Madison Water Utility	PROJECT SCOPING DOCUMENT	Project Manager:	Dennis M. Cawley P.E.
		Project Information:	Pressure Zone 7 & 8 Water Supply Augmentation
		Draft:	
Department:	Section:	Revised:	March 31, 2010

Project Scoping Document

Pressure Zone 7 & 8 Water Supply Augmentation

DRAFT

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Scoping Document – Pressure Zone 7 & 8 Water Supply Augmentation

1. Project Description

A description of the project, including a map showing existing facilities, approximate location of proposed facilities, documented contaminated sites, the extent of the Eau Claire shale (if applicable) and the location of floodplain areas.

The Madison Water Utility desires to improve water supply in Utility Pressure Districts 7 (PZ7) and 8 (PZ8) on the City's west side. A map showing existing wells serving PZ7 and PZ8 are included in Exhibit A.

It is the position of Water Utility staff that the wells in PZ7 and PZ8 do not have enough supply capacity to handle the demands in these two zones, especially in peak conditions.

2. Purpose

The purpose and necessity of the project, with supporting data including recent and anticipated water consumption data and hydraulic model summarizations.

The wells in PZ7 also supply water through a booster station to PZ9. The wells in PZ8 also serve PZ10 and PZ11 through booster stations. For purposes of this discussion demands listed in this section include the higher zone demands.

Presently PZ7 is served by Unit Wells 10, 12, & 20. The water quality problems of Well 10 have been well documented and the Water Utility has resorted to making this well an emergency use facility only. The combined capacity of Wells 12 & 20 is 6 MGD. Based on information gathered by Black & Veatch as part of the latest Master Plan update, the average day demand in PZ7 is 4.5 MGD. The maximum day demand is 9.6 MGD. Presently max day conditions are handled without Well 10 through a combination of depleting the storage in the 4.2MG reservoir on Prairie Road and transferring water from PZ6 and PZ8. Currently without Well 10 we lack our desired redundancy in PZ7. Exhibit B contains documentation on current and projected average and maximum day demands in both pressure zones. Buildout refers to the demands that are projected if all property in the study area is developed to the maximum density allowed by Zoning Code.

The highest pumpage year we have had in recent years was in 2005. I have included a chart in Exhibit B that shows run times of our deepwell pumps in PZ7 and PZ8 during the maximum day, the maximum month and the average day. These results show that while the Water Utility is able to handle average day conditions with one additional well out of service, we become vulnerable if we lose a well for any length of time during a high demand period.

Wisconsin Department of Natural Resources staff engineers recommend that deepwell pumps operate on average no more than 16 hours per day in peak demand periods and no more than 12 hours per day in average demand periods.

PZ8 is presently served by Wells 16, 26, and 28 with a combined capacity of 9 MGD. The current average day demand is 3.1 MGD. The current max day demand is 6.97 MGD. When one well is out of service we would have to deplete water in the 4MG reservoir on High Point Road to meet max day conditions.

The projected demands calculated by Black & Veatch do not include any adjustments for the recently

adopted water conservation goal of reducing residential water demand by 20% in 2020. Residential sales typically account for 40% of all water sales by the Madison Water Utility. In Exhibit B I have included adjusted demands that assume one-half of the goal will be met by 2015 and the entire goal met by 2020.

3. Projected Effect

The projected affect of the project on quality and reliability of service, and hydrologic impacts.

This project would immediately increase supply in PZ7 and provide backup supply to PZ8. If a new well were the chosen alternative it would also delay the need to provide additional supply in PZ6, as less of a transfer to PZ 7 would be required.

4. Alternatives

A description of alternative projects or programs considered (This does not include specific site comparisons during early phases of the project).

This project is necessary because there is a water supply problem on the near west side. The only alternative solutions are to drill for additional supply or to transfer water from a different pressure zone that has excess supply.

If drilling is chosen as the alternative one potential site at this point in time is Utility owned property at 320 South Whitney Way. An aerial photograph of this site and a map showing existing wells serving PZ7 and PZ8 are included in Exhibit A.

