PUBLIC NOTICE

City of Madras

90-day Notice of System Development Charge Modification

The City of Madras hereby issues public notice, pursuant to ORS 223.304, of its intent to modify its Waste Water System Development Charge.

The portion of the report addressing the methodology and calculation of the proposed charges is attached. For a copy of the full document please visit our website at http://ci.madras.or.us

A public hearing to accept comments regarding the proposed modifications to the Waste Water System Development Charge will be held on December 11, 2018 at 7:00 p.m. in the Madras City Hall Council Chambers. If you wish to comment, but cannot attend the public hearing, please address written comments to the following address:

City of Madras
City Hall
125 SW E Street
Madras, OR 97741

Those wishing to offer written comments are asked to submit their comments on or before 4:00 p.m. on Monday, November 26, 2018 so that they can be included in the City Council packet for the meeting on December 11, 2018. Any comments received after that date will be reviewed and added the night of the public hearing.

Publish Date: August 8, 2018 (Madras Pioneer)

Posted at: Jefferson County Clerk's Office
U.S. Post Office
Madras City Hall

August 2, 2018

City of Madras

Wastewater System Development Charge Update

May 2018

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I.A. INTRODUCTION

Oregon Revised Statutes (ORS) 223.297 to 223.314 authorize local governments to establish system development charges (SDCs). These are one-time fees on new development paid at the time of development. SDCs are intended to recover a fair share of the cost of existing and planned facilities that provide capacity to serve future growth. In general, SDCs are calculated by adding together a reimbursement fee component and an improvement fee component, as defined by ORS 223.299.

Reimbursement Fee: A reimbursement fee is designed to recover "costs associated with capital improvements already constructed, or under construction when the fee is established, for which the local government determines that capacity exists." ORS 223.304(1) states, in part, that a reimbursement fee must be based on "the value of unused capacity available to future system users or the cost of existing facilities" and must account for prior contributions by existing users and any gifted or grant-funded facilities. The calculation must "promote the objective of future system users contributing no more than an equitable share to the cost of existing facilities." A reimbursement fee may be spent on any capital improvement related to the system for which it is being charged (whether cash-financed or debt-financed) and on the costs of compliance with Oregon's SDC law.

Improvement Fee: An improvement fee is designed to recover "costs associated with capital improvements to be constructed." ORS 223.304(2) states, in part, that an improvement fee must be calculated to include only the cost of projected capital improvements needed to increase system capacity for future users. In other words, the cost of planned projects that correct existing deficiencies or do not otherwise increase capacity for future users may not be included in the improvement fee calculation. An improvement fee may be spent only on capital improvements (or portions thereof) that increase the capacity of the system for which it is being charged (whether cash-financed or debt-financed) and on the costs of compliance with Oregon's SDC law.

Compliance Cost Recovery: ORS 223.307(5) also authorizes the expenditure of SDCs for "the costs of complying with the provisions of ORS 223.297 to 223.314, including the costs of developing system development charge methodologies and providing an annual accounting of system development charge expenditures." To avoid spending monies for compliance that might otherwise have been spent on growth-related projects, this report includes an estimate of compliance costs in the SDC calculation.

Figure 1. SDC Equation

Reimbursement Fee		Improvement Fee				
Eligible costs of available capacity in existing facilities / Units of growth (MCEs)	+	Eligible costs of capacity-increasing capital improvements / Units of growth (MCEs)	+	Pro-rata share of costs of complying with Oregon SDC law	=	SDC per MCE

I.B. CUSTOMER BASE

In order to calculate an SDC component, a numerator and a denominator must be developed. This section focuses on the denominator (i.e. the customer base). The denominator represents growth that can be served once the capital improvement plan has been executed. In other words, future customers. For the City of Madras wastewater service, the denominator will be developed in two steps:

- Determine future treatment plant capacity in million gallons per day (mgd). [Both the North and South treatment plants are included to determine total system capacity.]
- Calculate growth in mgd, from current, to treatment plant capacity.
- Convert million gallons per day into meter capacity equivalents. The City administers the SDC based on a customer's meter size, which corresponds to meter capacity equivalents (MCEs) depending on the size of the meter.

