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October 28, 2005

Honorable Mayor and City Council
City of Lake Elmo, Minnesota

Re: Northern Watermain Extension
City of Lake Elmo, Minnesota
TKDA Project No. 13267.000

Dear Mayor and City Council:

The approval of the Sanctuary, Discover Crossing, and Deer Glen subdivisions give the City the opportunity to complete a portion of the water system shown in our Comprehensive Plan. You may recall that we have an informal policy to serve all new developments with a public water supply or a community well. For all three of these projects it is more cost effective to extend municipal water than to drill and maintain a single private well.

In order to serve these new subdivisions, a single 16-inch watermain is planned for extension from Well House No. 2 at the intersection of 55th Street and Manning Trail, to the intersection of Keats Avenue and 59th Street. The proposed route is shown in the attached map.

The City will need to obtain easements across two properties in order to extend this watermain.

The first easement would run under the existing power line easement. Since no buildings can be placed under the power lines, the cost of the land will be lower than other possible routes.

The second easement crosses undeveloped property. Here we recommend a temporary easement covering the most direct route. The temporary easement would expire when the property develops, and a permanent route is established. It is possible that in the future, some of the watermain pipe in this temporary easement could be replaced.

We are not proposing to assess any properties for watermain laid in these easements.

The cost of this project is estimated as follows:

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Item	Estimated Cost
Oversizing in Sanctuary	\$ 75,000.00
Watermain between Sanctuary and Discover Crossing	\$ 175,000.00
Oversizing in Discover Crossing	\$ 70,000.00
Watermain between Discover Crossing and Deer Glen	\$ 100,000.00
Oversizing in Deer Glen	\$ 65,000.00
Easement between Sanctuary and Discover Crossing	\$ 45,000.00
Easement between Discover Crossing and Deer Glen	<u>\$ 25,000.00</u>
Estimated Cost	\$ 555,000.00
Number of new units	\$ 115.00

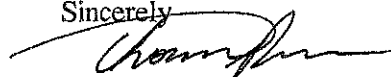
The project would need to be started and completed in the spring of 2006 in order to provide these subdivisions with water to meet their building schedules.

City Council Action Requested

Authorize the staff to begin the property acquisition process. Depending on the procedure we use, this could take up to four months to complete.

Authorize the City Engineer to prepare plans and specifications for the two sections of watermain between the three subdivisions.

Sincerely



Thomas D. Prew, P. E.
City Engineer

TDP/bas
Enclosure



Comparing The Costs of City Water vs. Private Wells

City water:

- Average residential water usage: 109,500 gallons/yr = \$279.63
- With lawn watering: 124,500 gal/yr = \$305.88
- Annual MDH fee: \$6.36
- **Total cost: \$279.63 – \$305.88/yr**

*25.00 x 12 = 300
279.63 - 300 = -20.37*

• Other considerations:

- City water system continues to operate during power outages
- City water increases fire protection, which generally results in lower home insurance rates (15-25% lower, depending upon company and policy; on a \$1,000 policy, that equals a savings of \$150 - \$250/yr)
- City water is tested for all Safe Drinking Water Act compounds (bacteria, nitrate, volatile organic compounds, pesticides, metals, radioactive elements, etc. – approx. annual cost: \$2,500/yr)
- Costs include all operating, monitoring, analytical, and maintenance costs

Well water:

- Electricity = approx. \$23 - 26/yr
- Bacteria and nitrate testing (recommended annually) = \$40/yr
- Pump replacement (approximately every 10-15 yrs., \$1,000-1,500), averages to: \$67 - \$150/yr
- Well replacement (usually required approx. every 50+ yrs; \$8,000 - 10,000), averages to: \$160 - 200/yr
- **Total “annual” operating and maintenance cost: \$290 - \$416/yr**

• Other considerations:

- Without a back-up generator, private wells shut down during power outages
- Water conditioning is needed more often with private wells than with city water
- Water testing comparable to that done for city water system would cost over \$2,500/yr
- Homeowner insurance policies are higher in neighborhoods without fire hydrants (as much as 15-25%, see above)

Comparing The Costs of City Water vs. Private Wells

Assumptions:

1. The average pump in the Lake Elmo area is likely a 1 horsepower submersible pump (based on average depth of wells), which uses approximately 1.5 kilowatts (kW) per hour and pumps approximately 10 gallons per minute (gpm).
2. Average Lake Elmo household water use: 300 gallons per day or 109,500 gallons per year (from city records, individual households may be more or less).
3. Lake Elmo water charges: \$22/quarter base charge plus \$1.75 / 1,000 gal. water
4. Fee for MDH regulation of public water supplies (including Safe Drinking Water Act testing): \$6.36 / yr. (fee as of 7/1/06). (This fee is included in the base)
5. Homes with larger lawns likely use more than the annual average listed above. Estimated additional lawn watering use: 10 gpm x 30 minutes/day = 300 gallons per day; watering every 3rd day for 5 months (growing season): 300 gals./day x 10 days/month x 5 months = 15,000 gallons/ growing season (annual total: 124,500 gal/yr).
6. Electric costs, average household water use: 109,500 gal/yr divided by 10 gpm pumping rate = 10,950 min pumping per year = 182.50 hours pumping per year
 - o 182.50 hrs/yr x 1.5 kW per hour = 274 kW/yr
 - o \$0.0758/kW x 274kW/yr = \$20.77
7. Electric costs, w/ additional lawn watering use: 124500 gal/yr divided by 10 gpm = 12,450 min/yr = 207.50 hrs/yr
 - o 207.50 hrs/yr x 1.5 kW per hour = 311 kW/yr
 - o \$0.0758/kw x 311 kW/yr = \$23.57/yr
8. Private well “life-expectancies” – the average well pump will need to be replaced once every 10 – 15 years and the average well casing will fail after approximately 50 years (necessitating that the well be sealed and a new one drilled).