

**AGENDA
CITY COUNCIL
SPECIAL MEETING
CITY OF EAST GRAND FORKS
JANUARY 24, 2012
5:00 P.M.**

CALL TO ORDER

CALL OF ROLL

DETERMINATION OF A QUORUM

- 1. Consider approving the Pay Equity Implementation Report for FY2012.**

ADJOURN

**AGENDA
CITY COUNCIL
WORK SESSION
CITY OF EAST GRAND FORKS
JANUARY 24, 2012
5:00 PM**

CALL TO ORDER

CALL OF ROLL

DETERMINATION OF A QUORUM

- 1. Swimming Pool – Scott Huizenga**
- 2. 14th Ave. SE Street Improvement Project – Council Member DeMers**
- 3. Speed Limit on 23rd St. NW – Greg Leigh**
- 4. Aerial Platform Truck – Randy Gust**
- 5. Ice Resurfacers (Zamboni) Advertising – Scott Huizenga/Dave Aker**
- 6. Bleachers & Picnic Tables – Dave Aker**

7. Legislative Agenda – Scott Huizenga

8. W&L Commission Update – Council Member Tweten

ADJOURN

Upcoming Meetings

Regular Meeting – February 7, 2012 – 5:00 PM – Council Chambers

Work Session – February 14, 2012 – 5:00 PM – Training Room

Regular Meeting – February 21, 2012 – 5:00 PM – Council Chambers

Work Session – February 28, 2012 – 5:00 PM – Training Room

Request for Council Action

Date: 01/18/2012

To: East Grand Forks City Council, Mayor Lynn Stauss, President Craig Buckalew, Council members: Marc Demers, Ron Vonasek, Henry Tweten, Wayne Gregoire, Greg Leigh, and Mike Pokrzyński

Cc: File

From: Randy Gust, Fire Chief

RE: Purchase of Aerial Platform Truck

Background and supporting documentation of request: The department was given permission by council to look into the purchase of Aerial Platform Truck. The department set search committee and have found a number of trucks located throughout the US. At this time we have narrowed our searches down to 4 trucks that we feel meet the needs of the department and would like to present our findings to the council for consideration. I have attached photos and specs on the 4 trucks.

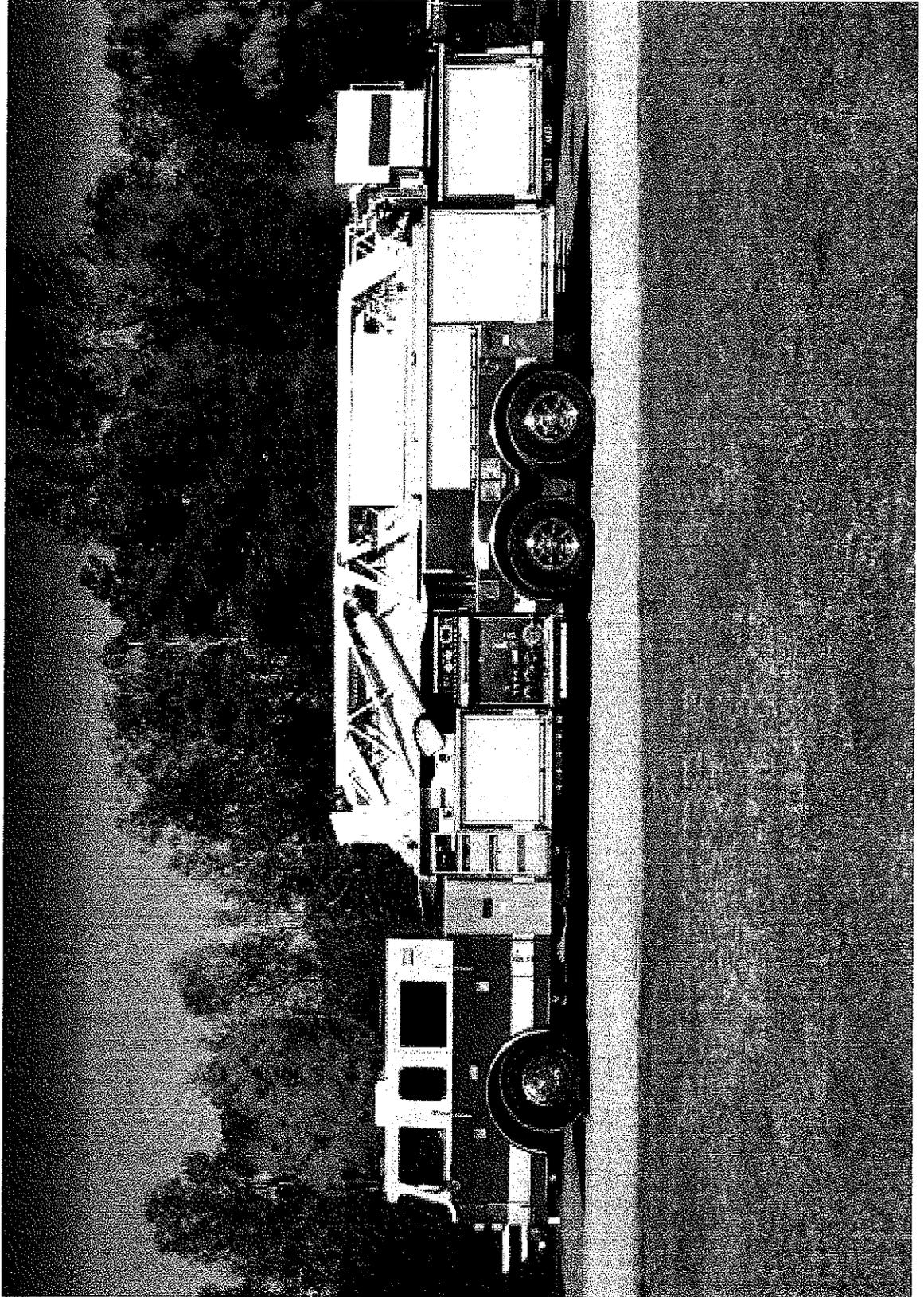
Recommendation: It is my (Randy Gust) recommendation that the fire department be allowed to start the purchasing process

Request: Allow the Fire Department to start purchasing process with vendors.

Enc.

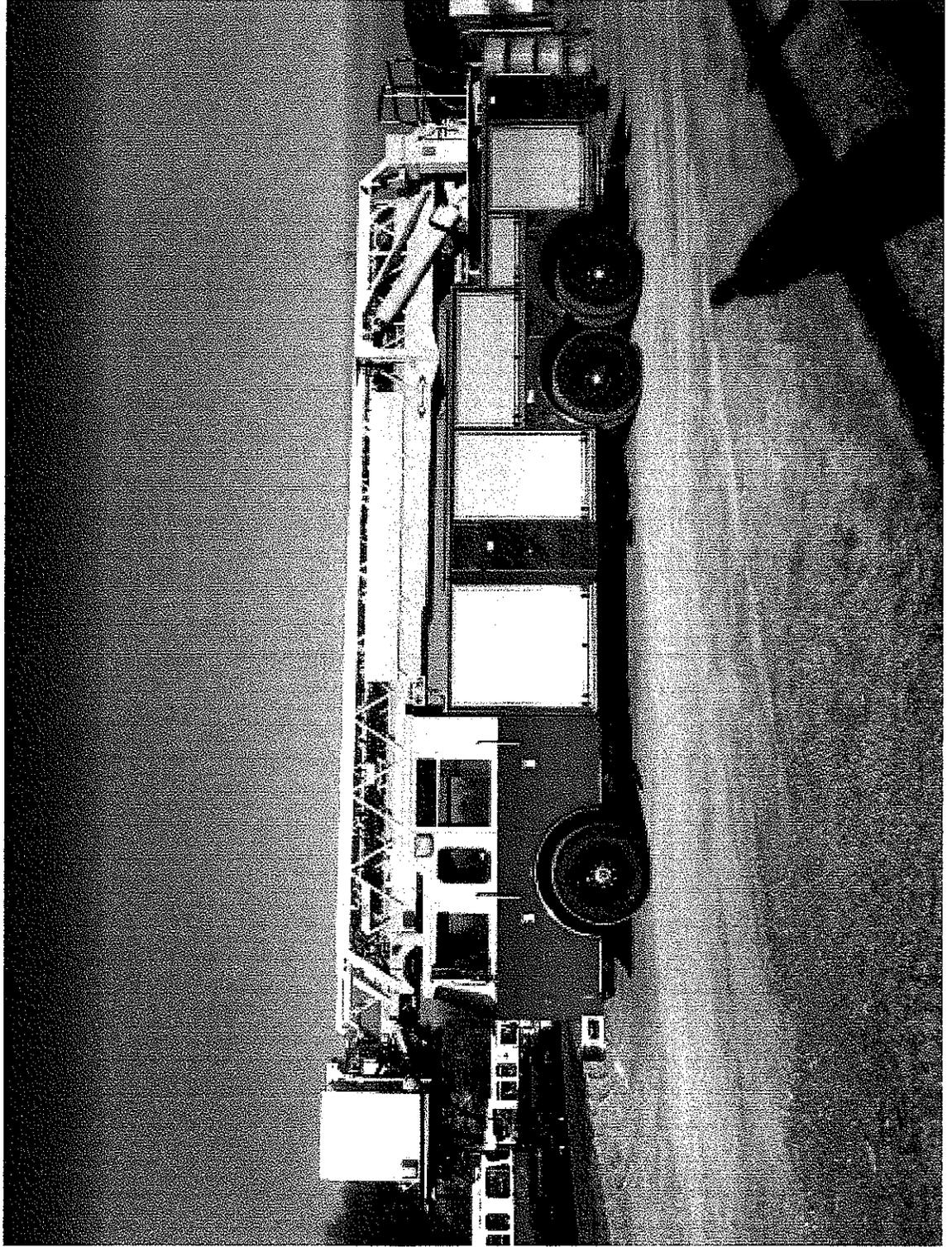
2002 PIERCE DASH 95' MIDMOUNT PLATFORM

\$595,000



2002 Pierce Dash 95' Midmount Platform
Seating for 6 – 5 SCBA Seats
Detroit Series 60 500 HP Diesel Engine
Allison HD4060 Automatic Transmission
Hale 8FGR 2000 GPM Pump
200 Gallon Polypropylene Tank
Driver's Side Discharges: 2 – 2 ½"
Driver's Side Suction: 1 – 2 ½", 1 – 6"
Officer's Side Discharges: 1 – 2 ½", 1 – 4"
Officer's Side Suction: 2 – 6", 1 – 5" Aerial Inlet
1 – 2 ½" Discharge in Basket
2 – 1 ½" Preconnect Crosslays
2 – Elkhart Scorpion 1000 GPM Monitors
AMPS 6KW PTO Generator
Ground Ladders Included
Kussmaul Charger with Auto Eject
Breathing Air to Tip
Backup Camera
Federal Q2B Siren
Air Conditioning
Current Annual Pump Service Test
Current Aerial Certification
Engine Hours: 3,021
Mileage: 25,342

