CITY OF Fargo

Division of Solid Waste
2301 8th Avenue North
Fargo, North Dakota 58102
Phone: 701-241-1449
Fax: 701-241-8109

Terry Ludlum
Solid Waste Utility Manager
City of Fargo
2301 8th Avenue North
Fargo, ND 58102

November 29, 2007

North Dakota Industrial Commission
Renewable Energy Development Program
State Capitol – Fourteenth Floor
600 East Boulevard
Bismarck, ND 58505

Commissioners:

I submit herewith an application entitled "Landfill Gas Renewable Energy Project" seeking a grant from the North Dakota Industrial Commission's Renewable Energy Development Fund in the amount of $500,000.

The project would be performed under my direction as Solid Waste Utility Manager for the City of Fargo. This letter shall serve as a commitment on behalf of the City to complete the project as described in the application should the Commission make the grant requested.

Question regarding the application may be directed to me at (701) 241-1552.

Respectfully Submitted,

Terry Ludlum

North Dakota Industrial Commission

RENEWABLE ENERGY DEVELOPMENT FUND

GRANT APPLICATION

PROJECT TITLE: Landfill Gas Renewable Energy Project

APPLICANT: City of Fargo

PRINCIPAL INVESTIGATOR: Terry Ludlum, Solid Waste Utility Manager

DATE OF APPLICATION: December 1, 2007

AMOUNT OF REQUEST: $500,000

TABLE OF CONTENTS

Section A - Abstract

The objective of the project is to convert captured landfill gas into electricity and, thereby offset the City's need for purchasing and consuming retail electricity. The project will involve acquisition of a 925 kilowatt landfill gas generator capable of producing nearly 7 megawatts of electricity annually. The City landfill currently consumes about 3 megawatts of electricity annually. The electricity produced by the generator will be used either directly by the City or sold to Cass County Electric to offset the City's consumption of retail electricity.

The total estimated project cost is $1,000,000 as detailed in Section G. The project has an expected life of 40 years based on the predicted landfill gas production model.

The sole project applicant will be the City of Fargo as the owner and operator.

Section B - Project Description

Introduction

The City of Fargo owns and operates a Municipal Solid Waste (MSW) landfill located on 160 acres in the northeast quarter of Section 4, Township 139 North, Range 49 West, Cass County, North Dakota. A site plan of the landfill can be found on Figure 1 in the Appendices. The landfill accepts residential, commercial and non-hazardous industrial waste, construction and demolition waste, wastewater treatment plant biosolids, water treatment plant lime sludge residuals, and small amounts of special waste such as fuel contaminated soil, incinerator ash and asbestos. The landfill is an EPA subtitle D compliant facility which operates under permit number SW-260 issued by the North Dakota Department of Health (NDDH).

Background

In June 2002, a landfill gas collection system was installed and placed into operation for the primary purpose of eliminating offensive odors and capturing the gas for beneficial use. The original system included 20 vertical gas extraction wells, piping interconnects, two compressor units, gas flare unit and force main pipeline. The original wellfield

covered portions of Cells 1 through 5 and a small section of the landfill's unlined area along the facilities west boundary. The original wellfield produced a gas flow rate of 600 cubic feet per minute (cfm) (127,722 million BTUs per year) which has been sold to a nearby agricultural processing facility for use as an alternative to natural gas. A drawing showing the original gas collection system can be found on Figure 2 in the Appendices.

Since that time, the landfill has expanded sufficiently to support an expansion of the gas collection wellfield. Thus, in 2007, the landfill installed an additional 21 gas extraction wells resulting in an additional flow rate of 600 cfm (127,722 million BTU's per year). A drawing showing the expanded gas collection system can be found on Figure 3 in the Appendices.

To utilize the additional gas most beneficially, the landfill installed a 925 kilowatt landfill gas generator for the purpose of producing electricity. The generator requires a gas flow rate of 300 cfm and produces approximately 7 megawatts of electricity annually. The existing generator installation was completed in August, 2007 and has been operating successfully since that time.

However, the landfill has an unallocated 300 cfm of landfill gas available for use as a renewable fuel. Thus, the landfill would like to install a second 925 kilowatt gas generator for the production of additional electricity. The electricity will be used either directly by the city or sold to the local power provider to offset the City's consumption of retail electricity.

