



Water Management and Conservation Plan

Final Report

Prepared for:

City of Brownsville

Date:

July 2023



Prepared by:

Oregon Association of Water Utilities

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Water Permits, Extensions, Certificate C
Endangered Species Information D
Water Rates Schedule E

Req'd	WMCP Checklist	OAR Reference	Page No.
WMCP Plan Elements			
✓	Notice to affected local government(s)	690-086-0125(5)	3
✓	Proposed WMCP update schedule	690-086-0125(6)	3
✓	Additional time to implement conservation benchmarks	690-086-0125(7)	4
Water Supplier Description			
✓	Supplier's source(s)	690-086-0140(1)	4
✓	Current service area & population served	690-086-0140(2)	6
✓	Assessment of adequacy and reliability of existing water supplies	690-086-0140(3)	6
✓	Present and historic water use	690-086-0140(4)	8
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✓	Interconnections with other systems	690-086-0140(7)	13
✓	System schematic	690-086-0140(8)	13
✓	Quantification of system leakage	690-086-0140(9)	13
Water Conservation Element			
	Progress report on implementation of conservation measures	690-086-0150(1)	15
✓	Water use measurement and reporting program	690-086-0150(2)	15
✓	Currently implemented conservation measures	690-086-0150(3)	16
✓	Annual water audit	690-086-0150(4)(a)	16
✓	Full metering of system	690-086-0150(4)(b)	16
✓	Meter testing and maintenance program	690-086-0150(4)(c)	16
✓	Rate structure	690-086-0150(4)(d)	17
✓	System Leakage exceeds 10 percent	690-086-0150(4)(e)	17
✓	2-yr. ID factors and remedies for water loss	690-086-0150(4)(e)(A)	17
✓	5-yr. Process	690-086-0150(4)(e)(B)	18
✓	Regular Schedule Leak Detection Replacement Program	690-086-0150(4)(e)(B)(i)	18
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✓	Public education program	690-086-0150(4)(f)	18
	>1,000 pop, propose expansion ext. permit, >7,500 pop – 5-yr.	690-086-0150(5)	19
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	Other proposed conservation measures	690-086-0150(d)(e)	20
Water Curtailment Element			
✓	Water supply assessment and description of past deficiencies	690-086-0160(1)	23
✓	Stages of alert	690-086-0160(2)	23
✓	Triggers for each stage of alert	690-086-0160(3)	24
✓	Curtailment actions	690-086-0160(4)	25
Water Supply Element			
✓	Future service area and population projections	690-086-0170(1)	28
✓	Schedule to fully exercise each permit (<i>i.e.</i> , certification)	690-086-0170(2)	29
✓	Demand forecast	690-086-0170(3)	30
✓	Comparison of projected need and available sources	690-086-0170(4)	31
	Analysis of alternative sources	690-086-0170(5) and (8)	32
	Maximum rate and monthly volume quantification	690-086-0170(6)	33
	Mitigation actions under state and federal laws	690-086-0170(7)	34
Greenlight Water Request			
	Conservation measure schedule and cost effectiveness	690-086-0130(7)(a)	34
	Acquisition of New Water Rights	690-086-00170 (8) (a-c)	35
	Justification that selected source is most feasible and appropriate	690-086-0130(7)(b)	36
	Mitigation requirements	690-086-0130(7)(c)	36
✓	Checked boxes required by all water suppliers.		

City of Brownsville

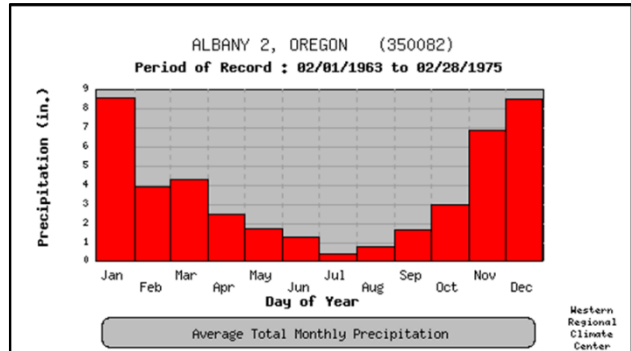
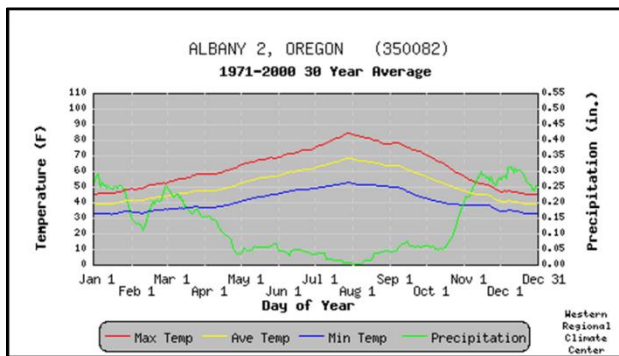
WATER MANAGEMENT CONSERVATION PLAN

INTRODUCTION:

Situated in the southern part of Linn County, originally named Calapooya after the area’s original inhabitants, Brownsville was the first county seat for Linn County. The city was incorporated in 1876 and the service area is approximately 6.0 square miles of land and is coordinated with Linn County zoning development.¹

The median household income for the Brownsville area is \$58,919.00 while the average per capita income is \$28,176.00 ² The current population, per Portland State University-Population Research Center (2020 Annual Population Report), is 1,730 while Linn County’s population is 127,320.³ Per Oregon drinking water data, Brownsville has 765 water service connections.

Weather related information is taken from the averages proven by the Western Regional Climate Center over a period of 1963 through 2000. Annual rainfall is 43.21 inches, with 75 percent occurring over a five-month period between November and March. Like many areas of Oregon, the hottest month occurs in July while the coldest month is usually December. The average mean minimum temperature is 41⁰ F as the average mean maximum temperature is 63⁰ F.⁴



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	46.2	52.6	56.5	60.2	68.4	73.7	80.6	80.8	75.8	64.7	53.5	46.5	63.3
Average Min. Temperature (F)	33.6	34.4	35.5	37.7	42.7	48.6	50.6	50.7	46.9	41	38.6	34.5	41.2
Average Total Precipitation (in.)	8.56	3.74	4.33	2.48	1.73	1.26	0.38	0.78	1.65	2.96	6.84	8.49	43.21
Average Total SnowFall (in.)	2.9	0.6	0	0	0	0	0	0	0	0	0	1.5	5

1 - https://en.wikipedia.org/wiki/Brownsville,_Oregon

2 - <http://www.city-data.com/city/Brownsville-Oregon.html>

3 - <https://www.pdx.edu/population-research/population-estimate-reports>

4 - <https://wrcc.dri.edu/summary/Climsmor.html>

SCOPE:

The scope of this water management and conservation plan (WMCP) is to consider the functions of the water system from various points as it is run by the City of Brownsville. The primary concern is the management of existing water sources and the sustainability of the sources as they relate to the growth in and around the area. Equally important is continuing to supply water to both existing and future customers. Implementing conservation ideals and methods will be another tool to manage beneficial water use. Management of the water under continual satisfactory conditions will be an effort for both water system personnel and the community.

PURPOSE:

The purpose of this WMCP is to gain a better understanding of the balance of water from the source, through the water system and how it is consumed by the customers, coordinate with OAR requirements and guidelines towards water management and conservation. City of Brownsville currently meets the criteria proven under OAR 690-086-0150(5), serving a population of 1,730 through 765 connections.¹

This WMCP is a first report sent to Water Resources Department and is written as a guideline for the City of Brownsville's continued efforts towards water conservation. The next update for a WMCP is due in 2032, will be preceded by a progress report due in 2027.

Every five years, the City of Brownsville will update the Water Resources Department with a progress report on how the benchmarks are being implemented as well as any changes in the efforts of water management and conservation.

Following the administrative rules, the City of Brownsville proposes to send a progress report as key benchmarks are obtained, and water use reported. Progress reports will be written and sent to the Water Resources Department as addendums to this water management and conservation plan.

Key benchmarks presented will be dependent on both monetary and available work force to complete the tasks. At a minimum the City of Brownsville will:

- Supply educational information on water conservation to the customers
- Perform annual water audit
- Review past production, consumption records
- Verify accuracy of production meters
- Initial leak detection

This document has been compiled by the Oregon Association of Water Utilities with authorization from the City of Brownsville. This WMCP follows the Oregon Administrative Rules (OAR) Chapter 690, Division 86.

1 - <https://yourwater.oregon.gov/inventory.php?pwsno=00152>

SECTION ONE

MUNICIPAL WATER SUPPLIER

1.1 Affected Local Governments: OAR 690-086-0125 (5) A list of the affected local governments to whom the draft plan was made available pursuant to OAR 690-086-0120 (6) and a copy of any comments on the plan provided by the local governments.

In July 2022, City of Brownsville submitted a copy of this water management conservation plan for review to all affected governments listed below, as well as a request for comments on the awareness of water management and conservation planning.

- Linn County EMA Coordinator – 541.812.2274
Ric Lentz – rlentz@linnsheff.org

Comments were received from the single entity. A copy of the notification letter and comments are included in Appendix A

1.2 Updated Plan Submittal: OAR 690-086-0125 (6) A proposed date for submittal of an updated plan within no more than 10 years based on the proposed schedule for implementation of conservation measures, any relevant schedules for other community planning activities, and the rate of growth or other changes expected by the water supplier; or an explanation of why submittal of an updated plan is unnecessary and should not be required by the Department.

OAR 690-086-0125 (6) says an updated plan to be sent within no more than 10 years. This is based on the proposed schedule for implementing conservation measures, rate of growth or other expected changes by the water supplier. A “Progress Report” will be sent on or before the 5-year period (2027) to review benchmarks and water use progress and to give an updated WMCP at the end of the 10-year period.

Conservation and water use practices are constantly evolving. Listed conservation efforts at the end of section two will be reviewed annually by assigned administrative staff, enabling City of Brownsville to decide the progress of the management conservation plan.

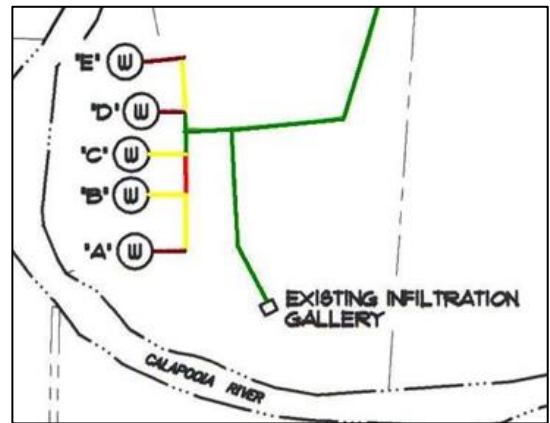
All efforts towards management and conservation will be noted and kept for the progress report which will be given every five years by City of Brownsville. The next progress report will be due by the end of 2027.

1.3 Additional Time: OAR 690-086-0125 (7) If the municipal water supplier is requesting additional time to implement metering as required under OAR 690-086-0150 (4)(b) or a benchmark established in a previously approved plan, documentation showing additional time is necessary to avoid unreasonable and excessive costs.

The City of Brownsville is not requesting an extension of time to implement metering, or a benchmark set up in a previously approved water management conservation. City of Brownsville is a fully metered water system, with new meters installed in 2019.

1.4 Municipal Water Supplier Description: OAR 690-086-0140 (1) A description of the supplier's source(s) of water; including diversion, storage, and regulation facilities; exchange agreements; intergovernmental cooperation agreements; and water supply or delivery contracts.

City of Brownsville supplies water to the community through four wells capable of producing approximately 450 gallons per minute (GPM) and an infiltration gallery hydraulically connected to the Calapooia River. Wells are in line with one another and itemized B through E and cover approximately 200 feet in length.¹ Picture depicts “well A” which has not been utilized. Wells are positioned 200 to 400 feet from the eastern riverbank. The infiltration gallery just east of the wells, lies below the river and collects subsurface flows through a 24-inch lateral pipe.



All source water is pumped to the water treatment plant (WTP) using one or more of the three slow sand filters. Each filter has a design capacity of 200 GPM (0.288 million gallons per day - MGD). Any two filters are capable of producing 420 GPM (1.04 MGD). The WTP is designed for the construction of a fourth filter at a future time. City of Brownsville has an approximate 23 miles of various sized pipe from 2-inch to 12-inch encompassing five pressure zones. Water storage consists of two reinforced concrete tanks totaling 1.55 MG.² The City of Brownsville does not have any special exchange agreements or intergovernmental memorandum of understanding regarding water delivery.

The City of Brownsville uses Permit S-52426 at 2.232 CFS for aesthetic purposes to support flows through an existing long-time canal that meanders approximately three-miles through the community. This water returns back to the Calapooia River. [Permit G-12406 has a development limitation of 0.479 CFS out of 1.25 CFS, also noted in table 1-6, page 10.](#)

1 – Snipped from Water System Schematic - Lee Engineering, Inc.

2 – Water Master Plan – 2010-2030, John W. Cunningham, PE

1.4.1 Points of Diversion

Permit POD	Township	Range	Section	Qtr Qtr	Notes	Static Water Level (ft.)	Rate	Rate
							(CFS)	(GPM)
G-12406	13 - S	3 - W	36	SE SE	a	9.0	1.25	561.00
GR - 12	13 - S	2- W	31	SE SW		UNK	0.5013	224.98
S-27871	13 - S	3 - W	36	SE SE	b	NA	0.67	300.70
S-47733	13 - S	3 - W	36	SE SE		NA	0.58	260.30
S-52426	14 - S	2 - W	4	NW NE	c	NA	2.232	1001.72
Total ^d							3.00	2348.71
a - Five wells named A, B, C, D, E, SWL averaged 8-10 feet								
b - Five wells with 0.134 per well								
c - Use is classified as Aesthetics, water used to maintain canal, flows back to Calapooia River								
d - 3.00 CFS does not include permit S-52426, but only permit total for municipal purposes								

1.4.2 Water Permits - Certificates

Application Number	Permit Number	Certificate Number	Priority Date	Source	Use	Permitted		Gallons per Minute
						CFS	MGD	
G-13221	G-12406	NA	12/7/1992	Wells	M	1.25	0.808	561.00
0	GR - 12	GR11	12/31/1921	Well	M	0.5013	0.324	224.98
S-37425	S-27871	90031	2/23/1962	River/Wells	M	0.67	0.433	300.70
S-65273	S-47733	93465	7/6/1983	River	M	0.58	0.375	260.30
S-74044	S-52426	NA	5/11/1994	NA	A*	2.232		
Total						3.0013	1.94	1346.98
Notes:								
M- municipal, A - Aesthetics								
G-12406 supplemental water during winter months when water quality diminishes - Wells B, C, D, E								
Certificate 90031 Calapooia River and four wells maximum rate at 0.134 CFS each, total at 0.67 CFS								
* - Non consumptive use to provide flow through canal, with period of use from may 15 through October 15. not included in total								

1.4.3 Storage Capacities

Table: 1-3: Storage Reservoirs		
Reservoir	Storage Capacity (MG)	Elevation
1	1.30	531
2	0.25	535
Total Capacity		
	1.55	

1.5 Current Service Area: OAR 690-086-0140 (2) a delineation of the current service areas and an estimate of the population served, and a description of the methodology (ies) used to make the estimate.