**2004 Pierce Dash 100' Rear Mount Platform
\$590,000**

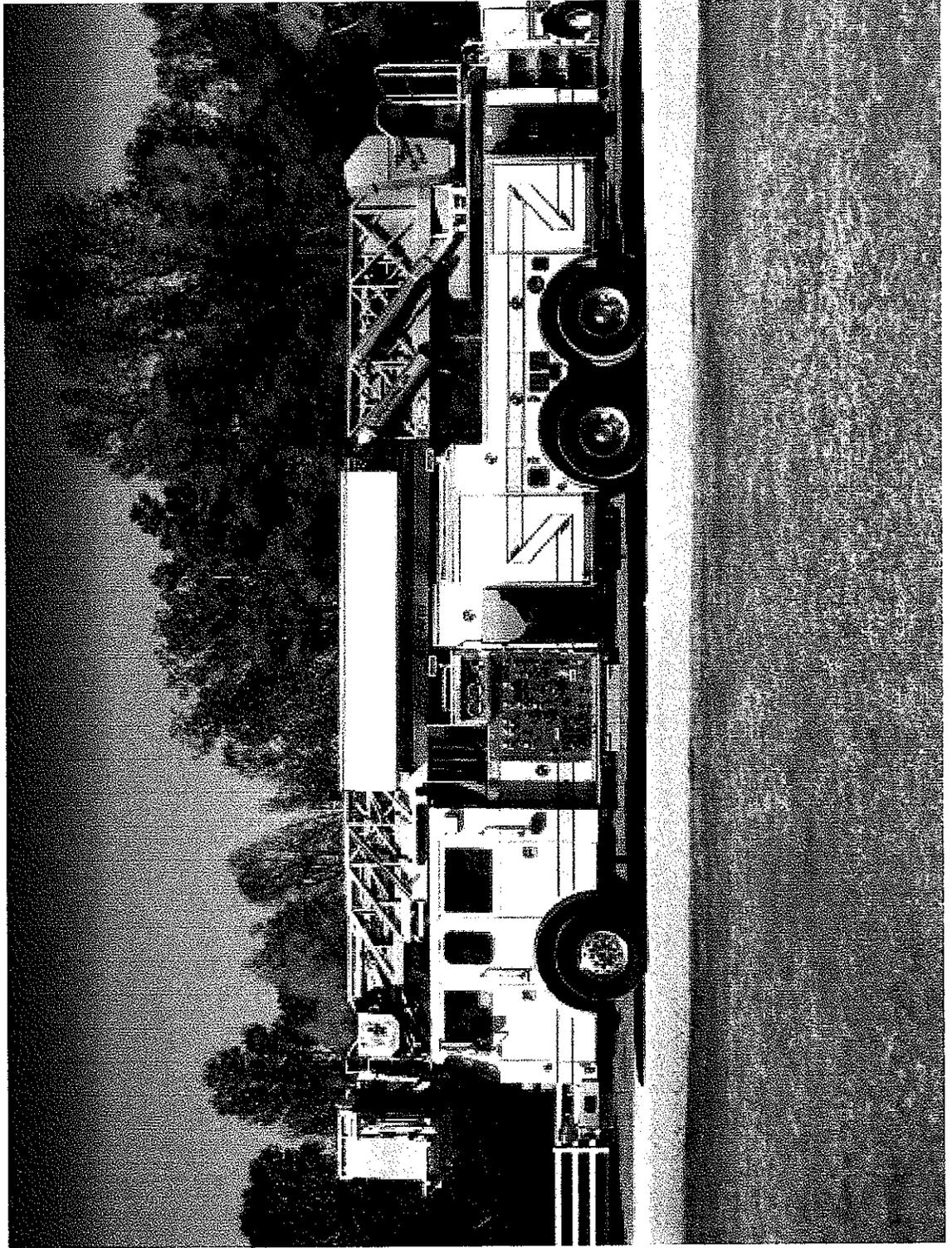


2004 Pierce Dash 100' Tower
Cummins ISM 500 HP Diesel Engine
Allison 4000 EVS Automatic Transmission
Rear: – 1 Waterway Inlet
2 – 2 ½" Outlets in Basket
AKron Stream Master Monitor
Harrison 10 KW Hydraulic Generator
Cab Air Conditioning
Automatic Tire Chains
Automatic Lubrication System
Heated Mirrors
Backup Camera
Interior Medical Cabinet
Transmission Retarder
Arrowstick Traffic Indicator
Current Aerial Certification
Engine Hours: 5,690
Mileage: 44,278

**PUMP AND TANK CAN BE ADDED BEFORE
DELIVERY**

2006 Pierce Dash 100' Rear Mount Platform

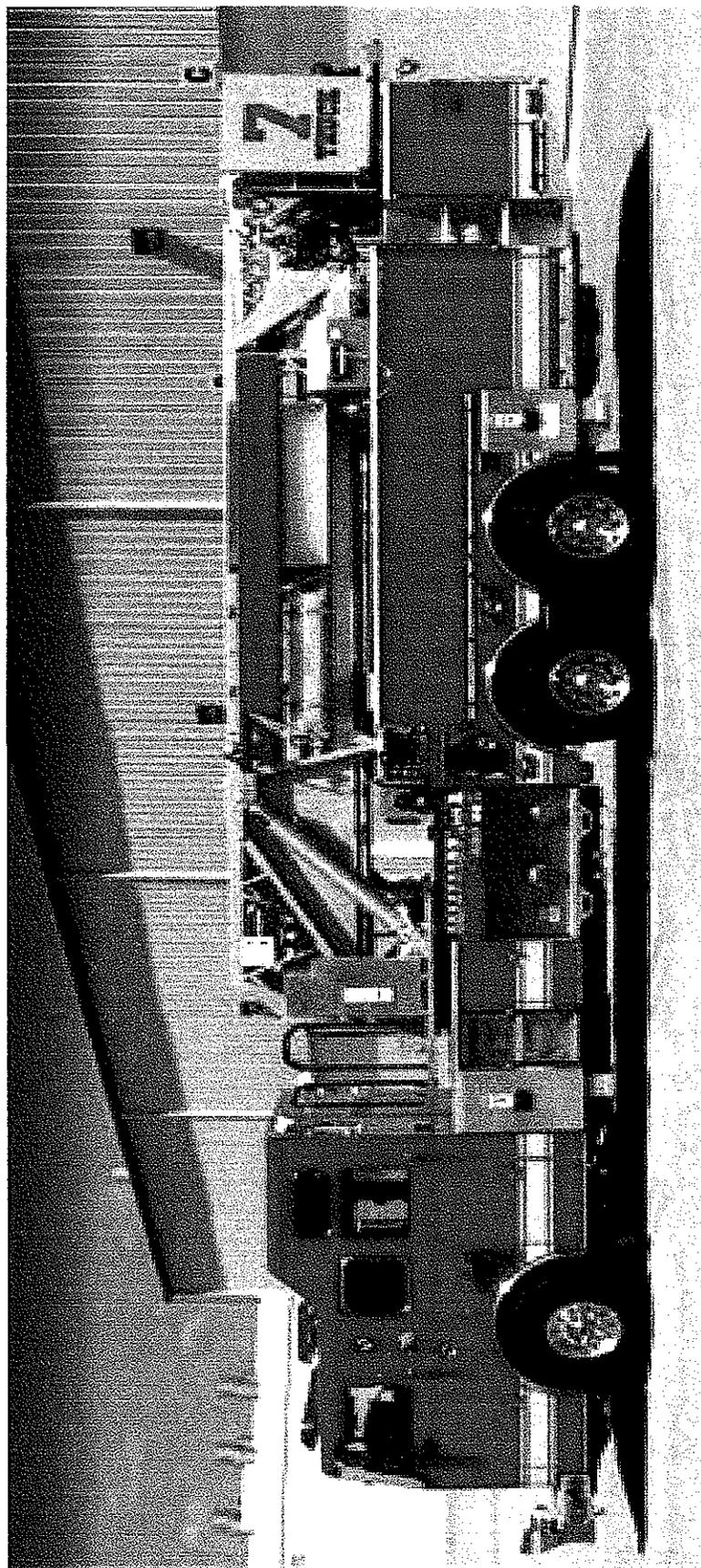
\$680,000



2006 Pierce Dash 100' SkyArm Platform
Enclosed Seating for 6 – 5 SCBA Seats
Detroit Series 60 515 HP Diesel Engine
Allison Automatic Transmission
Waterous 2000 GPM Pump
150 Gallon Polypropylene Tank
Driver's Side Discharges: 2 – 2 ½"
Driver's Side Suction: 1 – 2 ½", 1 – 6"
Officer's Side Discharges: 2 – 2 ½", 1 – LDH
Officer's Side Suction: 1 – 2 ½", 1 – 6"
Front Discharges: 1 – 1 ½"
Rear: 1 – 5" Aerial Inlet
2 – 1 ½", 1 – 2 ½" Preconnect Crosslays
Monitor in Platform
Harrison 20KW Hydraulic Generator
1 – 200' Electric Cord Reel
3 – 750W Extendable Scene Lights
Roll Stability Control
Tak-4 Front Suspension
Kussmaul Charger with Auto Eject
Roll-Up Doors
Federal Q2B Siren
Air Conditioning
Back-up Camera
Heated Remote Mirrors
Arrowstick Traffic Indicator
Current Aerial Certification
Current Annual Pump Service Test
Engine Hours: 817
Mileage: 8,350

2007 Seagrave 100' Mid-Mount Platform

\$700,000



2007 Seagrave 100' Midmount Platform
Marauder 6-Person Tilt Cab w/15" Raised Roof
Stainless Steel Construction
Seating for 6 – 5 SCBA Seats
Detroit Series 60 500 HP EGR Engine
Allison 4000 EVS Transmission
Waterous 2000 GPM Pump
300 Gallon Water Tank
100 Ft. Mid-Ship Tower, 1000# Rated
Harrison 10 KW Generator
2 – Electric Cord Reels
2 – Kwik-Raze Magna-Fire 3000 Floodlights
Code 3 Warning Light Package
Intec Rear-View Camera
Dual Air Horns, Code 3 Electronic Siren
Federal Q2B Siren
Ladder Rung Lights
Dual Monitors at Tip
Cab & Body Avoidance System
Single (1) Breathing Air System
150 Ft. of Ground Ladders
Cab Access Compartments
David Clark Headsets for Six (6)
Air Conditioner
Heated/Remote Mirrors
Aerial Certification Test: 07/2011
Current Pump Certification Test
Road Miles: 14,898
Engine Hours: 1,007.4
Aerial Hours: 106.9
Generator Run Hours: 34.6

Request for Council Action

Date: January 18, 2012

To: East Grand Forks City Council, Mayor Lynn Stauss, Henry Tweten, Council Members: Marc Demers, Council President Craig Buckalew, Council Vice President Wayne Gregoire, Greg Leigh, Mike Pokrzywinski and Ron Vonasek.

Cc: File

From: Dave Aker

RE: Bleachers and picnic tables

Background:

We have \$20,000 in the Park and Recreation capital fund to buy bleachers. I have two bids for bleachers and BSN Sports has the lowest bid at \$12,393.23 for four bleachers that are 5 rows and 50 seat aluminum. Besides bleachers we need some picnic tables so I got bids on them and BSN Sports came in the lowest on 8 extra rugged aluminum picnic tables for \$6,925.50. The bleachers would go over to Itt's Williams fields and the picnic tables would go to Stauss Park, Senior Center and Itt's Williams. The total price for the bleachers and picnic tables is \$19,318.73.

Recommendation: It is my recommendation to go with the bid of \$19,318.73.

Enclosures: The bids from BSN Sports.



P.O. Box 7726, Dallas, TX 75209
 TEL: 1-800-527-7510 FAX: 1-800-899-0149
 Come Visit us at www.bsnsports.com

Quotation	
Document Number	20400460
P.O. Number	: BLEACHERS
Doc. Creation Date	01/06/2012
Customer Number	1920367
Sales Rep	: Tom Piche



This is NOT a Bill - DO NOT PAY.

Customer #1920367
Sold To EAST GRAND FORKS PARK & REC
 600 Demers Ave
 EAST GRAND FORKS MN 56721-1840

Ship To: EAST GRAND FORKS PARK & RECREATION
 929 5th Ave NE
 EAST GRAND FORKS MN 56721-2500

Payer: EAST GRAND FORKS PARK & REC
 600 Demers Ave
 EAST GRAND FORKS MN 56721-1840

Item Number	Item Description	Delivery DT(S)	SKU	Color/ Team/ Size	Qty/ UOM	Unit Price	Extended Price
NB0515	5 Row 50 Seat Alum. Bleacher	02/13/2012	NB0515		4EA	2,799.00	11,196.00

Check your quote at www.bsnsports.com/?&ProgramID=20400460&zip=56721-2500

Merchandise Sub Total	Other	Freight	Sales Tax	Payment/Credit Applied	Total Order Amount
\$ 11,196.00	\$ 0.00	\$ 400.00	\$ 797.23	\$ 0.00	\$ 12,393.23

Cart Summary



Order Info

Cart ID: 102247-
 Cart Name: AutoSave Cart
 Order Date: 01/13/2012
 Requested Ship date: 01/17/2012
 Customer Number: 1040065 EAST GRAND FORKS PARK & R
 ECREATION
 SSG Order #:
 Sales PO: Tables
 Sales Pro: 102247 Tom Piche
 Sales Pro Phone: 972-484-9484-...
 Alt Contact : 102246 Nathan Wood
 Alt Contact Phone: 972-484-9484-...
 Email Confirmation: daker@eastgrandforks.net

Ship To

Name: EAST GRAND FORKS PARK & RECREATION
 Attn: Dave Aker
 Street: 929 5th Ave NE
 City: EAST GRAND FORKS
 State: MN
 Zip: 56721-2500

Cart

Line #	Item Number	Description	ATP	Qty	Your Price	Total Price	Hold
10	NEC62BGV	Extra Rugged Picnic Table - 6' Plastisol Color= Green; Color= Green;	02/24/2012	8	\$ 760.00 EA	\$ 6,080.00	(Held in step one)

Total: \$6,080.00
Minimum Order Surcharge: \$0.00
Shipping: \$400.00
Tax: \$445.50
Grand Total: \$6,925.50

Request for Council Action

Date: 1/19/12

To: East Grand Forks City Council, Mayor Lynn Stauss, President Craig Buckalew, Council Wayne Gregoire, Council members: Marc DeMers, Ron Vonasek, Henry Tweten, Greg Leigh and Mike Pokrzywinski

Cc: File

From: Scott Huizenga, City Administrator

RE: 2012 Legislative Priorities

The 2012 Minnesota Legislative convenes shortly. The Coalition of Greater Minnesota Cities is sponsoring its annual Greater Minnesota at the Capitol Day on Wednesday, February 8. Therefore, I request that the City establish its formal legislative priorities for presentation to state officials. The City Council may also have additional items to consider. Following discussion at the work session, staff will draft the results into a resolution to be adopted at the next regular City Council session.

