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PHASE I ENVIRONMENTAL SITE ASSESSMENT

UMore Park
Rosemount, Minnesota

Prepared for:

University of Minnesota
Real Estate Office

July 26, 2006

PHASE I ENVIRONMENTAL SITE ASSESSMENT
UMORE PARK
ROSEMOUNT, MINNESOTA
(Peer File #16069)

Prepared for:

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TABLE OF CONTENTS

1.0 INTRODUCTION 1

 1.1 PURPOSE..... 1

 1.2 LIMITATIONS AND EXCEPTIONS 1

 1.3 SPECIAL TERMS AND CONDITIONS 2

2.0 SITE LOCATION AND DESCRIPTION 2

3.0 USER PROVIDED INFORMATION..... 7

4.0 RECORDS REVIEW..... 8

 4.1 SITE GEOLOGY..... 8

 4.2 HISTORICAL LAND USE INFORMATION..... 9

 4.2.1 Historical Sources 9

 4.2.2 GOW Historical Overview 10

 4.2.3 Fire Insurance Maps 16

 4.2.4 Aerial Photographs 16

 4.2.5 Tenant List 18

 4.2.6 Topographic Maps 21

 4.2.7 Dakota County Records..... 21

 4.3 FEDERAL AND STATE GOVERNMENT RECORDS REVIEW 22

 4.3.1 Source 22

 4.3.2 Subject Property..... 22

 4.3.3 Adjoining Properties..... 33

 4.3.4 Surrounding Area (Not Adjoining) 36

 4.4 EPA INTERNET DATABASE REVIEW..... 37

5.0 SITE RECONNAISSANCE..... 38

 5.1 METHODOLOGY AND LIMITING CONDITIONS 38

 5.2 SUBJECT PROPERTY 39

 5.2.1 Hazardous Substances and Petroleum Products 39

 5.2.2 Aboveground or Underground Storage Tanks..... 39

 5.2.3 Polychlorinated Biphenyls (PCBs) 40

 5.2.4 Other Items or Activities of Potential Environmental Concern 40

 5.3 ADJOINING PROPERTIES..... 41

6.0 INTERVIEWS/INQUIRIES 41

 6.1 FORMER PROPERTY OWNER/OCCUPANT..... 41

 6.2 PROPERTY OWNER REPRESENTATIVES 42

 6.3 CITY OF ROSEMOUNT FIRE DEPARTMENT 42

7.0 DOCUMENT REVIEW..... 42

 7.1 GOW-RELATED ACTIVITIES 42

 7.1.1 Preliminary Environmental Investigation, Former Gopher
 Ordnance Works, U/More Park, Rosemount, MN, prepared by Peer,
 August 19, 2003 (Peer File #11717). 42

 7.1.2 Preliminary Assessment Report - 1947 Quitclaim Property,

	Former Gopher Ordnance Works, Rosemount, MN, prepared by U.S. Army Corps of Engineers - Omaha District, March 2006.	46
7.1.3	GOW Decontamination/Decommissioning Reports, August 16, 1946 and April 28, 1947.....	47
7.1.4	Phase 1 Environmental Assessment, Dakota County Parcel, Blaine Avenue and 170 th Street East, Rosemount, MN, prepared by Delta Environmental Consultants, Inc. (Delta), May 28, 1977.....	48
7.1.5	Draft Report for Confirmation Study at Former Gopher Ordnance Plant, Rosemount, MN, prepared by Donohue & Associates, Inc., October 1987.....	48
7.2	POST-GOW LAND USE.....	49
7.2.1	Record of Decision, UMRRC, prepared by MPCA, June 11, 1990 (concurring by the EPA on June 29, 1990).....	49
7.2.2	Declaration of Restrictions and Covenants and Affidavit Concerning Real Property Contaminated with Hazardous Substances, UMRRC, January 3, 2000.....	50
7.2.3	1998 Soil Sampling at Bomb Squad Detonation Facility, UMRRC, Rosemount, MN, prepared by STS Consultants, Ltd. (STS), February 11, 1999.....	50
7.2.4	Limited Phase I Environmental Site Assessment, RRC, Jensen Field Landing Strip, prepared by EnecoTech Midwest, Inc., February 14, 1995.....	50
7.2.5	Phase I Report, RRC, Remedial Investigation, Rosemount, MN, February 1985; First Quarter Summary Report, Phase II Remedial Investigation, August 27, 1985, prepared by Soil Exploration Company; and Abandoned Solid Waste Disposal Site Closure Record, Coates Dump, prepared by University, September 26, 1988.	51
7.2.6	Final Report, Phase II Ground Water Investigation, George’s Used Equipment Site, RRC, April 21, 1988; and Final Report, Soil Contamination Investigation, George’s Used Equipment Site, RRC, June 7, 1988, prepared by IT Corporation.....	52
7.2.7	Letter from the University to James Backstrom, County Attorney, Office of Dakota County, March 10, 1988; Letter from the University to David Estenson, City of Minneapolis Police Department, January 8, 1988; and Letter from the University to City of Rosemount, March 21, 1989.	52
7.2.8	Reports and Correspondence Related to the University Oxidation Pond, UMRRC.	52
7.2.9	2001-2002 Ground Water Monitoring Results, UMRRC, Rosemount, MN, prepared by Delta, February 28, 2002.....	53
7.2.10	Remedial Investigation, 2375 – 160 th Street West, Rosemount, MN (MPCA Leaksite ID# 7154), prepared by STS, August 3, 1994.	53
7.2.11	Soil Exploration/Remedial Investigation at Rosemount Agricultural	

Experiment Station, Petroleum Release Site (MPCA Leaksite No. 2529), prepared by STS, May 31, 1991.	54
7.2.12 Excavation Report for Petroleum Release Site, UMRRC, 15325 Babcock Avenue, Building 717A, Rosemount, MN, MPCA Leak No.: 4928, prepared by Nova Environmental Services, Inc., February 18, 1992.....	54
7.2.13 Limited Site Investigation Report, Building 719 Blaine, UMRRC, Rosemount, MN, prepared by Meisch & Associates, Ltd., October 26, 2000.....	54
7.2.14 List of ASTs/USTs at University Facilities, dated August 4, 2005, and RRC Tank Inventory, prepared by University, May 3, 2004.....	55
7.2.15 RRC, Rosemount, MN, RCRA Closure Assistance (Buildings A-F), 1996-98 (Peer File #6708).	56
7.2.16 Rosemount Agricultural Center Petroleum Release Remedial Investigation and Corrective Actions, 1994-95 (Peer File #4033).	57
7.2.17 RROC, 1605 160 th Street South, Pesticide Site Investigations and Corrective Actions, 1994-2002, and Land Application of Pesticide Contaminated Soil and Rinsate, 1995 and 2000 (Peer File #4172).	58
7.2.18 Reports for Navy Satellite Operations Center (NAVSOC), Detachment Bravo, 14952 Akron Avenue, Rosemount, MN: Environmental Baseline Survey for prepared by Peer, March 28, 1996; and Geohydrologic Study, prepared by U.S. Army, September 10-11, 1996.	60
7.2.19 Limited Phase I Environmental Site Assessment, UMRRC, Navy Satellite Complex, prepared by EnecoTech Midwest, Inc., January 16, 1995.	61
7.2.20 Environmental Baseline Study, Naval Intelligence Reserve Center, Rosemount, MN, prepared by Versar Inc., September 13, 2004.....	61
8.0 FINDINGS AND OPINION.....	62
8.1 RECOGNIZED ENVIRONMENTAL CONDITIONS.....	62
8.2 HISTORICAL RECOGNIZED ENVIRONMENTAL CONDITIONS	63
8.3 DE MINIMIS CONDITIONS	65
8.4 ADDITIONAL CONCERNS.....	66
9.0 CONCLUSIONS	66
10.0 DEVIATIONS	67
11.0 REFERENCES	67
12.0 GENERAL REMARKS	68
12.1 STANDARD OF CARE	68
12.2 QUALIFICATIONS AND SIGNATURES	69

LIST OF FIGURES

Figure 1 - Site Location Map
Figure 2 – UMore Park Diagram

LIST OF TABLES

Table 1 – Site Reconnaissance Data Summary

LIST OF APPENDICES

Appendix A – Property Conveyance Documents
Appendix B – Dakota County Real Estate Inquiry Information
Appendix C – User Provided Information
Appendix D – County Well Index Information
Appendix E – Historical and Environmental Document List
Appendix F – GOW Historical Information
Appendix G – Fire Insurance Maps – No Coverage Documentation
Appendix H – Tenant List
Appendix I – Dakota County Environmental Management Department Records
Appendix J – Government Records Review (EDR Report) and EPA Documents
Appendix K – Summary of Qualifications

1.0 INTRODUCTION

1.1 PURPOSE

Peer Engineering, Inc. (Peer) was retained by the University of Minnesota (University) Real Estate Office to perform a Phase I Environmental Site Assessment of the University's Outreach, Research, and Education (UMore) Park property located in Rosemount, Dakota County, Minnesota (subject property). The subject property was formerly developed as the Gopher Ordnance Works (GOW) in the early 1940s.

The objective of this assessment was to identify Recognized Environmental Conditions associated with the property according to the ASTM E 1527-05 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process".

The ASTM E 1527-05 Standard defines the term *recognized environmental condition* as meaning "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the *property* or into the ground, ground water, or surface water of the *property*. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* are not recognized environmental conditions."

The Scope of Services performed by Peer is defined by the ASTM E 1527-05 Standard and the methodologies and procedures described in the body of this report. The ASTM E 1527-05 Standard is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability, which is the practice that constitutes "all appropriate inquiry into previous ownership and uses of the property consistent with good commercial or customary practice" as defined at 42 U.S.C. 9601(35)(B).

1.2 LIMITATIONS AND EXCEPTIONS

This Phase I Environmental Site Assessment was performed in accordance with ASTM E 1527-05 Standard Practice for Environmental Site Assessments. Any limitations, additions, or exceptions from this scope are as stated in the body of this report.

1.3 SPECIAL TERMS AND CONDITIONS

Peer provided a Proposal dated May 2, 2006 to the University. The Scope of Services, Terms, and Conditions for this Phase I Environmental Site Assessment are described in that Proposal. This report has been prepared exclusively for the use of the University (the User). No additional parties may rely on the contents of this report unless written authorization is obtained from Peer.

Supporting documentation for this assessment is included in the Appendices.

2.0 SITE LOCATION AND DESCRIPTION

The subject property consists of fifteen contiguous parcels that are located south of 145th Street, west of Highway 52, north of 170th Street, and east of Biscayne Avenue in Rosemount, Dakota County, Minnesota (see Figure 1). The subject property is part of the larger UMore Park. Figure 2 presents a diagram depicting the entire UMore Park property. The subject property is the section of UMore Park that is depicted in yellow in Figure 2. The portion of UMore Park south of 170th Street is excluded from this Phase I ESA.

The subject property is part of approximately 11,700 acres of former homesteads and agricultural land that were acquired through condemnation by the federal government in 1942 during World War II for construction of the GOW. The GOW consisted of approximately 858 buildings and associated utilities and infrastructure designed for the production of smokeless gunpowder and related by-products. The GOW operated primarily on the northern and central portions of UMore Park. Two parallel munitions facilities were intended. The first facility ("A", "B", "C" line) was completed on the northeastern portion of the subject property and manufactured nitrocellulose (smokeless gunpowder) and its related by-products for approximately eleven months during late 1944 and 1945. The facility included a sulfuric (oleum) plant and nitric acid (ammonia oxidation) plant. The second facility ("D", "E", "F" line) was located on the north-central portion of the GOW site and was partially completed and reportedly never became operational. The GOW halted production in September 1945. In 1947 and 1948, the University acquired approximately 8,000 acres of the former GOW from the federal government. The remaining approximately 4,700 acres of the GOW was sold back to farmers and others. With subsequent land sales, UMore Park now comprises approximately 7,500 acres. The University provided Peer with seven Quitclaim Deeds and related conveyance documents pertaining to the subject property. Copies of those documents are included as Appendix A.

UMore Park presently consists of two primary operating units: the Rosemount Research and Outreach Center (RROC) and the University of Minnesota Rosemount Research Center (UMRRC or RRC). The RROC is a branch of the Minnesota Agricultural Experiment Station. RROC conducts research in agricultural and animal science, veterinary medicine, environmental sciences, and building construction methods. The RROC comprises approximately 3,500 acres of the subject property located south of County Road 42, west of Akron Avenue, north of 170th Street and east of Biscayne Avenue. The RRC is under the direction of the University's Real Estate Office and manages internal and external partnerships, leases, and the physical plant of UMore Park, including a number of remnant structures from the GOW. The RRC comprises approximately 4,000 acres of the subject property south of County Road 42, north of 170th Street and east of Akron Avenue. The subject property was formally named UMore Park in 2003.

Peer obtained Dakota County Real Estate Inquiry information for each individual parcel from the Dakota County Internet site. The information includes property identification number (PIN), a partial tax description, acreage, construction date (if applicable), property type, property owner, and a 2002 aerial photograph that depicts the outline of the individual parcel. The Dakota County property information is included as Appendix B.

The subject property is owned by the University. The Public Land Survey coordinates for the subject property generally include all or parts of T114N, R19W, Sections 1-4 and T115N, R19W, Sections 25-28 and Sections 33-36. The subject property consists of the following parcels (listed west-to-east and then north-to-south):

1. PIN# 34-02810-011-50 has the address of 1741 145th Street West and is located in the south half of Section 28, Township 115, Range 19. A partial tax description is listed as Gopher Ordinance South Half of Section 28 excluding University Addition. The parcel measures approximately 257 acres. No structures are currently located on the parcel. The parcel consists of predominately cultivated cropland of the RROC. A railroad track formerly traversed the parcel.
2. PIN# 34-02700-010-50 does not have a listed address. A partial tax description is listed as Southwest Quarter of Section 27, Township 115, Range 19. The parcel measures approximately 160 acres. The parcel is occupied by the multi-building Beef, Sheep, and Swine Breeding (North Beef) facility of the RROC. A railroad track formerly traversed the parcel.

3. PIN# 34-02700-010-75 does not have an address and is located in the south half of the southeast quarter of Section 27, Township 115, Range 19. A partial tax description is listed as Gopher Ordnance Southeast Quarter excluding the North 1400 Feet of Section 27, Township, Range 19. The parcel measures approximately 76 acres. No structures are currently located on the parcel. A portion of the parcel is utilized by the adjoining Dakota County vocational college as a driving training course. This parcel is under the RRC.
4. PIN# 34-02600-011-70 does not have a listed address. The parcel is located in the south half of Section 26, Township 115, Range 19. A partial tax description is listed as Gopher Ordnance South Half of Section excluding North 1400 Feet of West 290 Feet excluding South 1263 Feet of North 1400 Feet of East 440 Feet of West 730 Feet. The parcel measures approximately 297 acres. Two single-family residential dwellings are listed for the parcel (one dwelling is still present; the second dwelling has been demolished). One dwelling was constructed in 1910 and the other dwelling was constructed in 1930. Former GOW structures occupy, or occupied, the parcel. The western portion of the parcel is leased to the adjoining Dakota County vocational college. The northern portion is leased for cultivated cropland use. A portion of the parcel is leased to a radio-controlled airplane facility. The GOW well #2 is located on the parcel. A railroad line formerly traversed the parcel. This parcel is under the RRC.
5. PIN# 34-02500-010-50 does not have a listed address. A partial tax description is listed as Southwest Quarter of Section 25, Township 115, Range 19 and also Spur Track and its right-of-way over that part of Southeast Quarter lying West of Railroad. The parcel measures approximately 160 acres. No structures are currently located on the parcel. The parcel consists of predominately cultivated cropland leased by the RRC and undeveloped tree-covered land. A railroad track formerly traversed the parcel.
6. PIN# 34-03310-010-01 does not have a listed address. A partial tax description is listed as Gopher Ordnance All of Section 33, Township 115, Range 19 Subject to Parcel 1 Dakota County R/W Map 255 and Parcel 1 Dakota County R/W Map 256. The parcel measures approximately 644 acres. The parcel is occupied by the Poultry and Agronomy facilities of the RROC, the Administration building of the RROC, and cultivated crop land. In addition, a single-family residential dwelling, constructed in 1960, is listed for the parcel.

7. PIN# 34-03400-010-01 does not have a listed address. A partial tax description is listed as All of Section 34, Township 115, Range 19 Subject to Parcel 1 Dakota County R/W Map 253 and Parcel 1 Dakota County R/W Map 254. The parcel measures approximately 643 acres. Three single-family residential dwellings are listed for the parcel. The dwellings were constructed in 1875, 1953, and 1963. Several building associated with the North Beef facility of the RROC are located near the northwest corner of the parcel. Former GOW structures occupy, or occupied, the parcel.
8. PIN# 34-03500-011-01 does not have a listed address. A partial tax description is listed as Gopher Ordnance All of Section 35, Township 115, Range 19 Excluding South 987 Feet of Southeast Quarter Lying East of West 620 Feet Subject to Parcel 1 Dakota County R/W Map 252. The parcel measures approximately 596 acres. One single-family residential dwelling is listed for the parcel. The dwelling was constructed in 1942. Former GOW structures occupy, or occupied, the parcel.
9. PIN# 34-03500-012-01 does not have a listed address. A partial tax description is listed as Section 35, Township 115, Range 19, South 987 Feet of Southeast Quarter Excluding West 620 Feet Thereof. The parcel measures approximately 46 acres. The parcel is currently occupied by a rifle range that was constructed approximately four years ago.
10. PIN# 34-03600-010-25 does not have a listed address. A partial tax description is listed as West Half of Section 36, Township 115, Range 19. The parcel measures approximately 321 acres. One single-family residential dwelling is listed for the parcel. The dwelling was constructed in 1973. Former GOW structures occupy, or occupied, the parcel.
11. PIN# 12-00400-010-01 does not have a listed address. A partial tax description is listed as Gopher Ordnance All of Section 4, Excluding Roads, Subject to Parcel 2 Dakota County R/W Map 255 and Parcel 2 Dakota County R/W Map 256. The parcel measures approximately 643 acres. The parcel is occupied by the Station Service Center and the Plant Pathology facilities of the RROC, and cultivated crop land. The northwest corner of the parcel was the former location of the Dairy facility of the RROC before it was demolished in the 1980s.
12. PIN# 12-00300-010-01 does not have a listed address. A partial tax description is listed as North Half of Section 3, Township 114, Range 19 Also Southeast Quarter Subject to Parcel 2 Dakota County R/W Map 253 and Parcel 2 Dakota County R/W Map 254. The parcel measures approximately 485 acres. The Agricultural Engineering facility of the RROC is located near the northwest corner of the parcel. Cultivated crop land and undeveloped grassland also occupy this parcel. Former GOW structures occupy, or occupied, the parcel.