The project will offer the following environmental and economic benefits:

- Utilize an available renewable energy resource.
- Benefit the environment through the destruction of methane gas, a recognized greenhouse gas.
- Benefit the citizens of Fargo by reducing the need to purchase retail power or creating a new source of revenue for the City.

The project methodology will be patterned after the existing 925 kilowatt landfill gas generator which has been successfully operating since August, 2007. The existing generator is currently producing about 22,000 kilowatts of electricity per day which is sold to Cass County Electric Cooperative.

Section C - Standards of Success

The Landfill Gas Renewable Energy Project standards of success will be based on measurable outcomes as follows:

1. Meter recorded production of electricity converted to number of homes equivalent.
2. Calculated efficiency of landfill gas generator.
3. Meter recorded destruction of methane converted to tons of carbon dioxide emissions avoided.
4. Calculated economic benefit through either electricity sales or avoided electrical expenses.
5. Calculated project pay-back term.

The value of this project to the State of North Dakota will include the following:

1. Demonstrate the successful use of an available renewable energy resource that can be replicated at other landfills in North Dakota.
2. Reduction in greenhouse gas emissions through the destruction of methane gas.
3. Production of enough electricity to power 700 homes annually.
4. Establish a landfill facility that produces three times the electricity that it consumes.
5. Serve as an educational tool regarding the benefit of previously "wasted" renewable resource.

Section D - Background/Qualifications

The City of Fargo currently owns and operates an MSW landfill, gas collection system and generator located at 4501 7th Avenue North, Fargo, ND. The existing generator is a 925 kw Caterpillar landfill gas fueled generator which was placed into operation in August of 2007. The City entered an agreement with Cass County Electric and Minnkota Power Cooperative to allow connection to their power distribution system and establish a power purchase rate. Since initial start-up, the existing generator has been producing approximately 7 MW of electricity annually or enough energy to power 700 homes.

Due to the availability of additional landfill gas and the successful experience with the existing generator, the City would like to add a second 925 kw landfill gas generator for the production of electricity.

Section E - Management

Management of the Landfill Gas Renewable Energy Project will be overseen by a Project Manager (PM) as designated by The City of Fargo, Division of Solids Waste. During the *Preconstruction Phase* of the project, the PM will be responsible for acquiring equipment and contractor proposals and will review, evaluate, and recommend awarding of the proposals based on the following criteria: completeness and organization, qualifications of assigned personnel, prior pertinent staff experience, available resources of the firm, and cost of services. In order to meet scheduling objectives of the *Phase*, all proposals will be awarded by the Fargo City Commission during their predetermined 2008 meetings as given in Section F-Timetable. An interim report giving a project evaluation, an outline of accomplishments, and expenditures to date, will be prepared by the PM and submitted to the North Dakota Industrial Commission.

During the *Construction Phase* of the project, the PM will organize a construction meeting involving all contractors and equipment manufacturers that received bid awards for the project. The PM and contractors will review all proposals as awarded and outline scheduling objectives for the duration of the project. Contractors will be required to submit monthly Contract Disbursement Summaries which will outline all work completed, current pay requests, and any construction amendments. The PM will approve and authorize payment for services as completed and submitted in the summary. A second interim report will be submitted to the Commission after a majority of the *Construction Phase* has been completed.

The *Generator Installation and Startup Phase* of the project will be determined by the project shipping date of the generator, which has been given as approximately 40 to 52 weeks from order. The PM will organize a meeting to be attended by any contractors with remaining work and representatives of Cass County Electric, Inc. The PM will review the scheduling objectives remaining for project completion. Upon completion, a final report will be submitted to the Commission which will give a project summary including final costs and a review as to whether the project met the standards as given within the Renewable energy Council Policies.

