

**PRELIMINARY FEASIBILITY
STUDY WATER SYSTEM**

UNITY, WISCONSIN



Village of Unity
UNITY, WISCONSIN IN CLARK/MARATHON COUNTY



JUNE 2018

1814-035.010

Preliminary Feasibility Study Water System UNITY, WISCONSIN

SCOPE

This report evaluates the concept of forming a water utility and constructing a water system for the Village of Unity. The report will include an updated concept plan and rough cost estimates for the distribution system, water storage, and water supply wells. Also included will be an example of financing with potential funding source(s). This report does not include well site investigations or design calculations for the distribution, storage or new supply wells.

BACKGROUND

The Village of Unity is located between Marathon and Clark Counties, in Section 6, Township 27, Range 2 East (Marathon), and Section 1, Township 27, Range 1 East (Clark). The CN Railroad is on the boundary line for the counties, and the Village is on either side. The primary coordinate point is located at a latitude 44.8512 and longitude 90.313 in Clark County. The City limits encompass an area of 0.99 square miles, and the approximate elevation is 1335 feet. The Village of Unity was incorporated in 1906 as part of the Wausau Wisconsin Standard Metropolitan Statistical Area (SMSA). Current population is 342 people near the 2010 Census population of 343.

According to the Department of Administration's (DOA) website, the population projection for the Village of Unity is as follows:

2010 Census	1/1/2013 Estimate	2015 Projection	2020 Projection	2025 Projection	2030 Projection	2035 Projection	2040 Projection
343	338	335	340	335	330	325	310

In 2014, it was determined that a number of the private wells within the Village were contaminated with tetrachloroethylene (PCE), trichloroethylene (TCE), and vinyl chloride (VC). The source site was identified as North 102 Front Street in Unity, Marathon County, WI. The contamination is within a mixed commercial and residential area. This location was used as a dry-cleaning facility until the 1970s, then was used as a gasoline station. The site is listed on both the Wisconsin DNR Bureau of Remediation and EPA Superfund sites beginning in 1991 and continuing into the 2000s.

Enforcement action was initiated in 2011 and a notice of non-compliance and notice of violation recorded in 2013. Potable water well samples in August of 2014 indicated contaminant levels above water quality standards. WDNR began providing bottled water to affected residents and provided a shower trailer near the Village Hall for residents that had wells with contaminant levels above the dermal contact level for chlorinated solvents. Eight homes and businesses had carbon water treatment units installed and two other homes were receiving bottled water from WDNR. Residents have expressed the desire for the Village to provide a public water system to replace the private wells. This issue has been discussed at numerous Village Board meetings between 2014 and 2016, and in November of 2016 the Village held an advisory referendum and voted in favor of performing a feasibility study for a public water system.

The contamination plume seems to have impacted the western part of Unity more than the eastern half. **Figure 1** (attached) shows the PCE plume and areas of impact. EPA and WDNR are currently monitoring the situation, but any future treatment or remediation efforts will negatively affect private wells within the Village, at least for a period until the cleanup is completed. **Figure 2** (attached) shows the individual resident well sample results taken from 2014. Refer to the Final Site Assessment Report for the Unity Groundwater Site, dated January 2015, by Tetra Tech for U.S. EPA, with more specific information on the contamination assessment. The contamination plume will move and change and impact more and different wells over time.

WDNR and EPA would prefer to see the community develop a municipal water system. This will allow for more and better remediation methods that the agencies cannot do now do to potential effects on the private wells. Any remediation steps will have some influence on the nearby wells. By installing a municipal system, the residents of the community will be better protected by any remaining contamination and the effects remediation will have. In addition to the contaminated water concerns, there are other benefits to the community with a municipal water system.

STEPS TO FORM A PUBLIC WATER SYSTEM

To form a new public water utility, the community must first find a source, such as a well or well(s) that are properly located, constructed, installed, and maintained to provide safe drinking water. In addition, the operating of the system will require technical, managerial, and financial responsibilities so that the well and any treatment systems are constructed to state standards and the utility follows the federal Safe Drinking Water Act (SDWA) requirements. The following steps are needed to establish a new public water system:

- 1. Feasibility Study – (This Report)**
2. Preliminary Engineering Report
3. Well Site Investigation Report
4. Establish New Water Utility (PSC)
5. Plans and Specifications (Design)
6. Bid and Award
7. Construction
8. Start Operation

Because of the costs associated with design and construction of a new water system including supply source treatment (if necessary), distribution, and storage it will be necessary to find a funding “partner”. The contamination that much of the Village is experiencing should provide some opportunities to get assistance by low interest loans and grants, but will take some time and effort to secure the optimum funding package. This report will include a preliminary example of potential funding, but the actual funding for the project will not be known until after the Village gets through step 4 listed above.

SUPPLY AND STORAGE

Considering geological data from USGS and previous studies in the Unity area, it will be difficult to develop substantial ground water supplies. **Figure 3** (attached) shows a generalized geological cross section showing 25-30 feet layer of clay, with a small thinner layer of sandstone on top of a weathered or granite base. Two or three wells may be necessary to provide the required flow to meet the demand. Multiple wells do allow for some redundancy, assuming the capacity is enough from each well to meet the required demand. The Well Site Investigation Report will address location, number, and capacities of supply well(s). For our estimate we will assume (3) three shallow supply wells. Each well will pump to a common storage reservoir.

Considering the above referenced contamination and what a higher capacity municipal well would do to the contamination plume, the potentially best location for a new well or well(s) may be west of the Little Eau Pleine River which is currently not within the Village Limits. Locations for test wells will be determined if the Village elects to move forward.

WDNR has the following groundwater quality standards that will be tested during the well investigation:

Substance	Enforcement Standard (ES), mg/l	Preventative Action Limit PAL, mg/l
Chloride	250	125
Color	15 units	7.5 units
MBAS Foaming Agent	0.5	0.25
Iron	0.3	0.15
Manganese	0.05	0.025
Odor	3 (threshold odor no.)	1.5 (threshold odor no.)
Sulfate	250	125
Zinc	5	2.5

Higher concentrations of natural manganese and iron are typical in the Unity area groundwater aquifers. With no current well data other than the contamination information, we will assume a chemical feed system will be necessary for chemical sequestration of the iron and/or manganese. If, however, the concentrations of these minerals are higher than normal it may be necessary to add a water treatment system with filtration. The filtration system will not be included in the cost estimate at this time. If the test well results show levels below the above values, then the Iron/Manganese chemical treatment system can be removed from the estimate.

Additionally, a chemical feed system for disinfection will be included in the projected costs.

Water Demand

There are approximately 145 households within the Village of Unity, with a projected population declining over the next 20 years. Estimated water use per person is typically between 50 – 100 gallons per day, with peak volumes 3 to 4 times that during heavy usage. Lawn watering, air conditioning, and other major water use appliances or systems can increase the water demand. Wastewater usage is 70 gpcd. For this study purposes we will use 75 gallons per capita per day (gpcd) water usage with a peaking factor of 3.5 (263 gpcd). Using a design population of 340 people serviced, we estimate the water usage at:

$$340 \times 75 \text{ gpcd} = 25,500 \text{ gpd Average water demand}$$

$$340 \times 263 \text{ gpcd} = 89,420 \text{ gpd (62 gpm) Peak water demand}$$

For fire protection, use 750 gpm for 2 hours assuming a home separation distance of 31-100ft = 90,000 gallons.