- 1. Bonding – Waste Water Improvements Phase II** – The City continues to discuss options for a potential Waste Water Phase II project, which primarily addresses improvements to the City's waste water treatment facility. Current estimates range from \$7-13 million depending upon project scope. Project funding options include low-interest borrowing from the Minnesota Public Facilities Authority (PFA); and potential state bonding. Currently, the City is in the PFA's Intended Use Plan (IUP). The City used PFA loan funding for Phase I improvements, which totaled approximately \$4.2 million. Financing for Phase I necessitated an increase in single-family base meter charges from \$2 per month to \$10 per month over a year and a half period. The City Council also approved greater increases to multi-family and commercial rates. The city recently adopted an additional increase of approximately \$5 per month for the average residential user with corresponding increases for commercial and multi-family users. Using similar assumptions, rates would have to increase again by \$10-15 per month on single-family homes in order to finance Phase II improvements without supplemental funding. The Governor's bonding proposal includes approximately \$17 million for Clean and Drinking Water Fund Projects, which provides low interest loans. And, the proposal includes \$25 million in the Wastewater Infrastructure Fund, which provides supplemental grants for high-cost projects based on local income criteria.
- 2. Local Government Aid (LGA)** – The state has cut the City's LGA by over **\$2.0 million** since 2008. The projected deficit is projected at over \$1.5 billion for the next biennium. LGA funding has been cut over **\$1 billion** at the state level since 2003. The 2012 Certified LGA is identical to 2011, which was already cut nearly 20 percent from previous levels. The Coalition of Greater Minnesota Cities (CGMC) has adopted an LGA stance that recommends no further cuts to LGA.

3. **Street Improvement Districts** – Street Improvement District legislation would allow cities to *voluntarily* raise revenue through alternative means that could finance street improvements and maintenance. Property taxes alone generally do not provide adequate revenue streams for proper street maintenance. Legal opinions vary on whether or not cities can implement fees without legislative approval. Clear legislation regarding street improvement districts alleviates any potential conflicts. Similar authority already exists for other types of infrastructure such as sidewalks and street lights. The City supports extending to cities the *option* of financing its own infrastructure through Street Improvement Districts. The City supports the League of Minnesota Cities priorities FF-29 and LE-30 pertaining to Impact Fees.
4. **Mandate Relief** – The State imposes numerous mandates and restrictions that increasingly burden cities as budgets becoming tighter. Chief among these mandates is the state Pay Equity and Comparable Worth statutes. The City unequivocally supports the concept of “equal pay for equal work.” However, the specific reporting requirements and antiquated computational formulas provide undue administrative burdens in Cities with limited resources. Pay equity in its current form should be repealed. Additionally, Minnesota is among the most union-friendly states in the country. Labor-friendly arbitration awards and limited managerial rights greatly impede cities’ flexibility to effectively manage limited resources. Finally, excessive regulations in the areas of environmental compliance and annexation also limit the potential economic growth of cities. The City supports generally the lists of potential mandate reform efforts compiled by the League of Minnesota Cities and the Coalition of Greater Minnesota Cities. The League has published a comprehensive list of mandates affecting cities at the following web page: <http://www.lmc.org/media/document/1/mandates.pdf>.
5. **Oppose Supermajority Constitutional Amendments** – Legislators have discussed several constitutional amendment proposals in the upcoming session. One proposal would amend the Constitution so that any revenue increase would require a supermajority (60 percent or more) of both Houses in the legislature. Limited state revenues will push further service costs to local governments through decreased state aids and higher fees. The City opposes “budgeting through the Constitution.”

Recommendation:

Adopt by resolution an official City Legislative platform that the City present in its 2012 Legislative outreach efforts

Attachments:

Street Improvement District fact sheet
 Street Improvement District sample legislation
 Council Resolution 09-04-25 related to Street Improvement Districts
 League of Minnesota Cities Priority FF-29 regarding Street Improvement Districts
 Coalition of Greater Minnesota Cities Legislative Priorities

The state cut property tax aids and credits by \$638 million for the 2012-2013 biennium. This action resulted in large local property tax increases on homeowners, businesses, and renters. Greater Minnesota businesses were hit disproportionately hard -- making them less competitive and hurting the economic recovery.

CGMC's Proposals for Economic Recovery for the 2012 Legislative Session

Protect and Restore

Local Government Aid

State LGA cuts of over \$1.2 billion since 2003 have had a devastating impact on cities in greater Minnesota. The 2011 budget deal:

- Cut property tax aids and credits by \$638 million for 2012-2013 biennium
- Cut \$365 million from the Market Value Homestead Credit (MVHC)
- Cut over \$200 million from Local Government Aid (LGA)

What is needed now for economic recovery:

- **Oppose all cuts to LGA - additional cuts should be completely off the table in 2012 regardless of any new state budget deficit**
- **Restore LGA to per capita 2000 funding levels (an additional \$156 million) with at least half of this amount beginning in 2013**

Please remember Senator Julianne Ortman's commitment to future Local Government Aid and County Program Aid funding levels during the 2011 Special Session tax floor debate:

"All of our cities and counties know that the 2010 levels are permanent. That they will be paid out at those levels in 2011 and 12, and 13, and 14, and 15."

Adopt a Greater Minnesota Economic Recovery Plan

While protecting and restoring LGA is the most important approach to helping greater Minnesota's economy recover, here are additional initiatives to boost job creation:

Workforce Development and Training - Create a Greater Minnesota Employer Internship Tax Credit and a New Employees Job Training Program Tax Credit

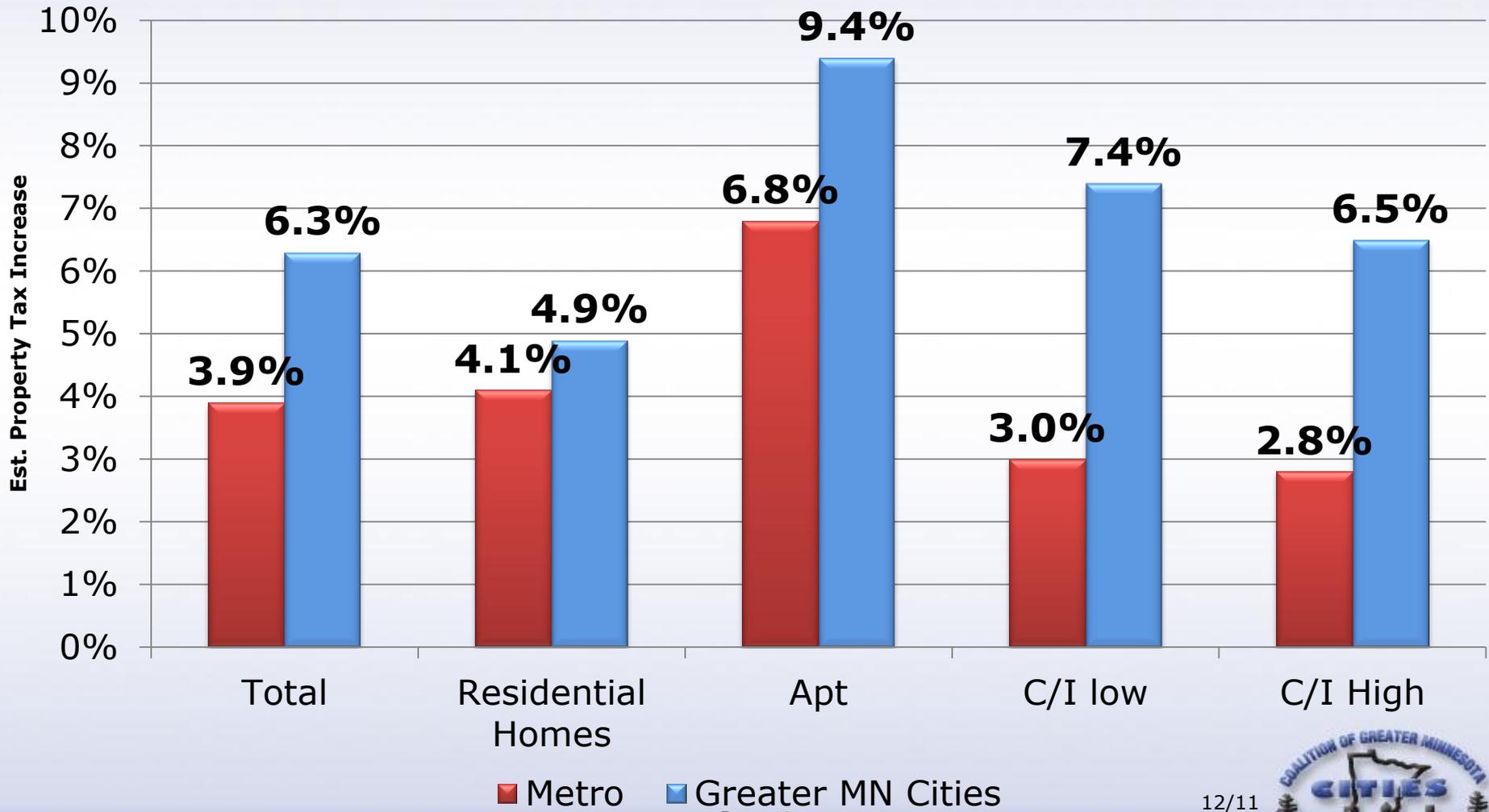
Entrepreneurial Enhancement - Increase angel investment tax credit for investments in greater Minnesota businesses to address the imbalance of credits issued since the program's inception in 2010

Regulations/Permitting - Reform and coordinate state regulatory permitting process

Infrastructure Development Bonding -

- Greater MN Business Development Public Infrastructure (BDPI) Grant Program - \$15 million
- Greater Minnesota General Bonding Program – at least \$350 million for higher education, economic development, and transportation
- Greater Minnesota Interchange Program – \$35 million for interchange projects to promote economic development, increase employment and improve public safety
- Municipal Wastewater and Sewer Infrastructure - \$200 million for a municipal wastewater and sewer infrastructure grant program

Property Tax Impacts of Budget



Oppose Potential Constitutional Limits on Spending and Raising Revenue in 2012



Limited state revenue will push cost to local governments

- With decreased state revenue, aids to local governments, colleges and other programs with alternative revenue sources would likely be reduced. This would increase local taxes and tuition. In addition, mandates passed down from the state would be even less likely to have funding, increasing unfunded mandates.

Budgeting through the Constitution

- If it becomes easier to pass a constitutional amendment (requiring only simple majority) than a tax increase (requiring a supermajority of legislature), there likely will be many more budget related constitutional amendments. This could include mandated funding for education or dedicated tax increases to programs. This could squeeze programs with less special interest backing and money.

Aid and credit reductions used as “revenue” for other budget areas

- Because of the nature of the legislative process it is usually the Omnibus Tax Bill – where LGA and other property tax aids and credits programs are handled – that is the last one to be completed. This means that as other budget bills spend dollars for priorities in those areas it will become necessary to find dollars from other areas. So, in an environment where taxes can't be raised, the dollars set aside for LGA are ripe to become “revenue” to balance the books in other areas of state government.

Property Tax Relief Will Need its Own Constitutional Protection

If Legislature passes a limitation on raising revenue then property tax relief will need constitutional protection

A constitutional amendment for property tax relief should:

- ✓ Dedicate 1.5 cents of existing sales tax to “Property Taxpayers Trust Fund”
- ✓ Trust Fund allocated by law, but must be:
 - 50% to LGA type program that takes into account a city's tax base and needs
 - 50% to direct tax relief to homeowners and renters

GREATER MINNESOTA ECONOMIC RECOVERY PLAN



Disparities in income and educational attainment levels, population shifts and other demographic variables in greater Minnesota calls for a fresh look at job creation by rural legislators at the Capitol. Accordingly, the Coalition of Greater Minnesota Cities proposes the following roadmap for the 2012 legislative session to help boost job-creation in greater Minnesota.

Protect and Restore Local Government Aid

Cuts in Local Government Aid (LGA) lead to property tax increases on local businesses and cuts to local services. These property tax increases fall disproportionately on greater Minnesota businesses. CGMC opposes any additional cuts to LGA in 2012 and supports an increase for LGA beginning in 2013.

Workforce Development and Training

- **Greater Minnesota Employer Internship Tax Credit - \$2.5 million/year for 3 years**
Employers in greater Minnesota who hire a student enrolled at a four-year university/college or two-year technical/community college as an intern would receive a refundable tax credit for a percentage of the salary paid to the intern. Certain qualifications would be attached to the intern, as well as the employer. Additionally, the amount of the credit and number of credits issued would be limited and available on a first-come, first-serve basis. A report to the Legislature is required.
- **New Employees Job Training Program – Cost Unknown**
A portion of a new employee's withholding tax is reinvested in the company to help pay for costs related to training of new employees. Businesses can use the funding to support its own training costs or contract with a training institution or private party to deliver the training. Applies to greater Minnesota businesses only. A report to the Legislature is required.