Section F - Timetable

TASK	TIMETABLE
Solicit proposals for landfill gas generator	January, 2008
Fargo City Commission Meeting - Execute Contract with North Dakota Industrial Commission - Award bid for purchase of landfill gas generator	March 10, 2008
Solicit proposals/bids: - Project Design - General Construction - Mechanical - Electrical	March 17, 2008
Submit electrical design to Cass County Electric for review	March 11, 2008
Prepare Electric Service Agreement - Minnkota Power Cooperative, Inc. - Cass County Electric Cooperative, Inc. - City of Fargo	April 15, 2008
Fargo City Commission Meeting - Award bids for General, Mechanical, and Electric Construction - Execute Electric Service Agreement	April 21, 2008
Preconstruction meeting	May 1, 2008
Interim report to North Dakota Industrial Commission - Update project's accomplishments and expenditures	June 2, 2008
Site preparation, electrical & mechanical construction	May- December, 2008
Complete site preparation	July 28, 2008
Generator delivery and installation	December 15, 2008
Interim report to North Dakota Industrial Commission - Update project's accomplishments and expenditures	December 17, 2008
Complete electrical & mechanical construction	January 12, 2009
Generator startup and electrical compliance testing	January 15, 2009
Final report to North Dakota Industrial Commission - Project Summary - Project Costs and Fiscal Accounting - Project Standards Review	March 10, 2009

Section G - Budget

The proposed budget submitted under this application is solely related to capital expenditures to purchase, install and interconnect a new 925 kilowatt landfill gas generator. No operating, staff or indirect costs are proposed to be supported through grant funding. This grant application proposes a 50-50 cost share agreement between the City of Fargo and the North Dakota Industrial Commission. The proposed grant funding is necessary to reduce the capital cost funding burden on the City of Fargo.

The project cost estimate is as follows:

Description		Cost
Landfill Gas Generator		$ 890,000
Generator Heat Recovery Components		$ 55,000
Transformer and Metering		$ 25,000
Forcemain, Concrete & Sitework		$ 100,000
Subtotal	=	$1,070,000
Contingency	=	$ 20,000
Project Total	=	$1,090,000
City of Fargo Cost Share	=	$ 590,000
Renewable Energy Grant Cost Share	=	$ 500,000

Section H - Tax Liability

NOV. 28. 2007 3:38PM NO. 342 P. 2

STATE OF NORTH DAKOTA
OFFICE OF STATE TAX COMMISSIONER
Cory Fong, Commissioner

CERTIFICATE

Attn: Terry Ludlum,
Solid Waste Utility Manager
City of Fargo
2301 8th Ave N
Fargo, ND 58102

Re: City of Fargo
Federal ID 45-6002069

Dear Sir:

I, Myles Vosberg, Director of the Tax Administration Division in the Office of the North Dakota State Tax Commissioner, and authorized by the North Dakota State Tax Commissioner to make this Certificate, do hereby certify that as of present date, the records in the Office of the North Dakota State Tax Commissioner do not show any indebtedness due and owing to the State of North Dakota by the City of Fargo, with respect to income taxes or sales and use taxes collected by and payable to the Tax Commissioner's office; and that said company insofar as the Tax Commissioner's records indicate, is in good standing with this office. All ad valorem property taxes are excluded from the taxes herein certified, since all such taxes are collected by the respective county treasurers.

Dated this 28th day of November, 2007 at Bismarck, North Dakota.

Myles S. Vosberg
Director, Tax Administration
Office of State Tax Commissioner

State of North Dakota)
)ss
County of Burleigh)

