ANNUAL TOWN MEETING
2015
PUBLIC WORKS

- Water
- $ Cost ???

The 1970’S

Cuyahoga River on Fire

Wake up Call

Earth Day 1970

Clean Water Act	1972
Safe Drinking Water Act	1974

Federal Legislation Authorizing the USEPA

Clean Water Act - Sanitary Sewer
Storm Sewer

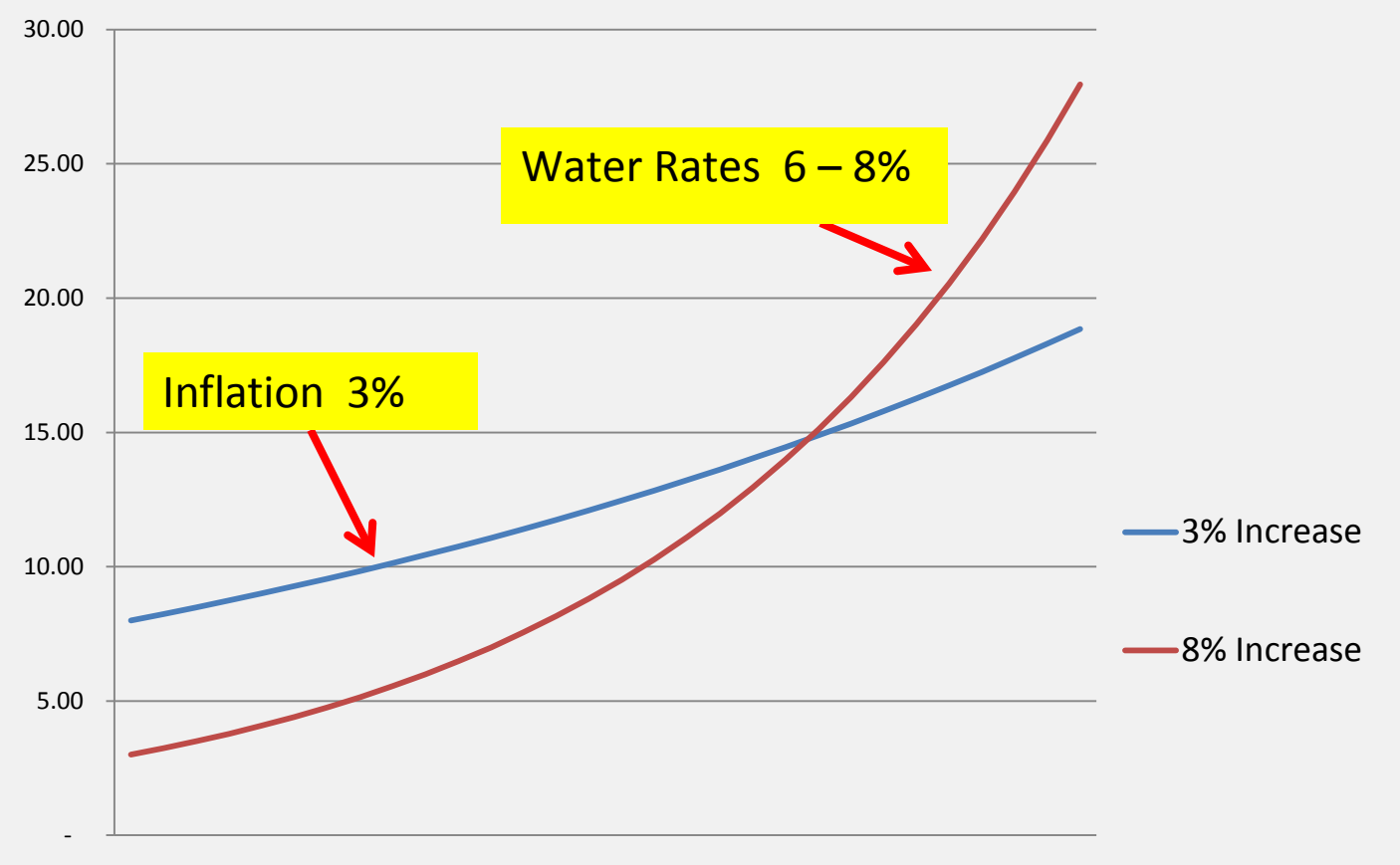
Safe Drinking Water Act – Water

Sanitary Sewer and Storm Sewer Rates
set by
Regional Sewerage Agency CWS

Water Rates are
Set by
City of Forest Grove

WATER RATES

Why are they increasing faster than the average rate of inflation?



THE ANSWER:

Aging Water Works (infrastructure)

Added Drinking Water Regulations

Saving Money for Future Projects

THE ANSWER:

Aging **Water Works** (infrastructure)

Added Drinking Water **Regulations**

Saving Money for **Future Projects**

Significant “infrastructure” built in 40’s 50’s 60’s.

That we all have been using and relying on.

It’s difficult to know how long it will last.

When it will break or fail.

What it will cost to fix it.

TYPICAL WATER COST

Residential Customer in Forest Grove

1,000 gallons $4.75

Delivered to your home
Into your home

HOW MUCH WATER DO YOU USE?

