following observations:

1. Other than replacing the well pump about 10 years ago, SPWD has made limited capital investments in renewal and replacement of water system assets since construction of the water system over 60 years ago. While SPWD's customers have realized the benefits of low rates for many years, SPWD's critical assets are at or near the end of their economic lives. Further, the SPWD distribution system may have potential deficiencies in available fire flow based on existing pipe sizes and fire hydrant spacing. In the absence of significant capital investments, the District faces a significant risk of failure of one or more critical water system assets within the next decade. Such failures may result in prolonged interruption of water service and/or unplanned costs for emergency repairs.

2. Significant rate increases – on the order of a doubling of current water rates – will be required to fund the needed capital improvements.
3. Low-interest loans are likely available to help fund the needed improvements; however, further planning and analysis will be required to identify a preferred capital plan, prepare a financial plan and prepare documentation needed to qualify for such funding. SPWD will also need to make significant near-term rate increases to qualify for a loan.
4. The resulting typical monthly water bills for SPWD customers would be comparable to several other water providers in the Portland region – particularly those water providers who have invested in ongoing renewal and replacement programs or have recently made significant capital investments.
5. In light of the significant capital investments the District is facing, SPWD is strongly encouraged to actively investigate possible consolidation and/or merger with another water provider. Such as consolidation will not avoid the need for capital investments – the acquiring system will likely require extensive updates to the SPWD system prior to consolidation – but consolidation will likely result in operating and maintenance cost savings that would help offset the rate impact of needed capital improvements.

### **Limitations of Analysis**

This analysis by SDAO Consulting Services is subject to the following:

1. This analysis is based on information furnished by SPWD and has not been further researched or verified.
2. Cost estimates are based on work published by TVWD in 2010; new cost estimates and/or further research into required improvements has not been prepared.
3. Cost analysis was limited to capital costs; further analysis of rate impacts resulting from changes in future operation and maintenance costs would be needed to prepare a comprehensive economic evaluation of the alternatives. For example, no attempt was made to quantify costs and savings of the following:
  - a. Reduced maintenance and repair costs to distribution piping that is replaced,
  - b. Reduced water leakage and associated reductions in non-revenue water,
  - c. Improved revenue recovery resulting from implementation of the proposed meter replacement program, and
  - d. Changes in operating costs for well operations versus purchased water.
4. SDAO Consulting Services does not provide engineering services and, as such, all findings and recommendations presented herein are subject to further analysis and verification.



## CIP Update & New Project List

10-yr Escalation Multiplier: 1.21

Project		Preliminary Cost Estimate (\$)	
No.	Description	2010 Plan	2020 Update
ELA (new)	Financial Plan / Master Plan / Legal		\$ 20,000
P1.a	Building Modifications	\$ 50,000	\$ 60,336
P3	Pump Station Piping	\$ 5,000	\$ 6,034
P4.a	SCADA Upgrades	\$ 3,600	\$ 4,344
P5	Backup Power Analysis (analysis only)	\$ 3,000	\$ 3,620
P6 (new)	Pump Replacement		\$ 40,000
✓ R0 (new)	Reservoir Cleaning		\$ 5,000
R1	Reservoir Structural Assessment (analysis only)	\$ 50,000	\$ 60,336
R2	Reservoir Options Planning (analysis only)	\$ 10,000	\$ 12,067
R3	Reservoir Lining - new interior coating	\$ 60,000	\$ 72,403
R4	Reservoir Coating - new exterior painting	\$ 200,000	\$ 241,344
R5	Property Line Adjustment	\$ 10,000	\$ 12,067
R6 (new)	Reservoir Structural Upgrades		\$ 350,000
S1	Portland Connection Upgrade (existing 2")	\$ 50,000	\$ 60,336
S2	Portland Connection (new 6")	\$ 125,000	\$ 150,840
S3	Water Softening	\$ 380,000	\$ 458,554
D1	New Pipe on SW Pamela between 63rd & 64th	\$ 24,000	\$ 28,961
D2	Repair Broken Valve at SW 62nd & 63rd	\$ 3,500	\$ 4,224
D3	Repair Broken Valve at SW 62nd & Southwood	\$ 3,500	\$ 4,224
D4	Repair Broken Valve at SW 63rd & 63rd Place	\$ 3,500	\$ 4,224
D5	Locate & Repair Valve at SW 61st & 62nd	\$ 3,500	\$ 4,224
D6	Repair Leaking Valve at SW 61st & 62nd	\$ 3,500	\$ 4,224
U1	Install New Pipe Sw 62nd & Southwood	\$ 15,000	\$ 18,101
U2	Install 4 Fire Hydrants	\$ 16,000	\$ 19,308
Replace	Replace Distribution System	\$ 1,622,000	\$ 1,957,300
M1	Replace Plastic Service Lines (include new meters)	\$ 443,000	\$ 534,577
M2	Install Residential Regulators	\$ 28,000	\$ 33,788