I.B.1. Capacity in Million Gallons per Day

After the execution of the capital plan identified in the utility's comprehensive plan, the wastewater utility is expected to have 1.65 mgd in treatment capacity. After removing the estimated existing City customer flows as well as the contractual amount allotted to the corrections facility, 0.927 mgd of capacity remains for future customers that have not yet connected to the system. Neither the North Plant's Phase 2 and 3 capacities (nor costs) are incorporated into this SDC.

Figure 2. Future Capacity in mgd

Future Capacity in Million Gallons per Day (mgd)	
Future Capacity (mgd)	
South Plant	1.150
North Plant	0.500
Total Future Capacity	1.650
Total Capacity with New CIP (mgd)	1.650
Less Existing Flows	(0.493)
Less Amount Reserved for Department of Corrections	(0.230)
Net Total Capacity for Future Growth	0.927

I.B.2. Capacity in Meter Capacity Equivalents (MCEs)

Now that the flow-related capacity has been determined, it must be converted into MCEs so that the charge calculation can align with how it is administered. To do this, the existing flows of 0.493 mgd will be compared to existing meter capacity equivalents within the utility. That will provide an estimate of mgd per MCE.

The City currently has 2,023 meters in the wastewater utility, comprised of customers served by two water systems—the City's water system and the Deschutes Valley Water District (DVWD). The six

inch meter serves the Department of Correction's Deer Ridge facility and is therefore excluded since the facilities entire contracted amount of 0.23 mgd has already been deducted from future capacity in **Figure 2** above.

Based on meter capacity equivalent ratios drawn from the American Water Works Association (AWWA) M1 Manual, each meter size has a corresponding number of meter capacity equivalents. Each number is based on the maximum safe flow capacity in gallons per minute, relative to a base 5/8 x 3/4 inch meter. By multiplying the MCE ratio and the number of meters in each size, 2,023 meters equates to 3,074 meter capacity equivalents.

Figure 3. Meters & Meter Capacity Equivalents

Meter Size	Meters in City Water System	Meters in DVWD Water System	Less: Department of Corrections	Total Meter Count	Meter Capacity Equivalent (MCE)	Number of MCEs
5/8"	883	935	-	1,818	1.00	1,818
1"	40	39	-	79	2.50	198
1.5"	16	1	-	17	5.00	85
2"	44	57	-	101	8.00	808
3"	3	3	-	6	17.50	105
4"	-	2	-	2	30.00	60
5"	-	-	-	-	62.50	-
6"	-	1	(1)	-	90.00	-
Total	**986**	**1,038**	**(1)**	**2,023**		**3,074**

By comparing existing flows with existing meter capacity equivalents, **Figure 4** shows that one MCE is equal to 0.000160 million gallons per day (0.493 mgd ÷ 3,074 MCEs). Additionally, it is estimated that 0.927 mgd of capacity will be available for new customers once the capital plan has been executed (as shown in **Figure 2**). By dividing 0.927 mgd by 0.000160, an additional 5,779 MCEs can be served by the new capacity.

Figure 4. Future MCEs Able to be Served

Meter Capacity Equivalents Served by Plant Expansion		
Existing Flows (mgd)	A	0.493
Existing MCEs	B	3,074
MGD per MCE	C = A ÷ B	0.000160
Capacity for Growth (mgd)	D	0.927
MGD per MCE	C	0.000160
Capacity for Growth MCEs	E = D ÷ C	**5,779**

I.C. REIMBURSEMENT FEE

The reimbursement fee's numerator is based on the original cost of the existing system's "unused capacity available to future system users." As shown in **Figure 5**, there is approximately 30% remaining capacity for future customers. The remaining 70% is assumed to be utilized by existing customers plus the capacity contractually reserved for the Deer Ridge facility.

Figure 5. Remaining Capacity in Existing Facilities

Treatment Plant Analysis	Existing Flows / Capacity
Peak Month Flows (mgd)	
Prison (contract capacity)	0.230
All Others (2016-17 Actuals)	0.493
Total Existing Flows + Contract Capacity	0.723
Existing Capacity (mgd)	
South Plant	0.540
North Plant	0.500
Total Capacity	1.040
% Remaining Capacity	**30%**

The total original cost of existing assets in the wastewater utility totals $32.4 million, with $10.7 million of that estimated to have been funded with grants. The remaining $21.7 million is assumed to be funded with utility resources. **Figure 6** shows that 30% of the utility-funded assets results in $6,624,457, which is eligible to be included in the reimbursement fee.