13. PIN# 12-00200-011-01 does not have a listed address. A partial tax description is listed as Gopher Ordnance All of Section 2, Township 114, Range 19 Excluding Northeast Quarter and North Half of North Half of Southeast Quarter Lying East of West 620 Feet Thereof Subject to Parcel 2 Dakota County R/W Map 251 and Parcel 2 Dakota County R/W Map 252. The parcel measures approximately 489 acres. Former GOW structures occupy, or occupied, the parcel. Cultivated crop land and undeveloped land also occupy this parcel.

14. PIN# 12-00200-012-01 does not have a listed address. A partial tax description is listed as Section 2, Township 114, Range 19, Northeast Quarter Excluding West 620 Feet and North Half of North Half of Southeast Quarter Excluding West 620 Feet. The parcel measures approximately 154 acres. Former GOW structures occupy, or occupied, the parcel. Cultivated crop land and undeveloped land also occupy this parcel.

15. PIN# 12-00100-011-25 does not have a listed address. This parcel consists of two sections separated by a parcel that is not part of the subject property. A partial tax description is listed as West Half of Section 1, Township 114, Range 19 Excluding South Half of Northwest Quarter and Excluding North Half of North Half of Southwest Quarter Subject to Parcel 1 Dakota County R/W Map 250. The parcel measures approximately 202 acres. An industrial/manufacturing building is listed for the parcel. The building was constructed in 1998 and has a finished floor space of 7,500 square feet. The Coates Dump has been determined to extend onto the southeast corner of the parcel.

Land use activities adjoining the subject property include:

NORTH: 145th Street borders the majority of the subject property except for the center portion of the north end of the subject property, which is occupied by the Dakota County Vocational College. The land to the north of 145th Street is a mixture of residential dwellings, cultivated cropland, and small commercial properties.

EAST: The land to the east is predominately cultivated cropland with areas of undeveloped grass- and tree-covered land except for a portion near the southeast corner of the subject property, which is occupied by a Dakota County yard waste compost facility. Several commercial/industrial properties are located just east of the subject property along Highway 52.

SOUTH: 170th Street borders the majority of the subject property except for the center portion of the south end of the subject property, which is occupied by a farmstead and cultivated cropland. The land to the south of 170th Street is a mixture of cultivated cropland, small commercial businesses, and the remainder of the UMore Park grounds.

WEST: Biscayne Avenue followed by a mixture of cultivated cropland, undeveloped grass- and tree-covered land, residential dwellings, and commercial properties.

3.0 USER PROVIDED INFORMATION

The University reviewed reasonably ascertainable information that did not identify any recorded land title records or lien records filed under federal, tribal, state, or local law that contained environmental liens or activity and use limitations that are currently recorded against the property.

Other than as set forth in the environmental reports and other information provided by the University to Peer as part of this assessment, the University does not have any specialized knowledge of the subject property and surrounding areas that is material to the stated recognized environmental conditions in connection with the subject property as identified in this report.

The University provided a Declaration of Restrictions and Covenants and an Affidavit Concerning Real Property Contaminated with Hazardous Substances which describe environmental requirements and use limitations in connection with certain portions of the subject property, as described therein. A copy of the provided information is included as Appendix C. These documents are further discussed in Section 7.2.2.

The University acquired the subject property in 1947 and 1948 for nominal consideration for educational purposes pursuant to the Surplus Property Act of 1944 (see 1947 and 1948 Quitclaim Deeds, Appendix A).

The University does not have any commonly known or reasonably ascertainable information within the local community about the property that is material to recognized environmental conditions in connection with the property.

This assessment was conducted on behalf of the University as part of the University's long-range planning process associated with the subject property.

4.0 RECORDS REVIEW

4.1 SITE GEOLOGY

Site geology can influence the susceptibility to, and relative magnitude of, environmental impacts and liabilities associated with on-site and off-site sources of contamination. The following maps and publications were used to estimate the physical characteristics of the subject property:

- ♦ *Coates, Minnesota, 7.5-Minute Topographic Map, 1974 (revised 1993), United States Geological Survey.*
- ♦ *Geologic Atlas, Dakota County, Minnesota, 1990, County Atlas Series, Atlas C-6, Minnesota Geological Survey.*
- ♦ *Protected Waters and Wetlands, Dakota County, Minnesota, 1984, Minnesota Department of Natural Resources, Division of Waters.*
- ♦ County Well Index Internet Database Site, Minnesota Department of Health.

Based on National Geodetic Vertical Datum, the surface elevation of the subject property ranges from approximately 900 to 950 feet (\pm 10 feet). The naturally occurring surficial deposits at the subject property consist of outwash deposits composed of gravel and sand. Bedrock occurs at depths of approximately 50 to 200 feet below the ground surface. Bedrock consists of areas of the St. Peter Sandstone Formation and dolostone of the Prairie du Chien Group.

The ground water table on the subject property is estimated to occur at a depth of approximately 50 to 80 feet below the ground surface (bgs). The regional ground water flow direction is estimated to be northeasterly. It should be noted that the depth and gradient of the water table might change seasonally in response to variation in precipitation and recharge, and over time in response to urban development such as storm water controls, impervious surfaces, and pumping wells.

The Protected Waters and Wetlands Map depicts no protected waters or wetlands on the subject or adjoining properties. However, the eastern portion of the property is within the watershed of the Vermillion River. A natural gas pipeline is depicted as traversing the northeast corner of the subject property (Sections 25 and 26). The subject property is depicted as the University's Rosemount Research Center.

Peer searched registered wells in the Minnesota Department of Health (MDH) County Well Index System (CWIS). Based on the available information, twenty-seven wells are registered to the property. Four of the wells are listed as sealed. According to the Well and Boring Records, soils consisted of sand, gravel, clay and loam; the static water level occurred at depths ranging from 50 to 120 feet; and bedrock (Prairie du Chien Formation and St. Peter Sandstone Formation) was encountered at depths ranging from 71 to 195 feet. The listed uses include domestic wells, irrigation wells, public supply/non-community wells, monitoring wells, and test wells. The information obtained from the CWI search is included as Appendix D.

4.2 HISTORICAL LAND USE INFORMATION

4.2.1 Historical Sources

Information sources consulted to evaluate past and present land use activities at the subject property included the following:

SOURCE	SOURCE LOCATION
Fire Insurance Maps	Environmental Data Resources, Inc.
Aerial Photographs	MarkHurd – 1945 photograph. www.co.dakota.mn.us – 2002 photograph.
Tenant Lists	University of Minnesota (University); Dakota County Environmental Management Department.
Topographic Maps	University Borchert Map Library, Minneapolis, MN.
Real Estate Information	www.co.dakota.mn.us
Dakota County Dump and Hazardous Waste Generator Records; GIS Map Data	Dakota County Environmental Management Department.
Previous Environmental Investigation Data	Peer Engineering, Inc., Eden Prairie, MN; University; and others.
GOW Historical Records and Previous Environmental Investigation Data	University; Minnesota Pollution Control Agency (MPCA); and Dakota County Environmental Management Department.

The ASTM Standard requires that review of historical sources be conducted from the present back to when the property first contained structures or was used for residential, agricultural, commercial, industrial, or governmental purposes. This task requires reviewing only as many of the “Standard Sources” as are necessary and both reasonably ascertainable and likely to be useful.

4.2.2 GOW Historical Overview

Peer was provided and reviewed various historical records regarding the GOW from the University, Dakota County and MPCA. A listing of the historical GOW records evaluated is provided in Appendix E; specific references are noted where appropriate in this section. The following is an overview of the GOW history.

The GOW was constructed and operated by the E. I. DuPont de Nemours (DuPont) for the United States (U.S.) Government on the northern and central portions of UMore Park between 1942 and September 1945. The U.S. Government deeded portions of the GOW property to the University in 1947 and 1948. The GOW was designed to include two identical production lines for the manufacture single-based (nitrocellulose) smokeless munitions (rifle and cannon) powder (i.e. smokeless powder), oleum and nitric acid. The GOW facility was also used for reworking and destruction of salvaged smokeless powder, which was shipped to GOW for reconditioning. One production line (which included the "A", "B" and "C" lines), was located on the northeastern portion of the subject property and reportedly operated from November 1944 through September 1945. The second production line (which included the "D", "E" and "F" lines), was located on the north-central portion of the subject property. Construction of this second production line was started and partially completed, but reportedly never became operational.

The smokeless powder manufacturing processes and associated infrastructure and support related activities at the GOW facility, involved manufacturing operations (i.e. of powder, oleum and nitric acid), as well as the storage and handling of a variety of hazardous substances and petroleum products, and the generation and disposition of various waste materials. Selected information regarding the GOW is included in Appendix F including the following:

- ◆ An Index Plan Sheet, based on the 1945 aerial photograph of the subject property, which shows the general operational areas of the GOW.
- ◆ Individual maps, also based on the 1945 aerial photograph, of each key operational and/or production area.
- ◆ Oblique 1943 photographs of the GOW and two facility construction plans¹.
- ◆ Two articles regarding the history of the GOW; one from 1985² and one from 2001³.

¹ *Industrial Facilities Inventory, Gopher Ordnance Works*, U.S. Army Corps of Engineers, January, 1944.

² *Ordnance Works - Condemnation, Construction, and Community Response*, Dooley, Patricia L., Minnesota History, Summer 1985.

³ *A History of the Gopher Ordnance Works Dawning of a War-Boom Community*, Dakota County Historical Society, Over the Years - Volume 41, Number 1, July 2001.

The following is a discussion of the general operational/functional areas associated with the GOW:

East Nitric Acid Plant; *Approximate Grid Coordinates:* E41-E43 x N25-26 (see map in Appendix F). The Nitric Acid Plant area was located west of the Oleum Plant. Nitric acid was produced in this area, which along with sulphuric acid was used in the manufacture of the nitrocellulose. Features associated with this area included anhydrous storage tanks, an ammonia oxidation plant, nitric acid storage tanks, nitric and sulphuric acid concentration facilities, a change house (used by workers for personal hygiene), and associated building structures and sewer system components. Some building remnants are still present in this area. Published U.S. Environmental Protection Agency (EPA) information indicates nitric and sulphuric acid concentration processes conducted in the Nitric Acid Plant area would have generated wastewater which consisted of cooling water contaminated by acid spills. Waste characterization data reviewed by EPA indicates that the wastewater would have low pH and high levels of sulfate. An estimated 51 million pounds of nitric acid were produced between November 1944 and September 1945. Some of this material was used on-site for nitrocellulose production and the remainder was shipped off-site for use at other munitions plants. This area was the subject of limited evaluation during the 2003 Preliminary Environmental Investigation, during which shallow soil impacts were identified. A discussion of the investigation results is provided in Section 7.1.1.

Oleum Plant (*Approximate Grid Coordinates:* E44-E45 x N25-N26 (see map in Appendix F). The Oleum Plant was used for the production of sulphuric acid which was concentrated into "oleum". The manufacturing process used raw sulfur. Remnants of a sulfur melting pit and other building remnants are still present in this area. Other features of this area included a boiler, sulfur storage tanks, oleum and spent acid storage tanks, and associated building structures and sewer system components. Published EPA information indicates wastewater generated from oleum production originated from cooling water contaminated by acid spills and tank car clean-up. Waste characterization data reviewed by EPA indicates that the wastewater would have a low pH and high levels of sulfate. Published information indicates that some raw sulfur product contains mercury. Because raw sulfur as well as sulphuric acid was used at GOW in the production of oleum, there is a potential that the wastewater generated by the oleum production would also have contained mercury. An estimated 81 million pounds of oleum was produced between November 1944 and July 1945. Some of this material was used on-site for nitrocellulose production and the remainder was shipped off-site for use at other munitions plants. This area was also the subject of a limited evaluation during the 2003 Preliminary Environmental Investigation, during which shallow soil impacts were identified. A discussion of the investigation results is provided in Section 7.1.1.

East Guncotton/Nitrocellulose Production Area; Approximate Grid Coordinates: E36-E38 and E39 x N23-N26 (see map in Appendix F). The East Guncotton/Nitrocellulose Production Area is where the "A", "B" and "C" production lines start and the initial processes related to the manufacture of nitrocellulose (e.g. guncotton) occurred. Each of the "A", "B" and "C" production lines had the same basic structures and processes. The "B" and "C" lines began operation in early 1945; the "A" line appears never to have been placed into full production due to lack of operating labor. The primary processes which occurred in this area included "nitration" of cellulose fiber to create nitrocellulose (guncotton), "boiling" of the nitrocellulose to ensure uniform stability, "pulping" (cutting of the fibers), "poaching/washing" to reduce the acidity and mechanically reduce fiber size, "screening/blending" to obtain uniform propellant and ballistic characteristics, and "wringer" to remove excess water for the nitrocellulose material. This area has not been investigated.

East Solvent Area; Approximate Grid Coordinates: E33/E34-E40 x N16-N20-½ (see map in Appendix F). The East Solvent Area is the second production area along the "A", "B" and "C" lines. Nitrocellulose material mixed with alcohol was transported from the Guncotton/Nitrocellulose Production Area to this area in lag cars where it was further processed. The primary processes which occurred in this area included "dehydration/press" to remove any residual water from the nitrocellulose and form it into blocks, "mixer" where the blocks were broken up, mixed with ether and a stabilizer diphenylamine (DPA), "press" where the blocks of nitrocellulose were placed in a vertical press and extruded, and "solvent recovery" where inert gases were passed through the powder to drive off residual ether/alcohol. The powder was then moved by rail to the Water Dry Houses in the Powder Manufacturing Area. This area included former bulk chemical storage sites along the "A" and "C" lines, and former bulk chemical storage areas in the northwestern portion of this area (E33-E34 x N20-N21). This area has not been investigated.

East Powder Manufacturing Area; Approximate Grid Coordinates: E35-E40 x N4-N17 and E32-E34 x N8-N10 (see map in Appendix F). Following the solvent recovery step (which occurred in the Solvent Area), the powder was sent to the Powder Manufacturing Area where it was processed in the Powder Water Dry Houses to harden the powder and further remove moisture, and the Sweetie Barrel Houses to granulate it. Next the powder was sent to the Tray Dryers, then graphite was added at the Glaze Barrel Houses to reduce the static charge and improve the packing characteristics. At the Shaker and Sieve Houses, excess graphite was removed and the powder was sampled for consistency. The powder was then sent to the Blending Towers and Packing Houses located in the west-central and southern portions of this area for thorough mixing and packing in airtight galvanized steel or copper lined wooden boxes. From here, the boxes were sent to the Shipping Houses in the Powder Storage and Shipping area. This area has not been investigated.

Powder Storage and Shipping Area; Approximate Grid Coordinates: E19-E32 x N1-N6 (see map in Appendix F). The Powder Storage and Shipping Area is located on the southern portion of the subject property, and extends further south of 170th Street East. This area includes the Shipping Houses where finished product was stored in airtight wooden boxes prior to shipment. This area has not been investigated.

East Powder Testing Area; Approximate Grid Coordinates: E42-E43 x N16-N17 and E34-E39 x N3 (see map in Appendix F). The East Powder Testing Area includes two locations; the Ballistics Lab located in the east-central portion of the subject property, and another which included Air Testing Houses located in the southeastern portion of the subject property. The Ballistics Lab also included temporary powder magazines, a firing range and an on-site septic system. One test pit (WWTP-TP-16) was completed in the vicinity of the former Ballistics Lab during the 2003 Preliminary Environmental Investigation. No visual or olfactory evidence of soil impacts was observed during completion of this test pit; however no analytical testing was conducted. Other than the above referenced test pit, this area has not been investigated.

Organics Area; Approximate Grid Coordinates: E25-E29 x N22-½-N23-½ (see map in Appendix F). Original GOW plans show facilities located in the Organics Area for the on-site manufacture diphenylamine (DPA) by an autoclaving process which used the aniline. DPA was used as a stabilizer to prevent deterioration of the smokeless powder. The 1945 aerial photograph shows various structures in the Organics Area that are similar to those depicted on the GOW plans⁴ and GOW records⁵ indicating these facilities were under construction and nearing completion in mid-April 1943. However, other GOW contract records indicate that all facilities for the manufacture of DPA were to be eliminated as of April 22, 1943. The structures shown on the plans include rail off-loading equipment for aniline, an aniline storage berm, a DPA autoclave house, ammonia recovery building, DPA vacuum still house, oil superheated house, fuel oil storage, DPA storehouses and chemical storage building. Information as to what specific activities occurred in this area is not currently available. This area has not been investigated.

⁴ *Construction of Ordnance Facilities, Gopher Ordnance Works Plot Plan*, U.S. Engineers Office, July 24, 1946.

⁵ *Industrial Facilities Inventory, Gopher Ordnance Works*, U.S. Army Corps of Engineers, January, 1944.

DNT Storage Area; Approximate Grid Coordinates: E13-E15 and E16 x N11-N15 (see map in Appendix F). The Dinitrotoluene (DNT) Storage Area was located in the west-central portion of the GOW. Original construction plans⁶ indicate this area had eight DNT storage structures (Igloo type) and a DNT transfer station. This area has not been investigated and is under consideration for investigation by the U.S. Army Corps of Engineers under the Formerly Used Defense Site (FUDS) program.