The City of Brownsville’s water system serves an incorporated area in Linn County which encloses approximately 6.0 square miles on the western slopes of the Cascade Mountain Range. Centrally located in the Willamette valley the community boasts a rural setting with major amenities found twenty-five minutes in the larger cities of Eugene, Springfield and Albany. City of Brownsville’s population served is approximately 1,730 through 765 connections,¹ equaling 2.26 persons per household. See maps in Appendix B

1.6 Adequacy / Reliability of Existing Source: OAR 690-086-0140 (3) An assessment of the adequacy and reliability of the existing water supply considering potential limitations on continued or expanded use under existing water rights resulting from existing and potential future restrictions on the community's water supply.

The adequacy and reliability of the existing water supply can be proven from two focus points, a) the ability to sustain flows in the Calapooia River, which is out of the control of the City, and the recharge of raw water into the aquifer, b) manage the existing water during distribution. A sound approach for the city is detailed data measurements of water drawn from the source, water returned to the source, and ability to manage supplies without loss. Limitations are outlined in the application for the extension of time for permit G-12406, defining the flow measurements of the Calapooia River and supporting the persistence of listed fish species. Appendix D shares information on any limitations associated with the city’s water sources.

Water production figures from Tables 1-4, 1-5 on the following pages give evidence for the consistency of water production at an average of 13.62 million gallons (MG) monthly. With the water treatment plant (WTP) system designed to firmly supply the City of Brownsville with the capacity of 420 GPM (0.93 CFS)(18.14 MG/month), and Table 1-5 indicating a five-year average usage rate at 221 GPM (0.49 CFS) (9.6 MG/month), City of Brownsville is steadfast in managing both the source as it relates to production potential, usage of water diverted and understanding the percentage of unaccounted water.

1 – <https://yourwater.oregon.gov/inventory.php?pwsno=00726>

Table 1-4: Water Production, Sales, Unaccounted										
Permit Certificate	PRODUCTION YEARS					Total Diverted Water (MG)	Raw Water Pumped	Production Water	Average GPM	Average CFS
	2021	2020	2019	2018	2017					
Million Gallons (MG) ^A									5-yr Average	
G-12406	32.96	24.82	16.19	18.09	24.42	116.49	116,486,873		44.33	0.0988
GR 11	0.07	0.00	0.00	0.43	0.00	0.50	504,940		0.19	0.0004
90031	99.55	99.97	82.71	66.75	60.22	409.20	409,200,974		155.71	0.3469
93465	66.59	75.15	66.52	48.66	35.80	292.71	292,714,100		111.38	0.2482
S-52426	150.81	88.70	121.17	71.28	114.04	546.00	545,996,496		207.76	0.4629
2021-2017	199.11	200.01	165.42	133.93	130.14	828.61	828,610,139		315.30	0.7025
Operations ^B	12.12	11.80	9.00	13.40	10.50					
Monthly Average (MG)	15.58	15.68	13.03	10.04	9.97	13.59				
	Annual Water Sales (MG)					Total Water Sales (MG)	Total Water Pumped	Operations	Unaccounted Water	
2021	126,857,337					126.86	170.41	12.12	-18%	
2020	120,206,009					120.21	167.74	11.80	-21%	
2019	141,393,258					141.39	168.84	9.00	-11%	
2018	99,423,277					99.42	165.94	13.40	-32%	
2017	93,700,801					93.70	133.22	10.50	-22%	
Table 1-4-1: Water Production, Sales Unaccounted Summary Averages										
2021-2017	2021	2020	2019	2018	2017	Five Year Loss Ave *			-20.89%	
Max MG	99.55	99.97	82.71	66.75	60.22	Notes:				
Max CFS	0.42	0.42	0.35	0.28	0.26	A - Figures taken from Water Use Report timeframe Jan 2017 - Dec 2021				
(5e) Allowed ^C	3.00	3.00	3.00	3.00	3.00	B - General operations, line flushing, hydrant testing, water return to river				
Allowed DL ^D	2.23	2.23	2.23	2.23	2.23	C - figures calculated in CFS with development limitations,				
(5f) Max Inst ^C	0.42	0.42	0.42	0.42	0.42	D - figures calculated in CFS with development limitations,				
(5f) Max Ann ^E	199.11	200.01	165.42	133.93	130.14	E - figures calculated in MG				
(5g) Ave Mo. ^E	16.59	16.67	13.78	11.16	10.84	* - Average loss, includes estimated repaired leaks				
(5g) Ave Daily ^E	0.553	0.556	0.459	0.372	0.361					

1.7 Quantification of Present and Historical Use: OAR 690-086-0140 (4) A quantification of the water delivered by the water supplier that identifies current and available historic average annual water use, peak seasonal use, and average and peak day use.

Table 1-5 outlines the quantification of water delivered both from an average monthly and annual quantity and the peak months for the past five-years. Highlighted are the months which the peak demand was created. The single reason for an increase in GPCD would be newer meters (2019) are more exact than older meters, depicting actual usage, not a skewed consumption.

Total Gallons							Gallons	
Month	2021	2020	2019	2018	2017	Monthly Averages	GPD	CFS
January	6,984,136	7,389,859	4,711,375	3,360,794	5,930,361	5,675,305	183,074	0.28
February	3,730,815	7,677,390	9,013,228	4,424,764	5,627,017	6,094,643	196,601	0.30
March	7,385,685	7,598,281	16,440,098	5,255,291	3,558,101	8,047,491	259,596	0.40
April	7,052,660	7,304,961	16,113,655	12,159,757	5,952,659	9,716,738	313,443	0.49
May	8,635,279	8,211,297	11,823,165	6,460,985	2,567,749	7,539,695	243,216	0.38
June	10,971,395	9,022,167	16,133,769	8,742,923	6,736,413	10,321,333	332,946	0.52
July	15,238,518	11,065,201	5,120,053	6,540,923	4,532,401	8,499,419	274,175	0.42
August	19,908,057	15,617,731	15,624,404	8,632,915	22,893,348	16,535,291	533,396	0.83
September	18,815,222	18,149,696	15,050,381	9,550,075	14,361,630	15,185,401	489,852	0.76
October	12,499,566	13,359,340	10,331,129	16,945,551	10,304,777	12,688,073	409,293	0.63
November	8,092,799	7,916,810	7,084,547	13,889,537	5,687,381	8,534,215	275,297	0.43
December	7,543,206	6,893,276	13,947,455	3,459,762	5,548,963	7,478,532	241,243	0.37
Annual Averages - Million Gallons								
Annual Totals	126,857,337	120,206,009	141,393,258	99,423,277	93,700,801	9,693,011	323,100	0.50
Annual Daily Ave	347,554	328,432	387,379	272,393	256,013	318,354	318,354	0.49
Monthly Maximum ^A	19,908,057	18,149,696	16,440,098	16,945,551	22,893,348	22,893,348	763,112	1.18
Peak Seasonal	August	September	March	October	August			
Peak Day Use	663,602	604,990	548,003	564,852	763,112	763,112		1.18
User Averages								
Population ^B	1730	1730	1720	1705	1705	1718		
Ave GPCD	201	190	225	160	150	185		
Peak GPCD	384	350	319	331	448	366		

A - peak demand highest rate at 1.18 CFS, B - figures taken from PSU-Population Research Center

1.8.0 Water Rights: OAR 690-086-0140 (5) a tabular list of water rights held by the municipal water supplier that includes the following information.

- (a) Application, permit, transfer, and certificate numbers (as applicable)
- (b) Priority date(s)
- (c) Source(s) of water
- (d) Type(s) of beneficial uses specified in the right
- (e) Maximum instantaneous and annual quantity of water allowed under each right
- (f) Maximum instantaneous and annual quantity of water diverted under each right to date
- (g) Average monthly and daily diversions under each right for the previous year, and if available for the previous five years
- (h) Currently authorized date for completion of development under each right; and
- (i) Identification of any stream flow-dependent species listed by a state or federal agency as sensitive, threatened or endangered that are present in the source, any listing of the source as water quality limited and the water quality parameters for which the source was listed, and any designation of the source as being in a critical ground water area.

Table 1-6: City of Brownsville Water Permits, Certificates Inventory													
									Actual Diversion				
Application No. (5)(a)	Permit No. (5)(a)	Certificate No. (5)(a)	Priority Date (5)(b)	Transfer No.(5)(a)	Source (5)(c)	Use (5)(d)	Maximum Allowed Rate (cfs) (5)(e)	Allowed Rate under Development Limitations (cfs) (5)(e)	Maximum Instantaneous Rate Diverted to Date (cfs) (5)(f)	Maximum Annual Quantity Diverted to Date (MG) (5)(f) ^A	Average Monthly Diversion (MG) (5)(g)	Average Daily Diversion (Gallons) (5)(g)	Authorized Completion Date (5)(h)
G-13221	G-12406		12/7/1992	NA	Wells	M	1.25	0.479	0.14	116.49	1.94	0.065	10/1/2048
	GR 11 ^a	GR 12	12/31/1921	NA	Well	M	0.5013	0.5013	0.002	0.50	0.01	0.0003	NA
S-37425	S-27871	90031	2/23/1962	NA	River/Wells	M	0.67	0.67	0.42	409.20	6.82	0.227	NA
S-65273	S-47733	93465	7/6/1983	NA	River	M	0.58	0.58	0.32	292.71	4.88	0.163	NA
S-74044	S-52426		5/11/1994		River	A*	2.232	2.232	0.64	546.00	9.10	0.303	10/1/2012
	S-52426		5/11/1994	City Engineer is completing the application extension, new authorized completion date will be updated									
					Total w/o Aesthetics		3.00	2.230	0.884	818.91	13.65	0.4549	NA
					Total w/ Aesthetic		5.23		0.42				
G-12406 supplemental water during winter months when water quality diminishes - Wells B, C, D, E, gray shaded cell indicates "development limitations"													
GR-12 225 GPM or .5013 CFS													
GR 11 is a claim													
Certificate 90031 Calapooia River and four wells maximum rate at 0.134 CFS each, total at 0.67 CFS													
* - Non consumptive use - from the Calapooia River provides flow through canal, with period of use from May 15 through October 15 - returns to the Calapooia River, total CFS not included in total municipal usage													
Appendix C: Copies of permits, certificates, transfers and extensions													

1.8.1 Environmental Resource Issues of Concern OAR 690-086-0140 (5)(i) Identification of any stream-flow dependent species listed by the State or Federal Agency as sensitive, threatened, or endangered that are present in their source(s). Any listing of the source as being water quality limited and the water quality parameters, any designation of the source as being in a critical ground water area.

City of Brownsville obtains its water from an infiltration gallery on the Calapooia River (surface water) and from wells that are found in sand and gravel beds associated with river drainage areas. The area is identified as the Upper Willamette sub-basin, by hydrologic unit code 17090003 encompassing four counties. Threatened species Federally listed are Coho Salmon, Steelhead-Winter, Chinook Salmon-Spring, Oregon Chub, and Bull Trout. The listed 303d streams within the area of the city is the Willamette River which traverses approximately ten miles to the west of the City and the Calapooia River which traverses through the southern end of the community.

Both Chinook Salmon and Winter Steelhead occur in the mainstem of the Calapooia River, with primary spawning and rearing in the upper tributaries (Treadwell, Potts, North Fork Calapooia Creeks). All spawning areas upstream from the community of Brownsville.

Table 1-7 Environmental Resource Concerns			
Oregon Dpeartment Fish and Wildlife Endangered Species Listing -			
Hydrological Unit - 17090003			
Species Name	Ecological Region	OR Status	Federal Status
Chinook Salmon (Fall)	Upper Willamette	SC, SMU, ESU	Th
Chum Salmon	NA	SC	Th
Coastal Cutthroat	NA	S	Th
Steelhead (*)	Upper Willamette	SC, SMU,ESU	Th
Western Brook Lamprey	Upper Willamette	S	Th
Pacific Lamprey - Brook	Upper Willamette	S	Th
White Sturgeon	NA	S	Th
Wildlife Species ODFW Revised October 2021			
* summer and Coastal			
Th - threatened, S - sensitive, SC -sensitive-critical, SMU - species management unit, ESU - evolutionary significant unit, DPS -distinct population segment			
NA - not found in hydrologic unit			

The Calapooia River is listed as a 303d stream as being water quality limited and the water quality parameters are extensive. Appendix D is supplemental information relating to water quality limitations. Maps are shown to better explain geographically the locations of various points

associated with 303d listed streams, fish habitats and distribution areas, along with the Department of Environmental Quality Water Quality Assessment Report.

1.9 Water use characteristics: OAR 690-086-0140 (6) A description of customers served including other water suppliers and the estimated numbers; general water use characteristics of residences, commercial and industrial facilities, and any other uses; and a comparison of the quantities of water used in each sector with the quantities reported in the water supplier's previously submitted water management and conservation plan and progress reports.

The City of Brownsville serves an approximate population of 1,730 through 765 connections in a land area typically appointed for a small rural city. This majority of the area is zoned medium density residential with small pockets of low and high density residential. Commercial zones are classified as “old town commercial” existing of main street small businesses and “volume commercial” where Main Street and Highway 228 intersect. Industrial zoning is primarily to the west, southwest of the city, with a small section on the eastside. For future consideration, an area north of the city limits and outside of the urban growth boundary (UGB) is appointed rural residential.

Neither commercial nor industrial services make up a large portion of the service connections as a total of 42 commercial, industrial accounts make up five percent of all service connections. Typical commercial accounts are restaurants, medical clinics, small office services to accommodate the citizens. Multiple schools are also served by the City of Brownsville.