If the drilling option is selected then this is the ideal site for a multi-zone well as the Water Utility already owns the site and it sits right on the border of PZ7 and PZ8. If for any reason this site were rejected then the Water Utility would work with the Citizens Advisory Panel to identify other potential sites.

If the option of transferring water from another zone were selected then an additional booster station would need to be constructed. Hydraulically the ideal location for this facility is at Reservoir Park on Glenway Street as it would be constructed adjacent to an existing 6 MG reservoir and the property sits right on the border of PZ6 and PZ7.

5. Photographic Examples

Photographic examples of similar facilities with discussion of possible variations.

The most recent similar projects are Unit Wells 28, 29, and 30. Photos of these wells are attached as Exhibit B for your viewing in order to give all parties an idea of the size and scope of the project.

6. Cost Estimate

The cost of the project by major plant accounts.

The following is the budget breakdown for this project:

2009 Drill Test Well Whitney Way $125,000
2009 Public Participation Plan $ 50,000
2010 Additional Water Quality and Analysis $ 75,000

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2011 Drill Production Well $657,000
2012 Design Reservoir and Pumphouse $190,000
2013 Construct Reservoir and Pumphouse and Water Main Hydraulic Improvements $2,878,500

7. Financing

The proposed method of financing the project.

We propose to continue our practice of financing new construction through revenue bonds. It is estimated that the addition of this project will cost the average ratepayer approximately $ 4.00 per year.

8. Operational Costs

The estimated annual operating costs of the project, by major expense accounts, to include possible fiscal effects of water treatment if anticipated.

The following are average yearly operating costs for a typical well:

Power $ 80,000 to $ 110,000
Building and Pumping equipment maintenance $ 18,000
Chemicals $ 7500
Chemical equipment maintenance $5000
Sampling and testing $ 13,000

9. Replacement Costs

A description of and the original cost of any property being replaced, by major plant accounts.

No Utility property is being replaced with this project.

10. Designation of Affected Parties, Notification List

The designation of public utilities, alders, and other persons materially affected by the project and a list of those, which have been notified.

The potential site on Whitney Way is in Aldermanic District 19 and the alder is Mark Clear. Since other sites in PZ7 and PZ8 will be under consideration Alders Schmidt, Skidmore, Sanborn, Pham-Remmele, King, Solomon, and Bruer are all included on the notification list. At this time the Water Utility is notifying all residents within a 1.25-mile radius of the Whitney site of any public forums. Also representatives of all neighborhood association in PZ7 and PZ8 are being notified.

11. RFP for Property Valuation Analysis

A draft request for proposals (RFP) for the acquisition of services to determine the impact on values of adjoining properties.

If requested the Madison Water Utility will prepare an RFP for the acquisition of services to determine the impact on values of adjoining properties.

12. Site Selection Criteria

A description of the draft site selection criteria to be used in locating, evaluating, and ranking potential sites for the proposed facility. Site selection criteria categories will include regulatory requirements, groundwater quality and quantity, aesthetic impact,

	compatibility with existing neighborhood context, historic land use, existence of natural buffers, and environmental equity/justice considerations.

When determining the permanent location for this well the following criteria will be considered: Quantity and quality of available water, land availability and cost, proximity to sources of contamination, proximity to large transmission mains, and neighborhood impact. Other criteria may be added by the Citizens Advisory Panel.

The property on Whitney Way was deeded at no cost to the Water Utility by the City of Madison in 1974 when the land became available due to the relocation of the Whitney Way right-of-way. Since then the Water Utility has paid $ 20,604.07 in assessments on this parcel.

13. Project Timeline	*The estimated project timeline, with identifies major project phases and decision points requiring an approved resolution from the Water Utility Board. Project phases requiring a resolution shall, at a minimum, include the establishment of the proposed project, the facility site selection, and the site plan selection.*

On March 23, 2010 the Water Utility Board voted to establish a project.

Next staff will then evaluate whether drilling a well or transferring water from another pressure district is the preferred alternative, and make a recommendation at a future Board meeting.