Administration and Main Shops/Maintenance Areas; Approximate Grid Coordinates: E28-E31 x N33-N34 and E31-½-E33-½ x N23-½-N27 (see Index Plan Sheet in Appendix F). The Administration and Main Shops Areas were located on the north-central portion of the subject property. These areas contained the GOW support operations and facilities such as offices (one of which had a firing range inside), vehicle and equipment repair shops, fueling stations, and equipment, supply and chemical storage. Limited evaluation was conducted of a former machine shop located within the Main Shop area during the 2003 Preliminary Environmental Investigation, during which no obvious impacts were identified. A discussion of the investigation results is provided in Section 7.1.1. No other specific investigation has been conducted in these areas.

Laminex Wood Box Sewer and Sanitary Sewer Systems; Approximate Grid Coordinates: Property Wide (see map in Appendix F). The Laminex Wood Box Sewer (Laminex Sewer) system received process wastewater from vitrified tile lateral pipes which serviced the various operational areas of the GOW (e.g. Nitric Acid Plant, Oleum Plant, etc.). The Laminex Sewer has a 3-½ x 4 foot cross-section and is constructed out of treated wood. The Laminex Sewer discharged to an open drainage ditch located on the southeastern portion of the subject property, which subsequently drained into primary and secondary settling basins which were located south of 170th Street East, then to the Vermillion River. The Sanitary Sewer system consists of vitrified tile pipes and services various GOW buildings. The Sanitary Sewer system discharged to the sewage treatment plant, which was located on the east-central portion of the subject property. Currently the Laminex Sewer is buried 5 to 10 feet below grade and contains accumulated sediment. The associated vitrified tile lateral pipes were reportedly removed/abandoned in some of the operational areas during decommissioning of the GOW in 1946. Because these sewer systems received waste materials from the GOW facility, accumulated sediment in the systems may contain a wide range of potential contaminants. This area has not been investigated.

⁶ *Construction of Ordnance Facilities, Gopher Ordnance Works Plot Plan*, U.S. Engineers Office, July 24, 1946.

Burning Grounds; Approximate Grid Coordinates: E24-E25 x N26-N29 (see map in Appendix F). The Burning Grounds was reportedly used for burning of off-specification and surplus powder, demolition materials and powder storage vessels. The Burning Grounds, which is located on the southern edge of a large wetland, consisted of a bermed area that surrounded four nitrocellulose, a DNT and other various material burn pits. Piles of “Keystone” drum bottoms and tops are currently present to the north and east of the burn pits. Water standpipes, which are still present, were used to flood the areas for fire and explosion control. This area was evaluated during the 2003 Preliminary Environmental Investigation, during which shallow soil impacts were identified. A discussion of the investigation results is provided in Section 7.1.1.

Waste Water Treatment Plant and Power Plant “A” Area; Approximate Grid Coordinates: East ½ of E41, E42 and E43 x N19-N23 (see map in Appendix F). This area includes two distinct operations areas of the GOW, including the Waste Water Treatment Plant (WWTP) and Power Plant “A”. Wastewater from GOW operations was piped to the WWTP via vitrified clay tile pipes. The treatment process included screens, digestion and sludge drying beds, which were located in the southwestern portion of this area. The sludge was removed from the drying beds and disposed of in a shallow borrow pit. Operational components and other areas of potential concern within the vicinity of the WWTP included transformer pads, an above ground secondary containment reservoir, an earthen berm, underground water holding tank, a wooded area, a rail spur, a firing range, and sludge drying beds. This area was the subject of a limited evaluation during the 2003 Preliminary Environmental Investigation, during which various shallow soil impacts were identified. A discussion of the investigation results is provided in Section 7.1.1.

Ash Pond (Effluent Pond); Approximate Grid Coordinates: E45-E46 x N17-N19 (see map in Appendix F). The former Effluent Pond received surface water and process water discharges from areas including but not limited to Power Plant A (located to the northwest) and the Ballistics Range and Lab (located to the southwest). This area was the subject of limited evaluation during the 2003 Preliminary Environmental Investigation, during which shallow soil impacts were identified. A discussion of the investigation results is provided in Section 7.1.1.

4.2.3 Fire Insurance Maps

Fire insurance maps were historically published to aid the fire insurance industry in assessing potential fire and explosion hazards associated with developed properties. As a result, these maps often give an indication of potential environmental concerns, including the locations, sizes and contents of chemical and petroleum storage tanks, chemical and petroleum storage areas, and electrical equipment. These maps also typically depict physical and cultural features such as buildings, addresses, property names, land uses, property configuration, and other miscellaneous information.

Peer authorized Environmental Data Resources, Inc. (EDR) to review their collection of Sanborn fire insurance maps to determine if there is coverage for the subject property. According to EDR, they have the largest and most complete collection of Sanborn maps. EDR reported that fire insurance maps depicting the subject property at the specified location were not identified in their collection. Documentation provided by EDR is attached in Appendix G.

4.2.4 Aerial Photographs

Aerial photographs were examined for the years 1940, 1945, 1951, 1957, 1964, 1970, and 2002. The entire subject property was not covered for every year that was reviewed, with the exception of the 1945 and 2002 aerial photographs. The 1945 digital aerial photograph was obtained from MarkHurd and used by Dakota County Environmental Management Department to generate individual maps of the different operational/functional areas associated with GOW which are included in see Appendix F. Appendix F also includes a plan sheet index map based on the 1945 aerial photograph. The 2002 digital aerial photograph coverage was obtained from the Dakota County Property Information Website database (copies of 2002 aerial photographs for the various property parcels are included in Appendix B). The 1940, 1951, 1957, 1964, and 1970 standard vertical aerial photographs were obtained from the University Borchert Map Library (copies of these photographs are not included with this Phase I ESA report).

Aerial photographs were examined for information regarding current and past site features and land use activities. Due to the scale and resolution of some of the photographs reviewed, only large features and general land uses were apparent. Details of site-specific features were not readily identifiable. The following observations are provided regarding the aerial photographs reviewed:

1940 Aerial Photographs

The subject and surrounding properties are a mixture of farmsteads and cultivated cropland on the 1940 photographs.

No bulk chemical or petroleum storage, indications of dumping, or uses of potential environmental concerns are apparent on the subject property in any of the photographs reviewed.

1945 Aerial Photograph

The approximate eastern two-thirds of the subject property are developed as the GOW on the 1945 photograph. Hundreds of structures and numerous areas of disturbed land (i.e., bare soil, excavation areas, etc.) are apparent. The approximate western one-third of the subject property appears to be predominately cultivated cropland on the 1945 photograph.

Structures associated with the portion of the GOW that extended south of 170th Street are evident on the 1945 photograph. The surrounding properties to the north, east, and west are a mixture of farmsteads and cultivated cropland.

1951 Aerial Photographs

On the 1951 photograph, it appears that the above grade portions of a number of the GOW structures have been razed. The remainder of the subject and surrounding properties appear relatively unchanged from the 1945 photograph.

1957 Aerial Photographs

The subject property is relatively unchanged from the 1951 photographs with the exception of vegetative growth over inactive areas of the former GOW. In addition, buildings associated with the University Dairy facility, the Agronomy facility, the Service Station Center facility, the Poultry facility, and the North Beef, Sheep, and Swine facility of the Agricultural Experiment Station are apparent. Surrounding properties are relatively the same with the exception of residential development to the northwest of the subject property.

1964 Aerial Photographs

The subject and surrounding properties are relatively unchanged from the 1957 photographs with the exception of more vegetative growth over inactive areas of the former GOW.

1970 Aerial Photographs

The subject and surrounding properties are relatively unchanged from the 1957 photographs with the exception of more vegetative growth over inactive areas of the former GOW. In addition, buildings associated with the Plant Pathology facility and the Agricultural Engineering facility of the Agricultural Experiment Station are apparent.

2002 Aerial Photographs

Scattered structures associated with the former GOW are apparent on the 2002 photographs. Many GOW structure remnants are still present on the subject property. DPRA, Inc. is currently conducting an assessment of the remnant GOW concrete buildings and foundations to map these remnants. Some of the land has been returned to cultivated cropland and other areas have been overgrown with vegetative growth. The approximate western one-third of the subject property consists of the existing University Agricultural Experiment Stations and cultivated cropland. The Dairy facility of the Agricultural Experiment Station is no longer present. The adjoining vocational college to the north is also apparent.

On the 2002 photograph, residential neighborhoods, commercial properties, cultivated cropland, and scattered farmsteads surround the subject property. Remnants of GOW are apparent to the south of 170th Street.

4.2.5 Tenant List

The University provided various lists of past and current tenants for review (included as Appendix H). The tenant uses were predominately for office and storage purposes with some agricultural uses. Dakota County provided a list and associated map that identified the former tenants on a building-by-building basis, based on the information provided by the University. The list and map prepared by Dakota County is also included in Appendix H. Based on a review of the lists, the following tenants may have used, stored, or manufactured hazardous substances and/or petroleum products:

- ♦ George's Used Equipment (junk cars and transformers), leased Buildings 716B and/or 301A and an area of land from 1971 through 1985. This site is further discussed in Sections 4.0 and 7.0.
- ♦ Carl Mathiason (storage of fertilizer tanks), leased land by Building 217A from 1981 through 1984.
- ♦ Printed Circuits (fabrication shop), leased Building 707-FFF in 1985 and 1986.
- ♦ Robert's Wood Products (woodworking shop), leased Building 708A from 1974 through 1983.

- ♦ Laurence Schonher (paint shop), leased Building 707-LL in 1984 and 1985.
- ♦ Sperry-Unisys (magnetic research), leased land south of 164th Street from 1980 through 1987.
- ♦ American Canadian Industries (engineering production), leased Buildings 713A and/or 707J in 1970 and 1971.
- ♦ Glen Berens (auto repair), leased Building 101C in 1972.
- ♦ Gerald Clark (production and storage of plastics and equipment), leased CRL and/or Building 302A from 1979 through 1981.
- ♦ Colorworld (storage of paints and tools), leased Building 706A in 1983.
- ♦ Jerry Dahl (car and truck repair), leased Building 709A from 1970 through 1973 and Building 746B from 1968 to 1970.
- ♦ Farmington Engineering (light manufacturing), leased Building 703A in 1972.
- ♦ Fluidyne Engineering (research lab), leased Buildings 302 and/or 217 from 1971 through 1976.
- ♦ Bernard Grinstead (autobody repair and storage), leased Building 709A from 1974 through 1978.
- ♦ Honeywell Inc. (research lab), leased Buildings 302 and/or 217 in 1970 and 1971.
- ♦ Lee Machines (rehabilitation and sale of woodworking machine), leased Building 217A from 1976 through 1983.
- ♦ Lifetime Building Systems (light manufacturing), leased Building 223A in 1971 and 1972.
- ♦ Long Engineering (machine shop), leased Building 707-LL from 1974 through 1977.
- ♦ Meehan Brothers (truck storage and repair), leased Building 713A in 1979 and 1980.
- ♦ Melco Trailers (manufacturing trailers), leased Building 716A in 1971.
- ♦ Minnesota Mining and Manufacturing (animal research), leased Building 707-FFF from 1974 through 1977.
- ♦ Thomas Mohr (storage and repair of excavating equipment), leased Building 709A from 1962 through 1965.
- ♦ Nilcon Minnesota (welding and fabrication), leased Building 217A in 1976.
- ♦ Northern States Power Company (storage of trucks and material), leased Building 717A in 1977.
- ♦ Porter Electric (storage of electrical supplies and equipment), leased Building 716A from 1968 through 1971. This site is further discussed in Sections 4.0 and 7.0.
- ♦ Root Equipment (storage of electric material), leased slab 227B in 1969 and 1970.
- ♦ Rosemount School Bus Company (school bus storage), leased Building 717A from 1968 to an unknown date.
- ♦ Technical Ordnance (manufacturer and storage of explosives), leased Buildings 706D, 251A, 501-D1, 302AA and/or CRL from 1965 through 1979.
- ♦ Tel-E-Lect (engineering and fiberglass production), leased Building 713A from 1970 through 1972.
- ♦ Jack Thompson (auto storage), leased Building 730A in 1972 and 1973.

- ◆ U.S. Transformer (repair, overhauling, and salvaging of transformers), leased Building 101A from 1973 through 1978. This site is further discussed in Sections 4.0 and 7.0.
- ◆ BMSI (briquette manufacturing), leased Building 217A from 1983 through 1987.
- ◆ Concast Inc. (precast concrete manufacturing), leased Building 223A in at least 1985.
- ◆ Control Air Products (paint sprayer manufacturing), leased Buildings 708A, 730A, and 706A in at least 1985.
- ◆ Dole Explosives (truck storage and shop), leased Building 713A from at least 1985 until the present. This site is further discussed in Section 4.0.
- ◆ Dupont deNemours and Company (nitrate and detonator storage), leased 10 acres in at least 1985.
- ◆ Daniel Hogan (welding shop), leased Buildings 713A and/or 746B since at least 1985.
- ◆ Arnie Jensen (auto shop), leased Building 709A in at least 1985.
- ◆ John Kruchowski (machine shop), leased Building 717A in at least 1985.
- ◆ Leisure Dynamics (storage, plastic molding dyes), leased Building 302A in at least 1985.
- ◆ Magnus Enterprises (fiberglass shop), leased Building 746C in at least 1985.
- ◆ Metropolitan Mosquito Control (office and chemical warehouse), leased Building 101B in at least 1985.
- ◆ Minneapolis Police Department (storage of explosives and detonators), leased Building 501-D1 since at least 1985. This site is further discussed in Section 7.0.
- ◆ Organic Conversion (manure stock pile), leased 40 acres of land in at least 1985.
- ◆ Printed Circuit Tech (shop, fabrication), leased Building 707-FFF in at least 1985.
- ◆ Recke Engineering (fiberglass shop), leased Building 719A in at least 1985.
- ◆ Reese Enterprises (plastic extruding), leased Building 223B since 1962.
- ◆ Roof-Tech (sheet metal shop), leased Building 723A in at least 1985.
- ◆ Sedco (PVC pipe fabrication), leased Building 707J in at least 1985.
- ◆ Burmeister Electric (storage and warehouse of electrical equipment), leased Building 223A since at least 1985.
- ◆ Counter Corporation (cabinet manufacturing), leased Building 217A since at least 1985.
- ◆ Dakota County Technical College (mechanic shop), currently leasing a section of Building 717A.
- ◆ Dakota Dynamics (machine shop), currently leasing Building 704F.
- ◆ Grasshopper Lawn Service (seasonal equipment), currently leasing Building 709A.
- ◆ Minnesota Operating Engineers Training Programs (training for heavy equipment), currently leasing CRL.

4.2.6 Topographic Maps

Topographic maps produced by the United States Geological Survey (USGS) depict cultural as well as natural surface features and elevation contours. The following USGS topographic map was examined:

- ♦ *Coates, Minnesota, 7.5-Minute Topographic Map, 1974 (revised 1993).*

Numerous structures and roads, a gravel pit, a pipeline (depicted as natural gas on the protected waters map), a radio tower, an abandoned railroad line, and a water tank are depicted in black on the map indicating that these features were present when the original base map was published in 1974. The subject property and the adjoining land to the south are labeled as University of Minnesota Rosemount Research Center.

No areas of dumping are depicted on the map. However, Dakota County Environmental Management Department provided Peer with a table of database listings and a map depicting areas of alleged past dumping/waste site activities at the subject property (see Section 4.2.7).

4.2.7 Dakota County Records

Real Estate Inquiry Information

Peer conducted a search of the Dakota County Real Estate Inquiry database. This information is summarized in Section 2.0 and is included in Appendix B.

Environmental Maps and Data

The Dakota County Environmental Management Department provided Peer with a table of database listings and a map depicting areas of alleged waste sites and hazardous waste generators located on the subject property. The hazardous waste generator information is consistent with information provided in the federal and states record review (See Section 4.3), and is thus not described in this Phase I ESA report. The table of waste site listings and associated map are included in Appendix I. The waste site listings correspond to both past GOW operations and post GOW property use.

4.3 FEDERAL AND STATE GOVERNMENT RECORDS REVIEW

4.3.1 Source

A federal and state database review was conducted by Environmental Data Resources, Inc. (EDR), a commercial regulatory database services firm. An EDR DataMap Area Study report was generated for the subject property on May 15, 2006. This report was used to identify verified or potential hazardous substance and petroleum release sites in the vicinity of the subject property. A copy of the report is included in Appendix J.

The federal and state regulatory agency databases that were evaluated and the minimum search distances specified are consistent with the requirements of the ASTM Standard. A description of the databases reviewed is provided in the EDR report.

The Federal and State regulatory agency databases evaluated and the approximate minimum search distances used are consistent with the requirements of the ASTM E 1527-05 Standard Practice. The EDR report includes descriptions of the databases examined, and an area radius maps showing the locations of many of the sites identified.

4.3.2 Subject Property

The following database listings were identified for the subject property:

- ♦ University of Minnesota or University of Minnesota Rosemount Research Center, 15325 Babcock Avenue, EDR Map ID# 11, identified on the National Priority List (NPL) database; the Delisted NPL database; the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) database; the RCRA Corrective Action Activity (CORRACTS) database; the RCRA treatment, storage, or disposal facility (TSDF) database; the RCRA registered small quantity hazardous waste generator (SQG) database; the Record of Decision (ROD) database; the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)/Toxic Substances Control Act (TSCA) Tracking System (FTTS) database; the PCB Activity Database (PADS); the Facility Index System (FINDS) database; the State Hazardous Waste Site (SHWS) database; the State List of Sites (MN LS) database; the leaking underground storage tank (LUST) database; the registered underground storage tank (UST) database; the registered aboveground storage tank (AST) database; the Institutional Control (INST CONTROL) database; and the Hazardous Waste Enforcement Log (MN Enforcement Log) database.

The NPL database is a subset of CERCLIS and identifies sites for priority cleanup under the Superfund Program. The Delisted NPL database contains sites deleted from the NPL where no further response is appropriate. The CERCLIS database contains data on potentially hazardous waste sites that are either proposed to or on the NPL and sites which are in the screening and assessment phase for possible inclusion on the NPL. According to the EDR report, certain portions of the subject property were proposed for listing on the NPL in 1984, were listed on the NPL in 1986, and were deleted from the NPL in 2001. ROD documents mandate a permanent remedy at an NPL site containing technical and health information to aid in the cleanup. A ROD was completed on June 29, 1990. The ROD is discussed in Sections 4.4 and 7.2.1.