Table 1-8: Water Use Characteristics

Classification	Consumption		
	Gallons per day	# Connections	% of total gallons
Residential	312K	722	98
Commercial / Industrial	4K	43	1.2
Operations	1K	NA	>1
Totals			
	317K	765	99+

Gallons per daily capita = approximately 185 gallons, which includes all classifications of users. Figures used from Annual Consumption Report 2021-17

1.10 Interconnections with other systems: OAR 690-086-0140 (7) Identification and description of interconnections with other municipal supply systems.

Currently, the City of Brownsville has no inter-ties with other water supply systems. The closest two water systems to the community will be the City of Halsey to the west (7 miles) and the Sweet Home approximately 20 miles east of the City of Brownsville.

1.11 System Schematic: OAR 690-086-0140 (8) A schematic of the system that shows the sources of water, storage facilities, treatment facilities, major transmission and distribution lines, pump stations, interconnections with other municipal supply systems, and the existing and planned future service area; and

City of Brownsville's water system schematic was derived from their water master plan completed in 2010 by Lee Engineering and updated in August 2012 by J.W. Cunningham, PE. The multi-page map depicts service lines, reservoirs, and appurtenances that are necessary for the water system to function. An added map (aerial view) is presented to show the UGB as it relates to the city's service boundary limits. See Appendix B

1.12 Quantification of System Leakage: OAR 690-086-0140 (9) a quantification and description of system leakage that includes any available information regarding the locations of significant losses.

Each year City of Brownsville sends an annual water report to OWRD, recording the total gallons pumped from October through September of the preceding year. City of Brownsville also reads meters on a monthly basis, tracks operational usage of water due from line flushing and repairs on leaks.

City of Brownsville has had several significant large leaks throughout the system during the past ten years. Since 2014, a single section of twelve-inch pipe, through erosion, was exposed and replaced at once. This activity involved finding many leaks due to cold weather. A six-inch mainline had multiple leaks found within 800 feet along Main Street which were repaired. Another six-inch was upgraded as part of the sewer project. Newer water main lines were upgraded in association with development.

Most smaller leaks are found as water appears on the surface and or detected through meter reading, with newer meters having built-in leak detection capabilities. The city repairs approximately 2-3 leaks per month, with an estimated loss at six GPM.

City of Brownsville, through normal operations of line flushing, fire hydrant testing and small leak repair, estimates an approximate 0.03 MG of water are accounted for daily, 0.9 MG per month

Referencing table 1-4 on page 7, supplies information about non-revenue, loss water percentages for each year 2017 through 2021.

SECTION TWO

WATER CONSERVATION ELEMENT

Water conservation activities contribute an important facet towards the sustainability of water for the future. Not all conservation efforts are going to be effective. It is those that have been implemented and continued that will show the greatest results.

City of Brownsville, having 20.89 percent un-accounted water, has increased its focus on water consumption and production from a managerial perspective. City of Brownsville will emphasize various water conservation efforts which will include water system audits, leak detection, public education, and if workable, retrofitting of inefficient water devices. These activities are pending the availability of labor, time, and financial resources

2.1 Progress Report: OAR 690-086-0150 (1) [A progress report on the conservation measures scheduled for implementation in a water management and conservation plan previously approved by the Department, if any.](#)

This water management conservation plan for City of Brownsville is the first document sent to OWRD. It is the intent of both the City Council and staff to continue to enhance the ideals of conservation through system operational reviews, customer knowledge, and implementation of conservation measures. Upon completion of this water management conservation plan, the City of Brownsville will review efforts made in meeting the benchmarks learned and supply a progress report in 2027. See listed efforts at the end of section two, table 2-1.

2.2 Water Use Measurements and Reporting: OAR 690-086-0150 (2) [A description of the water supplier's water use measurement and reporting program and a statement that the program complies with the measurement standards in OAR Chapter 690, Division 85, that a time extension or waiver has been granted, or that the standards are not applicable.](#)

The measurement and reporting information found in this document is taken from the annual water use report that is due each year for the Water Resources Department. The City of Brownsville adheres to the measurement and reporting requirements found in the Oregon Administrative Rules Chapter 690, Division 85. Flow meters are placed at water intakes, wells, the outlet on the water treatment plant, and service connections on all customers.

Extensions of time for permit G-12406 have been given to City of Brownsville for the authorized completion date of 10-01-2048, with three permits being certified, [GR-12](#), 90031 and 93465. Permit S-52426, used for aesthetics (water flowing through a canal and returning to the river) is a non-consumptive use permit and has an authorized completion date of 10-01-2012. Permit S-53436 extension work is being completed by the City's engineer.

2.3 Measurement Already Implemented: OAR 690-086-0150 (3) A description of other conservation measures, if any, currently implemented by the water supplier, including any measures required under water supply contracts.

City of Brownsville does not supply water under contract to any entity. Water is only supplied to the community through the distribution and to fill water trucks for bulk delivery, primarily construction support.

2.4 Annual Water Audit: OAR 690-086-0150 (4) A description of the specific activities, along with a schedule that establishes five-year benchmarks, for implementation of each of the following conservation measures that are required of all municipal water suppliers.

2.5 Unmetered / Unauthorized Usage (4) (a) An annual Water Audit that includes a systematic and documented methodology for estimating any un-metered authorized and unauthorized uses, and an analysis of the water supplier's own water use to identify alternatives to increase efficiency.

City of Brownsville reviews water production and consumption figures to compare and define total actual losses, with this single step being the primary effort in an annual water audit.

System-wide, the system is inspected through routine travels by the water department's crew looking for leaks, illegal connections, misuse of fire hydrants or vandalism. These efforts lead to understanding the real water losses. [See Table 2-1: Water Loss Control Activity Matrix page 21](#)

2.6 Full Metering of System: OAR 690-086-0150 (4) (b) if the system is not fully metered, a program to install meters on all un-metered water service connections. The program shall start immediately after the plan is approved and shall identify the number of meters to be installed each year with full metering completed within five years of approval of the water management and conservation plan.

The City of Brownsville is a fully metered water system which includes meters on both the raw water sources (wells) and consumer connections. At this time, the water system is considered fully metered. Production meters are read daily, and consumer's meters read monthly.

2.7 Meter Testing and Maintenance: OAR 690-086-0150 (4) (c) A meter testing and maintenance program.

City of Brownsville has not created a scheduled meter testing program, except for the source meters on the production side. Primary effort in managing source meters accuracy is through tracking of pumping totals on a monthly and annual basis. Figures are compared to past records for fluctuations or discrepancies in readings.

The city has replaced water service meters in 2019. [Replacing the battery every ten-years is the single recommended maintenance step for meter services.](#) The city will continue to watch billing records for discrepancies and will implement a test, repair, or replace meters when an irregularity is found.

2.8 Rate Structure: OAR 690-086-0150 (4) (d) A rate structure under which customers' bills are based, at least in part, on the quantity of water metered at the service connections.

City of Brownsville has in place an increased block rate structure for water usage, which was implemented in 2021. Water rates and authorized charges are set by resolution of the Council and reviewed annually.

MONTHLY SERVICE CHARGE:

In-City:

Base Rate:	\$ 26.97	0 - 300 c.f.
Additional From:		301 – 600 c.f. \$ 1.75 per hundred c.f. 601 - 1000 c.f. \$ 1.94 per hundred c.f. 1001 - 1500 c.f. \$ 2.00 per hundred c.f. 1501+ c.f. \$ 2.17 per hundred c.f.

Out-of-City:

Base Rate:	\$ 40.46	0 – 300 c.f.
Additional From:		301 - 600 c.f. \$ 2.26 per hundred c.f. 601 - 1000 c.f. \$ 2.53 per hundred c.f. 1001 - 1500 c.f. \$ 2.77 per hundred c.f. 1501+ c.f. \$ 2.84 per hundred c.f.

Appendix E

2.9 Leak Detection Program: OAR 690-086-0150 (4) (e) If the annual water audit indicates that system leakage exceeds 10 percent.

2.9.1 Factors of Loss and Remedies OAR 690-086-0150 (4) (e) (A) - Within two years or approval of the water management conservation plan, the water supplier shall provide a description and analysis identifying potential factors for the loss and selected action for remedy.

City of Brownsville currently has a five-year annual unaccounted for water average at 20.89 percent. Added tasks over the next two-years, performed by Public Works will entail a review of the distribution system pipe materials and areas of probable leaks, verify production meters for replacement and look at the best approach towards a leak detection program, either in-house or contractual agreement with an outside source. [Each task below will be implemented in 2023-24](#)

The following areas of concern are:

- Accuracy – service meters were replaced in 2019
- Verify meter sizes to the profile of the customer
- Billing procedures verifying meter figures match software formulation
- Mainlines – leak detection – initially (2023) and or annually

The City of Brownsville, per statute, must implement a leak detection program because of average water loss (2017-2021) is greater than ten percent. The Water Master Plan estimated in 2012 water loss at 26 percent, which OAR 690-086-0150(5) mandates system leakage is reduced to 15 percent with an eventual goal towards ten percent. These primary areas of concern are the residential area south of Highway 228 and the northwest section of the community that traverses Seven Mile Lane. These two sections will be the focus of leak detection and main line repairs.

2.9.2 Systematic Leak Evaluation OAR 690-086-0150 (4) (e) (B) – If actions identified under subsection (A) do not result in the reduction of water losses to 10 percent or less, within five years or approval of the water management conservation plan, the water supplier shall, **(i)** develop and implement a regularly scheduled and systematic program to detect repair leaks in the transmission and distribution system using methods and technology appropriate to the size and capability of the municipal water supplier or a line replacement program detailing the size and length of pipe to be replaced each year; or **(ii)** – develop and implement a water loss control program consistent with American Water Works Association standards.

City of Brownsville has consistently looked at methods to sustain or improve on lowering water loss. Changes in system operations, looking at main distribution lines, flow and pressure testing will supply more information as it relates to water loss. Both apparent and real losses are considered when approaching a properly operated water system.

Apparent losses will be reviewed by confirming billing software, meter accuracies and routine unauthorized consumptions. The two-step benchmark approach will be to implement routine leak detection that will prioritize line replacement, which will depend on the cost associated with of contracted services for leak detection. A leak detection program will begin in 2023 and continue annually while unaccounted water remains above 10 percent.

2.10 Public Education Program: OAR 690-086-0150 (4) (f) A public education program to encourage efficient water use and the use of low water use landscaping that includes regular communication of the supplier's water conservation activities and schedule to customers.

Currently, the City of Brownsville supplies information on drinking water in the bi-annual newsletter. City of Brownsville prints two newsletters annually highlighting the city's activities. Topics relating to water: water quality, consumer confidence reports, Calapooia Watershed Council information, and general information on activities of the water department. These newsletters are found on the city's website, www.ci.brownsville.or.us

City of Brownsville will continue the efforts of water conservation by supplying more information to the consumers through distribution of brochures (flyers) encouraging the use of water saving devices and gardening techniques.

General information from water conservation bulletins provided in the links below will offer new ideas that can be placed in the newsletter.

https://www.oregon.gov/owrd/WRDPublications1/Saving_Water_Municipal_Systems.pdf

https://www.oregon.gov/owrd/WRDPublications1/Saving_Water_Inside.pdf

https://www.oregon.gov/owrd/WRDPublications1/Saving_Water_Outside.pdf

2.11 Expansion / Diversion: OAR 690-086-0150 (5) If the municipal water supplier serves a population greater than 1,000 and proposes to expand or initiate diversion of water under an extended permit for which resource issues have been identified under OAR 690-086-0140(5)(i), or if the municipal water supplier serves a population greater than 7,500, a description of the specific activities, along with a schedule that establishes five-year benchmarks, for implementation of each of the following measures, or documentation showing that implementation of the measures is neither feasible nor appropriate for ensuring the efficient use of water and the prevention of waste.

Currently City of Brownsville does not propose to expand or start diversion of water under an extended permit for the primary reason; a) City of Brownsville water supplies are speculated to be adequate utilizing the existing permit and certificates, b) City of Brownsville does not serve a population greater than 7,500, c) City of Brownsville is not using groundwater considered found in a critical groundwater area, d) City of Brownsville has been managing the existing water sources in compliance with various regulations pertaining to stream flow dependent species established by both State and Federal Agencies.

2.12 Technical and Financial Assistance: OAR 690-086-0150 (5)(a) Technical and financial assistance programs commensurate to the size of the municipal water supplier to encourage and aid residential, commercial, and industrial customers in implementation of conservation measures.

City of Brownsville currently does not supply technical or financial aid in developing water conservation ideas, such as rebates for water efficient fixtures, water audits for households, and public information. As told in sub-section 2.9.1, City of Brownsville will consider more methods to share information with its consumers. Any future ideas about water conservation will be decided by the City Council, equal with the availability of monetary resources. These programs will be adopted by the City Council and implemented by the administrative team. Considerations for the 2022-2027 fiscal years will include dialogue with the large water users about:

- conservation ideas at their facilities
- water saving equipment,
- ground maintenance and drought tolerant plants
- look at water schedules for efficiency

2.13 Retrofitting/Replacement: OAR 690-086-0150 (5)(b) Supplier financed retrofitting or replacement of existing inefficient water using fixtures, including distribution of residential conservation kits and rebates for customer investments in water conservation.

Retrofitting is the adaptation or replacing of an older water fixture with one that is more water efficient and ultimately offers considerable water saving potential in the home and business. The City of Brownsville will not make available faucet aerators and low flow shower heads (efficient fixtures) to its citizens. Using public monies to supply private interest could be viewed negatively by the citizenry.

The primary effort towards using water conservation devices will be found in brochures and links on the city's website. The City of Brownsville will add information on fixtures to the existing education program to encourage its customers in using more efficient, water conserving devices.

2.14 Rate Structures: OAR 690-086-0150 (5)(c) Adoption of rate structures, billing schedules, and other associated programs that support and encourage water conservation.

In subsection 2.8, explains the rate structure in effect in January 2021. This structure is aligned to better support water conservation. Currently the rate structure is a base including 300 cubic feet (2,244 gals) rate for the monthly service and extra water is charged using an increased block rate. Each block of water consumed is measured in 100 cubic feet, with the various levels ranging from \$1.75 to \$2.84 per unit.

2.15 Recycle / Reuse: OAR 690-086-0150 (5)(d) Water reuse, recycling, and non-potable water opportunities; and

For the City of Brownsville the design of the wastewater system is contrary to water reuse and recycling as it collects the effluent in lagoons situated outside the urban growth boundary (UGB) a good distance from any potential area for reuse. The City of Brownsville does not have to implement water re-use, recycling program as the cost associated with this endeavor is not feasible or appropriate. Any use of gray water from individual residents for irrigation purposes will be the responsibility of the owner(s) if laws allow such use.