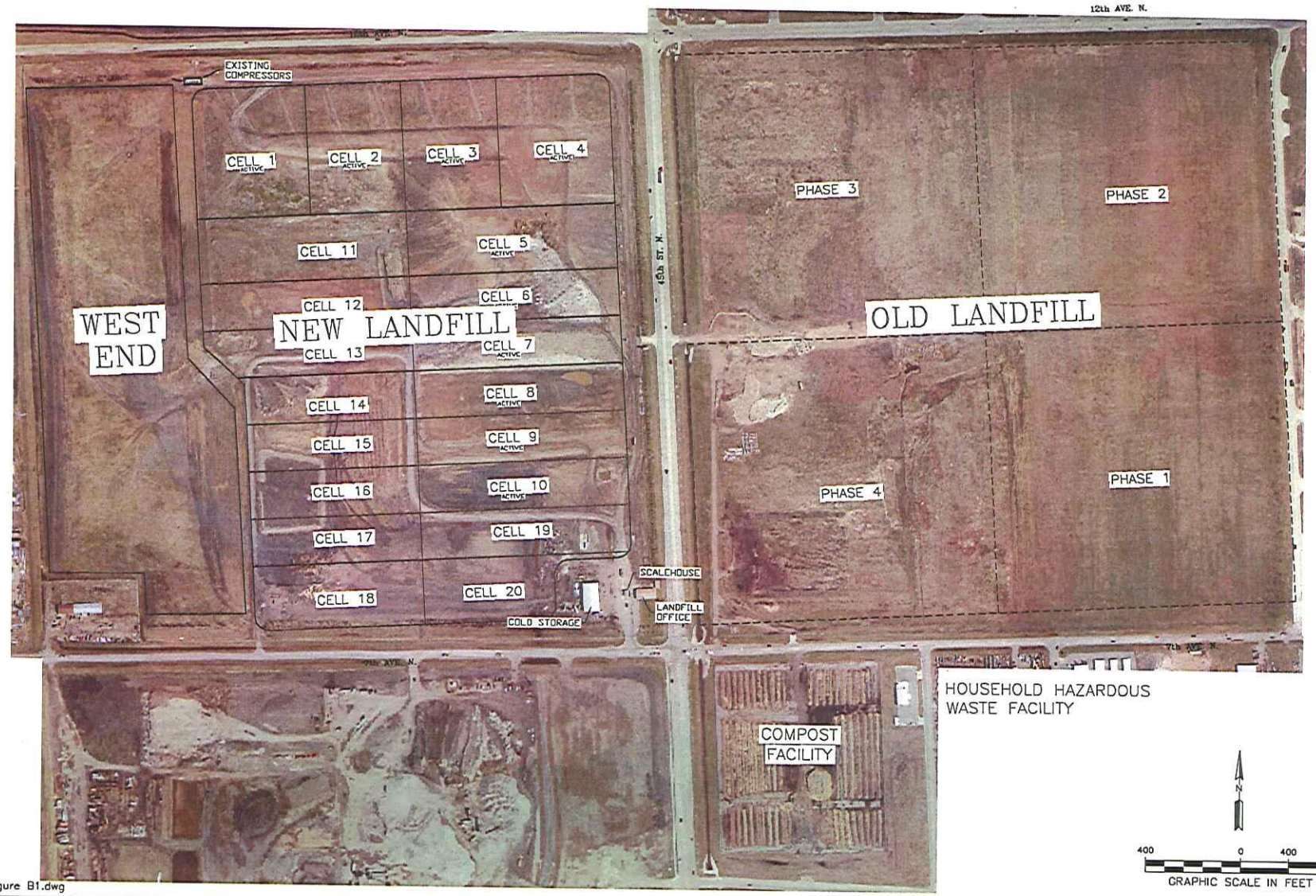
Subscribed and sworn to before me this 28th day of November, 2007.

CLAUDIA C. SCHUSTER
Notary Public
State of North Dakota
My Commission Expires June 6, 2008

Notary Public

600 E. BOULEVARD AVE., DEPT. 127, BISMARCK, NORTH DAKOTA 58505-0599
701.328.2770 FAX: 701.328.3700 HEARING/SPEECH IMPAIRED: 800.366.6888 WWW.ND.GOV/TAX TAXINFO@ND.GOV