According to the EDR report, the University formerly operated an approximately 4-acre disposal site. Between 1960 and 1973, the University buried, or incinerated, gaseous, liquid and solid chemical laboratory wastes at this site. In 1972, the University detected volatile organic compounds (VOCs) and heavy metals in monitoring wells and soil on the property. A remedial investigation/feasibility study was ordered to determine the type and extent of the contamination. The order also called for removal of contaminated soil and monitoring of ground water. Additional detail regarding these impacts is discussed in Sections 4.4 and 7.0.

The CORRACTS database identifies hazardous waste handlers with RCRA corrective action activity. RCRA information also contains information on sites which generate, transport, store, treat, and/or dispose of hazardous wastes. Nine violations pertaining to generator recordkeeping requirements, TSD permits, TSD manifests requirements, and other requirements for generators and TSDs were noted. All of the violations were subsequently brought into compliance.

The FTTS database tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA, and Emergency Planning and Community Right-to-Know Act (EPCRA). According to the EDR report, inspections occurred in 1990 and 1997. A violation (not identified in the EDR report) was determined during the 1990 assessment. No additional information was included in the EDR report.

The PADS database identifies generators, transporters, commercial storers and/or brokers and disposers of PCBs.

Inclusion on FINDS simply indicates that the property is listed on other federal databases, as noted, such as CERCLIS and RCRA-SQG.

The SHWS database is the state's equivalent to CERCLIS. The University is listed twice on this database. According to the EDR report, one listing is for PCB-contaminated soil at a recycling/salvage site that is on the NPL and the site is not active. The second listing is for lead-contaminated soil at a recycling/salvage site that is on the NPL and the site is not active. Although not specifically identified, the SHWS database listings refer to the former George's Used Equipment, Porter Electric and Machine Company, and U.S. Transformer sites that are part of the delisted NPL site (as discussed in Sections 4.4 and 7.2.1).

Inclusion on MN LS simply indicates that the property is listed on other federal or state databases, as noted, such as Delisted PLP.

According to supplemental EDR Site reports, the following tanks are registered to the University:

1. One 12,000-gallon fuel oil UST installed on January 1, 1942 and removed on January 11, 1990.
2. One 6,000-gallon fuel oil UST installed on January 1, 1954. The EDR report lists this tank as both removed and as active.
3. One 1,000-gallon gasoline UST installed on January 1, 1982 and removed on August 20, 1993.
4. One 1,000-gallon UST installed on January 1, 1956 and removed on December 24, 1991.
5. One 6,000-gallon diesel UST installed on May 15, 1982 and removed on February 7, 1990.
6. One 1,000-gallon diesel UST removed on January 11, 1990.
7. One 3,000-gallon fuel oil AST removed on April 26, 2000.

A petroleum release was reported on December 23, 1991 (LEAK# 4928) related to the 1,000 gallon UST removed on December 24, 1991. The file regarding this release was "closed" by the Minnesota Pollution Control Agency (MPCA) on May 26, 1992. A "closed" designation indicates that the MPCA has determined that the concerns at the subject property do not appear to represent a material threat to human health or the environment but does not necessarily indicate that no contamination exists. According to the EDR report, there was no ground water contamination and no contaminated soils remain.

The INST CONTROL database lists sites that have an Institutional Control event. According to the EDR report, the PCB-contaminated soil site identified on the SHWS database, as discussed above, is also identified on the INST CONTROL database. An environmental restrictive covenant has been placed on this site (see Section 7.2.2).

The MN Enforcement Log database is the Regulatory Compliance, Hazardous Waste Enforcement Log and Hazardous Waste Permit Unit Project Identification List. According to the EDR report, Letters of Warning were issued in 1990 and 1999 and a Ten Day Letter was issued in 1996. No additional information was included in the EDR report.

- ♦ Dole Explosives Inc., 15325 Babcock Avenue, EDR Map ID# 11, is identified on the Toxic Chemical Release Inventory System (TRIS) database; the FINDS database; and the UST database.

The TRIS database identified facilities that release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313. No information was provided in the TRIS database. Inclusion on FINDS simply indicates that the property is listed on other federal databases, as noted, such as TRIS.

According to a supplemental EDR Site report, the following USTs are registered to Dole Explosives:

1. Two 6,000-gallon fuel oil USTs installed on July 15, 1980 and removed on February 6, 1990.
2. A 1,000-gallon fuel oil UST listed as temporarily closed.

No releases have been reported with the past use of these tanks.

- ♦ Navy Reserve Intelligence Area 10, 14950 Akron Avenue, EDR Map ID# 6, identified on the RCRA-SQG, FINDS, UST, LUST, AST, leaking aboveground storage tank (LAST), and the spills list (MN SPILLS) databases.

No violations regarding the generation of hazardous waste were noted in the EDR report. Inclusion on FINDS simply indicates that the property is listed on other federal databases, as noted, such as RCRA-SQG.

According to a supplemental EDR Site report, the following USTs are registered to Navy Reserve Intelligence Area 10:

1. A 560-gallon gasoline UST installed on January 1, 1967 and removed on December 5, 1990.
2. A 4,000-gallon diesel UST installed on January 1, 1964 and removed on October 1, 1988.
3. A 565-gallon diesel UST installed on January 1, 1964 and listed as removed.
4. A 560-gallon gasoline UST installed on December 12, 1990 and removed on October 12, 2000.

5. A 2,000-gallon diesel UST installed on October 1, 1988 and listed as active.

An underground storage tank release (gasoline) was reported on December 20, 1990 (LEAK# 3682). The file regarding this release was closed by the MPCA on January 23, 1991. According to the EDR report, ground water was reportedly not impacted by the release; however, contaminated soils remain at the property.

A second release (gasoline) was reported on October 27, 2000 (LEAK# 13710). The file regarding this release was closed by the MPCA on January 29, 2002. According to the EDR report, it was unknown or unreported if ground water was impacted by the release or if contaminated soils remain at the property.

According to a supplemental EDR Site report, the following ASTs are registered to Navy Reserve Intelligence Area 10:

1. Two 150-gallon diesel ASTs removed on October 12, 2000.
2. A 265-gallon drain oil AST removed on October 12, 2000.

An aboveground storage tank release (gasoline) was reported on October 27, 2000 (LEAK# 13710). The file regarding this release was closed by the MPCA on January 29, 2002. According to the EDR report, it was unknown or unreported if ground water was impacted by the release or if contaminated soils remain at the property. Based on the available information, the LAST listing appears to be associated with the second LUST listing, as discussed above.

The MN SPILLS refers to a release reported on October 25, 1997. According to the EDR report, there was a natural gas pipeline break. No follow-up was required and the incident was labeled non-significant. The spill was closed by the MPCA on October 25, 1997. According to the EDR report, there is no file associated with this release.

Additional information pertaining to the Navy Reserve Intelligence Area 10 is discussed in Sections 7.2.18, 7.2.19 and 7.2.20.

- ♦ Rosemount Research Center U of M – Transformer O, 14951 Akron Avenue, EDR Map ID# 6, identified on the MN SPILLS database.

A release of an estimated 30 gallons of mineral oil was reported on October 25, 2005. The EDR report states that the contents of two transformers were released along the side of an unmarked road on the caller's (the University) property. Bay West was used for cleanup activities. Soils were reportedly impacted. The file was closed by the MPCA on October 31, 2005. No additional information was provided in the EDR report.

- ♦ Metropolitan Mosquito Control, 2240 152nd Street, Building 101, EDR Map ID# 8, identified on the RCRA-SQG and FINDS databases.

This business was not identified on any databases indicating a release associated with the generation of hazardous waste. No violations regarding the generation of hazardous waste were noted in the EDR report. Inclusion on FINDS simply indicates that the property is listed on other federal databases, as noted, such as RCRA-SQG.

- ♦ George's Used Equipment and A Woman's Touch, 1980-1982 153rd Street East, EDR Map ID# 9, identified on the RCRA-SQG and FINDS databases.

These businesses were not identified on any databases indicating a release associated with the generation of hazardous waste. No violations regarding the generation of hazardous waste were noted in the EDR report. Inclusion on FINDS simply indicates that the property is listed on other federal databases, as noted, such as RCRA-SQG. As discussed earlier in this section and in Sections 4.4, 7.2.1, 7.2.2 and 7.2.5, George's Used Equipment is part of a "de-listed" NPL site.

- ♦ Centex Homes - Rosemount, 1982 153rd Street West, EDR Map ID# 9, identified on the RCRA-SQG and FINDS databases.

This business was not identified on any databases indicating a release associated with the generation of hazardous waste. No violations regarding the generation of hazardous waste were noted in the EDR report. Inclusion on FINDS simply indicates that the property is listed on other federal databases, as noted, such as RCRA-SQG.

- ♦ Dakota County Tech/County Mech, 1950 153rd Street East, EDR Map ID# 9, identified on the FINDS database.

Inclusion on FINDS simply indicates that the property is listed on other federal databases, in this case, the Minnesota Permitting, Compliance, and Enforcement Information Management System. No additional information was provided in the EDR report.

- ♦ Mpls/St. Paul Esty, 2200 East 156th Street, EDR Map ID# 12, identified on the RCRA-SQG and FINDS databases.

This business was not identified on any databases indicating a release associated with the generation of hazardous waste. No violations regarding the generation of hazardous waste were noted in the EDR report. Inclusion on FINDS simply indicates that the property is listed on other federal databases, as noted, such as RCRA-SQG.

- ♦ NRG Processing Solutions LLC, 15800 Barbara Avenue, EDR Map ID# 15, identified on the RCRA-SQG and FINDS databases.

This business was not identified on any databases indicating a release associated with the generation of hazardous waste. No violations regarding the generation of hazardous waste were noted in the EDR report. Inclusion on FINDS simply indicates that the property is listed on other federal databases, as noted, such as RCRA-SQG.

- ♦ Reese Enterprises, 16350 Asher Avenue, EDR Map ID# 27, identified on the RCRA-SQG and FINDS databases.

This business was not identified on any databases indicating a release associated with the generation of hazardous waste. No violations regarding the generation of hazardous waste were noted in the EDR report. Inclusion on FINDS simply indicates that the property is listed on other federal databases, as noted, such as RCRA-SQG.

- ♦ Gopher Ordnance Plant Rosemount, EDR Map ID# 17, identified on the Formerly Used Defense Sites (FUDS) database.

The FUDS database includes locations of formerly used defense site properties where the US Army Corp of Engineers is actively working or will take necessary investigation, restoration and cleanup actions. According to the EDR report, the property was acquired by the U.S. in 1942 for use as an ordnance plant (Gopher Ordnance Plant) for the production of explosives. The plant occupied 11,994 acres. Improvements originally consisted of 885 manufacturing and operations buildings constructed between August 1942 and July 1943. The plant was completed in early 1944 and was closed some six months later. The property was granted to the University in 1947. Military munitions were produced or demilitarized at the property, thus representing an explosive hazard. Site-wide investigation and Department of Defense responsibility are the subject of the FUDS Program

involvement. Additional information is provided in Section 2.0, 4.2.2, and 7.1.1 and 7.1.2.

- ♦ Rosemount Burn Site, 2665 152nd Street East, EDR Map ID# 10, identified on the MN LS database.

Inclusion on the MN LS database simply indicates that the property is listed on other state databases, in this case, the MPCA Voluntary Investigation and Cleanup (VIC) Program database (VP4500). The VIC database tracks information pertaining to facilities that have undertaken or completed on-site remediation activities. Peer reviewed the MPCA VIC Internet Database for additional information on this listing. Based on the available information, the property was originally entered into the VIC Program in 1994 and in November 2002, a Phase I Environmental Site Assessment report dated February 7, 1996 was submitted to the MPCA. The file is listed as active. No other information is provided on the MPCA database. Based on the site name and address, this MN LS database listing corresponds with the University Burn Pit Site which is part of the de-listed NPL site at the subject property (as discussed in Sections 7.2.1).

This site was also identified as an orphan listing in the EDR report. Orphaned listings are sites for which EDR could not determine an exact location due to incomplete or inaccurate database information. According to an EDR Site Report, this site is listed on the VIC database, as discussed above, and is a 1-acre former laboratory facility located at present day Local 49 training facility. Technical Ordnance Pyrotechnical Laboratory leased the site from the University. Technical Ordnance manufactured explosive materials and occupied the site from about 1965 to 1973. Waste explosive and chemical materials including tetryl, PETN, tetacene, RDX, HMX, and lead azide and alcohol-based solvents were burned on site in a bermed burn barrel, located approximately 200 feet northeast of the laboratory building. The building was serviced by a central sewer system for the Rosemount Research Center.

Additional information is provided in Section 7.0.

- ♦ Rosemount Research Center Dump, North Side of 160th Street between Blaine and Barbara Avenues, EDR Map ID# 14, identified on the MN-LS database.

Inclusion on the MN LS database simply indicates that the property is listed on other state databases, in this case, the unpermitted dump database. No additional information was provided in the EDR report.

- ♦ University of Minnesota or Agricultural Experiment Station, 1605 160th Street West, EDR Map ID# 19, identified on the UST, LUST, the bulk pesticides/fertilizers facility (MN BULK), and the agricultural chemical spills (MN AGSPILLS) databases.

According to a supplemental EDR Site report, the following four USTs are registered to the Agricultural Experiment Station:

1. A 500-gallon gasoline UST installed on January 1, 1949 and removed on October 25, 1991.
2. A 500-gallon gasoline UST installed on January 1, 1950 and removed on October 25, 1991.
3. A 1,000-gallon gasoline UST installed on January 1, 1952 and removed on October 25, 1991.
4. A 3,600-gallon diesel UST installed on May 10, 1975 and removed on July 20, 1994.

The EDR report lists four “closed” petroleum release sites on this portion of the subject property (i.e. 1605 160th Street); the EDR report does not specify which former tank was associated with each release. An underground storage tank release (gasoline) was reported on May 14, 1990 (LEAK# 2529). The file regarding this release was closed by the MPCA on October 4, 1994. According to the EDR report, ground water was reportedly impacted by the release and contaminated soils remain at the property. This release is discussed further in Section 7.2.11.

A second release (gasoline) was reported on October 25, 1991 (LEAK# 4758). The file regarding this release was closed by the MPCA on January 21, 1993. According to the EDR report, ground water was reportedly not impacted by the release and no contaminated soils remain at the property.

A third release (gasoline) was reported on October 26, 1991 (LEAK# 4759). The file regarding this release was closed by the MPCA on January 21, 1993. According to the EDR report, ground water was reportedly not impacted by the release and no contaminated soils remain at the property.

A fourth release (diesel) was reported on June 21, 1994 (LEAK# 7504). The file regarding this release was closed by the MPCA on September 13, 1995. According to the EDR report, contaminated soils remain at the property.

The MN BULK database is a list of facilities that use bulk pesticides and fertilizers. According to the EDR report, the University of Minnesota has a bulk pesticide/fertilizer storage permit (License# 20058982).

The release date and the material(s) released were not identified for the MN AGSPILLS listing. The release was closed by the Minnesota Department of Agriculture (MDA) on September 25, 1992.

- ♦ Ag Research Center, 2375 160th Street West, EDR Map ID# 20, identified on the LAST database.

An aboveground storage tank release (fuel oil #1 and #2) was reported on January 19, 1994 (LEAK# 7154). The MPCA closed the file on this release on September 26, 1994. According to the EDR report, ground water was reportedly not contaminated by the release; however, contaminated soil remains at the property.

- ♦ Rosemount Compost Facility, 16200 Barbara Avenue, EDR Map ID# 26, identified on the AST database.

One 1,000-gallon diesel AST is registered to this facility. According to an EDR Site Report, the tank was installed in 2002 on a concrete base and is active. No releases have been reported in association with the use of the tank.

- ♦ Rosemount Research Center, 160th/Blaine, EDR Map ID# 23, identified on the MN SPILLS database.

A release of an estimated 55 gallons of used or waste oil was reported on July 2, 2004. The EDR report states that a plastic drum was discovered on the property. The only label on the drum was the drum manufacturer. The drum split open and released the contents, thus impacting the soil. The caller reportedly handled the clean-up and the disposal of the drum. The spill was closed by the MPCA on July 8, 2004. According to the EDR report, there is no file associated with this release.

- ♦ U of MN Rosemount Experimental Station, EDR Map ID# 13, identified on the MN AGSPILLS database.

Three releases are reported under this database listing. The investigation location description is listed as Buildings 313 and 315, Buildings 610, 612, and 621, and Buildings 706 and 709. The material(s) released is not identified. However, available information indicates the releases were pesticide rinsate from former USTs. All three releases were closed by the MDA on August 1, 2002. These releases are discussed further in Section 7.2.17.

- ♦ University of MN Sludge Holding Lagoon, west of Annette Avenue, south of Station Trail – A, an orphan listing in the EDR report, identified on the MN LS database.

According to an EDR Site Report, this site is an unpermitted dump. No additional information was provided.

- ♦ U of MN Building 179, Rosemount Research Center, an orphan listing in the EDR report, identified on the LAST database.

According to an EDR Site Report, an aboveground storage tank release (fuel oil #1 and #2) was reported on May 12, 2000 (LEAK# 13435). The file regarding this release was closed by the MPCA on May 20, 2000. According to the EDR report, it was unknown or unreported if ground water was impacted by the release or if contaminated soils remain at the property.

- ♦ International Union of Operating Engineers Local 49, 2665 East 152nd Street, an orphan listing in the EDR report, identified on the RCRA-SQG and FINDS databases.

This business was not identified on any databases indicating a release associated with the generation of hazardous waste. No violations regarding the generation of hazardous waste were noted in the EDR report. Inclusion on FINDS simply indicates that the property is listed on other federal databases, as noted, such as RCRA-SQG.

- ♦ U of M, 605 160th Street West, an orphan listing in the EDR report, identified on the MN SPILLS database.

The MN SPILLS refers to a release reported on November 29, 1994. According to an EDR Site Report, a release of agricultural pesticide or fertilizer was encountered during tank removal activities. Soil contamination was noted in the EDR Site Report. The spill was closed by the MPCA on November 29, 1994. According to the EDR report, there is no file associated with this release.