2.16 Other Conservation Measures: OAR 690-086-0150 (5)(e) any other conservation measures identified by the water supplier that would improve water use efficiency.

City of Brownsville has not found any other conservation measures that would improve water use efficiency. City of Brownsville does not have to supply additional measures as it does not propose to expand or initiate diversion of water under an extended permit.

The efforts and benchmarks completed over the next five years will be as follows:

- Track water use characteristics (gallons per capita daily) for significant increases as billing is completed monthly
- Public informational (education) highlighted on the billing statement
- Continue using the City of Brownsville's website
- Implement large meter (source) calibration / accuracy tests
- Perform annual leak detection in areas chosen by Public Works Director

In the table on the following page, are activities coordinated with the above bulleted items base on a timeline from short-term though long-term approach in conservation. Actions taken by the City of Brownsville are highlighted with footnotes explaining the step taken towards completion.

Table 2-1: Water Loss Control Activity Matrix					
Water Audit		Apparent Loss Control		Real Loss Control	
Time	Activity	Time	Activity	Time	Activity
Highlighted Task will be implemented over one, five, ten-years					
S	Top Down	S	Verify production meters for accuracy	S	Review past records ^{1,2}
					Target Range <15%
					Target Range < = 10%
M	Bottom Up	S	Flow chart customer billing	S	Customer Policy Leaks ³
Ongoing		S	Meter Testing - New 2019	S	Leak Detection ⁴
		PRIORITY	Larger Meters		Initial Leak Detection
				Sample Residential Meters	
		S	Audit Billing	S	PSI Review - Excess
		M	Install Upgrade Production Meters - 2019	S	District Meter Area ⁵
		M	Policy for Unauthorized Use	M	Create annual leak detection program
		M	Auto Meter Read Program Investigation	M	Leak Noise Detectors
		L	Install AMR/AMI System	L	Maintenance Information System
		L	New Billing System	L	Section Distribution System ⁶
L	Large Customer Meter Replacement	L	CIP for infrastructure ⁷		
S - short-term = 1-2 years, M - medium-term = 5 years, L - long-term = 10 years					
Public education is detailed in subsection 2.10					
1 - Maintenance records on line repairs, set target range compatible with existing, future resources					
2 - Volumes of leaks documented					
3 - Review billing software, policies for customer leaks, incentives to use less water					
4 - Annual leak detection, using acoustics, correlators,					
5 - Isolate area for one hour leak analysis					
6 - Develop District Management Areas - if feasible					
7 - Capital Improvement Plan for short term small projects -funded by rates					

SECTION THREE

WATER CURTAILMENT ELEMENTS

Water curtailment is designed to minimize the impacts of a short-term emergency water shortage by reducing the demand and possibly look for an alternative water supply. Generally, conservation measures and a secondary supply, or a combination of the two are the most important tools water suppliers can use to at once to reduce the shock on the primary source. Curtailment plans usually develop through voluntary and mandatory restrictions of usage, dependent upon the severity of the shortage.

3.1 Assessing Water Supply: OAR 690-86-0160 (1) A description of the type, frequency, and magnitude of supply deficiencies within the past 10 years and current capacity limitation. The description shall include an assessment of the ability of the water supplier to maintain delivery during long-term drought or other source shortages caused by a natural disaster, source contamination, legal restrictions on water use, or other circumstances.

Over the past ten years, the City of Brownsville has had to make two major repairs consisting of repairs of greater than 800 feet in the mainline. With the water treatment plant (WTP) system designed to firmly supply the City of Brownsville with the capacity of 420 GPM (0.93 CFS) (18.14 MG/month), and Table 1-5 indicating a five-year average usage rate at 221 GPM (0.49 CFS) (9.6 MG/month), City of Brownsville is steadfast in managing both the source as it relates to production potential, usage of water diverted and understanding the percentage of unaccounted water. With a daily average usage of 0.318 MG, and 1.40 MG available during storage, the reservoirs can supply water for 4.3 days under normal consumption. This figure can be increased by implementing conservation, restrictions during the necessary times. Calculations prove stored water can supply the city for approximately eight days, when allowances of water will be at 100 gallons per capita daily (GPCD).

During a drought declaration by the Governor, City of Brownsville notifies its customers of the impending conditions and asked its constituents for voluntary reduction in water usage. If water production at 80 percent of capacity equals 0.48 MG daily, this figure is consistently higher by 150 percent of normal usage, which normal usage can be reduced when necessary.

The City of Brownsville also has the ability to changeover from surface water to groundwater with wells having a capability of producing 450 GPM or 0.518 MG daily operating at 80 percent of the time.

3.2 Stages of Alerts: OAR 690-86-0160 (2) A list of three or more stages of alert for potential shortage or water service difficulties. The stages shall range from a potential or mild alert, increasing through a serious situation to a critical emergency.

City of Brownsville has adopted a five-level approach for curtailment of water use, with the primary goal of keeping adequate supplies to meet essential uses such as drinking, cooking, sanitation, and fire flow. A secondary goal is to support normal flows for all customers 24-hours per day, during all conditions.

The five levels of alert will be named as mild, moderate, serious, critical and emergency. Events causing this plan to be activated would include, but not limited to the following:

- Mechanical or electrical malfunctions of pumping equipment
- Interruption of the local power company supply for a duration of time (2 days) unless emergency back-up power restores water production
- Abnormal weather conditions, extreme heat weather, consumption of more water, or a decline in production capabilities for the WTP.
- Declaration of a drought for their area by the Governor by Oregon Revised Statute 536.720
- Natural disasters that damage critical infrastructure preventing the water system to work under normal conditions
- A deliberate act of contamination of water at various points in the water system

3.3 Alert Triggers: OAR 690-86-0160 (3) A description of pre-determined levels of severity of shortage or water service difficulties that will trigger the curtailment actions under each stage of alert to provide the greatest assurance of maintaining potable supplies for human consumption; and

With an ability to quickly know production capabilities, (or lack of) City of Brownsville approaches water curtailment primarily from the production perspective, as this method can swiftly discern limitations in supply. The approach is multi-facet:

- Production cannot sustain against consumption
 - Usage or water loss is considered – investigated
- Storage levels diminishing more rapidly
 - Customer usage increases, or major leak is detected

Table 3-1, next page details those triggers that put in motion the curtailment actions under each stage of alert.

Table 3-1: Levels of Alert Triggers
Mild Alert Level
◆ Water usage reaches 80% of capacity (water production) for three consecutive days
◆ Construction projects that impede full capacity flow of system for more than 3 days
◆ A production shut down or any action that may reduce flow capacity below 80%
◆ Aquifer drawdown shows a slower recovery than normal
Moderate Alert Level
◆ Water use reaches 85% of capacity (water production) for three consecutive days
◆ Pumping capacity is reduced to 80% of normal production
◆ Normal flow in water system is reduced to 80% of full flow
◆ Primary supply well capacity is reduced to less than 75% capacity
Serious Alert Level
◆ Water use reaches 90% of capacity (water production) for three consecutive days
◆ Pumping capacity is reduced to 70% of normal production
◆ Normal flow in water system is reduced to 70% of full flow
◆ The area is declared in a severe drought per declaration by the Governor
Critical Alert Level
◆ Water use reaches 90% of capacity (water production) for five consecutive days
◆ Pumping capacity is reduced to 60% of normal production
◆ Normal flow is reduced to 50% in water system
◆ A natural disaster that incapacitates the water system, or contaminates the water source
◆ Intentional act causing long-term disabling of the water system or sustained deficit of water
Emergency Alert Level
◆ Water usage and production ability are similar or inverted
◆ A natural disaster that incapacitates the water system, or contaminates the water source

3.4 Curtailment Actions: OAR 690-86-0160 (4) A list of specific standby water use curtailment actions for each stage of alert ranging from notice to the public of a potential alert, increasing through limiting nonessential water use, to rationing and/or loss of service at the critical alert stage.

Coordinated efforts to implement any curtailment or restrictions in water usage will be carried out by the City of Brownsville City Administrator with aid from the Public Works Director.

Table 3-2: Curtailment Actions
Low Level Action (1)
The Public Works Director/ City Manager, following the procedures proven in the City of Brownsville’s policies, will issue a general request for a voluntary reduction in water use by all water users. The request will be made at a time when there is a strong sign that the city’s water supply or production capabilities will be reduced below the capacity or maximum flow is reduced so not to supply adequate service to all water customers.
The request will include a summary of the current water situation, the reason for the requested reduction in use, and a warning that mandatory cutbacks will be necessary if the voluntary measures do not sufficiently reduce water usage by 5-10 percent. Also, said will be the time frame for the voluntary reduction will be set up, showing the date and time when the reduction will be concluded.
Mild Level Action (2)
A second step would be to implement mandatory reduction in water use by all consumers. This step will assure normal capacity flows during reduced production or delivery schedules and eliminate peak demands that may create other concerns for the water system. This step is the next natural level of curtailment moving towards a moderate level of action.
The goal of this step is to support 95% flow rates using a 10% reduction.
Moderate Level Action (3)
City of Brownsville will put into place the following:
◆ No flushing of system line unless essential.
◆ Implement schedules for irrigation of lawns and landscape.
◆ Commercial use to be reduced by 10% and residential use by 20%.
◆ Washing of vehicles will be prohibited.
The goal is to support 85% flow rates using a 20% overall reduction in usage.
Critical Level Action (4)
City of Brownsville will put into place the following:
◆ Possibly establish a “drought” rate surcharge.
◆ All outdoor use of water is prohibited.
◆ All customers will be set at a daily allotment in number of gallons per day.
◆ Water service will be disconnected if allotment if disregarded.
◆ Commercial users will be reduced to 70% of the previous year allotment.
◆ Bulk water sales/usage will be stopped until further notice
The goal is to support a 75% flow rate using a 30% overall reduction in usage.
Emergency Level Action (5)
It is not “if” an emergency is going to occur, but when an emergency will take place. There are several circumstances that can result in an emergency response condition, all resulting in the water system being incapable of supplying water to the consumers. This step is launched to supply the minimum of 70 gallons per person per day.

Each step will be carried out according to the city’s policy, using various methods of communications. See curtailment actions in table 3-2.

Table 3-3: Action Levels of Curtailment:			
Water Curtailment and Reduction Goals			
Shortage Condition	Level	Reduction Usage Goal	Type of Rationing
5%	1	10%	Voluntary
10%	2	10%	Mandatory
15%	3	20%	Mandatory
25%	4	30%	Mandatory
Water System Failure	5	75 - 85%	Mandatory

**SECTION FOUR
WATER SUPPLY ELEMENT**

Municipal Water Supply Element 690-086-0170 the water supply element shall include at least the following:

4.1 Delineation - Current and Future service areas: OAR 690-086-0170 (1) A delineation of the current and future service areas consistent with state land use law that includes available data on population projections and anticipated development consistent with relevant acknowledged comprehensive land use plans and urban service agreements or other relevant growth projections.

The current area of service for the City of Brownsville has been proven under the Linn County’s Comprehensive Land Use Plan. The Portland State University-Population Research Center (PSU-PRC), Coordinated Population Forecast shows forecasts for Linn County, its UGBs and areas outside the UGBs. The 2021 statistics forecast found the county’s growth through 2042 would average 5.9 percent over the twenty-year period. For the City of Brownsville, considered by Linn County’s forecast, the annual average growth rate is 1.3 percent through 2045, then tapers off to 0.6 percent through 2070.¹ The area within the City of Brownsville UGB is approximately 928 acres, including 849 acres within the city limits.²

City of Brownsville is not expected to reach saturation development through the timeline of the WMCP, 2042, but years of higher-than-normal residential housing starts will change the timeline for saturation. An example of irregular housing starts shows from 2017 through 2019, less than ten housing starts, but in 2021 the city has issued permits for 68 housing starts. Relevant to the consumption of total waters, the maximum speculated population could be 2,275 persons as per Portland State University - Population Research Center (PSU-PRC). Using these calculations, approximately ten new dwelling could be developed using 2.6 people per household.

YEAR	2022	2027	2032	2037	2042	2047
Linn County	127,320	134,032	139,090	142,903	146,130	149,296
Population + -	6,712	5,058	3,813	3,227	3,166	Annual Ave
% change	5.0%	3.6%	2.7%	2.2%	2.1%	0.16%
Brownsville UGB	1,746	1,928	2,058	2,171	2,275	2,379
Population + -	183	130	113	105	104	
5-YR % change	0.09	0.06	0.05	0.05	0.04	
Annual % Change	0.02	0.01	0.01	0.01	0.01	
Note:	https://www.pdx.edu/population-research/population-forecasts					

1- <https://www.pdx.edu/population-research/population-forecasts>
2 – Water Master Plan – 2012

4.2 Permit Usage Schedule: OAR 690-086-0170 (2) An estimated schedule that identifies when the water supplier expects to fully exercise each of the water rights and water use permits currently held by the supplier.

It is difficult to predict population forecast due to various factors that may distort the final outcomes. Using data compiled by PSU-PRC prediction for population estimates were factored to year 2042, based on annual growth of one percent annually, which will be applied for future predictions. The second figure implemented in the forecast equation will be the peak demand of 366 GPCD that is taken from the user averages in Table 1-5 calculated as peak demand over the five-years. Current Permit Usage is shown in Table 4-2.

Table 4-2: Current Permit Usage								
Permit No. (5)(a)	Certificate No. (5)(a)	Priority Date (5)(b)	Source (5)(c)	Use (5)(d)	Maximum Allowed Rate (cfs) (5)(e)	Allowed Rate under Development Limitations (cfs) (5)(e)	Maximum Instantaneous Rate Diverted to Date (cfs) (5)(f)	% total Allowance
G-12406	0	12/7/1992	Wells	M	1.25	0.479	0.14	29.2%
GR 12	GR 11	12/31/1921	Well	M	0.5013	0.5013	0.002	0.4%
S-27871	90031	2/23/1962	River/Wells	M	0.67	0.67	0.42	63.3%
S-47733	93465	7/6/1983	River	M	0.58	0.58	0.32	54.9%
S-52426	0	5/11/1994	River	A*	2.232	2.232	0.64	
Totals					3.0013	2.23	0.88	39.6%
Shaded cells are indicating development limitations and maximum allowed usage								
* - aesthetics usage, water used to flow through Mill Race canal								
Total figures are calculated by separating permit S-52426 (aesthetics usage) from municipal usage to conclude percentage of allowance								
Total allowed rate under development limitations is 2.23 CFS, does not include 2.232 CFS for aesthetics under permit S-52426								

Carrying the estimated population to year 2042, a total population served is estimated at 2,275¹ users, which was taken directly from the PSU-PRC forecast. Using the estimate of 2,275 population and the peak demand of 366 GPCD, will require an approximate peak water demand at 0.832 MGD or 1.28 CFS.