APPENDICES



T:\0208\2007 Grant\Figure B1.dwg

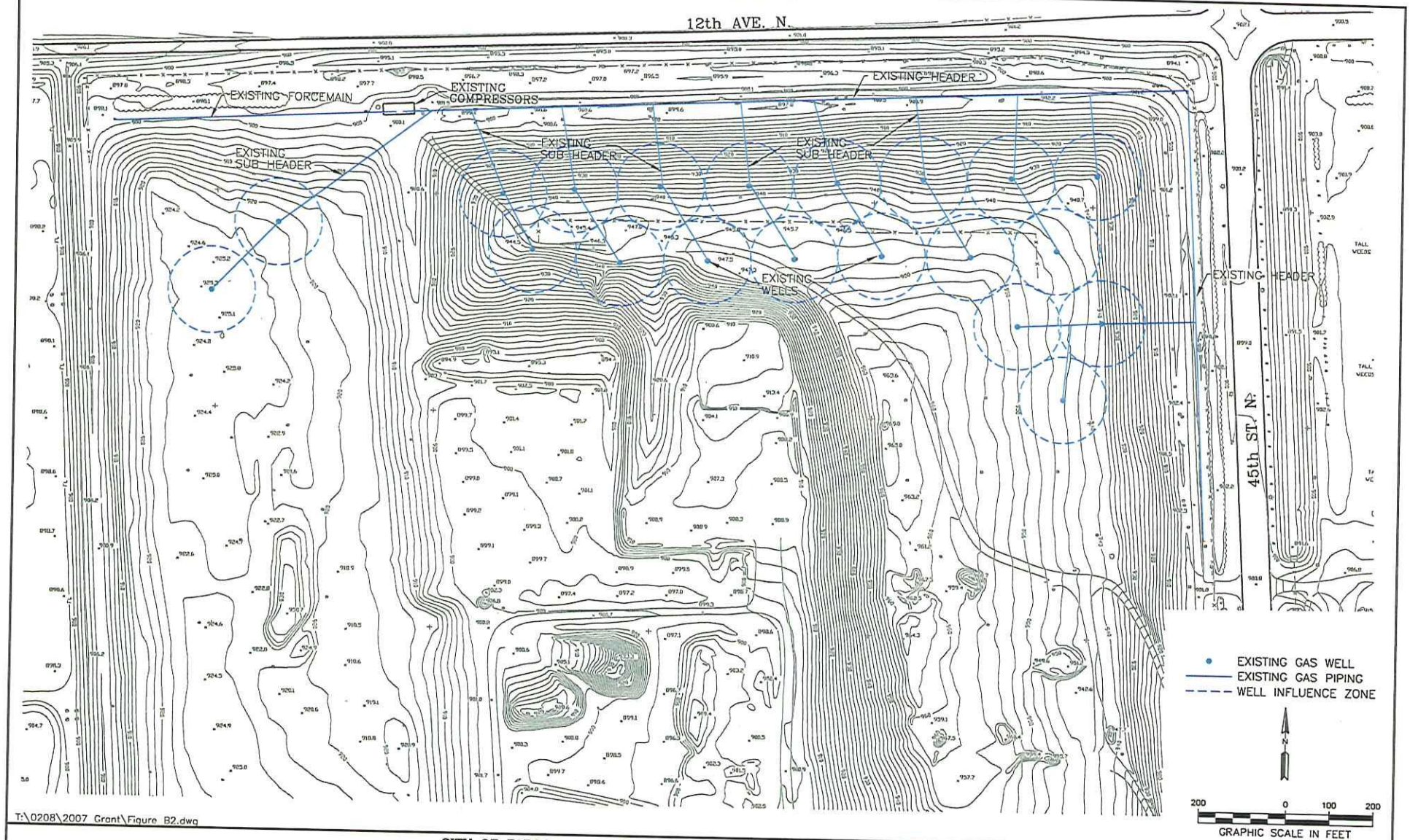
CITY OF FARGO

Landfill Site Plan

Wenck Associates, Inc. Environmental Engineers 1800 Pioneer Creek Center Maple Plain, MN 55359