Figure 6. Net Reimbursement Cost Basis

Reimbursement Cost Basis					
Asset Category	Original Cost	Grants	Original Cost less Grants	% Available Capacity	Reimbursement Cost Fee Basis
Treatment	$ 27,909,455	$ 9,195,436	$ 18,714,020	30%	$ 5,704,177
Collection	$ 2,163,660	$ 915,107	$ 1,248,553	30%	$ 380,569
General	$ 2,360,881	$ 590,220	$ 1,770,661	30%	$ 539,711
Total	**$ 32,433,996**	**$ 10,700,762**	**$ 21,733,233**		**$ 6,624,457**

The calculated reimbursement fee is shown in **Figure 7**, which totals $586 after deducting unused reimbursement SDC fund balance and a pro-rata share of outstanding debt principal. Outstanding debt principal is deducted from the reimbursement fee cost basis because debt principal is paid for with ratepayer revenue. By deducting a pro-rata share of outstanding debt principal, the fee avoids double-charging for an asset included in the cost basis that may have been funded with debt.

Figure 7. Reimbursement Fee

Reimbursement Fee		
Cost of Net Unused Capacity	$	6,624,457
Less: Unused Reimbursement SDC Fund Balance	$	(35,686)
Less: Pro-Rata Share of Debt Principal (growth related)	$	(3,202,197)
Reimbursement Cost Basis	$	3,386,575
Estimated Capacity (MCEs)		5,779
Reimbursement Fee:		**$586**

I.D. Improvement Fees

This section summarizes the improvement fee cost basis and resulting fee. Planned project cost data was provided by City staff and the City's consulting engineering firm. The wastewater utility's 20-year capital improvement plan was evaluated to determine which projects (or portions thereof) provided additional capacity for future customers. The 20-year capital improvement plan identified $111,530,000 in projects (in 2017 dollars). To determine the net eligible costs, two types of costs were excluded:

- Projects not expected to be funded by the utility: $65,470,000
  - The bulk of the cost in this category consists of Phases 2 and 3 of the North Wastewater Treatment Plant and related collection system projects (e.g. North Area Parallel Sewer). These capacity expanding phases would only be constructed if a new, significant customer needed capacity. Per City direction, the cost share would be negotiated at that time. To be conservative, all of those costs are assumed to be ineligible at this time.
- Projects funded by the City utility that do not increase capacity: $21,083,447
  - These projects are funded by the City's wastewater utility, but do not provide additional capacity for future customers. An example of this type of project would be an 8" collection pipe replacing an existing 8" collection pipe. No additional capacity would be created.

Once these adjustments have been made, **$24,976,553** can be incorporated into the improvement fee calculation. A detailed, project-by-project list can be seen in the appendix.

Figure 8. Eligible Future Capital Costs

Summary of Capital Plan (in December 2017 dollars)	
Total Capital	$ 111,530,000
Less: Projects not funded by utility	(65,470,000)
Cost potentially Eligible for SDC	$ 46,060,000
Less: Non-Capacity Expanding Share	$ (21,083,447)
Capacity Expanding Costs Funded by City Utility	$ 24,976,553

The total of capacity expanding costs is further adjusted by the improvement SDC fund balance, resulting in a total eligible cost of $24,739,089. With a denominator of 5,779 MCEs, the resulting improvement fee equals $4,281.

Figure 9. Improvement Fee Calculation

Improvement Fee		
Capacity Expanding Projects	$	24,976,553
Less: Unused Improvement SDC Fund Balance	$	(237,464)
Improvement Fee Cost Basis	$	24,739,089
Estimated Capacity (MCEs)		5,779
Improvement Fee:		**$4,281**

I.E. ADJUSTMENTS

ORS 223.307(5) authorizes the expenditure of SDCs on "the costs of complying with the provisions of ORS 223.297 to 223.314, including the costs of developing system development charge methodologies and providing an annual accounting of system development charge expenditures." This SDC methodology assumes a compliance cost of 5.7 percent.