In preparing a schedule that proves to fully exercise each water right, City of Brownsville is compelled to apply usage by forecasting and justifying the need for more water, if proven necessary. Using the calculations provided by the water system from the data covering January 2017 through December 2021, water demand estimates are based on population forecasts and gallons per capita per day, peak demand. To fully exercise each permit, under development limitations, using 1.1 percent growth and GPCD, Permit G-12406 at 1.25 CFS would be met on or about the year 2032 if all added water were presumed applied. Total certificates at 1.7513 CFS would estimate during the year 2100 with approximately 0.48 CFS (out of 2.23 CFS) exercised beyond the year 2100. This does not consider the added available water beyond the developmental limitation.

1- <https://www.pdx.edu/population-research/population-forecasts>

4.3 Demand Forecast: OAR 690-086-0170 (3) Based on the information provided in section (1) of this rule, an estimate of the water supplier's water demand projections for 10 and 20 years, and at the option of the municipal water supplier, longer periods.

The forecasted rate at which City of Brownsville will grow is founded on how the various classifications of users expand following the current alignment with the land comprehensive use plan. Historically with most small towns, the residential services account for approximately 90 percent of the total water served. Total water needed in the future:

- Population Forecast – (2042) 2,275
- Peak Demand – gallons per capita daily 366
- Total gallons per day - 0.832 MG
- Total CFS - 1.28

In sub-section 4-2, PSU-PRC estimated the service area would have an approximate 2,275 full time residents by the year 2042.¹ Based on a population of 2,275 multiplied by a maximum daily demand of 366 GPCD, generates 0.833 MGD or 24.97 MG per month. Table 4-3: Permit Applied Forecasts provides demand projections through year 2042.

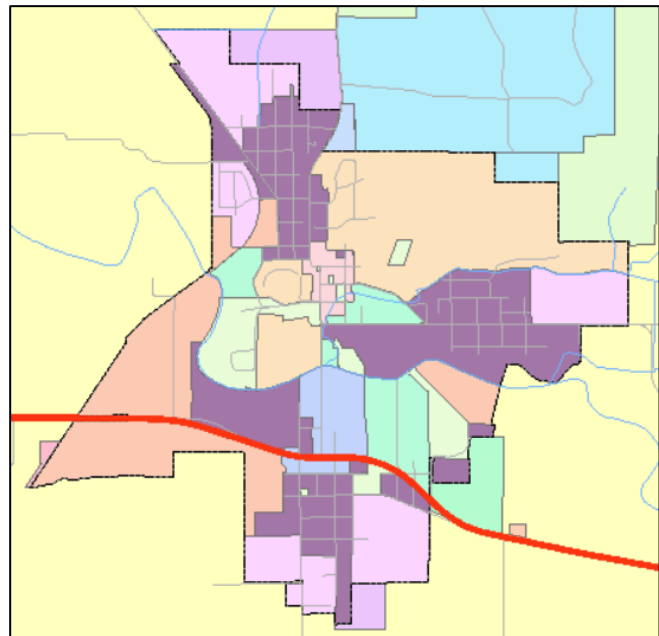
Permit	Certificate	Allowed Rate Development Limitations	Daily Usage Gals (CFS)	Peak Daily Usage CFS	2022	2027	2032	2037	2042	Total % each permits
Population					1,746	1,928	2,058	2,171	2,275	
Projected Water Usage (MG)					0.639	0.706	0.753	0.794	0.833	
Projected Water Usage (CFS) *					1.20	1.22	1.24	1.26	1.28	
G-12406		0.479	0.065	0.19	0.20	0.22	0.24	0.26	0.28	58%
GR 12	GR 11	0.50	0.0003	0.002	0.002	0.002	0.002	0.002	0.002	0%
S-27871	90031	0.67	0.227	0.57	0.57	0.57	0.57	0.57	0.57	84%
S-47733	93465	0.58	0.163	0.43	0.43	0.43	0.43	0.43	0.43	74%
S-52426		2.23	0.303	0.64	0.64	0.64	0.64	0.64	0.64	29%
Totals		2.230	0.455	1.18	1.20	1.22	1.24	1.26	1.29	58%
* - CFS is determined using population multiplied by peak GPCD, or 366 gallons										
Grey shaded cells are indicating development limitations as noted under "Allowed Rate"										
Total figures are calculated by separating permit S-52426 (aesthetics usage) from municipal usage to conclude percentage of allowance										
0.77 CFS held in greenlight water category of development limitations										

4.4 Comparison - Future Needs and Sources: OAR 690-086-0170 (4) A comparison of the projected water needs and the sources of water currently available to the municipal water supplier and to any other suppliers to be served considering the reliability of existing sources.

In table 4-3, Applied Permit Allowances, forecasting water usage for future demand is compared to current conditions for both daily and peak consumptions. Displaying the “allowed rate with development limitations” at 2.23 CFS and comparing the daily usage and peak usage with the allowed rates shows those consistent percentages of water necessary to supply the community.

Through the year 2042, consistent with the figures discovered throughout this WMCP, the City of Brownsville will require 58 percent of the existing water rights or 1.29 CFS. This figure could change if the criteria exercised in this WMCP changes, i.e., land use zoning from SFR to multi-family dwellings, or extend farm use land reclassified as rural residential.

The image shows both the City of Brownsville and a part of the surrounding area for Linn County and the current zoning. The larger percentage of yellow colored area surrounding the City of Brownsville is considered extended farm use, which could become rural residential and require water service.



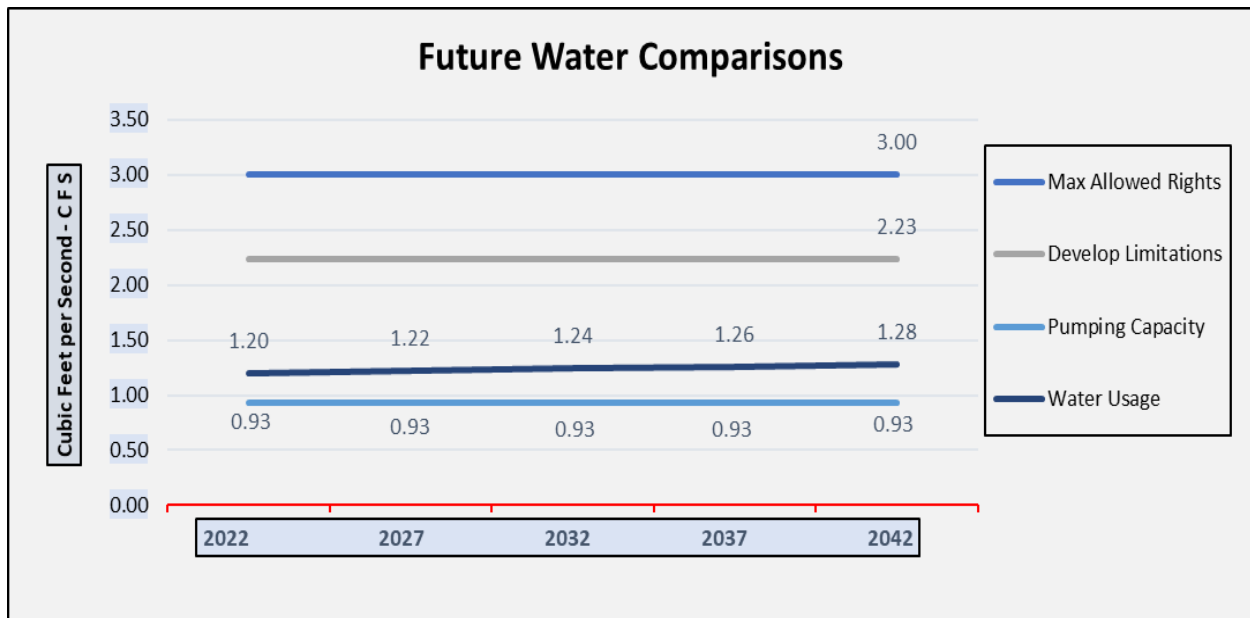
Comparison of both average and peak demands currently and projected 20-years show the increase required by the City of Brownsville and shown in Table 4-4: Water Demand Projections. See Map in Appendix B:

Brownsville	Projected Year				
	2022	2027	2032	2037	2042
Connections	765	835	885	929	969
Population	1,746	1,928	2,058	2,171	2,275
Million Gallons per Month					
Ave. Month Demand ^A	9,693,011	10,701,507	11,421,898	12,047,319	12,627,623
CFS	0.50	0.55	0.59	0.62	0.65
Maximum Month Peak Demand ^B	22,893,348	21,171,629	22,596,836	23,834,156	24,982,217
CFS	1.18	1.09	1.17	1.23	1.29
A - Average demand (non-peak) = 1.18CFS, (peak) = 1.288					
B - Figures estimated using population multiplied by 366 GPCD by 30 days					

Chart 4-1, provides the comparison of the projected required water for City of Brownsville which is 1.288 CFS, (578 GPM) based on peak demand for the year 2042. City of Brownsville’s projected use at 1.288 CFS from the available sources of water, and their reliability are deemed adequate.

The City of Brownsville has situated itself with water sources that afford flexibility as it relates to quantities of water. The city already has in place information relating to more storage capacity and a WTP plant upgrade, when another slow sand filter is put in place, gives an added 200 GPM. These two facts position the city for sustainability in the future.

Chart 4-1: Future Water Requirements:



4.5 Expansion - Initial Diversions: OAR 690-086-0170 (5)(a) If any expansion or initial diversion of water allocated under existing permits is necessary to meet the need shown in section (3) of this rule, an analysis of alternative sources of water that considers availability, reliability, feasibility, and likely environmental impacts. The analysis shall consider the extent to which the projected water needs can be satisfied through: (a) Implementation of conservation measures identified under OAR 690-086-0150. counted

Through implementation of conservation steps, i.e., review of consumption cycles, rate settings, consumer informational packets, leak detection repairs, and meter calibration, City of Brownsville has named conservation measures that are both practical and possible at this time.

It is the goal of the city to keep lower consumptions of water through conservation methods prior to applying for more water rights. Given the total amount of water rights, the city at this time, is not looking to expand or start the diversion of additional water. City of Brownsville will consider future monitoring of all production water, static water levels at the well and delivery methods to keep the current water permits and certificates.

4.6 Interconnections: OAR 690-086-0170 (5) (b) Interconnection with other municipal supply systems and cooperative regional water management; and

City of Brownsville has no emergency inter-tie with any other entity as the distance to create an inter-tie is not possible. City of Brownsville is open to discussing the topic of regional water management for the benefit of all who choose to take part. Participation will be contingent on the time and resources needed to aid in a cooperative regional water management group.

4.7 Cost Saving Measures: OAR 690-086-0170 (5) (c) Any other conservation measures that would provide water at a cost that is equal to or lower than the cost of other identified sources.

At this time, City of Brownsville has not developed any other conservation measures that will affect the cost of supplying water. The primary focus in conservation efforts is to reduce the demand on their existing supplies thus retaining current water sources.

4.8 Quantification of Maximum Rate: OAR 690-086-0170 (6) If any expansion or initial diversion of water allocated under existing permits is necessary to meet the needs shown in section (3) of this rule, a quantification of the maximum rate and monthly volume of water to be diverted under each of the permits.

Expansion or initial diversion of water allocated under existing permits and certificates is not necessary for existing or future needs. Table 4-5 below shows usage rates as they relate to the permit or certificate.

Table 4-5 shows the development limitations at 2.23 CFS and with current average daily usage (0.50 CFS) and peak demand (1.288 CFS) the City of Brownsville will continue to put forth an effort to manage the water usage in a responsible manner. The figures prove production, usage and unaccounted for water are a work in progress. Enhanced routine methods will be implemented for two purposes, a) to reduce the overall percentage of unaccounted for water, b) to recognize areas of apparent losses. The two methods will more accurately define the balance of water during the update of this WMCP.

Table 4-5: Permit Usage Rates					
Permit # Certificate #	Maximum Allowed Rate (cfs) ¹	Maximum Rate Allowed (CFS) ²	Maximum Rate Allowed (GPM)	Monthly Maximum Quantity Allowed (CFS)	Monthly Maximum Quantity Allowed (MG)
G-12406	1.25	0.48	214.98	0.28	5.43
GR 11	0.50	0.50	224.98	0.002	0.05
90031	0.67	0.67	300.70	0.57	10.98
93465	0.58	0.58	260.30	0.43	8.34
S-52426	2.23	2.23	1001.72	0.64	43.27
Total W DL	3.00	2.23	1000.96	1.28	24.79
Total	5.233	4.4623	2002.68	1.92	68.06
1- No development limitations, 2- With development limitations (DL), 0.77 CFS in "greenlight" water, available only by proof and request					
S-52426 - aesthetics only use water, water diverted through canal and returned back to river - not calculated in Total W DL					
Total W DL figures are calculated by separating permit S-52426 (aesthetics usage) from municipal usage to conclude total usage					

4.9 Mitigation Actions: OAR 690-086-0170 (7) For any expansion or initial diversion of water under existing permits, a description of mitigation actions the water supplier is taking to comply with legal requirements including but not limited to the Endangered Species Act, Clean Water Act, Safe Drinking Water Act; and

City of Brownsville will not be expanding or begin initial diversion under their existing permits as stated previously in this WMCP. City of Brownsville has followed both Federal and State rules under the Safe Drinking Water Act. Rules are in place and followed as it relates stream flow management and minimum fish persistence target flows. The wells are in an area that is not considered a “critical groundwater” area. Regarding the Clean Water Act, actions are required by City of Brownsville for the discharge of wastewater effluent follow the rules implemented by the State of Oregon Department of Environmental Quality (DEQ) and the limits of discharge to the receiving surface waters.

4.10 Acquisition of New Water Rights OAR 690—086-0170(8) If acquisition of new water rights will be necessary within the next 20-years to meet the needs shown in (3), an analysis of alternative sources of the additional water that considers availability, feasibility, and likely environmental impacts and the schedule for development of the new sources of water. The analysis shall consider the extent to which the new for new water rights can be eliminated through.

