

Professional

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# Project Plan Water System Improvements

## Report

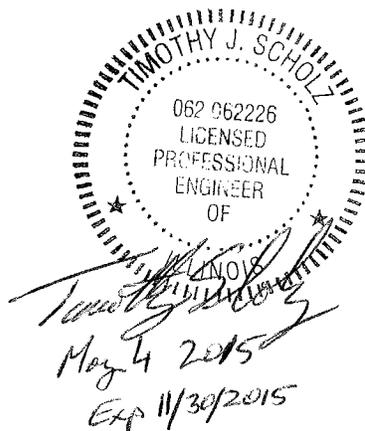
Village of  
Downers Grove, Illinois  
April 2015



# Report for Village of Downers Grove, Illinois

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## Project Plan Water System Improvements



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**SECTION 1  
INTRODUCTION**

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## 1.01 INTRODUCTION

This report provides information intended to satisfy the requirements of the Project Plan related to project funding through the Illinois Environmental Protection Agency (IEPA) Public Water Supply Loan Program. The information contained in this report is in accordance with the IEPA Project Planning Submittal Checklist and Illinois Administrative Code 35, Section 662.510 and 662.520.

## 1.02 BACKGROUND

This section presents background information including project location, description of the water system and service area, historical population, and customer base and projection of growth within the service area.

### A. Project Background

The Village of Downers Grove, Illinois (Village), is a suburb located approximately 20 miles west of the City of Chicago, Illinois. Figure 1.02-1 displays a map of the Village, its zoning types, and municipal boundaries. The Village has a number of existing water system facilities that require rehabilitation or replacement because of malfunction, wear, or reaching the end of their serviceable lives. The various facilities to be rehabilitated or replaced follow.

#### 1. Elevated Tanks

The Village has its elevated water storage tanks inspected by consultants every five years to maintain an accurate picture of required rehabilitations and schedules. Four elevated tanks have been identified as requiring rehabilitation work over the next five years. Work on these projects will include repair of miscellaneous steel that has been affected by corrosion such as ladder, roof beams, and platform steel. This work will also include repainting the inside and outside of the tanks to inhibit future corrosion and provide aesthetic benefits. These tanks and the rehabilitation schedule as proposed by the consultants are identified in Table 1.02-1.

Tank Location	Capacity (gallons)	Proposed Rehabilitation Schedule
Finley Road	1,000,000	2020
Downers Drive	2,000,000	2016
Summit Avenue	500,000	2017
67th Street	1,000,000	2018

**Table 1.02-1 Locations, Capacities, and Overflow Elevations of Elevated Water Tanks**

Inspection reports submitted to the Village by the consultants are located in Appendix A.

#### 2. Emergency Well Houses

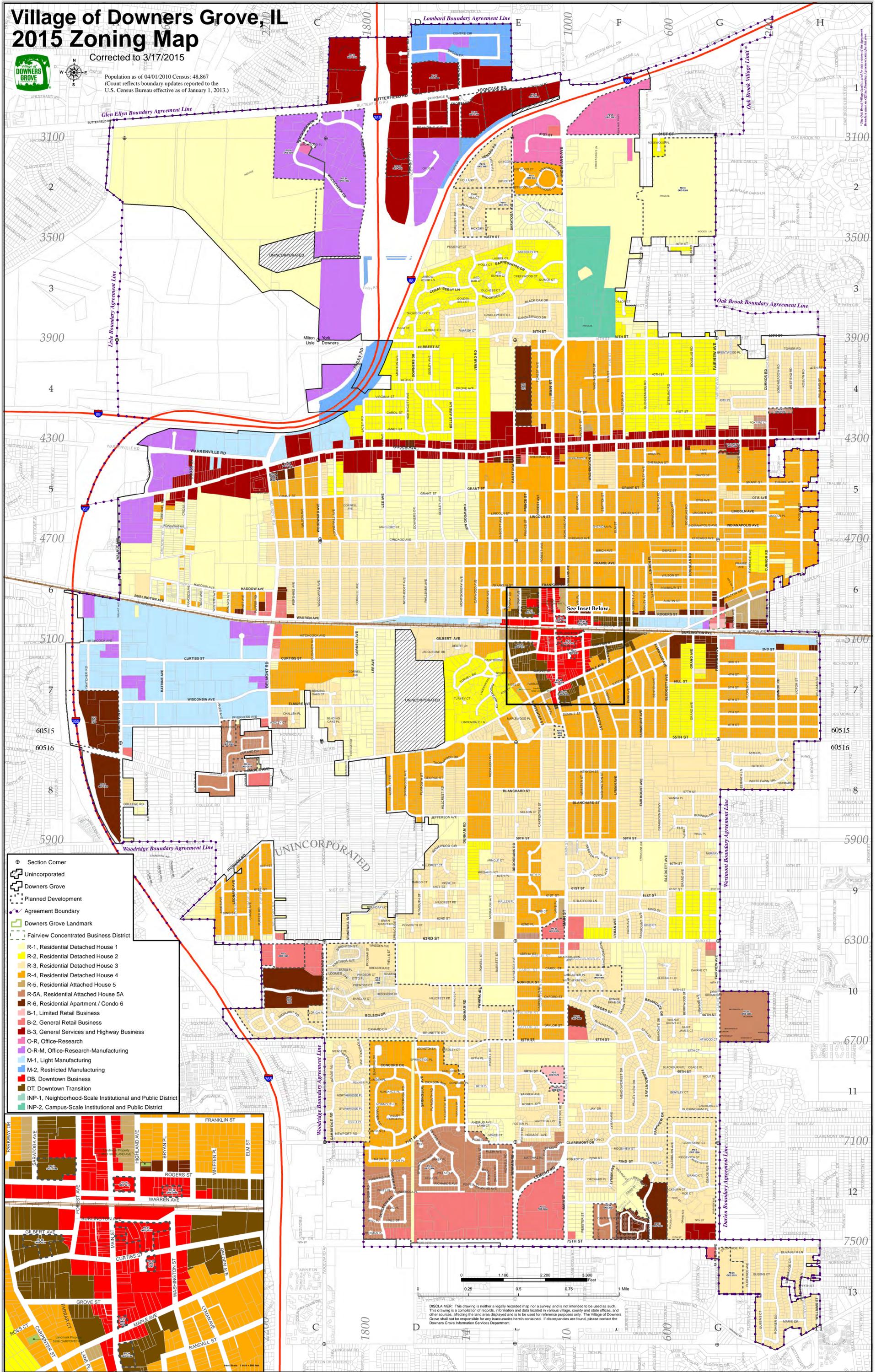
The Village has three existing emergency well houses that require rehabilitation to be able to function as an emergency water supply in the event of an emergency. Rehabilitation work will

# Village of Downers Grove, IL 2015 Zoning Map

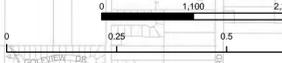
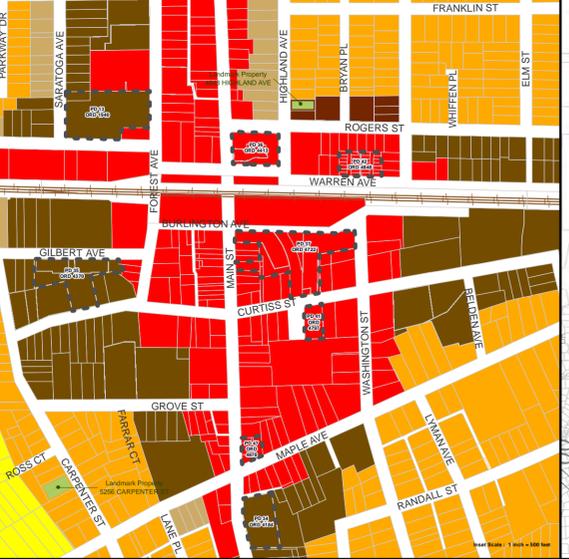
Corrected to 3/17/2015



Population as of 04/01/2010 Census: 48,867  
(Count reflects boundary updates reported to the U.S. Census Bureau effective as of January 1, 2013.)



- ⊕ Section Corner
- ⊞ Unincorporated
- ⊞ Downers Grove
- ⊞ Planned Development
- ⊞ Agreement Boundary
- ⊞ Downers Grove Landmark
- ⊞ Fairview Concentrated Business District
- R-1, Residential Detached House 1
- R-2, Residential Detached House 2
- R-3, Residential Detached House 3
- R-4, Residential Detached House 4
- R-5, Residential Attached House 5
- R-5A, Residential Attached House 5A
- R-6, Residential Apartment / Condo 6
- B-1, Limited Retail Business
- B-2, General Retail Business
- B-3, General Services and Highway Business
- O-R, Office-Research
- O-R-M, Office-Research-Manufacturing
- M-1, Light Manufacturing
- M-2, Restricted Manufacturing
- DB, Downtown Business
- DT, Downtown Transition
- INP-1, Neighborhood-Scale Institutional and Public District
- INP-2, Campus-Scale Institutional and Public District



DISCLAIMER: This drawing is neither a legally recorded map nor a survey, and is not intended to be used as such. This drawing is a compilation of records, information and data located in various village, county and state offices, and other sources, affecting the land area displayed and is to be used for reference purposes only. The Village of Downers Grove shall not be responsible for any inaccuracies herein contained. If discrepancies are found, please contact the Downers Grove Information Services Department.

include updated controls; communications; updated heating, ventilation, air conditioning (HVAC), and chemical injection equipment; and provision for backup emergency power supply.

Miscellaneous structural repairs may be required. The exact extent of required repairs will be identified during project design. Table 1.02-2 indicates the emergency well houses to be rehabilitated.

Project	Date Built
Well No. 9	1956
Well No. 12	1971
Well No. 14	1976

**Table 1.02-2 Emergency Well Houses to be Rehabilitated**

3. Water Main Replacements

The Village identified segments of water main that require replacement because of a variety of factors, including breaks, age, hydraulic inadequacy, and concurrent location with the Village's roadway replacement program. Water main replacements include a variety of segments ranging in size from 4 to 12 inches in diameter. The water main will be constructed within parkway easements and existing road rights-of-way; therefore, land acquisition is not anticipated. Table 1.02-3 identifies the proposed water main segments and their replacement characteristics.

B. Location

Figure 1.02-2 shows the location of the proposed elevated water storage tank rehabilitation projects, the emergency well house rehabilitation projects, and an overview of the proposed water main replacement routes. Water main replacements will occur within existing Village rights-of-way or existing utility easements.

C. Description of Water System

1. Water Supply and Storage

Prior to 1988, Village water was supplied by six wells located around the Village. In January 1984, the Village prepared a *Water System Analysis Study* and determined that a shallow or deep well supply source was not a viable long-term option to provide potable water for the Village. The report recommended the Village pursue a DuPage Water Commission (DWC) Lake Michigan supply source.

The process to supply Lake Michigan water is as follows: Water is drawn into the Jardine Water Purification Plant in Chicago and sold to the DWC, which then pipes and sells water to the Village. In 1992, the Village began receiving its entire supply from the DWC. The Village initially kept six wells on standby for use in an emergency that reduced the DWC supply: however, the 63rd Street and Katrina Street wells have since been decommissioned. To date, an emergency requiring the use of these standby wells has not occurred.

# Village of Downers Grove, IL 2014 Zoning Map



Corrected to 03/18/2014  
Population as of 04/01/2010 Census: 47,833

## FIGURE 1.02-2 WATER MAIN SYSTEM IMPROVEMENTS OVERLAY ON VILLAGE ZONING MAP

Water Main Replacements Denoted by a BOLD Blue Line

Finley Road Tank Rehab and Well No. 12 Well House Rehab

Downers Drive Tank Rehab

Well No. 9 (63rd Street) Well House Rehab

Summit Street Tank Rehab

67th Street Tank Rehab

Well No. 14 Well House Rehab



- ⊕ Section Corner
- ⬭ Agreement Boundary
- ⬭ Downers Grove Landmark
- ⬭ Planned Development
- ⬭ Unincorporated
- ⬭ Downers Grove
- R1, Single Family Residence (20,000sf/100ft wide)
- R2, Single Family Residence (15,000sf/85ft wide)
- R3, Single Family Residence (10,500sf/75ft wide)
- R4, Single Family Residence (7,500sf/50ft wide)\*
- R5, Two Family Residence
- R5A, Townhouse Residence
- R6, Multiple Family Residence
- B1, Limited Retail Business
- B2, General Retail Business
- B3, General Services and Highway Business
- OR, Office Research
- ORM, Office Research Manufacturing
- M1, Light Manufacturing
- M2, Restricted Manufacturing
- DB, Downtown Business
- DT, Downtown Transition



DISCLAIMER: This drawing is neither a legally recorded map nor a survey, and is not intended to be used as such. This drawing is a compilation of records, information and data located in various village, county and state offices, and other sources, affecting the land area displayed and is to be used for reference purposes only. The Village of Downers Grove shall not be responsible for any inaccuracies herein contained. If discrepancies are found, please contact the Downers Grove Information Services Department.

Table 1.02-3 Water Main Replacements

Segment Number	Street Corridor	From Street	To Street	Existing Pipe Size (inches)	Proposed Pipe Size (inches)	Length (Feet)	Estimated Construction Cost per Foot	Segment Construction Cost
<b>Preliminary Opinion of Probable Cost-Priority 1 Construction Year 2016</b>								
1A	Grant	Prince	Linscott	4	8	800	\$385	\$308,000.00
1B	Prospect	Prairie	Rogers	4	8	1,400	\$385	\$539,000.00
1C	Grand	62nd	61st	6	8	700	\$385	\$269,500.00
1D	Dunham	63rd	Norfolk	8	8	1,100	\$385	\$423,500.00
1E	Chicago	Lee	Northcott	4	N/A	550	\$150	\$ 82,500.00
1F	Lincoln	Douglas	Fairview	4	8	800	\$385	\$308,000.00
1G	Indianapolis	Douglas	Fairview	4	8	800	\$385	\$308,000.00
1H	Linden	Gierz	Prairie	4	8	350	\$385	\$134,750.00
1I	Gierz	Fairview	Florence	4	8	800	\$385	\$308,000.00
<b>Preliminary Opinion of Probable Cost-Priority 2 Construction Year 2017</b>								
2A	Williams	55th	6th	4/6	8	1,000	\$385	\$385,000.00
2B	Grand	55th	Hill	4/6	8	1,400	\$385	\$539,000.00
2C	Williams	Tower Road	South of 40th	6	8	700	\$385	\$269,500.00
2D	Grant	Seeley	Oakwood	6	8	700	\$385	\$269,500.00
2E	Douglas	Prairie	Wilson	6	8	350	\$385	\$134,750.00
2F	Fairmount	55th	South of 57th Extended	6	8	1,600	\$385	\$616,000.00
2G	Stonewall	63rd	North. to Village Limits	6	8	750	\$385	\$288,750.00
<b>Preliminary Opinion of Probable Cost-Priority 3 Construction Year 2018</b>								
3A	Washington	Summit	55th	6	8	700	\$385	\$269,500.00
3B	61st	Blodgett	Fairmount	6	8	700	\$385	\$269,500.00
3C	Northcott	Prairie	South of Prairie	8	8	600	\$385	\$231,000.00
3D	Jefferson	Middaugh	Dunham	8	8	700	\$385	\$269,500.00
3E	Maple	Lane Pl	Carpenter	8	8	350	\$385	\$134,750.00
3F	Jay Dr.	Lyman	Webster	6	8	750	\$385	\$288,750.00
3G	Webster	Valley View Drive	North of Jay	6	8	500	\$385	\$192,500.00

Segment Number	Street Corridor	From Street	To Street	Existing Pipe Size (inches)	Proposed Pipe Size (inches)	Length (Feet)	Estimated Construction Cost per Foot	Segment Construction Cost
3H	Florence	Frontage Road	South to Village Limit/Queens	6	8	1,600	\$385	\$616,000.00
<b>Preliminary Opinion of Probable Cost - Priority 4 Construction Year 2019</b>								
4A	Williams	2nd	6th	6	8	1,350	\$385	\$519,750.00
4B	63rd	Puffer	Belmont	12	12	450	\$550	\$247,500.00
4C	Ogden (North Pkwy)	Saratoga	Forest Extended	6	8	750	\$350	\$262,500.00
4D	Prairie/Puffer ROW	Belmont	Chicago	6	8	1,100	\$350	\$385,000.00
4E	Venard	Janet Extended	41st Extended	12	12	550	\$435	\$239,250.00
4F	Valley View Drive	Fairmount	South of Fairmount	6	8	900	\$385	\$346,500.00
4G	39th	Forest	Main	8	8	650	\$385	\$250,250.00
4H	Leonard	62nd	63rd	6	8	750	\$385	\$288,750.00
4I	Lyman	Valley View Drive	North End	6	8	500	\$385	\$192,500.00
<b>Preliminary Opinion of Probable Cost - Priority 5 Construction Year 2020</b>								
5A	Wisconsin Avenue	Walnut	Katrine (West)	12	12	850	\$435	\$369,750.00
5B	Almond Court	Cul-de-sac	North to Snowberry Court	6	8	500	\$385	\$192,500.00
5C	Puffer	61st	62nd Extended	6	8	600	\$385	\$231,000.00
5D	Pomeroy Road	Acorn	North to Cul-de-sac	6	8	350	\$385	\$134,750.00
5E	Parkview Drive	Fairmount	Claremont	6	8	1,200	\$385	\$462,000.00
5F	Wisconsin Avenue	Katrine (West)	Janes	12	12	1,650	\$435	\$717,750.00

The Village currently draws its water supply from six separately-controlled Rate Control Stations that are connected to the DWC. The locations and control levels of the Rate Control Station are shown in Table 1.02-4.

Rate Station Location	Number	Controls	
Finley Road and 35th Street	Rate Control Station #1	Set at 70.0 pounds per square inch (psi)	Close if Finley Road Tank level is above 884.0 above mean sea level (amsl)
Maple Avenue and Belmont Road	Rate Control Station #2	Set at 53.0 psi	Close if Maple Avenue Tank level is above 889.5 amsl
Park Avenue and Summit Street	Rate Control Station #3	Set at 59.0 psi	
Main Street and Summit Avenue	Rate Control Station #4	Set at 52.8 psi	Close if Summit Street Tank level is above 884.7 amsl
75th Street and Lemont Road	Rate Control Station #5	Set at 49.0 psi	
75th Street and Fairview Avenue	Rate Control Station #6	Set at 47.0 psi	Close at local pressure of 52.50 psi

**Table 1.02-4 Locations and Control Levels of Rate Control Stations**

The Village has seven elevated water storage tanks that provide a total of 8.0 million gallons (MG) of storage. These tanks were constructed from 1938 to 2001 and are fed by flows from the abovementioned Rate Control Stations. Locations, capacities, and overflow elevations for the tanks are shown in Table 1.02-5.

Tank Location	Capacity (gallons)	Overflow Elevation (feet above msl)
Finley Road and 35th Street	1,000,000	885.0
Good Samaritan	1,000,000	879.0
Maple Avenue and Belmont Road	1,500,000	889.5
Downers Drive	2,000,000	873.4
Summit Avenue	500,000	884.7
67th Street	1,000,000	870.7
71st Street	1,000,000	874.0

**Table 1.02-5 Locations, Capacities, and Overflow Elevations of Elevated Water Tanks**

## 2. Water Distribution System

The Village has over 150 miles of polyvinyl chloride (PVC), ductile iron, and cast iron water main ranging in size from 2 to 24 inches in diameter. The age of the water main ranges from the 1930s to 2014. The Village has 3,254 hydrants and 3,208 isolation valves in the distribution system. Table 1.02-6 provides a breakdown of the pipe sizes and lengths based on data from the Village’s geographic information system (GIS) and asset management system.

A detailed drawing of Downers Grove’s distribution system, system limits and street map is provided on Figure 1.02-3.

From 1993 to 2004, the Village experienced an average of 50 main breaks a year. In 2005, the incidence of mains breaks rose dramatically to 136. These breaks are believed to be the combined result of deterioration of the main because of age and materials (poor manufacturing quality of 1970s era ductile iron water main and the 1950s and 1960s era cast iron water main), and localized ground movement. It is not believed that corrosive soils are the cause for a significant amount of main breaks.

D. Population

Population is the primary factor that determines water use (both directly for residential use and indirectly for services use such as hospitals, schools, and local commercial use). The Village is primarily a residential community with a substantial commercial base. Population data and forecasts from several sources were reviewed as part of this study and are summarized in the following subsections. Table 1.02-7 shows the population projections considered in the report.

Pipe Size (in)	Length (ft)
4	28,106
6	553,969
8	250,850
10	15,876
12	296,005
16	4,788
24	3,082
<b>Total</b>	<b>1,152,733</b>

\* This pipe length quantity does not include 279,796 linear feet of pipes of various size that are privately owned or are owned by the DWC and are located within the Village’s municipal limits.

**Table 1.02-6 Village Water Main Inventory**

Year	2010 United States Census	2006 NIPC Water Study	CMAP	SIU-C
2010	47,833			
2030		60,153		
2040			68,448	
2050				55,227

**Table 1.02-7 Population Projections**

1. United States Census Bureau

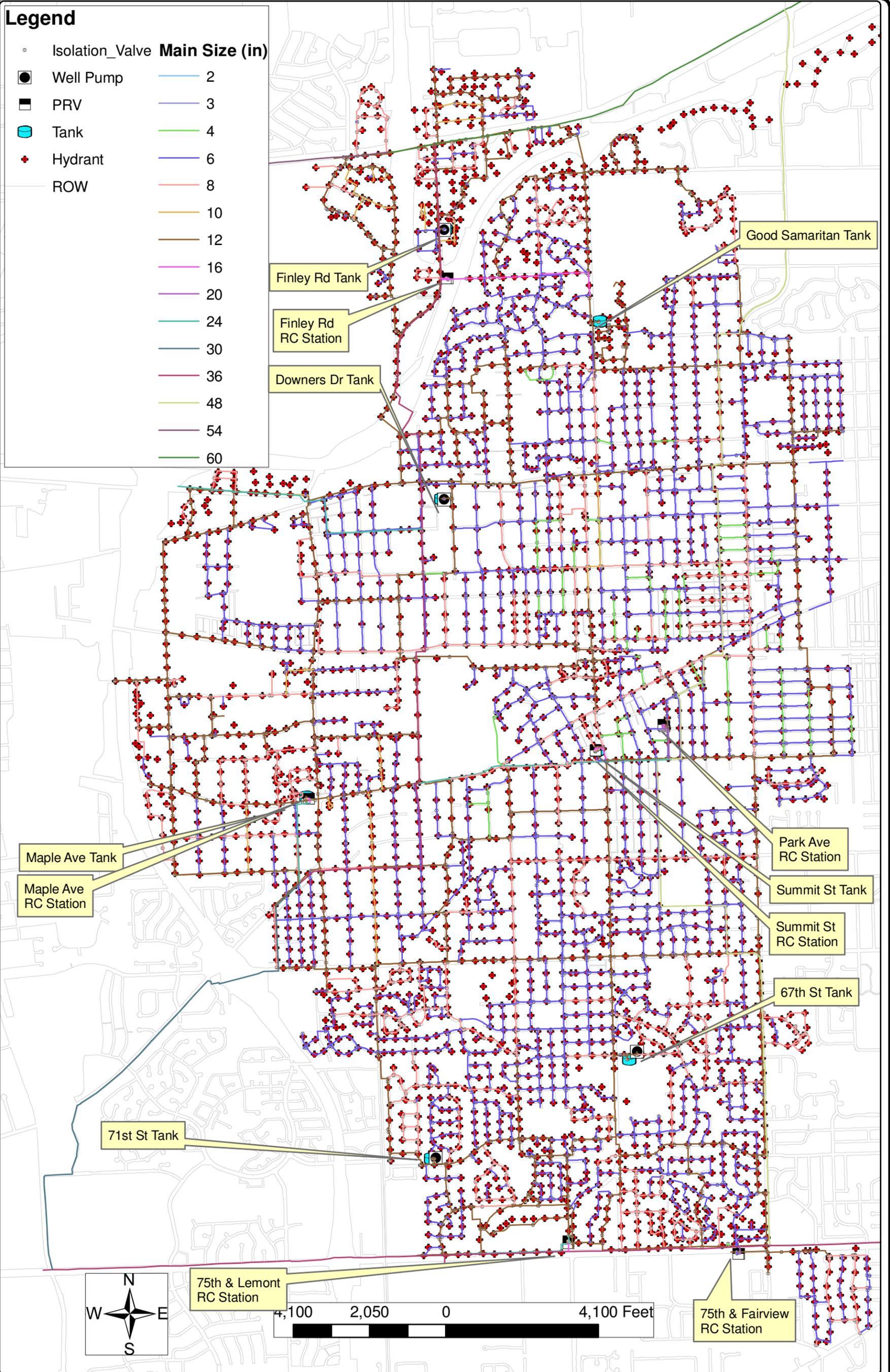
Data from the 2010 United States Census indicated a population of 47,833 in 19,187 residences (an average of 2.41 persons per household). In addition, there were 1,291 reported vacant residences not included in the population figures. Assuming all existing residences are occupied, the total population would be 50,994.