Figure 10. Administrative Adjustment for Compliance

Administrative Cost Recovery		
Net Annual Administrative Cost related to Wastewater SDC	$	2,000
Amortization of SDC Study Cost over 5 years (1):		2,310
Net Annual SDC Administrative Cost:	$	4,310
Projected Annual Number of New Connections		15.44
Annual Administrative Cost per Connection	$	279
Estimated Annual Proposed SDC Revenues before Admin. Cost	$	75,163
Admin. Cost / Total Annual SDC Revenues:		**5.7%**

NOTES:

(1)	Cost of:	$ 10,000	(Cost of FCS GROUP study)
	at:	5.0%	
	over:	5	years

The administrative adjustment is incorporated into the SDC by adding the $279 shown in Figure 10 to the reimbursement and improvement fees. The combined SDC totals $5,146, which is a decrease of $143 from the existing SDC of $5,289 (Figure 11).

Figure 11. Total System Development Charge

Total System Development Charge		
Reimbursement Fee		$586
Improvement Fee		$4,281
SDC Subtotal		$4,867
plus: Administrative Cost Recovery	**5.7%**	$279
TOTAL WASTEWATER SDC		**$5,146**
Existing SDC per MCE		$5,289
Change (%) - Calculated from Existing SDC		-3%
Change ($) - Calculated from Existing SDC		($143)

I.F. SUMMARY

SDCs are one-time fees imposed on new and increased development to recover the cost of system facilities needed to serve that growth. As discussed previously, an SDC can include three components: a reimbursement fee, an improvement fee, and a component for compliance cost recovery. The total calculated SDC is shown in **Figure 12**. For a basic 5/8 x 3/4 meter, the calculated SDC would be $5,146 instead of the existing SDC of $5,289.

Figure 12. SDC Schedule by Meter Size

Wastewater SDC Fee Schedule			
Meter Size	**MCEs per Size**	**Existing**	**Calculated**
5/8"	1.00	$5,289	$5,146
1"	2.50	$13,223	$12,864
1.5"	5.00	$26,445	$25,729
2"	8.00	$42,312	$41,166
3"	17.50	$92,558	$90,051
4"	30.00	$158,670	$154,373
5"	62.50	$330,563	$321,611
6"	90.00	$476,010	$463,120

We do not recommend any changes to the City's existing methodology related to multi-unit structures such as apartments or hotels. The following fee schedule would apply to multiple family residences and lodging facilities. The schedule maintains the existing assumed values of 0.71 MCEs per Multiple Family Residence unit and 0.74 MCEs per Lodging Facility unit.

Figure 13. SDC Fee Schedules for Multiple Family / Lodging Facilities

Wastewater SDC Fee Schedule			
	Assumed MCE per Unit	**SDC per 1.0 MCE**	**Total SDC per Unit**
Multiple Family Residences per Unit (i.e. Apartments)	0.71	$5,146	$3,654
Lodging Facility per Unit (i.e. Hotel)	0.74	$5,146	$3,808

I.G. INDEXING

Oregon law (ORS 223.304) also allows for the periodic indexing of system development charges for inflation, as long as the index used is:

> "(A) A relevant measurement of the average change in prices or costs over an identified time period for materials, labor, real property or a combination of the three;
>
> (B) Published by a recognized organization or agency that produces the index or data source for reasons that are independent of the system development charge methodology; and
>
> (C) Incorporated as part of the established methodology or identified and adopted in a separate ordinance, resolution or order."

We recommend that the City index its charges to the Engineering News Record 20-City Average Construction Cost Index, and adjust the charges annually as per that index. There is no comparable Oregon-specific index.