Storage

Considering the demand, we include two alternatives for water storage, an elevated storage tank and a below ground reservoir. With the ground reservoir pressure. High service pumps will be necessary to provide sufficient water pressures in the system. For this we will use three (3) pumps, two smaller pumps for normal and peak day demand, and one larger pump for a fire flow condition.

The preferred location for the tower or reservoir, would be near higher ground. Suggested area would be to the west of Washington St, behind Trinity Lutheran Church.

SYSTEM DISTRIBUTION

A network of piping will be necessary to distribute the water for domestic supply and fire protection to the 145 households and businesses within the Village limits. Enough fire hydrants and storage are provided so that resident/business structures are within the required separation distances of WDNR and ISO to keep fire insurance costs at a minimum.

Six (6") inch water mains are used for all mains, with hydrants positioned for protection and flushing. Poly vinyl chloride (PVC) pressure class pipe will be used on the main lines, with Ductile Iron Pipe (DIP) used for hydrant services and ductile iron fittings. Gate valves have been placed to allow isolating sections of the water main in case the need for repairs or additions of new main become apparent. By positioning these valves at certain locations, isolating specific sections of the main will allow most of the community to still have water service and minimize those who are affected when these repairs or additions come into play.

This Feasibility Study evaluated two (2) options for street restoration. Option A includes paving all disturbed streets with a 24-foot-wide section of Hot Mix Asphalt (HMA) in two (2) layers and Option B limited the paving to only the disturbed sections of STH 13 and CTH P. Option A is the better option with regards to road maintenance and concerns with plowing around valve boxes and manhole casting covers. Option B does include new aggregate base but will require more maintenance than a paved asphalt road. To save some costs, in both options we did not extend water main to the Village limits along CTH P to the East, or along Salter Street to the east. Also, we did not include costs out beyond the Eau Pleine River (West of), where a potential well site could be, but the property is currently not within the Village limits. If the Village elects to move forward a more detailed cost estimate can be completed based on the actual location(s) of the wells and distribution main. Below are the estimated quantities for the distribution system components based on the layout of this report:

- 19,100 lineal feet of 6-inch PVC C900 Pipe with Tracer Wire
- 372 lineal feet of 6-inch DIP CI 52 Pipe to hydrants
- 31 6-inch Water Hydrants
- 41 6-inch Gate Valves
- 140 1-inch Corporation Stop and Curbstop and box
- 4,200 lineal feet of 1-inch copper service pipe

Costs are included for crossings of the State Highway, County Trunk Highways, and the Railroad. Typically, these pipes that cross these thoroughfares are directionally bored and may be encased with a rigid casing pipe as required by the various jurisdictional requirements. (DOT, RR, and County).

Service Connections

Included with the distribution system are individual service connections to the household residents and businesses. For this report we used 1-inch copper service pipe with a corporation cock connection to the main, and curb-stop valves and boxes for shut off at the property line. Each residence or business would be responsible for running pipe from the curb stop to their residence. The water main lines will be offset to one side of the road, so some service pipes will be longer than others depending on which side of the road the water main is laid. Services on the West side of STH 13 and North of CTH P, would be bored under the highway from the main to eliminate open cut excavation across the highway.

To measure the amount of water consumption from each residence meters will be necessary. Costs for 5/8" and 3/4" meters that would be installed in for each user are included. Each homeowner or business owner will be responsible for providing a location and pipe for connection. Each meter will include a transmitter that will allow for operating staff to remotely read the meters.

Operation and Maintenance

In communities the size of Unity, the operator typically takes care of both the Water and Sewer Systems. The water supply requites daily attention for recording data and adjusting the chemical feed

system, about 1 hour per day. Reservoirs require little maintenance although internal inspections are generally required on a five-year cycle. The distribution system hydrants need flushing twice per year. There will be power costs for the well pumps and chemical costs. The wells will need regular chemical cleaning to maintain capacity. Office time will be necessary for compiling meter readings, billing and collecting. Annual reports must be filed with PSC and it is likely that the funding source will require annual audits. A preliminary estimate of annual O&M costs is \$36,000.00.

PROJECTED COSTS & FINANCING

Attached are preliminary costs for two (2) options A and B. Option A includes costs for Water distribution, (3) supply wells and 100,000-gallon elevated storage tank, water treatment systems, water meters, and paved streets for disturbed streets with new mains. **Total Estimated Project Cost for Option A = \$5,827,900.**

Option B includes the same items as above without the paved streets, using a gravel aggregate base course as street surface. In both cases there would be a lower cost for an in-ground concrete tank reservoir. With an in-ground reservoir a booster pump station would be necessary and would add additional maintenance items that over the service life would cost more than an elevated tank. **Total Estimated Project Cost for Option B = \$4,940,000.**

See attached detailed cost estimates for each option. Figure 4 (attached) shows a preliminary layout of a water system for Unity, WI. Operation and Maintenance (O&M) costs are based on similar sized communities with municipal water systems. Each cost option includes a \$36,000 per year operation and maintenance cost including O&M for chemical sequestration and disinfection. These costs can be revisited and updated during the preliminary engineering report phase.

As noted above, for the Village of Unity to be able to afford a total water system including supply, storage, treatment, and distribution a funding partner or partner(s) will be necessary. There are examples of communities receiving significant help in funding projects, especially when the community can demonstrate a significant health and safety issue from contamination as identified by U.S. EPA and Wisconsin DNR. Examples of this include:

1. Stetsonville, WI in 2012 received multiple grants from EPA LUST Trust Funds, USDA-RD, CDBG, EPA State and Tribal Assistance, and a Commerce Petroleum Environmental Cleanup Fund. Along with a low interest USDA-RD loan received over \$7 million dollars in assistance to help fund a new municipal water system. That community was in a similar position as Unity with private wells contaminated from underground fuel storage tanks.
2. City of Morgan, Minnesota with a population of 900 people is receiving assistance for funding complete replacement of the wastewater treatment facility, 100% of the sanitary sewer collection system and 95% of the water mains. The project costs are 20.5 million dollars of which a good portion will be paid by grants and low interest loans.

Funding assistance and grant programs can be obtained if there are motivated people in the community and with assistance from local, state, federal and private agencies that can work together.

Below is a brief summary of different programs that the Village could explore for funding assistance. Other programs may exist and should be researched once discovered. Agencies that should be contacted include, but not limited to:

United States Department of Agriculture-Rural Development (USDA-RD)
Environmental Protection Agency (EPA) Trust Funds (LUST)
EPA State and Tribal Assistance Grant (STAG)
Wisconsin State Trust Fund
Wisconsin Community Development Block Grant (CDBG)

Department of Commerce Petroleum Environmental Cleanup Fund Award (PECFA)

USDA-Rural Development

Rural Development (RD), part of the U.S. Department of Agriculture, administers a grant and loan program for water facilities. According to the USDA website, the maximum grant amount has several stipulations, which are as follows:

75% of the project cost

- Communities with a served community population of 5,000 or less, and;
- The MHI is below the higher of the poverty line or 60 percent of the State nonmetropolitan median household income.