It is not necessary for City of Brownsville to attain new water rights within the next 20-years, as the city is currently forecasted to use 1.288 CFS of 3.00 CFS (without development limitations) or 43 percent through the year 2042, or when it is assumed, saturation is completed with a total population of 2,275 full-time residents.

4.11 Implementation of Conservation Measures: OAR 690-086-0170 (8) (a) Implementation of conservation measures identified under OAR 690-086-0150.

City of Brownsville is charged with the conservation and management of the State's water. Through a series of steps outlined in section 2.10 City of Brownsville currently meets all the requirements in the following manner. Annual Water audit, full metered system (replacement of new meters in 2019), leak detection and repair, rate structure that encourages conservation and a public education program. Pending on results of upcoming years water loss reports (2027), such evidence will guide the City Council to added steps if necessary.

4.12 Cooperative Regional Water Management OAR 690-086-0170 (8) (b) Interconnection with other municipal supply systems and cooperative regional water management; and

City of Brownsville, for several reasons is strategically found between two larger municipalities, but relating to regional water management and interconnections, it is physically unlikely to develop an inter-tie with any entity in the near future. City of Brownsville's Council will be open to discussions with regional entities to keep abreast on the growth of and demand of water usage in the area.

4.13 Other Conservation Measures OAR 690-086-0170 (8) (c) Any other conservation measures that would provide water at a cost that is equal to or lower than the cost of other identified sources.

City of Brownsville has no other conservation measures that would provide water at a cost that is equal to or lower than the cost of other identified sources. Sources are proven adequate in both quantity and quality both currently and during the timeline of this WMCP.

4.14 Conservation Schedule – Cost: OAR 690-086-0130(7)(a) if during the next 20 years the maximum rate of water diverted under an extended permit will be greater than the maximum rate authorized for diversion under the extension or previously approved water management conservation plan: a) the plan includes a schedule for development of any conservation measures that would provide water at a cost that is equal to or lower than the cost of other identified sources, unless the supplier has provided sufficient justification for the factors used in selecting other sources for development or the supplier serves a population of less than 1,000;

City of Brownsville, over the next 20-years will not likely need to divert an amount of water greater than the maximum rate of diversion under the final order approving the permit (G-12406) extension of time (10-1-2048). Based on the single existing permit, and certificates with a total of 2.23 CFS (1,000 GPM), City of Brownsville will not expect the need to divert more water beyond the maximum rate authorized under the final order approving the WMCP. Additionally, the efficiency which City of Brownsville supplies water to its customers will prove more economical as the upgrades to the meters, distribution system and public education will begin a new era of water control and management.

4.15 Justification of Source(s) OAR 690-086-0130(7)(b): increase use from the source is the most feasible and appropriate water supply alternative available to the supplier; and

The City of Brownsville's sources are the most feasible and appropriate supply. The City of Brownsville has not considered an alternative supply source. City of Brownsville's personnel are aware of production capacities, aesthetics in water quality, static water levels in the aquifer, and flows in the Calapooia River and uses this information for the best management of both the quantity and quality of water.

4.16 Mitigation Requirements: OAR 690-086-0130(7)(c): If mitigation is legally required to address limitations or restrictions on the development of permits for which resource issues are identified under OAR 690-086-0140(5)(i), the plan contains documentation that the supplier is complying with the mitigation requirements. The Department may consult with federal and state agencies in making this determination.

Resource issues identified with the water sources are primarily focused on the Calapooia River, which is listed in the 2018-20 Integrated Assessment Report. The river was reviewed for many assessments and labeled under category 5 show a designated use is not supported or a water quality standard is not attained and a TMDL is needed. Appendix D provides additional information. This plan contains information proving any concerns identified under OAR 690-086-0140(5)(i) are relevant to the water sources used by City of Brownsville, who is in compliance with the mitigation requirements.

Greenlight Water Worksheet

(NOTE: Water suppliers are encouraged to include this worksheet as part of their WMCP. Use additional sheets as necessary.)

1. Does the water supplier hold any extended water use permits?

Yes No

If **NO**, stop. A Greenlight Water request does not apply.

If **YES**, list the extended permit number(s) and indicate the maximum instantaneous rate of water allowed by the permit:

Permit Number	<u>Instantaneous Rate of Water Allowed by Permit</u> (in cfs or gpm)
G-12406	1.25 CFS – 561 GPM

2. Do the extended permit(s) have a Development Limitations condition imposed by a final order approving the Permit Extension or a previously submitted WMCP that freeze the quantity of water that can be diverted under the extended permit?

Yes No

If **NO**, stop. A Greenlight Water request does not apply.

If **YES**, list the extended permit number(s) and indicate the maximum instantaneous rate of water allowed under the Development Limitations condition established by the Permit Extension or previously approved WMCP:

Permit Number	<u>Development Limitations</u> Instantaneous Rate of Water Allowed by Final Order approving a Permit Extension or previous WMCP (in cfs or gpm)
G-12406	0.479 – 215 GPM

3. Does the water supplier anticipate needing to divert water under an extended permit(s) at an instantaneous rate that **is greater than** the amount specified in the Development Limitations condition (established by the Permit Extension or previously approved WMCP) in order to meet its projected 20-year water demands?

Yes No

If **NO**, stop. A Greenlight Water request does not apply.

If **YES**, Items **A** and **B** below must be addressed in the water supplier's WMCP being prepared for submittal:

- A. Identify the maximum instantaneous rate and the maximum monthly volume of water that will be needed under the extended permit(s) for the next 20 years to meet the water supplier's projected demands:

Permit Number	<u>Greenlight Water Request</u>	
	Maximum Instantaneous Rate of Water (in cfs or gpm) Anticipated to be Diverted to meet 20-year Demands	Maximum Monthly Volume of Water (in million gallons) Anticipated to be Diverted to meet 20-year Demands
Total		

Greenlight Water Worksheet (...continued)

B. In the spaces provided below, describe how the water supplier has satisfied each of the following criteria:

- **OAR 690-086-0130(7)(a)** The plan includes a schedule for development of any conservation measures that would provide water at a cost that is equal to or lower than the cost of other identified sources, **unless**:
 - the supplier has provided sufficient justification for the factors used in selecting other sources for development;
or
 - the supplier serves a population of less than 1,000.

NA

- **OAR 690-086-0130(7)(b)** Increased use from the source is the most feasible and appropriate water supply alternative available to the supplier.

NA

- **OAR 690-086-0130(7)(c)** If mitigation is legally required to address limitations or restrictions on the development of permits for which resource issues are identified under OAR 690-086-0140(5)(i), the plan contains documentation that the supplier is complying with the mitigation requirements. The Department may consult with federal and state agencies in making this determination.

NA

Appendices A:

To:

- Linn County EMA Coordinator – 541.812.2274
 - Ric Lentz – rlentz@linnsheriff.org

From: The City of Brownsville – Scott McDowell

RE: Water Management Conservation Plan (WMCP)

To Whom It May Concern:

Following rule 690-086-0125(5), notification of local governments of the completion of our WMCP, please find an e-copy attached in this e-mail for your review. Any comments on the plan can be sent by a replied e-mail and will be placed in the copy that will be sent to the office of Oregon Water Resources Department.

Please provide a reply within thirty (30) days or sooner of receiving this e-mail so we may move forward with this project. We appreciate the time spent under review. Please send any questions or comments to Scott McDowell, City Administrator at admin@ci.brownsville.or.us

Sincerely,

Scott McDowell – City Administrator

City of Brownsville

Reply from Linn County Emergency Manager

Hey Scott,

Thanks for including me on this. My Recovery and Mitigation specialist (Emerson Marsh) and I reviewed the plan. Looks good overall. Our only comment is that we think OSU is set to release some new climate projections later this year that might be useful for this plan. If/when that data gets released I can send it your way. Let me know if you have any questions.