Average Person in Forest Grove

Uses 100 gallons per day

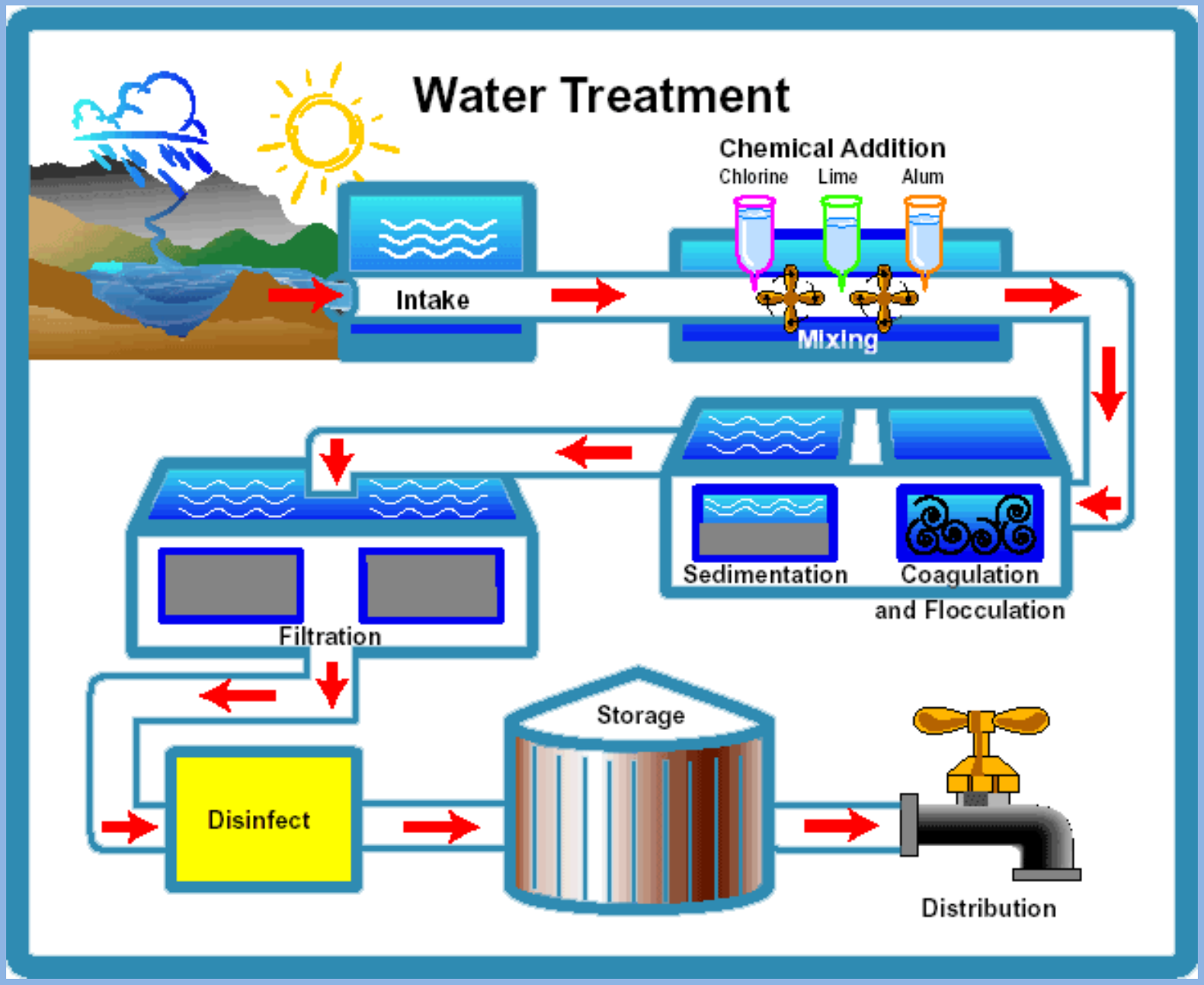
Household 7,500 gallons per month

Or 90,000 gallons per year

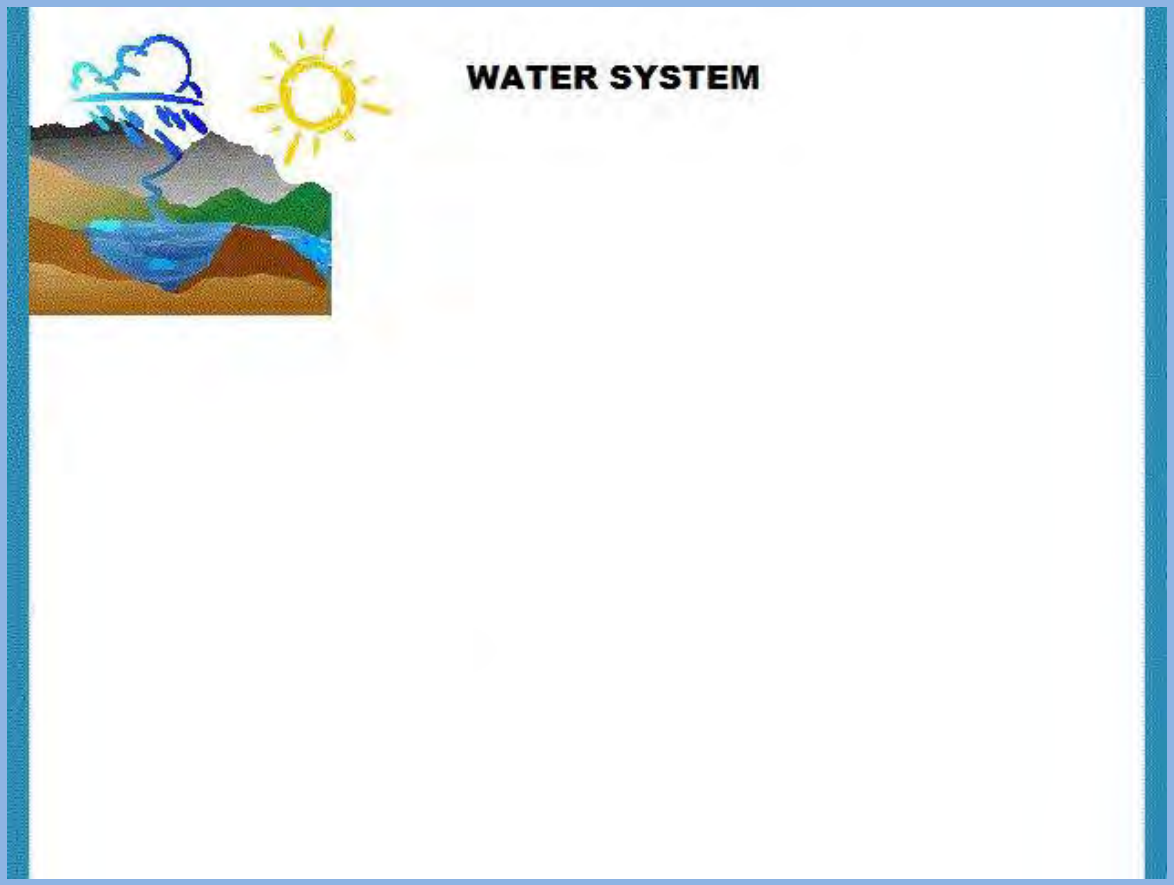
WATER SYSTEM

- Source $
- Treatment $
- Distribution $

- There are three main elements to a water system (infrastructure)

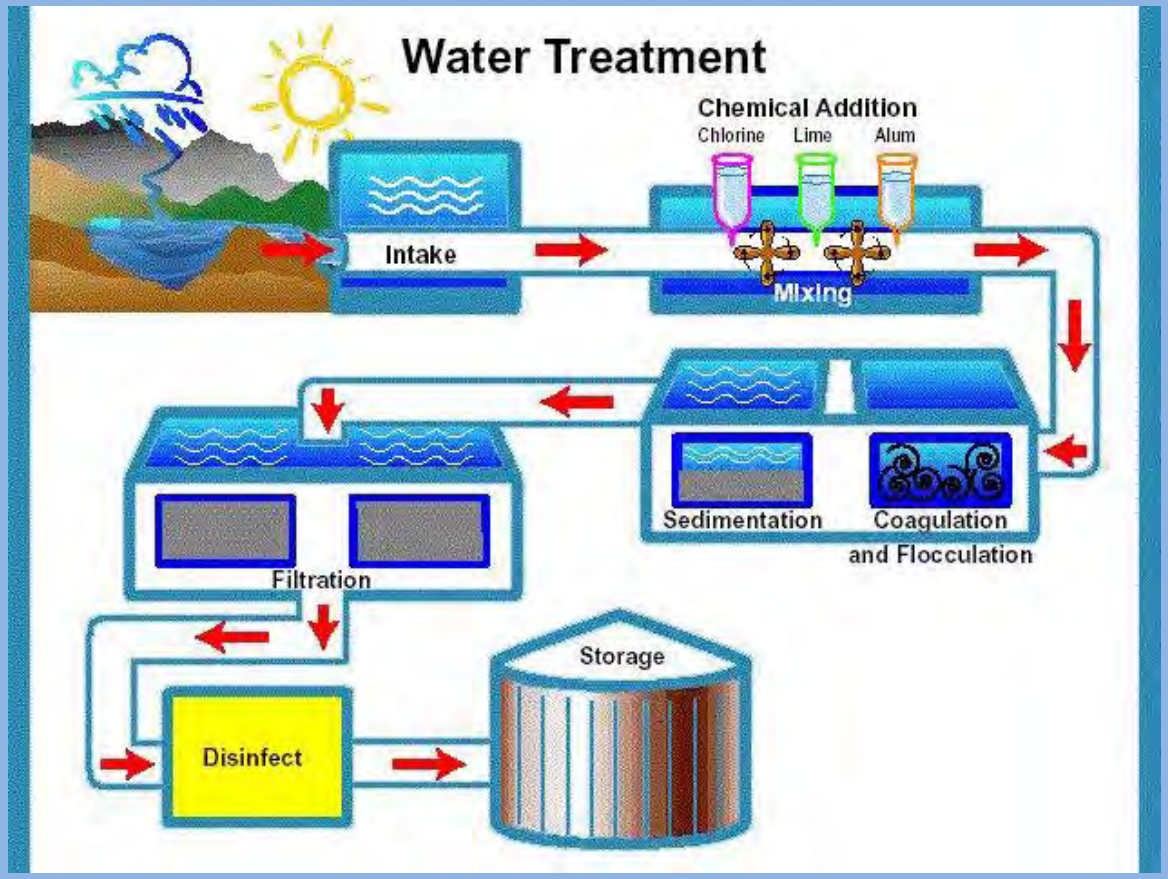

Water Treatment
Chemical Addition
Chlorine
Lime
Alum
Intake
Mixing
Sedimentation
Coagulation
and Flocculation
Filtration
Storage
Disinfect
Distribution

Source of Water



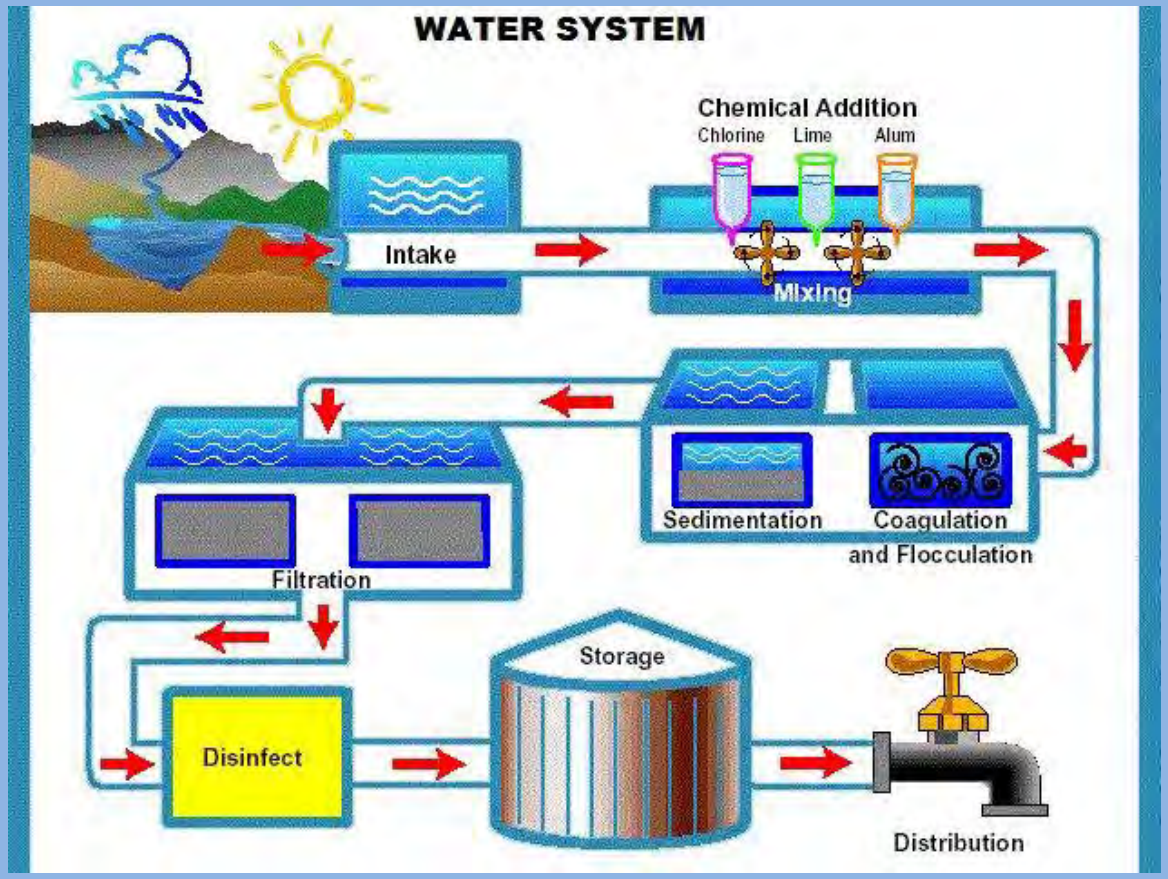
River or Lake

(Very difficult to develop new water source)



Treatment Plant

($$ needed for operation, maintenance, and expansion)



Distribution – pipes, valves, pumps, tanks

($$ needed for operation, maintenance, expansion)

CITY OF FOREST GROVE'S WATER SOURCES

The City owns two:

1. Joint Water Commission
2. City-Owned Watershed

JOINT WATER COMMISSION SYSTEM

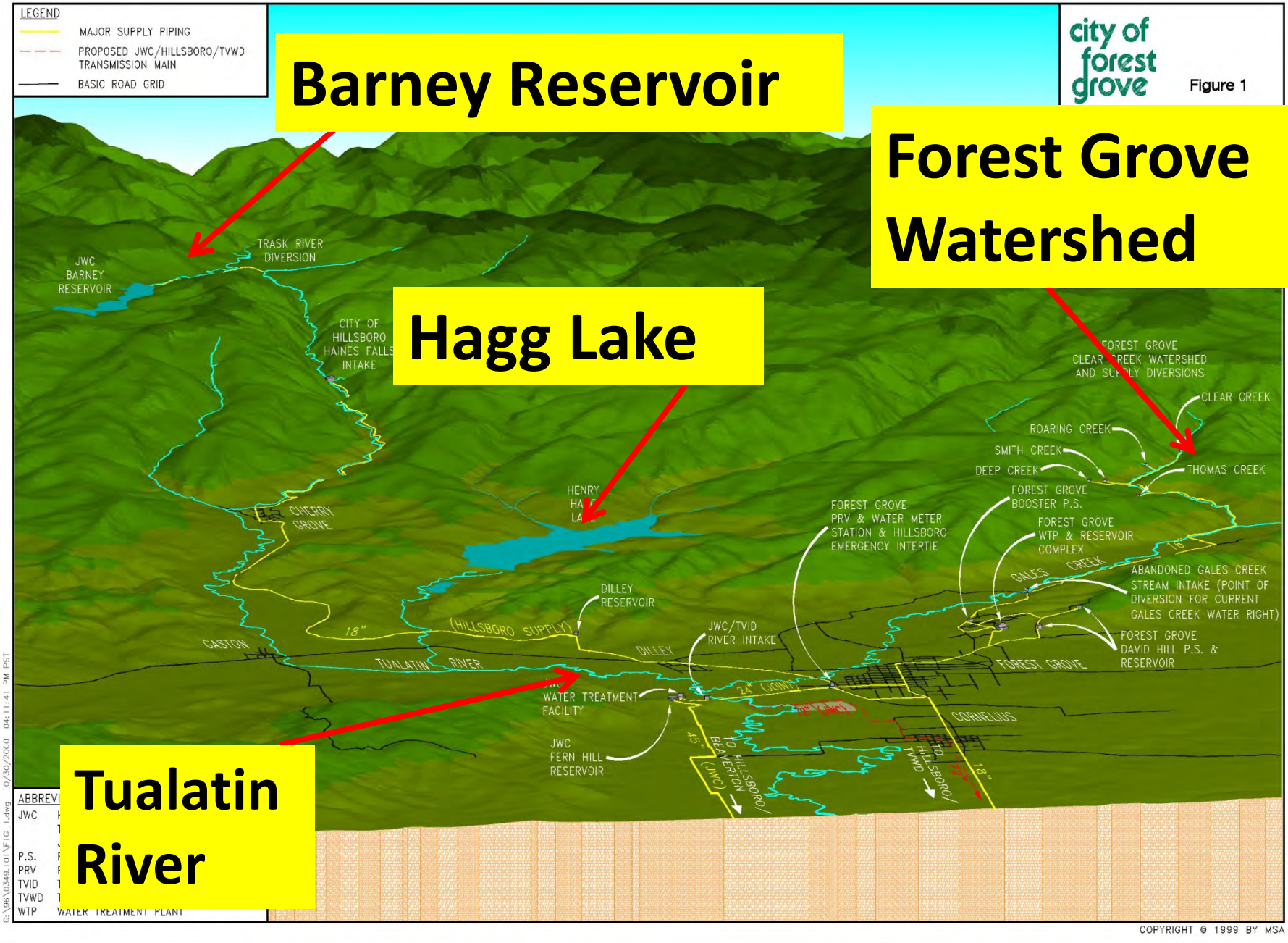
Tualatin River — Winter months

(Water right for natural stream flow)

Hagg Lake — Summer months

Barney Reservoir

(water right for storage)


LEGEND
MAJOR SUPPLY PIPING
PROPOSED JWC/HILLSBORO/TVWD TRANSMISSION MAIN
BASIC ROAD GRID
city of forest grove
Figure 1
Barney Reservoir
Forest Grove Watershed
Hagg Lake
Tualatin River
JWC BARNEY RESERVOIR
TRASK RIVER DIVERSION
CITY OF HILLSBORO HAINES FALLS INTAKE
HENRY HAGG LAKE
CHERRY GROVE
GASTON
TUALATIN RIVER
DILLEY RESERVOIR
(HILLSBORO SUPPLY)
18"
DILLEY
JWC/TVID RIVER INTAKE
WATER TREATMENT FACILITY
JWC FERN HILL RESERVOIR
TO HILLSBORO/ BEAVERTON (JWC)
TO HILLSBORO/ TVWD
CORNELIUS
FOREST GROVE
FOREST GROVE PRV & WATER METER STATION & HILLSBORO EMERGENCY INTERTIE
FOREST GROVE BOOSTER P.S.
FOREST GROVE WTP & RESERVOIR COMPLEX
FOREST GROVE CLEAR CREEK WATERSHED AND SUPPLY DIVERSIONS
CLEAR CREEK
ROARING CREEK
SMITH CREEK
DEEP CREEK
THOMAS CREEK
GALES CREEK
ABANDONED GALES CREEK STREAM INTAKE (POINT OF DIVERSION FOR CURRENT GALES CREEK WATER RIGHT)
FOREST GROVE DAVID HILL P.S. & RESERVOIR
ABBREVI
JWC
P.S.
PRV
TVID
TVWD
WTP
WATER TREATMENT PLANT
G:\96\0349.101\FIG_1.dwg 10/30/2000 04:11:41 PM PST
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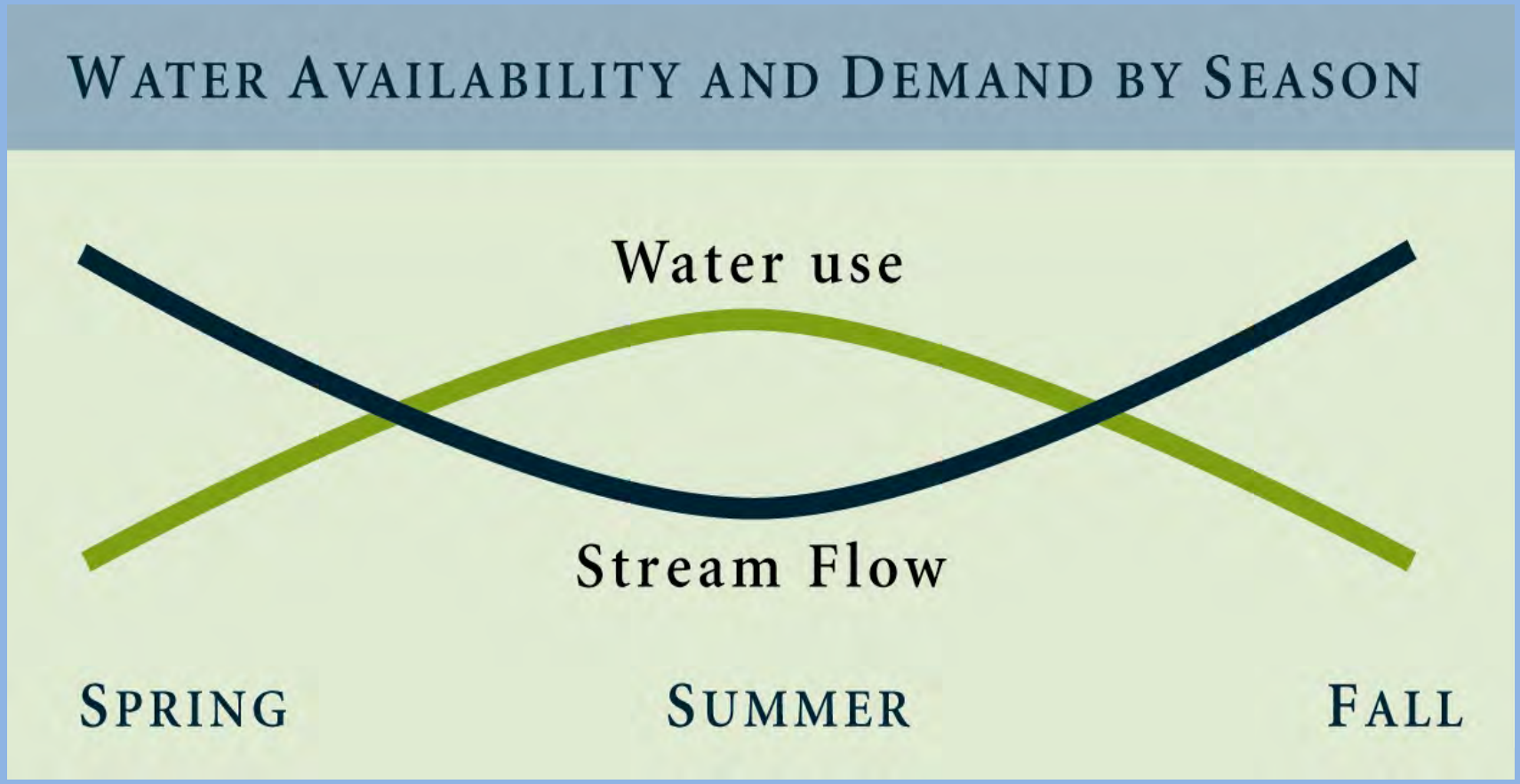
TUALATIN RIVER WATER INTAKE

SPRING HILL PUMPING STATION

IN THE SUMMER MONTHS THE TUALATIN RIVER FLOWS DROP DOWN



HOWEVER THE DEMAND FOR WATER INCREASES

WATER IS RELEASED FROM HAGG LAKE INTO THE TUALATIN RIVER TO INCREASE THE FLOW

SCOGGINS DAM

Constructed in 1970's

Forest Grove owns a contract for water. (1.7 billion gallons)