55% of the project cost

- Communities with a served community population of 12,000 or less, and;
- The MHI is below the higher of the poverty line or 70 percent of the State nonmetropolitan median household income.

35% of the project cost

- Communities with a served community population of 20,000 or less, and;
- The MHI is below the higher of the poverty line or 80 percent of the State nonmetropolitan median household income.

15% of the project cost

- Communities with a served community population of 12,000 or less, and;
- The MHI is below the higher of the poverty line or 90 percent of the State nonmetropolitan median household income.

In addition to the above stipulations, the following criteria must also be met:

- Applicants must have legal authority to borrow money, obtain security, repay loans, construct, operate, and maintain the proposed facilities.
- Applicants must be unable to finance the project from their own resources and/or through commercial credit at reasonable rates and terms.
- Facilities must serve rural area where they are/will be located.
- Project must demonstrate substantial community support.
- Environmental review must be completed and acceptable.

The loan repayment period must not extend past the useful life of the facility or 40 years maximum. The 2016 MHI for the Village of Unity was \$41,250, per American Factfinder website.

Wisconsin State Trust Fund

The Board of Commissioners of Public Lands administers the State Trust Fund, which provides loans to communities for this type of project. Current interest rates are 4.00% for 5 years or less, 4.25% for 6-10 years and 4.50% for 11-20 years. The application procedure is simple and there are no fees.

Safe Drinking Water Loan Program (SDWLP)

The Safe Drinking Water Loan Program (SDWLP) provides loans to public water systems to build, upgrade, or replace water supply infrastructure to protect public health and address federal and state safe drinking water requirements. The DNR is the primary administrator and the Department of Administration (DOA) is the financial manager for this program. Funds will be loaned for water system improvements. The principal and interest payments back to DNR will be used for new loans for other projects.

**PRELIMINARY COST ESTIMATE
MUNICIPAL WATER SYSTEM - OPTION A
UNITY, WISCONSIN**

Reduced WM and Street

**does not include to far east Village limits*

Quantity	Unit	Item	Unit Price		Total
<u>Water Distribution</u>					
19,100	lin. ft.	6" PVC C900 Watermain w/ Tracer	\$	32.00	\$ 611,200.00
31	ea.	Hydrants	\$	2,800.00	\$ 86,800.00
372	lin. ft.	6" DIP Hydrant lead Pipe	\$	38.00	\$ 14,136.00
31	ea.	Hydrant 6" gate valve w/ box	\$	1,100.00	\$ 34,100.00
41	ea.	6" Gate Valves w/ box	\$	1,050.00	\$ 43,050.00
3,300	lb	Special Fittings	\$	6.00	\$ 19,800.00
140	ea.	1" Corporation Stop	\$	160.00	\$ 22,400.00
140	ea.	1" Curbstop and box	\$	180.00	\$ 25,200.00
4,200	lin. ft.	1" Copper Water Service Pipe	\$	20.00	\$ 84,000.00
2,000	lin. ft.	Highway Service Crossing	\$	80.00	\$ 160,000.00
3	ea.	RR Crossings w/ Casing Pipe	\$	12,000.00	\$ 36,000.00
3	ea.	Highway Crossings	\$	3,500.00	\$ 10,500.00
Subtotal					\$ 1,147,186.00
<u>Supply and Storage</u>					
3	ea.	Test Well(s)	\$	35,000.00	\$ 105,000.00
3	ea.	Supply Wells (Shallow)	\$	80,000.00	\$ 240,000.00
1	LS	Pumphouse	\$	120,000.00	\$ 120,000.00
1	LS	Electrical/SCADA	\$	90,000.00	\$ 90,000.00
1	ea.	Backup Generator	\$	75,000.00	\$ 75,000.00
1,500	lin. ft.	Transmission Line	\$	32.00	\$ 48,000.00
1	LS	100,000 Gallon Elevated Steel Tank Reservoir	\$	650,000.00	\$ 650,000.00
Subtotal					\$ 1,328,000.00
<u>Additional Cost for Treatment</u>					
1	LS	Additional Building Cost for Treatment	\$	380,000.00	\$ 380,000.00
1	LS	Treatment Equipment	\$	250,000.00	\$ 250,000.00
1	LS	Additional Electrical/SCADA	\$	20,000.00	\$ 20,000.00
Subtotal					\$ 650,000.00
<u>Water meters</u>					
140	ea.	5/8" and 3/4"	\$	300.00	\$ 42,000.00
5	ea.	1" meter with transmitter	\$	450.00	\$ 2,250.00
1	ea.	SCADA/Hard/Software for Reading Meters	\$	15,000.00	\$ 15,000.00
Subtotal					\$ 59,250.00

Street & Miscellaneous

10,300	sq. yd.	Pulverizing Existing Pavement	\$	1.10	\$	11,330.00
17,700	cu. yd.	Excavation	\$	5.00	\$	88,500.00
10,300	sq. yd.	Salvage Pulverized Material (3")	\$	1.00	\$	10,300.00
1,400	cu. yd.	Place & Compact Pulverized Material	\$	1.50	\$	2,100.00
21,700	tons	Aggregate Base Course	\$	12.00	\$	260,400.00
5,900	tons	HMA Pavement (binder course)	\$	75.00	\$	442,500.00
2,600	gal.	Tack Coat	\$	3.00	\$	7,800.00
3,000	tons	HMA Pavement (surface course)	\$	82.00	\$	246,000.00
25,500	sq. yd.	Restoration	\$	1.50	\$	38,250.00
120	ea.	Density Testing, Trench and Roadway	\$	100.00	\$	12,000.00
250	lin. ft.	Sawcutting Existing Pavement	\$	5.00	\$	1,250.00
2	ea.	Work in ROWs (STH 13 and CTH P and K)	\$	6,000.00	\$	12,000.00
Subtotal					\$	1,132,430.00
TOTAL ESTIMATED CONSTRUCTION COST					\$	4,316,866.00
Engineering, Legal, and Contingency					\$	1,511,000.00
TOTAL ESTIMATED PROJECT COSTS					\$	5,827,866.00

Alternate 1 - Use Concrete Reservoir in-lieu of Above Ground Tank

1	LS	100,000 Gallon In-Ground Concrete Tank	\$	350,000.00	\$	350,000.00
2	ea.	Booster Pumps for Water Demand	\$	22,000.00	\$	44,000.00
1	ea.	Booster Pump for Fire Demand	\$	28,750.00	\$	28,750.00
1	LS	Booster Pump Building	\$	200,000.00	\$	200,000.00
						\$622,750.00