- ♦ Rosemount Agricultural Experimental Dump, northwest of 154th Street West and Station Trail, an orphan listing in the EDR report, identified on the MN LS database.

According to an EDR Site Report, this site is an unpermitted dump. No additional information was provided.

- ♦ UMore Park/Former Gopher Ordnance Works, 153rd East and 155th East, an orphan listing in the EDR report, identified on the FINDS and US BROWNFIELDS databases.

The US BROWNFIELDS database includes Brownfield properties addressed by Cooperative Agreement Recipients and Brownfield properties addressed by Targeted Brownfield Assessments. The FINDS listing is related to the Targeted Brownfield Assessments. No additional information was provided in the EDR report.

- ♦ Former Gopher Ordnance Works, County Highway 42, Highway 52, Clayton Avenue, an orphan listing in the EDR report, identified on the US BROWNFIELDS database.

No information was provided in the EDR report.

Summary

The subject property has been developed for commercial and/or industrial use for over 60 years. It is not uncommon for historically developed industrial areas to have soil and ground water and surface water impacts associated with their operational activities. Government database records indicate that petroleum and/or hazardous substance contamination has been identified or is suspected at the subject property. Although the reported releases have been closed by the MPCA, any future redevelopment or use plans for the subject property will need to appropriately consider this residual contamination. Therefore, these past releases represent recognized environmental conditions.

4.3.3 Adjoining Properties

Based on a review of the EDR report and on observations made at the time of the site reconnaissance, the following listings identified in the EDR report were determined to be for adjoining properties:

- ♦ Vic's Welding and Engineering, 2829 and 3000 East 145th Street, located on an adjoining property to the north across East 145th Street (EDR Map# 3 and 4), identified on the RCRA-SQG, FINDS, and UST databases.

This business was not identified on any databases indicating a release. No violations regarding the storage or disposal of hazardous waste were noted in the EDR report. Therefore, the inclusion of this business on the hazardous waste generator database is not considered to be a recognized environmental condition as defined by ASTM.

A 560-gallon gasoline UST and a 12,000-gallon gasoline UST are registered to this site. Both tanks are listed as removed. No releases have been reported in association with the past use of the tanks. Therefore, the UST listing does not represent a recognized environmental condition.

- ♦ Softech Automatics and Cap Spray Industries, 14635 Audrey Avenue, located on an adjoining property to the north (EDR Map# 5), identified on the RCRA-SQG and FINDS databases.

These businesses were not identified on any databases indicating a release. No violations regarding the storage or disposal of hazardous waste were noted in the EDR report. Therefore, the inclusion of these businesses on the hazardous waste generator database is not considered to be a recognized environmental condition as defined by ASTM.

- ♦ Associated Wood Products, 15051 Biscayne Avenue West, located on an adjoining property to the west across Biscayne Avenue (EDR Map# 7), identified on the RCRA-SQG and FINDS databases.

This business was not identified on any databases indicating a release. No violations regarding the storage or disposal of hazardous waste were noted in the EDR report. Therefore, the inclusion of this business on the hazardous waste generator database is not considered to be a recognized environmental condition as defined by ASTM.

- ♦ Dakota Fence of Minnesota, 15953 Biscayne Avenue West, located on an adjoining property to the west across Biscayne Avenue (EDR Map# 18), identified on the RCRA-SQG and FINDS databases.

This business was not identified on any databases indicating a release. No violations regarding the storage or disposal of hazardous waste were noted in the EDR report. Therefore, the inclusion of this business on the hazardous waste generator database is not considered to be a recognized environmental condition as defined by ASTM.

- ♦ Interstate Battery Twin Cities, 1106 West 170th Street, located on an adjoining property to the south across West 170th Street (EDR Map# 29), identified on the RCRA-SQG and FINDS databases.

This business was not identified on any databases indicating a release. No violations regarding the storage or disposal of hazardous waste were noted in the EDR report. Therefore, the inclusion of this business on the hazardous waste generator database is not considered to be a recognized environmental condition as defined by ASTM.

- ♦ Heikes Black Dirt, 1960 170th Street, located on an adjoining property to the south across 170th Street (EDR Map# 30), identified on the RCRA-SQG and FINDS databases.

This business was not identified on any databases indicating a release. No violations regarding the storage or disposal of hazardous waste were noted in the EDR report. Therefore, the inclusion of this business on the hazardous waste generator database is not considered to be a recognized environmental condition as defined by ASTM.

- ♦ NRG Empire Processing Facility, NRG Processing Solutions Empire, or Empire Compost Facility, 16454 Blaine Avenue, located on an adjoining property to the east across Blaine Avenue (EDR Map# 28), identified on the FINDS database, the Solid Waste Facilities/Landfill Sites (SWF/LF) database, the MN LS database, and the AST database.

The SWF/LF database contains an inventory of solid waste disposal facilities or landfills. No information was provided in the EDR report.

Inclusion on the FINDS and MN LS databases simply indicates that the property is listed on other federal and state databases.

Two 1,000-gallon diesel ASTs and one 500-gallon diesel AST are registered to Empire Compost Facility. One of the 1,000-gallon ASTs is listed as active and the second is listed as removed. The 500-gallon AST is listed as abandoned. No releases have been reported in association with the use of the tanks. Therefore, this listing does not represent a recognized environmental condition at this time.

- ♦ Coates Dump, East of Blaine Avenue, South of 170th Street East, located on an adjoining property to the southeast (EDR Map# 31), identified on the MN LS database.

According to the EDR report, this site was an unpermitted dump. As discussed in Section 7.0, the northwest end of the dump may have extended onto the subject property.

4.3.4 Surrounding Area (Not Adjoining)

Mapped Listings

The EDR report identified ten additional mapped database listings within the ASTM search distances of the subject property. Some of the sites are listed on more than one database.

The database listings include three small quantity hazardous waste generators, three FINDS sites, one SWF/LF site, one MN LS site, and two LUST sites.

With the exception of the LUST sites, no releases have been reported at these sites. The files regarding the LUST sites have been “closed” by the MPCA indicating that they have determined that the concerns at the sites do not appear to represent a material threat to human health or the environment but does not necessarily indicate that no contamination exists.

Based on factors including the type of database; site regulatory status as indicated in the EDR report; site information obtained from the EDR report; the site distances from the subject property; and/or site locations relative to the estimated direction of ground water flow, the listings in the EDR report do not represent recognized environmental conditions as defined by ASTM.

Unmapped Listings

The EDR report listed fifty-four additional database listings that are identified as “orphaned”. Orphaned listings are sites for which EDR could not determine an exact location due to incomplete or inaccurate database information. These listings appear to be for sites located beyond the appropriate search distances (as determined by the limited location information provided), their locations could not be determined, the listings were also mapped sites, or the listings were determined not to represent recognized environmental conditions.

4.4 EPA INTERNET DATABASE REVIEW

The EPA Superfund Information System Internet site was reviewed for information pertaining to the subject property. Select information obtained from the Internet Site is included at the end of Appendix J. Portions of the University of Minnesota (Rosemount Research Center) are identified as a "de-listed" Superfund site. According to a NPL Fact Sheet, this NPL site covers approximately five-square miles. Soil contamination with lead, copper, and polychlorinated biphenyls (PCBs) was restricted to three smaller disposal areas within the site and resulted from the operations of tenants of the University including: George's Used Equipment, Porter Electric and Machine Company, and U.S. Transformers. At George's Used Equipment, surface soil was contaminated with PCBs, lead, and copper. At Porter's Electric and Machine Company, soil was contaminated with high levels of PCBs. At the time the site was placed on the NPL, the ground water was also contaminated with volatile organic compounds (VOCs) from the disposal of laboratory wastes by the University. The major contaminant of concern was chloroform. Approximately 9,600 people use wells within three miles as a source of drinking water.

The site was proposed for the NPL on October 15, 1984. The University and the MPCA signed a response order by consent on May 30, 1985, under the Minnesota Superfund law. The site was included on the final NPL on June 10, 1986. The ROD, dated June 29, 1990, documents the selection of a ground water pump and treatment system as the remedy for contaminated ground water; off-site disposal of lead, copper, and PCB-contaminated soil that could not be economically separated from lead and copper contaminated soil; and on-site thermal desorption with fume incineration of other PCB-contaminated soil.

In 1988, the health-based drinking water guideline for chloroform was raised from 1.9 to 57 parts per billion (ppb). Since the concentration of chloroform in all residential wells was below 57 ppb, the drinking water advisories issued to 27 Rosemount residences were made unnecessary; however, the University chose to provide a community water supply with distribution lines to these residences. Construction began in 1989 and was completed in 1991. MPCA approved pump and treatment system shutdown in October 1991.

In July and August 1990, the University disposed of 4,384 tons of lead/PCB-contaminated soil from the former George's Used Equipment, Porter's Electric and UST sites in Resource Conservation and Recovery Act (RCRA) and/or Toxic Substance Control Act (TSCA) landfills. Removal of high levels of copper was associated with the removal of this lead-contaminated soil. An additional 100 cubic yards of lead-contaminated soil was removed to an approved landfill in 1993. A total of approximately 7,000 cubic yards of PCB-contaminated soil was burned in the thermal destruction unit. Soil containing low levels of PCBs and ash from the incinerator were

placed in an on-site landfill, which was capped and vegetated. All construction was completed in June 1996. A five-year review was completed by EPA on June 6, 1997, which indicated that the remedy remains protective of human health and the environment. The site was delisted from the NPL on February 6, 2001. A second five-year review was completed by EPA on June 21, 2002. The second review stated the remedy remains protective of human health and the environment.

5.0 SITE RECONNAISSANCE

5.1 METHODOLOGY AND LIMITING CONDITIONS

Mr. Kelly Brown and/or Mr. Stephen Jansen of Peer conducted observations of conditions at the subject property and adjoining properties on May 18, 19, and 26, 2006. Photographs were taken at the time of the site reconnaissance and are on file at Peer. Mr. Eugene Im, Mechanic Foreman for Rosemount Research Center, provided site access. Observations of the adjoining properties were limited to those made from the subject property and public roadways. A general description of the subject and adjoining properties is included in Section 2.0.

As the property encompasses approximately 7,500 acres of land, there were limitations as to the areas that could be readily observed. Peer inspected buildings that are currently leased through the University, buildings that are currently vacant but were formerly leased through the University, buildings associated with the RROC, and former GOW buildings that are currently vacant. Additional observations focused primarily on the areas where issues were noted by others in previous reports and accessible roads and thoroughfares. During the dates of inspection, the ground surface was overgrown with vegetation, which prevented full, direct observations of the ground surface. The subject property contains hundreds of remnants of former GOW buildings. Peer did not access the ruins for observation. No additional access limitations were encountered.

Due to the number of buildings/areas that were accessed or observed during the reconnaissance, a table depicting the buildings/areas accessed or observed during the reconnaissance and the features associated with the buildings/areas is included as Table 1.

5.2 SUBJECT PROPERTY

5.2.1 Hazardous Substances and Petroleum Products

Hazardous substances and/or petroleum products were observed inside various buildings on the subject property. These products were stored in various size containers ranging from 1-quart to 55-gallon drums, not including storage tanks as discussed in Section 5.2.2. The products included, but not limited to, paints, vehicle maintenance chemicals, oils, hydraulic fluids, gasoline, hazardous wastes, solvents, kerosene, and adhesives. Areas of staining were observed on the concrete floors of the following buildings: 717A, 713A, 714A, 709A, the Dakota Woodgrinding building, the airport hangers, 302A, and 706B. An inventory of hazardous substances, wastes and petroleum products was beyond the scope of this Phase I ESA.

5.2.2 Aboveground or Underground Storage Tanks

Registered storage tanks at the subject property are identified in Section 4.3.2 (the EDR report).

Numerous storage tanks were present during the time GOW was in operation. Remnant concrete stands for many of the ASTs remain at the property. A large, round AST that was formerly used by GOW to store hydrous ammonia is located in the area near Building 302A, which is currently leased by Minnesota Operating Engineers Training Programs.

The University has operated numerous storage tanks at the subject property. The University provided lists of their storage tanks, as discussed in Section 7.2.14. In addition to those identified on the provided lists, a 1,000-gallon gasoline UST was reportedly removed from Building 717A in 1991 (associated with MPCA LEAK# 4928).

Several current tenants use/operate storage tanks including a 7,000-gallon diesel UST used by Dole Explosives outside of Building 713A (soil staining was observed beneath the dispensing pump); a 1,000-gallon heating oil AST inside of the space leased by Counter Corporation in Building 217A (surrounded by a secondary containment); two 260-gallon used oil ASTs and one 1,000-gallon diesel AST located on a concrete pad outside of the Dakota Woodgrinding building; a 18,000-gallon diesel AST located outside of Building 302A (located in a deteriorating secondary containment); and a 200-gallon gasoline AST and a 265-gallon used oil AST located outside of Building 302A (soil staining was observed beneath the used oil AST). Some of these tanks were identified on the lists provided by the University.

5.2.3 Polychlorinated Biphenyls (PCBs)

Buildings at the subject property contain various types of electrical or hydraulic-powered equipment, which could potentially contain polychlorinated biphenyls (PCBs). In addition, previous tenants (i.e. George's Used Equipment, Porter Electric and Machine Company, and U.S. Transformer) at the subject property handled and recycled PCB-containing electrical equipment. Those tenant activities resulted in PCB releases at the subject property as discussed in Sections 4.4 and 7.2.1. These PCB releases were remediated and residual PCB contamination at the subject property is being managed through a Declaration of Restrictions and Covenants and an Affidavit Concerning Real Property Contaminated with Hazardous Substances discussed in Sections 3.0, 4.3.2, and 7.2.2.

During the site reconnaissance, Peer observed numerous transformers related to current operations at the subject property. No evidence of leaking was observed on the transformers that were observed. In addition, Peer also observed fourteen capacitors currently stored on pallets inside Building 101A. The capacitors appeared to be in good condition, and no evidence of staining was observed on the concrete floor beneath them.

Fluorescent light fixtures are present throughout many of the accessed property buildings. Ballasts in fluorescent light fixtures that were manufactured prior to 1979 can contain small amounts of PCBs. Since the majority of the property buildings were constructed prior to 1979, the ballasts may contain PCBs. Ballasts that contain PCBs should be properly disposed when removed from service.

5.2.4 Other Items or Activities of Potential Environmental Concern

Clandestine drug labs were reportedly operated in the past in Buildings 746A and 303B. Building 746A was reportedly cleaned and was subsequently demolished. No corrective actions reportedly have yet been conducted at Building 303B.

Certain of the GOW buildings were constructed with individual septic systems. The GOW facility sewer system included a Laminex Woodbox Sewer System. The GOW operated a waste water treatment plant (see Section 4.2.2). Many of the buildings currently used by the University are connected to a community septic system. Past discharges to the facility-wide and individual sewer systems could potentially have impacted soil and/or ground water at the subject property.

Suspect asbestos-containing materials (ACM) observed during the site reconnaissance including, but not limited to, floor tile, ceiling tile, transite panel siding, and thermal system insulation. These materials were in good to damaged condition. No samples of suspect ACM were collected. The observations conducted during this assessment are not intended to represent an asbestos building survey as defined by the Minnesota Department of Health or other regulatory agencies.

It was reported that several areas of waste disposal are located across the subject property. These activities reportedly included, among other things, disposal of demolition debris associated with former GOW buildings and chemicals associated with past University activities. Areas of alleged dumping identified by Dakota County are discussed in Section 4.2.2. This represents a recognized environmental condition.

5.3 ADJOINING PROPERTIES

Observations of adjoining properties were limited to those made from the subject property and public thoroughfares. A description of the adjoining properties is included in Section 2.0.

The surrounding area is developed for residential, agricultural, and commercial uses. No hazardous substance or petroleum product storage or use is readily apparent on the adjoining properties. No apparent outdoor storage or manufacturing activity was observed on the surrounding properties. No industrial wastewater pits, ponds, or lagoons, industrial wastewater discharges or wastewater treatment processes were observed at adjoining properties.

As previously noted, GOW operations extended south of the subject property across 170th Street. Structures or systems associated with GOW south of 170th Street included, but not limited to, the shipping and storage buildings, the Laminex Woodbox Sewer System, and the primary and secondary wastewater settling basins.

6.0 INTERVIEWS/INQUIRIES

6.1 FORMER PROPERTY OWNER/OCCUPANT

The subject property was owned by the federal government in the 1940s. Numerous significant historical records, including federal documents, were reviewed by Peer as part of this assessment. In addition, Peer was the environmental consultant for the University on a number of previous environmental investigations on portions of the subject property. Given Peer's knowledge and involvement with the general environmental conditions at the subject property, attempting to identify and then conducting an interview with a representative of the federal government or other former property representatives was deemed not practical.

6.2 PROPERTY OWNER REPRESENTATIVES

Interviews were conducted with Mr. Eugene Im, Mechanic Foreman for Rosemount Research Center; Mr. Gordon Girtz, University's Boynton Health Service; Ms. Kathy Boudreau, Administration Professional for Rosemount Research Center; and tenants of each of the buildings, who were present at the time of the site reconnaissance. Peer made specific inquiry during the interviews regarding knowledge of existing or former storage tanks, leaks, spills, dumps, or additional potential environmental concerns associated with the subject property. The information obtained from the interviews is incorporated in the site reconnaissance table included as Table 1.

6.3 CITY OF ROSEMOUNT FIRE DEPARTMENT

An inquiry to the City of Rosemount Fire Department was not deemed necessary since the University's Environmental Health and Safety Department manages environmental issues such as hazardous waste disposal and storage tank information at the subject property and these records were made available for review.

7.0 DOCUMENT REVIEW

Peer has conducted numerous environmental investigations on portions of the subject property since 1994 on behalf of University and reviewed documents from these investigations as well as historical and environmental documents prepared by others in connection with the subject property. A Historical and Environmental Document List is included as Appendix E and lists Peer's documents, as well as related regulatory approvals and other technical reports for the subject property. Certain of the more significant documents and reports included on the Historical and Environmental Document List are summarized below.

