

## City of Manzanita

### WATER SYSTEM CAPITAL IMPROVEMENT PLAN AND SYSTEM DEVELOPMENT CHARGE METHODOLOGY UPDATE

June 2010

#### I. OVERVIEW

In December of 1995 the City of Manzanita prepared a Water System Capital Improvement Plan (CIP) and Methodology for the Water System Development Charges (SDC). This document was based on a 1990 Master Water Plan Study completed by Hanforth, Larson & Barrett. The City subsequently commissioned HGE, Inc. Engineers to prepare a Water System Master Plan, which expanded and updated the CIP, and was completed in 2006.

The purpose of this current work effort is to summarize the needed water system capital improvements in a new CIP and update the SDC methodology to reflect the CIP, acknowledge completed projects and incorporate revisions mandated by the implementing statutes.

The CIP and SDC methodology updates incorporate the requirements of ORS 223.297 through 223.314 and incorporate the text by reference. As allowed under ORS 223.304(8), the values used in this update are to be adjusted annually based on the change in the Engineering News Record (ENR) Construction Cost Index (CCI). For reference and future inflation adjustments, a value of 8,671 was used herein as the February 2010 ENR CCI.

Maintenance of the SDC methodology should include adjusting all capital improvement cost estimates, value of existing facilities and values of the credits for eligible public works projects, according to the increase in the ENR CCI. This should be completed annually by resolution of the Council.

#### II. SDC ORDINANCE & METHODOLOGY

The proposed SDC methodology is based on defining the current value of all existing improvements (Reimbursement Fee) and the estimated cost of all needed future improvements (Improvement Fee), and allocating these costs to all users, current and future equally, based on their proportional water use. The goal of this exercise is to establish an equitable charge to be assessed to new connections that is equal to the cost of their proportionate impact to the water system.

## DRAFT FOR PUBLIC HEARING

In that SDC's are collected with building permits which are not based on population, the unit of measure for allocating SDC costs is defined as the water demand from a typical single family residential household, and is defined herein as an Equivalent Dwelling Unit (EDU).

There are several variables used in the methodology of cost allocation, with the most important being the Maximum Daily Demand (MDD) per EDU. To be conservative, the capacity of all water system components, excepting distribution, is based on its ability to meet the maximum daily demand. This assures that adequate resources are available at all times to serve the demand. As the observed maximum daily demands approach the system capacity, capital improvements should be undertaken to expand the system.

Peak Day Demand is difficult to identify due to the variation in rental service population. Based on full time city residents only (assuming no rental population, which understates the service population), the peak day demand equates to 554 gallons per capita or 1050 gpd per EDU at 1.84 residents per EDU. Based on the total number of residential units only (assuming each rental is filled, which overstates the service population), the peak day demand equates to 344 gpd/EDU or 190 gallons per capita per day. The correct figure is somewhere in between.

This SDC Update will use the average value of 450 gallons per capita per day and 850 gallons per EDU per day to project peak day demands. This maximum daily demand figure allows easy identification of capacities for existing source, treatment and storage facilities, each of which are sized on their ability to meet maximum day demands.

Residential fire protection systems are also becoming more prevalent and within a few years are anticipated to become required by code. Experience in sizing meters to serve residential sprinkler systems has indicated the typical 5/8" x 3/4" meter used in most municipalities cannot provide adequate flow to support residential fire sprinkler systems.

As a result, the meter size for residential fire sprinkler systems must be increased to accommodate the required fire flow, typically to a full 3/4" x 3/4". In that fire flow demands are very infrequent, the peak day demand for a home with a fire protection sprinkler system is deemed to be identical to a non-sprinkled home. As a result, if a residential unit utilizes a larger meter solely for the purpose of satisfying the sprinkler fire flow demands, then the same SDC fee will be charged as the typical 5/8" x 3/4" meter size.