Entrepreneurial Enhancement

- **Greater Minnesota Angel Investment Tax Credit Expansion – No Cost**
Adjust angel investment tax credit statute to provide for 50% tax credit for investors in a qualified small business in greater Minnesota. The 25% tax credit in current law would remain for investments in Metro Area qualified businesses. Adjustment reflects significant shortage of investments in greater Minnesota since program's creation in 2010.

Regulations/Permitting

- **Reform and Coordination of the Permitting Process – No Cost**
Support legislative efforts designed to improve efficiency and coordination within the state regulatory permitting process. This involves the use of existing or new technologies to better track and process permits, as well as providing greater transparency and accountability. Emphasize public-private partnership opportunities with the State Chamber of Commerce and other groups.

Infrastructure Development

- **Greater MN Business Development Public Infrastructure (BDPI) Grant Program - \$15 million (G.O.)**
Request a \$15 million general obligation bond appropriation for the BDPI grant. Also, emphasize legislative or administrative solution allowing for receipt of BDPI grants where a city does not yet have a commitment from a tenant(s) at the industrial park.
- **Greater Minnesota General Bonding Program – at least \$350 million (G.O.)**
2012 is a traditional bonding year at the Capitol. One-half of the bonding bill, or at least \$350 million, should be designated for various greater Minnesota infrastructure projects. This would include funding for higher education, economic development, and transportation. Estimated amount and projects loosely based on 2012 agency and local government capital investment requests submitted to the Department of Minnesota Management and Budget in June, 2011.
- **Greater Minnesota Interchange Program – \$35 million (T.H. Bonds)**
Approximately \$35 million in trunk highway bonding for interchange projects in greater Minnesota where the interchange will promote economic development, increase employment and improve public safety. No project specifically earmarked. Repeal of Motor Vehicle Sales Tax exemption for collector cars or other revenue should be considered to help pay for debt service on the trunk highway bonds. (Debt service is approximately \$3.6-3.7 million per year.)
- **Municipal Wastewater and Sewer Infrastructure Bonding - \$100 million/year for 2 years (G.O.)**
General obligation bond request of \$200 million for a municipal wastewater and sewer infrastructure grant program. The grant would call for a local match of at least 25%. These resources would be in addition to the yearly Public Facilities Authority base request for funding of waste water and sewer projects. Funding would operate through the Wastewater Infrastructure Fund (WIF) fund, with modified eligibility criteria. The program is designed to address wastewater treatment facility improvement funding shortfalls, and incentivize project development.

12/11

on to fund local infrastructure improvements.

FF-28. Distribution of Proceeds from the Sale of Tax-Forfeit Property

Issue: The apportionment of the proceeds from the sale of tax forfeit property provides a process for the repayment of special assessments but does not require the repayment of unpaid utility charges or unpaid building and development fees. In addition, counties are allowed to use 30 percent of the amount remaining after the deduction for administrative expenses and the repayment of special assessments for forest development projects and then 20 percent of any remaining proceeds for county parks and recreation projects. The structure of the distribution of the proceeds frequently results in cities receiving a very small percentage of the forfeit sale proceeds. As a result cities may not recoup even a portion of the unpaid taxes owed on a property.

Response: **The League of Minnesota Cities supports changes in the distribution of the proceeds from the sale of tax forfeit property contained in Minn. Stat. § 282.08 to elevate the priority for repayment of unpaid charges for electricity, water and sewer charges certified pursuant to Minn. Stat. § 44.075 subd. 3(e) and any unpaid fees prescribed pursuant to Minn. Stat. § 462.353 subd. 4(a) to require those unpaid charges and fees to be repaid immediately after unpaid special assessments. The League also supports the elimination of the apportionments for county forest development and county parks/recreation areas while allowing counties to use their 40 percent share of the remaining proceeds for these uses.**

FF-29. Impact Fees

Issue: New development and the resulting growth create an increased demand for public infrastructure and other public facilities. Severe constraints on local fiscal resources and dramatic forecasts for population growth have prompted cities to reconsider ways to pay for the inevitable costs associated with new development.

Traditional financing methods tend to subsidize new development at the expense of the existing community, discourage sound land-use planning, place inefficient pressures on public facilities, and allow under-utilization of existing infrastructure. Consequently, local communities are exploring methods to ensure new development pays its fair share of the true costs of growth. Given the existing authorization to impose fees on new development for water, sanitary and storm sewer, and park purposes, it is reasonable to extend the concept to additional public infrastructure and facilities improvement also necessitated by new development.

Response: **The Legislature should authorize local units of government to impose impact fees so new development pays its fair share of the off-site, as well as the on-site, costs of public infrastructure and other public facilities needed to adequately serve new development.**

FF-30. Equity in Library Funding

Issue: Many community libraries in Minnesota are city owned. Although located in an individual community, city libraries serve a much wider area. In some Minnesota counties, there are wide disparities between city and rural tax burdens for library services. Furthermore, library services have expanded over the years with the offering of videos and Internet access in many

2009 Legislative Issues — **Municipal Street Improvement District Authority**

What is it?

The League of Minnesota Cities supports legislation that would give cities the authority to collect fees from property owners to fund municipal street maintenance, construction, reconstruction, and facility upgrades. Municipal street improvement district authority would give cities a tool that would allow maintenance and reconstruction to be performed on schedule. Timely maintenance is essential to preserving city streets, thereby protecting taxpayer investments.

Why is it needed?

Cities rely on general revenues (including state aids) and special assessments to fund street maintenance. Consequently, many cities are currently deferring maintenance because of tight budgets and volatile economic conditions. Moreover, Municipal State Aid (MSA) funds are limited to cities with populations exceeding 5,000, making nearly 80 percent of Minnesota cities ineligible for that option. Without ongoing maintenance, the average life expectancy of local streets is approximately 25-30 years. With appropriate maintenance the life expectancy can be extended to 50-60 years; but this maintenance requires a dedicated funding source that does not exist under the current volatile property tax system.

Reasons to support Municipal Street Improvement District Authority

- It is a good alternative to special assessments, which can be burdensome to property owners and are difficult to implement for some cities.
- It is also a good alternative to using property taxes to fund municipal street improvements. Property tax dollars are generally not dedicated and are sometimes diverted to other needs, such as public safety, water quality, and cost participation in state and county highway projects.
- This authority would provide a funding mechanism that is transparent and fair. It establishes a clear relationship between who pays fees and where projects occur.
- The authority allows cities to collect fees from tax exempt properties within a district.
- The authority would allow property owners to fund expensive projects by paying small fees over time. The tool could be used to mitigate or eliminate the need for special assessments altogether.
- The authority is enabling legislation—cities would not be required to create municipal street improvement district, but would be authorized to consider it as an option.

1 **SAMPLE LEGISLATION SEEKING SPECIAL AUTHORITY FOR STREET**
2 **IMPROVEMENT DISTRICT**

3
4
5 A bill for an act
6 relating to municipalities; authorizing the city of _____ to establish street
7 improvement districts and apportion street improvement fees within districts; requiring adoption
8 of street improvement plan; authorizing collection of fees; proposing coding for new law in
9 Minnesota Statutes, chapter 435.

10
11 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

12 Section 1. **[435.39] MUNICIPAL STREET IMPROVEMENT DISTRICTS.**

13 Subdivision 1. Definitions. (a) For the purposes of this section, the following terms have
14 the meanings given them.

15 (b) "Municipality" means the city of _____.

16 (c) "Governing body" means the _____ City Council.

17 (d) "Municipal street" means a street, alley, or public way in which the municipality has
18 powers conferred by section 429.021.

19 (e) "Street improvement district" means a geographic area designated by the municipality
20 within which street improvement and maintenance may be undertaken and financed according to
21 this section.

22 (f) "Improvements" means construction, reconstruction, and facility upgrades involving:

23 (1) right-of-way acquisition;

24 (2) paving;

25 (3) curbs and gutters;

26 (4) bridges and culverts and their repair;

27 (5) milling;

28 (6) overlaying;

29 (7) drainage and storm sewers;

30 (8) excavation;

31 (9) base work;

32 (10) subgrade corrections;

33 (11) street lighting;

34 (12) traffic signals;

1 (13) signage;
2 (14) sidewalks;
3 (15) pavement markings;
4 (16) boulevard and easement restoration;
5 (17) impact mitigation;
6 (18) reconstruction, connection, and reconnection of utilities;
7 (19) turn lanes;
8 (20) medians;
9 (21) street and alley returns;
10 (22) retaining walls;
11 (23) fences;
12 (24) lane additions; or
13 (25) fixed transit infrastructure, trails, or pathways. "Fixed transit infrastructure" does not
14 include commuter rail rolling stock, light rail vehicles, or transitway buses; capital costs for park-
15 and-ride facilities; feasibility studies, planning, alternative analyses, environmental studies,
16 engineering, or construction of transitways; or operating assistance for transitways.

17 (g) "Maintenance" means striping, seal coating, crack sealing, pavement repair, bridge
18 and retaining wall repair, sidewalk maintenance, signal maintenance, street light maintenance,
19 and signage.

20 **Subd. 2. Establishment of districts.** The municipality may, by ordinance, establish
21 municipal street improvement districts within the municipality's boundaries.

22 **Subd. 3. Authorization.** The municipality may defray all or part of the total costs of
23 municipal street improvements and maintenance by apportioning street improvement fees on a
24 uniform basis to all eligible property located in the district.

25 **Subd. 4. Adoption of plan.** Before establishing a municipal street improvement district
26 or authorizing a street improvement fee, the municipality must propose and adopt a street
27 improvement plan that identifies and estimates the costs of proposed improvements and
28 maintenance for the following five years and identifies the location of the municipal street
29 improvement district. Notice of a public hearing on the proposed plan must be given by mail to
30 all affected owners of eligible property at least ten days before the hearing and posted for at least
31 ten days before the hearing. At the public hearing, the governing body must present the plan, and

1 all affected owners of eligible property in attendance must have the opportunity to comment
2 before the governing body considers adoption of the plan.

3 Subd. 5. **Use of fees.** Revenues collected from property in a district from the fee
4 authorized in this section must be placed in a separate account and be used only for projects
5 located within that same district and identified in the municipal street improvement district plans.

6 Subd. 6. **Unpaid fees.** Fees that, as of October 15 of each calendar year, have remained
7 unpaid for at least 30 days may be certified to the county auditor for collection as a special
8 assessment payable in the following calendar year against the affected property.

9 Subd. 7. **Notice; hearings.** The municipality may impose a municipal street improvement
10 fee provided in this section by ordinance. The ordinance must not be voted on or adopted until
11 after a public hearing has been held on the question.

12 Subd. 8. **Not exclusive means of financing improvements.** The use of the municipal
13 street improvement fee by the municipality does not restrict the municipality from imposing
14 other measures to pay the costs of local street improvements or maintenance, except that the
15 municipality must not impose special assessments for projects funded with street improvement
16 fees.

RESOLUTION NO. 09-04-25

**A RESOLUTION REQUESTING AUTHORITY
TO ESTABLISH A MUNICIPAL STREET IMPROVEMENT DISTRICT**

Councilmember Leigh, Seconded by Councilmember DeMers, introduced the following resolution and moved its adoption:

WHEREAS, residents and businesses benefit from a sound, efficient and adequately funded transportation system that offers diverse modes of travel; and

WHEREAS, under-investment in transportation infrastructure diminishes quality of-life for Minnesota residents and hinders Minnesota's progress as a national business, economic and civic leader; and

WHEREAS, the integrity of the City of East Grand Forks's transportation infrastructure is dependent upon long-term planning and ongoing maintenance, both of which require dedicated and sustainable revenue sources; and

WHEREAS, existing funding mechanisms for local roads, such as special assessments, bonding and municipal state aid, have limited applications; and

WHEREAS, the City of East Grand Forks does not have a stable funding stream for roads to keep pace with growing costs and changing needs; and

WHEREAS, the cost of maintaining and repairing city streets increases by as much as six times when maintenance is deferred; and

WHEREAS, local cost participation requirements for trunk highway and county projects are onerous and are contributing to strains on city budgets; and

WHEREAS, levy limits and cuts in aids to local government have contributed significantly to destabilization of local budgets; and

WHEREAS, transportation infrastructure maintenance and improvement costs significantly contribute to rising property taxes; and

WHEREAS, the City of East Grand Fork's transportation system is failing to meet the needs necessary to promote economic development; and

WHEREAS, some of the City of East Grand Fork's roads are not built to modern safety standards and are not meeting the needs of industries that depend on the ability to transport heavy loads; and

WHEREAS, authority to establish a street improvement district would provide the City of East Grand Forks with an additional tool for funding transportation infrastructure maintenance and reconstruction.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF EAST GRAND FORKS that this council believes creation of a street improvement district would allow for preservation of the city's transportation infrastructure assets; and

BE IT FURTHER RESOLVED BY THE COUNCIL OF THE CITY OF EAST GRAND FORKS that this council requests that the Minnesota Legislature provide authority for the City of East Grand Forks to create a street improvement district; and

BE IT FURTHER RESOLVED BY THE COUNCIL OF THE CITY OF EAST GRAND FORKS that this Council requests that Governor Tim Pawlenty allow legislation providing authority for the City of East Grand Forks to create a street improvement district to become law.