2. Water System Study Update 2006

The Village completed an update to its water system study in 2006, which reviewed current population projections from two regional agencies. The study used a population projection from the Northeastern Illinois Planning Commission (NIPC) as the basis for estimating water

### Legend

- Isolation\_Valve
  - Well Pump
  - PRV
  - Tank
  - ◆ Hydrant
  - ROW
- | Main Size (in) |
|----------------|
| 2              |
| 3              |
| 4              |
| 6              |
| 8              |
| 10             |
| 12             |
| 16             |
| 20             |
| 24             |
| 30             |
| 36             |
| 48             |
| 54             |
| 60             |



demands to the year 2030. The 2030 NIPC population projection was 60,153 at the time of the 2006 study.

### 3. Chicago Metropolitan Agency for Planning (CMAP)

The CMAP was created in 2005 by the merger of NIPC and the Chicago Area Transportation Study. CMAP provides land use and transportation planning for seven counties in northeast Illinois. Population and regional water use data from the CMAP website were reviewed as part of this study.

The CMAP website published its *2040 Forecast of Population, Households, and Employment* as part of the regional comprehensive planning effort, *Go TO 2040*. The population forecast for the Village indicates a 2040 population of 68,448.

The *Regional Water Demand Scenarios for Northeastern Illinois: 2005-2050* report prepared for CMAP by Southern Illinois University-Carbondale presents regional water supply forecasts for major water use categories including public water supplies. The report uses NIPC/CMAP population forecasts along with mathematical models that account for various water use variables, such as weather patterns, price of water, and employment, to forecast future water use. The report forecasts population growth in DuPage County at a linear rate of 0.36 percent from one year out to the year 2050. If this rate of growth is applied to the Village using the 2010 United States Census population as a starting point, the 2050 population would be 55,227.

### 4. Population Discussion

The 2030 NIPC population projection of 60,153 appears to account for a reasonable rate of growth in the Village, given that growth within the Village is limited to teardowns because of the boundaries of the Village's water system. Teardowns typically lower residential density because most teardowns result in larger single family structures. The Village's other option for organic population growth is to annex currently unannexed areas on the western boundary of the Village. The 2040 CMAP forecast of 68,448 is substantially higher than the NIPC projections used in previous water planning documents for the Village and the SIU-C population estimates.

For the purpose of evaluating water supply infrastructure needs, the population of the service area will provide a reasonable estimate of future water demands. The ultimate service population of 60,153 represents a 20 percent increase above the 2010 "fully occupied" population of 50,227, thus allowing for annexations and the potential for increased population density.

### 1.03 ABBREVIATIONS AND DEFINITIONS

Amsl	above mean sea level
CMAP	Chicago Metropolitan Area Planning
CY	Cubic Yards
DWC	DuPage Water Commission
EcoCAT	Ecological Compliance Assessment Tool
GIS	Geographic Information System
IEPA	Illinois Environmental Protection Agency
IDNR	Illinois Department of Natural Resources
IHPA	Illinois Historic Preservation Agency
ft	feet
in	inch
IEPA	Illinois Environmental Protection Agency
MG	million gallon
NIPC	Northern Illinois Planning Commission
psi	pounds per square inch
PVC	Polyvinyl chloride
SIU-C	Southern Illinois University-Carbondale
sq ft	sq ft

**SECTION 2**  
**EXISTING AND PROJECTED WATER USE**

---

## 2.01 DEMAND FACTORS

This section presents water use factors that will be applied to the population projections to estimate future water demands.

### A. Per Capita Water Use

The *2010 Water System Study* reviewed historic water use trends to determine reasonable per capita demands for forecasting water use. A value of 107 gallons per capita per day (gcd) was used in the *Hydraulic Computer Model Update* report. This value represented the higher end of the historic range to provide conservative estimates. In the *2005 Water Distribution System Analysis* report, per capita demand was found to be 136 gcd.

In a 2008 DuPage Water Commission Annual Report, the Illinois Department of Natural Resources projected the Village's Lake Michigan water allocation in 2010 to be 6.59 million gallons per day (mgd), or 135 gcd. The 2020 projection was found to be 7.27 mgd.

### B. Current Demand

#### 1. Average Day Demand

The most current Average Day Demand rate was found to be 5.26 mgd in 2010 or 3,653 gallons per minute (gpm).

#### 2. Maximum Day Demand

The Maximum Day Demand for the period over which data was collected occurred on June 28, 2005 and was 11.25 mgd or 7,814 gpm.

#### 3. Maximum to Average Day Ratio

To obtain an accurate Maximum Day to Average Day Ratio, the same demand year must be used for the ratio. The Average Day Demand in 2005 was found to be 6.68 mgd. Therefore, the Maximum Day to Average Day Ratio for 2005 can be calculated by  $11.25 \text{ mgd} / 6.68 \text{ mgd} = 1.68$ .

### C. Projected Demand

The following estimated water demands are based on the ultimate service population previously described. Table 2.01-1 summarizes current demands and demand projections.

#### 1. Average Day Demand

The Average Day Demand is estimated by multiplying the projected design population of 60,153 by the per capita water use in 2005 of 136 gcd. The 2005 demand per capita was used to give a more conservative water demand, since 2005 experienced a long dry summer, resulting in

increased water use. The design population is the estimated 2030 population of 60,153, taken from the 2006 NIPC water study, as discussed in Section 1. The resulting Average Day Demand is 8.21 mgd or 5,700 gpm.

2. Maximum Day Demand

Applying the previously determined Maximum to Average Day Ratio of 1.68 results in a Maximum Day Demand of 13.78 mgd or 9,568 gpm.

<b>Demand Type</b>	<b>Average Day (mgd)</b>	<b>Average Day (gpm)</b>	<b>Maximum Day (mgd)</b>	<b>Maximum Day (gpm)</b>
Present Day Demands	5.26	3,653	11.25	7,814
Ultimate Day Demands (2030)	8.21	5,700	13.78	9,568

**Table 2.01-1 Water Demand Forecasts**

**SECTION 3  
ALTERNATIVES ANALYSIS**

---

This section discusses the alternatives considered for the tank and well house rehabilitations and water main replacements.

### 3.01 ELEVATED WATER STORAGE TANK REHABILITATION

#### A. Elevated Water Storage Tank Rehabilitation Prioritization Criteria

The recommended amount of storage for water systems is an amount equal to an average day demand. The Village has a storage capacity of 8.0 MG, which is greater than its historical average day demand. However, current storage capacity is sufficient to meet anticipated fire demands and, based on this, it is not recommended that the Village install additional water storage capacity. Maintenance of the existing storage capacity appears sufficient for the Village's needs.

Any increase in the volume of storage in the Village's system will be to store the volume required by the Village's water purchase agreement with DWC, rather than for a specific hydraulic need. If the Village agrees to purchase more water from DWC in the future, additional storage may be needed to meet contractual obligations with the DWC. However, such a need is not anticipated within the next 20 to 30 years, given the current water use and that the Village is a built-out municipality.

The Village contracted Dixon Engineering, Inc. to perform inspections of the Village's tanks to assess their condition and submit a report summarizing the conditions of the tanks, recommended improvements to rehabilitate the tanks, and prioritization and scheduling of the rehabilitations. Dixon Engineering, Inc.'s reports recommended maintenance to four Village tanks, including the Downers Drive Tank, the Summit Street Tank, the 67th Street Tank, and the Finley Road Tank. Copies of the Dixon Maintenance Inspection reports are included in Appendix A.

The majority of the tank rehabilitations are driven by the need to protect the steel member and walls from corrosion or to install or update safety elements to the tank to meet Occupational Safety And Health Administration-required safety codes. In this context, there is little room to allow for alternatives, only to determine the schedule in which the rehabilitation should occur. The following summarizes results of the inspection reports

1. The Downers Drive Tank should be rehabilitated within two to five years. Work will consist of repainting the tank exterior and interior, replacing foundation grout, installing safety grabs and rigging clips, and replacing various hatches to incorporate safety recommendations. The Dixon report discusses various options for surface preparation, painting types, and steel repairs. Figure 3.01-1 displays the proposed work and cost summary provided by Dixon Engineering, Inc.

2. The Summit Street Tank should be rehabilitated within two to five years. Work will consist of repainting the tank exterior and interior, and installing a cathodic protection system, handrail, and sidewall ladder with step-off; replacing foundation grout and the wet interior ladder; installing safety grabs and rigging clips; and replacing various hatches to incorporate safety recommendations.

**COST SUMMARY:**

	2-5 years	Now
Abrasive blast clean the exterior	\$553,000	
Containment	100,000	
Abrasive blast clean the wet interior	336,000	
Seal lap seams	3,000	
Cathodic protection system		17,000
Cathodic clips and couplings	1,500	
Abrasive blast clean the pit piping	3,000	
Repair grout	1,000	
Install painter's rail	3,000	
Install 30-inch roof hatch	3,000	
Install hatch over ladder opening	2,000	
Install wet interior ladder	10,000	
Install a new sidewall/roof ladders	12,000	
Fill pits	1,000	
Repair sidewall stiffener	1,000	
Install riser grate	1,000	
	1,030,500	17,000
Engineering and Contingencies	24,500	3,500
<b>Total</b>	<b>\$1,155,000</b>	<b>\$20,500</b>

Source: Preliminary Maintenance Inspection 2,000,000 gallon Legged Tank, Downers Drive Tank, Downers Grove, Illinois. Inspection Performed 10/24/2013. Report Prepared: 12/6/2013

**Figure 3.01-1 Dixon Recommended Rehabilitation and Cost Opinion for Downers Drive Tank**

The Dixon report discusses various options for surface preparation, painting types, and steel repairs.

Figure 3.01-2 displays the proposed work and cost summary provided by Dixon Engineering, Inc.

**COST SUMMARY:**

	2 – 5 years	Now
Exterior over coat	\$118,0000	
Containment	100,000	
Abrasive blast clean the wet interior	95,000	
Seal lap seams	3,000	
Cathodic protection system		\$17,000
Cathodic protection clips and couplings	1,500	
Abrasive blast clean pit piping	3,000	
Repair foundations	1,000	
Handrail/painter's rail	15,000	
Install id over balcony opening	2,000	
Wet interior ladder	8,000	
Vertical sidewall ladder with step-off	10,000	
Pit welding	1,000	
Pit filling	2,000	
	359,500	17,000
Engineering and Contingencies	53,500	3,500
<b>Total</b>	<b>\$413,000</b>	<b>\$20,500</b>

Source: Preliminary Maintenance Inspection 500,000 gallon Legged Tank, Summit Road, Downers Grove, Illinois. Inspection Performed 10/10/2013. Report Prepared: 11/22/2013

**Figure 3.01-2 Dixon Recommended Rehabilitation and Cost Opinion for Summit Street Tank**

3. The 67th Street Tank should be rehabilitated within two to five years. Work will consist of repainting the tank exterior and interior; installing a cathodic protection system, handrail, and sidewall ladder with step off; replacing foundation grout and replacing the wet interior ladder; installing safety grabs and rigging clips; and replacing various hatches to incorporate safety recommendations.

<u><b>COST SUMMARY:</b></u>	
Exterior coating	\$200,000
Dry interior coating	12,000
Wet interior coating	150,000
Cathodic clips	1,500
Weld roof cathodic openings	1,000
Pit piping coating	4,000
Repair foundation	1,000
Grout repair	1,000
Roof handrail	10,000
Mud valve	<u>4,500</u>
	\$385,000
Engineering and Contingencies	<u>65,000</u>
<b>Total</b>	<b>\$450,000</b>

Source: Preliminary Maintenance Inspection 1,000,000 gallon Spheroid Tank, Downers Grove, Illinois. Inspection Performed 11/21/2014. Report Prepared: 1/19/2015

**Figure 3.01-3 Dixon Recommended Rehabilitation and Cost Opinion for 67th Street Tank**

The Dixon report discusses various options for surface preparation, painting types, and steel repairs. Figure 3.01-3 displays the proposed work and cost summary provided by Dixon Engineering, Inc.

4. For the Finley Road Tank, the Dixon report stated that the Village should not take rehabilitative action on the interior or exterior, but that it should plan for rehabilitative work to occur to the exterior, interior wet, and interior dry in five to eight years. The report also recommended that the rehabilitative work include provision of a roof handrail and work to hatchways to reflect OSHA-required safety codes. The report discusses various options for surface preparation, painting types, and steel repairs.

The Dixon report does not discuss probable construction costs for the rehabilitative work given the five-year period until work is performed. However based on similar cost opinions, the Village was able to determine a cost based on extrapolation of unit prices to the actual units (i.e., square footage required for painting) for the Finley Road Tank. A copy of the Dixon Maintenance Inspection report with its recommendations and alternatives is included in Appendix A.

In summary, the featured reports recommend a rehabilitation schedule as shown in Table 3.01-4.

Priority	Design Year	Construction Year	Completion and Operation Year
Downers Drive Tank Rehabilitation	2015	2016	2016
Summit Street Tank Rehabilitation	2016	2017	2017
67th Street Rehabilitation	2017	2018	2018
Finley Road Rehabilitation	2019	2020	2020

**Table 3.01-4 Elevated Water Storage Tank Rehabilitation Phasing**

### 3.02 EMERGENCY WELL HOUSE REHABILITATION

The existing distribution system is connected to the DWC supply system at six supply locations, and it has seven elevated water storage tanks with a capacity of 8 MG. The Village has three separate emergency water supply wells in the event of DWC supply being interrupted at its source. The wells are currently pumped to waste once each month for required Illinois Environmental Protection Agency (IEPA) sampling and testing submittals. These wells are collectively able to supply 4.3 mgd (below the current average day demand of 5.6 mgd) and can provide the Village with approximately eight days of adequate water supply to maintain pressure in the system, and likely longer given the water use restrictions that would be applied in such an emergency (i.e., prohibition of lawn sprinkling, etc.). The Village does not have a viable alternative to connect to an alternative water supply other the DWC; therefore, it is the preferred option for the Village to maintain this emergency well water supply.

The three existing well houses are single-story brick structures dating from the 1950s and have not been appreciably upgraded since that time. These well houses require the following upgrades.

1. Communications equipment to the Village’s supervisory control and data acquisition system.
2. Backup power supplies such as generators and associated uninterruptible power supply switches.
3. Updates to the motor control center, supervisory control center, and general switchgear.
4. Miscellaneous rehabilitation of the well head and general updates to bring the building up to current code.
5. Any adjustments to the well houses will require that they be brought up to meet current codes. Specific adjustments will be determined as design for the rehabilitations progresses; however, it is anticipated that particular attention will be required for electrical, HVAC, and safety codes, and environmentally-exposed elements such as roofing.

Photographs of the existing well houses are included in Appendix B.

All the well houses are in similar condition and, since no one well house’s production or location is hydraulically significant relative to the rest, the prioritization of well house rehabilitation is not critical. At present, an anticipated schedule is shown in Table 3.02-1, although the well house rehabilitation order is interchangeable.

Priority	Design Year	Construction Year	Completion and Operation Year
Well No. 9 Well House Rehabilitation	2016	2017	2017
Well No. 12 Well House Rehabilitation	2017	2018	2018
Well No. 14 Well House Rehabilitation	2017	2019	2019

**Table 3.02-1 Well House Rehabilitation Phasing**

### 3.03 WATER MAIN REPLACEMENTS

The existing distribution system is effective at taking water from the DWC Rate Control Stations scattered through the system, filling the seven elevated tanks, and satisfying daily water demands and fire protection needs. The 2006 water system study identified various areas of low flow in the Village and recommended that the Village institute a new standard size water main of a minimum 8 inches in diameter.

This section summarizes the criteria used to select the water main route and sizing. As noted earlier, the existing system is thought to provide sufficient fire flow to service areas.

#### A. Water Main Replacement and Prioritization Criteria

As part of the project plan, a detailed water main evaluation was completed to incorporate prioritization criteria to create a numerical basis for the selection of water main to be replaced. The prioritization criteria are shown in Table 3.03-1.

Criteria	Discussion
Replace Small Diameter Main	Replacement of 4-inch-diameter main is prioritized to provide these areas with the minimum specified water main diameter in the Village in accordance with the 2006 <i>Water System Study</i> .
Replace Main Made of Poor Material	Poorly performing and older cast iron main were given a higher prioritization rating since these older mains are approaching the end of their service life and are responsible for much of the Village's unaccounted-for water from leaky sections. New water main will be constructed of either ductile iron or PVC depending on the particular location and application.
Replace Main with High Break Rate	The Village maintains records of water main breaks and prioritization was given to water main that experienced a significant amount of breaks over the past three years.
Streets in Need of Repair	Replacement of water main along existing roadways will require repair of the street and, where existing, curb and gutter. The replacements considered existing street condition and gave preference to those in need of repair (measured by inclusion in the Village's five-year roadway repair plan), and avoided those that have been recently improved.
Phasing	Water main improvements were grouped to allow sensible phasing of water main replacements. Certain sections can be constructed on different timelines. Less critical sections are delayed to provide consistent capital cost over time.

**Table 3.03-1 Water Main Replacement Prioritization Criteria**

B. Phasing

Design and construction of the water main will be phased as outlined in Table 3.03-2. More information on the specific main included in each phase and its priority ranking is shown in Table 3.03-3.

Priority	Design Year	Construction Year	Completion and Operation
Priority 1 Water Main Replacements	2015	2016	2016
Priority 2 Water Main Replacements	2016	2017	2017
Priority 3 Water Main Replacements	2017	2018	2018
Priority 4 Water Main Replacements	2018	2019	2019
Priority 5 Water Main Replacements	2019	2020	2020

**Table 3.03-2 Water Main Replacement Phasing**

**3.04 REGULATORY COMPLIANCE**

The proposed elevated tank rehabilitations, emergency well house rehabilitations and water main replacements will be designed in accordance with applicable federal, state, and local laws and regulations. There are no known or impending violations of federal or state public water supply regulations that need to be addressed with the proposed projects.

**SECTION 4  
ENVIRONMENTAL IMPACTS**

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This section discusses the environmental impacts and sign-offs required for the proposed water system improvements project in accordance with the IEPA Loan Environmental Checklist.

#### **4.01 NATIONAL HISTORIC PRESERVATION ACT**

A letter was sent to the Illinois State Historic Preservation Agency (IHPA) on March 3, 2015, requesting a Federal Section 106 sign-off. A response has been received, and sign-off approval was granted. IHPA responses are provided in Appendix C.

The elevated tank rehabilitation projects will be limited to the immediate physical footprint of the elevated tanks. All elevated tanks are located on Village-owned land parcels.

The emergency well house rehabilitation projects will be limited to the immediate physical footprint of the emergency well houses. All emergency well houses are located on Village-owned land parcels.

The water main projects will occur within existing Village rights-of-way or existing Village utility easements and will not impact existing structures.

#### **4.02 ILLINOIS ENDANGERED SPECIES, NATURAL AREAS, AND PRESERVATION ACT**

The Illinois Department of Natural Resources (IDNR) Ecological Compliance Assessment Tool (EcoCAT) was used to initiate communication regarding the proposed connection facility and water main projects. Project information was entered through the EcoCAT website on February 18, 2015. A printout of the assessment is provided in Appendix D. The final determination letters of no impact were received from IDNR on February 19, and are also attached in Appendix D.

**SECTION 5**  
**PROJECT IMPLEMENTATION**

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This section discusses project implementation including project schedule, anticipated cost, financing details, and the impact on water rates.

**5.01 PROJECT SCHEDULE**

The Village plans to begin design of the water main improvements in 2015. Design of the Priority 1 water main will be complete by the end of 2015 to allow bidding in the winter months and start of construction in 2016. Construction of the improvements will be completed in 2016.

Design of the Priority 2 water main will be complete by the end of 2016 to allow bidding in the winter months and start of construction in 2017. Construction of the improvements will be completed in 2017.

**5.02 PROJECT COST**

A. Construction Cost

1. Elevated Water Storage Tank Rehabilitation

The total anticipated project capital cost for the elevated water storage tank rehabilitations, including engineering and construction, is \$3,015,000. Table 5.02-1 presents the opinion of probable cost for the elevated water storage tank rehabilitations. Construction costs are further broken down in Appendix E.

Item	Cost Opinion
Downers Drive Elevated Water Storage Tank-Construction Year 2016	\$1,375,000
Summit Street Elevated Water Storage Tank-Construction Year 2017	\$530,000
67th Street Elevated Water Storage Tank-Construction Year 2018	\$450,000
Finley Road Elevated Water Storage Tank-Construction Year 2020	\$660,000
<b>TOTAL</b>	<b>\$3,015,000</b>

**Table 5.02-1 Elevated Water Storage Tank Rehabilitation Cost Opinion**

2. Emergency Well House Rehabilitation

The total anticipated project capital cost for the emergency well house rehabilitations, including engineering and construction, is \$3,000,000. Table 5.02-1 presents an opinion of probable cost for the elevated emergency well house rehabilitations. The construction costs are further broken down in Appendix E.

Item	Cost Opinion
Well House No. 9 Rehabilitation (Downers Drive)-Construction Year 2017	\$1,000,000
Well House No. 12 Rehabilitation (Finley Road)-Construction Year 2018	\$1,000,000
Well House No. 14 Rehabilitation (71st Street)-Construction Year 2019	\$1,000,000
<b>TOTAL</b>	<b>\$3,000,000</b>

**Table 5.02-2 Emergency Well House Rehabilitation Cost Opinion**

3. Water Main Replacements

The total anticipated project capital cost for the water main, including engineering and construction, is \$12,295,000. Table 5.02-1 presents an opinion of probable cost for the water main improvements. The construction costs are further broken down in Appendix E.

Item	Cost Opinion
Priority 1 Water Main Replacements-Construction Year 2016	\$2,681,250
Priority 2 Water Main Replacements-Construction Year 2017	\$2,502,500
Priority 3 Water Main Replacements-Construction Year 2018	\$2,271,500
Priority 4 Water Main Replacements-Construction Year 2019	\$2,732,000
Priority 5 Water Main Replacements-Construction Year 2020	\$2,107,750
<b>TOTAL</b>	<b>\$12,295,000</b>

**Table 5.02-3 Water Main Improvements Cost Opinion**

Overall the proposed annual capital costs are shown in Table 5.02-4.