Credit for using underground Reservoir vs Tower **\$27,250.00**

Total Project Cost using Reservoir vs Tower **\$ 5,800,616.00**

**PRELIMINARY COST ESTIMATE
MUNICIPAL WATER SYSTEM - OPTION B
UNITY, WISCONSIN**

Reduced WM and Street, limited paving
**does not include to far east Village limits*

Quantity	Unit	Item	Unit Price	Total
<u>Water Distribution</u>				
19,100	lin. ft.	6" PVC C900 Watermain w/ Tracer	\$ 32.00	\$ 611,200.00
31	ea.	Hydrants	\$ 2,800.00	\$ 86,800.00
372	lin. ft.	6" DIP Hydrant lead Pipe	\$ 38.00	\$ 14,136.00
31	ea.	Hydrant 6" gate valve w/ box	\$ 1,100.00	\$ 34,100.00
41	ea.	6" Gate Valves w/ box	\$ 1,050.00	\$ 43,050.00
3,300	lb	Special Fittings	\$ 6.00	\$ 19,800.00
140	ea.	1" Corporation Stop	\$ 160.00	\$ 22,400.00
140	ea.	1" Curbstop and box	\$ 180.00	\$ 25,200.00
4,200	lin. ft.	1" Copper Water Service Pipe	\$ 20.00	\$ 84,000.00
2,000	lin. ft.	Highway Service Crossing	\$ 80.00	\$ 160,000.00
3	ea.	RR Crossings w/ Casing Pipe	\$ 12,000.00	\$ 36,000.00
3	ea.	Highway Crossings	\$ 3,500.00	\$ 10,500.00
Subtotal			\$	1,147,186.00
<u>Supply and Storage</u>				
3	ea.	Test Well(s)	\$ 35,000.00	\$ 105,000.00
3	ea.	Supply Wells (Shallow)	\$ 80,000.00	\$ 240,000.00
1	LS	Pumphouse	\$ 120,000.00	\$ 120,000.00
1	LS	Electrical/SCADA	\$ 90,000.00	\$ 90,000.00
1	ea.	Backup Generator	\$ 75,000.00	\$ 75,000.00
1,500	lin. ft.	Transmission Line	\$ 32.00	\$ 48,000.00
1	LS	100,000 Gallon Elevated Steel Tank Reservoir	\$ 650,000.00	\$ 650,000.00
Subtotal			\$	1,328,000.00
<u>Additonal Cost for Treatment</u>				
1	LS	Additional Building Cost for Treatment	\$ 380,000.00	\$ 380,000.00
1	LS	Treatment Equipment	\$ 250,000.00	\$ 250,000.00
1	LS	Additional Electrical/SCADA	\$ 20,000.00	\$ 20,000.00
Subtotal			\$	650,000.00
<u>Water meters</u>				
145	ea.	5/8" and 3/4"	\$ 300.00	\$ 43,500.00
5	ea.	1" meter with transmitter	\$ 450.00	\$ 2,250.00
1	ea.	SCADA/Hard/Software for Reading Meters	\$ 15,000.00	\$ 15,000.00
Subtotal			\$	60,750.00
<u>CTH P and STH 13 Street & Miscellaneous</u>				
6,800	sq. yd.	Pulverizing Existing Pavement	\$ 1.50	\$ 10,200.00
5,000	cu. yd.	Excavation	\$ 5.00	\$ 25,000.00
6,800	sq. yd.	Salvage Pulverized Material (3")	\$ 1.20	\$ 8,160.00
1,100	cu. yd.	Place & Compact Pulverized Material	\$ 1.50	\$ 1,650.00
21,700	tons	Aggregate Base Course	\$ 12.00	\$ 260,400.00
800	gal.	Tack Coat	\$ 3.00	\$ 2,400.00

1,700	tons	HMA Pavement (surface course)	\$	82.00	\$	139,400.00
7,200	sq. yd.	Restoration	\$	1.50	\$	10,800.00
25	ea.	Density Testing, Trench and Roadway	\$	100.00	\$	2,500.00
100	lin. ft.	Sawcutting Existing Pavement	\$	5.00	\$	500.00
2	ea.	Work in ROWs (STH 13 and CTH P and K)	\$	6,000.00	\$	12,000.00

Subtotal **\$ 473,010.00**

TOTAL ESTIMATED CONSTRUCTION COST **\$ 3,658,946.00**

Engineering, Legal, and Contingency \$ 1,280,700.00

TOTAL ESTIMATED PROJECT COSTS **\$ 4,939,646.00**

Alternate 1 - Use Concrete Reservoir in-lieu of Above Ground Tank

1	LS	100,000 Gallon In-Ground Concrete Tank	\$	350,000.00	\$	350,000.00
2	ea.	Booster Pumps for Water Demand	\$	22,000.00	\$	44,000.00
1	ea.	Booster Pump for Fire Demand	\$	28,750.00	\$	28,750.00
1	LS	Booster Pump Building	\$	200,000.00	\$	200,000.00

\$622,750.00

Credit for using underground Reservoir vs Tower **\$27,250.00**

Total Project Cost using Reservoir vs Tower **\$ 4,912,396.00**

Loan funds are distributed based on a competitive priority scoring system, which includes the following criteria:

- Risk to Human Health
- Compliance with SDWA
- Financial Need

Loan rates are 55% of the State's market rate, currently 1.87%. Small communities (<10,000) with low incomes (<80% State MHI for 2015; \$42,952) are eligible for a loan rate at 33% of market rate, currently 1.122%. Term is 20 years. The Village of Unity's State (for FY 2019) adjusted MHI of \$39,464 is below 80% of the adjusted State MHI, which means Unity qualifies for the low interest rate.

Principal Forgiveness (PF) is additional subsidy, provided by the federal government, to assist municipalities that would experience significant hardship raising the revenue necessary to finance needed infrastructure projects. PF is used to reduce the size of a loan, thus reducing annual principal and interest payments. CWFP and SDWLP loans are for the full amount of funds being provided for a project, but the PF portion is forgiven at the time of disbursement. The municipal bond pledged as security for the loan only needs to cover the amount of principal which will actually be repaid.

Community Development Block Grants

The Department of Commerce administers the Community Development Block Grant Public Facilities Program (CDBG-PF). According to (Wisconsin Department of Administration, 2017), the maximum grant available is \$500,000.00 per year. The typical grant is approximately 50% of project cost. The project must address one of the following national objectives:

A. Low and Moderate-Income Benefit (LMI)

At least 51% of the beneficiaries of the proposed project must be of low or moderate income (family income below 80% of the median household income for the county in which the project is located). The 2010 LMI for Unity was 41.03%.

B. Urgent Local Needs (ULN)

The project must be designed to alleviate existing conditions "that pose an imminent threat to the health, safety or general welfare of the community". The "condition" must have become urgent within the 18 months preceding the application or the community must have begun to deal with the need within 18 months of discovering the problem. In addition, the applicant must show that it is unable to finance the activity on its own. If general obligation debt would exceed 80% of capacity, this financing condition is met.