Annual payments are $75,000

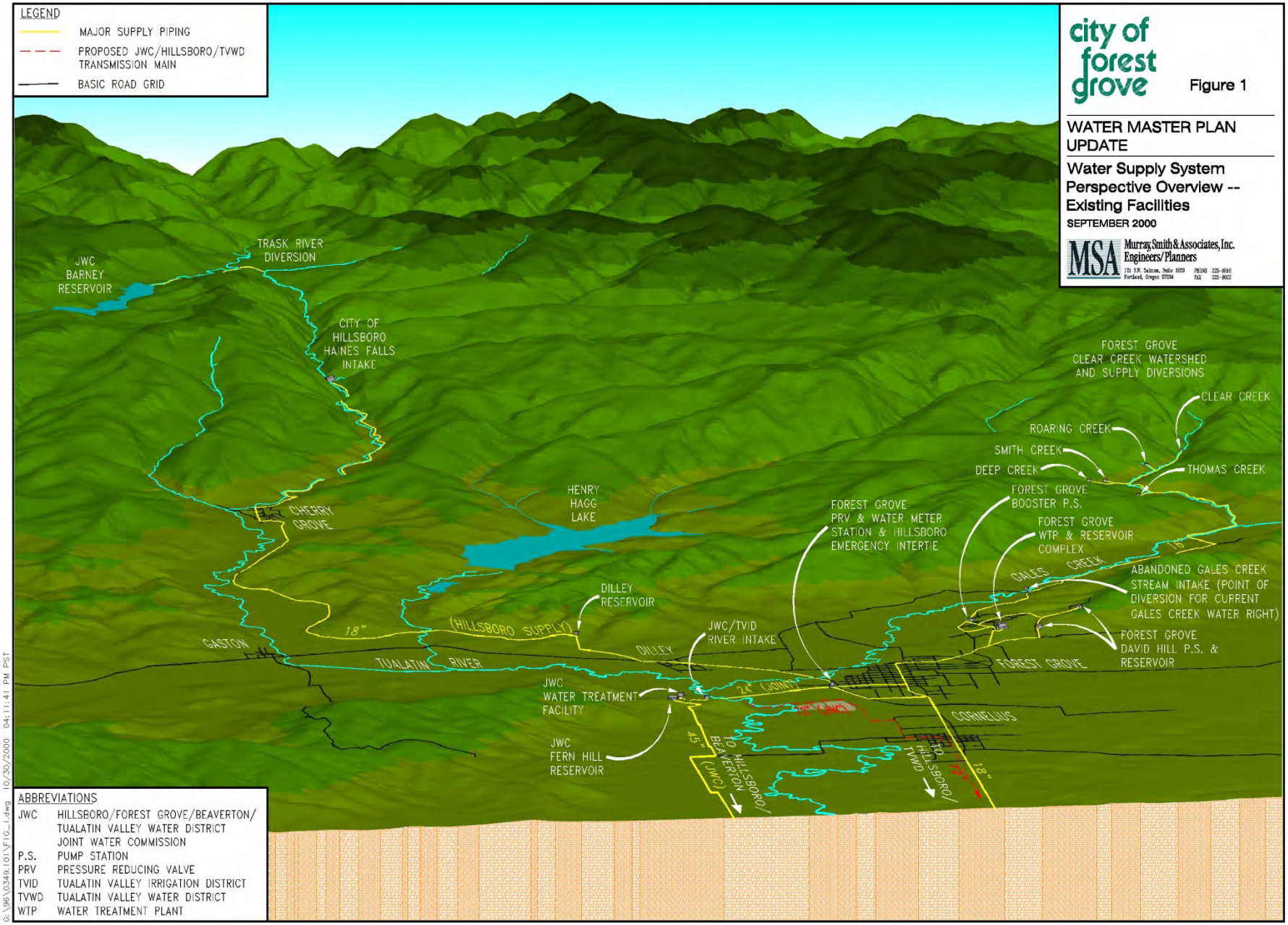
(Replacement Cost Today est. $75 million)

AND ALSO WATER IS RELEASED FROM THE BARNEY RESERVOIR

BARNEY RESERVOIR

Constructed	1998
Cost	$38,000,000
Forest Grove Ownership	163 million Gallons

(Replacement Cost Today est. $7.5 million)



ABBREVIATIONS

JWC	HILLSBORO/FOREST GROVE/BEAVERTON/ TUALATIN VALLEY WATER DISTRICT JOINT WATER COMMISSION
P.S.	PUMP STATION
PRV	PRESSURE REDUCING VALVE
TVID	TUALATIN VALLEY IRRIGATION DISTRICT
TVWD	TUALATIN VALLEY WATER DISTRICT
WTP	WATER TREATMENT PLANT

city of forest grove

Figure 1

WATER MASTER PLAN UPDATE

Water Supply System Perspective Overview -- Existing Facilities

SEPTEMBER 2000

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 1020 Portland, Oregon 97204
PHONE 225-9010 FAX 225-9022

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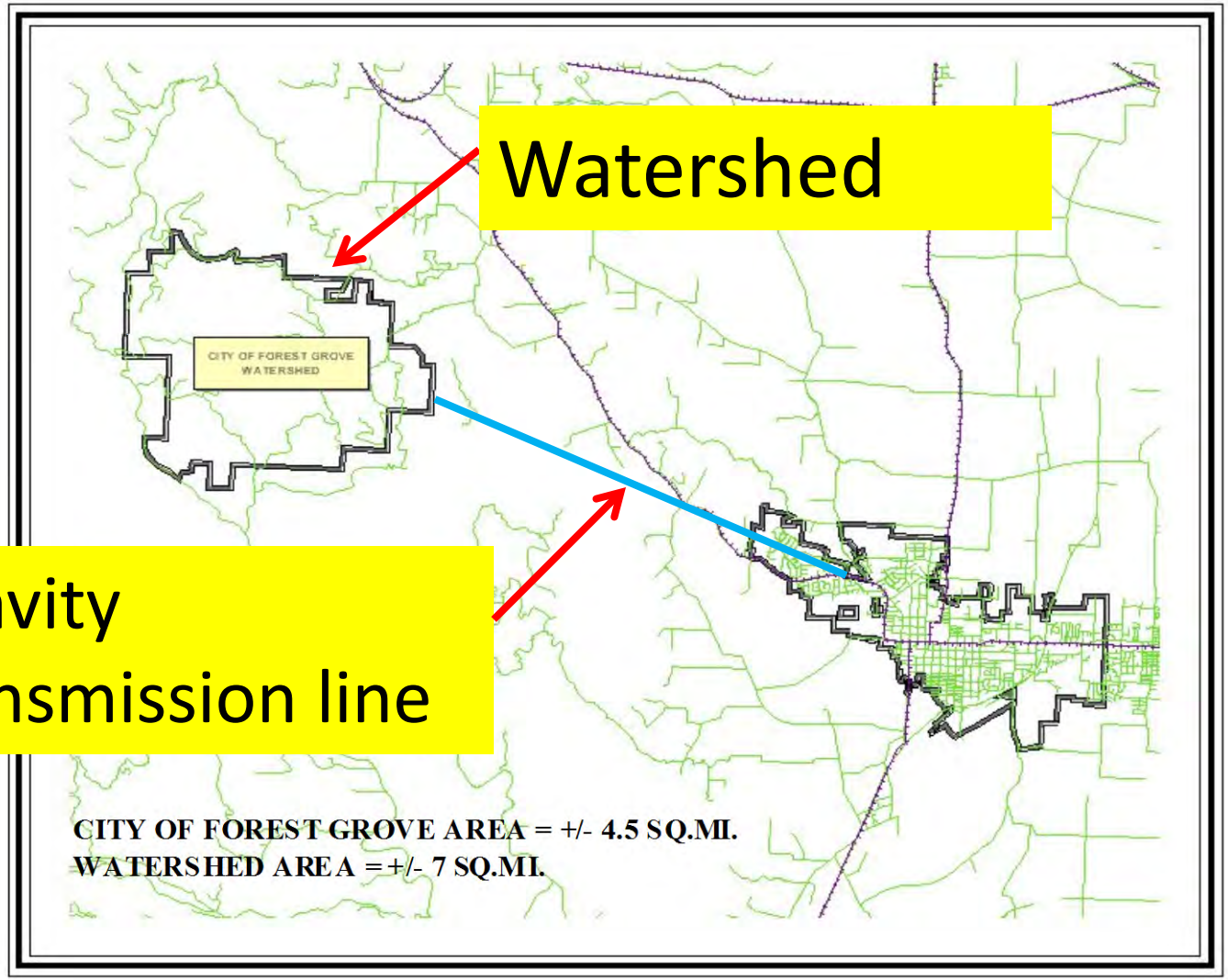
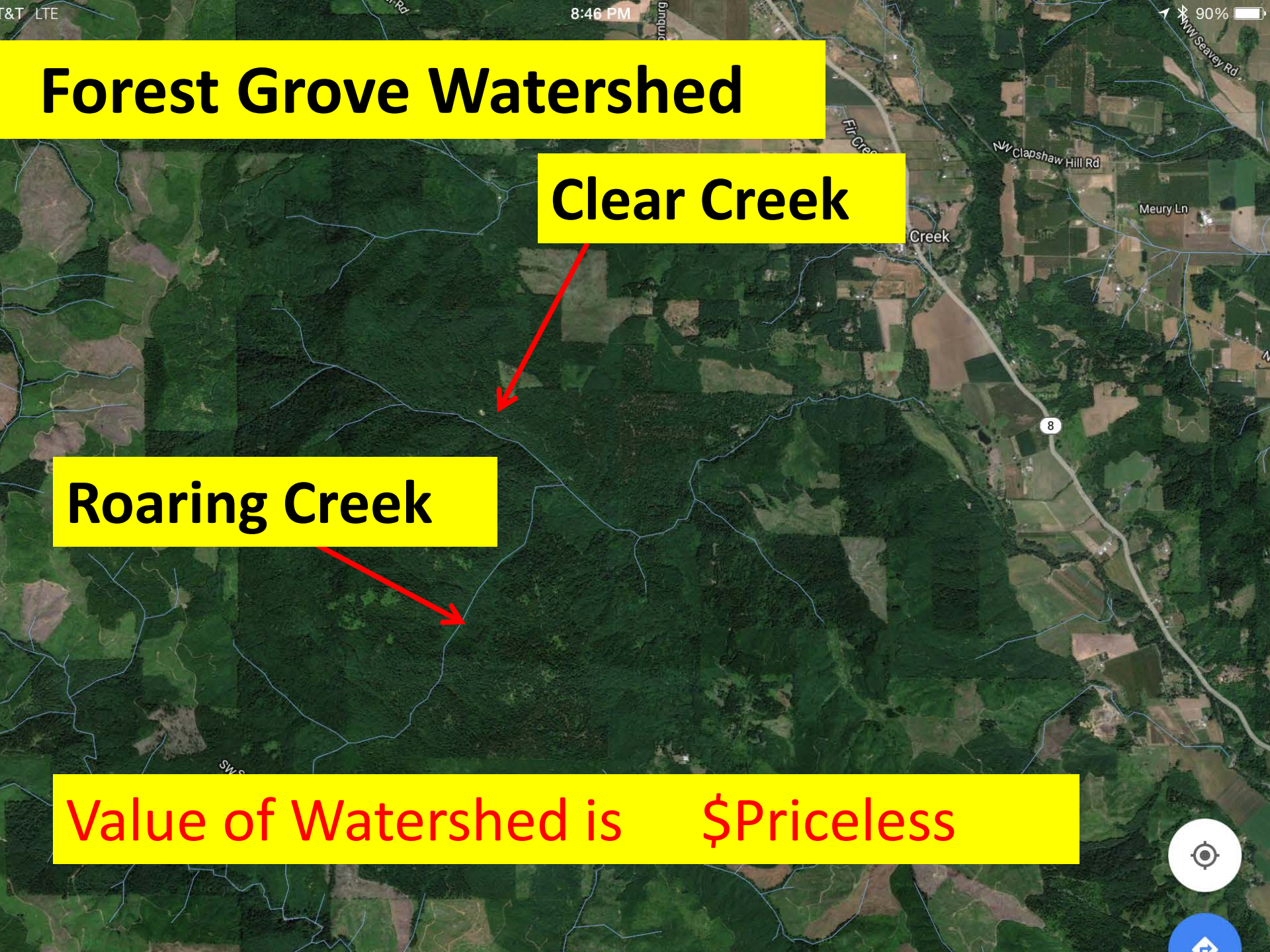
THE OTHER SOURCE OF WATER IS THE CITY'S WATERSHED