7.1 GOW-RELATED ACTIVITIES

7.1.1 Preliminary Environmental Investigation, Former Gopher Ordnance Works, U/More Park, Rosemount, MN, prepared by Peer, August 19, 2003 (Peer File #11717).

In 2002, Peer completed a historical review of readily available information regarding the GOW. Based on the review, Peer identified a number of former GOW operation areas with potential for environmental impacts. Dakota County staff also completed detailed information review, as well as site visits and historical aerial photograph review. Information from the aerial photograph review was mapped using GIS (Geographic Information System) to allow for easy identification of locations in the field. Based on the results of the information review and subsequent discussions between the MPCA, the University and Dakota County, six areas (five of which were

located on the subject property and one which was located just south-southeast of the subject property) were investigated in late 2002/early 2003. The areas investigated on the subject property included the Oleum Plant, the Nitric Acid Plant, the Burning Grounds, the Waste Water Treatment Plant and Power Plant "A" area, and Main Shops area (see Index Plan Sheet and Operational Area Maps included in Appendix F).

The following are the findings of the 2003 Preliminary Environmental Investigation:

Oleum Plant. Six test pits (OP-TP-1 through OP-TP-6) were completed in the vicinity of the Oleum Plant and associated structures. The areas of investigation included the sulfur mixing pit, septic tank, drainage areas and above ground Oleum storage tank holders. Key findings included from these test pits included:

- ♦ The two test pits (OP-TP-1 and OP-TP-2) completed within the former sulfur mixing pit identified residual sulfur at a depth of approximately 2 feet. No visual or olfactory evidence of impacts were identified in the other four test pits in the Oleum Plant area.
- ♦ Analytical testing of shallow soils from the Oleum Plant area identified concentrations of semivolatile organic compounds (SVOCs), diesel range organics (DRO), and soluble sulfates.
- ♦ Mercury was detected in six of the twelve samples at concentrations ranging from 0.016 to 0.072 mg/kg. Metals concentrations detected were below the respective MPCA Industrial Soil Reference Values (SRVs) or Soil Leaching Values (SLVs).

East Nitric Acid Plant. Four test pits (NA-TP-1 through NA-TP-4) were completed in the vicinity of the Nitric Acid Plant and associated structures. Key findings included from these test pits included:

- ♦ One of the test pits (NA-TP-3) was completed around a brick structure that surrounded a vitrified clay drainage line associated with the above ground acid tank holders. This test pit uncovered fill soils with intermixed innocuous debris that included black brick mortar, remnants of burnt wood and broken gaskets from the drainage line. No visual or olfactory evidence of impacts were identified in field observations from the other three test pits.
- ♦ Analytical testing of sediment within the drainage line, a gasket from the line, and mortar from the brick structure in the Nitric Acid Plant area identified concentrations of DRO and soluble sulfates.
- ♦ Analytical testing of a soil sample from the base of a dry well in the Nitric Acid Plant area adjacent to a change house (Building 707A), identified mercury at a concentration of 42 mg/kg.

Burning Grounds. Eighteen test pits (BG-TP-1 through BG-TP-18) were completed in the vicinity of the Burning Grounds. The areas of investigation included the west burn pit, east burn pit, drainage culvert and the northern ridge where numerous drum components were present. Shallow soil samples collected from the test pits identified total lead at concentrations exceeding the industrial SRV and SLV in two samples including 3,100 mg/kg in BG-TP-15 (0-1')(A) and 1,000 mg/kg in sample BG-TP-1 (0-1'), and total mercury exceeding the industrial SRV and SLV in one sample BG-TP-8 (0-1') (16 mg/kg). Elevated polynuclear aromatic hydrocarbons (PAHs) were detected in sample BG-TP-12 "wood", which consisted of charred drum components.

Waste Water Treatment Plant and Power Plant "A" Area. Twenty-four test pits (WWTP-TP-1 through WWTP-TP-24) were completed in the vicinity of the WWTP and associated structures. The areas of investigation included the transformer pads, the aboveground secondary containment reservoir, the earthen berm, the underground water holding tank, the wooded area, the rail spur, the firing range, the drying beds, the Effluent Pond (described previously) and heavy equipment area. Shallow soil samples collected from the WWTP and Power Plant "A" Area identified the following impacts:

- ◆ *Transformer Pad Area:* PCBs were detected at measurable concentrations in the surficial soil samples from the transformer pad area.
- ◆ *Earthen Berm:* Seven of the test pits (WWTP-TP-5 through WWTP-TP-11) were completed in an earthen berm in the treatment plant area. The berm stratigraphy included coal from depths of 0 to 4 feet bgs, underlain by dark black material that appeared to have the characteristics of sewage and/or organic decay to depths of up to 15 feet bgs. The base of the berm consisted of what appeared to be a 1-1/2 foot concentrated layer of red to rusty colored dense soil. Total mercury was detected at a concentration of 25 mg/kg which exceeded the Industrial SRV and SLV in a sample WWTP-TP-11 10'(B) collected at 10 feet bgs within the earthen berm.
- ◆ *Underground Water Holding Tank:*
 - Test pit WWTP-TP-12 was completed inside of an underground water holding tank. The test pit uncovered a large amount of miscellaneous demolition debris that was apparently dumped into the holding tank. The debris consisted of electrical components, brick, slag, tar and asbestos containing material. Samples of materials collected from the underground water holding tank detected naphthalene, SVOCs, PCBs, arsenic, DRO and asbestos; concentrations of arsenic and benzo(a)pyrene (BaP) equivalent exceeded the Industrial SRVs in two samples.

- ♦ *Wooded Area to South-Southeast of WWTP:*
 - Test pits WWTP-TP-13 and WWTP-TP-14 were completed in the wooded area. Significant deposits of coal, ash, slag and clinkers were prevalent in the surficial soils from 0-1 feet bgs. The coal and clinkers were underlain by native sandy soil.
 - Shallow soil samples WWTP-TP-13 (0-1')(A) and WWTP-TP-14 (0-2') were collected from the wooded area and contained total mercury at concentrations of 29 and 30 mg/kg, respectively. These concentrations exceed the Industrial SRV and SLV.
- ♦ *Sludge Drying Bed Area:* Shallow soil sample WWTP-TP-17 & 18 2'(A), collected from the sludge drying beds area, contained total mercury at a concentration of 23 mg/kg, which exceeded the Industrial SRV and SLV.
- ♦ *Heavy Equipment Area:* One shallow soil sample [WWTP-TP-22 (0-2')], collected from the heavy equipment area contained total mercury at a concentration of 20 mg/kg, which exceeds the Industrial SRV and SLV. This sample was collected from the southeast edge of the adjacent Effluent Pond.

East Powder Testing Area. The East Powder Testing Area includes two locations; the Ballistics Lab located in the east-central portion of the Property, and another which included Air Testing Houses located in the southeastern portion of the Property. The Ballistics Lab also included temporary powder magazines, a firing range and an on-site septic system. One test pit (WWTP-TP-16) was completed in the vicinity of the former Ballistics Lab. No visual or olfactory evidence of soil impacts was observed during completion of this test pit; no analytical testing was conducted.

Ash Pond (Effluent Pond). Six test pits (WWTP-TP-19 through WWTP-TP-24) were completed in the vicinity of the Effluent Pond. The shallow soil samples WWTP-TP-19(2') and WWTP-TP-20 2'(B) collected from the Effluent Pond identified total mercury concentrations of 420 milligrams per kilogram (mg/kg) and 590 mg/kg. Sample WWTP-TP-TP-22 (0-2'), located on the southeastern edge of the Effluent Pond has a total mercury concentration of 20 mg/kg. These mercury concentrations exceeded the current MPCA SRV and SLV. DBP was also detected at concentrations below the Residential SRV. Dibutyl phthalate (DBP) was added to smokeless powder as plasticizer to make the grains less brittle.

Maintenance Shops. The Maintenance Shops area was used primarily for service and maintenance activities, and included numerous shop and garage buildings, parking areas, and petroleum product storage. Two test pits MSTP-1 and MSTP-2 were completed in the area of a former 10,000 gallon UST. Key findings included:

- ♦ No visual/olfactory evidence of contamination or elevated PID readings was identified in soil samples collected from these test pits.
- ♦ No petroleum-related constituents (e.g., DRO) were detected in the soil samples collected from a depth of 5 to 6 feet in this area. Detectable concentrations of RCRA metals (below SRVs and SLVs) were detected in one of the samples. Mercury was detected at a concentration of 0.022 mg/kg.

7.1.2 Preliminary Assessment Report - 1947 Quitclaim Property, Former Gopher Ordnance Works, Rosemount, MN, prepared by U.S. Army Corps of Engineers - Omaha District, March 2006.

The Preliminary Assessment (PA) was conducted by the U.S. Army Corps of Engineers to determine if further investigation of the former GOW property was warranted under the Defense Environmental Restoration Program - Former Used Defense Sites (DERP FUDS) program. The PA specifically evaluated the "1947 Quitclaim Property" which includes the portion of UMore Park south of 170th Street and the northwestern portion of the UMore Park which is on the subject property and includes an area bound by 170th Street on the south, Biscayne Avenue on the west, 145th Street on the north and generally Akron Avenue on the east.

The PA report identified the following Areas of Concern (AOC) which are north of 170th Street on the subject property (see Plate 2 of the PA report which is included at the end of Appendix F):

AOC 1 - "Laminex Woodbox Sewer Outfall"; located on the east-central portion of the subject property. The potential Hazardous, Toxic, and Radioactive Waste (HTRW⁷) related to past GOW activities include nitrocellulose, VOCs (petroleum-based industrial solvents/degreasers from vehicle maintenance activities), SVOCs (DPA from powder manufacturing), metals, nitric and sulfuric acids.

AOC 3 - "Miscellaneous Drainage Areas"; one of three identified areas is located on the subject property immediately south of the DNT Storage Area. The potential HTRW related to past GOW activities are nitrocellulose, DNT and DPA.

⁷ HTRW is a standard acronym; the PA report indicates there is no indication that radioactive waste was either used or generated during production at the former GOW.

AOC 5 - "DNT Storage Bunkers"; located on the west-central portion of the subject property. The potential HTRW related to past GOW activities are DNT residue associated with storage of the DNT and asbestos related to bunker construction materials.

AOC 6 - "154th Street Disturbed Areas"; located on the southwestern portion of the subject property. The potential HTRW related to past GOW activities are unknown. There is no record of what types of materials were disposed here. Asbestos may be associated with demolition materials observed at the site.

The U.S. Army Corps of Engineers is currently contemplating intrusive testing and other investigation activities in these areas.

7.1.3 GOW Decontamination/Decommissioning Reports, August 16, 1946 and April 28, 1947.

Two documents were prepared which describe the decontamination/decommission activities conducted by U.S. Government and its contractors at the GOW following termination of production activities in 1945. These activities were conducted to address explosive risks associated with past GOW operations. These documents include: 1) "Gopher Ordnance Works Decontamination - Completion Report", dated August 16, 1946, U.S. Army Ordnance Department and 2) "Inspection of Decontaminated Areas Gopher Ordnance Works", dated April 28, 1947, U.S. Army Ordnance Department. The August 16, 1946 document describes the decontamination activities completed for buildings, the grounds and equipment on operational portions of the GOW, not portions that were under construction. This document indicates the following general activities were conducted:

- ♦ Buildings and equipment were first cleaned as much as possible of the product (e.g. powder) being manufactured;
- ♦ Equipment was further cleaned as it was dismantled before either being flashed at the burning grounds or treated by caustic;
- ♦ Equipment was destroyed by burning when necessary to assure decontamination;
- ♦ Office equipment and furniture from each building were cleaned, moved to another building for temporary storage, a final decontamination inspection was conducted, an inventory was conducted and the building was locked.

The April 28, 1947 document describes the results of an additional inspection conducted on April 23, 1947 with regards to decontamination activities at the GOW. This document identified a number of areas which had not been “properly decontaminated” to address potential explosive risks and indicated that further decontamination instructions would be forth coming. In a March 12, 1948 memorandum prepared shortly before the property transfer to the University, it is stated that no further decontamination work was necessary at the GOW⁸.

7.1.4 Phase 1 Environmental Assessment, Dakota County Parcel, Blaine Avenue and 170th Street East, Rosemount, MN, prepared by Delta Environmental Consultants, Inc. (Delta), May 28, 1977.

This site, located northwest of the intersection of Blaine Avenue and 170 Street, consists of approximately 200 acres of farmland and wooded land. Delta observed scattered ruins (buildings, roads, water and sewer lines) from GOW. This site is located on Parcel 15, as discussed in Section 2.0. Delta identified the past and present use of the parcel as an environmental concern. Additional investigation was recommended to determine the location and amounts of any potential asbestos-containing water and steam supply pipes.

7.1.5 Draft Report for Confirmation Study at Former Gopher Ordnance Plant, Rosemount, MN, prepared by Donohue & Associates, Inc., October 1987.

This report was prepared to make a preliminary determination of the presence or absence of contamination which may have been caused by Department of Defense-related activities. Soil samples were collected from 23 locations and ground water samples were collected eight monitoring wells. Soil samples were analyzed for petroleum hydrocarbons, total metals, soil pH, and residual nitrocellulose explosive. Ground water samples were analyzed for VOCs, total recoverable petroleum hydrocarbons, and dissolved metals.

According to the report, the results of the soil and ground water sampling and analysis did not indicate that significant areas or contamination were present at the site.

⁸ March 12, 1948 Memorandum, Subject: Disposal of Ordnance Plants, from John W. Phillips, Acting Director, Compliance Enforcement Division to W. L. Godman, Deputy Administrator, Office of Real Property Disposal.

7.2 POST-GOW LAND USE

7.2.1 Record of Decision, UMRRC, prepared by MPCA, June 11, 1990 (concurring by the EPA on June 29, 1990).

The ROD presents the selected remedial actions for the George's Used Equipment/Porter Electric and Machine Company/U.S. Transformer Sites on the subject property.

George's Used Equipment was an electrical equipment storage and salvage facility that operated between 1968 and 1985. Activities included reclamation of copper wire; salvage of electrical equipment, batteries, and drums; incineration of liquids including PCB contaminated oils; and unidentified drum handling/storage and transfer activities. PCB oils were apparently disposed of in a depression near the building occupied by this tenant. Solvents were also released at the site. Soil was contaminated with lead at the site.

Porter Electric and Machine Company leased the property immediately south of George's Used Equipment from 1968 to 1971. Activities included storage and reconditioning of used industrial electrical equipment. PCB contaminated waste oils generated from these activities reportedly were spread on the roads in the area. An area of soil contaminated by PCBs existed at this site.

U.S. Transformer leased Building 101A and the property approximately 2,000 feet northeast of the George's Used Equipment from 1973 to 1978. Activities included dismantling and salvaging electrical transformers. Waste oils from these activities were reportedly washed off a concrete slab on to the soil at the site. An area of soil contaminated with PCBs existed at this site.

The selected remedy was thermal destruction of the PCBs, with preference for on-site thermal desorption with fume incineration, and off-site disposal of soil contaminated with lead and copper.

The ROD presents the selected remedial actions for the Burn Pit Site on the subject property. The selected remedy was a pump out and air stripper treatment system. The Burn Pit Site is located north of 160th Street approximately halfway between Akron and Blaine Avenues. This site was used by the University as a disposal area for waste chemicals. University records indicate that approximately 90,000 gallons of laboratory chemicals, solvents, corrosives, salts, heavy metals, organics and inorganics were infiltrated and/or burned in the pit between 1968 and 1974. The pit was lined with lime, backfilled with clean sand and capped with clay in 1980.

7.2.2 Declaration of Restrictions and Covenants and Affidavit Concerning Real Property Contaminated with Hazardous Substances, UMRRC, January 3, 2000.

These documents, which are included in Appendix C, describe restrictions and covenants pertaining to the George's Used Equipment/Porter Electric and Machine Company/U.S. Transformer Sites and the Burn Pit Site discussed in Section 7.2.1 in order to de-list the site from the NPL. The use restrictions are specifically discussed in Section 2 of the Declaration of Restrictions and Covenants document and summarized in Section 8.2 of this Phase I ESA report. In general, the use restrictions include the maintenance of soil caps; commercial and industrial land uses only; MPCA approval of any soil excavation and removal; and/or restricted access.

7.2.3 1998 Soil Sampling at Bomb Squad Detonation Facility, UMRRC, Rosemount, MN, prepared by STS Consultants, Ltd. (STS), February 11, 1999.

STS concluded that no significant soil impacts appear to be associated with the site. No elevated concentrations of RCRA metals in exceedance of MPCA draft SRV levels were identified. The identified low concentrations of VOCs were not above the applicable MPCA draft SRV values at that time. Additional sampling and testing was also conducted on an ongoing basis, which reportedly did not identify any impacts.

7.2.4 Limited Phase I Environmental Site Assessment, RRC, Jensen Field Landing Strip, prepared by EnecoTech Midwest, Inc., February 14, 1995.

This assessment was conducted to assess the presence of potentially hazardous materials at the site. The site consists of an eight acre parcel leased by private individuals for the purpose of operating a light aviation airstrip. Thirteen aircraft hangers were present along the northeast end of the airstrip.

According to the report, prior to being acquired for the GOW, the site was used for agricultural purposes. During the time GOW was in operation (see Section 4.2.2), numerous buildings occupied the site including buildings on the eastern portion of the site for the storage of organic chemicals and numerous ASTs (used to store aniline, benzene, ammonia, and fuel oil). Buildings for residential use were reportedly located on the western portion of the site. Apparently in the 1970s, the site was used as a training area for heavy equipment operators and much of the near surface soil was graded. Reportedly, buildings that were associated with GOW were demolished and buried on-site during construction of the airstrip in 1982.

At the time of the 1995 assessment, a building identified as a storage facility for PCBs and PCB-containing equipment was located immediately east of the site. The building was constructed for GOW and was being used by the University for PCB storage.

EnecoTech concluded that general items of environmental concern identified included presence of lead-based paint, fluorescent lamps and associated ballasts, batteries, oils, radiator fluid, acetone, gasoline, and solvents waste. In addition, the historical use of the site was identified as an environmental concern.