I.H. APPENDIX

Capital Project Costs, Funding Source, and Before/After Capacity

Improvement Fee Cost Basis Project Name	Total Value	Funding Source	Current Capacity	Future Capacity	Eligible Portion	Full CIP
Gravity Sewers						
Mountain View / Sky Ridge Sewer Extensions	$ 1,175,000	City Utility Fund	0.00	8.00	100%	$ 1,175,000
Jefferson Street / North Unit	$ 555,000	City Utility Fund	0.00	8.00	100%	$ 555,000
Bel Air / Herzberg Heights -- Grant Funded	$ 500,000	CIAC	0.00	8.00	100%	$ -
Bel Air / Herzberg Heights	$ 655,000	City Utility Fund	0.00	8.00	100%	$ 655,000
Hess Street Sewer	$ 350,000	City Utility Fund	0.00	8.00	100%	$ 350,000
Mill Street Sewer	$ 300,000	City Utility Fund	0.00	8.00	100%	$ 300,000
North Y Sewer Replacement	$ 880,000	City Utility Fund	8.00	12.00	56%	$ 488,889
Culver Hwy, Parallel Sewer	$ 760,000	City Utility Fund	0.00	10.00	100%	$ 760,000
Juniper Heights Sewer Extension	$ 1,400,000	City Utility Fund	0.00	8.00	100%	$ 1,400,000
Willow Creek North Sewer Extension	$ 565,000	City Utility Fund	0.00	8.00	100%	$ 565,000
Potential Sewers for Major Industrial Park Users						
North Area Parallel Sewer -- Airport Way	$ 940,000					
Pump Stations						
Influent Screen at "B" Street North PS – No expansion	$ 465,000	City Utility Fund	1.11	1.11	0%	$ -
Golf Course PS Replacement -- Expanded Capacity	$ 490,000	City Utility Fund	17.00	213.00	92%	$ 450,892
"B" Street North PS Renovation -- No expansion	$ 610,000	City Utility Fund	1.11	1.11	0%	$ -
"B" Street North & South Generator Set Replacement	$ 245,000	City Utility Fund	0.00	0.00	0%	$ -
South U.S. 97 PS Renovation -- No Expansion	$ 60,000	City Utility Fund	0.06	0.06	0%	$ -
"B" Street South PS Expansion & Renovation	$ 730,000	City Utility Fund	1.33	2.66	50%	$ 365,000
Demers PS Replacement -- Expanded Capacity	$ 1,790,000					
Demers Force Main Replacement -- 8" Pipe	$ 1,585,000					
Airport Area PS and Force Main	$ 2,340,000					
WWTPs & Effluent Recycling						
NWWTP Phase 1A Improvements	$ -	City Utility Fund	0.50	0.50	0%	$ -
Alternate NWWTP Phase 1A Improvements	$ 1,355,000	City Utility Fund	0.50	0.50	0%	$ -
SWWTP Biosolids Thickening System	$ 1,255,000	City Utility Fund	0.54	0.65	17%	$ 212,385
SWWTP Phase 1 Expansion/Renovation	$ 1,245,000	City Utility Fund	0.54	0.65	17%	$ 210,692
SWWTP Irrigation System Expansion	$ 515,000	City Utility Fund	0.00	0.65	100%	$ 515,000
NWWTP Phase 1B Improvements	$ 8,210,000	City Utility Fund	0.50	0.50	0%	$ -
NWWTP Phase 1 Land Acquisition & Irrigation System	$ 1,600,000	City Utility Fund	0.50	0.50	0%	$ -
SWWTP Phase 2 Expansion and Renovation	$ 10,025,000	City Utility Fund	0.65	1.15	43%	$ 4,358,696
SWWTP Phase 2 Effluent Storage Expansion	$ 9,200,000	City Utility Fund	0.00	0.50	100%	$ 9,200,000
SWWTP Phase 2 Farmland Acquisition & Irrigation System	$ 3,415,000	City Utility Fund	0.00	0.50	100%	$ 3,415,000
NWWTP Phase 2 Treatment Module w/aerated lagoons	$ 10,685,000					
NWWTP Phase 2 Effluent Storage Pond	$ 12,535,000					
NWWTP Phase 2 Farmland Acquisition & Irrigation System	$ 4,695,000					
NWWTP Phase 3 Treatment Module w/aerated lagoons	$ 12,490,000					
NWWTP Phase 3 Effluent Storage Pond	$ 12,535,000					
NWWTP Phase 3 Farmland Acquisition & Irrigation System	$ 5,375,000					
Total	**$ 111,530,000**					**$ 24,976,553**

CIAC means contributions in aid of construction—essentially NOT funded with Utility resources—be it grants or developer funded.

Current and Future capacity notes:

- Gravity sewer: size of pipe in inches
- Pump Stations: million gallons per day (mgd)
  - Golf Course PS Replacement project: Dwelling Units served before and after (17, 213 respectively)
- WWTP and Effluent Recycling: million gallons per day (mgd)

Existing System Flows (0.493 mgd)

Data from Harper Houf Peterson Righellis Inc. in May 2018.