EPA LUST Trust Fund

In 1986, Congress created the Leaking Underground Storage Tank (LUST) Trust Fund to address petroleum releases from federally regulated underground storage tanks (USTs) by amending Subtitle I of the Solid Waste Disposal Act. In 2005, the Energy Policy Act expanded eligible uses of the Trust Fund to include certain leak prevention activities. The LUST Trust Fund provides money to:

- Oversee cleanups of petroleum releases by responsible parties;
- Enforce cleanups by recalcitrant parties;
- Pay for cleanups at sites where the owner or operator is unknown, unwilling, or unable to respond, or which require emergency action; and
- Conduct inspections and other release prevention activities.

EPA Multipurpose Grants to States and Tribes

The FY 2016 Consolidated Appropriations Act (Public Law 114-113) provides \$21,000,000 (\$20,809,000 after rescission), for EPA to issue grants to states and tribes to assist with the implementation

of environmental programs. A total of \$19,809,000 is available for states, territories, and the District of Columbia, and \$1,000,000 is available for eligible tribes.

The explanatory statement accompanying the Act states that “Funds allow States and tribes to have the flexibility to direct resources for the implementation of high priority activities, including the processing of permits, which complement programs under established environmental statutes.” EPA expects to award these funds to states and tribes by the end of FY 2016 (September 30, 2016). Additional details about multipurpose grants is available in the Catalog of Federal Domestic Assistance (CFDA, www.cfda.gov) under 66.204. These funds may be added to Performance Partnership Grants (PPGs); additional information about PPGs is available under CFDA 66.605. EPA will also post answers to questions as they are received to the “Multipurpose Grants to States and Tribes” section of <https://www.epa.gov/grants/specific-epa-grant-programs>.

For States and Territories:

- A total of \$19.8 million is available for states, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, and American Samoa.
- All are eligible for a specific funding amount that includes: a base amount, an amount based on each state’s share of Clean Air Act (CAA) major source permits as of 2015, and an amount based on each state’s share of EPA’s total FY 2015 categorical grant funding.
 - **65 percent** of their funding will be available to support core air regulatory work, including but not limited to National Ambient Air Quality Standards (NAAQS) implementation, including designations and State Implementation Plans (SIPs); CAA permitting (excluding Title V permitting); and, state-led activities to address climate change.
 - **35 percent** of their funding will be available for high priority activities identified by individual states eligible under existing federal environmental statutes.
- States and territories who submit workplans or workplan amendments consistent with the multipurpose grant guidance and approved by their respective EPA region will receive the full amount for which they are eligible.
- To maximize efficiency for all parties, resources may be added to Performance Partnership Grants (PPGs) where available and desired.

Municipal Borrowing

A. General Obligation Bonds

General obligation bonds (G.O.) or notes are payable from the general revenues of the municipality and backed by its “full faith and credit” and taxing power. The revenue securing payment comes from the *ad valorem* property tax. G.O. Bonds are typically used for non-revenue generating, long-term capital improvements. The amount is limited to 5% of equalized valuation. The repayment period for bonds is limited to 20 years. Interest rates vary but are currently estimated to be 5.0%. The borrowing municipality must levy an irrepealably tax sufficient to pay the principal and interest.

B. Revenue Obligation Bonds

Revenue obligation bonds are issued for a particular project and are repaid from revenues generated by the project. Water user fees may be used to pay for revenue bonds used to construct water facilities. Revenue bonds are not subject to the constitutional 5% debt limit; the amount is limited by the ability to pay. Interest rates vary and are generally slightly higher than general obligation bonds. Current rates are approximately 5.25%. The term may be up to 40 years. Revenue bonds usually have a “debt coverage requirement” that requires revenues to be budgeted at 110% - 140% of the debt service.

Financing

Once all available grant funds are secured and loans obtained for the net local share of the project cost, a revenue stream needs to be created to pay the principal and interest on the loan. The form of

revenue may be limited by the method of borrowing as outlined above. In addition to debt, revenue needs to be generated for operation and maintenance costs. The various forms of revenue available for this project are described as follows:

A. Property Taxes (*ad valorem*)

This is the annual tax levied on all taxable property within the District limits. A "Public Fire Protection" (PFP) property tax may be recommended by the Public Service Commission for water utilities. Tax exempt properties do not contribute directly but may be charged a fee equivalent to the PFP amount. All taxable property within the Village contributes, regardless of the amount of water use. There are limitations on the ability to raise property taxes.

B. Special Assessments

Those properties "benefiting" from the project may be assessed all or a portion of the cost. These costs may be distributed to property owners via a variety of methods including front footage, acreage, connections, etc. The amount assessed is collected annually over the term of the bond (10 to 40 years). Undeveloped property may be assessed. The collection of the assessment for an undeveloped lot may be deferred until development.

Assessments can also be used for general improvements such as reservoirs and wells. Assessments may be "targeted" to specific beneficiaries if they petition for the improvement and assessment.

Low income households have access to individual family programs that can subsidize their actual costs.

C. Water Use Charges

Water use charges are monthly or quarterly charges that vary with the volume of usage. Generally, there will be a fixed charge based on meter size and a volumetric charge based on usage. Water rates are determined by PSC.

Estimated Annual Cost

Grant funding will need to be investigated further. Financing for the project is estimated using a low interest loan from DNR Safe Drinking Water Loan Program and some form of Principal Forgiveness. The estimated rates for construction of a complete water system with a new well, elevated storage and minimal treatment, along with a distribution system and paved roads is estimated at:

DNR 20-year Loan with Principal Forgiveness	
Total Estimated Cost	\$5,828,000
Interest During Construction	\$291,400
60% Principal Forgiveness (PF)	(\$2,578,800)
Net Financed	\$3,540,600
SDWLP, 1.122%, 20 years	\$198,620
Commercial G.O., 4.0%, 20 years	\$112,580
Total Annual P&I	\$311,200
Estimated Annual O&M	\$36,000
Total Annual Cost	\$347,200
REU	140
Annual Cost per REU	\$2,223.00
Monthly Cost per REU	\$185.24

The actual water rate increase will be established by the Public Service Commission and may include a Public Fire Protection charge as well as the fixed meter charge and volumetric charge.

Another example of funding could be a USDA-RD grant/loan assuming 45% grant and the remaining balance a low interest loan for a 40-year period.

USDA-RD Loan and Grant (45%)	
Total Estimated Cost	\$5,828,000
Interest During Construction	\$291,400
45% Grant	(\$2,622,600)
Rural Development Loan	\$3,496,800
USDA-RD Loan, 3.125%, 40 years	\$154,350
10% Reserve	\$15,435
Total Annual P&I	\$169,785
Estimated Annual O&M	\$36,000
Total Annual Cost	\$205,785
REU	140
Annual Cost per REU	\$1,469.89
Monthly Cost per REU	\$122.49

One final example of funding, and possible best alternative could be a USDA-RD grant/loan for assuming 75% grant, due to the health and safety issues, with the remaining balance a low interest loan for a 40-year period.