Watershed
CITY OF FOREST GROVE WATERSHED
Gravity transmission line
CITY OF FOREST GROVE AREA = +/- 4.5 SQ.MI.
WATERSHED AREA = +/- 7 SQ.MI.
N
W
E
S

FOREST GROVE WATERSHED HISTORY

- 1872 City of Forest Grove incorporated
- 1895 Private water system uses Gales Creek
- 1908 Clear Creek first public water system
- 1917 City purchased 200 acres on Clear Creek
- 1935-1941 City purchased 2,200 acres
- 1948 City purchased 1,700 acres after WWII
- 1948 City constructed first water treatment plant
- 1971-1976 Forest Grove and Hillsboro build JWC
- 1978 Forest Grove water treatment plant renovated
- 1988 City purchased 140 acres


T&T LTE
8:46 PM
90%
Forest Grove Watershed
Clear Creek
Roaring Creek
Value of Watershed is $Priceless
NW Clapshaw Hill Rd
Meury Ln
NW Seavey Rd
Creek
8

CLEAR CREEK INTAKE

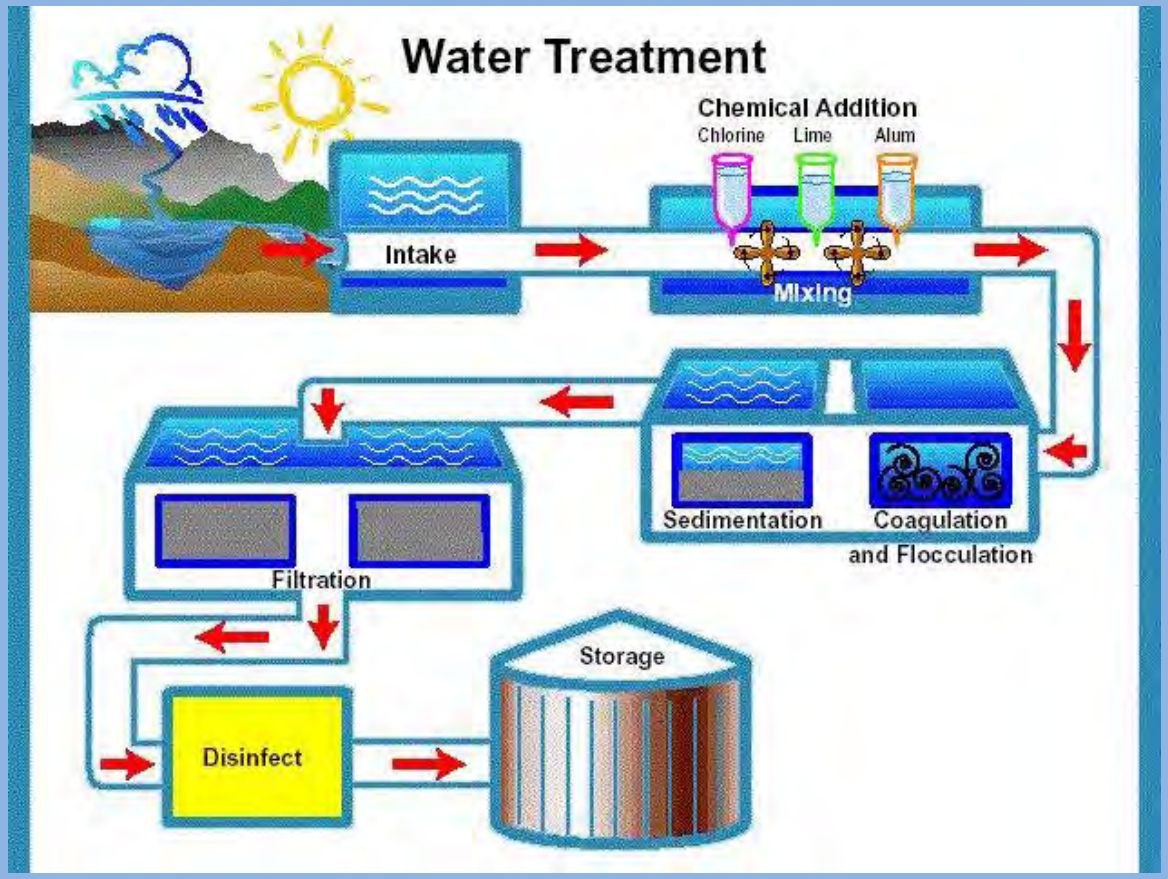
CLEAR CREEK FISH LADDER

WATERSHED HABITAT

Sustainable Forest Management


Harvest Revenue used to keep water rates low

WATER TREATMENT



FILTER TREATMENT PLANT

TWO WATER TREATMENT PLANTS

	MGD
City of Forest Grove	3.7
Joint Water Commission	10.0
TOTAL	13.7

(New Construction cost $20 million)


CITY OF FOREST GROVE
WATER TREATMENT PLANT
501 WATERCREST ROAD

FOREST GROVE TREATMENT PLANT

WATER TREATMENT PLANT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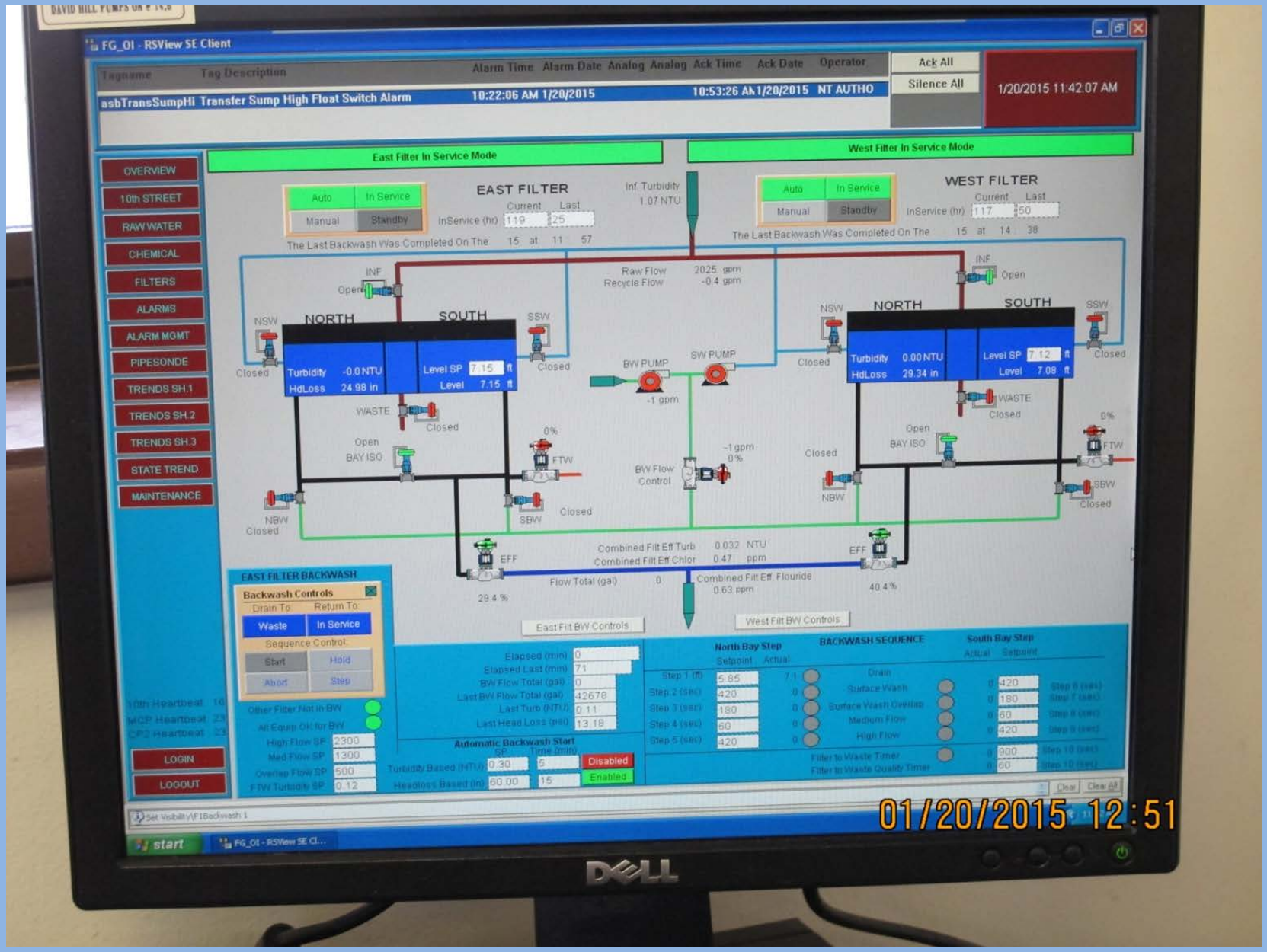
01/20/2015 12:51



$ 1.0 MILLION UPGRADES TO PLANT CONTROLS 2000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UPGRADES WERE NEEDED TO MEET NEW DRINKING WATER REGULATIONS