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14. Appendix

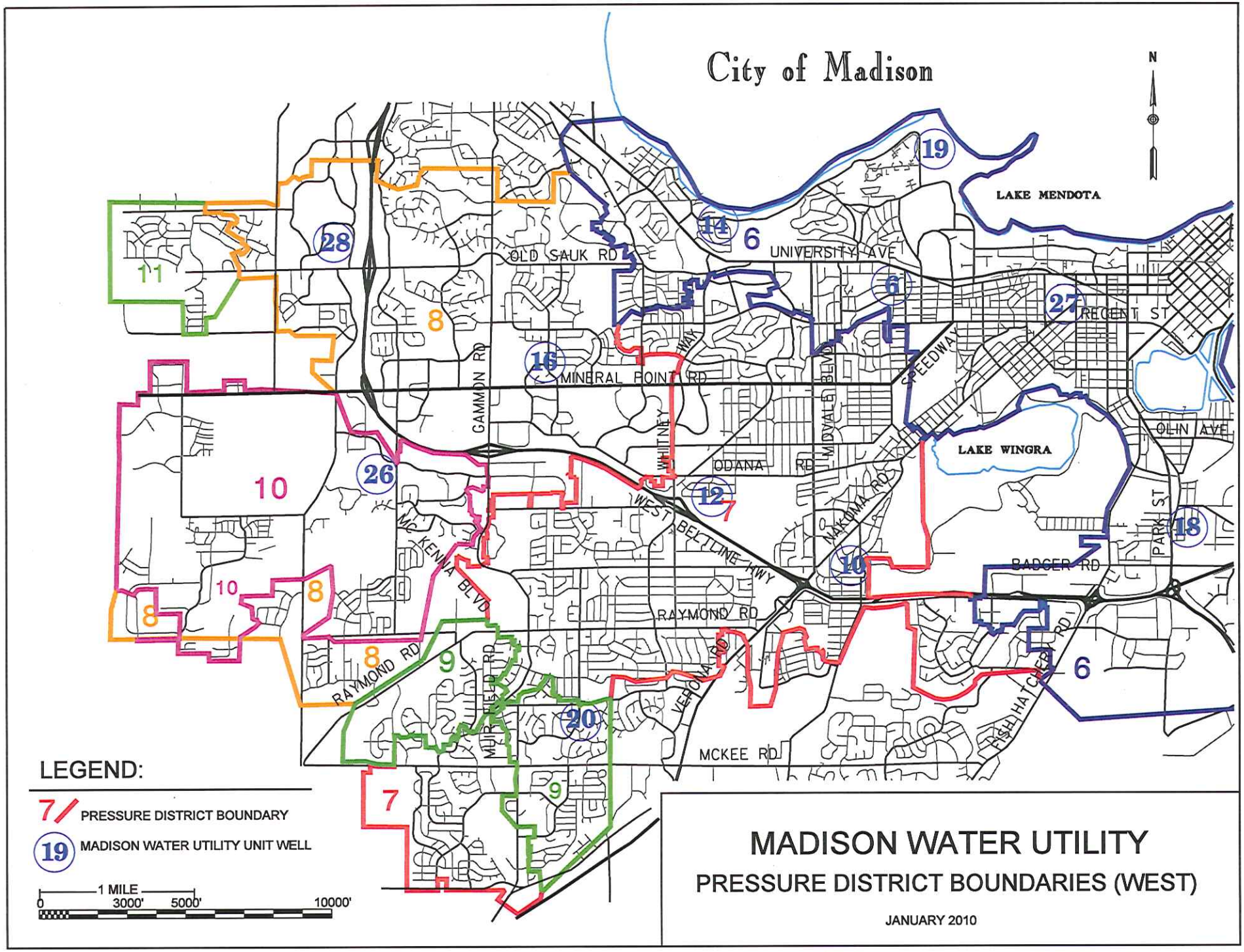
Documents referenced in the Scoping Document.

