

# CITY OF PECULIAR

## 2014 Preliminary Engineering Report Water Supply, Pumping, Storage & Distribution

July 21, 2014

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"Leaving a Legacy of Enduring  
Improvements to Our Community."

PURPOSE STATEMENT



—| LARKIN |—  
**LAMP RYNEARSON**

## Minimum Design Standards for Missouri Community Water Systems

- Assess present facilities
- Use hydraulic modeling to address deficiencies
- Project future water demands
- Formulate Capital Improvement Plan (CIP)
- Assess funding for improvements and impact on rates
- Five-year Owner Supervised Program

# ASSESS PRESENT FACILITIES

Currently **1537** meters are served by the City.

## Facilities:

- Supply from three meter vaults
- Distribution system – 2” – 12” Mains
- Booster pump station
- 425,000 gal. Ground storage tank
- 400,000 gal. Elevated storage tank

# ASSESS PRESENT FACILITIES

## Distribution System Pipe Summary

Pipe Diameter(in.)	2 – 4*	6	8	10 - 12	Total
Total length, (ft)	74,711	26,649	111,095	27,513	239,975
% of total system	31.2%	11.1%	46.3%	11.4%	100.0%

\*Pipe sizes of 6" or larger are required to deliver fire flow.

# ADDRESS DEFICIENCIES

## Problem Areas in the Distribution System

- Peculiar Dr./Main St. between Hurly St. and E. North
- Along Harr-Grove Rd.
- Along Elm St.
- E. Broadway St between E. 3<sup>rd</sup> St. and N. Main St.
- Gregory between Elm St. and Kayla Dr.

# PROJECT FUTURE WATER DEMANDS

Projected Population			
Year	Population	Annual % Change	Population Change
1980	1571		
1990	1777	1.24%	206
2000	2604	3.90%	827
2010	4054	4.53%	1450
2011	4225	4.21%	171
2012	4403	4.21%	178
2013	4588	4.21%	185
2018	5638	4.21%	228
2023	6930	4.21%	280
2028	8516	4.21%	344
2033	10466	4.21%	423

# HISTORICAL WATER DEMANDS

## Recent Historical Water Usage

Year	2010	2011	2012	2013	Average
Customers	1,509	1,525	1,540	1,537	1,528
Annual Percent Change - (%)		1.06%	0.98%	-0.19%	0.62%
Annual Water Purchased (gal)	87,230,287	94,070,020	99,276,682	94,465,030	93,760,505
Annual Percent Change – (%)		7.84%	5.53%	-4.85%	2.84%
Annual Water Sales (gal.)	74,145,744	79,959,517	84,385,180	80,295,276	79,696,429
Annual Percent Change – (%)		7.84%	5.53%	-4.85%	2.84%
Total Water Not Sold – (gal)	13,084,543	14,110,503	14,891,502	14,169,755	14,064,076
Total Water Not Sold – (%)*	15%	15%	15%	15%	0.15
Avg. Consumption (gpm/meter)	0.11	0.12	0.12	0.11	0.11
Avg. Day Purchases (gal./day)	238,987	257,726	271,991	258,808	256,878

*\*Estimated water loss for 2010 through 2012*

# FUTURE WATER DEMANDS

## Projected Water Demands

<b>Year</b>	<b>2018</b>	<b>2028</b>	<b>2033</b>
Annual Water Purchased	116,096,211	175,352,517	215,505,811
Annual Water Sales	98,681,779	149,049,640	183,179,939
Average Day Purchased	317,203	479,105	590,427
Maximum Day Purchased	475,804	718,658	885,640



# FUTURE WATER DEMAND

## Possible Sources of Growth in Water Demands

- Interchange on I-49 at 211th Street
- Current Land Use Plan with consideration of service area limits
- Growth within platted subdivisions served by the City

# WATER SUPPLY EVALUATION

## Supplier Decision Matrix

<b>Item</b>	<b>Consideration</b>	<b>Percent</b>
1	20-Year Life Cycle Analysis	20
2	Water Rates	25
3	Capital Cost	20
4	Maintenance (Time) Requirements	10
5	Environmental	10
6	Accessibility	5
7	ROW Acquisition	5
8	Utility Consideration	5
		<b>100%</b>



# EVALUATION RESULTS

## Weighted Decision Matrix

Item	Consideration	Percent	Cass 2	KCMO	WaterOne	TCWA
1	20-Year Life Cycle	20	15	20	17	18
2	Water Rates	25	10	25	24	14
3	Capital Cost	20	20	7	5	3
4	Lower Maintenance	10	8	10	5	7
5	Environmental	10	10	8	4	6
6	Accessibility	5	5	4	2	3
7	ROW Acquisition	5	5	4	2	3
8	Utility Consideration	5	5	4	2	3
		100	78	82	61	57