Item	Cost Opinion
Tank Rehabilitation, Priority 1 Water Main Replacements-Construction Year 2016	\$4,056,250
Tank Rehabilitation, Well House Rehabilitation, Priority 2 Water Main Replacements-Construction Year 2017	\$4,032,500
Tank Rehabilitation, Well House Rehabilitation, Priority 3 Water Main Replacements-Construction Year 2018	\$3,721,500
Well House Rehabilitation, Priority 4 Water Main Replacements-Construction Year 2019	\$3,732,000
Tank Rehabilitation, Priority 5 Water Main Replacements-Construction Year 2020	\$2,767,750
<b>TOTAL</b>	<b>\$18,310,000</b>

**Table 5.02-4 Water System Improvements Cost Opinion**

B. Operation and Maintenance Costs

1. Elevated Tank Rehabilitations

The 20-year operation and maintenance costs associated with the elevated water storage tank rehabilitations are expected to be minimal. The technological advancements associated with coatings technology indicated that coatings have an expected service lifespan of 25 years. The nature of elevated tanks means that they have no moving parts with the associated wear. It can be assumed that miscellaneous repairs over 20 years may include small areas of localized repainting, lightbulb replacement, and cathodic protection cathode/anode replacement. We anticipate this amount to be no more than 10 percent of the initial capital cost of the rehabilitation.

2. Emergency Well House Rehabilitations

The 20-year operation and maintenance costs associated with the emergency well houses are expected to be small compared to the construction cost. Operating costs are estimated to be approximately \$5,000 a year and will involve well house heating, miscellaneous power costs, and monthly pumping to waste. Well houses are intended to be operated on an emergency basis with one temporary start and pump-to-waste a month to collect samples for reporting and keep the equipment operational. Chlorine disinfectant is anticipated to be held by on-call suppliers, thus eliminating the cost of maintaining disinfectant. Maintenance is anticipated to be limited to consumable equipment repair (lightbulbs, etc.), lubrication of pumps, moving-part machinery, and other assorted miscellaneous tasks.

3. Water Main Replacements

The 20-year operation and maintenance costs associated with the new water main are difficult to quantify and are expected to be minimal. Costs associated with water main maintenance typically include hydrant flushing, valve exercising, and repair of water main breaks. These costs are typically flat with respect to pipe age, with the exception of water main break repair, which typically rises as water main age increases beyond 40 years.

Because this project will be replacing aging and break-prone sections of pipe, there will be no additional maintenance costs to the Village, and the annual cost is likely to decrease because the new water main is expected to experience significantly fewer breaks over the next 20 years.

### 5.03 FINANCING DETAILS

The Village has been planning this project for several years and has budgeted funds for fiscal years 2015 through 2020 to pay for the design and construction of Phase 1 through 4 water main and the elevated tank and emergency well house rehabilitations. Water rate revenue will be used to cover the debt service on the IEPA Public Water Supply Loan for the improvements detailed in this report.

**5.04 WATER RATE STRUCTURE**

Table 5.04-1 shows the existing water rate structure for the Village. Billings are based on a combination of a fixed charge (based on the size of the subject property’s water meter) and the number of “units” of water consumed per billing cycle, with one unit equal to 100 cubic feet (748 gallons).

Customers are billed bimonthly for the actual quantity of water used based on the following. The average bimonthly bill for the Village is \$101.60. (\$50.80 a month). According to the 2010 US Census, the Median Household income is \$84,269 (\$7,022.42 per month). The \$51.00 water bill is 0.72 percent of monthly income. This magnitude bill corresponds with an average residential customer using 11,220 gallons bimonthly, or 5,647 gallons a month.

Total capital cost for the infrastructure improvements is \$18,310,000. Debt service for a 20-year loan on this amount at an anticipated interest rate of 1.9 percent a year is \$91,763 a month.

<b>Bimonthly Rate per Unit Consumed (1 Unit = 750 gallons)</b>		<b>2015 Price</b>
Inside Village Limits		\$5.96
Outside Village Limits		\$6.84

<b>Bimonthly Fixed Charge by Water Meter Size</b>	
5/8 inch	\$12.59
1 inch	\$18.89
1 1/2 inch	\$62.97
2 inch	\$100.74
3 inch	\$157.55
4 inch	\$262.58
6 inch	\$525.15
10 inch	\$1,260.36

**Table 5.04-1 Existing Water Rate Structure**

The Village has accounted for the anticipated debt service load of the project during the Comprehensive Annual Financial Reports and Budgets. The Village will be able to service the total debt service load without a rate increase or other revenue generating action.

**APPENDIX A**  
**WATER TANK INSPECTION REPORTS**

# Dixon Engineering, Inc.

Preliminary Maintenance Inspection

1,000,000 Gallon Spheroid  
Water Storage Tank

Village of Downers Grove  
Downers Grove, Illinois

Dixon Engineering, Inc.  
9415 W. Forest Home #208  
Hales Corners, WI 53130  
Phone: (414) 529-1859  
Fax (414) 529-3120  
<http://www.dixonengineering.net>  
[Wisconsin@dixonengineering.net](mailto:Wisconsin@dixonengineering.net)

Inspection Performed: November 21, 2014  
Report Prepared: January 19, 2015

## **CONCLUSIONS:**

1. The exterior coating is the original epoxy/urethane coating system that is in good condition except for the roof where there is extensive topcoat delamination. The coating has faded the primary modes of failure are rock nicks, delamination, rust bleed-through, spot coating breaks to the substrate, and rust undercutting. The coating has good adhesion. Coating deterioration is minor and the condition is average for a 14 year old coating system.
2. The dry interior coating is an epoxy system that is in good condition overall. Moderate failure has occurred on the tops of the platforms and there are spot failures throughout the dry interior.
3. The wet interior coating is an epoxy system that is in fair condition overall. The coating appears to have fair adhesion. Below the high water line the coating has moderate spot failures on the floor, access tube, and sidewalls. Above the high water line, the coating is in good condition, with moderate corrosion.

## **COATING SAMPLES:**

4. Two exterior, one wet interior, and one dry interior coating samples were taken and analyzed for metal content. Test results showed none of the coatings are heavy metal bearing coatings.

## **RECOMMENDATIONS:**

1. Schedule regular cleanings and inspections of the tank by an independent third party as recommended by AWWA, or once every five years.
2. Complete the recommended work in 1-2 years. The coating work is the greatest cost and largest part of the recommendations. The repairs and upgrades should be completed during the next major tank rehabilitation process when coating repairs are made.
3. High-pressure water clean (5,000-10,000 psi), spot power tool clean and recoat the exterior with a polyurethane system. The estimated cost is \$200,000.
4. Abrasive blast clean the topsides of the platforms including 1 foot up the riser walls and the other areas of failed coating and apply a spot epoxy coating system to all prepared surfaces. The estimated cost is \$12,000.
5. Abrasive blast clean the entire wet interior to a near white metal condition (SSPC-SP10), and apply a three-coat epoxy polyamide system. The estimated cost is \$150,000.
6. Install cathodic clips and a pressure fitting for future installation of a submerged cathodic protection system. The estimated cost is \$1,500.
7. Weld plates with couplings for interior rigging over the cathodic lift holes in the tank's roof. The estimated cost is \$1,000.

8. Abrasive blast clean the pit piping to a commercial grade (SSPC-SP6) and apply a two-coat epoxy system. The estimated cost is \$4,000.
9. Install a chain link fence around the tank for security.
10. Repair the cracks in the foundation by routing and filling with a mortar material. The estimated cost is \$1,000.
11. Coat the foundations to help prevent further deterioration. Cost would be incidental to exterior painting.
12. Repair areas of missing and damaged grout between the baseplate and the foundation. The estimated cost is \$1,000.
13. Install a 42-inch high railing on the roof. The estimated cost is \$10,000.
14. Request the antenna owners to correct deficiencies in cable sealing and routing.
15. Install a cover over the access tube gap to eliminate the gap as a point of possible contamination. Cost would be incidental to exterior repainting or the installation of a new roof vent.
16. Annually inspect the roof vent screen.
17. Replace the inoperable mud valve with a new valve. The estimated cost is \$4,500.

## **A DISCUSSION ON RESCUE AND RETRIEVAL OPERATIONS FROM ELEVATED PEDESTAL STORAGE TANKS**

A series of accidents involving falls from or in water tanks has highlighted inadequacies in tank design and a potentially greater problem. The rescue may be more dangerous, with potential for more loss of life or injury, than the original accident. Contractors and engineers are responsible for their own employees. Even with safety training and proper equipment, accidents will occur. Most rescue squads are local or neighboring fire departments, some with more practice than other departments. Elevated tanks were designed to store water, not for rescue or retrieval convenience. The following items would make working on and retrieval from water tanks safer. This discussion is offered as a starting point. We recommend that you meet with your rescue personnel and draft a rescue plan. A copy of the plan should be kept at the tank and with the rescue crew.

OSHA now requires 30-inch manways and hatches with fall prevention on all ladders. We have always objected to replacement of ladders as new regulations are passed relatively frequently, especially on retrofit of existing tanks. We recommend the changes for the convenience and safety of your employees, rescue personnel, and others working on the tank. As far as we know, none of these conversion items recommended are required or mandated by any government agency for retrofits.

DIXON recommends these changes be made during the next major tank painting.

### RETRIEVAL FROM WET INTERIOR:

#### Access:

The dry interior ladders are located in the basebell, stem, and access tube. These ladders do meet OSHA standards. All ladders do contain a rail-type fall prevention device. There is a 16 x 24-inch elliptical manway in the access tube for access into the bottom of the wet interior. The roof has a through an antenna pod for the dry interior, and a 30-inch diameter roof hatch for the wet interior. There is no roof handrail. There are rigging posts welded to the roof for exterior rigging.

There is a full under the bowl, and a condensate ceiling at approximately 20 feet above the ground in the dry interior. Ladder openings in platforms are 30-inch in diameter.

#### Procedure:

1. It is not possible to install a 30-inch manway in the bottom of the tank. Retrieval must be up to the roof by use of a winch and tripod. Rescue personnel enter the tank through the new 30-inch roof hatch or the bottom manway.
2. Inside the new roof handrail, the rescue crew raises the basket to the roof using a tripod and a winch. Place the basket on the roof while the tripod is moved over the access tube hatch.

3. Establish a helicopter rescue, or lower the basket down the access tube to the top platform. From the top platform, lower the basket to ground level through the new 30-inch platform hatches with a pulley or winch connected to an attachment lug welded to the tank's bowl.

From the roof, it is possible to lower the basket over the side to ground level, but that would require a very large winch and increased loading on the attachment point. On a rainy, windy, or snowy day, the objective would be to get rescue personnel off the roof as soon as possible, so lowering through the dry interior is preferred.

Structural Modifications Necessary (As stated in the recommendations):

1. Install a 42-inch high railing and a painter's rail on the roof.
2. Weld an attachment lug to the tank's bowl. Cost is incidental to coating costs.

Equipment:

Winch or pulley system.

Tag line rope.

Basket.

**COST SUMMARY:**

Exterior coating	\$200,000
Dry interior coating	12,000
Wet interior coating	150,000
Cathodic clips	1,500
Weld roof cathodic openings	1,000
Pit piping coating	4,000
Repair foundation	1,000
Grout repair	1,000
Roof handrail	10,000
Mud valve	<u>4,500</u>
	\$385,000
Engineering and Contingencies	<u>65,000</u>
Total	\$450,000

## **INSPECTION:**

On November 21, 2014, Dixon Engineering, Inc. (DIXON) performed a preliminary maintenance inspection on the 1,000,000-gallon spheroid water storage tank owned by the Village of Downers Grove, Illinois. Purposes of the inspection were to evaluate the interior and exterior coating's performance and life expectancy, assess the condition of metal surfaces and appurtenances, review safety and health aspects, and make budgetary recommendations for continued maintenance of the tank. All recommendations, with budgeting estimates for repairs are incorporated in this report. The inspection was performed by Tom Van Gemert, Senior Engineer. The inspector was assisted by Kelly Green, staff technician and Brad Schotanus, Project manager. Following the inspection, chlorine was added to disinfect the tank per AWWA Standard C652-11 method No. 3.

## **TANK INFORMATION:**

The tank was built in 2000 by CB&I with a height-to-low-water line of 86 feet, the tank is welded construction. The tank has its original coating applied in 2000.

## **CONDITIONS AND RECOMMENDATIONS:**

### **EXTERIOR COATING CONDITIONS:**

The exterior coating system is a multiple coat epoxy urethane coating system.

The exterior coating is in good condition overall, it is beginning to chalk and fade and there is loss of gloss. Surfaces have faded due to exposure to ultraviolet rays, which is a normal occurrence for an exterior coating system. The coating is adequately protecting the metal and the aesthetics are good. The system is performing as would be expected for a 14 year old system.

Several areas of rock chip damage were noted on the base cone and lower stem. These areas have started to surface rust and undercut the surrounding coating.

The basebell coating is in good condition. Primary methods of deterioration are rust bleed through and rust undercutting. The failures noted are minor with only a few failures noted.

The stem coating is in good condition. No coating breaks were found on the stem.

The bowl coating is in good condition. No coating breaks were found on the bowl.

The sidewall coating is in good condition. No coating breaks were found on the sidewall.

The roof coating is in poor condition. Primary methods of deterioration are spot coating breaks to the substrate and extensive delaminated topcoat. The failures noted are extensive.

Good adhesion was noted on the ASTM x-cut test areas, with trace loss of topcoat to the substrate coat in areas tested. The tank is a candidate for over-coating.

This exterior system was tested at below reporting limit of 0.00075% and below reporting limit of 0.0013% percent.

Lettering on the tank consists of 'Downers Grove' in one location; it is in block style.

There is a logo on the sidewall, it is a city sky line.

#### **EXTERIOR COATING RECOMMENDATIONS:**

The existing coating is an epoxy/urethane system with the underlying coating. The recommended procedure is to high-pressure water clean (5,000-10,000 psi) the exterior to remove any delamination or flaking coating and any contaminants, followed by spot power tool cleaning to bare metal (SSPC-SP 11) any rusted or failed areas.

The coating system would consist of a spot prime coat on the bare metal, a full coat of epoxy, followed by a two full coats of polyurethane. The polyurethane system offers excellent abrasion resistance with high gloss and sheen retention. The expected life of this system is fifteen years. The system can be recoated again in fifteen years, and a second time approximately fifteen years after the first recoating, extending the life of the coating to forty-five years before total removal would be necessary. The tank would be removed from service during the painting project. This is necessary to reduce moisture condensation on the tank's surface. Polyurethane coatings have a minimum temperature requirement for application and are sensitive to moisture during the curing process. If moisture is present during the curing process, the appearance will become cloudy with little or no gloss. The estimated cost to spot power tool clean and overcoat the existing system with an epoxy polyurethane system is \$200,000.

If the coating is allowed to deteriorate to the point of needing total removal the additional coat of containment will be needed.

#### **DRY INTERIOR COATING CONDITIONS:**

The dry interior area on this structure is defined as the non-water contact surfaces, consisting of the base cone, stem, bowl, and access tube.

The dry interior coating is an epoxy system that is in good condition.

The primary causes of deterioration in the base cone is delamination and spot coating breaks.

The coating in the stem is in good condition with no significant deterioration.

The primary causes of deterioration in the access tube is rust bleed through, abrasion, and spot coating breaks.

The coating on the tops of the platforms is in fair condition. The areas are moderately rusted. Primary causes of deterioration is abrasion.

### **DRY INTERIOR COATING RECOMMENDATIONS:**

Abrasive blast clean to a SSPC-SP6 commercial standard, the entire topsides of the platforms including 1 foot up the riser wall, the baseplate, access tube and the other areas of failure noted throughout the dry interior. The bare metal would be coated with an epoxy system. The estimated cost of spot repainting is \$12,000.

### **WET INTERIOR COATING CONDITIONS:**

The wet interior coating is an epoxy system that is in fair condition.

The roof coating is in good condition. There are areas of spot coating failures with rusting.

The sidewall coating is in fair condition with deterioration in the form of spot coating breaks from age and abrasion. There is moderate damage at the high water line, which would be the area most affected by ice pressures and ice movement. The coating is still protecting the metal, with the exception of the noted failures.

The access tube coating is in fair condition with deterioration in the form of spot coating breaks from age and abrasion. There is moderate damage at the high water line.

The coating on the tank bottom is in fair condition, with deterioration in the form of spot coating breaks.

The tank bottom was covered with approximately 2-inches of mud sediment that was frozen.

### **WET INTERIOR COATING RECOMMENDATIONS:**

Remove the coating system by abrasive blast cleaning the metal to a near white metal grade (SSPC-SP 10) and apply a new epoxy coating system. Paint systems are to be approved for potable storage tanks contingent upon meeting requirements of National Sanitation Foundation Standard 60/61.

Epoxy paint systems are recommended in most applications. Their drawbacks are a minimum application temperature of 50°F or 35°F for fast cure; and long cure times, 7 days at 70°F and up to 28 days at 35°F. The coatings are formulated in high solids form to reduce VOC emissions and have good adhesion and abrasion resistant qualities. The coatings are normally applied in three coats with recoat times up to twenty-four hours. The estimated cost to apply the three-coat epoxy system is \$150,000.

As an alternative, apply a high film build 100% solids epoxy or plural component urethane coating. These coating systems are not solvent based, so thicker films can be obtained in a single pass. This saves on labor cost for applying second and third coats. The thicker film performs better covering rough and pitted surfaces than conventional systems. The coatings have a very short cure times usually less than forty-eight hours. In addition, they may be applied in lower temperature conditions. However the coatings have a higher cost due to the additional material used and the proprietary mixing and application equipment which must be rented or purchased by the contractor. Training by the material supplier is also needed to ensure that the contractor applies the product correctly. The estimated cost for a high build epoxy or urethane system is \$250,000.

#### **CATHODIC PROTECTION CONDITIONS:**

The tank does not contain a cathodic protection system.

The tank does not have clips and a pressure fitting installed for a future cathodic protection installation.

#### **CATHODIC PROTECTION RECOMMENDATIONS:**

Install cathodic clips and couplings for future installation of floating-type cathodic protection system. The estimated cost is \$1,500.

Install an impressed current cathodic protection system in 3-5 years after interior coating is completed. The system is designed with a horizontal ring configuration. The anode is suspended into the lower one-third of the tank by arms off the access tube. As water fills the tank, the anode takes the desired ring configuration. This design is considered ice-free. Formation of ice normally occurs at the high water level and some along the sidewalls. As long as the tank is operated in the upper one-half of its capacity, the probability of ice damage is very low. The anode used is a platinized niobium or titanium wire with a design life of ten years. The system also incorporates copper/copper sulfate reference anodes.

The system is automatically controlled by monitoring the water-to-tank potential. It provides protection to steel surfaces where holidays (coating pinholes) or coating breaks exist. Cathodic protection operates by inhibiting galvanic cell corrosion where steel is exposed. The system creates an equipotential across the tank and drives the tank potential down to a point (-850 millivolts) where corrosion is essentially non-existent. Only surfaces that are in contact with water are protected because water acts as the electrolyte for the circuit. Therefore, areas of the roof and upper sidewalls are not protected by the system. The estimated cost is \$17,000.

#### **PIT AND PIT PIPING CONDITIONS:**

The tank contains piping located in the pit below the tank.

The piping is in good condition. Coating on the pipes is in poor condition. The pipes and valves have general surface rust.

The pit was wet during the inspection water was found in the pit.

**PIT AND PIPING RECOMMENDATIONS:**

Abrasive blast clean the piping to a commercial blast condition (SSPC-SP 6), and apply an epoxy system. The estimated cost is \$4,000.

**SITE CONDITIONS:**

The size of the tank site is small and is not fenced.

There is a small sized staging area for the contractor's equipment.

There is residential development and parks to all sides of the tank.

The neighbors are close to the tank and extra precautions will need to be taken to keep from getting paint or debris on the neighbors' properties.

The site is accessible from a municipal street and paved parking lot.

There is one antenna control panels with exposed equipment adjacent to the tank.

Antennas cabinets and a finished control room are present in the base cone.

**SITE RECOMMENDATIONS:**

Install a fence around the tank to provide increased security. The fence should be a minimum of 10-12 feet larger than the bowl diameter to allow room for containment. Obtain a quote from a qualified fencing contractor.

**FOUNDATION CONDITIONS:**

The top 2-10 inches of the foundation are exposed.

The exposed foundation is in fair condition and showed moderate amounts of deterioration. Deterioration includes cracking, chipping, and spalling with no rebar exposed.

**FOUNDATION RECOMMENDATIONS:**

Pressure wash the concrete and coat the exposed concrete to help prevent further deterioration with an epoxy coating system. The cost would be incidental to exterior painting.

Repair the cracks in the foundation by routing and filling with a mortar. The estimated cost is \$1,000.

### **GROUT CONDITIONS:**

The grout is in fair condition overall. One foot of the grout is missing between the bottom plate and the foundation. Several feet are deteriorating.

### **GROUT RECOMMENDATIONS:**

Repair the grout at the foundation. The purpose of the grout is to evenly distribute the dead and live loads onto the foundations. Grout also keeps water from getting between the foundation and tank.

Remove all loose or deteriorated grout then repair with an epoxy grout. The estimated cost is \$1,000.

### **ROOF HANDRAIL AND PAINTER'S RAILS:**

The tank has no roof handrail. There are posts welded to the roof for painter's rigging.

### **ROOF HANDRAIL AND PAINTER'S RAIL RECOMMENDATIONS:**

Install a 42-inch high railing on the roof. Railing will allow tie-off locations and safety during routine vent screen and obstruction light inspections, and would provide a work area for retrieval personnel performing roof extraction. The railing should provide sufficient area to rest a basket for a helicopter lift, or for stabilizing before lowering down through the dry interior. The estimated cost is \$10,000.

### **AVIATION LIGHTS AND ELECTRICAL CONDITIONS:**

The tank has a beacon on the antenna that is in good condition. The light appears to be operating properly.

There are light fixtures located in the dry interior. None of the lights were burnt out during the inspection.

Electrical outlets are located at the top of the stem and access tube.

### **ANTENNAS:**

The roof area contains 36 antennas. The antennas are attached to the antenna pod and a monopole on top of the pod.

The mounting brackets are in good condition, but there are an excessive amount of cables on the roof.

The antennas and cables present a potential safety and health problem. There are openings to the dry interior that are not sealed. Cable routing interferes with climbing in the access tube and top platform.

### **ANTENNA RECOMMENDATIONS:**

Request the antenna owner to return and correct the cable routing in the dry interior and to seal the openings in the pod on the roof.

### **OVERFLOW PIPE CONDITIONS:**

The tank has an overflow pipe that extends along the access tube in the dry interior down through the dry riser and exits near the bottom of the basebell.

The end of the pipe has a screened flap gate that is in good condition.

The pipe discharges to a storm drain with the required air gap. The discharge area is in good condition.

### **OVERFLOW PIPE RECOMMENDATIONS:**

Annually inspect the screen to insure it is open and not damaged.

### **HATCH AND MANWAY CONDITIONS:**

#### Roof:

The tank has a 30-inch diameter flip-top, roof access hatch to the wet interior. The hatch is in good condition.

The access to the dry interior is through the antenna pod.

The roof wet interior hatch was secured with a padlock matching the owner's master key system.

#### Wet Access:

The tank has a 16-inch x 24-inch elliptical access manway in the access tube that is in good condition.

The manway is hinged, the gasket showed no signs of leaking. The crab bolts are mildly rusted.

#### Dry Access:

The tank has a 36-inch x 80-inch access door into the basebell. The door is in good condition and operated properly during the inspection.

The tank has a 24-inch diameter painter's hatch (bird hatch) at the top of the dry riser. The hatch is in good condition.

The ladder openings in the dry interior platforms are 30-inch round with lids.

### **VENT CONDITIONS:**

The roof vent has two 18-inch pressure-vacuum vents. The vents are in good condition.