## Summary of Planning Scenarios

Scenarios	Features & Improvements													Other / Notes
	Financial, Engr & Legal	Tank Struct Analysis	Maintain Tank	Maintain Well & Pump	Maintain Bldg	Dist Syst Maint	Dist Syst Replace	Tank Struct U/G	PDX Vault U/G	New PDX Connect	Meters & Services	PR V's	Water Softening	
Scenario 1 - Do Nothing														High potential for critical system failure within 10 years
Scenario 2 - Maintain existing assets; stay on well, no tank upgrades, no softening	✓	✓	✓	✓	✓	✓			✓		✓			Best case 'as is' scenario; existing operating cost
Scenario 3 - Maintain existing assets; stay on well but tank upgrades required in 5 years, no softening	✓	✓		✓	✓	✓		✓	✓		✓			Tank upgrade; existing operating cost
Scenario 4 - Maintain existing distribution assets; convert to Portland supply, maintain tank but not well		✓	✓	✓							✓	✓		Changes in operating cost of wells vs purchased water; must verify compatibility of AC pipe w/ PDX water
Scenario 5 - Replace distribution system; convert to Portland supply, maintain tank but not well	✓		✓				✓				✓	✓		Replace distribution system; assume DI pipe but lower cost options may be viable.
Scenario 6 - Consolidate with other district	✓		✓											Projects & costs will depend on consolidation agreement

### Helpful Comparisons

- 1 vs any scenario: do nothing vs system investments
- 2 vs 3: effect of tank upgrade
- 2 vs 4: effect of moving to Portland supply
- 4 vs 5: effect of replacing distribution system



**Scenario 2 - Maintain existing assets; stay on well, no tank upgrades, no softening**

No.	Project Description	2020 Cost (\$)
ELA (new)	Financial Plan / Master Plan / Legal	\$ 20,000
P1.a	Building Modifications	\$ 60,336
P3	Pump Station Piping	\$ 6,034
P4.a	SCADA Upgrades	\$ 4,344
P5	Backup Power Analysis (analysis only)	\$ 3,620
P6 (new)	Pump Replacement	\$ 40,000
R0 (new)	Reservoir Cleaning	\$ 5,000
R1	Reservoir Structural Assessment (analysis only)	\$ 60,336
R2	Reservoir Options Planning (analysis only)	\$ 12,067
R3	Reservoir Lining - new interior coating	\$ 72,403
R4	Reservoir Coating - new exterior painting	\$ 241,344
R5	Property Line Adjustment	\$ 12,067
R6 (new)	Reservoir Structural Upgrades	\$ 350,000
S1	Portland Connection Upgrade (existing 2")	\$ 60,336
S2	Portland Connection (new 6")	\$ 150,840
S3	Water Softening	\$ 458,554
D1	New Pipe on SW Pamela between 63rd & 64th	\$ 28,961
D2	Repair Broken Valve at SW 62nd & 63rd	\$ 4,224
D3	Repair Broken Valve at SW 62nd & Southwood	\$ 4,224
D4	Repair Broken Valve at SW 63rd & 63rd Place	\$ 4,224
D5	Locate & Repair Valve at SW 61st & 62nd	\$ 4,224
D6	Repair Leaking Valve at SW 61st & 62nd	\$ 4,224
U1	Install New Pipe SW 62nd & Southwood	\$ 18,101
U2	Install 4 Fire Hydrants	\$ 19,308
Replace	Replace Distribution System	\$ 1,957,300
M1	Replace Plastic Service Lines (include new meters)	\$ 534,577
M2	Install Residential Regulators	\$ 33,788

	Five Year Plan					Total 5-yr Plan
	FY20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	
	\$ 20,000					
		\$ 60,336				
		\$ 6,034				
		\$ 4,344				
				\$ 40,000		
		\$ 5,000				
			\$ 60,336			
			\$ 12,067			
				\$ 72,403		
					\$ 241,344	
			\$ 12,067			
			\$ 60,336			
		\$ 28,961				
	\$ 4,224					
	\$ 4,224					
	\$ 4,224					
	\$ 4,224					
	\$ 4,224					
	\$ 18,101					
	\$ 19,308					
	\$ 106,915	\$ 106,915	\$ 106,915	\$ 106,915	\$ 106,915	
	\$ 148,033	\$ 248,999	\$ 251,722	\$ 219,319	\$ 348,259	\$ 1,216,332
	\$ 148,033	\$ 254,651	\$ 263,177	\$ 234,412	\$ 380,565	\$ 1,280,838
	\$ 163,000	\$ 280,000	\$ 289,000	\$ 258,000	\$ 419,000	\$ 1,409,000