USDA-RD Loan and Grant (75%)	
Total Estimated Cost	\$5,828,000
Interest During Construction	\$291,400
75% Grant	(\$4,371,000)
Rural Development Loan	\$1,748,400
USDA-RD Loan, 3.125%, 40 years	\$77,180
10% Reserve	\$7,718
Total Annual P&I	\$84,898
Estimated Annual O&M	\$36,000
Total Annual Cost	\$120,898
REU	140
Annual Cost per REU	\$863.56
Monthly Cost per REU	\$71.96

One of the factors in determining funding is consideration of the users annual cost relative to the community's median household income (MHI). USDA-RD will typical view rates in other surrounding communities and try to target a user rate at or below 2% of the MHI. 2010 Census data shows an MHI for Unity at \$43,646. Two percent of the Village MHI is \$872.92. The above calculated annual costs show on the 75% grant and 40-year loan term puts Unity residents below the 2% threshold.

Other community rates that are nearby to Unity are listed below (source: Environmental Finance Center <https://efc.sog.unc.edu/resource/wisconsin-residential-water-rates-dashboard>).

Other Rates				
	<i>Mo rate</i>	<i>Qtr rate</i>	<i>MHI</i>	<i>%MHI</i>
Colby, WI	46.44/mo	139.32/qtr	\$42,188	1.30%
Owen, WI	70.19/mo	210.57/qtr	\$34,667	2.43%
Loyal, WI	38.30/mo	114.90/qtr	\$41,591	1.10%
Stratford, WI	56.19/mo	168.57/qtr	\$46,548	1.45%

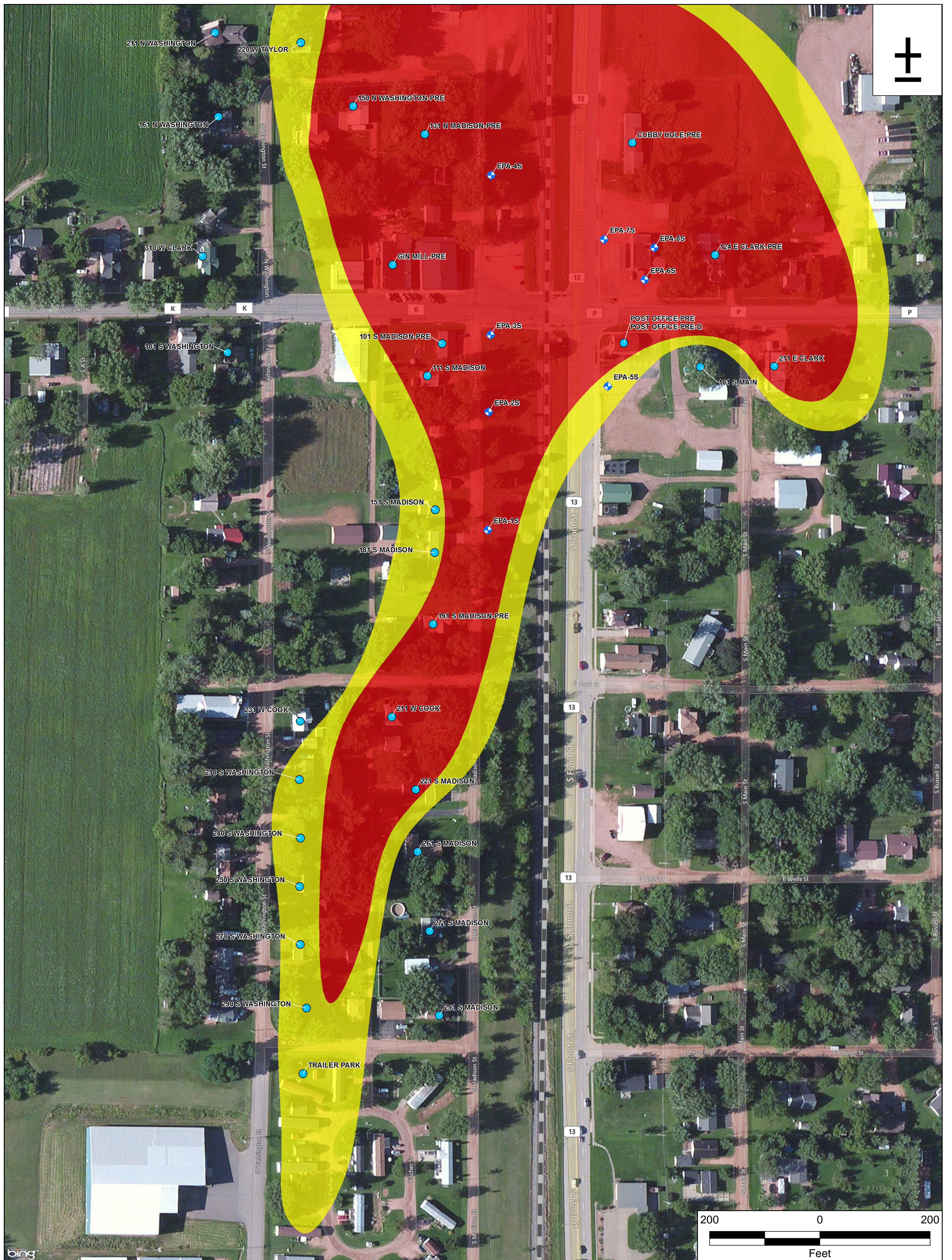
NEXT STEPS

For this project to move forward the Village is going to need funding assistance from government agencies to make this affordable for the residents of Unity. There is a real need and health and safety concern with the contamination at 102 Front Street and the spread of the plume. Ideally the Village would get a supply well or wells located far enough to the west to not be influenced by the plume.

Communication and potential meetings with above funding sources should be pursued by the Village to make the communities case for funding assistance. Meeting with local, state, and federal officials will be necessary to secure funding. A meeting with WDNR and EPA has been scheduled for some time in July 2018. Some funding agencies will require a more detailed investigations and reports. Those costs are not in the estimates included in this document.

Steps up to Construction:

- I. Preliminary Engineering Report for water system
 - a. Evaluate water source quality, need for treatment
 - b. Determine water usage and flow requirements.
 - c. Size distribution piping and system layout
 - d. Size storage reservoir and location
 - e. Submit to regulatory agencies for approval
- II. Well Site Investigation Report
 - a. Review geology for potential well site locations
 - b. Perform geological and hydrogeologic evaluation. Sample private wells.
 - c. Drill test well(s)
 - d. Select site and submit report
- III. Establish a new water utility with the Public Service Commission (PSC)
 - a. Meet with WDNR and PSC to establish user rates and parameters
 - b. Establish ordinances and other regulatory requirements
- IV. Prepare Plans and Specifications
 - a. Detail design of well and pump house.
 - b. Detailed design of distribution system
 - c. Detailed design of water storage reservoir
 - d. Advertise for Construction



Legend

- ▲ Shallow Monitoring Well Location
- Residential Well Location
- PCE above ES
- PCE above PAL

PCE = Tetrachloroethene
 ES = State NR 140 Enforcement Standard
 PAL = Preventative Action Level