The roof does contain vents, but has an access tube air gap that is not screened. This is a possible source for contamination of the water supply. No evidence of entry was found.

### **VENT RECOMMENDATIONS:**

Install a cover over the access tube gap to eliminate the gap as a point of possible contamination. Cost would be incidental to exterior repainting or the installation of a new roof vent.

Annually inspect the vent to make sure the screen is open and not damaged.

### **LADDER CONDITIONS:**

#### **Dry:**

The dry interior ladders are in good condition. They are located in the basebell, stem, and access tube. The ladders do meet OSHA requirements.

The basebell ladder is in good condition and has a rail-type fall prevention device.

The stem ladder is in good condition and has a rail-type fall prevention device.

The access tube ladder is in good condition and has a rail-type fall prevention device.

The fall prevention devices are in good condition.

#### **Wet:**

The wet interior contains a ladder that is in good condition. The ladder does meet current OSHA size requirements.

The wet interior ladder has a rail-type fall prevention device. The fall prevention device is in good condition.

### **FILL/DRAW PIPE CONDITIONS:**

The fill pipe runs through the dry interior into the bottom of the bowl and extends into the bottom of the tank. There is a deflector plate over top of the line. The pipe is in good condition and is well coated.

### **EXPANSION JOINT CONDITIONS:**

The expansion joint is located at the top of the riser is covered with insulation and is not accessible for inspection.

### **INSULATION CONDITIONS:**

The fill pipe is insulated with rigid foam insulation and is covered with a paper cover. The insulation and cover are in good condition.

### **MUD VALVE CONDITIONS:**

A single mud valve is located in the bottom of the tank. The valve is operated by removing a plug inside the tank. It cannot be operated while the tank is full.

### **MUD VALVE RECOMMENDATIONS:**

Install a mud valve that can be operated from the top platform while the tank is full of water to aid with removal of built-up sediment while the tank is in service, and aid with cleaning the tank during regular maintenance inspections. The estimated cost is \$4,500.

Begin annual operation of the mud valve to minimize sediment accumulation.

### **CONDENSATE DRAIN CONDITIONS:**

The condensate line consists of a rubber hose attached to steel pipes at each end, there is a check valve on the line to stop back flow during overflow conditions. The condensate line runs from the condensate platform to the overflow pipe.

The line is in good condition, the drain in the platform appeared to be operational.

### **WET INTERIOR METAL CONDITIONS:**

The steel structure is in good condition above the high water line and in good condition below it.

No pitting was found at the existing coating breaks on the bottom, sidewalls, and access tube.

## **SUMMARY OF TEST RESULTS**

By William J Dixon, P.E., Esquire

DIXON collected 4 coating samples for analysis. 1 sample was taken from the wet interior, 1 sample was taken from the dry interior, and 2 samples from the exterior. Only one sample was taken from the wet interior because wet interior coatings are almost always uniform. Very seldom is the coating system repaired; therefore, one sample is representative of the entire system. The one problem found too frequently is an incomplete abrasive blast cleaning prior to the last repaint. Multiple samples would not be beneficial because the chance of sampling a poorly cleaned spot would be random. In addition, testing is destructive exposing bare steel to the water. Sampling should be on the roof or if the tank has cathodic protection, then a bowl or riser sample is more representative. Your sample was taken from the roof.

On the exterior, usually there are multiple repaints with spot repair, and there are different weathering conditions on the roof versus the legs, the stem, and the sidewalls, giving different lead results. For proper analysis, multiple samples are preferred. The primers of either the exterior or interior are generally the same as the dry interior. If a repair is required in the dry interior, the tank itself acts as a containment device. One sample is sufficient, and the area then can be grouped with the wet interior and exterior.

<u>Test Locations</u>	<u>Lead</u>	<u>Chrome</u>	<u>Cadmium</u>
Wet Interior:	<b><u>Below reporting limit of 0.0025%</u></b>	<u>N/A</u>	<u>N/A</u>
Dry Interior:	<b><u>Below reporting limit of 0.0025%</u></b>	<b><u>0.0039 % (39 ppm)</u></b>	<u>N/A</u>
Exterior Base cone:	<b><u>Below reporting limit of 0.0025%</u></b>	<b><u>Below reporting limit of 0.0013%</u></b>	<b><u>Below reporting limit of 0.0075%</u></b>
Exterior Roof:	<b><u>Below reporting limit of 0.0047%</u></b>	<u>N/A</u>	<u>N/A</u>

Eight metals have waste disposal problems. The ones most frequently encountered in the coating industry are lead, cadmium, and chromium. Samples taken were tested for total metals, which tells us what percent the metals are in reference to the coating only. When it is time for disposal, a TCLP test will be run on the waste that tests for the metals leachability. A correlation has not been made between the results of total lead tests and TCLP results. It is possible to have a low amount of lead, but highly soluble lead that could result in a hazardous waste because it is highly leachable. Conversely, a high amount of total lead, that is insoluble, could have minimal leaching and not result in a hazardous waste. The total metal testing completed is needed for use in the preparation of specifications, waste disposal, and OSHA considerations.

### **Lead:**

For reference, housing paint is considered lead free if it is below 0.06% (600 ppm) by volume. Lead has a TCLP leachable limit of 5mg/l, anything greater than 5 mg/l is considered a hazardous waste. Therefore, the contractor must employ special storage, transportation, and disposal procedures. Based on your test results of below the reporting limit, waste disposal should not require special considerations in the specifications.

During abrasive blast cleaning procedures, the waste generated may be considered a hazardous waste (groundwater leachable). In addition, the airborne particulate of spent abrasive and lead paint may be considered a threat to public health, not only to workers, but also to pedestrians and business owners in the immediate vicinity. The EPA and their local divisions or state primary agencies are the enforcement agencies. Enforcement on these issues has been stepped up and fines of up to \$25,000/day for non-compliance are possible. Several techniques have been developed for containment. These include vertical and horizontal tarping, negative pressure, vacuum blasting, water blasting, and chemical strippers. Each method has advantages, disadvantages, and related costs. Cost depends on the level of containment required and complexity of the structure.

Lead also has OSHA standards with 30 micrograms per cubic meter action level, and 50 micrograms per cubic meter permissible exposure limit. This is tested when the project begins to determine the amount of lead to which a worker is exposed. The total lead test completed by DIXON is used in preparing the engineering analysis to evaluate the alternative methods of surface preparation to minimize workers' exposure. There is no correlation between respirable lead and total lead yet because of the variables between the different methods of surface preparation, engineering, and administrative controls. Based on your test results, the action limit should not be triggered when work is completed.

Personal air monitoring is required regardless of the total lead test because under the OSHA standard there is the presumption that lead is present in sufficient quantities to expose workers. OSHA has actually set what the exposure can be by the type of surface preparation. Until it can be proven otherwise by the exposure monitoring, work must progress under the presumption that the action level will be reached.

### **Chromium:**

Chromium also has a waste disposal concern. If leachable chromium exceeds the 0.0005 percent, 5-ppm limit, then the waste also is considered a hazardous material. Based on test results of 0.0039 percent (39 ppm), there may be a waste disposal concern that must be addressed in the specifications. However, the environmental and worker safety concerns you are already addressing because of the lead content will address the chrome concerns by default.

### **Cadmium:**

Cadmium also was tested. Cadmium is tested because there is a waste disposal problem if cadmium is leached at greater than 0.0001 percent, 1 ppm. The main concern with cadmium is the OSHA standard. The action level for OSHA is only 2 micrograms per cubic meter; as compared to lead at 30 micrograms per cubic meter, and the permissible exposure limit is 5 micrograms per cubic meter, as compared to lead at 50 micrograms per cubic meter for lead. These limits are exceptionally low. The cadmium standard does not require the presumption of the presence of cadmium. Cadmium was not used as often in coating systems as was the lead. The test for cadmium, particularly at this low level of below detectable limits of 0.00075 percent (7.5 ppm), indicates there is no concern for cadmium.

## ANALYTICAL LABORATORY REPORT

Tuesday, December 2, 2014

Page 1 of 3

**CUSTOMER:** Dixon Engineering - WI  
9415 West Forrest Home Suite 208  
Hales Corners, WI 53130

**DATE RECEIVED:** Wednesday, November 26, 2014  
**PO/PROJECT #:**  
**SUBMITTAL #:** 2014-11-26-004

**LAB NUMBER: AB88327**

**Sampled By:** Tom Van Gemert  
**Job Location:** Downers Grove, IL IMMSP  
**Sample Identification:** 1- Exterior base cone

**Date Sampled:** Friday, November 21, 2014  
**Sample Description:** Paint Chips

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)  
**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)  
**Date Analyzed:** Monday, December 1, 2014

ELEMENT	RESULT (by dry weight)	REPORTING LIMIT (RL)
Cadmium	< RL	0.00075 %
Chromium	< RL	0.0013 %
Lead	< RL	0.0025 %

**LAB NUMBER: AB88328**

**Sampled By:** Tom Van Gemert  
**Job Location:** Downers Grove, IL IMMSP  
**Sample Identification:** 2- Exterior roof

**Date Sampled:** Friday, November 21, 2014  
**Sample Description:** Paint Chips

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)  
**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)  
**Date Analyzed:** Monday, December 1, 2014

ELEMENT	RESULT (by dry weight)	REPORTING LIMIT (RL)
Lead	< RL	0.0047 %

**LAB NUMBER: AB88329**

**Sampled By:** Tom Van Gemert  
**Job Location:** Downers Grove, IL IMMSP  
**Sample Identification:** 3- Wet interior

**Date Sampled:** Friday, November 21, 2014  
**Sample Description:** Paint Chips

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)  
**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)  
**Date Analyzed:** Monday, December 1, 2014

ELEMENT	RESULT (by dry weight)	REPORTING LIMIT (RL)
Lead	< RL	0.0025 %

CCC&L has obtained accreditation under the programs detailed on the final page of the Laboratory report. The accreditations pertain only to the testing performed for the elements, and in accordance with the test methods, listed in the scope of accreditation table. Testing which is performed by CCC&L according to other test methods, or for elements which are not included in the table fall outside of the current scope of laboratory accreditation.

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## ANALYTICAL LABORATORY REPORT

Tuesday, December 2, 2014

Page 2 of 3

CUSTOMER: Dixon Engineering - WI  
9415 West Forrest Home Suite 208  
Hales Corners, WI 53130

DATE RECEIVED: Wednesday, November 26, 2014  
PO/PROJECT #:  
SUBMITTAL #: 2014-11-26-004

## LAB NUMBER: AB88330

Sampled By: Tom Van Gemert

Job Location: Downers Grove, IL IMMSP

Sample Identification: 4- Dry interior

Date Sampled: Friday, November 21, 2014

Sample Description: Paint Chips

Preparation Method: EPA 3050B-P-M (Acid Digestion for Paints)

Analysis Method: EPA 6010C (ICP-AES Method for Determination of Metals)

Date Analyzed: Monday, December 1, 2014

ELEMENT	RESULT (by dry weight)	REPORTING LIMIT (RL)
Chromium	0.0039 %	0.0013 %
Lead	< RL	0.0025 %

CCC&L has obtained accreditation under the programs detailed on the final page of the laboratory report. The accreditations pertain only to the testing performed for the elements, and in accordance with the test methods, listed in the scope of accreditation table. Testing which is performed by CCC&L according to other test methods, or for elements which are not included in the table fall outside of the current scope of laboratory accreditation.

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9415 West Forrest Home Suite 208  
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**DATE RECEIVED:** Wednesday, November 26, 2014  
**PO/PROJECT #:**  
**SUBMITTAL #:** 2014-11-26-004

Unless otherwise noted, the condition of each sample was acceptable upon receipt, all laboratory quality control requirements were met, and sample results have not been adjusted based on field blank or other analytical blank results. Individual sample results relate only to the sample as received by the laboratory.

**Tests Reviewed By:** Jason Kraai, Senior Analyst *Jason Kraai* 2014.12.02  
CCC&L has obtained accreditation under the following programs: 16:55:13 -05'00'

- National Lead Laboratory Accreditation Program (NLLAP)**  
ELLAP: AIHA-LAP Laboratory ELLAP Accreditation Program Laboratory, ID#101030 ([www.aihaaccreditedlabs.org](http://www.aihaaccreditedlabs.org))  
OH: Ohio Department of Health Lead Poisoning Prevention Program, Approval #E10013 ([www.odh.ohio.gov](http://www.odh.ohio.gov))
- AIHA-LAP Laboratory IHLAP Accreditation Program** ([www.aihaaccreditedlabs.org](http://www.aihaaccreditedlabs.org))  
IHLAP: Laboratory ID#101030
- National Environmental Laboratory Accreditation Program (NELAP)**  
NY: State of New York Department of Health, Laboratory ID#11609 (Serial # 50712, 50714-50716, 51544) (518-485-5570)  
LA: State of Louisiana Department of Environmental Quality, Laboratory ID#180321 (Certificate 05036) ([www.deq.louisiana.gov](http://www.deq.louisiana.gov))  
OK: Oklahoma Department of Environmental Quality, Laboratory ID#9993 (Certificate 2014-025) ([www.deq.state.ok.us](http://www.deq.state.ok.us))

Testing which is performed by CCC&L according to test methods, or for elements which are not included in the table below fall outside of the current scope of laboratory accreditation. Customers are encouraged to verify the current accreditation status with the individual accreditation programs by calling or visiting the appropriate website for the applicable program.

#### SCOPE OF ACCREDITATION

##### Air and Emissions

Element/Test	Method	Accreditation(s)
Suspended Particulates: PM10 / TSP	40 CFR 50 Appendix J / 40 CFR 50 Appendix B	NY, LA
Lead in Airborne Dust	NIOSH 7300	ELLAP, OH, NY, LA
Lead in Airborne Dust	EPA 600/R-93/200/ EPA 6010C	ELLAP, OH
Metals in Airborne Dust	EPA 600/R-93/200/ NIOSH 7300/ EPA 6010C	IHLAP
Surface Coating: Density	ASTM D1475	NY
Surface Coating: Percent Solids	ASTM D2897	NY
Surface Coating: Percent Water	EPA 24	NY
Surface Coating: Volatile Content	EPA 24 / ASTM D2369	NY

##### Solid Chemical Materials

Element/Test	Method	Accreditation(s)
TCLP	EPA 1311(Sample Preparation Method)	NY, LA, OK
Lead in Soil	EPA 3050B/ EPA 6010C	ELLAP, OH, NY, LA, OK
Lead in Paint	EPA 3050B/ EPA 6010C	ELLAP, OH, NY, LA
Lead in Paint	ASTM D 3335-85A/ EPA 6010C	NY
Lead in Dust Wipes	EPA 3050B/ EPA 6010C	NY, LA
Lead in Dust Wipes	EPA 600/R-93/200/ EPA 6010C	ELLAP, OH
Ignitability	EPA 1010A	NY

##### Non-Potable Water / Analysis by ICP

Element/Test	Method	Accreditation(s)	Method	Accreditation(s)
Arsenic	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK	EPA 6010C	NY, LA
Barium	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK	EPA 6010C	NY, LA
Cadmium	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK	EPA 6010C	NY, LA
Chromium	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK	EPA 6010C	NY, LA
Copper	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK	EPA 6010C	NY, LA
Lead	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK	EPA 6010C	NY, LA, OK
Mercury	EPA 245.1 Rev.3/ EPA 7470A	NY, LA, OK	EPA 7471B	NY, LA
Nickel	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK	EPA 6010C	NY, LA
Selenium	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK	EPA 6010C	NY, LA
Silver	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK	EPA 6010C	NY, LA
Zinc	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK	EPA 6010C	NY, LA
Cobalt	---	---	EPA 6010C	NY, LA
Manganese	---	---	EPA 6010C	NY, LA
Acid Digestion	EPA 3010A	NY, LA	EPA 3050B	NY, LA

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**DIXON ENGINEERING, INC.**  
**STEEL TANK FIELD INSPECTION REPORT**  
**PEDESTAL TANK**

DATE: November 21, 2014

OWNER: Village of Downers Grove

CLIENT CODE: 13-22-16-07

LOCATION: Street: Main Street

City: Downers Grove

State: Illinois

GPS coordinates: N 41° 45' 56" W 88° 0' 25"

TANK SIZE: Capacity: 1,000,000 gallons

Height to bottom (LWL): 86 feet

CONSTRUCTION:

Type of structure: Spheroid

Type of roof: Hemisphere

Type of bowl: Hemisphere

DATE CONSTRUCTED: 2000

MANUFACTURER: CB&I

CONTRACT NUMBER: 109916

COATING HISTORY	EXTERIOR	WET INTERIOR	DRY INTERIOR
DATE LAST COATED	<u>2000</u>	<u>2000</u>	<u>2000</u>
CONTRACTOR	<u>CB&amp;I</u>	<u>CB&amp;I</u>	<u>CB&amp;I</u>
COATING SYSTEM	<u>Urethane</u>	<u>Epoxy</u>	<u>Epoxy</u>
SURFACE PREPARATION	<u>SSPC SP-6</u>	<u>SSPC SP-10</u>	<u>SSPC SP-6</u>
COATING MANUFACTURER	<u>Tnemec</u>	<u>Tnemec</u>	<u>Tnemec</u>

PERSONNEL: Inspector Tom Van Gemert, Top person Kelly Green, Ground person Brad Schotanus

TYPE OF INSPECTION: Preliminary Maintenance

METHOD OF INSPECTION: Dry

**SITE CONDITIONS**

Fenced: No

Site large enough for contractor's equipment: Yes

Control building: No

Antenna control site: No

SCADA controls: Yes

Location of antenna: Base cone

Site conditions: Well maintained

Neighborhood: **Residential**

To the North: **Fire Station**

To the East: **Houses**

To the South: **Park**

To the West: **Houses**

Power lines within 50 feet: **No**

Are power lines attached to the structure: **No**

Site drainage: **Away from tank**

Indications of underground leakage: **No**

Shrub, tree, etc. encroachment: **No**

### **EXPOSED PIPING**

Location: **Tank base (in pit)**

Condition of structure: **Good**

Structure is: **Wet**

Pump present: **No**

Altitude valve: **No**

Condition of coating: **Good**

Describe coating: **Rust bleed through.**

Condition of metal: **Good**

### **FOUNDATION**

Foundation exposed: **Yes**

Exposed height: **2-10 inches**

Exposed foundation condition: **Fair**

Damage or deterioration: **Yes**

Type of damage: **Chips and cracks**

Severity: **Moderate**

Crack location: **At anchor bolts**

Total length of cracking: **1 foot**

Foundation coated: **Yes**

Coating condition: **Fair**

Type of grout: **Cement**

Condition: **Poor**

Grout missing: **Yes**

Amount missing: **1 foot**

Indications of foundation settlement: **No**

Undermining of foundation: **No**

### **EXTERIOR COATING**

#### **Base coat:**

Topcoat condition: **Good**

Previous coat condition: **Good**

Describe coating: **Fading, rust bleed through, and rust undercutting.**

Dry film thickness: **12-15 mils**

Metal condition: **Good**

## **EXTERIOR COATING**

### **Stem:**

Topcoat condition: **Good**  
Previous coat condition: **Good**  
Describe coating: **Fading with no significant coating deterioration.**  
Mildew growth: **No**  
Metal condition: **Good**

### **Bowl:**

Topcoat condition: **Good**  
Previous coat condition: **Good**  
Describe coating: **Fading with no significant coating deterioration.**  
Mildew growth: **No**  
Metal condition: **Good**

### **Sidewall:**

Lettering: **Yes**  
Number: **1**  
Lettering Content: **Downers Grove**  
Style: **Block**  
Logo: **Yes**  
Number: **1**  
Describe logo: **City skyline**  
Topcoat condition: **Good**  
Previous coat condition: **Good**  
Describe coating: **Fading with no significant coating deterioration.**  
Metal condition: **Good**

### **Roof:**

Topcoat condition: **Poor**  
Previous coat condition: **Good**  
Describe coating: **Chalking, fading, delaminating, spot coating breaks to substrate, and rust bleed through.**  
Dry film thickness: **9-11 mils**  
Metal condition: **Good**

## **EXTERIOR APPURTENANCES**

### **Access door:**

Size: **36 inches x 80 inches**  
Coating condition: **Poor**  
Metal condition: **Good**

## **EXTERIOR APPURTENANCES**

### **Anchor bolts:**

Number: **21**  
Diameter: **1 inch**  
Anchor bolt chairs: **Yes**  
Coating condition: **Fair**  
Metal condition: **Good**

### **Overflow pipe:**

Coating condition: **Fair**  
Metal condition: **Good**  
Inside diameter: **8 inches**  
Condition of screen: **Fair**  
Percent of screen open: **95**  
Flap gate: **Yes**  
Design: **Screened**  
Flap gate condition: **Good**  
Air gap: **Yes**  
Highest part of discharge to the ground distance: **24 inches**  
Splash pad: **Yes**  
Type: **Storm drain**  
Condition: **Good**

### **Roof handrail:**

**N/A**

### **Painter's rail:**

**N/A**

### **Roof hatches:**

Wet interior:  
Coating condition: **Fair**  
Metal condition: **Good**  
Neck diameter: **30 inches**  
Shape: **Round**  
Hatch security: **Lock**

Dry interior:

**N/A**

Hatch comments: **The antenna pod is located on top of the dry access tube.**

### **Bolted ventilation hatch:**

**N/A**

## **EXTERIOR APPURTENANCES**

### **Roof vent:**

Number: 2  
Type: **Screened pressure-vacuum and access tube air gap**  
Neck diameter: **18 inches**  
Vent material: **Aluminum**  
Coating condition: **Poor**  
Metal condition: **Good**  
Screen condition: **Good**  
Percent of screen open: **99**  
Vent comments: **The access tube air gap is not covered.**

### **Aviation lights:**

Condition: **Good**  
Design: **Beacon**  
Items higher than lights: **Yes**  
Identify items: **Pod**

### **Removable cathodic caps:**

**N/A**

### **Roof rigging points:**

Rigging couplings: **Yes**  
Number: **12**  
Couplings plugged: **Yes** (# not plugged **1**)  
Rigging clips: **No**  
Coating condition: **Good**  
Metal condition: **Good**

### **Antennas:**

Roof Number: **36**  
Attached to: **Pod**  
Cable runs: **In dry interior**  
Stem number: **0**  
Cable penetrations sealed: **No**  
Antennas or cables interference: **Yes**  
**Cables not secured**  
Location: **Base cone**  
**No room to work around antennas**  
Location: **Roof**

### **Antenna pod:**

Coating condition: **Fair**  
Metal condition: **Good**  
Door Properly sealed: **Yes**  
Monopole attached: **Yes**

## **DRY INTERIOR COATING**

### **Below the bottom platform:**

Topcoat condition: **Fair**

Prime coat condition: **Fair**

Describe coating: **Delaminating, spot coating breaks to substrate, and rust bleed through.**

Dry film thickness: **7-14 mils**

Metal condition: **Good**

Floor: **Concrete**

### **Bottom platform:**

Platform design: **Full**

Coating condition: **Fair**

Describe coating: **Delaminating, spot coating breaks to substrate, and rust undercutting.**

Ladder opening size: **30 inches**

Shape: **Round**

Opening covered: **Yes**

Metal condition: **Good**

Drain: **Yes**

Type: **To overflow**

Size: **2 inches**

Functioning properly: **Yes**

### **Stem above the bottom platform:**

Diameter: **15 feet**

Topcoat condition: **Good**

Prime coat condition: **Good**

Describe coating: **No significant coating deterioration.**

Dry film thickness: **18-21 mils**

Metal condition: **Good**

### **Intermediate platform:**

**N/A**

### **Top platform:**

Platform design: **Full**

Coating condition: **Fair**

Describe coating: **Rust bleed through and erosion.**

Ladder opening size: **30 inches**

Shape: **Round**

Opening covered: **Yes**

Metal condition: **Good**

## **DRY INTERIOR COATING**

### **Stem above the top platform:**

Topcoat condition: **Good**  
Prime coat condition: **Good**  
Describe coating: **No significant coating deterioration.**  
Dry film thickness: **7-10 mils**  
Metal condition: **Good**