Total by Year  
With Escalation  
Suggested Budget



**Scenario 3 - Maintain existing assets; stay on well but tank upgrades required in 5 years, no softening**

Project		2020 Cost (\$)
No.	Description	
ELA (new)	Financial Plan / Master Plan / Legal	\$ 20,000
P1.a	Building Modifications	\$ 60,336
P3	Pump Station Piping	\$ 6,034
P4.a	SCADA Upgrades	\$ 4,344
P5	Backup Power Analysis (analysis only)	\$ 3,620
P6 (new)	Pump Replacement	\$ 40,000
R0 (new)	Reservoir Cleaning	\$ 5,000
R1	Reservoir Structural Assessment (analysis only)	\$ 60,336
R2	Reservoir Options Planning (analysis only)	\$ 12,067
R3	Reservoir Lining - new interior coating	\$ 72,403
R4	Reservoir Coating - new exterior painting	\$ 241,344
R5	Property Line Adjustment	\$ 12,067
R6 (new)	Reservoir Structural Upgrades	\$ 350,000
S1	Portland Connection Upgrade (existing 2")	\$ 60,336
S2	Portland Connection (new 6")	\$ 150,840
S3	Water Softening	\$ 458,554
D1	New Pipe on SW Pamela between 63rd & 64th	\$ 28,961
D2	Repair Broken Valve at SW 62nd & 63rd	\$ 4,224
D3	Repair Broken Valve at SW 62nd & Southwood	\$ 4,224
D4	Repair Broken Valve at SW 63rd & 63rd Place	\$ 4,224
D5	Locate & Repair Valve at SW 61st & 62nd	\$ 4,224
D6	Repair Leaking Valve at SW 61st & 62nd	\$ 4,224
U1	Install New Pipe SW 62nd & Southwood	\$ 18,101
U2	Install 4 Fire Hydrants	\$ 19,308
Replace	Replace Distribution System	\$ 1,957,300
M1	Replace Plastic Service Lines (include new meters)	\$ 534,577
M2	Install Residential Regulators	\$ 33,788

Five Year Plan						Total 5-yr Plan
FY20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25		
\$ 20,000						
	\$ 60,336					
	\$ 6,034					
	\$ 4,344					
			\$ 40,000			
	\$ 5,000					
		\$ 60,336				
		\$ 12,067				
				\$ 72,403		
				\$ 241,344		
		\$ 12,067				
				\$ 350,000		
		\$ 60,336				
	\$ 28,961					
\$ 4,224						
\$ 4,224						
\$ 4,224						
\$ 4,224						
\$ 4,224						
	\$ 18,101					
	\$ 19,308					
\$ 106,915	\$ 106,915	\$ 106,915	\$ 106,915	\$ 106,915		
\$ 148,033	\$ 248,999	\$ 251,722	\$ 146,915	\$ 770,663	\$ 1,566,332	
\$ 148,033	\$ 254,651	\$ 263,177	\$ 157,026	\$ 842,151	\$ 1,665,039	
\$ 163,000	\$ 280,000	\$ 289,000	\$ 173,000	\$ 926,000	\$ 1,831,000	