Voting Aye: Tweten, Gregoire, Leigh, Pokrzywinski, DeMers, Grassel, and Buckalew.
Voting Nay: None.
Absent: None.

The President declared the resolution passed.

Passed: April 7, 2009

Attest:

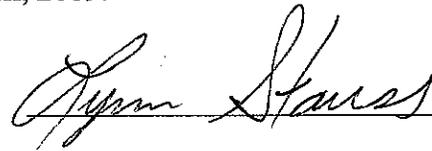


City Administrator/Clerk-Treasurer



President of Council

I hereby approve the foregoing resolution this 7th of April, 2009.



Mayor

Water & Light Commission Summary

East Grand Forks Water Distribution System consists of approximately 58 miles of watermains. The watermain materials consist of polyvinyl chloride Pipe (PVC), ductile iron, cast iron and asbestos concrete pipe (ACP). The Water and Light Department on an annual basis, budgets approximately \$350,000.00 for watermain replacement projects. These projects typically focus on the replacement of the cast iron mains. As of the end of the 2011 construction season, there is approximately 6.75 miles of cast iron main left to be replaced. A summary of the past two years (2010-2011) of watermain replacement projects is shown below:

2010 Watermain Replacement (see attached map for project area)

Total project cost: \$1,136,555.00

Project replaced cast iron watermains from the years (1955-1961)

Total watermain replaced/installed:	6" PVC:	125 LF
	8" PVC:	4,200 LF
	12" PVC:	<u>750 LF</u>
	Total Footage:	5,075 LF

2011 Watermain Replacement (see attached map for project area)

Total project cost: \$422,487.00

Project replaced cast iron watermains from the years (1954-1961)

Total watermain replaced/installed:	6" PVC:	2,400 LF
	12" PVC:	<u>70 LF</u>
	Total Footage:	2,470 LF

Water Plant Updates

2010 - No major capital improvements were implemented in 2010. The focus was on maintenance repairs, which included:

- Maintenance on plant dehumidifier
- Repair and update on plant lime delivery unloading system
- Complete update of the carbon bag dump system

Other work included:

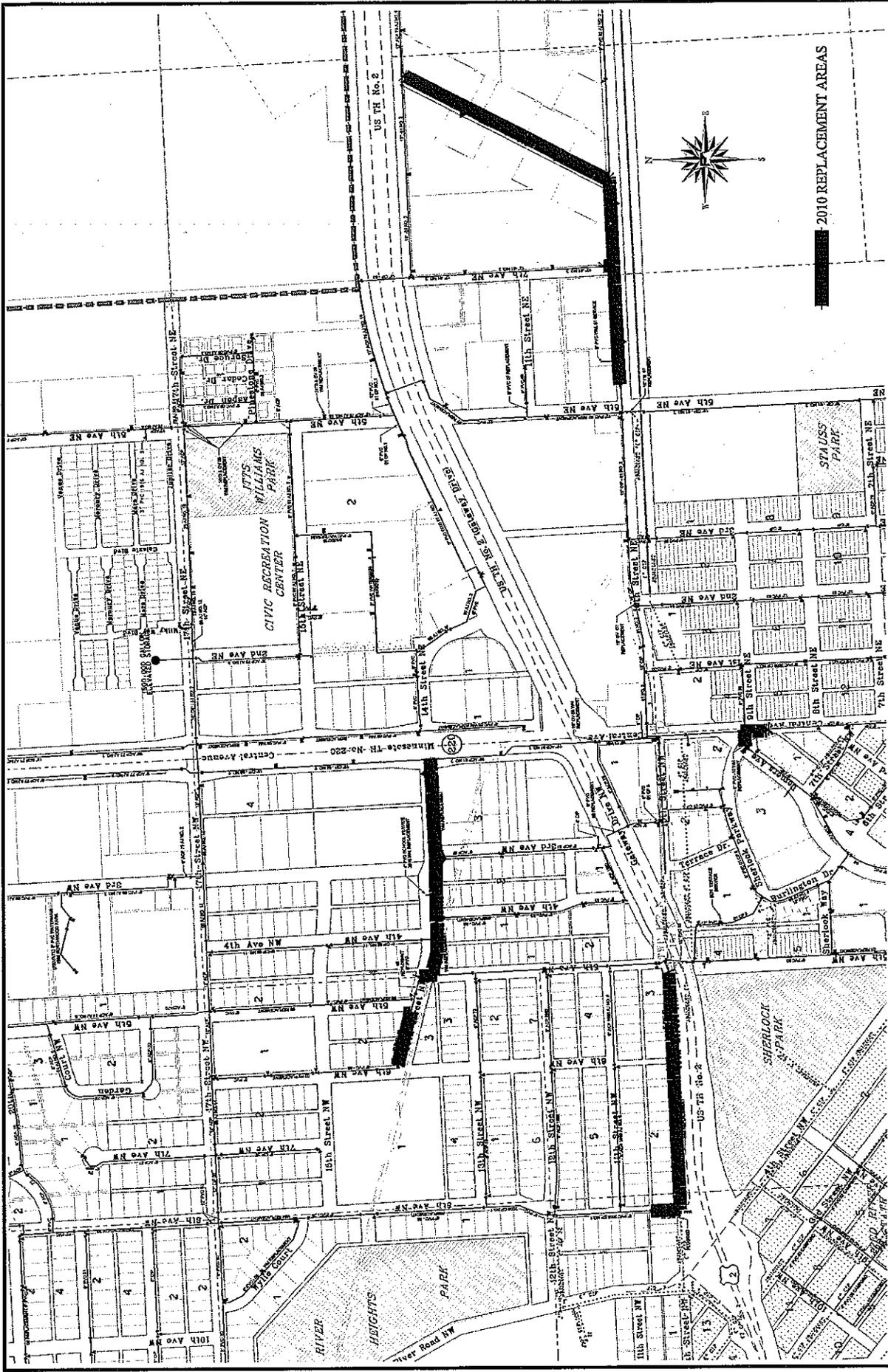
- Filter evaluation
- Disinfection byproduct evaluation
- Risk Management Plan update

2011 - Major Projects Included:

- Relocated plant booster pump controls
- Completed plant lighting update
- Installed active mixing system in plant reservoir
- Inspection of north water tower
- Replacement of windows and siding at water plant
- Completed Filter #1 Bay 2 rehabilitation project
- EERC started on energy savings opportunities in water treatment and distribution system (see attached proposal from EERC for description of work)
- Started lime sludge pond relocation project - Total Project Cost: \$2,314,628.00

Anticipated or Planned Projects for 2012

- Watermain replacement (see attached map for project area)
 - Engineers estimated total project cost: \$428,400.00
 - Project replacing cast iron watermains from the years (1956-1959)
 - Total watermain replaced/installed: 6" PVC: 2,462 LF
- Continuation of lime sludge and relocation project
- Installation of river intake pumps variable frequency drives
- South water tower repainting and installation of active mixing system



SHEET
1 of 1

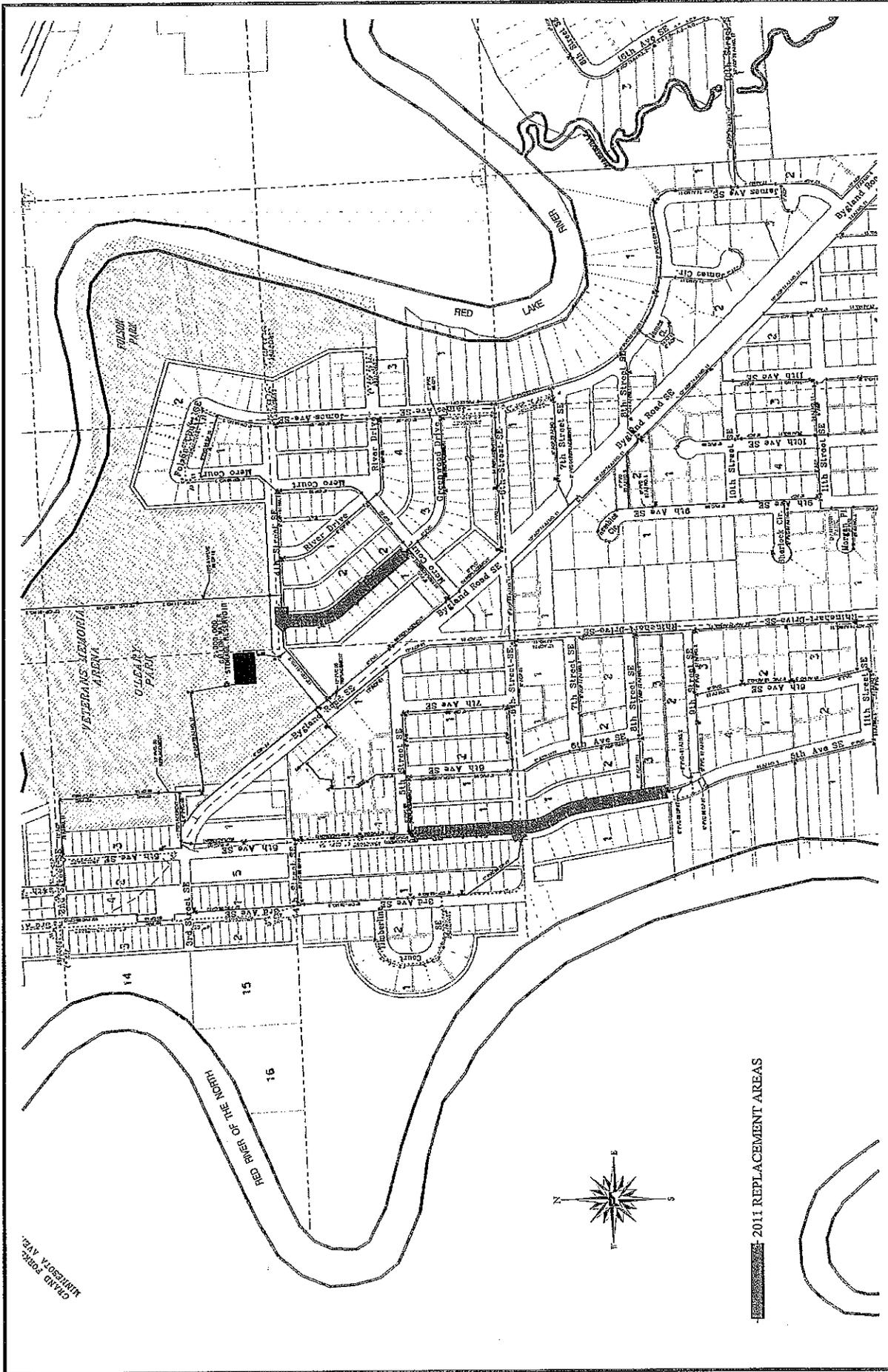
**East Grand Forks Water & Light Department
2010 Watermain Replacement Project
East Grand Forks, Minnesota**

PROJECT

DATE: 1/16/2012	DRAWN BY: MBA
DGN: 10-11_wm_replacements.dgn	CHECKED BY: SRE
MODEL NAME: 2010 WM Replacement	REVISION:
PATH: N:\EGF\projects\h2oplant\10-11_wm_replacements.dgn	