### **Bowl:**

Topcoat condition: **Good**  
Prime coat condition: **Good**  
Describe coating: **No significant coating deterioration.**  
Metal condition: **Good**  
Rigging point present above opening: **Yes**

### **Access tube:**

Diameter: **60 inches**  
Topcoat condition: **Good**  
Prime coat condition: **Good**  
Describe coating: **Rust bleed through, erosion, and rust undercutting.**  
Dry film thickness: **10-13 mils**  
Metal condition: **Good**

## **DRY INTERIOR APPURTENANCES**

### **Base ladder:**

Coating condition: **Good**  
Metal condition: **Good**  
Toe clearance: **7 inches or greater**  
Width of rungs: **16 inches**  
Thickness of rungs: **¾-inch**  
Shape of rungs: **Diamond**  
Fall prevention device: **Yes**  
Type: **Rail**  
Condition: **Fair**  
Cage: **No**

### **Stem ladder:**

Coating condition: **Good**  
Metal condition: **Good**  
Toe clearance: **7 inches or greater**  
Width of rungs: **16 inches**  
Thickness of rungs: **¾-inch**  
Shape of rungs: **Diamond**  
Fall prevention device: **Yes**  
Type: **Rail**  
Condition: **Good**

## **DRY INTERIOR APPURTENANCES**

Cage: **No**

### **Access tube ladder:**

Coating condition: **Good**  
Metal condition: **Good**  
Toe clearance: **7 inches or greater**  
Width of rungs: **16 inches**  
Thickness of rungs: **¾-inch**  
Shape of rungs: **Diamond**  
Fall prevention device: **Yes**  
Type: **Rail**  
Condition: **Good**

### **Painter's (bird) hatch:**

Coating condition: **Good**  
Metal condition: **Good**  
Size: **24 inches**

### **Manway to wet interior:**

Location: **In access tube**  
Coating condition: **Fair**  
Metal condition: **Good**  
Size: **16 inches x 24 inches**  
Gasket leaking: **No**  
Hinged: **Yes**

### **Expansion joint:**

Location: **Top of fill pipe**  
Accessible for inspection: **No**

### **Fill pipe insulation:**

Type: **Rigid foam**  
Condition: **Good**  
Insulation cover: **Yes**  
Type: **Paper**  
Condition: **Good**

### **Mud valve:**

Number: **1**  
Functioning properly: **Unknown – did not operate**  
Coating condition: **Good**  
Metal condition: **Good**  
Mud valve comments: **Mud valve can only be operated from the wet interior.**

## **DRY INTERIOR APPURTENANCES**

### **Electrical:**

Lights functioning: **Yes**

Number burnt out: **0**

Grills and globes present: **Yes**

Number damaged: **0**

Enough light for safety: **Yes**

Electrical outlets: **Yes**

Functioning: **Yes**

Location: **In bottom of dry interior, at top of stem, and at top of access tube**

## **WET INTERIOR COATING**

### **Roof:**

Topcoat condition: **Good**

Primer coating condition: **Good**

Describe coating: **Spot coating breaks to substrate.**

Metal condition: **Good**

Lap seams: **Welded**

Condition of laps: **Good**

### **Sidewall:**

Topcoat condition: **Fair**

Primer coating condition: **Fair**

Describe coating: **Spot coating breaks to substrate.**

Mineral deposits: **Light**

Metal condition: **Good**

Active pitting: **No**

Previous pitting: **No**

Previous pit filling: **No**

Sidewall comments: **There is one large area of failure.**

### **Access tube:**

Topcoat condition: **Fair**

Primer coating condition: **Fair**

Describe coating: **Spot coating breaks to substrate.**

Mineral deposits: **Light**

Metal condition: **Good**

Active pitting: **No**

Previous pitting: **No**

Previous pit filling: **No**

## WET INTERIOR COATING

### Tank bottom:

Type: **Bowl**  
Topcoat condition: **Fair**  
Primer coating condition: **Fair**  
Describe coating: **Spot coating breaks to substrate.**  
Mineral deposits: **Light**  
Metal condition: **Good**  
Active pitting: **No**  
Previous pitting: **No**  
Previous pit filling: **No**  
Depth of sediment: **2 inches**

## WET INTERIOR APPURTENANCES

### Tank ladder:

Coating condition: **Poor**  
Metal condition: **Fair**  
Toe clearance: **7 inches or greater**  
Width of rungs: **16 inches**  
Thickness of rungs: **3/4-inch**  
Shape of rungs: **Diamond**  
Shape of side rails: **Flat**  
Fall prevention device: **Yes**  
Type: **Rail**  
Condition: **Good**

### Cathodic protection:

**N/A**  
Clips and pressure fitting present: **No**

### Fill pipe:

Diameter: **12 inches**  
Height above floor: **18 inches**  
Deflector over end: **Yes**  
Removable silt ring: **Yes**  
Mixing system: **No**  
Coating condition: **Good**  
Metal condition: **Good**

### Separate draw pipe:

**N/A**

### Overflow pipe:

Type: **Elbow**  
Coating condition: **Fair**  
Metal condition: **Good**

**WET INTERIOR APPURTENANCES**

**Roof beams:**

N/A

**Sidewall beams:**

N/A

**Interior balcony:**

N/A

Field Inspection Report is prepared from the contractor's viewpoint. It contains information the contractor needs to prepare his bid for any repair or recoating. The engineer uses it to prepare the engineering report. Cost estimates are more accurate if the contractor's problems can be anticipated. While prepared from the contractor's viewpoint, the only intended beneficiary is the owner. These reports are completed with diligence, but the accuracy is not guaranteed. The contractor is still advised to visit the site.



1. The exterior coating is in good condition with no significant coating deterioration found.

2. Same.



3. The coating on the base cone exterior is in good condition.



4. An antenna site next to the tank is close to the foundation.

5. The overflow pipe, screen, and storm drain are in good condition.



6. The base cone door is in good condition and operated properly during the inspection.



7. The foundation grout is in poor condition with one foot missing.

8. The anchor bolts and chairs are in good condition. The coating is in fair condition.



9. Same.



10. The exterior roof coating is in poor condition. Extensive topcoat delamination was found.

11. Same.



12. Same.



13. The roof hatch into the wet interior is in good condition.

14. The access tube air gap is not screened.



15. The screened pressure vacuum vent is in good condition.



16. The roof couplings are not properly plugged.

17. The cable penetrations in the pod are not sealed.

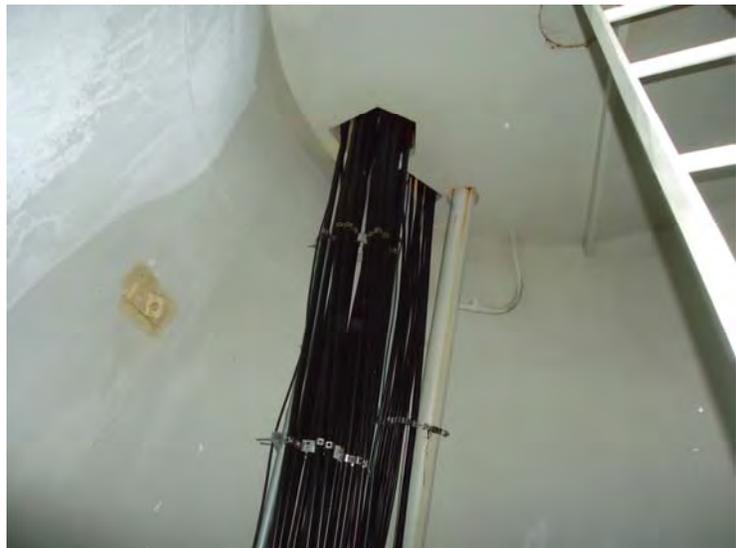


18. The pod is in good condition.  
The coating is in fair condition.



19. The base cone is completely filled with electronic components.

20. Cables are routed through the dry interior. The base cone coating is in fair condition.



21. Coating on the top of the bottom platform is in fair condition.



22. Cables are well routed through the stem.

23. The stem interior coating is in good condition.



24. The coating on the top of the top platform is in fair condition.



25. Cables routed above the top platform interfere with movement.

26. The expansion joint at the top platform is not accessible for inspection. The insulation and cover are in good condition.



27. The manway into the wet interior is in good condition. The coating is in poor condition.



28. The bowl coating is in good condition.

29. The access tube is crowded with cables.



30. The access tube coating is in good condition.



31. The wet interior roof coating is in good condition.

32. A small amount of coating failures and rust bleed through were found on the roof.



33. Multiple spot coating failures on the wet interior sidewalls were found. The areas are rusting.



34. Spot coating failures on the wet interior sidewalls are rusting.

35. Spot coating failures are rusting at the top of the access tube.

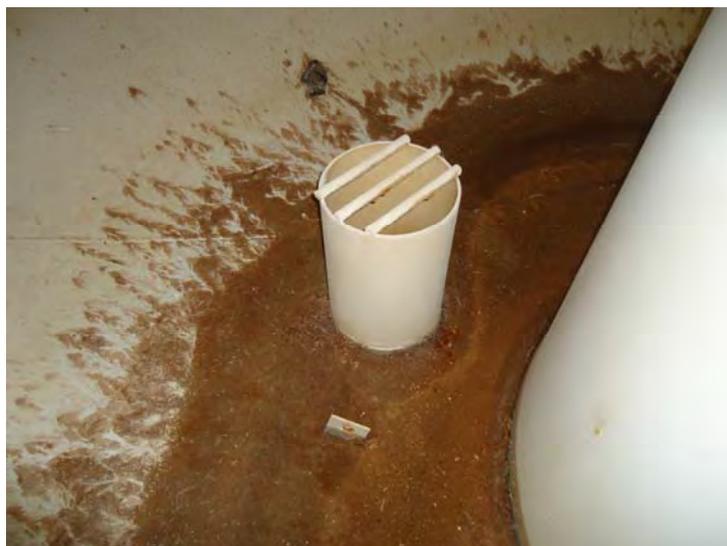


36. A large area of coating failure is allowing rust to form on the sidewalls.



37. The mud at the bottom of the tank was frozen at the time of the inspection. The mud valve operates from the wet interior.

38. The manway into the dry interior access tube is in good condition.



39. The fill/draw pipe is in good condition and is well coated.

# Dixon Engineering, Inc.

Preliminary Maintenance Inspection

2,000,000 Gallon  
Legged Tank

Downers Drive Tank  
Downers Grove, Illinois

Dixon Engineering Inc.

9415 W. Forest Home #208

Hales Corners, WI 53130

Phone (414) 529-1859

Fax (414) 529-3120

<http://www.dixonengineering.net>

[wisconsin@dixonengineering.net](mailto:wisconsin@dixonengineering.net)

Inspection Performed: October 24, 2013

Report Prepared: December 6, 2013

## **CONCLUSIONS:**

1. The exterior coating is presumed to be a urethane coating system that is in poor condition. The coating has faded extensively and the primary modes of failure are rust bleed-through, spot coating breaks to the substrate and rust undercutting. The coating has poor adhesion. There are numerous areas of spot coating failures on the leg, riser, sidewalls, and roof. The logo and lettering is extensively faded.
2. The wet interior coating is presumed to be a multi coat epoxy system that is in fair condition overall. Below the high water line, the coating has spot failures on the floor, access tube, and sidewalls. Above the high water line, the coating is in fair condition. The roof coating is deteriorating at the lap seams and on the roof beam edges with minor corrosion. Extensive scratches from a damaged sidewall rail and exterior welding have damaged the wet interior coating.
3. Three exterior and one wet interior coating samples were taken and analyzed for metal content. Test results indicated the exterior is a chrome bearing coating and the wet interior is a chrome bearing coating.

Details are included in the Summary of Test Results at the end of this report.

## **RECOMMENDATIONS:**

1. Schedule regular cleanings and inspections of the tank by an independent third party as recommended by AWWA, or once every five years.
2. Complete the recommended work in 2-5 years. The coating work is the greatest cost and largest part of the recommendations. The repairs and upgrades should be completed during the next major tank rehabilitation process when coating repairs are made.
3. Abrasive blast clean the exterior to a commercial grade (SSPC-SP6) condition inside a dust tight flexible frame containment system, and recoat with a polyurethane coating system. The estimated cost is \$553,000, plus \$100,000 for containment.
4. Abrasive blast clean the entire wet interior to a near white metal condition (SSPC-SP10), and apply a three-coat epoxy polyamide system. The estimated cost is \$336,000.
5. To delay the need to abrasive blast clean and recoat in the wet interior, plan to immediately install a floating-type cathodic protection system on the interior. The estimated cost is \$17,000.

6. Abrasive blast clean the piping to a commercial grade (SSPC-SP6) and apply a two coat epoxy system. The estimated cost is \$3,000.
7. Remove soil on the foundation to expose the top 6 inches of the foundation, work can be performed by in-house personnel.
8. Water clean and coat the foundations to prevent further deterioration. Cost would be incidental to exterior painting.
9. Repair areas of missing and damaged grout between the baseplate and the foundation. The estimated cost is \$1,000.
10. Install safety grabs on the exterior roof for temporary fall prevention of workers in the wet interior. Cost would be incidental to coating costs.
11. Request the antenna owner to correct deficiencies in cable routing.
12. Install rigging couplings under the bowl, halfway between each leg and the riser. The clips would be used by contractors for rigging safety lines during exterior work. Cost would be incidental to repainting costs.
13. Replace the wet interior roof hatch with a 30-inch diameter hatch. The estimated cost is \$3,000.
14. Install a hinged lid over the ladder opening in the balcony. The estimated cost is \$2000.
15. Annually inspect the roof vent screen.
16. Install a wet interior ladder with a fall prevention device. The estimated cost is \$10,000.
17. Replace the sidewall and roof ladders with a vertical ladder and a step-off platform. The estimated cost is \$12,000.
18. Remove the remainder of the damaged painter's rail from the wet interior and repair the coating. The estimated cost is \$1,000.
19. Install a hinged opening in the grate at the top of the riser. The estimated cost is \$1,000.

## **A DISCUSSION ON RESCUE AND RETRIEVAL OPERATIONS FROM ELEVATED LEG STORAGE TANKS**

A series of accidents involving falls from or in water tanks has highlighted inadequacies in tank design and a potentially greater problem. The rescue may be more dangerous, with potential for more loss of life or injury, than the original accident. Contractors and engineers are responsible for their own employees. Even with safety training and proper equipment, accidents will occur. Most rescue squads are local or neighboring fire departments, some with more practice than other departments. Elevated tanks were designed to store water, not for rescue or retrieval convenience. The following items would make working on and retrieval from water tanks safer. This discussion is offered as a starting point. We recommend that you meet with your rescue personnel and draft a rescue plan. A copy of the plan should be kept at the tank and with the rescue crew.

OSHA now requires 30-inch manways and hatches, and roof ladders are to be replaced with platforms, steps, and railings. We have always objected to replacement of ladders as new regulations are passed relatively frequently, especially on retrofit of existing tanks. We recommend the changes for the convenience and safety of your employees rescue personnel, and others working on the tank. As far as we know, none of these conversion items to be discussed are required or mandated by any government agency for retrofits.

DIXON recommends these changes be made during the next major tank painting.

### RETRIEVAL FROM INTERIOR:

#### Current Access:

Access to the roof is from the leg ladder, the sidewall ladder, and the roof ladder. All ladders do contain a fall prevention device. There is not a ladder in the wet interior from the roof hatch to the bowl area. There is a 30-inch manway in the bottom of the riser. The roof has a 24-inch roof hatch for the wet interior. There is a grate over the top of the riser in the bowl. There is a 20-foot diameter by 36-inch high railing on the roof with a 4-inch high kick plate. The area within the railing is large enough for temporary basket storage. There is not a painter's rigging rail around the roof railing.

#### Modified Access:

Providing safe access to rescue personnel is essential. Replace the sidewall ladder so it extends straight up to a work platform with railings that surrounds the roof edge hatch. Replace the existing roof hatch with a 30-inch hatch with lockable, rainproof lid. The existing hatch is too small for a rescue basket and rescue personnel with equipment. Replace the roof ladder with a series of steps and railings to permit access to the center of the roof standing upright. Install a 42-inch high railing on the roof. The railing would allow tie-off locations and increase safety during routine maintenance.

This ladder and railing can be used by your personnel for checking lights, vents, and security annually, or by antenna personnel. The railing can also be used for antenna mounting. Install a new wet interior ladder from the roof hatch to the wet interior floor. Install a grate over or a railing around the top of the riser.

Retrieval down the riser:

1. Retrieval down through the riser is usually the safest method. Remove the new vent from the top center of the tank, and attach a winch or pulley system to a tripod set-up over the vent.
2. Raise and lower the basket through the riser and out the 30-inch diameter manway at the bottom of the riser. Rescue personnel would also raise and lower all their equipment through the riser, and then leave the wet interior using the wet interior ladder with fall prevention. On the roof, personnel would be working from inside the security of a roof railing around the center attachment area and the roof hatch.

Modifications Necessary (As stated in the recommendations):

1. Install a new sidewall ladder with a step-off platform and roof handrails.
2. Install a new 30-inch roof hatch.
3. Install a roof painter's rail.
4. Install a new wet interior ladder.
5. Install a hinged opening in the grate over the riser.

Equipment:

Winch or pulley system and a tripod.  
Basket.  
Fall prevention sliders.

**COST SUMMARY:**

	<b>2-5 years</b>	<b>Now</b>
Abrasive blast clean the exterior	\$553,000	
Containment	100,000	
Abrasive blast clean the wet interior	336,000	
Seal lap seams	3,000	
Cathodic protection system		17,000
Cathodic clips and couplings	1,500	
Abrasive blast clean the pit piping	3,000	
Repair grout	1,000	
Install painter's rail	3,000	
Install 30-inch roof hatch	3,000	
Install hatch over ladder opening	2,000	
Install wet interior ladder	10,000	
Install a new sidewall/roof ladders	12,000	
Fill pits	1,000	
Repair sidewall stiffener	1,000	
Install riser grate	<u>1,000</u>	
	1,030,500	17,000
Engineering and Contingencies	24,500	3,500
<b>Total</b>	<b>\$1,155,000</b>	<b>\$20,500</b>

## **INSPECTION:**

On October 24, 2013, Dixon Engineering, Inc. (DIXON) performed a preliminary maintenance inspection on the 2,000,000-gallon radial arm water storage tank owned by the Village of Downers Grove, Illinois. Purposes of the inspection were to evaluate the interior and exterior coating's performance and life expectancy; assess the condition of metal surfaces and appurtenances; review safety and health aspects; and make budgetary recommendations for continued maintenance of the tank. All recommendations, with budgeting estimates for repairs are incorporated in this report. The inspection was performed by Thomas Van Gemert, senior staff engineer. The inspector was assisted by Kayla S. Mulcahy and Lane M. Tremblay, staff technicians. Scheduling and arrangements for the inspection were completed through Dave Yelton. A source of water for cleaning was provided by the Village. Following the inspection, chlorine was added to disinfect the tank per AWWA Standard C652-07 method No. 3.

## **CONDITIONS AND RECOMMENDATIONS:**

### **EXTERIOR COATING CONDITIONS:**

The exterior coating system is presumed to be a multiple coat polyurethane system.

The leg coating is in poor condition. The primary methods of deterioration are rust bleed through, spot coating breaks, and rust undercutting.

The riser coating is in poor condition. Primary methods of deterioration are rust bleed through and rust undercutting.

The coating on the bowl is in poor condition. Primary methods of deterioration are spot rust bleed through and rust undercutting.

Coating on the balcony is in poor condition.

The sidewall coating is in poor condition. Primary methods of sidewall coating deterioration are spot coating breaks to the substrate and undercutting.

The sidewall and bowl areas are covered with light algae growth.

The roof coating is in poor condition. Primary methods of roof coating deterioration are delamination, spot coating breaks to the substrate, and rust undercutting.

Fair to poor adhesion was noted on the ASTM x-cut test areas, with up to 1/4-inch loss of topcoat to the substrate in areas tested. The tank is not a candidate for over-coating.

This exterior system was tested at 0.0269 percent (269ppm) lead by weight. This exterior system was tested at 0.020% (200ppm) chrome by weight.

Lettering on the tank consists of DOWNERS GROVE in two locations, and is block style.

There is a logo on the sidewall, it is trees.

#### **EXTERIOR COATING RECOMMENDATIONS:**

Plan and budget for exterior recoating in 2-5 years. Fading will continue and more rust spots will occur, decreasing the tank's aesthetic appearance. Currently there are several exposed surfaces actively rusting.

The existing coating is presumed to be a polyurethane system. The recommended procedure is to high-pressure water clean (5,000-10,000 psi) the exterior to remove any delamination or flaking coating and any contaminants, followed by spot power tool cleaning to bare metal (SSPC-SP 11) any rusted or failed areas.

The coating system would consist of a spot prime coat on the bare metal, a full coat of epoxy, followed by a two full coats of polyurethane. The polyurethane system offers excellent abrasion resistance with high gloss and sheen retention. The expected life of this system is fifteen years. The system can be recoated again in fifteen years, and a second time approximately fifteen years after the first recoating, extending the life of the coating to forty-five years before total removal would be necessary again. The tank would be removed from service during the painting project. This is necessary to reduce moisture condensation on the tank's surface. Polyurethane coatings have a minimum temperature requirement for application and are sensitive to moisture during the curing process. If moisture is present during the curing process, the appearance will become cloudy with little or no gloss.

The estimated cost to abrasive blast clean and recoat with an epoxy urethane system is \$553,000 plus \$100,000 for containment.

#### **WET INTERIOR COATING CONDITIONS:**

The wet interior coating is presumed to be an epoxy system.

The roof coating is in fair condition. The coating is 99 percent intact, with the primary areas of deterioration along the lap seams, the beam edges, in the crevices, and in the weld burns. The tank's roof contains open lap seams that have started to rust and streak.

Staining is typical for a tank of this construction where the lap seams are open and not seal welded or caulked. Staining in the lap seams is not a concern, but should be monitored during future inspections for corrosion growth. Roof beam edge corrosion is typical but should be corrected before structural loss of steel occurs.

Coating deterioration is occurring along edges of all of the roof support beams. Rust is also occurring at the roof-to-beam junction. Extensive coating damage has been caused by exterior welding. The roof handrail and antenna brackets were welded on the exterior and the interior coating was burnt.

The sidewall coating is in poor condition. The coating on the sidewalls is 99 percent intact. There is any damage at the high water line, which would be the area most affected by ice pressures and ice movement. The primary causes of deterioration are spot coating breaks and scratches to the substrate. The sidewall railing has been pulled loose and the loose ends have been scratching the coating off the walls. The scratches are to the substrate and have allowed rust to form.

The coating on the tank bottom is in fair condition, 99 percent intact. The primary causes of deterioration are spot coating breaks.

The tank bottom was covered with approximately ¼ inch of mud sediment that was flushed from the interior.

The coating in the riser is in good condition, 99 percent intact.

The sidewall, bowl, and riser are covered with light mineral staining, which does not affect the integrity of the coating system.

Minor active pitting of the metal was found on the floor. Pitting depth indicated that the surface has been corroding for a short time.

#### **WET INTERIOR COATING RECOMMENDATIONS:**

The existing coating system has not deteriorated to the point where replacement is warranted. A cathodic protection system could adequately protect all areas below the high water line where the coating has deteriorated. Long-term budget for repainting in 2-5 years. The estimated cost is \$336,000.

#### **CATHODIC PROTECTION CONDITIONS:**

The tank does not contain a cathodic protection system.