Summary of Flow Data - North & South Combined (MGD)

2017	Flow Unit	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Mar-Oct w/o Aug
Total Avg Flow	(MGD)	0.616	0.589	0.569	0.569	0.558	0.573	0.586	0.627	0.587	0.582	0.570	0.588	0.575
Avg Prison Flow	(MGD)	0.081	0.083	0.079	0.082	0.072	0.072	0.072	0.076	0.071	0.070	0.074	0.086	0.074
Net Flow w/o Prison	(MGD)	0.536	0.506	0.489	0.487	0.486	0.501	0.514	0.552	0.515	0.512	0.496	0.502	0.501
2016	**Flow Unit**	**Jan.**	**Feb.**	**Mar.**	**Apr.**	**May**	**Jun.**	**Jul.**	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**	**Mar-Oct w/o Sept**
Total Avg Flow	(MGD)	0.526	0.523	0.518	0.526	0.557	0.555	0.560	0.549	0.503	0.555	0.538	0.576	0.546
Avg Prison Flow	(MGD)	0.047	0.059	0.058	0.059	0.062	0.062	0.063	0.062	0.061	0.061	ND [4]	ND [4]	0.061
Net Flow w/o Prison	(MGD)	0.478	0.464	0.460	0.467	0.495	0.493	0.497	0.487	0.442	0.494	---	---	0.485
2016-17 Net Flow	(MGD)	0.507	0.485	0.475	0.477	0.490	0.497	0.505	0.519	0.479	0.503			0.493
													Net Flow Per MCE (MGD)	0.000160
													(gpd)	160

Notes:
1. Exclude Winter months due to inflow from snowmelt (particularly high during winter of 2016-17)
2. Exclude August 2017 due to unusually high flows from visitors for eclipse.
3. Exclude September 2016 due to flow instrument failure.
4. No prison flow data available for November-December 2016.
5. Total MCE = 3,074

ODOC Contract Capacity (0.23 mgd)

Data from Harper Houf Peterson Righellis INC. in 2017.

WASTEWATER MASTER PLAN UPDATE **CITY OF MADRAS**

The plant headworks consist of influent screening and grit removal processes. The screenings and grit removed by these processes are disposed of at a landfill. The SBR process is an activated-sludge system that provides biological treatment. The filters remove suspended solids to reduce chlorine demand and prevent fouling of irrigation components. Because the City does not need to produce Class A effluent, chemicals are not added upstream of the filters to increase solids removal.

The SWWTP was designed to ultimately have three 0.5-MGD SBR modules and two of those modules have been built. But when the second module was added, the plant design was modified to treat more-highly concentrated WW from the prison. The design WW strength for the prison is three times the design strength for the City. As a result, the expansion increased the capacity to treat a higher organic loading, but did not significantly increase the flow capacity. Now the two SBR modules have a 0.54-MGD average design flow capacity rather than a 1.0-MGD capacity.

The agreement between the City and the ODOC stipulates that an average flow capacity of 0.23 MGD at the SWWTP is dedicated to serving the prison. Although the prison is not fully occupied, this study assumes it will be contributing the maximum allowed flow within five years to avoid reliance on capacity that is dedicated to the prison. This currently leaves the City with an available capacity of 0.31 MGD at the SWWTP.

North Plant Existing Design Capacity (0.50 mgd)

Data from Harper Houf Peterson Righellis INC. in 2017.

Table 2-3
Existing NWWTP Design Parameters and Components

1. Plant Influent Design Parameters	
Average Daily Flow:	0.50 MGD
Peak Hourly Flow:	1.35 MGD
Design Average BOD_5 Concentration:	200 mg/L
Design Average TSS Concentration:	215 mg/L
2. Biological (Oxidation) Process	
Process:	Partially-Aerated/Facultative Lagoon System
Total System Surface Area & Volume:	28 acres & 50 MG
Average Organic Surface Loading Rate:	30 lbs. BOD_5/acre/day
Primary Lagoon Aerators (each cell):	10 units @ 5.0 hp each (50 hp/cell)
3. Clarification/Filtration Process	
Process Capacity:	1.0 MGD Avg. Recycling Flow
Clarification Process:	Krofta SupraCell (SPC) Dissolved Air Flotation (DAF) Clarifier
Filtration Process (Not Used):	Krofta Sandfloat (SASF 20) Filter
4. Disinfection Process	
Disinfectant:	Sodium Hypochlorite Solution
Maximum Feed Rate:	170 gpd
5. Effluent Storage Pond	
Total Storage Volume:	79 MG
Design Storage Capacity:	Five Months @ 0.5 MGD Avg. Flow
6. Intermediate Lift & Effluent Irrigation Pumps	
No. of Pumps:	Two (one intermediate & one effluent)
Design Pump Capacity:	700 gpm each
7. Sludge Drying Beds	
No. of Beds:	24
Bed Dimensions:	24 ft. x 100 ft. x 12 in. Deep (each)