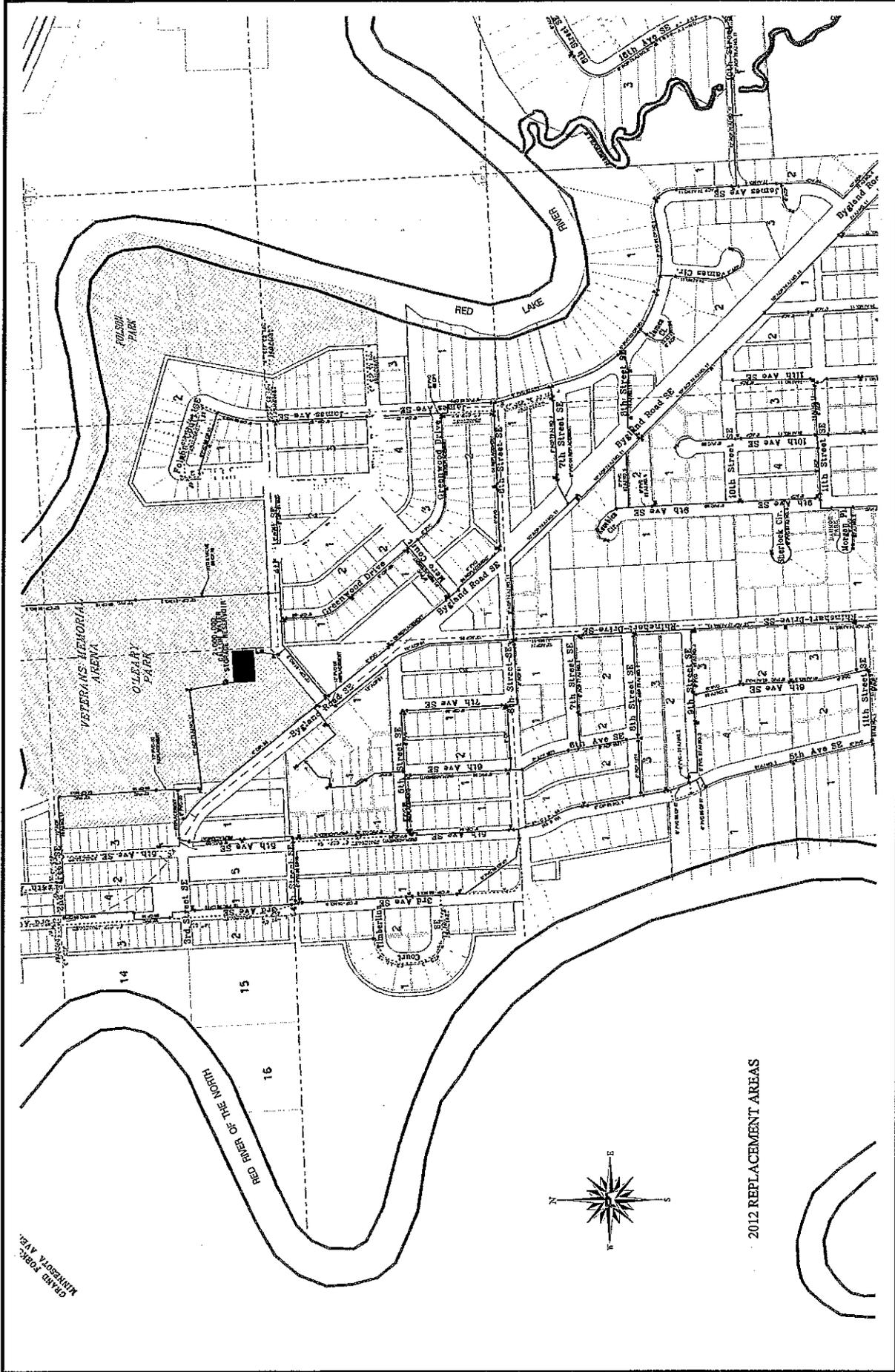


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DATE: 1/16/2012	DRAWN BY: MBA	PROJECT	SHEET
DGN: 10-11_wm_replacements.dgn	CHECKED BY: SRE	East Grand Forks Water & Light Department	
MODEL NAME: 2011 WM Replacement	REVISION:	2011 Watermain Replacement Project	
PATH: N:\EGF\projects\h2oplant\10-11_wm_replacements.dgn		East Grand Forks, Minnesota	
		1 of 1	

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2012 REPLACEMENT AREAS

DATE: 1/17/2012	DRAWN BY: MBA	PROJECT	SHEET
DGN: 10-11-12_wm_replacements.dgn	CHECKED BY: SRE	East Grand Forks Water & Light Department	1 of 1
MODEL NAME: 2012_WM_Replacement	REVISION:	2012 Watermain Replacement Project	
PATH: N:\EGF\projects\h2oplant\10-11-12_wm_replacements.dgn		East Grand Forks, Minnesota	

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EERC

Energy & Environmental Research Center

UNIVERSITY OF NORTH DAKOTA

15 North 23rd Street — Stop 9018 / Grand Forks, ND 58202-9018 / Phone: (701) 777-5000 Fax: 777-5181
Web Site: www.undeerc.org

May 19, 2011

Mr. Dan Boyce
General Manager
East Grand Forks Water and Light Department
PO Box 322
East Grand Forks, MN 56721-0322

Dear Mr. Boyce:

Subject: EERC Proposal No. 2011-0236 Entitled "Energy-Saving Opportunities in Water Treatment and Distribution"

The Energy & Environmental Research Center (EERC) is pleased to submit the enclosed proposal to East Grand Forks Water and Light Department to assess energy-saving opportunities in water treatment and distribution and to investigate the energy impacts of implementing alternative disinfection practices, including ozonation and ultraviolet light.

We look forward to working with you on this project and helping you achieve your future energy goals while providing your customers with the highest-quality water possible. If you have any questions about our proposal, please contact me by phone at (701) 777-5247 or by e-mail at dstepan@undeerc.org.

Sincerely,

Daniel J. Stepan
Senior Research Manager

DJS/bjr

Enclosure



EERC

Energy & Environmental Research Center

ENERGY-SAVING OPPORTUNITIES IN WATER TREATMENT AND DISTRIBUTION

EERC Proposal No. 2011-0236

Submitted to:

Dan Boyce

**East Grand Forks Water and Light Department
PO Box 322
East Grand Forks, MN 56721-0322**

Submitted by:

**Daniel J. Stepan
Nicholas S. Kalenze
Bradley G. Stevens
Dingyi Ye
Robert M Cowan**

**Energy & Environmental Research Center
University of North Dakota
15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018**



Daniel J. Stepan, Project Manager



Dr. Gerald H. Groenewold, Director
Energy & Environmental Research Center

May 2011

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ENERGY-SAVING OPPORTUNITIES IN WATER TREATMENT AND DISTRIBUTION

INTRODUCTION

Water is the most critical limiting resource throughout the world. Sufficient quantities of good-quality water are needed for several competing uses, including energy production, growing and processing high-value crops, industrial manufacturing, and expanding populations. The Energy & Environmental Research Centers (EERC) Northern Great Plains Water Consortium[®] (NGPWC) is a partnership between the U.S. Department of Energy (DOE) and key stakeholders representing oil and gas companies, power generation utilities, industry, municipalities, and other interested entities to address critical water issues in the north-central United States. A primary goal of NGPWC is to assess, develop, and demonstrate technologies and methodologies that minimize water use and reduce impacted water discharges from a range of energy technologies, including coal combustion, coal gasification, coalbed methane, and oil and natural gas production.

Most people do not understand the interconnectivity of water and energy and that people typically use as much water turning on lights and running appliances as they do through direct use like bathing and watering their lawns. This is because large volumes of water are needed to produce electricity. Thermoelectric power generation withdraws as much water as is used in agricultural irrigation, and the two combine to account for 80% of national water withdrawals. Conversely, water treatment and distribution require a significant amount of energy. The largest municipal energy use is typically associated with water and wastewater treatment plants. Utility energy costs can be as high as 35% of the total facility operating and maintenance costs, second only to staffing. These energy uses can be expected to increase further as treatment facilities endeavor to satisfy increasingly stringent regulatory requirements. For instance, regulations that limit the levels of disinfection by-products (DBPs) in drinking water will require many water treatment plants to incorporate different disinfection practices, including changing disinfectants and, in many cases, adding additional treatment capabilities such as ozonation or ultraviolet (UV) light. Ozonation and UV light are energy-intensive processes that can significantly impact facility energy costs.

The EERC proposes to assess potential energy-saving opportunities at the East Grand Forks Water Treatment Plant (EGFWTP) and to conduct laboratory testing to evaluate the energy impacts of implementing alternative disinfection practices, including both ozonation and UV light.

EGFWTP is a dual-media filtration plant with enhanced pretreatment, enhanced lime/soda ash softening, fluoridation, stabilization, chlorine, and chloramine disinfection (Figure 1). Raw water for EGFWTP is drawn through two intake lines located in the Red Lake River. Three vertical turbine pumps, two with capacities of 1400 gpm rated at 30 hp and one with a capacity of 2800 gpm rated at 60 hp, deliver the raw water through a transmission line to the water treatment plant. The current plant consists of the original plant, which was constructed in 1963, and a Phase I plant addition, completed in 1995. EGFWTP operates at its maximum treatment capacity of 2780 gpm (or 4 million gallons per day [MGD]) during the summer and approximately 1600 gpm during the winter, with an average operating period of 16 hours a day.

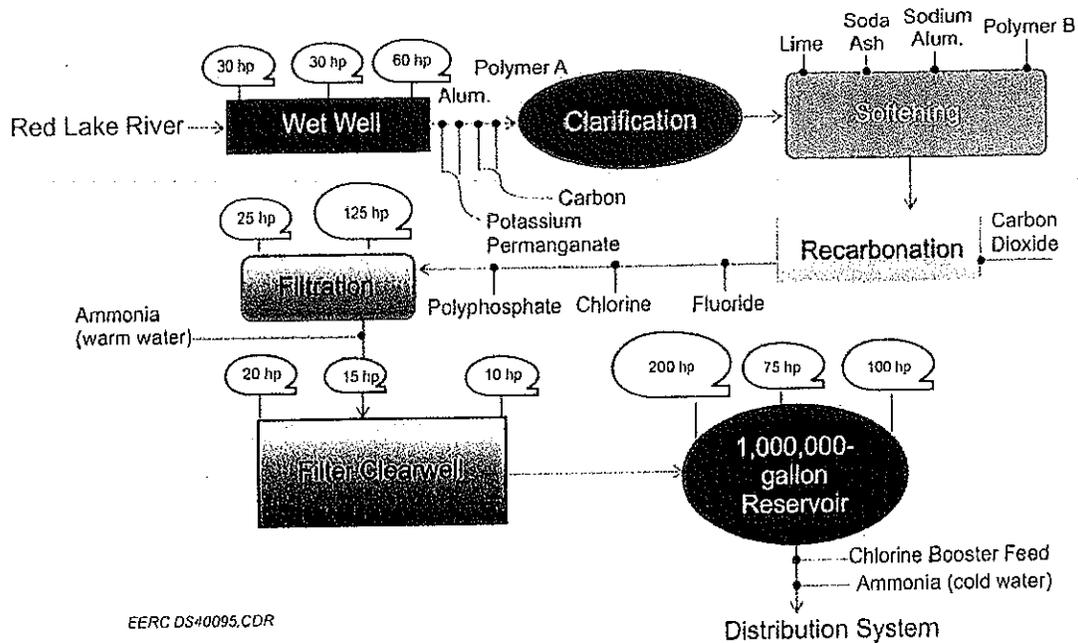


Figure 1. Overall unit process layout for EGFWTP.

Water is pumped using transfer pumps from the clear well to the finished-water reservoir (FWR) by two 1400-gpm and one 2800-gpm centrifugal pumps. The FWR is served by two 2800-gpm and one 1400-gpm high-service pumps. Since EGFWTP does not continuously pump to the distribution system, the high-service pumps lose pumping efficiency (1).

BACKGROUND

According to 2007 Minnesota Statute 216B.241, the East Grand Forks Water & Light Department (EGFW&L) is required to invest, expend, and/or contribute 1.5% of its gross operating revenues for energy conservation improvement. Additionally, the mandate requires reduction of electrical consumption annually by 1.5% of kilowatt-hour (kWh) sales based on the average of the previous 3 years (2).

In addition to Minnesota's energy conservation requirements, the City of East Grand Forks is also challenged with adhering to the U.S. Environmental Protection Agency (EPA) Stage 2 Disinfectants/Disinfection By-Products Rule (D/DBPR), which regulates the compounds and maximum contaminant levels (MCLs) listed in Table 1. Because the Red Lake River has a high naturally occurring organic matter (NOM) content, satisfying the requirements of the D/DBPR can be a challenge. D/DBPR also mandates a maximum residual disinfectant level of 4.0 mg/L for chlorine and chloramines and 0.8 mg/L for chlorine dioxide. DBPs such as TTHM (total trihalomethanes) and HAA5 (haloacetic acids) are evaluated based on an initial distribution system evaluation monitoring program where locations with the highest DBP concentrations in the distribution system are used as the sampling sites for Stage 2 D/DBPR compliance monitoring.

Table 1. Regulated DBPs and Associated MCLs

Regulated DBP	MCL
TTHM ¹	80 ppb
HAA5 ²	60 ppb
Chlorite	1.0 ppm
Bromate	10 ppb

¹Sum of chloroform, bromodichloromethane, dibromochloromethane, and bromoform.

²Sum of mono-, di-, and trichloroacetic acids and mono- and dibromoacetic acids.

DBPs are formed when NOM reacts with specific disinfectants, such as chlorine, chloramines, and chlorine dioxide. A key component in the formation of DBPs when chlorine or chloramine-based disinfectants are used is the mandated concentration time (CT) requirements, enforced by the current Long-Term 2 Enhanced Surface Treatment Rule (LT2ESTR), to ensure a given pathogen kill, where C is the residual disinfectant concentration (mg/L) and T is the time (in minutes) that water is in contact with the disinfectant. As the CT value is increased, a greater percentage of microorganisms are inactivated by chemical disinfection. The CT and, therefore, the level of inactivation can be increased by applying greater doses of the disinfectant or by increasing the time that the water is in contact with the disinfectant. However, increased chlorine or chloramine CT can also result in increased DBP formation.

LT2ESTR addresses the minimum log kill that is necessary for giardia (3-log removal or inactivation), virus (4-log removal or inactivation), and cryptosporidium (2-log removal or inactivation). LT2ESTR also enforces additional cryptosporidium treatment requirements to high-risk public water systems (PWSs). Specific cryptosporidium concentrations are monitored in filtered and unfiltered systems. Table 2 indicates any additional cryptosporidium treatment credit requirements that are needed if cryptosporidium concentrations in raw water exceed certain levels for PWSs that use conventional filtration (3).