The tank does have clips and a pressure fitting installed in the riser for a future cathodic protection installation. Clips are not installed on the sidewall or floor.

### **CATHODIC PROTECTION RECOMMENDATIONS:**

As soon as budgeting allows, install an impressed current cathodic protection system. The system is designed with a horizontal ring configuration. The anode is suspended into the lower one-third of the tank by floats. As water fills the tank, the anode takes the desired ring configuration. This design is considered ice-free. Formation of ice normally occurs at the high water level and some along the sidewalls. As long as the tank is operated in the upper one-half of its capacity, the probability of ice damage is very low. The anode used is a platinized niobium or titanium wire with a design life of ten years. The system also incorporates copper/copper sulfate reference anodes.

The system is automatically controlled by monitoring the water-to-tank potential. It provides protection to steel surfaces where holidays (coating pinholes) or coating breaks exist. Cathodic protection operates by inhibiting galvanic cell corrosion where steel is exposed. The system creates an equipotential across the tank and drives the tank potential down to a point (-850 millivolts) where corrosion is essentially non-existent. Only surfaces that are in contact with water are protected because water acts as the electrolyte for the circuit. Therefore, areas of the roof and upper sidewalls are not protected by the system. The estimated cost is \$17,000.

If installation of a cathodic protection system is delayed, during the next major paint rehabilitation, install cathodic clips and couplings for future installation of floating-type cathodic protection system. The estimated cost is \$1,500.

### **PIT AND PIT PIPING CONDITIONS:**

The tank is operated by valves located in the pump house adjacent to the tank.

The piping is in good condition. Coating on the pipes is in poor condition. The pipes and valves have general surface rust.

### **PIT AND PIPING RECOMMENDATIONS:**

Abrasive blast clean the piping to a commercial blast condition (SSPC-SP 6), and apply an epoxy system. The estimated cost is \$3,000. Work could also be performed by in-house personnel.

### **SITE CONDITIONS:**

The size of the tank site is small and is fenced with a locking gate.

The site is well maintained.

There is residential development to the east, west, and south. It is adjacent to a car dealership to the north.

The neighbors are close to the tank and extra precautions will need to be taken to keep from getting paint or debris on the neighbors' properties.

The site is accessible from a municipal street.

There are five antenna control sites adjacent to the tank.

Power lines are attached to the leg ladder from the east.

**SITE RECOMMENDATIONS:**

Regularly mow the grass near the tank.

**FOUNDATION CONDITIONS:**

The top 0-4 inches of the leg foundation are exposed. Soil is covering the rest of the foundations including the riser foundation.

The exposed foundations are in good condition and showed minor amounts of deterioration. Deterioration includes cracking and chipping with no rebar exposed.

Minor corrosion is occurring in the anchor bolt chairs.

**FOUNDATION RECOMMENDATIONS:**

Pressure wash the leg and riser concrete and coat the exposed concrete to prevent further deterioration with an epoxy coating system. The cost would be incidental to exterior painting.

Using high-pressure air, annually blowout any vegetation, grass clippings, etc. from behind the anchor bolts.

Excavate to expose the top 6 inches of the foundation.

**GROUT CONDITIONS:**

The grout is in good condition overall. 1-foot of the grout is missing between the bottom plate and the leg foundations.

### **GROUT RECOMMENDATIONS:**

Repair the grout at the leg foundation. The purpose of the grout is to evenly distribute the dead and live loads onto the foundations. Grout also keeps water from getting between the foundation and tank.

Remove all loose or deteriorated leg grout then repair with an epoxy grout. The estimated cost is \$1,000.

### **LEG CONDITIONS:**

The tank is supported by 10 tubular leg columns that attach to large radial arms under the bowl, which extend to the top of the riser.

The legs are in good condition and appeared to be in alignment.

### **BALCONY CONDITIONS:**

The exterior balcony is in good condition. The balcony on the exterior sidewall is 24-inches wide with a 42-inch high handrail. The handrail has a mid-rail and a kick plate at the balcony floor.

The vertical balcony posts are channel and the top rail is angle iron. The mid-rail is angle iron. There is a flat stock toe plate.

One opening in the balcony has been cut for cable access. The opening is reinforced.

### **ROOF HANDRAIL AND PAINTER'S RAILS:**

A handrail is located on the roof surrounding the roof hatches and the vent. The handrail is in good condition. The handrail is being used for antenna mounts.

Posts for rigging surrounds the handrail on the roof; they are in good condition.

### **ANTENNAS:**

The roof area contains four antennas. The antennas are attached to the roof handrail.

The mounting brackets are in good condition.

The balcony has twelve antennas attached to mounting brackets. The legs have eighteen antennas attached to mounting brackets. The antennas and cables present a potential safety problem. The cables route over the sidewall and roof ladders.

**ANTENNA RECOMMENDATIONS:**

During exterior coating operations, the antennas and cables will need to be removed from the tank. While the equipment is off the tank, rusting and mounting upgrades should be performed. New, welded brackets, properly routed cables, and upgraded equipment should be installed while the paint project is happening.

Request the antenna owner to return and correct the cable.

**ROD/SAFETY CONDITIONS:**

The tank's sway rods are in good condition.

The coating on the sway rods is in good condition with moderate coating failures and surface rust on the rods and turnbuckles, and on the struts between the leg columns.

Because of the inaccessibility of the sway rods, the exact tension could not be determined. However, based on the amount of coating loss on the sway rods where they cross, it was evident the rods are tight.

The tank has one set of riser tie rods extend from the leg columns to the riser with fixed lug connections. The riser tie rods are in good condition.

There are no rigging couplings under the bowl.

**ROD/SAFETY RECOMMENDATIONS:**

Install rigging couplings on the bowl halfway between each leg and the riser. The couplings would be used by contractors for rigging safety lines. Currently the contractor has no separate, independent tie off location for safety lines. The rigging and safety lines are tied to the same location. Cost would be incidental to repainting costs.

**OVERFLOW PIPE CONDITIONS:**

The tank has an 8-inch diameter overflow pipe extends down along the sidewall, through the balcony, and down along a leg column to ground level.

The discharge end of the overflow pipe is screened. The screen is in good condition.

The end of the pipe has a screened flap gate that is in good condition.

The pipe discharges to a storm drain with the required air gap. The discharge area is in good condition.

### **HATCH AND MANWAY CONDITIONS:**

The tank has a 24-inch diameter flip-top, roof access hatch to the wet interior. The hatch is in good condition.

The roof wet interior hatch was secured with a padlock matching the owner's master key system.

The roof contains a 30-inch diameter painter's hatch with a bolted cover that is in good condition. The hatch is used for ventilation and lighting during maintenance or a rescue.

The tank has a 30-inch diameter access manway in the riser that is in good condition.

The manway is hinged and the gasket showed no signs of leaking.

The tank has a 12 x 18-inch elliptical access manway in the riser that is in good condition.

The manway is not hinged, the gasket showed no signs of leaking.

The ladder opening in the balcony does not have a lid.

### **HATCH AND MANWAY RECOMMENDATIONS:**

Replace the wet interior roof access hatch with a new 30-inch curbed hatch. Average rescue baskets and rescue personnel wearing equipment will not pass through the existing 24-inch hatch. The estimated cost is \$3,000.

Install a hatch cover at the balcony to prevent equipment or people from accidentally going through the opening. The estimated cost is \$2,000.

### **VENT CONDITIONS:**

The roof vent is a 24-inch pressure-vacuum design. The vent is in good condition.

The vent is properly screened.

### **VENT RECOMMENDATIONS:**

Annually inspect the vent to make sure the screen is open and not damaged.

### **LADDER CONDITIONS:**

#### Exterior:

The tank has an exterior leg ladder that starts approximately 20-feet above ground level, and extends up to a small platform near the top of the leg column, with a stairway and ladder that go from the platform to the balcony. The ladder is not caged and is in good condition. The ladder contains a rail-type fall prevention device.

The vandal guard on the ladder has been broken off.

The tank has a fixed sidewall shell and a fixed roof ladder that follows the slope of the roof to the center near the vent. The ladder does have a rail-type fall prevention device.

The rail sections are misaligned on the roof ladder.

#### Wet:

There is no ladder in the wet interior.

### **LADDER RECOMMENDATIONS:**

With antennas being installed on towers, the ladders will be used more often. OSHA requires a fall prevention device on ladders in excess of 20 foot, or 30 foot if a cage is present. There are two major types of fall prevention devices. One uses a rail; the other a cable.

#### Exterior:

The roof and sidewall shell ladder should be replaced with a vertical sidewall ladder that runs up to a step-off platform surrounded with handrails at the roof hatch. The step-off platform will provide a safe working area around the roof hatch. Estimated cost is \$12,000.

#### Wet:

Install a ladder on the wet interior from the roof to the bowl with a fall prevention device to match the existing fall prevention device. The estimated cost is \$10,000.

**FILL PIPE CONDITIONS:**

The 16-inch fill pipe extends 32-inches into the bottom of the riser.

There is a deflector plate over top of the line.

**FILL PIPE RECOMMENDATIONS:**

**WATER STRATIFICATION:**

Water in certain zones of a tank sometimes becomes stagnant, resulting in low chlorine levels and sometimes freezing in the winter. Sampling of the effluent would not necessarily reveal this problem until it is too late. The cause is a short-circuiting of the mixing during inflow and draw. Tanks with the same line for influent and draw are susceptible. Tanks with top feed and bottom draw overcome this problem if the tank is a relatively small diameter.

Many factors are involved such as daily turnover, rate of turnover, and pressures. Using a majority of the capacity during a pump down helps with mixing. Some municipalities have installed sampling locations several feet inside the tank and at different elevations. There are new fluid mixer systems, which are ideal for mixing and for reducing icing. A low maintenance system has no moving parts, just a series of pipes and nozzles to distribute water and, theoretically, to remove the oldest water first. Sampling ports, if still preferred, could be added to this design. Depending on the size of the tank, systems can be installed from \$15,000 to \$60,000.

**WET INTERIOR METAL CONDITIONS:**

The steel structure is in good condition above the high water line and in good condition below it.

Minor pitting was observed on the floor. Pit depth is up to 1/32-inch.

**Roof Beams:**

The interior roof is supported by 70-radial beams that are in good condition with minor corrosion in the crevices and at the edges.

**Sidewall Stiffeners:**

The tank contains a stiffener ring that is angular in construction and situated at the top section of the sidewall. It is in poor condition.

The ring is partially torn down from ice damage. The loose section of the ring is moving and the movement is scraping the sidewall, damaging the coating on the sidewall and bottom.

Riser:

There is a grate over around the riser opening.

The grate was too heavy to move so the inspector could not repel down the riser.

**WET INTERIOR METAL RECOMMENDATIONS:**

Sidewall Stiffeners:

Remove the damaged section and grind all stray welds. The estimated cost is \$ 1,000.

Riser:

Install a hinged opening in the grate over the top of the riser. The grate should have a swing open area of 30-inches to lower a rescue basket. Estimated cost is \$1,000.

## SUMMARY OF TEST RESULTS

By William J Dixon, P.E., Esquire

DIXON collected four coating samples for analysis. One sample was taken from the wet interior, and three samples were taken from the exterior. Only one sample was taken from the wet interior because wet interior coatings are almost always uniform. Very seldom is the coating system repaired; therefore, one sample is representative of the entire system. The one problem found too frequently is an incomplete abrasive blast cleaning prior to the last repaint. Multiple samples would not be beneficial because the chance of sampling a poorly cleaned spot would be random. In addition, testing is destructive exposing bare steel to the water. Sampling should be on the roof or if the tank has cathodic protection, then a bowl or riser sample is more representative. Your sample was taken from the roof.

On the exterior, usually there are multiple repaints with spot repair, and there are different weathering conditions on the roof versus the legs, the riser, and the sidewalls, giving different lead results. For proper analysis, multiple samples are preferred. The primers of either the exterior or interior are generally the same as the dry interior. If a repair is required in the dry interior, the tank itself acts as a containment device. One sample is sufficient, and the area then can be grouped with the wet interior and exterior.

<u>Test Locations</u>	<u>Lead</u>	<u>Chrome</u>	<u>Cadmium</u>
Wet Interior:	<b><u>0.018</u></b> % ( <b><u>180</u></b> ppm)	<b><u>0.032</u></b> % ( <b><u>320</u></b> ppm)	<b><u>0.045</u></b>
Exterior Leg:	<b><u>0.0077</u></b> % ( <b><u>77</u></b> ppm)	<b><u>N/A</u></b>	<b><u>N/A</u></b>
Exterior Sidewall:	<b><u>0.045</u></b> % ( <b><u>450</u></b> ppm)	<b><u>N/A</u></b>	<b><u>N/A</u></b>
Exterior Roof:	<b><u>0.028</u></b> % ( <b><u>280</u></b> ppm)	<b><u>0.020</u></b> % ( <b><u>200</u></b> ppm)	<b><u>&lt;RL of 0.00075%</u></b>

Eight metals have waste disposal problems. The ones most frequently encountered in the coating industry are lead, cadmium, and chromium. Samples taken were tested for total metals, which tells us what percent the metals are in reference to the coating only. When it is time for disposal, a TCLP test will be run on the waste that tests for the metals leachability. A correlation has not been made between the results of total lead tests and TCLP results. It is possible to have a low amount of lead, but highly soluble lead that could result in a hazardous waste because it is highly leachable. Conversely, a high amount of total lead, that is insoluble, could have minimal leaching and not result in a hazardous waste. The total metal testing completed is needed for use in the preparation of specifications, waste disposal, and OSHA considerations.

### **Lead:**

For reference, housing paint is considered lead free if it is below 0.06% (600 ppm) by volume. Lead has a TCLP leachable limit of 5mg/l, anything greater than 5 mg/l is considered a hazardous waste. Therefore, the contractor must employ special storage, transportation, and disposal procedures. Based on your test results of 0.0269 percent (269 ppm) average on the exterior and 0.018 percent (180 ppm) in the wet interior; waste disposal should not require special considerations in the specifications.

During abrasive blast cleaning procedures, the waste generated may be considered a hazardous waste (groundwater leachable). In addition, the airborne particulate of spent abrasive and lead paint may be considered a threat to public health, not only to workers, but also to pedestrians and business owners in the immediate vicinity. The EPA and their local divisions or state primary agencies are the enforcement agencies. Enforcement on these issues has been stepped up and fines of up to \$25,000/day for non-compliance are possible. Several techniques have been developed for containment. These include vertical and horizontal tarping, negative pressure, vacuum blasting, water blasting, and chemical strippers. Each method has advantages, disadvantages, and related costs. Cost depends on the level of containment required and complexity of the structure.

Lead also has OSHA standards with 30 micrograms per cubic meter action level, and 50 micrograms per cubic meter permissible exposure limit. This is tested when the project begins to determine the amount of lead to which a worker is exposed. The total lead test completed by DIXON is used in preparing the engineering analysis to evaluate the alternative methods of surface preparation to minimize workers' exposure. There is no correlation between respirable lead and total lead yet because of the variables between the different methods of surface preparation, engineering, and administrative controls. Based on your test results, the action limit should not be triggered when work is completed on the wet interior or exterior.

Personal air monitoring is required regardless of the total lead test because under the OSHA standard there is the presumption that lead is present in sufficient quantities to expose workers. OSHA has actually set what the exposure can be by the type of surface preparation. Until it can be proven otherwise by the exposure monitoring, work must progress under the presumption that the action level will be reached.

### **Chromium:**

Chromium also has a waste disposal concern. If leachable chromium exceeds the 0.0005 percent, 5-ppm limit, then the waste also is considered a hazardous material. Based on test results of 0.020 percent (200 ppm) on the exterior, and 0.032 percent (320 ppm) in the wet interior; there is may be a waste disposal concern that must be addressed in the specifications.

### **Cadmium:**

Cadmium also was tested. Cadmium is tested because there is a waste disposal problem if cadmium is leached at greater than 0.0001 percent, 1 ppm. The main concern with cadmium is the OSHA standard. The action level for OSHA is only 2 micrograms per cubic meter; as compared to lead at 30 micrograms per cubic meter, and the permissible exposure limit is 5 micrograms per cubic meter, as compared to lead at 50 micrograms per cubic meter for lead. These limits are exceptionally low. The cadmium standard does not require the presumption of the presence of cadmium. Cadmium was not used as often in coating systems as was the lead. The test for cadmium, particularly at this low level of below detectable limits of 0.00075 percent (7.5 ppm), indicates there is no concern for cadmium.

**ANALYTICAL LABORATORY REPORT**

Friday, November 1, 2013

Page 1 of 3

**CUSTOMER:** Dixon Engineering - WI  
 9415 West Forrest Home Suite 208  
 Hales Corners, WI 53130

**DATE RECEIVED:** Monday, October 28, 2013  
**PO/PROJECT #:**  
**SUBMITTAL #:** 2013-10-28-019

**LAB NUMBER: AB65890**

**Sampled By:** Tom Vangemert  
**Job Location:** Downer's Grove/ Downer's Drive Tank  
**Sample Identification:** 1- Wet interior roof- lead + chrome

**Date Sampled:**  
**Sample Description:** Paint Chips

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)  
**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)  
**Date Analyzed:** Tuesday, October 29, 2013

<u>ELEMENT</u>	<u>RESULT (by dry weight)</u>	<u>REPORTING LIMIT (RL)</u>
Chromium	0.032 %	0.0013 %
Lead	0.018 %	0.0025 %

**LAB NUMBER: AB65891**

**Sampled By:** Tom Vangemert  
**Job Location:** Downer's Grove/ Downer's Drive Tank  
**Sample Identification:** 2- Exterior roof- lead, cad, chrome

**Date Sampled:**  
**Sample Description:** Paint Chips

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)  
**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)  
**Date Analyzed:** Wednesday, October 30, 2013

<u>ELEMENT</u>	<u>RESULT (by dry weight)</u>	<u>REPORTING LIMIT (RL)</u>
Cadmium	< RL	0.00075 %
Chromium	0.020 %	0.0013 %
Lead	0.028 %	0.0025 %

**LAB NUMBER: AB65892**

**Sampled By:** Tom Vangemert  
**Job Location:** Downer's Grove/ Downer's Drive Tank  
**Sample Identification:** 3- Exterior leg- lead

**Date Sampled:**  
**Sample Description:** Paint Chips

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)  
**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)  
**Date Analyzed:** Wednesday, October 30, 2013

<u>ELEMENT</u>	<u>RESULT (by dry weight)</u>	<u>REPORTING LIMIT (RL)</u>
Lead	0.0077 %	0.0025 %

CCC&L has obtained accreditation under the programs detailed on the final page of the laboratory report. The accreditations pertain only to the testing performed for the elements, and in accordance with the test methods, listed in the scope of accreditation table. Testing which is performed by CCC&L according to other test methods, or for elements which are not included in the table fall outside of the current scope of laboratory accreditation.

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**CORROSION CONTROL CONSULTANTS & LABS, INC. a GPI company**

**ANALYTICAL LABORATORY REPORT**

Friday, November 1, 2013

Page 2 of 3

**CUSTOMER:** Dixon Engineering - WI  
9415 West Forrest Home Suite 208  
Hales Corners, WI 53130

**DATE RECEIVED:** Monday, October 28, 2013  
**PO/PROJECT #:**  
**SUBMITTAL #:** 2013-10-28-019

**LAB NUMBER: AB65893**

**Sampled By:** Tom Vangemert

**Date Sampled:**

**Job Location:** Downer's Grove/ Downer's Drive Tank

**Sample Description:** Paint Chips

**Sample Identification:** 4- Exterior sidewall lead

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)

**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)

**Date Analyzed:** Friday, November 1, 2013

<u>ELEMENT</u>	<u>RESULT (by dry weight)</u>	<u>REPORTING LIMIT (RL)</u>
Lead	0.045 %	0.0025 %

CCC&L has obtained accreditation under the programs detailed on the final page of the laboratory report. The accreditations pertain only to the testing performed for the elements, and in accordance with the test methods, listed in the scope of accreditation table. Testing which is performed by CCC&L according to other test methods, or for elements which are not included in the table fall outside of the current scope of laboratory accreditation.

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# CORROSION CONTROL CONSULTANTS & LABS, INC. a GPI company

## ANALYTICAL LABORATORY REPORT

Friday, November 1, 2013

Page 3 of 3

**CUSTOMER:** Dixon Engineering - WI  
9415 West Forrest Home Suite 208  
Hales Corners, WI 53130

**DATE RECEIVED:** Monday, October 28, 2013  
**PO/PROJECT #:**  
**SUBMITTAL #:** 2013-10-28-019

Unless otherwise noted, the condition of each sample was acceptable upon receipt, all laboratory quality control requirements were met, and sample results have not been adjusted based on field blank or other analytical blank results. Individual sample results relate only to the sample as received by the laboratory.

**Tests Reviewed By:** Jason Kraai, Senior Analyst  Jason Kraai  
2013 11 01 16:33:54  
04:00

CCC&L has obtained accreditation under the following programs

- **National Lead Laboratory Accreditation Program (NLLAP)**  
**ELLAP:** AIHA Laboratory ELLAP Accreditation Program Laboratory, ID#101030 ([www.aiha.org](http://www.aiha.org))  
**OH:** Ohio Department of Health Lead Poisoning Prevention Program, Approval #E10013 ([www.odh.ohio.gov](http://www.odh.ohio.gov))
- **AIHA Laboratory IHLAP Accreditation Program** ([www.aiha.org](http://www.aiha.org))  
**IHLAP:** Laboratory ID#101030
- **National Environmental Laboratory Accreditation Program (NELAP)**  
**NY:** State of New York Department of Health, Laboratory ID#11609 (Serial # 48735 through 48739) (518-485-5570)  
**LA:** State of Louisiana Department of Environmental Quality, Laboratory ID#180321 (Certificate 05036) ([www.deq.louisiana.gov](http://www.deq.louisiana.gov))  
**OK:** Oklahoma Department of Environmental Quality, Laboratory ID#9993 (Certificate 2013-040) ([www.deq.state.ok.us](http://www.deq.state.ok.us))

The accreditations pertain only to the testing performed for the elements, and in accordance with the test methods, listed in the table below. Testing which is performed by CCC&L according to other test methods, or for elements which are not included in the table below fall outside of the current scope of laboratory accreditation. Customers are encouraged to verify the current accreditation status with the individual accreditation programs by calling or visiting the appropriate website for the applicable program.