FIGURE 1

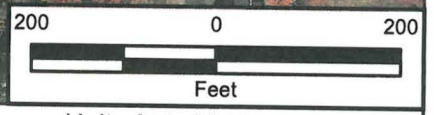
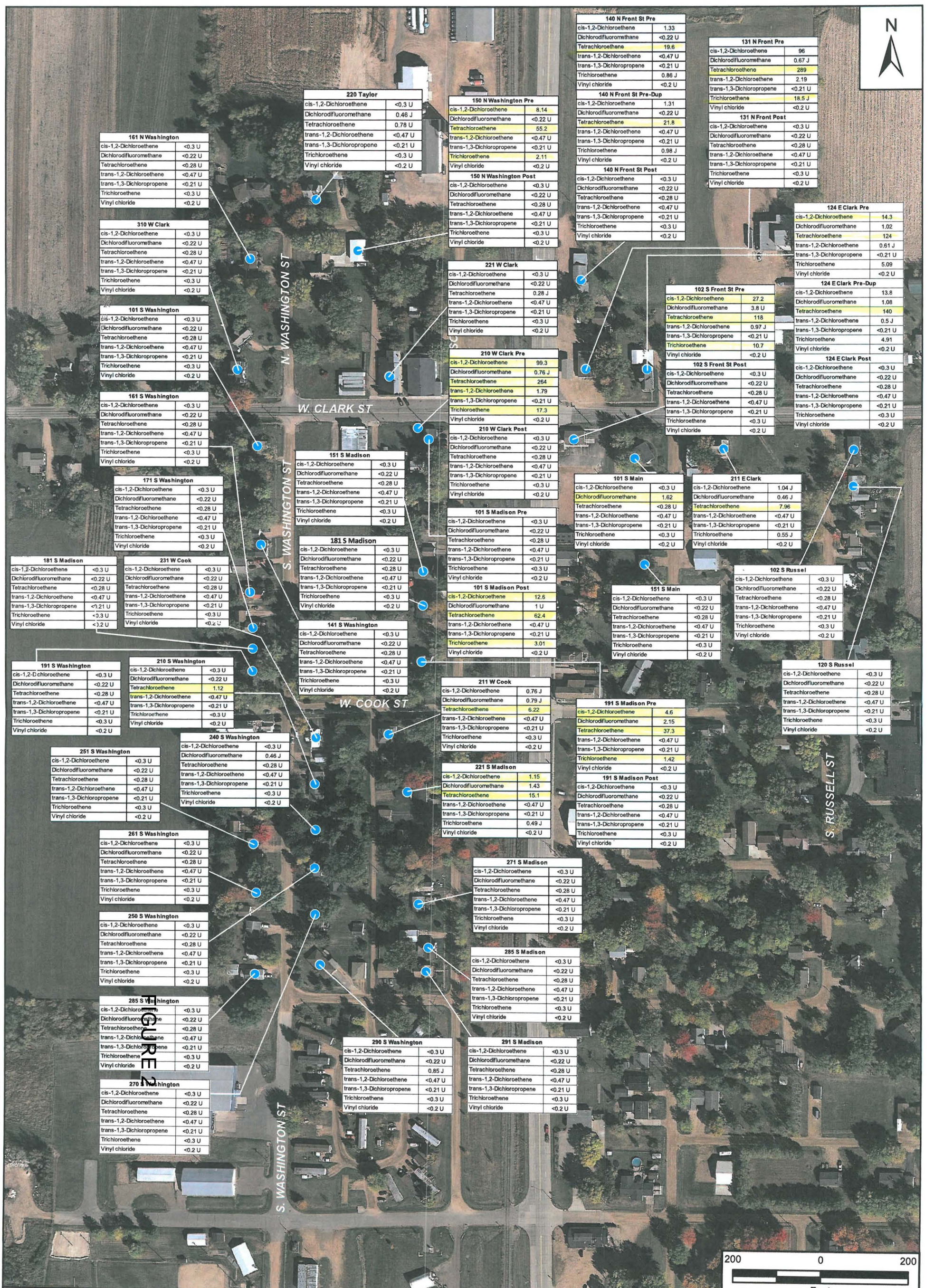
Unity Auto Mart
 102 N. Front Street
 Unity, Clark County, Wisconsin

**ROUGH ESTIMATE OF THE
 EXTENT OF THE PCE PLUME**



Prepared For: US EPA

Prepared By: Tetra Tech



Legend
● Residential Well Location

Results are in units of micrograms per liter ($\mu\text{g/L}$)
 J = The analyte was positively identified. The associated value is an approximate concentration.
 U = The analyte was not detected above the laboratory reporting limit.

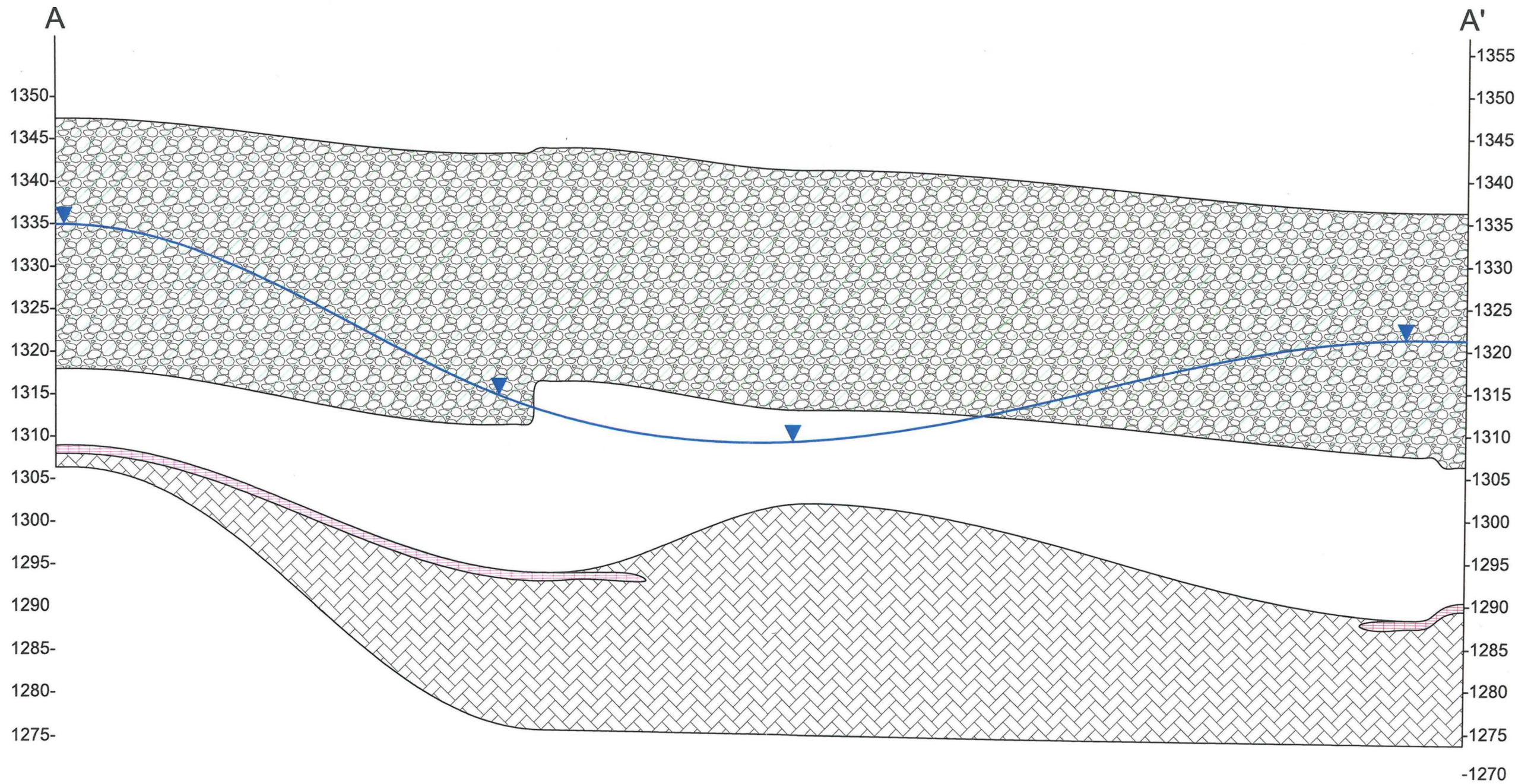
Unity Auto Mart
 102 N. Front Street
 Unity, Clark County, Wisconsin