The proposed project will provide EGFWTP management with a better understanding of how energy is currently used as well as potential opportunities to reduce energy consumption, resulting in facility operating cost reductions. This may provide EGFWTP, as a customer of EGFW&L, knowledge to aid EGFW&L in meeting the statutory requirements. In conjunction with the energy study, a bench-scale disinfection study using ozone and UV treatment on source

Table 2. Bin Classification by Cryptosporidium Concentration According to LT2ESTR

Bin Number	Average Source Water Cryptosporidium Concentration, oocysts/L	Additional Treatment Requirements for System with Conventional Treatment
1	<0.075	No action
2	0.075 to <1.0	1-log treatment
3	1.0 to <3.0	2-log treatment*
4	≥3.0	2.05-log treatment*

* At least 1-log by zone, chloride dioxide, UV disinfection, membranes, bag/cartridge filters, or in-bank filtration
 Source: Jacangelo, J., 2006, Johns Hopkins University.

waters throughout EGFWTP will be conducted. Both of these processes require the use of electricity. Ozonation requires electricity for use in converting molecular oxygen, O₂, into ozone, O₃. UV light disinfection requires electricity to power the UV lightbulbs. Both of these processes are effective at disinfection and at destruction of DBP precursors. Some of the pros and cons associated with implementing ozone or UV as a primary disinfectant are listed in Table 3. Ozone or UV disinfection treatment, when used alone or with chloramine chemical disinfection treatment, can reduce TTHM and HAA5 levels below the MCLs equal to 80 and 60 ppb, respectively. This proposed study will provide the City of East Grand Forks with data and information comparing the overall effectiveness of both UV light and ozonation in determining which disinfection practice is best for EGFWTP.

SCOPE OF WORK

Project activities will be conducted as four individual tasks.

Task 1 – Investigation of Energy-Saving Opportunities at EGFWTP

Task 1 involves a thorough evaluation of the energy use at EGFWTP. Utilizing historical information obtained from EGFWTP and EGFW&L, the EERC will develop an electricity usage profile for the facility with as much detail and granularity as available data permit. In addition, the EERC will assemble a complete inventory of electrical loads as well as how these loads are operated by EGFWTP personnel. These two types of information will provide crucial insight into where energy-saving opportunities may exist. With a baseline profile and a complete inventory of electrical loads established, specific loads will be evaluated for their potential energy-saving opportunity by adding technology improvements such as variable-frequency drives or implementing operational changes. Each evaluation will determine the technical and economic benefit in reference to the baseline energy profile previously established.

Table 3. Ozone vs. UV Treatment for Water Disinfection

Treatment	Pros	Cons
Ozone	<ul style="list-style-type: none"> • Excellent disinfection • Reduces or eliminates DBPs • Reduces chemical usage • Design flexibility • Excellent at killing viruses 	<ul style="list-style-type: none"> • No disinfectant residual • Energy-intensive • Challenging to retrofit • Cost • Can form bromate • Not as effective at killing protozoa as UV
UV	<ul style="list-style-type: none"> • No DBPs • Kills microorganisms • Reduced chemical usage • Does not alter water's pH, taste, or odor • Excellent at killing protozoa 	<ul style="list-style-type: none"> • No disinfectant residual • Energy-intensive • Does not kill spores • Cost • Weaker treatment at killing viruses than ozone

The EERC may also, if deemed of value, employ its FLIR Systems, Inc. (FLIR), thermal imaging camera to aid in the evaluation. The FLIR camera provides infrared images of building envelopes to determine leaks as well as motors or electrical circuits to detect overheating issues.

In addition to evaluating potential energy savings associated with plant hardware and operations, the EERC will provide an evaluation of the energy impact of the disinfection practices in Task 2. This, along with the performance effectiveness of the disinfection method, will provide necessary information to make an informed decision regarding new capital investment associated with alternative disinfection practices.

Task 2 – Water Quality Survey and Ozone/UV Treatment Tests

This task consists of two subtasks: a water quality survey and ozone and UV treatment testing.

Subtask 2a – Water Quality Survey. The purpose of the water quality survey will be to characterize chemical and microbial parameters for selected water samples at EGFWTP. Samples characterized in this subtask will serve as baseline data. Grab samples will be collected from four locations: raw water at the intake line, water exiting the presedimentation basin, softened water, and finished disinfected water prior to distribution.

The baseline sampling event will be scheduled in July or August. Total organic carbon (TOC) concentrations in EGFWTP raw water tend to be relatively consistent in quality from month to month, with an average TOC content of just over 13 mg/L, with a standard deviation of 1.4 mg/L based on 2010 data (4). However, the 2010 data indicate that the raw water TOC is greatest in the summer, with the peak occurring in July at 16 mg/L. Sampling in July or August will provide water with the highest TOC levels and represent the most problematic conditions with respect to DBP formation. Table 4 lists the locations and parameters to be analyzed for the water quality survey.

The pH will be measured on-site at the EGFWTP. Other chemical analyses is will be conducted by Minnesota Valley Testing Laboratory (MVTL) and Energy Laboratories.

Microbial analysis will consist of characterizing water samples to determine indicator organisms that are present through source waters by enumerating total coliform in colony-forming units (CFU)/liter (L). The total coliform counts will be tested by MVTL, while giardia and cryptosporidium tests will be conducted at the University of Iowa.

Subtask 2b – Ozone and UV Treatment Experiments. Ozonation and UV light will be evaluated with respect to both disinfection capabilities and energy utilization to achieve a desired water quality. A full-factorial test matrix for three independent variables will be utilized to determine the effects of both ozonation and UV light operating parameters on the treated water quality. In a full-factorial matrix, all possible combinations of high and low values of each independent variable (i.e., the operating conditions) are tested. The test matrix (Table 5) also includes four center points to provide an estimate of precision and to check for curvature of the results. The test order will be randomized to minimize experimental bias and ensure validity of the results.

Table 4. EGFWTP Water Characterization Testing Summary

Location	TOC	THMFP*	TTHM	pH	Alkalinity	Total Coliform	Giardia and Cryptosporidium
Raw Water	X	X		X	X	X	X
Presedimentation Effluent**	X	X		X	X	X	
Softened Water Effluent**	X	X		X	X	X	
Finished Water	X	X	X	X	X	X	

* THM formation potential.

** Water samples for parametric testing.

Table 5. Unrandomized Factorial Test Matrix

Run Number	Temperature	Disinfectant Concentration	Residence Time
1	Low	Low	Low
2	High	Low	Low
3	Low	High	Low
4	High	High	Low
5	Low	Low	High
6	High	Low	High
7	Low	High	High
8	High	High	High
9	Center	Center	Center
10	Center	Center	Center
11	Center	Center	Center
12	Center	Center	Center

Bench-scale test results will be evaluated and used to compare the efficiency and cost of ozone and UV treatment applications. In these experiments, pH, alkalinity, and TOC will be analyzed after the treatment. All treatability test samples will be analyzed for THMFP. Giardia and cryptosporidium will be tested only once under conditions corresponding to summer conditions where the lowest source water quality typically occurs. Testing is proposed to be conducted at two locations for each disinfectant. The exact locations will be determined in conjunction with EGFWTP personnel, but are expected to include after presedimentation and following softening and recarbonation.

The data generated will be statistically analyzed using regression analysis. The resulting equations will relate the THM formation potential and TOC levels to the temperature, disinfectant dose, and residence time. Confirmation testing will be performed at the test conditions that are predicted by the equations to produce optimal results.

Ozonation Testing. Ozonation will be performed using an OREC™ Model 03B1-0 ozonator. At full power and flow, the generator is capable of delivering a maximum ozone dosage of approximately 17 mg/L. Pure oxygen will be supplied to the ozone generator from compressed, bottled oxygen. An electrical current will then be applied across the oxygen stream within the

ozone generator to convert oxygen to ozone. Ozone will then be introduced into the water samples through a coarse-bubble fritted-glass diffuser. Three residual ozone-trapping vessels containing a potassium iodide solution will be positioned in series downstream from the sample vessel to consume any unreacted ozone (5).

The factorial test matrix will evaluate the effects of ozone dose, temperature, and contact time under the test conditions listed in Table 6. The resultant data will be used to develop dose/contact time-response relationship plots. Temperature conditions will be adjusted and maintained at 0°, 12.5°, and 25°C, representing summer, spring and fall, and winter temperature conditions of Red Lake River source water. Ozone doses will be established at 0.5, 4.75, and 10 mg/L. Literature suggests that typical ozone contact times range from 1 to 4 minutes (6). Contact times for these experiments will range from 1 to 7 minutes.

UV Testing. UV disinfection testing will be conducted in parallel with the ozonation tests, and the purpose will be to compare its effectiveness at removing DBP precursors (TOC) and THMFP under different operating conditions.

The UV disinfection test will be conducted with a Watts Model WUV2-110 rated at a 2-gallon-per-minute treatment capacity; maximum dosage will be 40 millijoules per square centimeter (mJ/cm²), which is common for achieving a 4-log kill of microorganisms in the water sample. The purpose of selecting this particular unit for UV disinfection treatment is so the rated capacity of water treatment will compare with that of the OREC ozonator unit for the ozone tests.

UV intensity will be adjusted by using a transformer, whereas the contact time will be determined by controlling the once-through flow rate of the inlet water. The experiments will be conducted at a bench scale at the same temperatures as the ozonation test. The varying flow rates will influence the necessary contact time for removing DBP precursors and will also influence the testing results for the parameters listed in Table 4. A typical UV contact time is shorter than other disinfection methods such as chlorination and ozonation. Since this small-scale UV treatment uses a low-pressure lamp, a common contact time range is 20–30 seconds (7).

The UV test parameters are listed in Table 7. Temperature will be adjusted and maintained at the same test conditions used for ozonation testing. UV light intensity will range from 10 to 40 mJ/cm², with a midrange test condition of 25 mJ/cm². Contact time will range from 15 to 35 seconds, with a midrange test condition of 25 seconds.

Table 6. Ozonation Test Variables and Conditions

	-1	0	+1*
Ozone Dose, mg/L	0.5	4.75	10
Temperature, °C	0	12.5	25
Contact Time, minutes	1	4	7

* -1, 0, +1 represent three levels: low center and high, respectively.

Table 7. UV Statistical Matrix Variables

	-1	0	+1*
UV Dose, mJ/cm ²	10	25	40
Temperature, °C	0	12.5	25
Contact Time, seconds	15	25	35

* -1, 0, +1 represent three levels: low, center and high, respectively.

Task 3 – Cost/Benefit Evaluation

As indicated in previous task descriptions, the EERC proposes to perform an evaluation of the cost/benefits related to two distinct areas; 1) energy improvements to the existing facility and operations and 2) financial implications related to the implementation of advanced disinfection methods (i.e., ozonation or UV).

Work in Area 1 will begin with the establishment of baseline energy consumption at the EGFWTP. The baseline will establish the energy usage profile as granularly as possible, but at a minimum on a monthly basis. Usage will be evaluated for anomalies and unusual patterns for further investigation. As part of the baseline establishment, an inventory of electrical loads will also be developed for use in identifying energy savings opportunities. Based on this information, certain electrical loads may be monitored individually to obtain additional electrical consumption data. A summary of these findings as well as recommended improvements to both the facility and water treatment operations will be provided as part of the final report.

Evaluation of Area 2 will utilize data collected in Task 2 to determine the equipment capital and associated costs, such as operation and maintenance (O&M) and energy use, for ozonation and UV disinfection methods. The capital investment and O&M costs for each advanced disinfection system will be compared to the existing chlorine disinfection process to provide the City of EGF sufficient information to evaluate these technologies.

Task 4 – Project Management and Reporting

The proposed project will become one of the activities of the EERC's NGPWC. Mr. Daniel J. Stepan, Senior Research Manager, will serve as Project Manager for the NGPWC and will oversee the activities associated with this project. Mr. Nicholas S. Kalenze, Research Engineer, will serve as principal investigator who will be responsible for the day-to-day conduct of the project activities. Other key project staff include Dr. Dingyi Ye, Research Microbiologist, Mr. Bradley G. Stevens, Research Manager, and Dr. Robert M. Cowan, Research Engineer.

In addition to routine communication between the project staff and EGFW&L, the EERC prepares quarterly technical progress reports for DOE. A copy of the quarterly report will be submitted to EGFW&L within 30 days of the end of each calendar quarter. A final technical project report will be prepared and submitted to EGFW&L within 30 days of the completion of testing and data analysis. In addition, EERC staff will present the results of the project to EGFW&L on or before the project end date. A project time line is presented in Table 8.