**Scenario 4 - Maintain existing distribution assets, convert to Portland supply, maintain tank but not well**

Project		2020 Cost (\$)
No.	Description	
ELA (new)	Financial Plan / Master Plan / Legal	\$ 20,000
P1.a	Building Modifications	\$ 60,336
P3	Pump Station Piping	\$ 6,034
P4.a	SCADA Upgrades	\$ 4,344
P5	Backup Power Analysis (analysis only)	\$ 3,620
P6 (new)	Pump Replacement	\$ 40,000
R0 (new)	Reservoir Cleaning	\$ 5,000
R1	Reservoir Structural Assessment (analysis only)	\$ 60,336
R2	Reservoir Options Planning (analysis only)	\$ 12,067
R3	Reservoir Lining - new interior coating	\$ 72,403
R4	Reservoir Coating - new exterior painting	\$ 241,344
R5	Property Line Adjustment	\$ 12,067
R6 (new)	Reservoir Structural Upgrades	\$ 350,000
S1	Portland Connection Upgrade (existing 2")	\$ 60,336
S2	Portland Connection (new 6")	\$ 150,840
S3	Water Softening	\$ 458,554
D1	New Pipe on SW Pamela between 63rd & 64th	\$ 28,961
D2	Repair Broken Valve at SW 62nd & 63rd	\$ 4,224
D3	Repair Broken Valve at SW 62nd & Southwood	\$ 4,224
D4	Repair Broken Valve at SW 63rd & 63rd Place	\$ 4,224
D5	Locate & Repair Valve at SW 61st & 62nd	\$ 4,224
D6	Repair Leaking Valve at SW 61st & 62nd	\$ 4,224
U1	Install New Pipe Sw 62nd & Southwood	\$ 18,101
U2	Install 4 Fire Hydrants	\$ 19,308
Replace	Replace Distribution System	\$ 1,957,300
M1	Replace Plastic Service Lines (include new meters)	\$ 534,577
M2	Install Residential Regulators	\$ 33,788

Five Year Plan						Total 5-yr Plan
FY20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25		
\$ 20,000						
	\$ 5,000					
		\$ 60,336				
		\$ 12,067				
			\$ 72,403			
				\$ 241,344		
		\$ 12,067				
		\$ 150,840				
	\$ 28,961					
\$ 4,224						
\$ 4,224						
\$ 4,224						
\$ 4,224						
\$ 4,224						
	\$ 18,101					
	\$ 19,308					
\$ 106,915	\$ 106,915	\$ 106,915	\$ 106,915	\$ 106,915		
\$ 148,033	\$ 178,285	\$ 342,226	\$ 179,319	\$ 348,259	\$ 1,196,122	
\$ 148,033	\$ 182,332	\$ 357,799	\$ 191,660	\$ 380,565	\$ 1,260,389	
\$ 163,000	\$ 201,000	\$ 394,000	\$ 211,000	\$ 419,000	\$ 1,388,000	
Total by Year With Escalation						



## 4

[illegible]



## Loan Costs and New Bills

### Loan Costs

Term (yrs): 20

Interest Rate (%): 2.50%

Scenario	5-yr Capital	Loan Amount	Annual Debt Service (\$/yr)	Cost per Connection/yr
1	\$ -	0		
2	\$ 1,409,000	\$ 1,400,000	\$89,805.98	\$301.36
3	\$ 1,831,000	\$ 1,800,000	\$115,464.83	\$387.47
4	\$ 1,388,000	\$ 1,350,000	\$86,598.62	\$290.60
5	\$ 3,540,000	\$ 3,500,000	\$224,514.95	\$753.41
6				

*5th reserve  
monthly  
income*

### New Typical Bill by Scenario

Existing Typical Bill: \$ 320.47 Per Year

Scenario	Existing Bill (\$/yr)	New Debt (\$/yr)	Total Typical Bill (\$/yr)	Total Typical New Bill (\$/month)	Required Rate Increase (%)
1	\$ 320.47	\$ -	\$ 320.47	\$ 26.71	0%
2	\$ 320.47	\$ 301.36	\$ 621.83	\$ 51.82	94%
3	\$ 320.47	\$ 387.47	\$ 707.94	\$ 58.99	121%
4	\$ 320.47	\$ 290.60	\$ 611.07	\$ 50.92	91%
5	\$ 320.47	\$ 753.41	\$ 1,073.88	\$ 89.49	235%
6	\$ 320.47	\$ -	\$ 320.47	\$ 26.71	0%

## Comparison to Typical Monthly Bill of Other Water Providers

assumes 5/8" residential meter, based on 2018-19 rates

Jurisdiction	Typical Monthly Bill (\$/mo)
Raleigh	\$ 22.92
Rockwood	\$ 23.58
Tualatin	\$ 24.78
Troutdale	\$ 24.84
SPWD Existing	\$ 26.71
Oak Lodge	\$ 27.08
Hillsboro	\$ 32.12
Milwaukie	\$ 32.33
Gladstone	\$ 36.44
Sunrise	\$ 38.00
Portland	\$ 39.24
Forest Grove	\$ 40.41
Sandy	\$ 41.33
Beaverton	\$ 41.36
CRW	\$ 47.92
Gresham	\$ 47.92
Cornelius	\$ 49.62
SPWD Scenario 4	\$ 50.92
SPWD Scenario 2	\$ 51.82
TVWD	\$ 52.44
Lake Oswego	\$ 53.96
West Slope WD	\$ 54.40
Tigard	\$ 57.70
SPWD Scenario 3	\$ 58.99
SPWD Scenario 5	\$ 89.49