

City of Baxter

## 2024 Well Rehabilitation Summary

Utilities Commission Meeting | December 4, 2024

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1

### Overview

- 2024 Well Rehabilitation
- Rehabilitation Results
  - Flow
  - Specific Capacity
- 2025 Water Demand Projections
- Recommendations



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2

## 2024 Well Rehabilitation

- Wells cleaned with combination of mechanical and chemical cleaning methods
  - Chemicals recommended by Water Systems Engineering based on water samples from Well 3
- Schedule:
  - Well 3: April 12 – April 25, 2024
    - Additional Rehabilitation June 7 – June 19, 2024
  - Well 2: April 25 – May 6, 2024
  - Well 4: September 9 – September 16, 2024
  - Well 1: September 23 – September 30, 2024



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3

## Rehabilitation Results - Flow

	Maximum Flow Rate (all wells running) (11/21/2024)	2023 Well Inspection Pumping Rate	2013 Design Flow	Difference (Current Flow – Design Flow)
Well 1R (gpm)	585	691	700	-115
Well 2R (gpm)	578	674	700	-122
Well 3 (gpm)	628	741	700	-72
Well 4R (gpm)	513	661	700	-187
Total	2,304 gpm	2,767 gpm	2,800 gpm	-496 gpm
	3.3 MGD	4.0	4.0	-0.7
Firm Capacity <sup>(1)</sup>	1,676 gpm	2,026 gpm	2,100 gpm	-424 gpm
	2.4 MGD	2.9 MGD	3.0 MGD	-0.6 MGD

Notes: <sup>(1)</sup> Firm capacity is defined as the capacity with the highest capacity pump/well out of service.

Source: City Records



4

## Rehabilitation Results – Specific Capacity

Description	Well <sup>(1)</sup>			
	1R	2R	3	4R
March 2023 Specific Capacity (gpm/ft)	41.0	34.9	34.9	36.1
2024 Pre-Rehabilitation Specific Capacity (gpm/ft)	18.9	19.8	12.9	13.8
2024 Post-Rehabilitation Specific Capacity (gpm/ft)	22.2	21.0	18.0	21.1
% Increase from 2024 Rehabilitation	17%	6%	40%	53%
Well Rehabilitation Trigger <sup>(2)</sup> Specific Capacity (gpm/ft)	17.8	16.8	14.4	16.9

**Notes:**

<sup>(1)</sup> Individual well specific capacities calculated while on the single well is running. Running multiple wells in the well field will cause the specific capacity to be calculated at a lower value due to well interference.

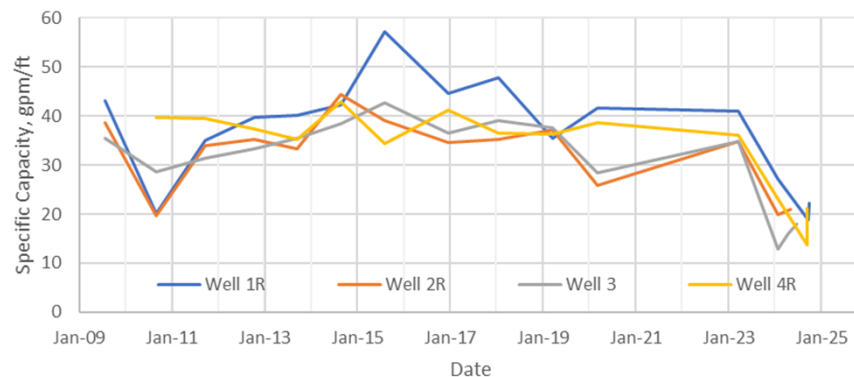
<sup>(2)</sup> "Trigger" specific capacity represents a decrease in specific capacity of 20%, at which time the City should consider rehabilitating the well.

Source: Their Well Inspection Reports, City Records



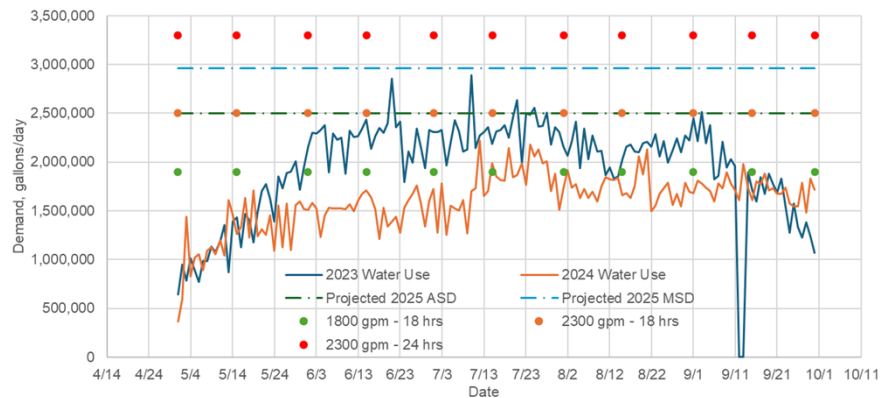
5

## Rehabilitation Results – Specific Capacity



6

## 2025 Water Demand Projections



7

## 2025 Water Demand Projections

- Ability to meet 2025 demands will be dependent upon:
  - Well/pump condition
  - Weather (irrigation demands)
  - Interconnect operation
- Purchasing 300 gpm from Brainerd all summer cost ~\$27,600 more than the water would be sold for at current rates
  - Well rehabilitations cost ~\$32,000 per well, not including engineering.



8

## Recommendations

- Operate multiple wells at lower flow rates to reduce the amount of drawdown
  - E.g. Run 3 wells at 465 gpm instead of 2 wells at 700 gpm
- Replace pumps for Wells 1 and 4 to achieve up to 700 gpm per well
  - ~\$15,000 per pump
  - 5-6 weeks from pump order to install
- Drill additional production wells (Wells 5 & 6)
- Monitor specific capacity and rehabilitate well(s) as necessary
- Discuss wholesale water rates with BPU



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9

## Questions?



10