Distribution system capacities are more difficult to define in terms of their ability to serve a maximum daily demand, and are limited typically by a geographical service area as opposed to population. As a result, cost allocations for distribution system improvements are based on the maximum day demand created by the number of housing units served at build-out of the Urban Growth Boundary (UGB). This is an equitable allocation in that the SDC eligible distribution system improvements as identified in the Water System Master Plan will provide water distribution throughout the entire UGB.

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An estimate can be made of the number of EDUs at build-out by review of the current population and land use densities for undeveloped property within the UGB. A Housing Needs Analysis was completed by Cogan Owens Cogan, LLC, dated February 25, 2008, which identified the remaining buildable lands within the Manzanita UGB based on inventories prepared in 2006. The following table summarizes the number of additional housing units inside the UGB:

### CITY OF MANZANITA EDU AT BUILDOUT OF THE UGB

Based on 2006 Land Inventory

Land Use/Zone Designation	Acres	EDU
R-2: Medium Density Residential	75.4	202
R-3: High Density residential	1.4	10
R-4: HDR/Limited Commercial	0.9	8
RMD: Residential Manufactured	20.9	71
SR-R: Residential/Recreational	60.2	132
C1: Commercial	7.1	11
TOTAL	165.9	434

The existing number of housing units in 2006 totaled approximately 1,517, giving a total EDU at build-out of the UGB estimated at 1,950. Associated maximum daily demand at build-out of the UGB is estimated to be of 1,660,000 gpd based on 850 gpd/EDU.

There are two components to the SDC cost allocations Reimbursement Fees and Improvements Fees. SDC Reimbursement Fees are designated by statute to be based on the “value” of existing system improvements allocated over the capacity of existing facilities. SDC Improvement Fees are based on the current “estimated cost” of needed system improvements and again allocated over the capacity of the future facility. Capacities of both reimbursement eligible components and improvements are stated in gallons per day (gpd) available to meet Maximum Day Demands of the 850 gpd/EDU established earlier.

### III. SDC GROWTH PROJECTIONS

The SDC calculations are based upon the value and capacity of existing and future facilities and are independent of any growth rate estimates. The collected fees will fund the cost of needed improvements or reimburse the existing users for excess capacity as demands are connected to the system, regardless of growth rates. In an accelerated growth period, fee collections will be accelerated which will permit improvements to be undertaken earlier. In a slow growth period, improvements can be postponed to coincide with actual demands and lower revenue collections.

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**IV. WATERLINE CONSTRUCTION CREDITS**

**Credit for Eligible Construction:**

ORS 223.304(4) requires that a method of credits be available for the construction of qualified public improvements. The statute further defines qualified public improvements as those ...”required as a condition of development approval, identified in the plan and list adopted pursuant to ORS 223.309 and either:

- (a) *Not located on or contiguous to property that is the subject of development approval; or*
- (b) *Located in whole or in part on or contiguous to property that is the subject of development approval and required to be built larger or with greater capacity than is necessary for the particular development project to which the improvement fee is related.”*

The credit for any qualified public improvement includes the cost of public works construction, select backfill within the street right-of-way and 30% for engineering, legal and contingency expenses. The following table documents the amount of credit to be awarded for construction of eligible improvements:

**CITY OF MANZANITA  
WATERLINE CONSTRUCTION CREDITS  
February 2010**

<b>LINE SIZE</b>	<b>4"</b>	<b>6"</b>	<b>8"</b>	<b>10"</b>
<b>CONSTRUCTION COST</b>	\$40/lf	\$44/lf	\$50/lf	\$60/lf
<b>UP-SIZING CREDIT</b>	\$40/lf	\$44/lf	\$5070/lf	\$60/lf
<b>OVERSIZE CREDIT</b>	\$0	\$4/lf	\$10/lf	\$20/lf

Eligible capital improvements may provide for Up-sizing credits and/or Oversizing Credits. Up-sizing credits are as referenced in item (a) above, and provide a credit for the entire cost of an off-site eligible public improvement when mandated to improve service or replace an existing line with a larger line size to serve future demands. Oversizing credits, as referenced in item (b) above, provide a credit only for the component of an eligible improvement which is sized greater than the base 4" diameter size required for all development. The base size of 4" is unusual; however, this diameter has been adopted by the City of Manzanita as the minimum required line size for the distribution system.