List of Exhibits

Aerial Photo and Existing Facilities Map	Exhibit A
Pressure Zone Demands and Well Run Times	Exhibit B
Photos of Similar Projects	Exhibit C

EXHIBIT A

AERIAL PHOTOGRAPH AND SYSTEM FACILITIES MAP


City of Madison
N
LAKE MENDOTA
LAKE WINGRA
OLD SAUK RD
UNIVERSITY AVE
MINERAL POINT RD
GAMMON RD
WHITNEY WAY
MIDVALE BLVD
SPEEDWAY
REGENT ST
OLIN AVE
ODANA RD
NAKOMA RD
PARK ST
WEST BELTLINE HWY
MC KENNA BLVD
RAYMOND RD
BADGER RD
VERONA RD
MUIR FIELD RD
FISH HATCHERY RD
MCKEE RD
LEGEND:
7 PRESSURE DISTRICT BOUNDARY
19 MADISON WATER UTILITY UNIT WELL
1 MILE
0 3000' 5000' 10000'
MADISON WATER UTILITY
PRESSURE DISTRICT BOUNDARIES (WEST)
JANUARY 2010


S ROSA RD
TRAIL
TRAIL

EXHIBIT B

PRESSURE ZONE DEMANDS & WELL RUN TIMES

Average Day

Service Zone	7	8
Current Well Capacity, mgd	9.5	9.5
Current Well Capacity, mgd (One well out of service)	6.3	6.3
2005 Average Day Demand, mgd	4.5	3.1
2010 Average Day Demand, mgd	4.5	3.6
2015 Average Day Demand, mgd	4.5	4.1
2020 Average Day Demand, mgd	4.6	4.6
2025 Average Day Demand, mgd	4.7	5.2
Buildout	4.8	7.6

Average Day Demands Adjusted For Conservation Goals

Service Zone	7	8
Current Well Capacity, mgd	9.5	9.5
Current Well Capacity, mgd (One well out of service)	6.3	6.3
2005 Average Day Demand, mgd	4.5	3.1
2010 Average Day Demand, mgd	4.5	3.6
2015 Average Day Demand, mgd	4.3	3.9
2020 Average Day Demand, mgd	4.2	4.2
2025 Average Day Demand, mgd	4.3	4.8
Buildout	4.4	7.0

Maximum Day Demands

Service Zone	7	8
Current Well Capacity, mgd	9.5	9.5
Current Well Capacity, mgd (One well out of service)	6.3	6.3
2005 Max Day Demand, mgd	9.6	6.97
2010 Max Day Demand, mgd	9.72	7.83
2015 Max Day Demand, mgd	9.73	8.81
2020 Max Day Demand, mgd	9.84	9.91
2025 Max Day Demand, mgd	9.95	10.93
Buildout	10.21	14.97

Maximum Day Demands Adjusted For Conservation Goals

Service Zone	7	8
Current Well Capacity, mgd	9.5	9.5
Current Well Capacity, mgd (One well out of service)	6.3	6.3
2005 Max Day Demand, mgd	9.6	6.97
2010 Max Day Demand, mgd	9.72	7.83
2015 Max Day Demand, mgd	9.34	8.46
2020 Max Day Demand, mgd	9.05	9.12
2025 Max Day Demand, mgd	9.15	10.06
Buildout	9.39	13.77

PRESSURE ZONES 7 & 8 UNIT WELL AND BOOSTER STATION RUN TIMES

Maximum Day 6/24/2005

Zone 7

Well 12	24 hrs
Well 20	24 hrs
Booster Station 106	21 hrs

Zone 8

Well 16	23.8 hrs
Well 26	24 hrs
Well 28	24 hrs

Maximum Month July 2005

Zone 7

Well 12	21.7 hrs
Well 20	18.0 hrs
Booster Station 106	8.5 hrs

Zone 8

Well 16	12.7 hrs
Well 26	20.3 hrs
Well 28	20.8 hrs

Average Day 2005

Zone 7

Well 12	19.2 hrs
Well 20	15.6 hrs
Booster Station 106	2.0 hrs

Zone 8

Well 16	5.0 hrs
Well 26	16.6 hrs
Well 28	19.0 hrs

EXHIBIT C

PHOTOS OF UNIT WELLS 28, 29, & 30