EXIT
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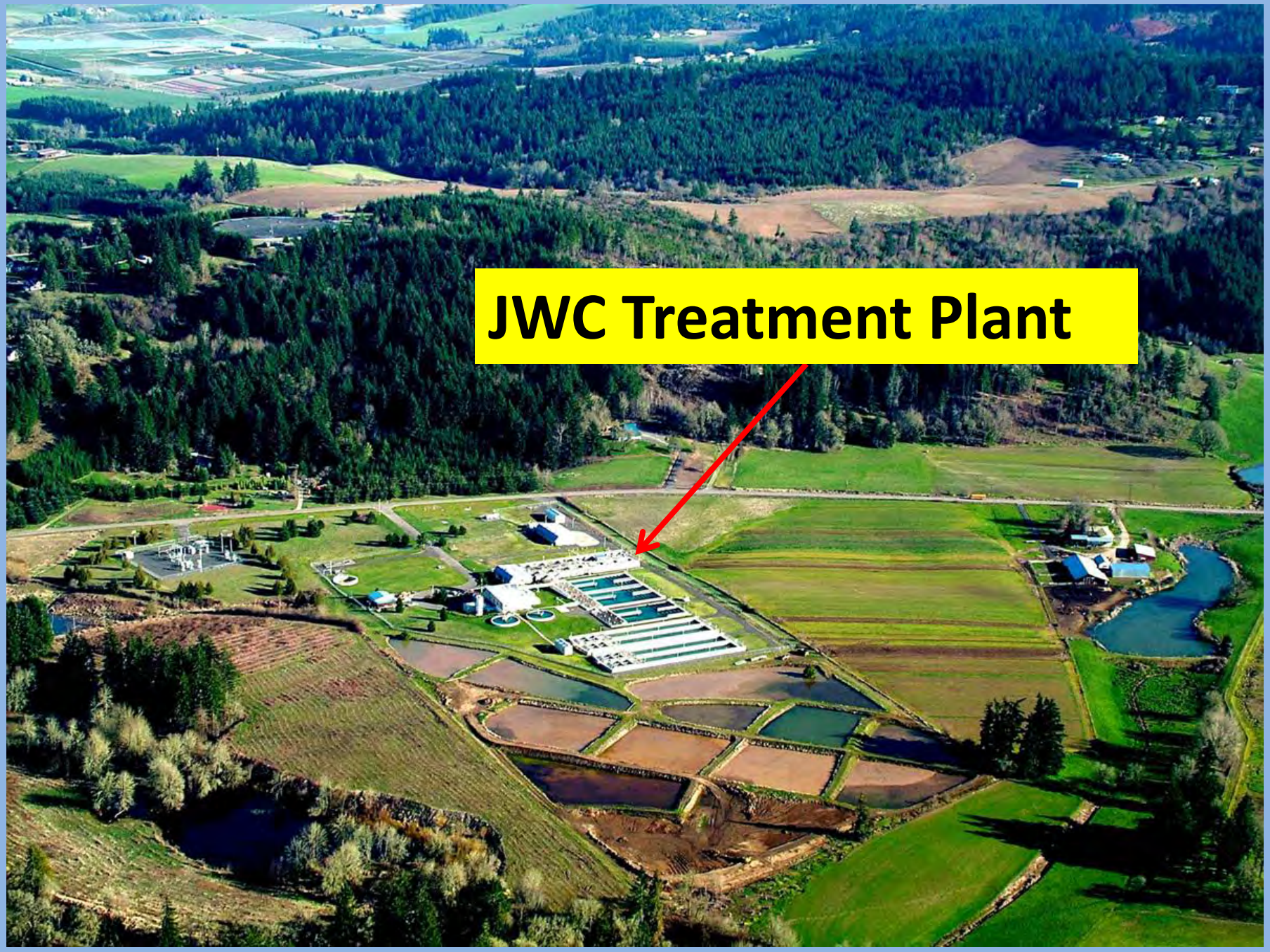
TREATMENT PLANT FILTER REPAIR

TREATMENT PLANT FILTER REPAIR

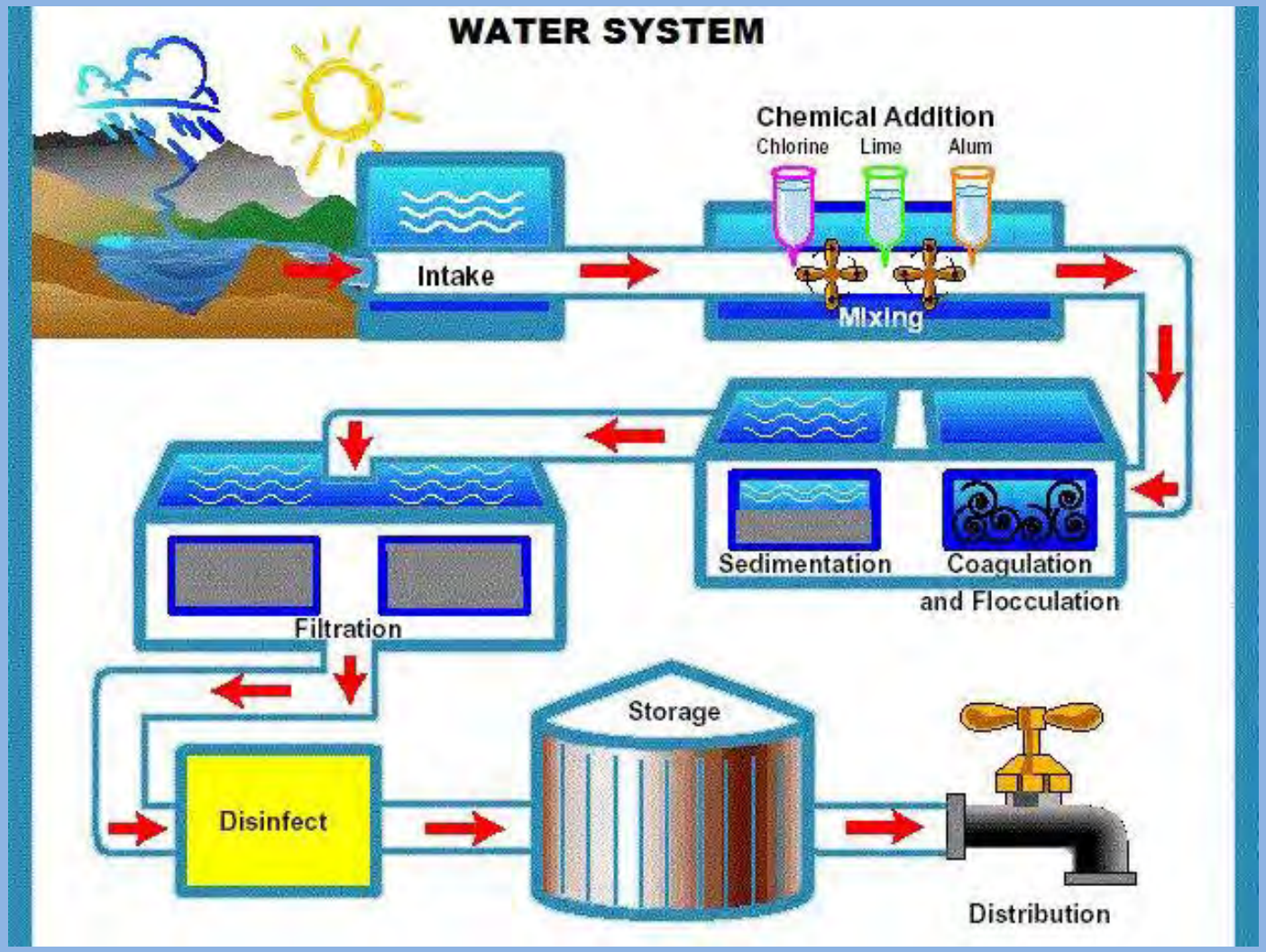
$230,000

JWC WATER COMMISSION TREATMENT PLANT


JWC Treatment Plant

Joint Water Commission Treatment Plant
Maximum capacity 65 MGD
Forest Grove's % ownership is 10 MGD
To increase capacity $1.5 million per MGD
Annual maintenance typically $200,000 yr