Table 8. Project Schedule

Month	1	2	3	4	5	6	7	8	9	10	11	12
Task 1 Energy Savings Assessment at EGFWTP	■	■	■	■	■							
Task 2 Water Characterization		■	■	■	■	■	■	■				
Task 3 Economic Assessment									■	■	■	■
Task 4 Final Reporting with Project Results	■	■	■	■	■	■	■	■	■	■	■	■

FUNDING EXPECTATION

The total estimated project cost is \$125,280, of which the EERC is requesting \$26,350 (20%) of the total estimated project cost from the City of East Grand Forks on a cost-reimbursable basis. Since the goals of the proposed project are consistent with those of the NGPWC, the EERC will provide \$98,930 from the DOE-sponsored NGPWC, contingent upon DOE approval.

Budget details are provided as an attachment to this proposal. Initiation of the proposed work is contingent upon the execution of a mutually negotiated agreement or modification to an existing agreement between EERC and the sponsoring organizations.

REFERENCES

1. Floan-Sanders and Advanced Engineering, 1996, East Grand Forks water treatment plant report.
2. Minnesota Office of the Revisor of Statutes, 2010, 2009 Minnesota statutes: 216B.241 Energy Conservation Improvement, www.revisor.mn.gov/statutes/?id=216B.241 (accessed July 2010).
3. U.S. Environmental Protection Agency, 2010, Disinfection by-product information: water.epa.gov/lawsregs/rulesregs/sdwa/stage2/regs_factsheet.cfm (accessed June 2010).
4. Rapacz, R., 2011, East Grand Forks Water Treatment Plant Superintendent, personal communication.
5. Moe, T., Turner, C., Mayer, G., and Stepan, D., 1988, *Treatability testing of KILnGAS and Texaco coal gasification wastewaters*: CH₂M Hill and Energy & Mineral Research Center.
6. Water Quality Products, 2011, Ozone plant design—why use ozone?: www.roadsbridges.com/Ozone-Pilot-Plant-Design-Why-Use-Ozone-article1272 (accessed March 2011).
7. U.S. Environmental Protection Agency, 2011, Wastewater technology factsheet, ultraviolet disinfection: http://water.epa.gov/scitech/wastetech/upload/2002_06_28_mtb_uv.pdf (accessed March 2011).

ENERGY-SAVING OPPORTUNITIES IN WATER TREATMENT AND DISTRIBUTION
 EAST GRAND FORKS POWER AND LIGHT
 PROPOSED PROJECT START DATE: 6/1/11
 EERC PROPOSAL #2011-0236

BUDGET

CATEGORY	TOTAL	EAST GRAND FORKS WATER & LIGHT	DOE SNESS SHARE
TOTAL DIRECT HRS/SALARIES	1,040 \$ 43,177	251 \$ 10,041	789 \$ 33,136
TOTAL FRINGE BENEFITS	\$ 23,747	\$ 5,523	\$ 18,224
TOTAL LABOR	\$ 66,924	\$ 15,564	\$ 51,360
OTHER DIRECT COSTS			
TRAVEL	\$ 50	\$ 50	\$ -
SUPPLIES	\$ 2,000	\$ 775	\$ 1,225
COMMUNICATION - LONG DISTANCE & POSTAGE	\$ 130	\$ 50	\$ 80
PRINTING & DUPLICATING	\$ 53	\$ 30	\$ 23
OPERATING FEES & SVCS			
Graphics Support	\$ 265	\$ -	\$ 265
Outside Lab.	\$ 13,000	\$ -	\$ 13,000
TOTAL DIRECT COST	\$ 82,422	\$ 16,469	\$ 65,953
FACILITIES & ADMIN. RATE - % OF MTDC	VAR \$ 42,858	60% \$ 9,881	50% \$ 32,977
TOTAL PROJECT COST - US DOLLARS	\$ 125,280	\$ 26,350	\$ 98,930

Due to limitations within the University's accounting system, bolded budget line items represent how the University proposes, reports and accounts for expenses. Supplementary budget information, if provided, is for proposal evaluation.

BUDGET NOTES

ENERGY & ENVIRONMENTAL RESEARCH CENTER (EERC)

BACKGROUND

The EERC is an independently organized multidisciplinary research center within the University of North Dakota (UND). The EERC receives no appropriated funding from the state of North Dakota and is funded through federal and nonfederal grants, contracts, and other agreements. Although the EERC is not affiliated with any one academic department, university faculty may participate in a project, depending on the scope of work and expertise required to perform the project.

INTELLECTUAL PROPERTY

If federal funding is proposed as part of this project, the applicable federal intellectual property (IP) regulations may govern any resulting research agreement. In addition, in the event that IP with the potential to generate revenue to which the EERC is entitled is developed under this agreement, such IP, including rights, title, interest, and obligations, may be transferred to the EERC Foundation, a separate legal entity.

BUDGET INFORMATION

The proposed work will be done on a cost-reimbursable basis. The distribution of costs between budget categories (labor, travel, supplies, equipment, etc.) is for planning purposes only. The project manager may, as dictated by the needs of the work, incur costs in accordance with Office of Management and Budget (OMB) Circular A-21 found at www.whitehouse.gov/omb/circulars. If the Scope of Work (by task, if applicable) encompasses research activities which may be funded by one or more sponsors, then allowable project costs may be allocated at the Scope of Work or task level, as appropriate, to any or all of the funding sources. Financial reporting will be at the total-agreement level.

Escalation of labor and EERC recharge center rates is incorporated into the budget when a project's duration extends beyond the current fiscal year. Escalation is calculated by prorating an average annual increase over the anticipated life of the project.

The cost of this project is based on a specific start date indicated at the top of the EERC budget. Any delay in the start of this project may result in a budget increase. Budget category descriptions presented below are for informational purposes; some categories may not appear in the budget.

Salaries: The EERC employs administrative staff to provide required services for various direct and indirect support functions. Salary estimates are based on the scope of work and prior experience on projects of similar scope. The labor rate used for specifically identified personnel is the current hourly rate for that individual. The labor category rate is the current average rate of a personnel group with a similar job description. Salary costs incurred are based on direct hourly effort on the project. Faculty who work on this project will be paid an amount over their normal base salary, creating an overload which is subject to limitation in accordance with university policy. Costs for general support services such as contracts and intellectual property, accounting, human resources, purchasing, shipping/receiving, and clerical support of these functions are included in the EERC facilities and administrative cost rate.

Fringe Benefits: Fringe benefits consist of two components which are budgeted as a percentage of direct labor. The first component is a fixed percentage approved annually by the UND cognizant audit agency, the Department of Health and Human Services. This portion of the rate covers vacation, holiday, and sick leave (VSL) and is applied to direct labor for permanent staff eligible for VSL benefits. Only the actual approved rate will be charged to the project. The second component is estimated on the basis of historical data and is charged as actual expenses for items such as health, life, and unemployment insurance; social security; worker's compensation; and UND retirement contributions.

Travel: Travel is estimated on the basis of UND travel policies which can be found at www.und.edu/dept/accounts/policiesandprocedures.html. Estimates include General Services Administration

(GSA) daily meal rates. Travel may include site visits, field work, meetings, and conference participation as indicated by the scope of work and/or budget.

Equipment: If equipment (value of \$5000 or more) is budgeted, it is discussed in the text of the proposal and/or identified more specifically in the accompanying budget detail.

Supplies – Professional, Information Technology, and Miscellaneous: Supply and material estimates are based on prior experience and may include chemicals, gases, glassware, nuts, bolts, and piping. Computer supplies may include data storage, paper, memory, software, and toner cartridges. Maps, sample containers, minor equipment (value less than \$5000), signage, and safety supplies may be necessary as well as other organizational materials such as subscriptions, books, and reference materials. General purpose office supplies (pencils, pens, paper clips, staples, Post-it notes, etc.) are included in the facilities and administrative cost.

Subcontracts/Subrecipients: Not applicable.

Professional Fees/Services (consultants): Not applicable.

Other Direct Costs

Communications and Postage: Telephone, cell phone, and fax line charges are generally included in the facilities and administrative cost. Direct project costs may include line charges at remote locations, long-distance telephone, postage, and other data or document transportation costs.

Printing and Duplicating: Photocopy estimates are based on prior experience with similar projects. Page rates for various photocopiers are established annually by the university's duplicating center.

Food: Food expenditures for project meetings, workshops, and conferences where the primary purpose is dissemination of technical information may include costs of food, some of which may exceed the institutional limit.

Professional Development: Fees are for memberships in technical areas directly related to work on this project. Technical journals and newsletters received as a result of a membership are used throughout development and execution of the project by the research team.

Fees and Services – EERC Recharge Centers, Outside Labs, Freight: EERC recharge center rates for laboratory, analytical, graphics, and shop/operation fees are established and approved at the beginning of the university's fiscal year.

Laboratory and analytical fees are charged on a per sample, hourly, or daily rate, depending on the analytical services performed. Additionally, laboratory analyses may be performed outside the university when necessary.

Graphics fees are based on an established per hour rate for production of such items as report figures, posters, and/or PowerPoint images for presentations, maps, schematics, Web site design, professional brochures, and photographs.

Shop and operation fees are for expenses directly associated with the operation of the pilot plant facility. These fees cover such items as training, personal safety (protective eyeglasses, boots, gloves), and physicals for pilot plant and shop personnel.

Freight expenditures generally occur for outgoing items and field sample shipments.

Facilities and Administrative Cost: Facilities and administrative (F&A) cost is calculated on modified total direct costs (MTDC). MTDC is defined as total direct costs less individual capital expenditures, such as equipment or software costing \$5000 or more with a useful life of greater than one year, as well as subawards in excess of the first \$25,000 for each award. The F&A rate for nonfederal sponsors is 60%. This rate is based on costs that are not included in the federally approved rate, such as administrative costs that exceed the 26% federal cap and depreciation/use allowance on buildings and equipment purchased with federal dollars.

BN-Nonfederal Cost-reimbursable
Updated 03/11



5 Year Project Summary January 10, 2012

Electric

Electric projects include service to new development areas and new street light systems, however, the greater portion of project capital is used to replace aging distribution equipment.

Overhead to Underground

Water and Light has been working on converting to a completely underground system for about 40 years and will reach that goal in 2012.

Replacement of Early Underground Primary Cable, Connectors and Transformers

Much improvement has been realized in URD equipment, especially in primary cable and newer jacketed cable providing greater system reliability.

Voltage Conversion

This is another on-going project that started in 1986 when Industrial Park Substation was constructed at a higher distributive voltage. Sugar Hills Substation followed in 2001, leaving the city with 2 substations at 12470 volts and 2 stations at 4160 volts. There is a plan to rebuild Central Substation in 2013 to the higher voltage, allowing the decommissioning of Park Substation, our oldest substation behind the Legion.

Equipment Purchases

The majority of equipment needed for projects is purchased each spring through a bidding process with 5 vendors. These expenditures were as follows:

<u>Year</u>	<u>Cost</u>
2011	\$193,818.88
2010	\$235,589.00
2009	\$232,833.32
2008	\$283,509.77
2007	\$247,506.64
	<u>\$89,977.00</u> for Street Lighting
Total	\$337,483.64

Labor Costs

Trenching and boring cable is included in a contract bid for labor each spring. These expenditures were as follows:

<u>Year</u>	<u>Cost</u>	<u>Contractor</u>
2011	\$182,099.00	North Holt
2010	\$184,890.54	North Holt
2009	\$142,200.42	Moorhead Electric
2008	\$ 18,658.50	North Central Services
	\$ 27,021.80	Arvig Communication Services
	<u>\$116,068.10</u>	North Holt
Total	\$161,748.40	
2007	\$ 25,266.50	North Central Services
	<u>\$129,931.25</u>	North Holt
Total	\$155,197.75	

Water Distribution

Our focus for more than 30 years has been replacement of deteriorating cast iron water main. When this program began, \$100,000 a year was dedicated to install new pipe, valves and hydrants. Throughout the years labor and material costs have escalated and in 2012 Water and Light has budgeted \$300,000 for water main replacement.

There have been some years where we spent more on a larger project, due to road repairs or sewer replacements in the same area. In 2010, Water and Light spent almost \$1 million to partner with the City's sewer replacement and paving on 10th St NW

Labor and Material Bids for Water Main Replacement the past 5 years are as follows:

<u>Year</u>	<u>Cost</u>	<u>Contractor</u>
2011	\$343,345.45	Hough Inc
2010	\$975,674.80	Spruce Valley
2009	New Main Extension on 23 rd St NW (No Replacement)	
2008	\$419,100.40	Soberaski
2007	\$318,797.90	Zavoral's

ENERGY CONSERVATION BUDGET		
BUDGET-Rebates, Audits, Special Programs	\$250,000.00	
Low Income Weatherization		\$30,000.00
Residential Weatherization Rebates		\$40,000.00
Residential Direct Install		\$10,000.00
Residential Appliance Rebates		\$20,000.00
A/C Tune Up Rebates		\$10,000.00
CFL Bulb Rebate		\$5,000.00
CFL Swap		\$5,000.00
Residential Energy Audits		\$5,000.00
Commercial Rebates		\$100,000.00
<i>(lighting, weatherization, VFD, etc.)</i>		
Commercial Energy Audits		\$25,000.00
Budget-Advertising & Education	\$25,000.00	
Advertising		\$20,000.00
Education		\$5,000.00