NOVEMBER, 2007

Figure No. B1



T:\0208\2007 Grant\Figure B2.dwg

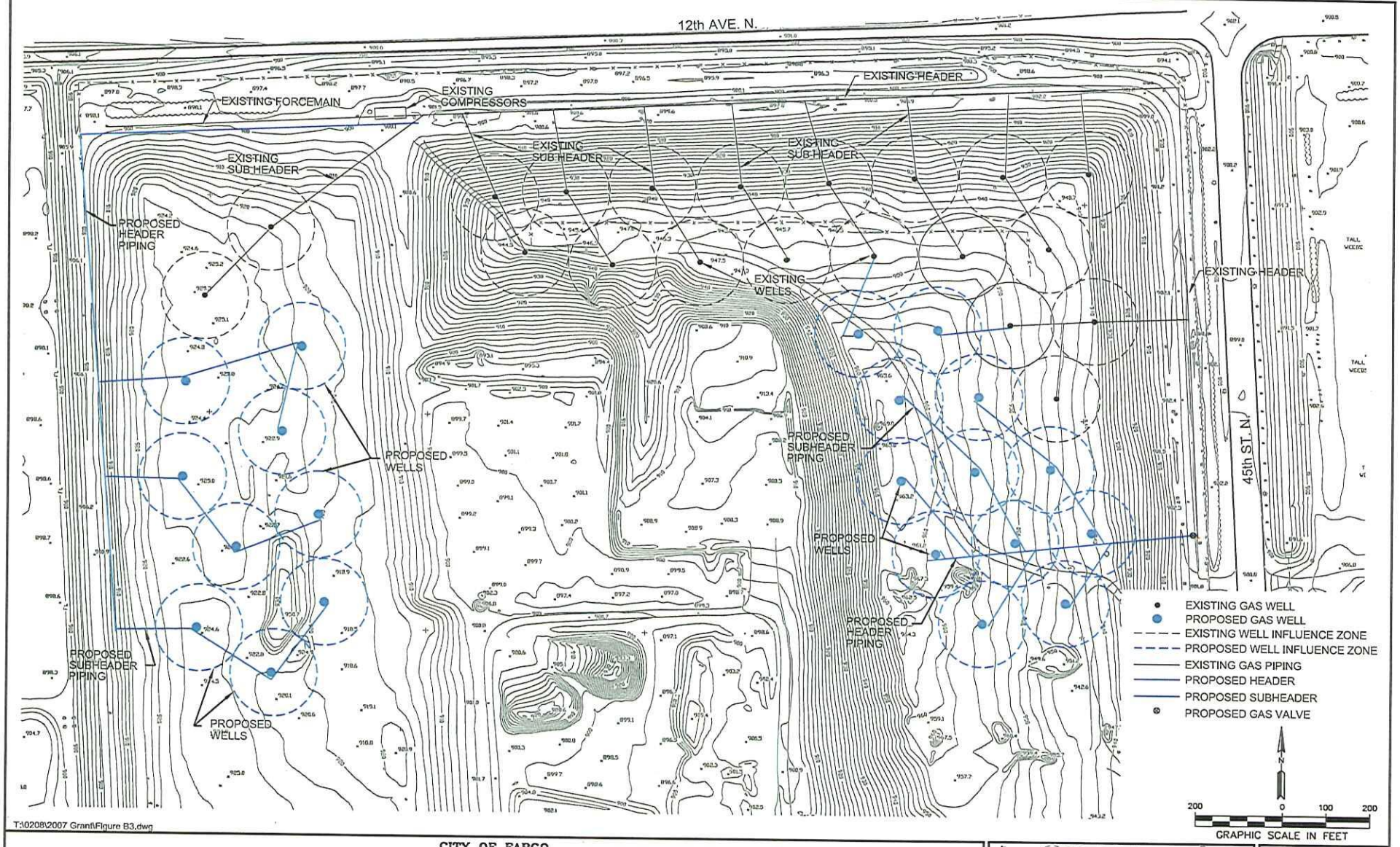
CITY OF FARGO

Original Gas System

Wenck Associates, Inc. Environmental Engineers
1600 Pioneer Creek Center Maple Plain, MN 55339

NOVEMBER, 2007

Figure No. B2



T:\0208\2007 Grant\Figure B3.dwg

CITY OF FARGO

Phase 2 Expansion

COPYRIGHT Wenck Associates, Inc. Environmental Engineers 1800 Pioneer Creek Center Maple Plain, MN 55359

NOVEMBER, 2007

Figure No. B3

Butler Machinery Company
3402 36th Street South
Fargo, ND 58104
701-298-1828
701-298-1810 FAX

BUTLER POWER SYSTEMS

PROPOSAL

Date: 11 / 19 / 07

To: FARGO LANDFILL
Fargo, ND 58102

Quote Number: Budgetary

RE: Generator set

WE PURPOSE TO FURNISH IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS, TERMS, AND CONDITIONS

QUANTITY:	One (1) new CATERPILLAR generator set
MODEL:	G3516 Landfill gas powered
RATING:	925 kw continious @ 60 Hz.
VOLTAGE:	277/480 volt, three phase
SWITCHGEAR:	1200 amp, paralleling switchgear
ENCLOSURE:	Walk in, insulated enclosure

TOTAL BUDGETARY PRICE: $ 890,000.00*

Fuel consumption 138,000 btu/min

ADDER:

Heat recovery system for exhaust and jacket water system **ADD: $ 55,000.00***

Please refer to the attached Bill of Materials
*Price does not include state or local sales and/or use taxes

APPROXIMATE SHIPPING DATE: 52 weeks **F.O.B.:** Jobsite on Carrier

TERMS: 95% on delivery / remaining 5% upon successful start-up

THIS PROPOSAL IS SUBJECT TO ALL PROVISIONS OF THE CONTRACT AND WARRANTY ON THE SALES AGREEMENT

ACCEPTED:

By

Its

Respectfully submitted,

By Tim Olson

Tim Olson, Power Systems Consultant

Figure No. 4