Figure 1
Residential Well Sample Results



Prepared For: US EPA Prepared By: Tetra Tech

G:\G\9026-START IV\Wisconsin\Unity Auto Mart\DWG\CrossSection.dwg 12/10/2015



LEGEND






-  CLAY
-  SANDSTONE
-  GRANITE
-  WEATHERED GRANITE
-  WATER TABLE SURFACE

FIGURE 3


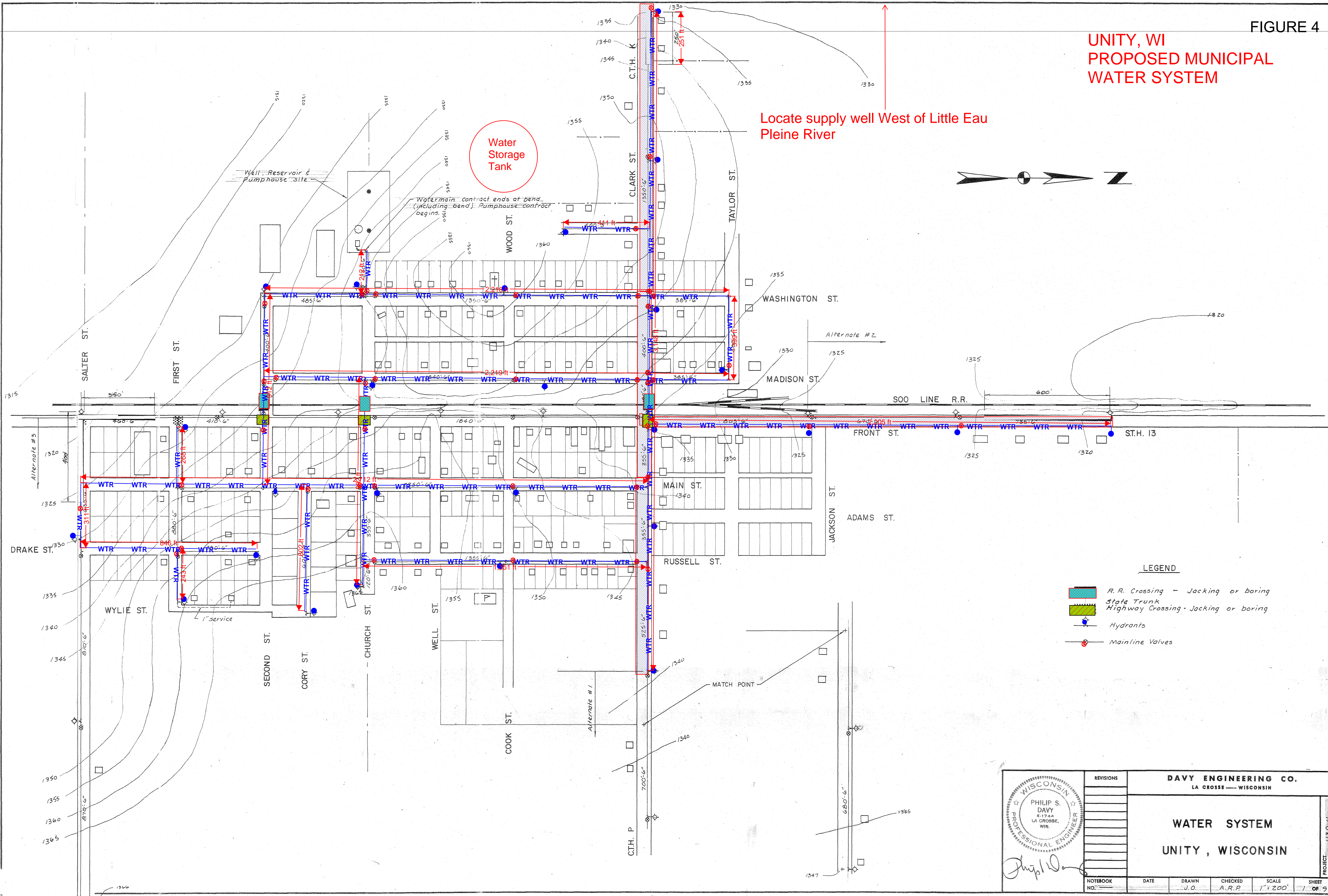
UNITY AUTO MART 102 N. FRONT STREET UNITY, CLARK COUNTY, WISCONSIN	
Figure X Generalized Geological Cross Section A - A'	
	
PREPARED FOR: US EPA	PREPARED BY: TETRA TECH

FIGURE 4


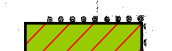
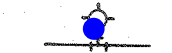


UNITY, WI
PROPOSED MUNICIPAL
WATER SYSTEM

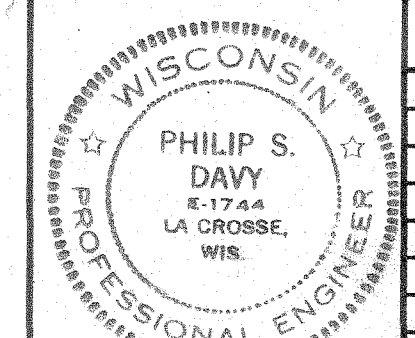
Locate supply well West of Little Eau
Pleine River

Water
Storage
Tank



LEGEND

-  R.R. Crossing - Jacking or boring
-  State Trunk
-  Highway Crossing - Jacking or boring
-  Hydrants
-  Mainline Valves

	DAVY ENGINEERING CO. LA CROSSE - WISCONSIN				
	WATER SYSTEM UNITY, WISCONSIN				
REVISIONS 	DATE 	DRAWN J.O.	CHECKED A.R.P.	SCALE 1" = 200'	SHEET OF 9
NOTEBOOK NO.		PROJECT NUMBER 130677			