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If an up-sizing credit is provided for the cost of an eligible off-site public improvement, as mandated by the statute, then a site specific SDC Overlay allocation should be adopted by resolution to collect the value of the base 4" pipeline. The value of the offsite construction cost will then be covered by the regional SDC funds for the oversize component, if any, and by the Overlay allocation for the 4" pipeline costs. The resolution should specifically define the benefited properties and allocate the cost of the base 4" waterline only to the benefited properties. The methodology for an Overlay allocation is discussed below.

### **Credit for Pre-existing Use:**

A system development charge should be imposed on all new construction or when a change of use on a parcel increases the demand on the utility. In the event of a change of use, a credit is given for the system development charge calculated to apply to the pre-existing structure, to the extent that prior structure existed and services were established prior to the proposed change in use.

## **V. WATER SYSTEM CAPITAL IMPROVEMENT PLAN**

The capital improvements needed to support growth include improvements that will benefit the residents in the City of Manzanita, and in some cases, will also support a regional water system. The regional facilities will generally include source development and equalization storage and benefit a much larger area including the City of Wheeler, Zaddack Creek and Nehalem Bay State Park.

The City of Manzanita has the option of including regional improvements in the City's SDC to collect revenues to support the City's share of regional improvements. Including the regional improvements within the City's SDC structure is feasible and can provide a simple and equitable cost allocation. The mechanics of the SDC fee calculation simply divides the total cost of each project by the total capacity in EDUs. In the case of regional facilities, the costs will be allocated over the regional capacity; however, the City will only collect revenues from benefited users within the City. Collecting the City's share of regional projects in the City's SDC will assure the City has funding available to support their proportionate share of any regional facilities.

The following table lists all capital improvements as identified by the 2006 Water System Master Plan and City staff, with all estimated costs adjusted to the current February 2010 ENR CCI of 8,671, and ultimate total capacity stated in gallons per day. A description of each project can be found in the Master Plan document. This table is published to satisfy the requirements of ORS 223.309:

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**CITY OF MANZANITA**  
**WATER SYSTEM CAPITAL IMPROVEMENT PLAN**  
February 2010

No.	PROJECT DESCRIPTION	PROJECT PRIORITY	ELIGIBLE COST	ULTIMATE CAPACITY GPD	SDC COST PER GAL
<b>Source Development: Total Ultimate Source Capacity 2,640,000 gpd</b>					
	Well Upgrades	16-20 yrs	\$310,000	2,640,000	\$0.12
<b>Treatment System Improvements: Total Ultimate Treatment Capacity 1,000,000 gpd</b>					
	Water Equipment Building	1-5 yrs	\$80,000	1,000,000	0.08
	WTP (Populate Membranes)	6-10 yrs	200,000	1,000,000	0.20
	Well Treatment Systems	6-10 yrs	50,000	1,000,000	0.05
<b>Distribution System Improvements: MDD of UGB Build out is 1,660,000 gpd</b>					
	Dist. I Improvements (Projects 2,9,11,12 & 33)	1-20 yrs	\$640,000	1,660,000	0.39
	Dist. II Improvements (Projects 1, 3, 6-8, 13, 14, 17-19, 21 & 23-32)	1-20 yrs	660,000	1,660,000	0.40
	6" AC Main Replacement (Upsize 6,050 LF)	1-20 yrs	393,250	1,660,000	0.24
	8" AC Main Replacement (Upsize 3,330 LF)	1-20 yrs	233,100	1,660,000	0.14
	10" AC Main Replacement (Upsize 2,680 LF)	1-20 yrs	214,400	1,660,000	0.13
<b>Storage System Improvements: Capacity is 2.35 MG less 0.45 MG for fire storage.</b>					
	Res #1 Coating, 15k SF	1-5 yrs	70,000	1,900,000	0.04
	Res #3 Coating, 25k SF	16-20	125,000	1,900,000	0.06
<b>Regional Equalization Capacity: Estimated Regional MDD Equivalent 4 MGD</b>					
	0.5 MG Flow Equalization	1-5 yrs	1,000,000	4,000,000	0.25
<b>System Planning: Benefit to the entire UGB</b>					
	Planning & SDC Update	1-20 yrs	50,000	2,048,000	0.02