Respectfully,

Ric Lentz

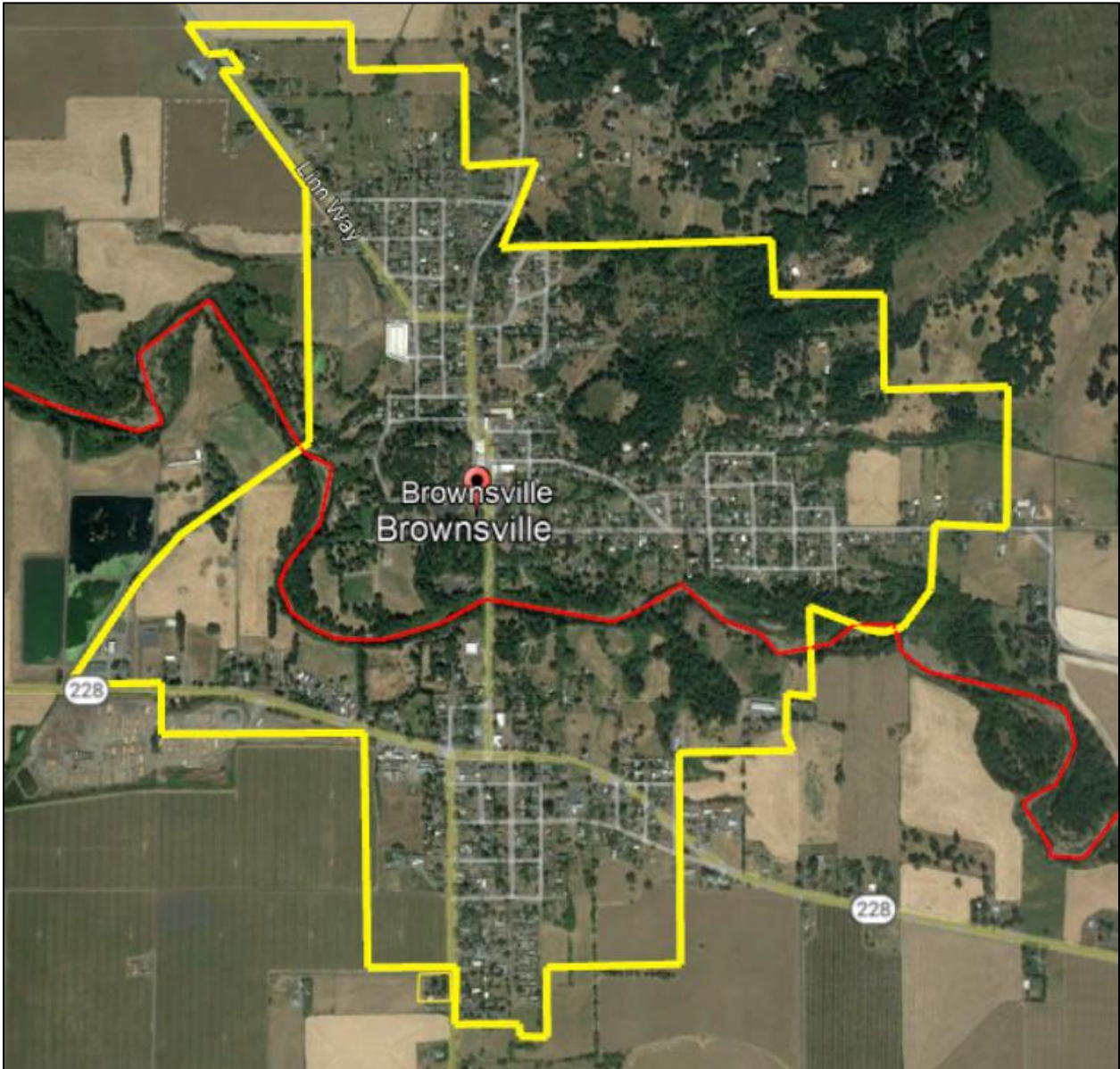
Emergency Manager

Linn County Sheriff's Office

Office 541-812-2274 x4693

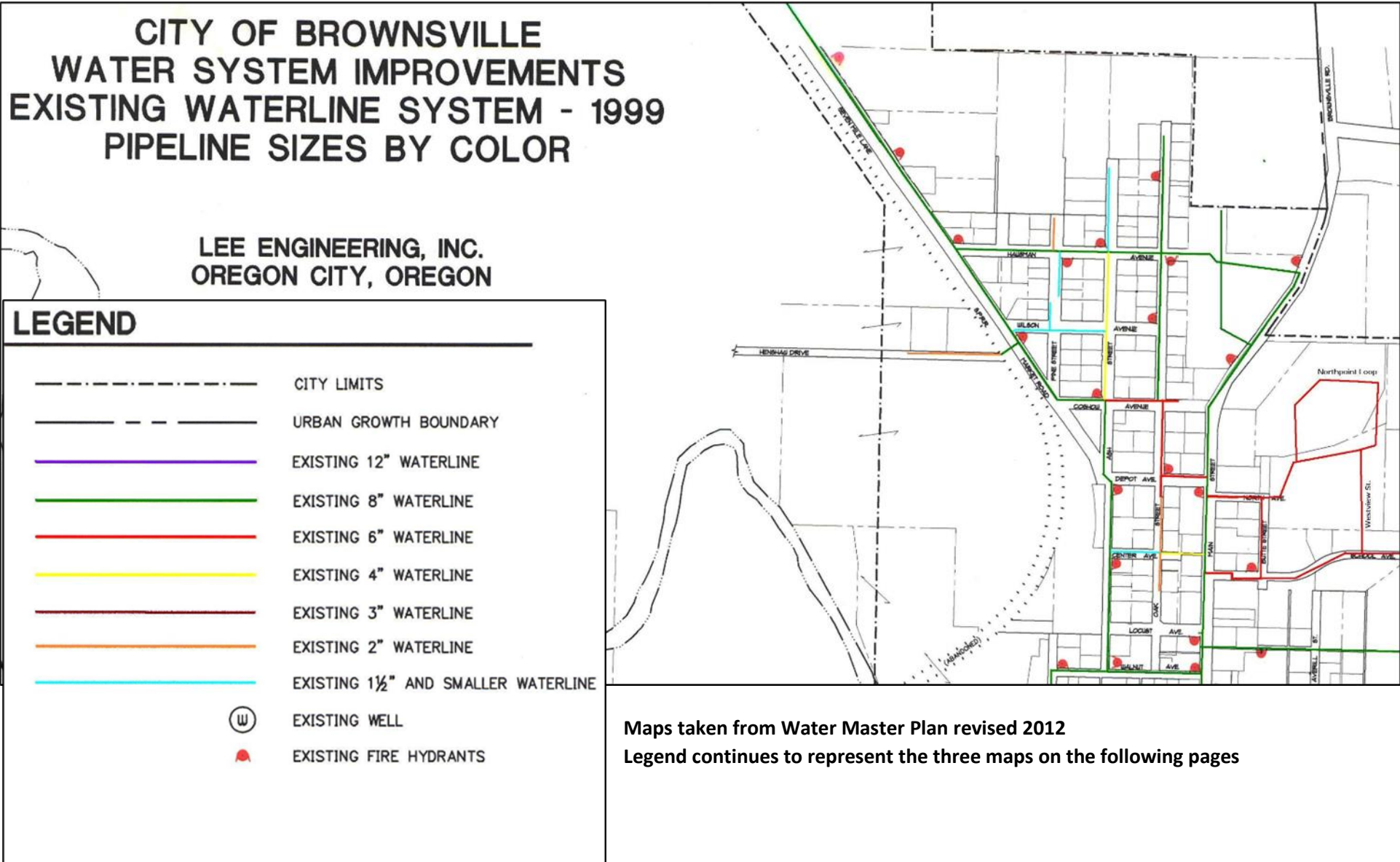
Mobile 561-281-8625

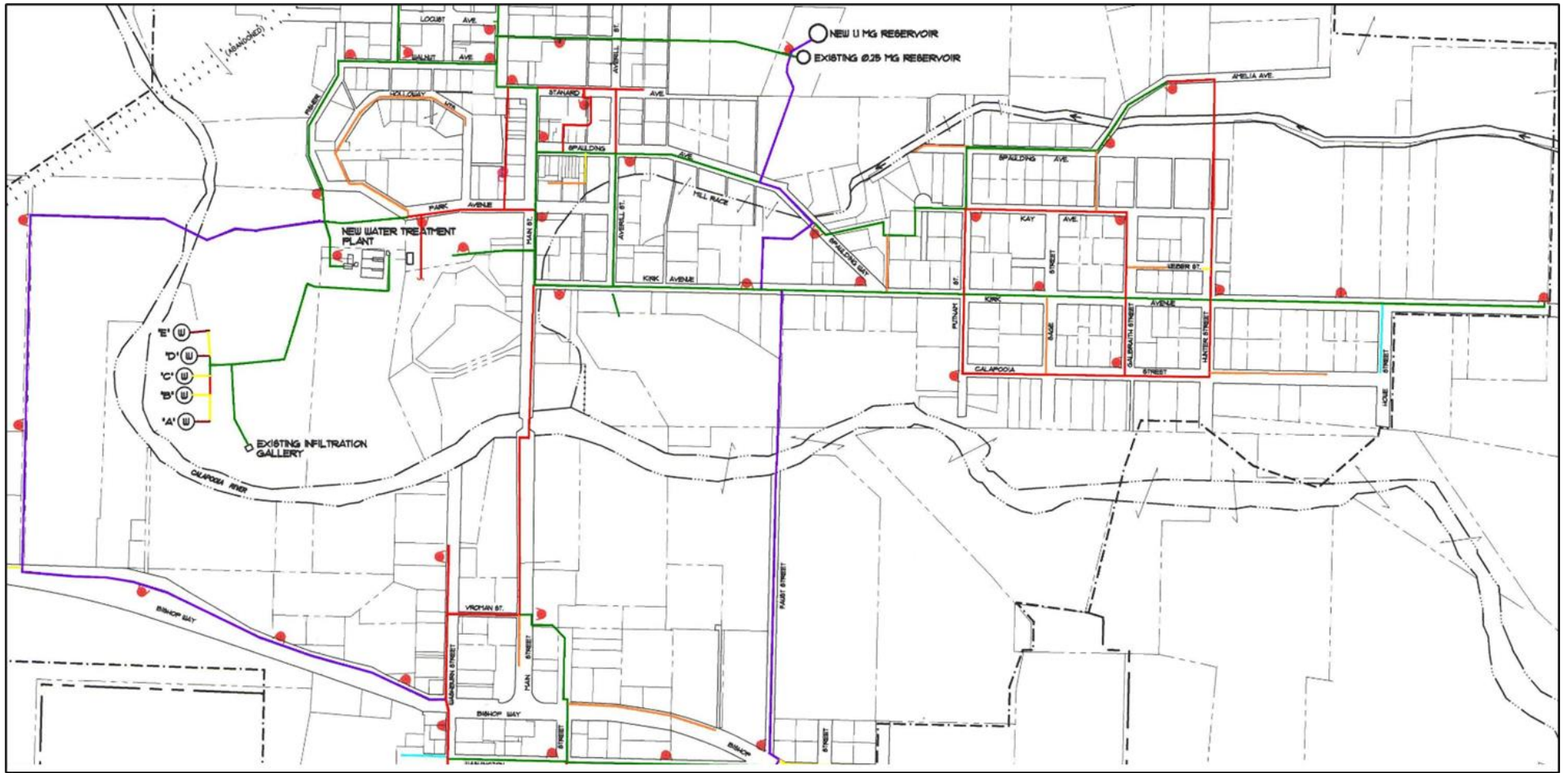
Appendix B Aerial Urban Growth Boundary



City limits depicted in gray scale
Image of City of Brownsville Urban Growth Boundary shown by yellow border
Calapooia River shown using red line – Google Earth 2021, Calapooia River depicted in red path

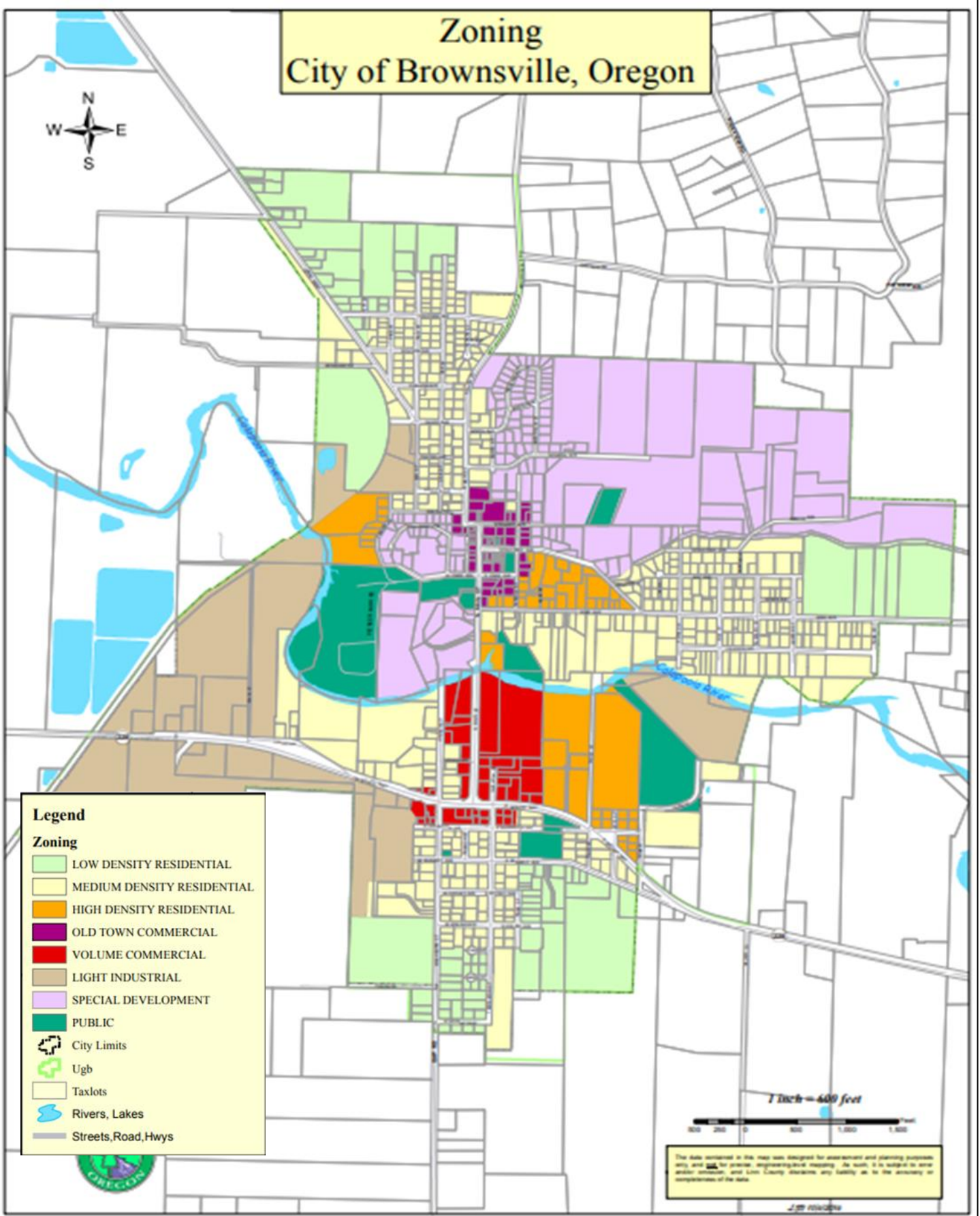
Appendix B: Brownsville Water System Maps







Zoning City of Brownsville, Oregon



Legend

Zoning

- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- OLD TOWN COMMERCIAL
- VOLUME COMMERCIAL
- LIGHT INDUSTRIAL
- SPECIAL DEVELOPMENT
- PUBLIC
- City Limits
- Ugb
- Taxlots
- Rivers, Lakes
- Streets, Road, Hwys

1 Inch = 400 feet



The data contained in this map was designed for assessment and planning purposes only and is not for general engineering-level mapping. No warranty is made as to the accuracy or completeness of the data.