7.2.5 Phase I Report, RRC, Remedial Investigation, Rosemount, MN, February 1985; First Quarter Summary Report, Phase II Remedial Investigation, August 27, 1985, prepared by Soil Exploration Company; and Abandoned Solid Waste Disposal Site Closure Record, Coates Dump, prepared by University, September 26, 1988.

The objectives of the Phase I and Phase II investigations were to generally define the hydrogeologic system in the northeastern portion of the RRC and determine the nature and extent of contamination in the soil and ground water at several sites at the RRC. Investigations were performed in the following six areas: Burn Pit site and regional VOC ground water contamination area; George's Used Equipment (former Porter's Electric) site; U.S. Transformer site; oxidation pond and RRC sewage system; Coates Dump site; and former process wastewater lagoon. Land use in some of the investigated areas predated in the University's 1947-1948 acquisition of the property (e.g. use of the Coates Dump, sewage system and process wastewater lagoon). It should be noted that the Coates Dump site and former process wastewater lagoon are both located on the southeastern portion of the UMore Park south of 170th Street primarily outside the boundaries of this Phase I ESA. At most, only the northern portion of the Coates Dump may extend onto the subject property.

Soil and ground water contamination was identified at the burn pit site. High levels of PCB contamination was identified in the surface soils collected in the depression at the George's Used Equipment site. Significant levels of PCB contamination was identified in the soil in the area south of the southeast corner of the U.S. Transformer building. PCB impacts were identified in the soil at the oxidation pond. No significant inorganic contamination was identified in ground water at the old Coates Dump site; however, low levels of toluene and xylenes were identified. No significant soil contamination or significant levels of inorganic parameters in ground water were identified at the former process water lagoon site; however, elevated levels of nitrate were identified in the ground water.

The September 26, 1988 Abandoned Solid Waste Disposal Site Closure Record was prepared by the University to document the actions undertaken to complete closure of the Coates Dump. The dump was used for disposal of demolition material, including bituminous road rubble, stumps, wood roofing, paper, glass, furniture and assorted metallic items. The dump was closed and covered with local fill sometime in the early 1980s. A hydrogeologic investigation conducted in 1986 determined that no significant ground water contamination was present.

- 7.2.6 Final Report, Phase II Ground Water Investigation, George's Used Equipment Site, RRC, April 21, 1988; and Final Report, Soil Contamination Investigation, George's Used Equipment Site, RRC, June 7, 1988, prepared by IT Corporation.

The Phase II ground water investigation was conducted to further define the extent of the PCB contamination at the site. PCBs were not detected in the monitoring wells down-gradient from the depression area identified as containing PCB contamination; however, VOCs were detected.

The soil investigation was conducted to determine the extent of soil contamination at the site. The results indicate the distribution of PCBs in the depression is less than 36 feet deep and is located in the eastern portion of the depression in an approximately 50 by 100 feet area. Acetone and lead were also detected in the soil samples.

- 7.2.7 Letter from the University to James Backstrom, County Attorney, Office of Dakota County, March 10, 1988; Letter from the University to David Estenson, City of Minneapolis Police Department, January 8, 1988; and Letter from the University to City of Rosemount, March 21, 1989.

These letters regard an earth berm project on the area leased by the Minneapolis Bomb Squad. Approximately 3,800 cubic yards of fill material was transported to the RRC to begin construction of the berm around the bomb squad facility. Dakota County intervened after it was discovered that the fill material contained ash and other materials. The materials were reportedly disposed of by the City of Minneapolis under the guidance of Dakota County and the MPCA. The Minneapolis Bomb Squad subsequently used a pile of inert coal, soil from a gravel pit, and a mound of native soil located on the University's property to complete the berm.

- 7.2.8 Reports and Correspondence Related to the University Oxidation Pond, UMRRC.

Documents reviewed by Peer specifically relating to the Oxidation Pond include: 1) UMRRC, Oxidation Pond Study, prepared by International Technology (IT), November 1986; 2) Letter from the MPCA to Robert A. Silvagni, University of Minnesota dated May 26, 1987; 3) Rosemount Oxidation Pond, prepared by IT Corporation, dated June 4, 1987; 4) Site Sewer Investigation, UMRRC, dated June 12, 1987; 5) Notice of Violation, Rosemount, Wastewater Evaporation/Infiltration Lagoon, prepared by IT Corporation, dated June 15, 1987; and 6) RCRA Facility Assessment Site Visit Report, prepared by MPCA, dated December 16, 1987.

According to the available information, the Oxidation Pond is a man-made system which serves as the collection point for sanitary sewage at RRC. The sanitary sewer system associated with the Oxidation Pond consists of several thousand feet of trunk line serving the RRC complex. The system is in use for sanitary sewer discharge only by a limited number of tenants. The pond system has been in existence since the late 1950s and has not been upgraded because of its limited use and accessibility. The pond is assumed to have been designed as an evaporation/infiltration lagoon since there is no discharge structure from the pond. The study determined that the pond needed to be permitted with the State.

A Notice of Violation (NOV) for the wastewater evaporation/infiltration lagoon was issued on May 26, 1987. The alleged violations include the lagoon was constructed and was being operated without MPCA review or approval. The University supplied the Agency with an incomplete permit application on April 23, 1987. The second alleged violation was that the system was constructed without any primary treatment of sanitary sewage or other wastes.

The site investigation identified ten industrial users, one residence and RRC shop facilities as dischargers to the sewer system. Based on the site investigation, it was determined the sources of waste discharges are domestic use, clear water flow from drinking water fountains, and domestic fixture leakage. Based on a December 16, 1987 RCRA Facility Assessment Site Visit Report, the MPCA concluded that "no evidence of PCB contamination has occurred at the site (i.e. Oxidation Pond) to warrant corrective action clean up".

7.2.9 2001-2002 Ground Water Monitoring Results, UMRRC, Rosemount, MN, prepared by Delta, February 28, 2002.

Delta collected ground water samples from two monitoring wells located just east of Blaine Avenue and east of the former GOW "A", "B" and "C" production lines and analyzed the samples for VOCs. Chloroform was detected in the ground water at concentrations of 11 and 18 micrograms per liter (ug/l), less than the MDH drinking water criteria of 60 ug/l.

7.2.10 Remedial Investigation, 2375 – 160th Street West, Rosemount, MN (MPCA Leaksite ID# 7154), prepared by STS, August 3, 1994.

The remedial investigation was conducted to determine the extent and magnitude of soil impacts associated with a fuel oil release at a rental home on the University's Agricultural Experiment Station (located at the former dairy facility). The fuel oil leaked from an AST in the basement of the house into a floor drain and then into a septic system. Three soil borings were advanced and two soil samples were collected from each boring for analysis for benzene, toluene, ethyl benzene, and xylenes (BTEX)

and DRO. No BTEX compounds were identified above method detection limits. DRO was detected in one soil sample. The release appeared to be limited to the soils adjacent to the pumping chamber and distribution box of the septic system. STS recommended the MPCA be requested to close the release. As discussed in Section 4.3.2, the MPCA issued closure on September 26, 1994.

7.2.11 Soil Exploration/Remedial Investigation at Rosemount Agricultural Experiment Station, Petroleum Release Site (MPCA Leaksite No. 2529), prepared by STS, May 31, 1991.

The soil exploration was conducted to determine the extent and magnitude of impacts associated with a petroleum release at the Service Station complex on the University's Agricultural Experiment Station. Soil samples were collected for analysis for BTEX and total petroleum hydrocarbons (TPH) as gasoline and total lead. BTEX and TPH compounds were detected in one soil sample. Remediation of the release was recommended. As discussed in Section 4.3.2, the MPCA issued closure on October 4, 1994.

7.2.12 Excavation Report for Petroleum Release Site, UMRRC, 15325 Babcock Avenue, Building 717A, Rosemount, MN, MPCA Leak No.: 4928, prepared by Nova Environmental Services, Inc., February 18, 1992.

A 1,000-gallon UST was removed on December 23, 1991. Approximately eight cubic yards of petroleum-impacted soil was excavated and stockpiled on-site. Based on field measurements and laboratory analysis, the impacted soil was limited to the sandy clay fill material from below the UST to a depth of approximately nine feet. No petroleum impacts were detected in the native soil at a depth of 10 feet. No additional investigation was recommended. As discussed in Section 4.3.2, the MPCA issued closure on May 26, 1992.

7.2.13 Limited Site Investigation Report, Building 719 Blaine, UMRRC, Rosemount, MN, prepared by Meisch & Associates, Ltd., October 26, 2000.

A 3,000-gallon fuel oil AST was removed on April 26, 2000. During removal hydrocarbon impacts to soil were observed on the ground surface beneath the tank valve location and the piping inlet into the building. Three soil borings were advanced a soil sample was collected from each boring for analysis for DRO, GRO, and BTEX. No detectable concentrations were identified. Meisch & Associates recommended the MPCA be requested to close the release (MPCA Leaksite No.: 13435). The MPCA issued closure on December 20, 2000.

7.2.14 List of ASTs/USTs at University Facilities, dated August 4, 2005, and RRC Tank Inventory, prepared by University, May 3, 2004.

Five USTs are listed for the Naval Satellite site. The tanks include a 560-gallon gasoline UST installed in 1967 and removed in 1990; a 4,000-gallon diesel UST installed in 1964 and removed in 1988; a 565-gallon diesel UST installed in 1964 and removed in 1990; a 560-gallon gasoline UST installed in 1990 and identified as "in use"; and a 2,000-gallon diesel UST installed in 1988 and identified as "in use".

Four USTs and three ASTs are listed for the Agricultural Experiment Station site. The tanks include a 500-gallon gasoline UST installed in 1950 and removed in 1991; a 500-gallon gasoline UST installed in 1949 and removed in 1991; a 1,000-gallon gasoline UST installed in 1952 and removed in 1991; a 3,600-gallon diesel UST installed in 1975 and removed in 1994; a 150-gallon used oil AST; a 2000-gallon diesel fuel AST; and a 150-gallon gasoline AST.

Five USTs are listed for the RRC. The tanks include a 12,000-gallon fuel oil UST installed in 1942 and removed in 1990; a 6,000-gallon fuel oil UST installed in 1954 and removed in 1994; a 1,000-gallon gasoline UST installed in 1982 and removed in 1993; a 6,000-gallon diesel UST installed in 1982 and removed in 1990; and 1,000-gallon diesel UST listed as installed on January 1, 2001 and removed on January 1, 1990.

Two ASTs are listed for Building 717A. The tanks include an 8,000-gallon fuel oil AST and a 2500-gallon fuel oil AST. The tanks are listed as located inside the building. These tanks were observed by Peer during the site reconnaissance.

Six ASTs are listed for Building 302 CRL. The tanks include one inactive tank of unknown capacity; one spherically AST (the "8 Ball" ammonia tank from GOW) listed as inactive; one 18,000-gallon diesel fuel AST in a deteriorated secondary containment structure; one 250-gallon diesel fuel AST; one 250-gallon gasoline AST; and one 150-gallon used oil AST.

One 8,000 to 10,000-gallon diesel fuel UST is listed for Building 713A. This tank is currently used by Dole Explosives. The tank reportedly has a leak detection system.

One 1,000-gallon heating oil AST is listed for Building 217A. This tank was observed by Peer during the site reconnaissance.

Six ASTs are listed for Dakota Wood Grinding. The tanks range in size from 100 to 500-gallons and are used to store used oil, diesel fuel, hydraulic oil, and engine oil. None of the tanks have secondary containment.

Two ASTs are listed for Vet Medicine. The tanks include a 160-gallon diesel fuel AST and a 150-gallon gasoline AST. The tanks do not have secondary containment.

One 150-gallon heating oil AST is listed for the USDA Facility Building 1004. The tank does not have secondary containment. This tank was observed by Peer during the site reconnaissance.

7.2.15 RRC, Rosemount, MN, RCRA Closure Assistance (Buildings A-F), 1996-98 (Peer File #6708).

The University operated an off-site hazardous waste storage facility at the Rosemount Research Center which consisted of six separate buildings (Buildings A, B, C, D, E and F). The six buildings are of concrete or masonry construction and vary in size. Waste materials stored at the facility were generated by the University at their Twin Cities and Duluth campuses, and the six coordinate campuses and agricultural experiment stations operated by the University throughout the State of Minnesota. In general, hazardous waste was generated at those facilities through teaching, research, and clinical activities.

Each building was used to store specific types of waste. The following is a general description of wastes stored within Building A.

- ♦ Low level radioactive waste and mixed waste (includes flammable, corrosive and toxic waste).

The following is a general description of wastes stored within Building B.

- ♦ Waste oxidizing materials.
- ♦ Waste corrosive (acidic – organic acid) materials.

The following is a general description of wastes stored within Building C.

- ♦ Waste flammable liquids.
- ♦ Waste corrosive (alkaline) materials.
- ♦ Waste toxic materials.
- ♦ Waste corrosive (acidic – organic acids) materials.

The following is a general description of wastes stored within Building D.

- ♦ PCB wastes.
- ♦ Bulk oxidizer, corrosive or toxic waste.

The following is a general description of wastes stored within Building E.

- ◆ Waste reactive materials.
- ◆ Waste shock-sensitive materials.

The following is a general description of wastes stored within Building F.

- ◆ Waste flammable liquids.
- ◆ Waste corrosive (alkaline) materials.
- ◆ Waste toxic materials.
- ◆ Waste corrosive (acidic – organic acids) materials.

Peer assisted the University in completing closure of Buildings A through E of the RRC hazardous waste storage facility. Closure activities were completed in accordance with applicable regulations for hazardous waste storage facilities including Minnesota Rules Chapter 7045 (Minnesota Hazardous Waste Regulations), and 40 CFR Part 264 (Federal Hazardous Waste Regulations). A Closure Plan for the RRC hazardous waste storage facility was prepared by the University and included in their facility permit (RCRA Part B Permit). The Closure Plan provided general information concerning facility closure requirements. Prior to initiating facility closure, a Closure Work Plan dated March 27, 1996 was prepared by Peer and submitted to the MPCA. The Closure Work Plan included detailed descriptions of the methods, procedures and approach for facility closure. The Closure Work Plan was approved by the MPCA in a letter to the University dated April 17, 1996. Subsequently, the University implemented the Closure Work Plan and prepared closure certification reports for each building. These closure reports were ultimately submitted to and approved by the MPCA, and the MPCA issued closure letters for each building.

7.2.16 Rosemount Agricultural Center Petroleum Release Remedial Investigation and Corrective Actions, 1994-95 (Peer File #4033).

Peer assisted the University on MPCA Leak #2529. A 500-gallon leaded gasoline UST was removed from the Station Service Center in 1991. Approximately 180 cubic yards of petroleum impacted soil was excavated at the time the UST was removed. A remedial investigation and corrective action design (RI/CAD) were subsequently completed at the site. As part of the CAD, a soil vapor extraction (SVE) well was installed. Analytical testing of a ground water sample collected from a temporary monitoring well installed in the extraction borehole indicated potential ground water contamination existed at the site. The MPCA requested that additional investigation be completed to evaluate potential ground water impacts. The investigation was to include installation of three additional ground water monitoring wells.

The soil vapor extraction system had been previously operating for a period of approximately one year; however, the system had been shut down by early 1994. The system needed to be re-started and operated for an additional year with quarterly monitoring.

Peer was retained to install three additional ground water monitoring wells; re-start the vapor extraction system; develop and survey the three new monitoring wells; sample the three monitoring wells and have the samples analyzed for GRO, VOCs, BTEX, total xylenes, methyl tert-butyl ether, and/or dissolved lead; sample the vapor extraction system emissions on a quarterly basis and monitor the system's operating parameters; complete a ground water receptor survey; and complete an annual report and three quarterly reports for submittal to the MPCA.

Significant findings of Peer's RI/CAD activities included the following:

- ◆ Native soil consists of well graded outwash sand.
- ◆ Ground water flow fluctuated to the south, southwest, and northwest.
- ◆ In two rounds of ground water sampling, none of the analytical parameters tested for were detected at or above method detection limits in any of the monitoring wells.
- ◆ The results of the analytical tests performed on the SVE stack emissions were all below the laboratory detection limit.

Based on the data, it appeared that the extent and magnitude of the petroleum release had been defined with a limited amount of impacted soils remaining in-place. Ground water was not impacted by the release. The MPCA closed the file on this release on October 4, 1994.

7.2.17 RROC, 1605 160th Street South, Pesticide Site Investigations and Corrective Actions, 1994-2002, and Land Application of Pesticide Contaminated Soil and Rinsate, 1995 and 2000 (Peer File #4172).

In 1994, USTs used for collecting pesticide rinsate were removed from three locations on the site. During tank removal activities, visual evidence of pesticide contaminated soil was observed surrounding the tanks. The Minnesota Duty Officer and the Minnesota Department of Agriculture (MDA) were notified of the release on October 4, 1994.

In 1998, a comprehensive remedial investigation examined eight additional areas at the site, which were identified as being high risk areas for agricultural chemical contamination. Of the areas investigated, Peer recommended and the MDA approved corrective actions for the following four areas:

- ♦ The Herbicide and Fungicide Storage building and Rinsate Tank Area located adjacent to Building 621 where 100 cubic yards of soil was excavated to a depth of approximately 13.5 feet along with the removal of the rinsate tank in 1994.
- ♦ The UST area near Building 706 where 20 cubic yards of soil was excavated to a depth of seven feet along with a rinsate tank in 1994.
- ♦ The UST area near Building 709 where 20 cubic yards of soil was excavated to a depth of seven feet along with a rinsate tank in 1994.
- ♦ The former lagoon area where 730 cubic yards of soil to a depth of six feet was excavated in 2000.

All excavated soil was land applied to 169 acres of land as approved by the MDA. Land application was completed in May 1995 and in November and December 2000. At the conclusion of the soil corrective actions completed at the site, one subsurface sample in the former lagoon area and one near Building 709 slightly exceeded soil cleanup goals for alachlor and trifluralin. There were also slight exceedances of pesticide cleanup goals at the base of the UST excavation near Building 621. This soil was not removed because it was determined that the contaminants left in place did not pose an unreasonable risk for adverse affects to human health or the environment.