### SCOPE OF ACCREDITATION

#### Air and Emissions

<u>Element/Test</u>	<u>Method</u>	<u>Accreditation(s)</u>
Particulates (PM10)	40 CFR 50 Appendix J	NY, LA
Total Suspended Particulates (TSP)	40 CFR 50 Appendix B	NY, LA
Lead in Airborne Dust	NIOSH 7300	ELLAP, OH, NY, LA
Lead in Airborne Dust	EPA 600/R-93/200/ EPA 6010C	ELLAP, OH
Metals in Airborne Dust	EPA 600/R-93/200/ NIOSH 7300/ EPA 6010C	IHLAP

#### Solid Chemical Materials

<u>Element/Test</u>	<u>Method</u>	<u>Accreditation(s)</u>
TCLP	EPA 1311(Sample Preparation Method)	NY, LA OK
Acid Digestion	EPA 3050B	NY, LA
Lead in Soil	EPA 3050B/ EPA 6010C	ELLAP, OH, NY, LA, OK
Lead in Paint	EPA 3050B/ EPA 6010C	ELLAP, OH, NY, LA
Lead in Paint	ASTM D 3335-85A/ EPA 6010C	NY
Lead in Dust Wipes	EPA 3050B/ EPA 6010C	NY, LA
Lead in Dust Wipes	EPA 600/R-93/200/ EPA 6010C	ELLAP OH

#### Non-Potable Water / Analysis by ICP

<u>Element/Test</u>	<u>Method</u>	<u>Accreditation(s)</u>
Arsenic	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA OK
Barium	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA OK
Cadmium	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Chromium	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Copper	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Lead	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Mercury	EPA 245 1 Rev 3	NY, LA, OK
Mercury	EPA 7470A	NY, LA, OK
Nickel	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Selenium	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Silver	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Zinc	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Acid Digestion	EPA 3010A	NY, LA

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**STEEL TANK FIELD INSPECTION REPORT**  
**LEG TANK**

DATE: **October 24, 2013**

**I. TANK DATA**

OWNER: **Village of Downers Grove**

CLIENT CODE: **13-22-16-06**

TANK NAME: **Downers Drive Tank**

LOCATION: Street: **4318 Downers Drive**

City: **Downers Grove**

State: **Illinois**

GPS coordinates: **N 41 ° 48 '24.9 " W 88° 01' 30.6 "**

Ground elevation (Above MSL): **776 feet**

TANK SIZE: Capacity: **2,000,000 gallons**

Height to bottom (LWL): **90 feet**

CONSTRUCTION: **Welded**

Type of structure: **Radial Arm**

Type of Roof: **Hemisphere**

Type of Bowl: **Radial Arm**

DATE CONSTRUCTED: **1957**

MANUFACTURER: **CB&I**

CONTRACT NUMBER: **7-4540**

COATING HISTORY	<b><u>EXTERIOR</u></b>	<b><u>WET INTERIOR</u></b>
DATE LAST COATED	<b><u>Unknown</u></b>	<b><u>Unknown</u></b>
COATING SYSTEM	<b><u>Presumed polyurethane</u></b>	<b><u>Presumed epoxy</u></b>
SURFACE PREPARATION	<b><u>SSPC SP-6</u></b>	<b><u>SSPC SP-6</u></b>
COATING SAMPLES	<b><u>Yes</u></b>	<b><u>Yes</u></b>
HEAVY METAL	<b><u>No</u></b>	<b><u>No</u></b>

INSPECTED BY: **Dixon Engineering, Inc.**

PERSONNEL: Inspector **Thomas Van Gemert** Top person **Lane M. Tremblay**, Ground person **Kayla S. Mulcahy**

TYPE OF INSPECTION: **Preliminary Maintenance -Dry**

**II. INSPECTION DATA**  
**SITE CONDITIONS**

Fenced: **Yes**

Control building: **Yes**

Location: **Adjacent to tank**

Antenna control site: **Yes**

Number: **5**

Location: **Adjacent to tank**

SCADA controls:

Site conditions: **Well maintained**

Neighborhood: **Residential and retail**

To the North: **Car dealership**

To the East: **Residential**

To the South: **Residential**

To the West: **Residential**

Power lines within 50 feet: **Yes**

Location: **Attaches to leg ladder from building east of tank**

Would power lines interfere with containment: **Yes**

Site drainage: **Away from tank**

Indications of underground leakage: **No**

Shrub, tree, etc. encroachment: **No**

**Piping:**

Location: **In the building**

Piping: **Above floor**

Condition of pit structure: **Good**

Structure is: **Dry**

Sump Pump: **No but there is a drain in the floor**

Altitude valve: **No**

Condition of coating: **Poor**

Describe coating: **Delamination, bleed through, and spot coating breaks to the substrate with rust undercutting**

Condition of metal: **Good**

**FOUNDATION**

**Riser:**

Foundation exposed: **No**

Undermining of foundation: **No**

Type of grout: **Cement**

Condition: **Good**

Grout missing: **No**

Indications of riser settlement: **No**

## **FOUNDATION**

### **Legs:**

Foundation exposed: **Yes**  
Exposed height: **0 - 4 inches**  
Undermining of foundation: **No**  
Exposed foundation condition: **Good**  
Damage or deterioration: **Yes**  
Type of damaged: **Chipped and cracked**  
    Severity: **Minor**  
    Location: **Random**  
    Exposed rebar: **No**  
Type of grout: **Cement**  
    Condition: **Good**  
    Grout missing: **Yes**  
        Amount missing: **1 foot**  
Indications of leg settlement: **No**

## **EXTERIOR COATING**

### **Legs:**

Number: **10**  
Type: **Tubular**  
    Dimensions: **4 -1/2 feet**  
Exterior connection to tank: **Good**  
Topcoat condition: **Poor**  
Primer coating condition: **Good**  
    Describe coating: **Chalking, fading, spot coating breaks to substrate, rust bleed through, erosion, and rust undercutting**  
Coating adhesion: **1A**  
Metal condition: **Good**

### **Riser:**

Type: **Wet**  
Diameter: **10 feet**  
Exterior connection to tank: **Good**  
Topcoat condition: **Poor**  
Primer coating condition: **Good**  
    Describe coating: **Chalking, fading, spot coating breaks to substrate, rust bleed through, erosion, and rust undercutting**  
Mildew growth: **Yes**  
    Amount: **Light**  
Coating adhesion: **2A**  
Metal condition: **Good**

## **EXTERIOR COATING**

### **Bowl:**

Topcoat condition: **Poor**

Primer coating condition: **Good**

Describe coating: **Spot coating breaks to substrate, rust bleed through, erosion, and rust undercutting**

Mildew growth: **Yes**

Amount: **Light**

Metal condition: **Good**

### **Sidewall:**

Lettering: **Yes**

Number: **2**

Describe lettering: **DOWNERS GROVE**

Logo: **Yes**

Number: **2**

Describe logo: **Trees**

Topcoat condition: **Poor**

Primer coating condition: **Fair**

Describe coating: **Chalking, fading, spot coating breaks to substrate, erosion, and rust undercutting**

Coating adhesion: **2A**

Metal condition: **Good**

Sidewall comments: **Light mildew growth**

### **Roof:**

Topcoat condition: **Poor**

Primer coating condition: **Fair**

Describe coating: **Chalking, fading, delaminating, spot coating breaks to substrate and rust undercutting**

Coating adhesion: **3A**

Metal condition: **Good**

## **EXTERIOR APPURTENANCES**

### **Riser access: 1**

Type: **Bottom manway**

Dimensions: **12 x 18 inches**

Coating condition: **Poor**

Metal condition: **Good**

Gasket: **Yes**

Leaking: **No**

Hinged: **No**

## **EXTERIOR APPURTENANCES**

### **Riser access: 2**

Type: **Bottom manway**  
Dimensions: **30 inches**  
Coating condition: **Poor**  
Metal condition: **Good**  
Gasket: **Yes**  
Leaking: **No**  
Hinged: **Yes**

### **Anchor bolts:**

Number of bolts per leg: **2**  
Diameter: **1-3/4 inches**  
Anchor bolt chairs: **Yes**  
Number of riser bolts: **6**  
Diameter: **2 inches**  
Anchor bolt chairs: **Yes**  
Coating condition: **Poor**  
Metal condition: **Good**

### **Overflow pipe:**

Coating condition: **Poor**  
Metal condition: **Good**  
Inside diameter: **8 inches**  
Condition of screen: **Good**  
Percent of screen open: **99**  
Flap gate: **Yes**  
Design: **Screened**  
Flap gate condition: **Good**  
Air gap: **Yes**  
Bottom of pipe to ground distance: **16 inches**  
Splash pad: **Yes**  
Type: **Storm basin**  
Condition: **Good**

### **Mud valve:**

**N/A**

## **EXTERIOR APPURTENANCES**

### **Struts and Rods:**

Number of bays: **1**  
Sway rod coating condition: **Poor**  
Metal condition: **Good**  
Loose rods: **No**  
Strut coating condition: **Poor**  
Metal condition: **Good**  
Riser rod coating condition: **Poor**  
Metal condition: **Good**

### **Rigging points:**

Under bowl: **0**  
Design: **Clips**  
Number at top of legs: **6 on each leg**

### **Leg ladder:**

Coating condition: **Fair**  
Metal condition: **Good**  
Height to start of ladder: **15 feet**  
Toe clearance: **7 inches or greater**  
Width of rungs: **16 inches**  
Thickness of rungs: **3/4 inches**  
Shape of rungs: **Rebar**  
Fall prevention device: **Yes**  
Type: **Rail**  
Condition: **Good**  
Cage: **No**  
Step off platform: **Yes**  
Dimensions: **26 x 28 inches**

## **EXTERIOR APPURTENANCES**

### **Balcony:**

Balcony width: **24 inches**

Railing height: **42 inches originally 36 inches but has an extension**

Midrail: **Mid-rail**

Toe plate height: **5 inches**

Vertical posts: **Channel**

Size: **6 inches**

Top Rail: **Angle**

Size: **2-1/2 x 2-1/2 inches**

Mid Rail: **Angle**

Size: **2 x 3 inches**

Balcony coating condition: **Poor**

Describe coating: **Chalking, fading, spot coating breaks to substrate, erosion and rust undercutting**

Exterior connection to tank: **Good**

Missing any bolts or rivets: **No**

Number of penetrations: **2**

Penetrations reinforced: **Yes and no**

Penetration uses: **Overflow pipe (not reinforced) and cables (reinforced)**

Accumulation of bird droppings: **No**

Water pooling: **No**

Metal condition: **Good**

Balcony comments: **There is no lid over the balcony opening and the top rail was originally 3 x 3 inches and 20 inches high**

### **Sidewall ladder:**

Type: **Follows roof**

Design: **Fixed**

Coating condition: **Fair**

Metal condition: **Good**

Toe clearance: **7 inches or greater**

Width of rungs: **16 inches**

Thickness of rungs: **3/4 inches**

Shape of rungs: **Rebar**

Fall prevention device: **Yes**

Type: **Rail**

Condition: **Good**

Cage: **No**

### **Step-off platform:**

**N/A**

## **EXTERIOR APPURTENANCES**

### **Roof ladder:**

Design: **Fixed and continuation of sidewall ladder**

Style: **Ladder**

Coating condition: **Poor**

Metal condition: **Good**

Toe clearance: **7 inches or greater**

Width of rungs: **16 inches**

Thickness of rungs: **3/4 inches**

Shape of rungs: **Rebar**

Fall prevention device: **Yes**

Type: **Rail**

Condition: **Fair**

Cage: **No**

Roof ladder comments: **Sections are misaligned**

### **Roof handrail:**

Location: **Ring on roof**

Coating condition: **Poor**

Metal condition: **Good**

Diameter: **20 feet**

Height: **36inches**

Midrail height: **24 inches**

Toe plate height: **4 inches**

Roof handrail comments: **There are rigging posts, located outside of the handrail**

### **Painter's rail:**

**N/A**

### **Roof hatches:**

Wet interior:

Coating condition: **Poor**

Metal condition: **Good**

Neck diameter: **24 inches**

Shape: **Round**

Hatch security: **Lock**

Dry interior: **N/A**

### **Bolted ventilation hatch:**

Coating condition: **Poor**

Metal condition: **Good**

Neck diameter: **30 inches**

## **EXTERIOR APPURTENANCES**

### **Roof vent:**

Number: 1  
Type: **Screened pressure-vacuum**  
Neck diameter: **24 inches**  
Vent material: **Steel**  
Coating condition: **Fair**  
Metal condition: **Good**  
Screen condition: **Good**  
Percent of screen open: **99**

### **Aviation lights:**

**N/A**

### **Removable cathodic caps:**

**N/A**

### **Rigging points:**

Rigging couplings: **Yes**  
Number: **20 +**  
Rigging clips: **No**  
Coating condition: **Poor**  
Metal condition: **Good**

### **Antennas:**

Roof number **4**  
Attached to: **Handrail**  
Sidewall number: **0**  
Balcony number: **12**  
Leg number: **18**  
Cable runs: **On exterior**  
Antennas or cables interfere with climbing: **Yes**  
Antenna issues: **Antennas interfere with access.**  
Location: **7/8 inch and 1 inch cable route over sidewall and roof ladders.**  
Are antennas 4G or microwave type: **No**

### **Antenna pod:**

**N/A**

## **DRY INTERIOR COATING**

**N/A**

## **WET INTERIOR COATING**

### **Roof:**

Topcoat condition: **Fair**  
Primer coating condition: **Good**  
Describe coating: **Rust bleed through and weld burns**  
Metal condition: **Good**  
Lap seams: **Caulked**  
Condition of laps: **Good**

### **Sidewall:**

Topcoat condition: P=**Poor**  
Primer coating condition: **Good**  
Describe coating: **Spot coating breaks to substrate**  
Mineral deposits: **Light**  
Metal condition: **Good**  
Active pitting: **No**  
Previous pitting: **No**  
Previous pit filling: **No**  
Sidewall comments: **Scratches to the substrate are from the damaged sidewall beam**

### **Tank bottom:**

Topcoat condition: **Fair**  
Primer coating condition: **Good**  
Describe coating: **Spot coating breaks to substrate and scrapes to the substrate**  
Mineral deposits: **Light**  
Metal condition: **Good**  
Active pitting: **Yes**  
Deepest pit depth: **1/32 inch**  
Number of pits: **Less than 25**  
Previous pitting: **No**  
Previous pit filling: **No**  
Depth of sediment: **1/4 inches**  
Bottom comments: **Scratches to the substrate are from the damaged sidewall beam**

## **WET INTERIOR COATING**

### **Riser:**

Topcoat condition: **Good**

Primer coating condition: **Good**

Describe coating: **Spot coating breaks to the substrate**

Mineral deposits: **Yes**

Severity: **Light**

Metal condition: **Good**

Active pitting: **No**

Previous pitting: **No**

Previous pit filling: **No**

## **WET INTERIOR APPURTENANCES**

### **Tank ladder:**

**N/A**

### **Cathodic protection:**

Clips and pressure fitting present: **Yes**

Cathodic comments: **Clips are only at base of riser- none in bowl or sidewall**

### **Fill pipe:**

Diameter: **16 inches**

Height above floor: **32 inches**

Deflector over end: **Yes**

Removable silt ring: **No**

Mixing system: **No**

Coating condition: **Fair**

Metal condition: **Good**

### **Separate draw pipe:**

**N/A**

### **Overflow pipe:**

Type: **Vortex break**

Coating condition: **Fair**

Metal condition: **Good**

### **Roof beams:**

Number in at top sidewall: **50 vertical**

Number in between: **20**

Circular number: **3**

Style: **Radial**

Shape: **Angle**

Connections: **Welded**

Coating condition: **Fair**

Metal condition: **Good**

## **WET INTERIOR APPURTENANCES**

### **Sidewall beams:**

Number: **1**

Orientation: **Horizontal**

Location: **At top of sidewall**

Coating condition: **Fair**

Metal condition: **Poor**

Comments: **Sections of the sidewall beam have been torn loose and are scraping the sidewall and bowl coating**

### **Riser safety:**

Riser grate: **Yes**

Opening size: **N/A**

Coating condition: **Fair**

Metal condition: **Good**

### **Siphon:**

**N/A**

### **Interior balcony:**

**N/A**

### **Spider:**

**N/A**

Field Inspection Report is prepared from the contractor's viewpoint. It contains information the contractor needs to prepare his bid for any repair or recoating. The engineer uses it to prepare the engineering report. Cost estimates are more accurate if the contractor's problems can be anticipated. While prepared from the contractor's viewpoint, the only intended beneficiary is the owner. These reports are completed with diligence, but the accuracy is not guaranteed. The contractor is still advised to visit the site.



1. The 2,000,000-gallon radial arm tank is located in the Village of Downers Grove, Illinois.



2. The piping located in the building is in good condition. The piping coating is in poor condition. There is delamination, rust bleed through, and spot coating breaks to the substrate with rust undercutting.

3. The riser foundation is buried and is not accessible for inspection.



4. The riser grout is in good condition with no significant deterioration.



5. The riser anchor bolts and anchor bolt chairs are in good condition. The coating is in poor condition.

6. The bolted riser manway is in good condition. The manway is hinged and the gasket showed no signs of leaking. The coating is in poor condition.



7. The second riser manway is in good condition. The manway is not hinged and the gasket showed no signs of leaking. The coating is in poor condition.



8. A pressure fitting and mount are present on the riser for the future installation of a cathodic protection system. The pressure fitting and mount are in good condition. The coating is in poor condition.

9. The exterior riser coating is in poor condition. The coating is chalking, fading, and eroding.



10. There are spot coating breaks to the substrate with rust undercutting.



11. There is rust bleed through.

12. The leg foundations are in good condition with minor chips and cracks.



13. The leg grout is in good condition overall with a few areas of grout missing.



14. The leg anchor bolts and anchor bolt chairs are in good condition. The coating is in poor condition.

15. The overflow pipe discharges to a storm drain with the required air gap. The overflow pipe and storm drain are in good condition. The coating is in poor condition.



16. The discharge end of the overflow pipe has a screened flap gate that is in good condition. The screen is in good condition.



17. The leg ladder contains a rail-type fall prevention device. The ladder and fall prevention device are in good condition. The coating is in fair condition.

18. There is a step off platform with stairs leading from the top of the leg ladder to the balcony. The step off platform and stairs are in good condition. The coating is in fair condition.



19. There are 6 safety clips located at the top of each leg. The clips are in good condition. The coating is in fair condition.



20. The antennas attached to the legs appear to be in good condition.

21. The exterior leg coating is in poor condition. The coating is chalking, fading, and eroding. There is rust bleed through.



22. There are spot coating breaks to the substrate with rust undercutting.



23. The exterior bowl coating is in poor condition. The coating is eroding.

24. There are spot coating breaks to the substrate with rust undercutting.

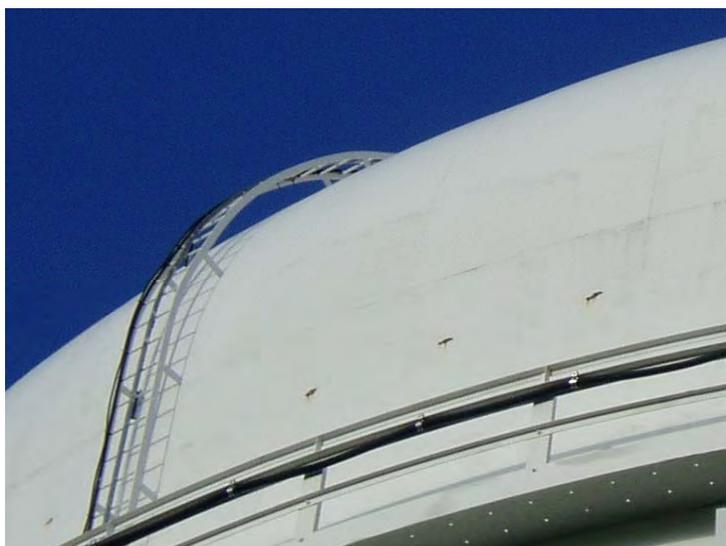


25. There is rust bleed through.



26. The balcony is in good condition. The balcony coating is in poor condition. The coating is chalking, fading, and eroding. There are spot coating breaks to the substrate with rust undercutting.

27. The antennas attached to the balcony handrail appear to be in good condition.



28. The sidewall ladder contains a rail-type fall prevention device. The ladder and fall prevention device are in good condition. The coating is in fair condition.



29. The exterior sidewall coating is in poor condition. The coating is chalking, fading, and eroding.

30. There are spot coating breaks to the substrate with rust undercutting.



31. The roof ladder contains a rail-type fall prevention device. The ladder is in good condition. The fall prevention device is in fair condition. Some sections of the fall prevention device are misaligned. The coating is in poor condition.



32. The roof handrail is in good condition. The coating is in poor condition.

33. There are rigging posts located outside of the roof handrail. The posts are in good condition. The coating is in poor condition.



34. The screened pressure vacuum roof vent is in good condition. The screen is in good condition. The coating is in fair condition.



35. The antennas attached to the roof handrail appear to be in good condition. Some cables that route to the roof are routed over the sidewall and roof ladders.

36. The exterior roof coating is in poor condition. The coating is chalking, fading, and eroding.



37. There is delamination and spot coating breaks to the substrate with rust undercutting.



38. The roof beams are in good condition with no significant deterioration. The coating is in fair condition.

39. The wet interior roof coating is in fair condition overall. There is rust bleed through and weld burns.



40. The wet interior sidewall beam is in poor condition. Sections of the beam are torn loose and scratching the sidewall and bowl coating. The beam coating is in fair condition.



41. The wet interior sidewall coating is in poor condition. There are spot coating breaks to the substrate and scratches to the substrate. The coating is covered with light mineral staining.

42. The grate over the top of the riser is in good condition. The coating is in fair condition.



43. There was approximately 1/4-inch of mud sediment that was removed from the wet interior.



44. The wet interior bowl coating is in fair condition.

45. There are spot coating breaks to the substrate and scratches to the substrate. The coating is covered with light mineral staining.



46. The fill pipe has a deflector plate. The fill pipe and deflector plate are in good condition. The coating is in fair condition.



47. A pressure fitting and clip are present on the wet interior riser for the future installation of a cathodic protection system. The pressure fitting and clip are in good condition. The coating is in fair condition.

48. The wet interior riser coating is in fair condition.



49. There are spot coating breaks to the substrate. The coating is covered with light mineral staining.

# Dixon Engineering, Inc.

Preliminary Maintenance Inspection

1,000,000 Gallon Fluted Column  
Water Storage Tank

Village of Downers Grove  
Downers Grove, Illinois

Dixon Engineering, Inc.  
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Inspection Performed: November 6, 2014  
Report Prepared: November 19, 2014

## **CONCLUSIONS:**

1. The exterior coating is presumed an epoxy/urethane coating system that is in fair condition overall. The coating has faded slightly and the primary modes of failure is spot coating breaks to the substrate, chalking, and fading. Coating deterioration is minor.
2. The dry interior coating is presumed to be an epoxy system that is in good condition overall. Minor failure has occurred on the tops of the platforms, access tube, and spot failures throughout the dry interior.
3. The wet interior coating is presumed a multi coat epoxy system that is in good condition overall. The coating appears to have good adhesion. Below the high water line the coating has minor spot failures on the floor, access tube, and sidewalls. Above the high water line, the coating is in good condition, with deterioration at the lap seams, on the roof beam edges with minor corrosion.
4. 2 exterior, 1 wet interior, and 1 dry interior coating samples were taken and analyzed for metal content. The coating on the tank is not heavy metal bearing.

Details are included in the Summary of Test Results at the end of this report.

## **RECOMMENDATIONS:**

1. Schedule regular cleanings and inspections of the tank by an independent third party as recommended by AWWA, or once every five years.
2. Complete the recommended work pending the revised condition assessment after the next 5-year inspection. The coating work is the greatest cost and largest part of the recommendations. The repairs and upgrades should be completed during the next major tank rehabilitation process when coating repairs are made. Estimated costs are in today's dollars.
3. Re-install cathodic protection for wet interior surfaces. Use a qualified cathodic protection contractor for maintenance.
4. Install a floating-type cathodic protection system on the interior. The estimated cost is \$17,000.
5. Install a 42-inch high railing and a painter's rigging rail on the roof. The estimated cost is \$20,000.
6. Install rigging couplings on the roof for temporary fall prevention of workers in the wet interior. Cost would be incidental to coating costs.
7. Install a cover over the access tube gap to eliminate the gap as a point of possible contamination. Cost would be incidental to exterior repainting or the installation of a new roof vent.
8. Annually inspect the roof vent screen.

9. Retape/Reband the loose insulation on the fill pipe. Cost would be incidental to interior repainting.
10. Install a mud valve in the wet interior to aid with removal of sediment and draining of the tank. The estimated cost is \$4,500.
11. Install a rubber condensate platform with a 2-inch drain line to the overflow with check valve, this will ensure no future water damage to the existing fire house below. The estimated cost is \$15,000.