# PROJECTED SUPPLY COST COMPARISON

<b>Rate and Annual Purchase Cost for Supply</b>			
<b>Source</b>	<b>Parameters</b>	<b>Year</b>	
		<b>2018</b>	<b>2033</b>
<b>CASS 2</b>			
	Rate per 1,000 gal* (Effective 5/1 ann.)	\$ 5.57	\$ 10.63
	Assumed Increase	5%/3%	5%/3%
	Cost of Water Purchased	\$ 581,248	\$ 1,491,786
<b>KANSAS CITY</b>			
	Rate per 1,000 gal**(Effective 5/1 ann.)	\$ 3.31	\$ 6.89
	Repumping fee per 1,000 gallons	\$ 0.30	\$ 0.63
	Assumed Increase	5.0%	5.0%
	Cost of Water Purchased	\$ 377,416	\$ 1,055,996
	Loan Repayment	\$ 241,988	\$ 241,988
	<b>Total</b>	<b>\$ 619,404</b>	<b>\$ 1,297,984</b>

\*Cass 2 has 3 components: Cost from KC, Cass 2 O&M, and Cass 2 debt service on shared facilities. (Annual rate increase is assumed at 5% for KC rate and 3% for O&M)

\*\*Includes Kansas City as a direct water wholesaler at their wholesale restricted rate plus 1 repump charge (Annual rate increase is assumed at 5%)

# WATER SUPPLY

## Supply Conclusions

Weighted Decision Matrix indicated purchase directly from KC as the best long term supply option:

- ✓ Lowest costs for **20-year life** cycle analysis
- ✓ Lowest water rates **in the future**

Assumptions for annual increase in water purchase cost:

- Cass 2 - 5% due to KC & 3% for Cass 2 O&M.
- KCMO - 5% plus loan repayment of \$241,988

# RECOMMENDED IMPROVEMENTS

Summary of Recommended Improvements	Cost
Supply Improvement	\$3,772,389
<ul style="list-style-type: none"> <li>• 12" on Peculiar Dr., Hurley St. to Main St., north to E. North St.</li> </ul>	\$640,393
<ul style="list-style-type: none"> <li>• 8" in Spencer Addition</li> </ul>	\$369,941
<ul style="list-style-type: none"> <li>• 8" on Harr Grove Rd. between Elm St. and Highway J</li> </ul>	\$292,059
<ul style="list-style-type: none"> <li>• 8" on Elm St. between Gregory and School Rd.</li> </ul>	\$261,482
<ul style="list-style-type: none"> <li>• 8" on Gregory St. and Kayla St. from Harr Grove and Gregory</li> </ul>	\$184,248
<ul style="list-style-type: none"> <li>• 12" on Peculiar Dr, between Maple Ave. and Willow St.</li> </ul>	\$452,156
<ul style="list-style-type: none"> <li>• 12" on E. Broadway between E. 3<sup>rd</sup> St. and N. Main St.</li> </ul>	\$184,046
<ul style="list-style-type: none"> <li>• 12" on E. 3<sup>rd</sup> St. between E. South St. and Legend Ln.</li> </ul>	\$278,154
Tank Mixing Systems (2)	\$100,000
Emergency Generator	\$35,000
<b>Total</b>	<b>\$6,569,868</b>

# Priority Distribution Improvements

**1.** 12" on Peculiar Dr, Hurley St. to Main St., north to E. North St.

**2.** 8" in Spencer Addition

**3.** 8" on Harr Grove Rd between Elm St. and Highway J.

**4.** 8" on Elm St. between Gregory and School Rd.

**5.** 8" on Gregory St and on Kayla Dr., Gregory to Harr Grove Rd.

- ✓ Continue pursuit of DNR State Revolving Fund Loan Funding.
- ✓ Install 8" minimum diameter new mains.
- ✓ Continue to replace 2 and 3" as funds allow.
- ✓ Eliminate dead end mains with looping as funds allow.
- ✓ Update Plan for new subdivisions, commercial or industrial

# 5-YEAR OWNER SUPERVISED PROGRAM

## DNR Submittals

- ✓ Preliminary Engineering Report
- ✓ 5-Year Owner Supervised Plan submittal
  - Facility Plan
  - Peculiar standard specifications
  - Peculiar construction details
  - City inspector resume.



# UPDATE OF THE WATER RATE STUDY

- ✓ Inserted new revenue and expense figures
- ✓ Inserted rate increases approved by the Board
- ✓ Examined rate adjustments for the following:
  - Priority Main Improvements
  - Supply Improvements

# Current Water Rates

Unit	City of Peculiar
Surcharge (Monthly Minimum Charge) 0 to 1,000 gallons	\$17.21
Each additional 1,000 gallons	\$12.77
Primacy fee (\$3 annual fee/meter to DNR)	\$0.25
Monthly bill for 5,000 gallons	\$68.54

# THANK YOU!

Questions or Comments?

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