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South Plant Existing Design Capacity (0.54 mgd)

Data from Harper Houf Peterson Righellis INC. in 2017.

Table 2-4
Existing SWWTP Design Parameters and Components

1. Plant Influent Design Parameters	
Average Daily Flow:	0.54 MGD
Peak Hourly Flow:	1.33 MGD
Design Average BOD_5 Concentration:	465 mg/L
Design Average TSS Concentration:	465 mg/L
2. Headworks	
Influent Screening:	One Mechanically-Cleaned Fine Screen
Design Screen Capacity:	4.0 MGD
Grit Removal Process	One Low-Energy Vortex Circular Chamber
Design Grit Removal Capacity:	2.5 MGD
3. Biological (Oxidation) Process	
Process:	SBR, Activated-Sludge System
No. of SBR Basins:	Two
Design Effluent BOD_5 Concentration:	10 mg/L
Design Organic Loading Rate:	0.5 lbs. BOD_5/lb. MLSS @ 4,500 mg/L MLSS
Design Oxygen Requirements:	1.5 lbs. O_2/lb. BOD_5 and 4.6 lbs. O_2/lb. TKN
4. Filter Process	
Process:	Cloth-Media Disk Filter
Peak Process Capacity:	2.4 MGD
No. of Filter Disks:	Four
Design Effluent TSS Concentration:	5.0 mg/L
5. Disinfection Process	
Disinfectant:	Sodium Hypochlorite Solution
Maximum Feed Rate:	170 gpd
6. Biosolids Handling	
Stabilization Process:	Aerobic Digesters
No. of Digester Basins:	Three
Design Avg. Retention Time:	60 Days
Drying Process:	AC-Lined Sludge Drying Beds @ NWWTP
Biosolids Disposal:	Land Application of Class B Biosolids
7. Storage Ponds	
Lower Pond Volume:	25 MG (Onsite SBR Effluent Storage)
Upper Pond Volume:	88 MG (Remote Site)
Design Storage Capacity:	Five Months @ 0.54 MGD Avg. Flow
8. Effluent Pumps	
No. of Pumps:	Two
Design Pump Capacity:	1,050 gpm each

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Future South (1.15 mgd) and North Plant (0.50 mgd) Capacities

It is assumed that the South Plant will have a future capacity of 1.15 mgd once the plan is completed.

> The evaluation assumes the SWWTP will be expanded in two phases as described in Chapter 5 to provide a design capacity of 1.15 MGD. These SWWTP expansions would provide flexibility both in freeing up capacity at the NWWTP for industrial developments and accommodating gravity service to east-side developments in the Main Collection System. Plus, this would take advantage of the existing SWWTP design to accommodate such expansions resulting in capital savings relative to an entire new 0.5-MGD treatment facility at the NWWTP.
>
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It is assumed that the North Plant will have a future capacity of 0.50 when the plan is completed—the same as the existing capacity. This does not include the Phase 2 or Phase 3, which are entirely excluded from the SDC calculation.

B. North WWTP Upgrades				
1. Phase 1 Retrofit to Maintain 0.5 MGD Capacity	10-12	0.50	0.50	$10,180,000
2. Phase 2 Retrofit for 0.5 MGD Expansion (to 1.0 MGD)	(2)	0.50	1.00	$10,740,000
3. Construct Effluent Storage for 0.5 MGD Expansion	(2)	0.50	1.00	$12,137,000
4. Phase 3 — Construct 0.5-MGD Module (Expand to 1.5 MGD)	(2)	--	1.5	$12,333,000
5. Effluent Storage Ponds for Expansion to 1.5 MGD	(2)	--	1.5	$12,137,000