TRANSMISSION & DISTRIBUTION

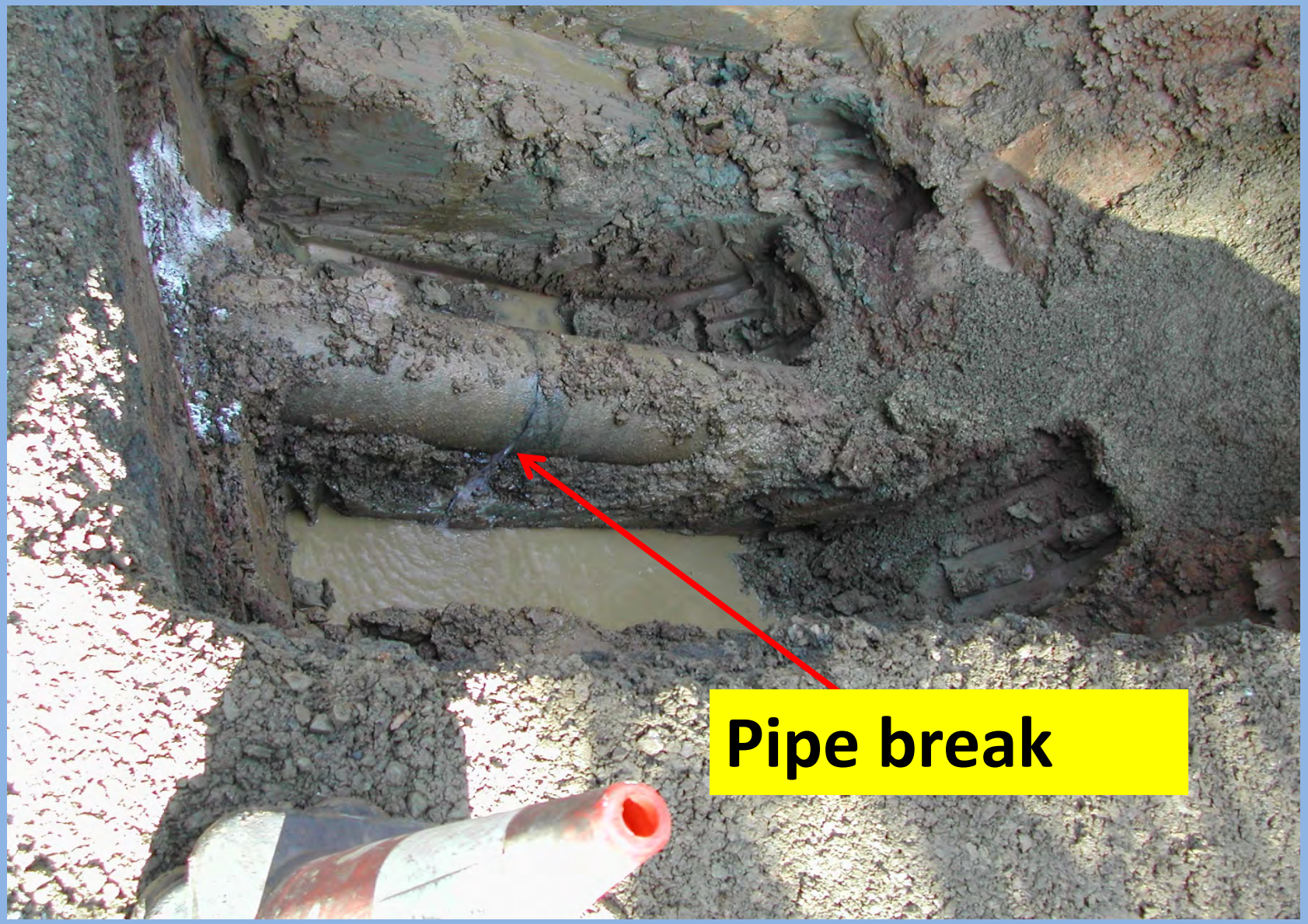


DISTRIBUTION PIPES & PUMPS

DISTRIBUTION WATER PIPES IN FOREST GROVE

Pipe Size	Feet	Miles
6” – 12”	435,685 ft.	82
16”	37,000 ft.	7
24”	10,500 ft.	2

(Pipe replacement cost starts at $100 per foot)



TRANSMISSION LINE LEAK

REPAIR BAND

WATER SYSTEM - MAINTENANCE

CITY CREWS REPLACE WATER VALVES AND INSTALL NEW LINE

Water Parts Inventory

CITY CREW REPAIRING WATER PIPE

TRANSMISSION LINE CREEK CROSSING

NEW TRANSMISSION LINE CROSSING

WATER DISTRIBUTION MAINTENANCE

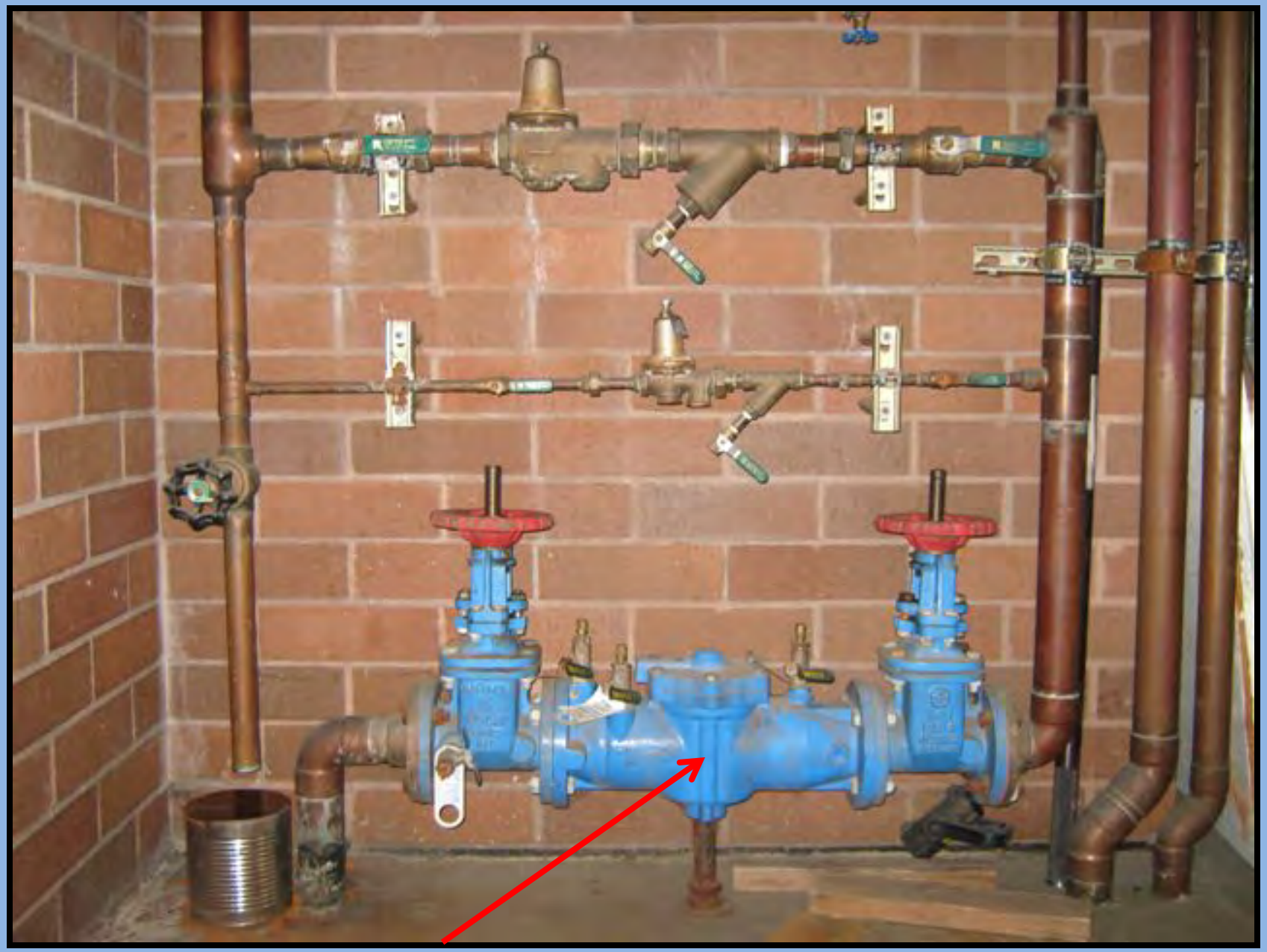
- Water Line Flushing
- Leak Detection
- Backflow Protection
- Fixing Water Main Breaks
- Annual Fire Hydrant Inspection
- Pipe Locates – *for other construction*


CLOW
USA
OSKALOOSA
IOWA
250 PSI

WATER LOSS DUE TO LEAKS
ANNUAL 10 TO 15%

PROTECTION AGAINST CROSS CONTAMINATION

BACKFLOW PREVENTION PROGRAM



BACKFLOW PREVENTION VALVE TESTED ANNUALLY


CONTROL

Water Sample Station

AUTOMATED METER READING

RESIDENTIAL WATER METER WITH REMOTE READ ANTENNA


STOP

SOME WATER NUMBERS

WATER SYSTEM BUDGET

(numbers are approximate for 2014)

Money from Customers	3,800,000
Money from Timber	588,000
Total:	4,388,000
Maintenance & Material	1,053,000
Major Capital Construction	500,000
Debt and Bonds	685,000
City Personnel	1,803,000
Total:	4,038,000
Difference:	350,000
Savings in the Bank 2014	7,138,000*

* Includes fund balance in water fund plus SDC system development fund


Public Works Employees

WATER FUND PERSONNEL

FTE (full time employee)

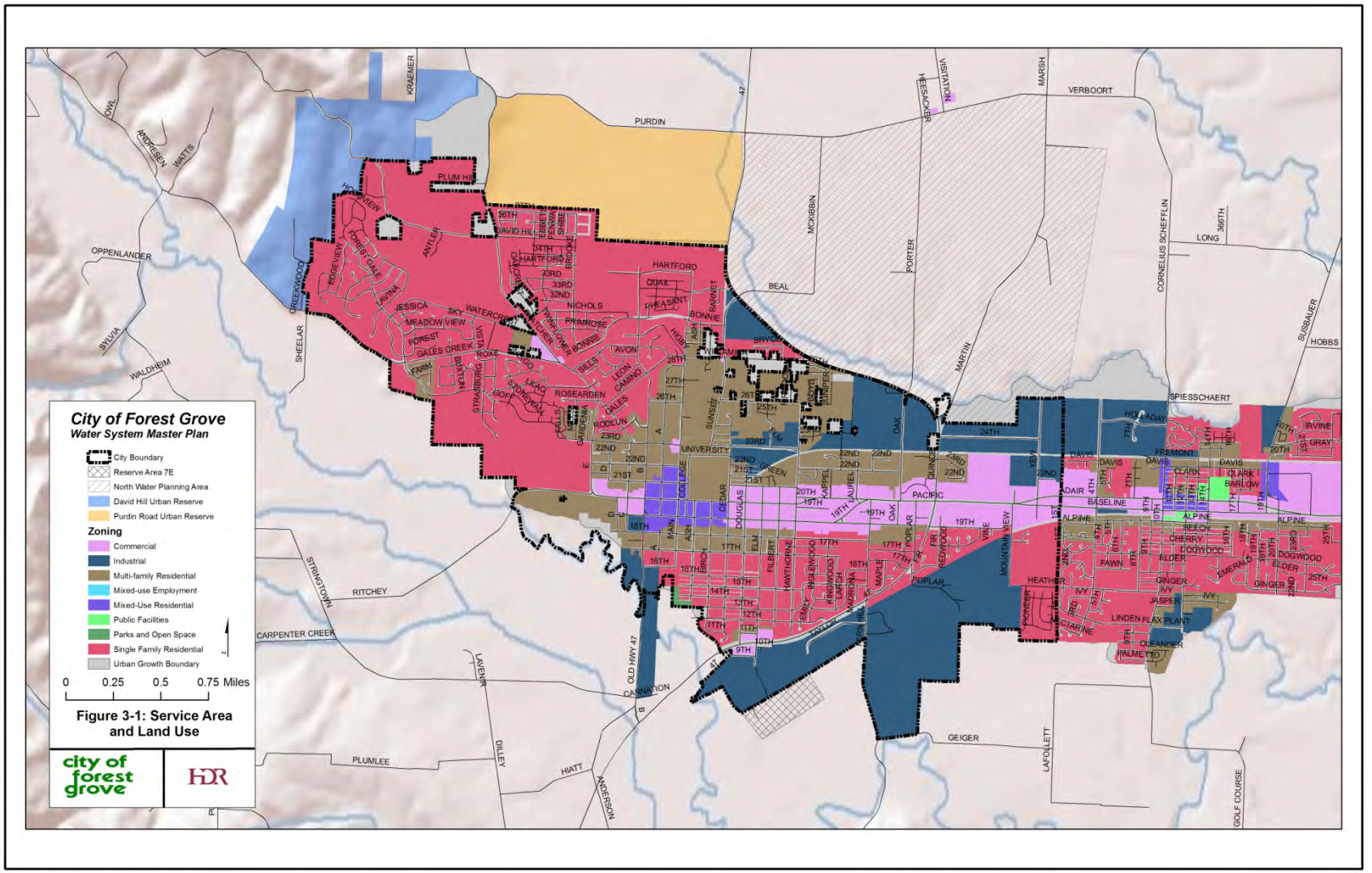
	FTE
WTP Operators	3.0
Maintenance Worker	5.2
Superintendent	0.2
Administrative Assistant	0.2
Meter Readers	0.88
Total	**9.48**