JPM CONSULTING

Appendix C – Water Permits, Extensions, and certificates



Permit G_12406.pdf



Permit G 12406 Ext
Final Order.pdf



Permit S_27871.pdf



Permit S_27871
Certificate 90031.pdf



Permit S_47733.pdf



Permit S_47733 Cert
93465.pdf

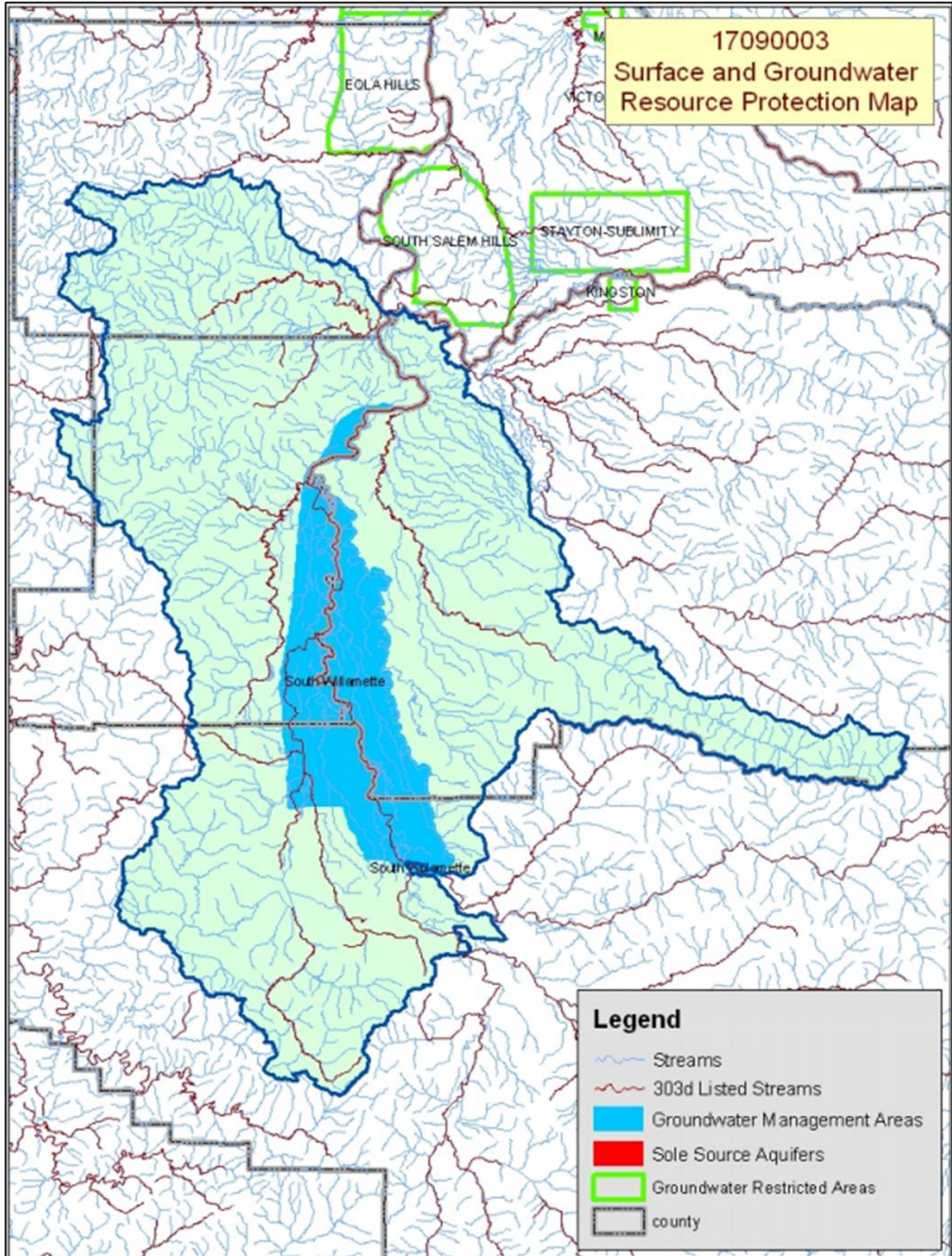


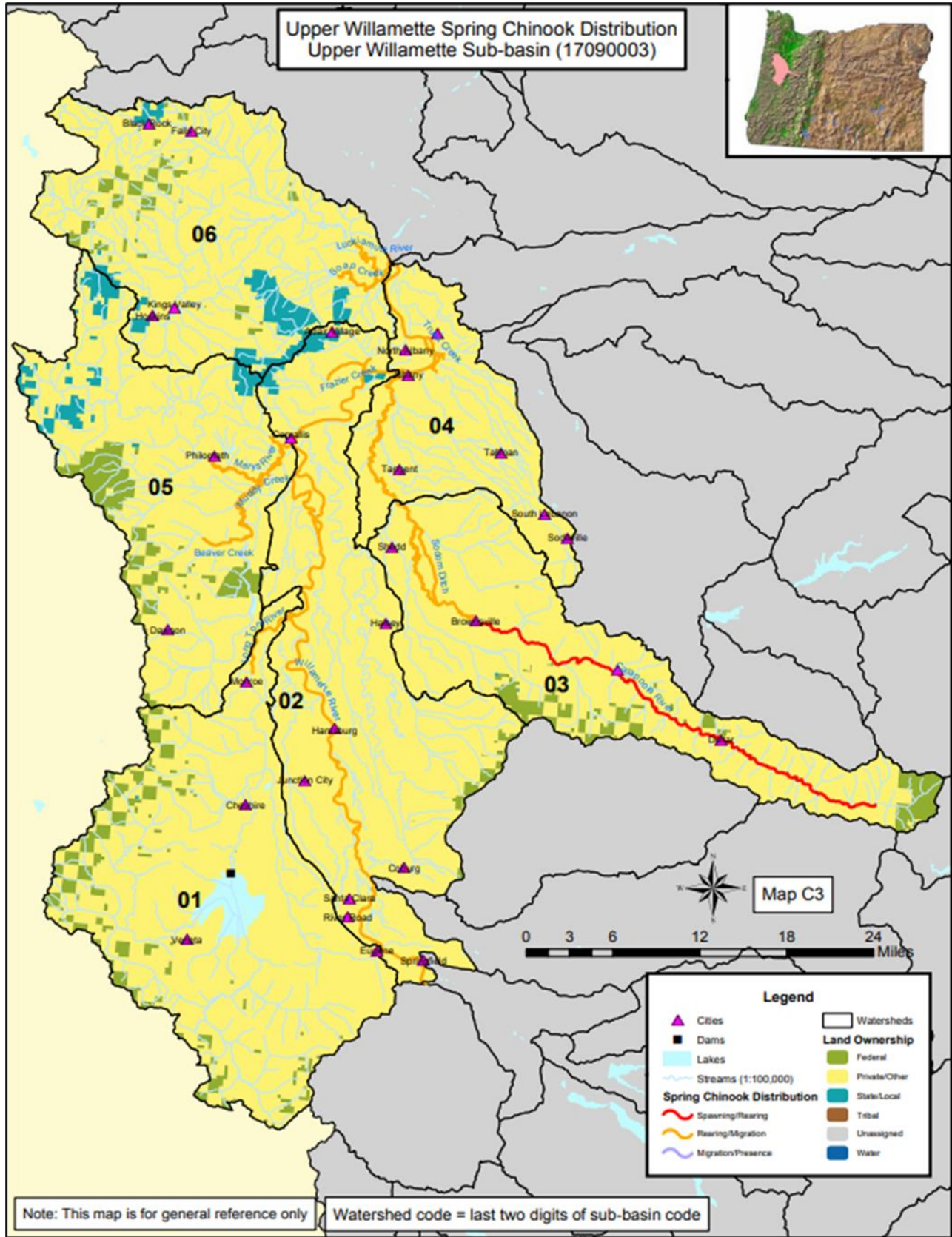
Permit S_52426.pdf



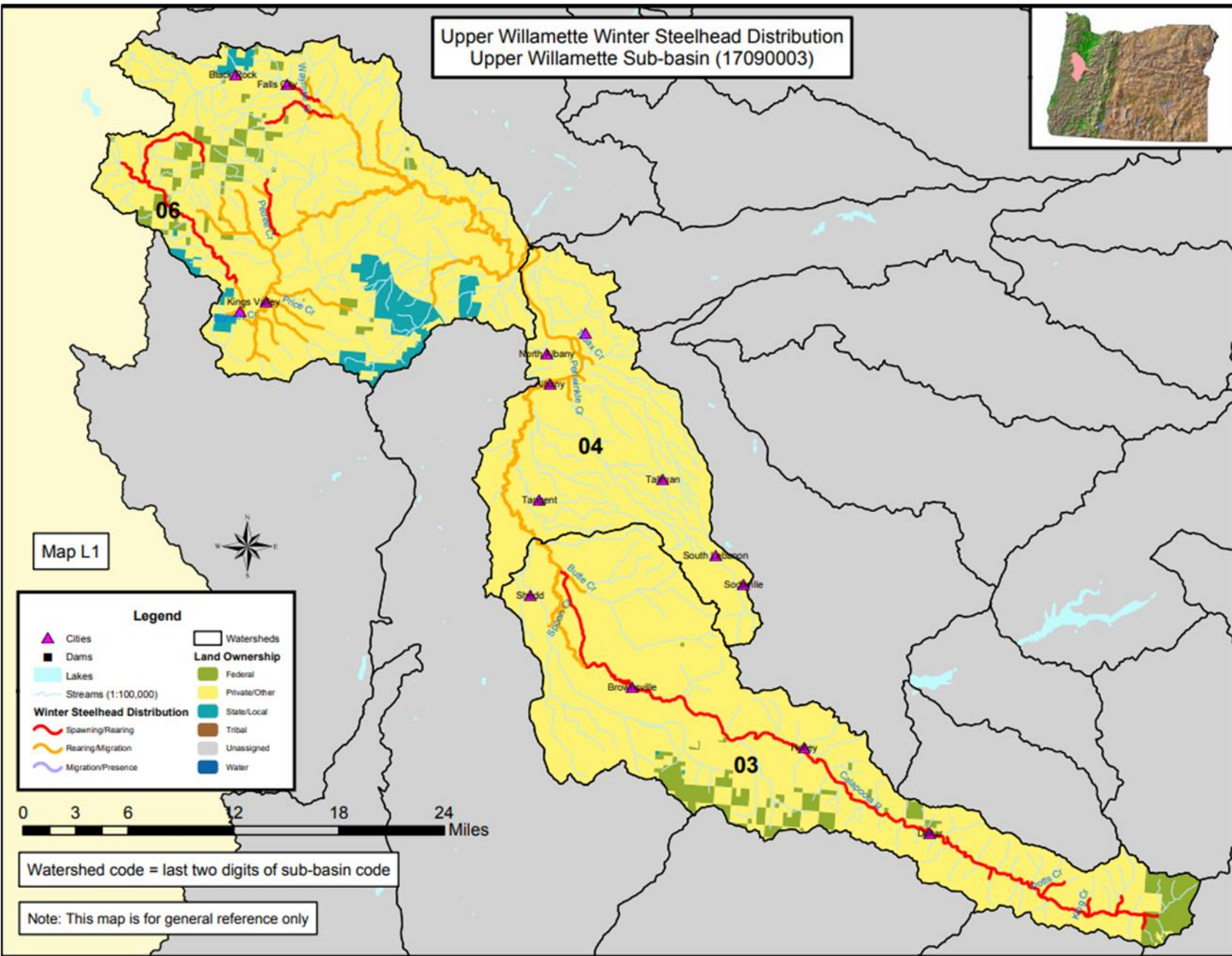
Permit S_52426 Ext of
Time.pdf

Appendix D – Endangered Species Information – Water Quality Assessments





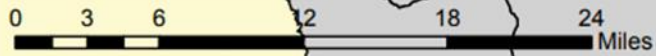
Upper Willamette Winter Steelhead Distribution
Upper Willamette Sub-basin (17090003)



Map L1

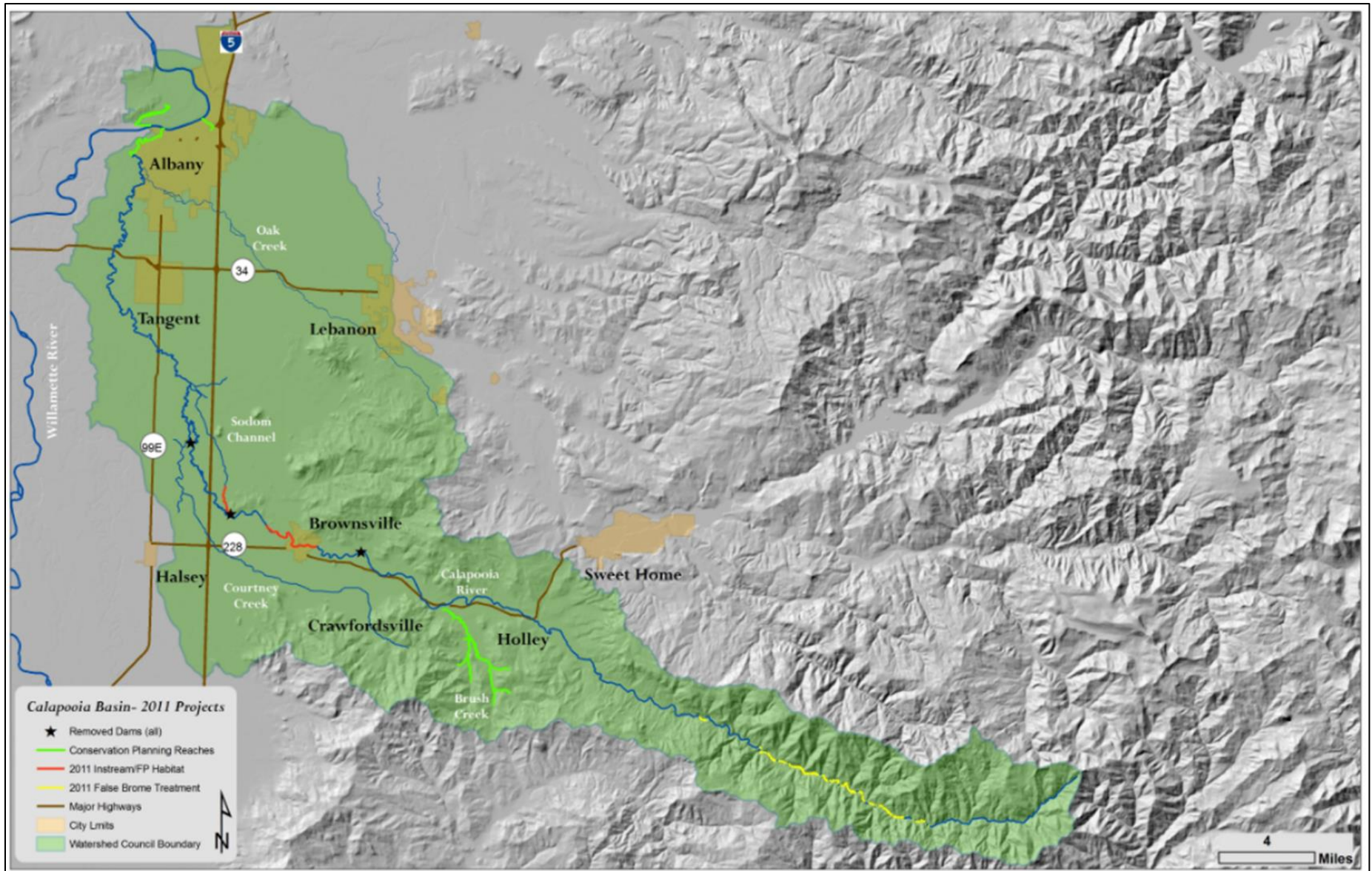
Legend

Cities	Dams	Lakes	Streams (1:100,000)	Watersheds
Winter Steelhead Distribution				Land Ownership
Spawning/Rearing	Rearing/Migration	Migration/Presence	Federal	Private/Other
			State/Local	Tribal
			Water	Unassigned



Watershed code = last two digits of sub-basin code

Note: This map is for general reference only



Appendix D: DEQ Water Quality Assessment Report:

Oregon's 2018 / 2020 Integrated Report								
Assessment Unit ID	Assessment Unit Name	Assessment Unit Description	OWRD Basin	Assessment	IR Category	Year Listed	Assessed 2018	Beneficial Use
OR_WS_170900030403_02_10427 4	HUC12 Name: Calapooia River	Watershed Unit (1st through 4th order streams)	Willamette	Dissolved Oxygen-Spawning	Category 5	2012	NO	Fish and Aquatic Life
OR_WS_170900030403_02_10427 4	HUC12 Name: Calapooia River	Watershed Unit (1st through 4th order streams)	Willamette	Dissolved Oxygen-Year Round	Category 5	2012	NO	Fish and Aquatic Life
OR_WS_170900030301_02_10426 4	HUC12 Name: Hands Creek-Calapooia River	Watershed Unit (1st through 4th order streams)	Willamette	Temperature-Spawning	Category 5	2010	NO	Fish and Aquatic Life
OR_WS_170900030301_02_10426 4	HUC12 Name: Hands Creek-Calapooia River	Watershed Unit (1st through 4th order streams)	Willamette	Temperature- Year Round	Category 5	2010	NO	Fish and Aquatic Life
OR_WS_170900030302_02_10426 5	HUC12 Name: Bigs Creek-Calapooia River	Watershed Unit (1st through 4th order streams)	Willamette	Temperature- Year Round	Category 5	2012	NO	Fish and Aquatic Life

Appendix D: Tables 1 and 2 in Permit G-12406 Extension Final Order from ODFW and Development Limitations

ODFW'S RECOMMENDED MINIMUM FISH FLOW NEEDS IN THE CALAPOOIA RIVER AT ALBANY, OREGON	
Month	Cubic Feet per Second
October	58
November – May	140
June	90
July	50
August	30
September	25

ODFW'S RECOMMENDED FISH PERSISTENCE TARGET FLOWS IN THE CALAPOOIA RIVER MEASURED AT USGS GAGE 14173500, CALAPOOIA RIVER AT ALBANY, OREGON	
Month	Cubic Feet per Second
November – May	140
June	90
July - October	Appropriation Not Authorized

Appendix E: Water Rates

MONTHLY SERVICE CHARGE

In-City

Base Rate 0 - 300 c.f. \$ 26.97

Additional From	301 - 600 c.f. \$ 1.75 per hundred c.f.
	601 - 1000 c.f. \$ 1.94 per hundred c.f.
	1001 - 1500 c.f. \$ 2.00 per hundred c.f.
	1501+ c.f. \$ 2.17 per hundred c.f.

Out-of-City

Base Rate 0 - 300 c.f. \$ 40.46

Additional From	301 - 600 c.f. \$ 2.26 per hundred c.f.
	601 - 1000 c.f. \$ 2.53 per hundred c.f.
	1001 - 1500 c.f. \$ 2.77 per hundred c.f.
	1501+ c.f. \$ 2.84 per hundred c.f.

Water Capital Improvement Fee	\$2.50
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BE IT FURTHER RESOLVED, that all prior Resolutions setting rates and fees authorized by Ordinance No. 534 and the Brownsville Municipal Code, Chapter 13.05, Article II. Water Regulations are hereby repealed.

This Resolution shall become effective July 1st, 2020, upon being passed and approved by the City Council.

Passed and approved by the City Council this 23rd day of June 2020.