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	<b>TOTAL</b>	<b>\$4,025,750</b>		<b>TOTAL</b>	<b>\$2.12 / gal</b>
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**VI. SDC IMPROVEMENT FEE CALCULATION**

The Improvement Fee is intended to quantify the cost of needed improvements to serve future users. The fee calculation is equal to the maximum day demand per EDU times the SDC cost per gallon:

$$\text{SDC Cost per EDU} = (\text{Maximum Day Demand}) \times (\text{Cost per Gallon})$$

$$\text{SDC Cost per EDU} = (850 \text{ gallons/EDU}) \times (\$2.12/\text{gallon})$$

$$\text{Improvement Fee} = \mathbf{\$1,800 \text{ per EDU}}$$

**VII. SDC REIMBURSEMENT FEE ASSET SUMMARY**

The Reimbursement Fee is intended to quantify the value of existing capacity available to serve future demands. The following table lists the current value of each capital improvement completed to-date, based on actual costs adjusted to the February 2010 ENR Construction Cost Index of 8,671, or an estimated current value if actual costs are not available. The current value is then divided by the capacity of each existing facility to determine the cost per gallon.

**CITY OF MANZANITA  
WATER SYSTEM REIMBURSEMENT FEE  
ASSET SUMMARY & CAPACITY  
February 2010**

PROJECT DESCRIPTION	ORIGINAL VALUE (YR)	CURRENT VALUE NET GRANTS	CAPACITY GPD	SDC COST PER GAL
<b>Existing Source and Transmission Improvements*</b>				
Well Improvements (1 & 2) and Transmission Line	\$3,595,300 (03)	\$2,518,000	2,640,000	\$1.95
Anderson Creek Intake and Transmission lines	---	200,000	2,640,000	0.08

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Well Supply Booster Station (Project Schedule A)	\$126,600 (09)	127,800	2,640,000	0.05
Transmission WTP to Reser. (Project Sch B/ CIP #34)	\$272,500(09)	275,200	2,640,000	0.10
<b>Treatment System Improvements**</b>				
Water Treatment Plant	\$2,529,500 (03)	1,771,600	1,000,000	1.77
WTP Effluent Pumping (Project Schedule C)	\$14,000 (09)	115,100	1,000,000	0.11
<b>Distribution System Improvements*** (see inventory below)</b>				
WTP Booster Station (Project Schedule A)	\$126,600 (09)	127,900	1,660,000	0.08
Ocean Avenue Waterline	\$99,300 (06)	111,200	1,660,000	0.07
<b>Storage Improvements****</b>				
Reservoir No. 1, 500,000 g	---	250,000	1,900,000	0.13
Reservoir No. 2, 250,000 g	---	150,000	1,900,000	0.08
Reservoir No. 3, 1.6 MG	\$718,700 (97)	1,069,700	1,900,000	0.56
<b>Engineering, Master Planning, SDC Methodology:</b>				
Water Master Plan and Water Conservation Plan	\$20,000 (06)	22,400	2,048,000	0.01
2010 SDC Update	\$5,700 (10)	5,700	2,048,000	0.00
<b>TOTAL</b>		<b>\$6,633,400</b>	<b>TOTAL</b>	<b>\$4.99 / gal</b>

Current Value Net Grants for the WTP and Well project includes escalation of 2003 costs to 2010 ENR of 8671, less \$2,631,300 total grant prorated 41.3% to the WTP and 58.7% to the wells and transmission.