The remedial investigation also included the installation of four monitoring wells and temporary ground water sampling probes, which identified deep ground water contamination immediately downgradient from identified sources areas. Subsequent to soil corrective actions and periodical ground water monitoring, it was determined that the contamination in ground water did not pose an unreasonable risk for adverse affects to human health or the environment. The monitoring wells were properly abandoned in 2001.

Based on the available information, the MDA issued a determination on July 21, 2002 to take no further action under Minn. Stat. 18D (2000) and 115B (2000) against the University Research and Outreach Center and successive owners of the property with respect to the identified release at the site.

7.2.18 Reports for Navy Satellite Operations Center (NAVSOC), Detachment Bravo, 14952 Akron Avenue, Rosemount, MN: Environmental Baseline Survey for prepared by Peer, March 28, 1996; and Geohydrologic Study, prepared by U.S. Army, September 10-11, 1996.

According to the U.S. Army report, the NAVSOC property was farmland until approximately 1942 when the U.S. government purchased the property and the adjacent properties (a total of 16 square miles) to construct the GOW. There was an unconfirmed report that a burning ground existed on the NAVSOC property. At the time the former GOW was deeded to the University in 1947, there were only two bunkers on the property. The property was reportedly not used again (except for two gravel pits) until the Navy began leasing the land from the University in 1962. In 1964, Detachment Bravo began operation to track and inject satellites for the Navy and had continued those activities until at least the time of the issuance of the report. Several buildings were constructed during the 1960s and 1970s. In 1990, the Navy leased an additional 70 acres for security purposes.

An Environmental Baseline Survey (EBS) was conducted on the NAVSOC property in 1995-96 and an EBS report was published in 1996. The EBS report stated that additional investigation was needed in the following areas: a dump southwest of the trailer park; an area of debris on a slope near the trailer park; an old drum under an utility line; the former firing range; two former dry wells in the service bays in Building 12; a waste oil tank behind Building 12; and six septic tanks.

A Geohydrologic Study, prepared by the U.S. Army Center for Health Promotion and Preventive Medicine, proposed soil sampling and analysis for potential contaminants at each of the identified areas. Soil samples were analyzed for VOCs, SVOCs, pesticides, PCBs, explosives, metals, nitrite/nitrate as nitrogen, GRO, and/or DRO. In addition, samples of the drinking water from the tap in Building 1 were analyzed for VOCs, SVOCs, explosives, pesticides, PCBs, metals, and nitrite/nitrate as nitrogen.

According to the report, results of the soil sample analyses from the six areas, identified in the EBS as potential contamination sources, indicated that "none of these areas are contaminated". A few anthropogenic organic compounds were detected at trace levels far below health risk-based soil screening levels". The report states the results of the tap water sample analysis showed that concentrations of all analytes were below the National drinking water maximum contaminant levels. The report states that the analytical results indicate that the areas of concern on the NAVSOC property, identified in the EBS, are "free of environmental contamination with respect to human health" and no further environmental sampling was needed to evaluate the impact of the NAVSOC activities.

7.2.19 Limited Phase I Environmental Site Assessment, UMRRC, Navy Satellite Complex, prepared by EnecoTech Midwest, Inc., January 16, 1995.

The property consisted of an eight acre parcel leased by the Navy and utilized as a satellite tracking complex. The eight acres appeared to be agricultural land on a 1937 photograph, undeveloped on a 1951 photograph, and progressively developed on 1957 through 1990 photographs. Reportedly, most of the existing structures were constructed in the early 1960s and two earth covered buildings existed prior to the Navy's leasing in 1962. Items of environmental concerns were two petroleum USTs, five ASTs, a backup diesel generator, hydraulically operated satellite platforms, former dry sumps, a former firing range, and a former dump site.

7.2.20 Environmental Baseline Study, Naval Intelligence Reserve Center, Rosemount, MN, prepared by Versar Inc., September 13, 2004.

The site was occupied by thirteen structures and associated utilities and roadways. Water was supplied by two wells (one at the operational area and one at the dormitory). A third well had been capped.

The following recognized environmental conditions were identified in the report: a former AST and UST associated with Building 12, an active 2,000-gallon diesel UST associated with the backup generator (Building 3), and an area west of Building 26 where surficial diesel spillage was documented. No further action was deemed necessary in association with the tanks with the exception of normal maintenance of the active UST. No further action was deemed necessary in the area west of Building 26.

Building 12 was identified as a garage with historic storage of hazardous materials, along with two closed dry wells. According to the report, sampling conducted in 1996 in the dry well area indicated no evidence of a release from Building 12.

The presence of ACM was identified in the report. Reportedly, a comprehensive asbestos survey was conducted in 1995 and updated in 2000. ACM was identified in the bunkered buildings, the main administration building, and the southern building.

According to the report, GOW operations did not take place on the Navy site. The two bunkered buildings were reportedly apparent on a 1957 photograph and were reportedly constructed by the Air Force. The Navy acquired the site from the Air Force in 1962 and operated a navigational satellite tracking station between 1962 and 1997.

8.0 FINDINGS AND OPINION

8.1 RECOGNIZED ENVIRONMENTAL CONDITIONS

This assessment has identified no recognized environmental conditions in connection with the subject property with the exception of the following:

- ♦ The GOW was constructed and operated by DuPont for the U.S. Government on the northern and central portions of UMore Park between 1942 and September 1945. The U.S. Government deeded portions of the GOW property to the University in 1947 and 1948. The GOW was designed to include two identical production lines for the manufacture single-based (nitrocellulose) smokeless munitions (rifle and cannon) powder (i.e. smokeless powder), oleum and nitric acid. The GOW facility was also used for reworking and destruction of salvaged smokeless powder, which was shipped to GOW for reconditioning. One production line (which included the "A", "B" and "C" lines), was located on the northeastern portion of the subject property and reportedly operated from November 1944 through September 1945. The second production line (which included the "D", "E" and "F" lines), was located on the north-central portion of the subject property. Construction of this second production line was started and partially completed, but reportedly never became operational.

The smokeless powder manufacturing processes and associated infrastructure and support related activities at the GOW facility, involved manufacturing operations (i.e. of powder, oleum and nitric acid), as well as the storage and handling of a variety of hazardous substances and petroleum products, and the generation and disposition of various waste materials. A preliminary environmental investigation was conducted 2003 of five GOW operational/functional areas on the subject property. That investigation identified hazardous substance (e.g. mercury, lead, SVOCs, PCBs DRO, soluble sulfates, and explosive related compounds) impacts to shallow soils at the subject property. The magnitude and extent of the impacts in these areas has not yet been determined. In addition, no investigation has been conducted in the other primary GOW operational/functional areas. The identified impacts to soils in the five GOW operational/functional areas investigated to date as well as the potential for impacts in the other GOW areas represent a recognized environmental condition.

- ♦ Dakota County provided a list and associated map which reportedly identifies 110 alleged abandoned waste disposal sites at the subject property. Based on descriptions provided by the County, these waste sites appear to be related to past GOW operations and post-GOW property use by the University and University tenants. There is limited information regarding the nature and/or potential for impacts from these waste sites. There is a potential that one or more of these waste site may contain hazardous materials that could impact soils and/or ground water at the property. This potential for impacts to soils and ground water represents a recognized environmental condition.
- ♦ A number of past and present tenants that previously leased or are currently leasing portions of the subject property have or currently store and handle hazardous substances and/or petroleum products and generate associated waste materials. Activities of several past tenants resulted in releases which have been addressed (see Section 8.2). Given the nature of some of the past and current tenant operations (e.g. automotive repair, above and underground petroleum storage, painting and manufacturing operations, research labs, land application of manure) there is a potential that unreported releases of hazardous substances and/or petroleum products may have occurred at the subject property. This potential for impacts to soils and ground water represents a recognized environmental condition.

8.2 HISTORICAL RECOGNIZED ENVIRONMENTAL CONDITIONS

The ASTM E 1527-05 Standard defines the term *historical recognized environmental condition* as meaning “an environmental condition, which in the past would have been considered a recognized environmental condition, but which may or may not be considered a recognized environmental condition currently”.

This assessment has identified the following historical recognized environmental conditions in connection with the subject property:

- ♦ Based on a review of the government records search (see Section 4.3.2), the following releases have been reported on the subject property:
 1. LEAK# 4928: University of Minnesota – Rosemount, 15325 Babcock Avenue, an underground storage tank release was reported on December 23, 1991 and was closed by the MPCA on May 26, 1992.
 2. LEAK# 3682: Navy Reserve Intelligence Area 10, 14950 Akron Avenue, an underground storage tank release was reported on December 20, 1990 and was closed by the MPCA on January 23, 1991.

3. LEAK# 13710: Navy Reserve Intelligence Area 10, 14950 Akron Avenue, a release of gasoline was reported on October 27, 2000 and was closed by the MPCA on January 29, 2002.
4. Navy Reserve Intelligence Area 10, 14950 Akron Avenue, a release of 30 gallons of mineral oil was reported on October 25, 2005 and was closed by the MPCA on October 31, 2005.
5. LEAK# 2529: Agricultural Experiment Station, 1605 160th Street West, an underground storage tank release was reported on May 14, 1990 and was closed by the MPCA on October 4, 1994.
6. LEAK# 4758: Agricultural Experiment Station, 1605 160th Street West, an underground storage tank release was reported on October 25, 1991 and was closed by the MPCA on January 21, 1993.
7. LEAK# 4759: University of Minnesota, 1605 160th Street West, an underground storage tank release was reported on October 26, 1991 and was closed by the MPCA on January 21, 1993.
8. LEAK# 7504: Rosemount Agricultural Center, 1605 160th Street West, an underground storage tank release was reported on June 21, 1994 and was closed by the MPCA on September 13, 1995.
9. LEAK# 7154: Ag Research Center, 2375 160th Street West, an aboveground storage tank release was reported on January 19, 1994 and was closed by the MPCA on September 26, 1994.
10. A release of 55 gallons of used/waste oil was reported at the Rosemount Research Center, 160th and Blaine, on July 2, 2004 and was closed by the MPCA on July 8, 2004.
11. Three releases of unidentified material were reported at Buildings 313, 315, 610, 612, 621, 706, and 709 at the University of Minnesota Rosemount Experimental Station and were subsequently closed by the MDA on August 1, 2002.
12. LEAK# 13435: U of MN Building 179, Rosemount Research Center, an aboveground storage tank release was reported on May 12, 2000 and was closed by the MPCA on May 20, 2000.

The “closed” designation indicates that the regulatory agency has determined that the concerns at these sites do not appear to represent a material threat to human health or the environment but does not necessarily indicate that no contamination exists. Documented soil and/or ground water impacts may remain at some or all of these sites. Since these releases have been “closed” by the MPCA and/or MDA, these releases represent a historical recognized environmental condition as defined by the ASTM Standard at this time. However, any future redevelopment and/or property transfer of these areas may require additional investigation and/or cleanup; thus, reclassifying these releases as recognized environmental conditions.

- ♦ Based on a review of the government records search (see Sections 4.3.2 and 4.4), portions of the University of Minnesota (Rosemount Research Center) are identified as a “de-listed” Superfund site. According to a NPL Fact Sheet, this NPL site covers approximately five-square miles. Soil contamination with lead, copper, and polychlorinated biphenyls (PCBs) was restricted to three smaller disposal areas within the site and resulted from the operations of tenants of the University including: George’s Used Equipment, Porter Electric and Machine Company, and U.S. Transformer. At the time the site was placed on the NPL, the ground water was also contaminated with volatile organic compounds (VOCs) from the disposal of laboratory wastes by the University. The major contaminant of concern was chloroform. The site was delisted from the NPL on February 6, 2001.

- ♦ As discussed in Section 7.2.1, documented soil and/or ground water impacts remain at the subject property related to the “de-listed” NPL site which includes the George’s Used Equipment, Porter Electric and Machine Company, and U.S. Transformer sites, and the Burn Pit Site. These remaining soil and ground water impacts are being managed through a Declaration of Restrictions and Covenants and an Affidavit Concerning Real Property Contaminated with Hazardous Substances which has been recorded with the property deed (see Appendix C). The Declaration of Restrictions and Covenants document applies to both restricted areas (i.e. “Parcel A - George’s Deep Site”) and non-restricted areas at the subject property (i.e. “Parcel B - George’s Shallow Site”, “Parcel C - U.S. Transformer Site”, “Parcel D - Burn Pit Site” and “Parcel E - Porter Electric and Machine Site”). Specific use restrictions for these areas include: 1) maintenance of a 10-inch thick soil cap over both restricted and non-restricted parcels; 2) commercial and industrial land uses only on non-restricted Parcels B, C and E; 3) restricted access to Parcel A using a 6-foot high chain link fence, 4) no disturbance or alteration of any nature on, above or beneath Parcels A and D without written MPCA approval; and 5) no excavation of soil from Parcels B, C and E unless conducted in accordance with a MPCA-approved contingency plan. Although this former NPL site has been de-listed by the EPA, this site represents a historical recognized environmental condition as defined by the ASTM Standard. Therefore, any future redevelopment or use of this site may require additional investigation and/or cleanup; thus, reclassifying the site as a recognized environmental condition.

8.3 DE MINIMIS CONDITIONS

The Government Records review identified several additional sites in the surrounding area. Based on factors affecting the significance of these sites relative to the subject property, these sites represent *de minimis* conditions.

Conditions determined to be *de minimis* are not recognized environmental condition as defined by ASTM.

8.4 ADDITIONAL CONCERNS

Historical records indicate GOW structures at the subject property were constructed using a variety of hazardous building materials including, but not limited to, asbestos-containing siding, insulation, mastic, and flooring; lead sheeting; treated wood flooring; and potential PCB-containing electrical equipment. Some suspect asbestos-containing materials (ACM) were noted at the existing subject buildings during the site reconnaissance, including siding, insulation, wall/ceiling panels, and floor tile. No samples of suspect ACM or other hazardous building materials were collected as part of this assessment. The observations and sampling activities conducted during this assessment are not intended to represent an asbestos building survey as defined by the Minnesota Department of Health or other regulatory agencies.

Two former clandestine drug labs have previously been identified at the subject property; one was located in existing GOW Building #303B and the other was located in former Building #746A which was demolished approximately two years ago. Building #303B is currently unoccupied and secured from unauthorized access. This building has not been investigated or remediated to address potential contamination from the former clandestine drug lab. Reportedly, the University conducted cleanup activities of Building #746A to address the clandestine drug lab, prior to the building demolition.

9.0 CONCLUSIONS

Recognized Environmental Conditions

Peer has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-05 of the UMore Park property located in Rosemount, Minnesota. Any exceptions to or deletions from this practice are described in Section 10.0 of this report.

This assessment has revealed on-site recognized environmental conditions in connection with the property as described in Section 8.1, which indicate there is existing, undefined soil contamination from GOW operational/functional areas identified in 2003, and there is a potential for potential for unidentified soil and/or ground water contamination at the subject property from other GOW operational/functional areas, waste sites identified by Dakota County, and past and/or present tenant property use. Phase II environmental assessment (intrusive testing of soil and ground water) will be needed to further evaluate these recognized environmental conditions.

In addition, a number of historical recognized environmental conditions associated with previously investigated/remediated hazardous substance and/or petroleum releases have been identified at the subject property. Should any future use or redevelopment of these areas occur, additional investigation and/or cleanup may be required.

Additional Concerns

Given the presence and/or potential presence of hazardous building materials in property buildings (see Section 8.4), hazardous materials inventories must be conducted for any property building targeted for renovation or demolition to ensure compliance with current environmental regulations.

10.0 DEVIATIONS

No deviations to the standard are noted. Limiting conditions are discussed in Section 5.1.

11.0 REFERENCES

GEOLOGICAL REFERENCES

- ♦ *Coates, Minnesota, 7.5-Minute Topographic Map, 1974 (revised 1993), United States Geological Survey.*
- ♦ *Geologic Atlas, Dakota County, Minnesota, 1990, County Atlas Series, Atlas C-6, Minnesota Geological Survey.*
- ♦ *Protected Waters and Wetlands, Dakota County, Minnesota, 1984, Minnesota Department of Natural Resources, Division of Waters.*
- ♦ *County Well Index Internet Database Site, Minnesota Department of Health.*

HISTORICAL REFERENCES

Aerial Photographs – MarkHurd.

- ♦ 1945.

Aerial Photographs – University Borchert Map Library.

- ♦ 1940, 1951, 1957, 1964, and 1970.

Aerial Photographs – Dakota County Real Estate Inquiry Website.

- ♦ 2002.

Tenant Lists – University of Minnesota.

Fire Insurance Maps – Environmental Data Resources, Inc.

- ◆ No coverage.

Topographic Maps – United States Geological Survey.

- ◆ *Coates, Minnesota, 7.5-Minute Topographic Map, 1974 (revised 1993).*

Dakota County Real Estate Inquiry – <http://www.co.dakota.mn.us>

HISTORICAL AND ENVIRONMENTAL DOCUMENT LIST

- ◆ Included as Appendix E.

REGULATORY

- ◆ Federal and State Database Review – Environmental Data Resources, Inc.
- ◆ Environmental Protection Agency Internet Site – <http://cfpub.epa.gov/supercpad>.
- ◆ Dakota County Environmental Management Department.

INTERVIEWS/INQUIRIES

- ◆ Mr. Eugene Im, University of Minnesota Rosemount Research Center.
- ◆ Mr. Gordon Girtz, University of Minnesota Boynton Health Service.
- ◆ Ms. Kathy Boudreau, University of Minnesota Rosemount Research Center.

12.0 GENERAL REMARKS

12.1 STANDARD OF CARE

The services performed by Peer Engineering, Inc. have been conducted with that level of care and skill ordinarily exercised by reputable members of the profession, practicing in the same locality under similar budget and time constraints. No other warranty is made or intended.

12.2 QUALIFICATIONS AND SIGNATURES

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in Part 312.10 of 40 CFR 312.

We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

A summary of corporate and individual qualifications for Peer and the individuals associated with this project is included in Appendix K.

Prepared by:
Peer Engineering, Inc.



Kelly W. Brown
Senior Environmental Professional



Stephen T. Jansen, M.S., P.G.
President