ADDITIONAL SUPPORT PERSONNEL FUNDED BY WATER FUND

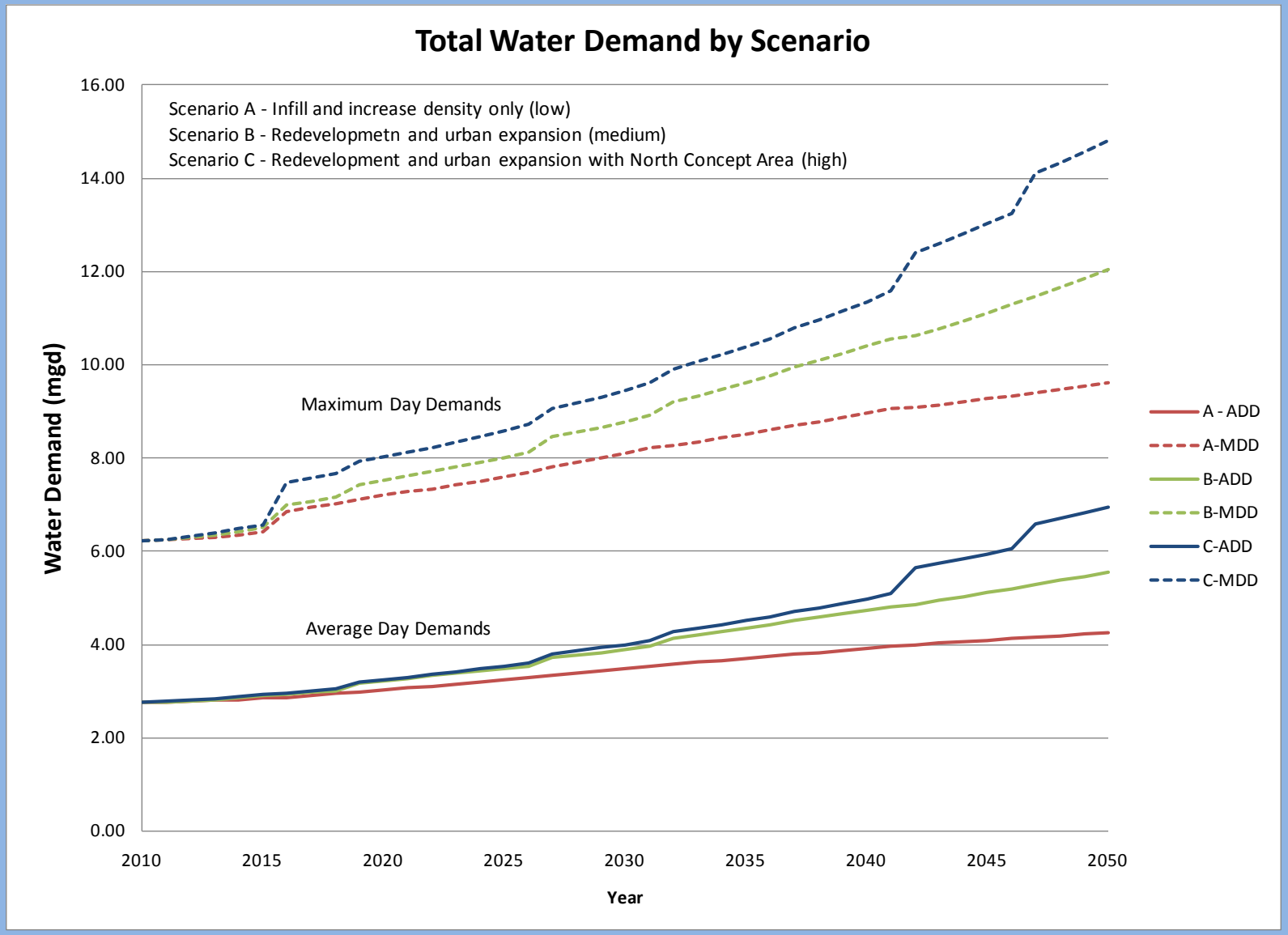
- Engineering Department
- Utility Billing Department
- Community Development
- City Finance & Administration

FUTURE WATER SUPPLY PLANNING

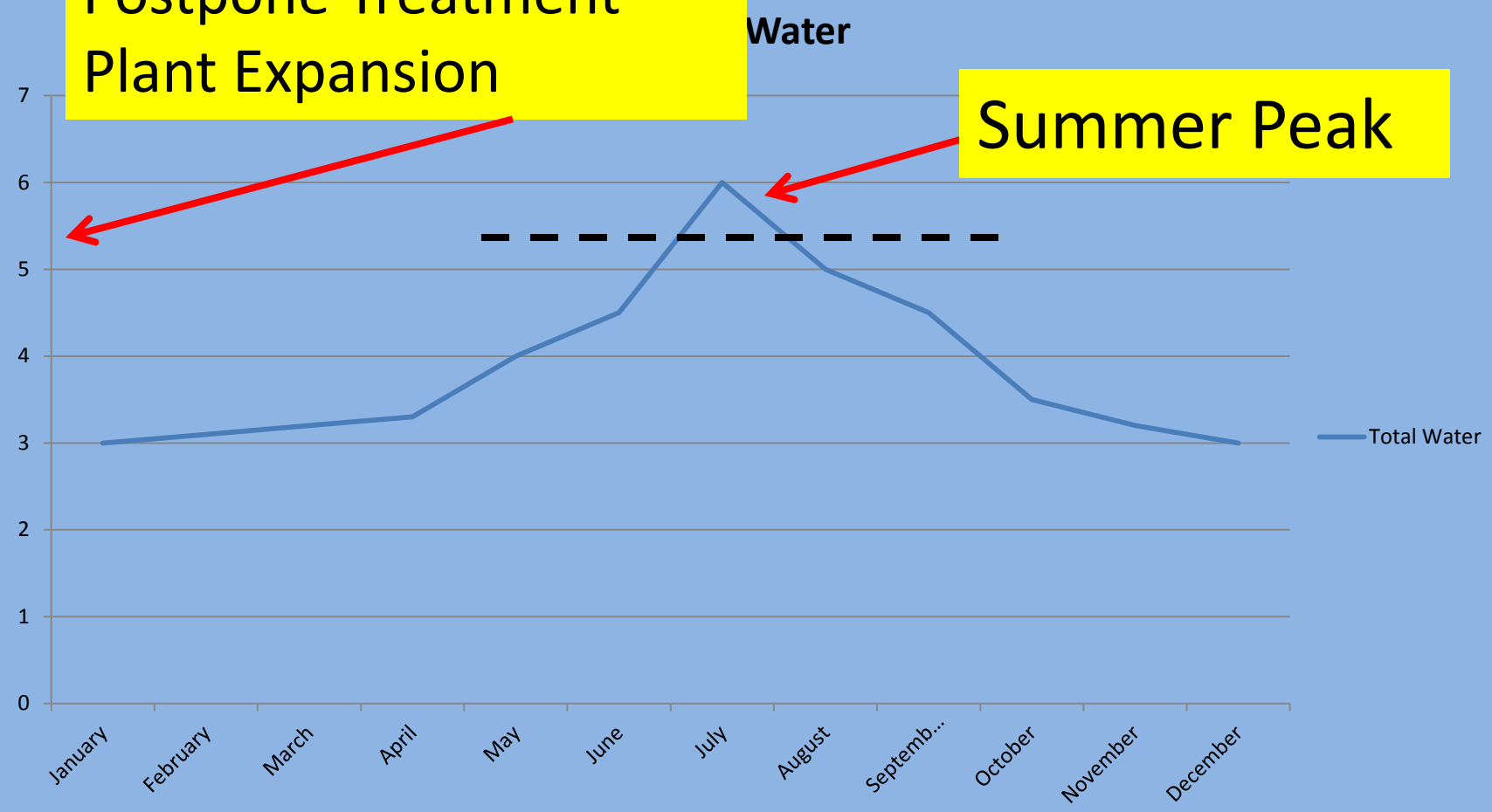
WATER DEMAND FORECAST



FUTURE WATER NEED TO 2050



SEASONAL WATER DEMAND



Water Conservation Program

Tiered Water Rates – (higher water users pay higher unit rates)

Low Flow Fixtures – (faucet and shower)

Education Programs – (local schools)

Team with 28 other Water Providers

Benefit of Conservation

Reduce the Seasonal Peak
Postpone future Expansions
Rain is a finite resource
(very very difficult to get new sources)

FUTURE WATER SYSTEM PROJECTS

	2014 Cost
Treatment Plant Plate Settlers	1,209,900
Barney Reservoir Buy-In	2,592,600
Watercrest Road Pump Station Upgrade	129,600
Scoggins Seismic Retrofit	8,469,200
Water Storage 0.30 MG Upper Reservoir #2	604,900
Water Storage 2.25 MG Lower Reservoir	3,681,500
Water Storage 1.0 MG David Hill Reservoir	1,642,000
David Hill URA Pump Station	604,900
David Hill URA PRV	345,700
FG Water System Seismic Improvements	2,000,000
Parallel Transmission Line JWC Supply	6,100,000
JWC WTP Seismic Improvements	3,235,000
Watershed Land Acquisition	500,000
TOTAL:	$ 31,115,300.00

Question:

Why are the water rates increased annually?

THE ANSWER:

Aging Water Works (infrastructure)

Added Drinking Water Regulations

Saving Money for Future Projects

THE END