\* Source capacity is based on the total of wells plus Anderson Creek

\*\* Treatment capacity is 1,000,000 in conjunction with the CIP improvements.

\*\*\* Distribution system capacity for regional benefiting pipelines is based on 6 FPS velocity in the transmission lines; Between Project Schedules A, B and C, distribution system improvement projects have included projects number 3, 4, 5, 10, 15, 16, 20, 22 and 34.

\*\*\*\* Storage improvements' capacity is the total storage volume less 450,000 gallons allocated to fire protection.

Output capacity of the water treatment facilities is currently limited to 350 gallons per minute, or 500,000 gpd, however, substantial improvements have been completed that will accommodate increased capacity with the addition of a second membrane unit. As a result, the nominal capacity of the facility is defined as 1,000,000 gallons per day in both the reimbursement and improvement fee summary, with the value of the existing plant in the reimbursement fee and the cost of the additional membrane units in the improvement fee.

## DRAFT FOR PUBLIC HEARING

Capacity of the storage facilities is defined by the ability to meet one maximum day demand, based on 850 gpd/EDU. To avoid duplicating SDC charges, the total capacity to serve domestic demands is based on the total of existing and proposed storage, less needed fire storage. The clearwell storage is not included in this calculation in that the value of that storage is included in the value of the Water Treatment Plant.

### VIII. SDC REIMBURSEMENT FEE CALCULATION

Similar to the Improvement Fee, the reimbursement component of the SDC is cost per gallon times Maximum Day Demand of 850 gpd/EDU:

$$\text{SDC Cost per EDU} = (\text{Maximum Day Demand}) \times (\text{Cost per Gallon})$$

$$\text{SDC Cost per EDU} = (850 \text{ gpd/EDU}) \times (\$4.99/\text{gallon})$$

$$\text{Reimbursement Fee} = \mathbf{\$4,240 \text{ per EDU}}$$

### IX. SDC OVERLAY COST ALLOCATION

ORS 223.304(4) requires that a credit be available for the construction of a “qualified public improvement” if it is required as a condition of development approval, identified in the Capital Improvement Plan and either located off the development site, or on-site and required to be built larger or with greater capacity than is necessary for the particular development.

It is clear that if the improvement is off-site, the qualified public improvement includes that portion required to meet the agency’s minimum standard. The minimum standard improvement, i.e., a 4" waterline as defined by the City of Manzanita, would by definition only benefit the off-site abutting users and would not have any regional benefit. As a result, the cost of the base 4" pipeline improvements should only be allocated to the abutting properties.

The portion of eligible project cost that should be allocated through the SDC Overlay is the cost of a 4" pipeline split equally to each side of the abutting properties. The overlay district should be identified in a revised SDC document with sufficient detail to estimate the assessment and magnitude of frontage benefited, excluding non-developable sites.

The requirement to pay an SDC Overlay assessment would be in addition to the cost of the City-wide reimbursement and improvement SDC charges for a new demand or changed use.

### X. SDC FEE SUMMARY

All residential units are assigned one EDU per dwelling unit. Commercial and industrial developments are assessed SDC charges based on meter size in accordance with the following table:

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**CITY OF MANZANITA  
WATER SYSTEM SDC FEE SCHEDULE**

February 2010

<b>Meter Size</b>	<b>EDU Factor</b>	<b>Improvement Fee</b>	<b>Reimbursement Fee</b>	<b>Total SDC</b>
3/4"*	1	\$1,800	\$4,240	<b>\$6,040</b>
1"	2	\$3,600	\$8,480	<b>\$12,080</b>
1 1/2"	4.5	\$8,100	\$19,080	<b>\$27,180</b>
2"	8	\$14,400	\$33,920	<b>\$48,320</b>
3"	18	\$34,920	\$76,320	<b>\$111,240</b>
4"	32	\$57,600	\$135,680	<b>\$193,280</b>

\* Includes 3/4" x 3/4" meter ONLY if required for residential fire sprinkler system.