## **A DISCUSSION ON RESCUE AND RETRIEVAL OPERATIONS FROM ELEVATED PEDESTAL STORAGE TANKS**

A series of accidents involving falls from or in water tanks has highlighted inadequacies in tank design and a potentially greater problem. The rescue may be more dangerous, with potential for more loss of life or injury, than the original accident. Contractors and engineers are responsible for their own employees. Even with safety training and proper equipment, accidents will occur. Most rescue squads are local or neighboring fire departments, some with more practice than other departments. Elevated tanks were designed to store water, not for rescue or retrieval convenience. The following items would make working on and retrieval from water tanks safer. This discussion is offered as a starting point. We recommend that you meet with your rescue personnel and draft a rescue plan. A copy of the plan should be kept at the tank and with the rescue crew.

OSHA now requires 30-inch manways and hatches with fall prevention on all ladders. We have always objected to replacement of ladders as new regulations are passed relatively frequently, especially on retrofit of existing tanks. We recommend the changes for the convenience and safety of your employees, rescue personnel, and others working on the tank. As far as we know, none of these conversion items recommended are required or mandated by any government agency for retrofits.

DIXON recommends these changes be made during the next major tank painting.

### RETRIEVAL FROM WET INTERIOR:

#### Access:

The dry interior ladders are located in the basebell, stem, and access tube. All ladders do contain a rail-type fall prevention device. There is a 24-inch diameter manway in the bowl for access into the bottom of the wet interior. The roof has a 30-inch diameter roof hatch for the dry interior, and a 30-inch diameter roof hatch for the wet interior. There is no roof handrail or painter's rail.

There is a partial platform under the bowl, and a condensate ceiling at approximately 20 feet above the ground in the dry interior. Ladder openings in platforms are 24-inch x 32-inch tombstone design.

#### Procedure:

1. Retrieval must be up to the roof by use of a winch and tripod. Rescue personnel enter the tank through the 30-inch roof hatch or the bottom manway.
2. Inside the new roof handrail, the rescue crew raises the basket to the roof using a tripod and a winch. Place the basket on the roof while the tripod is moved over the access tube hatch.

3. Establish a helicopter rescue, or lower the basket down the access tube to the top platform. From the top platform, lower the basket to ground level through the 30-inch platform hatches with a pulley or winch connected to an attachment lug welded to the tank's bowl.

From the roof, it is possible to lower the basket over the side to ground level, but that would require a very large winch and increased loading on the attachment point. On a rainy, windy, or snowy day, the objective would be to get rescue personnel off the roof as soon as possible, so lowering through the dry interior is preferred.

Structural Modifications Necessary (As stated in the recommendations):

1. Install a 42-inch high railing and a painter's rail on the roof.
2. Weld an attachment lug to the tank's bowl. Cost is incidental to coating costs.

Equipment:

Winch or pulley system.

Tag line rope.

Basket.

## **INSPECTION:**

On November 6, 2014, Dixon Engineering, Inc. (DIXON) performed a preliminary maintenance inspection on the 1,000,000 gallon fluted column water storage tank owned by the Village of Downers Grove, IL. Purposes of the inspection were to evaluate the interior and exterior coating's performance and life expectancy, assess the condition of metal surfaces and appurtenances, review safety and health aspects, and make budgetary recommendations for continued maintenance of the tank. All recommendations, with budgeting estimates for repairs are incorporated in this report. The inspection was performed by Josh M Grover staff technician. The inspector was assisted by Kelly Green staff technician and Lane Tremblay staff technician. Following the inspection, chlorine was added to disinfect the tank per AWWA Standard C652-11 method No. 3.

## **TANK INFORMATION:**

The tank was built in 1976 by CB&I with a height-to- low-water line of 89 feet. The tank is welded construction.

## **CONDITIONS AND RECOMMENDATIONS:**

### **EXTERIOR COATING CONDITIONS:**

The exterior coating system is presumed to be a multiple coat epoxy urethane coating system.

The exterior coating is in fair condition overall, it is beginning to chalk and fade and there is loss of gloss. Surfaces have faded due to exposure to ultraviolet rays, which is a normal occurrence for an exterior coating system. The coating is adequately protecting the metal and the aesthetics are good.

The stem coating is in fair condition. The primary methods of deterioration are spot coating breaks to the substrate, chalking, and fading. The failures noted are minor with only a few breaks noted throughout.

The bowl coating is in fair condition. No coating breaks were found on the bowl. The primary methods of deterioration are chalking and fading.

The sidewall coating is in fair condition. No coating breaks were found on the sidewall. The primary methods of deterioration are chalking and fading

The sidewall and bowl areas are covered with light mildew growth.

The roof coating is in fair condition. The primary methods of deterioration are spot coating breaks to the substrate, chalking, and fading. The failures noted are minor with only a few breaks noted throughout.

This exterior system was tested at less than 0.0025 percent (25 ppm) lead by weight and 0.003 percent (30 ppm) chromium by weight.

Lettering on the tank consists of Downers Grove in 2 locations; it is in block style.

There is a logo on the sidewall, it is trees and a field under the lettering.

#### **EXTERIOR COATING RECOMMENDATIONS:**

Take no immediate action on the exterior. Plan for exterior overcoating in 5-8 years based on the next inspection in 5 years.

#### **DRY INTERIOR COATING CONDITIONS:**

The dry interior area on this structure is defined as the non-water contact surfaces, consisting of the stem, bowl, and access tube.

The dry interior coating is presumed to be an epoxy system that is in good condition overall.

The primary cause of deterioration in the stem is spot coating breaks.

The primary causes of deterioration in the access tube are delamination to primer, spot coating breaks, and rust undercutting.

The coating on the tops of the platforms is in good condition. The primary cause of deterioration is spot coating breaks.

#### **DRY INTERIOR COATING RECOMMENDATIONS:**

Reinspect in five years when the exterior is inspected. Plan on spot coating repairs in 5-8 years.

Since the dry interior is also office space it needs to be kept dry. Currently there is no successful diversion of the condensation coming off the tank. Install a tarp and diversion piping over the top of the office space to collect water and keep it from getting the roof wet. The estimated cost is \$15,000.

#### **WET INTERIOR COATING CONDITIONS:**

The wet interior coating is presumed to be an epoxy system.

The roof coating is in good condition, with the primary areas of deterioration along the lap seams, the beam edges, and in the crevices. The tank's roof contains caulked lap seams that have started to rust and streak. Staining in the lap seams is not a concern, but should be monitored during future inspections for corrosion growth. Roof beam edge corrosion is typical but should be corrected before structural loss of steel occurs.

The sidewall coating is in good condition with deterioration in the form of spot coating breaks and delamination. There is not any significant damage at the high water line, which would be the area most affected by ice pressures and ice movement. The coating is still protecting the metal, with the exception of the noted failures.

The access tube coating is in fair condition with deterioration in the form of spot coating breaks, delamination, and rust bleed through.. There is damage at the high water line, which would be the area most affected by ice pressures and ice movement. The coating is still protecting the metal, with the exception of the noted failures.

The coating on the tank bottom is in good condition, with deterioration in the form of spot coating breaks. The coating is still protecting the metal, with the exception of the noted failures.

The tank bottom was covered with approximately 3-4 inches of mud sediment that was flushed from the interior.

The bottom, sidewall, and access tube are covered with light mineral staining, which does not affect the integrity of the coating system.

Overall adhesion of the coating is good. Adhesion was tested using a low-pressure power washer. With poor adhesion, it would be possible to notice the coating fluctuate and any loose coating would be removed during impact. This is a crude form of testing, yet the least destructive. A destructive test cuts the coating to the substrate. The test area is then susceptible to corrosion because it has been scratched to bare metal.

#### **WET INTERIOR COATING RECOMMENDATIONS:**

The existing coating system has not deteriorated to the point where replacement is warranted.

The wet interior coating system is believed to be an epoxy system based on the appearance (white), lead test results (lead free), and condition of the coating. Based on the roof coating it was apparent that the tank has been abrasive blast cleaned and painted at least once since the 1970's. The most prevalent coating for wet interiors in the late 1980's and 1990's was epoxy. Exact coating type is not essential because DIXON does not typically recommend repair of the existing coating.

When the coating is no longer protecting the metal at coating breaks, a cathodic protection system will prevent corrosion. When the coating deterioration goes beyond the cathodic protection's ability to protect the metal, then it is time for total removal and replacement of the coating.

With a cathodic protection system in place, plan for removal and replacement of the coating in 5-8 years.

### **CATHODIC PROTECTION CONDITIONS:**

The tank does not contain a cathodic protection system.

The tank needs new cathodic clips for a future cathodic protection installation.

### **CATHODIC PROTECTION RECOMMENDATIONS:**

Install an impressed current cathodic protection system immediately. The system is designed with a horizontal ring configuration. The anode is suspended into the lower one-third of the tank by floats/arms off the access tube. As water fills the tank, the anode takes the desired ring configuration. This design is considered ice-free. Formation of ice normally occurs at the high water level and some along the sidewalls. As long as the tank is operated in the upper one-half of its capacity, the probability of ice damage is very low. The anode used is a platinized niobium or titanium wire with a design life of ten years. The system also incorporates copper/copper sulfate reference anodes.

The system is automatically controlled by monitoring the water-to-tank potential. It provides protection to steel surfaces where holidays (coating pinholes) or coating breaks exist. Cathodic protection operates by inhibiting galvanic cell corrosion where steel is exposed. The system creates an equipotential across the tank and drives the tank potential down to a point (-850 millivolts) where corrosion is essentially non-existent. Only surfaces that are in contact with water are protected because water acts as the electrolyte for the circuit. Therefore, areas of the roof and upper sidewalls are not protected by the system. The estimated cost is \$17,000.

### **PIT AND PIT PIPING CONDITIONS:**

The tank contains piping with valves located in the pump house adjacent to the tank.

The piping is in good condition. Coating on the pipes is in fair condition.

### **SITE CONDITIONS:**

The size of the tank site is average and is fenced with a locking gate.

There is an average sized staging area for the contractor's equipment.

There is office buildings to the north and east. It is adjacent to control building to the west and a parking lot to the south.

The neighbors are close to the tank and extra precautions will need to be taken to keep from getting paint or debris on the neighbors' properties.

The site is accessible from a municipal street. The tank is located approximately 100 feet from the main access road.

There is 1 antenna control panel with exposed equipment adjacent to the tank.

Power lines are located 50 feet away from the tank.

**FOUNDATION CONDITIONS:**

The top 4-14 inches of the foundation is exposed.

The exposed foundation is in good condition and showed minor amounts of deterioration. Deterioration includes cracking, chipping, and spalling with no rebar exposed.

Corrosion is occurring on the anchor bolts. The anchor bolts are corroded.

**FOUNDATION RECOMMENDATIONS:**

Pressure wash the concrete and coat the exposed concrete to help prevent further deterioration with an epoxy coating system. The cost would be incidental to exterior painting.

Clean and coat the anchor bolts during the next coating project. Cost would be incidental to coating costs.

**GROUT CONDITIONS:**

The grout is in good condition overall. None of the grout is missing between the bottom plate and the foundation.

**ROOF HANDRAIL AND PAINTER'S RAILS:**

The tank has no roof handrail or painter's rail.

**ROOF HANDRAIL AND PAINTER'S RAIL RECOMMENDATIONS:**

During the next tank project, install a 42-inch high railing on the roof. Railing will allow tie-off locations and safety during routine vent screen and obstruction light inspections, and would provide a work area for retrieval personnel performing roof extraction. The railing should provide sufficient area to rest a basket for a helicopter lift, or for stabilizing before lowering down over the side or through the dry interior. Install a painter's rail outside the railing so contractor rigging does not interfere with the railing's interior clear area. The estimated cost is \$20,000.

Install rigging couplings on the roof under the painter's rail for fall prevention of workers in the wet interior. These would allow a contractor working in the wet interior to be completely tied off to a fall prevention device at all times. The cost would be incidental to the recoating.

### **ANTENNAS:**

The roof area contains 2 antennas. The antennas are attached to the roof mounting poles.

The mounting brackets are in good condition.

The riser has 6 antennas attached to mounting brackets.

### **ANTENNA RECOMMENDATIONS:**

Relocate all antennas to the new roof handrail and remove any remaining mounting poles from the roof.

### **OVERFLOW PIPE CONDITIONS:**

The tank has an overflow pipe that extends along the access tube in the dry interior down through the dry riser and exits near the bottom of the stem.

The end of the pipe has a screened flap gate that is in good condition.

The pipe discharges to a splash pad with the required air gap. The discharge area is in good condition.

### **HATCH AND MANWAY CONDITIONS:**

#### **Roof:**

The tank has a 30-inch diameter flip-top, roof access hatch to the wet interior. The hatch is in good condition.

The tank has a 30-inch diameter flip-top, roof access hatch into the dry interior. The hatches are in good condition.

The roof wet interior hatch was not secured.

The roof contains a 24-inch diameter painter's hatch with a bolted cover that is in good condition. The hatch is used for ventilation and lighting during maintenance or a rescue.

#### **Wet Access:**

The tank has a 24-inch diameter access manway in the bowl that is in good condition.

The manway is not hinged, the gasket showed no signs of leaking.

#### **Dry Access:**

The tank has a 36-inch x 80-inch access door and a 12-foot x 12-foot roll up door into the base of the tank. The door is in good condition and operated properly during the inspection.

The tank has a 24-inch x 30-inch diameter painter's hatch (bird hatch) at the top of the dry riser. The hatch is in good condition.

The ladder openings in the dry interior platforms are 24-inch x 32-inch tombstone shaped without lids.

#### **VENT CONDITIONS:**

The roof vent is a 24-inch pressure-vacuum design, the vent is in good condition.

The vent is properly screened.

The roof does contain a vent, but also has an access tube air gap that is sealed with a neoprene gasket. The gasket is gapped and does not cover the complete air gap area. This is a possible source for contamination of the water supply. No evidence of entry was found.

#### **VENT RECOMMENDATIONS:**

Install a new cover over the access tube gap to eliminate the gap as a point of possible contamination. Cost would be incidental to exterior repainting or the installation of a new roof vent.

Annually inspect the vent to make sure the screen is open and not damaged.

#### **LADDER CONDITIONS:**

##### Dry:

The dry interior ladders are in good condition. They are located in the stem, and access tube.

The stem ladder is in good condition and does have a rail-type fall prevention device.

The access tube ladder is in good condition and does have a rail-type fall prevention device.

The fall prevention devices are in good condition.

##### Wet:

The wet interior contains a ladder that is in good condition.

The wet interior ladder does have a rail-type fall prevention device. The fall prevention device is in good condition.

**FILL/DRAW PIPE CONDITIONS:**

The fill pipe runs through the dry interior into the bottom of the bowl and extends 24 inches into the bottom of the tank. There is a deflector plate over top of the line.

**EXPANSION JOINT CONDITIONS:**

The expansion joint is located in the valve vault area and is covered with insulation and is not accessible for inspection.

**INSULATION CONDITIONS:**

The fill pipe is insulated with rigid foam insulation and is covered with a paper cover. The insulation is in fair condition. Some of the paper cover is coming loose and is ready to fall.

**INSULATION RECOMMENDATIONS:**

Retape the loose insulation cover on the fill pipe. Cost would be incidental to interior repainting.

**MUD VALVE CONDITIONS:**

The tank does not have a mud valve.

**MUD VALVE RECOMMENDATIONS:**

During the next tank project, install a mud valve to aid with removal of built-up sediment while the tank is in service, and aid with cleaning the tank during regular maintenance inspections. The estimated cost is \$4,500.

Begin annual operation of the mud valve to minimize sediment accumulation.

**CONDENSATE DRAIN CONDITIONS:**

There is no condensate drain.

**CONDENSATE DRAIN RECOMMENDATIONS:**

Install a rubber condensate platform with a 2-inch drain line to the overflow with a check valve. The estimated cost is \$15,000.

**WET INTERIOR METAL CONDITIONS:**

The steel structure is in good condition above the high water line and in good condition below it.

No pitting was found at the existing coating breaks on the bottom, sidewalls, or access tube.

Roof Beams:

The interior roof is supported by 31 radial beams that are in good condition with minor corrosion in the crevices and at the edges.

Sidewall Stiffeners:

The tank contains a stiffener ring that is angular in construction and situated at the top section of the sidewall. It in good condition.

## **SUMMARY OF TEST RESULTS**

By William J Dixon, P.E., Esquire

DIXON collected four coating samples for analysis. One sample was taken from the wet interior, one sample was taken from the dry interior, and two samples from the exterior. Only one sample was taken from the wet interior because wet interior coatings are almost always uniform. Very seldom is the coating system repaired; therefore, one sample is representative of the entire system. The one problem found too frequently is an incomplete abrasive blast cleaning prior to the last repaint. Multiple samples would not be beneficial because the chance of sampling a poorly cleaned spot would be random. In addition, testing is destructive exposing bare steel to the water. Sampling should be on the roof or if the tank has cathodic protection, then a bowl or riser sample is more representative. Your sample was taken from the roof.

On the exterior, usually there are multiple repaints with spot repair, and there are different weathering conditions on the roof versus the column and the sidewalls, giving different lead results. For proper analysis, multiple samples are preferred. The primers of either the exterior or interior are generally the same as the dry interior. If a repair is required in the dry interior, the tank itself acts as a containment device. One sample is sufficient, and the area then can be grouped with the wet interior and exterior.

<u>Test Locations</u>	<u>Lead</u>	<u>Chrome</u>	<u>Cadmium</u>
Wet Interior:	<b><u>Less than 0.0025</u></b> % ( <b><u>25</u></b> ppm)		
Dry Interior:	<b><u>Less than 0.018</u></b> % ( <b><u>180</u></b> ppm)	<b><u>Less than 0.0091</u></b> % ( <b><u>91</u></b> ppm)	
Exterior Column:	<b><u>Less than 0.0025</u></b> % ( <b><u>25</u></b> ppm)		
Exterior Roof:	<b><u>Less than 0.0025</u></b> % ( <b><u>25</u></b> ppm)	<b><u>0.003</u></b> % ( <b><u>30</u></b> ppm)	<b><u>Less than 0.00075</u></b> % ( <b><u>7.5</u></b> ppm)

Eight metals have waste disposal problems. The ones most frequently encountered in the coating industry are lead, cadmium, and chromium. Samples taken were tested for total metals, which tells us what percent the metals are in reference to the coating only. When it is time for disposal, a TCLP test will be run on the waste that tests for the metals leachability. A correlation has not been made between the results of total lead tests and TCLP results. It is possible to have a low amount of lead, but highly soluble lead that could result in a hazardous waste because it is highly leachable. Conversely, a high amount of total lead, that is insoluble, could have minimal leaching and not result in a hazardous waste. The total metal testing completed is needed for use in the preparation of specifications, waste disposal, and OSHA considerations.

### **Lead:**

For reference, housing paint is considered lead free if it is below 0.06% (600 ppm) by volume. Lead has a TCLP leachable limit of 5mg/l, anything greater than 5 mg/l is considered a hazardous waste. Therefore, the contractor must employ special storage, transportation, and disposal procedures. Based on your test results of less than 0.0025 percent (25 ppm) average, waste disposal should not require special considerations in the specifications.

During abrasive blast cleaning procedures, the waste generated may be considered a hazardous waste (groundwater leachable). In addition, the airborne particulate of spent abrasive and lead paint may be considered a threat to public health, not only to workers, but also to pedestrians and business owners in the immediate vicinity. The EPA and their local divisions or state primary agencies are the enforcement agencies. Enforcement on these issues has been stepped up and fines of up to \$25,000/day for non-compliance are possible. Several techniques have been developed for containment. These include vertical and horizontal tarping, negative pressure, vacuum blasting, water blasting, and chemical strippers. Each method has advantages, disadvantages, and related costs. Cost depends on the level of containment required and complexity of the structure.

Lead also has OSHA standards with 30 micrograms per cubic meter action level, and 50 micrograms per cubic meter permissible exposure limit. This is tested when the project begins to determine the amount of lead to which a worker is exposed. The total lead test completed by DIXON is used in preparing the engineering analysis to evaluate the alternative methods of surface preparation to minimize workers' exposure. There is no correlation between respirable lead and total lead yet because of the variables between the different methods of surface preparation, engineering, and administrative controls. Based on your test results, the action limit should not be triggered when work is completed.

Personal air monitoring is required regardless of the total lead test because under the OSHA standard there is the presumption that lead is present in sufficient quantities to expose workers. OSHA has actually set what the exposure can be by the type of surface preparation. Until it can be proven otherwise by the exposure monitoring, work must progress under the presumption that the action level will be reached.

### **Chromium:**

Chromium also has a waste disposal concern. If leachable chromium exceeds the 0.0005 percent, 5-ppm limit, then the waste also is considered a hazardous material. Based on test results of 0.003 percent (30 ppm), there may be a waste disposal concern that must be addressed in the specifications. However, the environmental and worker safety concerns you are already addressing because of the lead content will address the chrome concerns by default.

### **Cadmium:**

Cadmium also was tested. Cadmium is tested because there is a waste disposal problem if cadmium is leached at greater than 0.0001 percent, 1 ppm. The main concern with cadmium is the OSHA standard. The action level for OSHA is only 2 micrograms per cubic meter; as compared to lead at 30 micrograms per cubic meter, and the permissible exposure limit is 5 micrograms per cubic meter, as compared to lead at 50 micrograms per cubic meter for lead. These limits are exceptionally low. The cadmium standard does not require the presumption of the presence of cadmium. Cadmium was not used as often in coating systems as was the lead. The test for cadmium, particularly at this low level of below detectable limits of 0.00075 percent (7.5 ppm), indicates there is no concern for cadmium.

## ANALYTICAL LABORATORY REPORT

Monday, November 17, 2014

Page 1 of 3

**CUSTOMER:** Dixon Engineering - WI  
9415 West Forrest Home Suite 208  
Hales Corners, WI 53130

**DATE RECEIVED:** Monday, November 10, 2014  
**PO/PROJECT #:**  
**SUBMITTAL #:** 2014-11-11-005

**LAB NUMBER: AB87848**

**Sampled By:** Tom Van Gemert  
**Job Location:** Downers Grove IL  
**Sample Identification:** 1 Wet Interior

**Date Sampled:** Thursday November 6, 2014  
**Sample Description:** Paint Chips

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)  
**Analysis Method:** FPA 6010C (ICP-AES Method for Determination of Metals)  
**Date Analyzed:** Tuesday, November 11, 2014

ELEMENT	RESULT (by dry weight)	REPORTING LIMIT (RL)
Lead	< RL	0.0025 %

**LAB NUMBER: AB87849**

**Sampled By:** Tom Van Gemert  
**Job Location:** Downers Grove, IL  
**Sample Identification:** 2 Exterior Roof

**Date Sampled:** Thursday November 6 2014  
**Sample Description:** Paint Chips

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)  
**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)  
**Date Analyzed:** Tuesday, November 11, 2014

ELEMENT	RESULT (by dry weight)	REPORTING LIMIT (RL)
Cadmium	< RL	0.00075 %
Chromium	0.003 %	0.0013 %
Lead	< RL	0.0025 %

**LAB NUMBER: AB87850**

**Sampled By:** Tom Van Gemert  
**Job Location:** Downers Grove, IL  
**Sample Identification:** 3 Dry Interior  
**Flagged Data:** Sample size less than the minimum required for analysis

**Date Sampled:** Thursday, November 6 2014  
**Sample Description:** Paint Chips

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)  
**Analysis Method:** FPA 6010C (ICP-AFS Method for Determination of Metals)  
**Date Analyzed:** Tuesday, November 11, 2014

ELEMENT	RESULT (by dry weight)	REPORTING LIMIT (RL)
Chromium	< RL	0.0091 %
Lead	< RL	0.018 %

CCC&L has obtained accreditation under the programs detailed on the final page of the laboratory report. The accreditations pertain only to the testing performed for the elements, and in accordance with the test methods listed in the scope of accreditation table. Testing which is performed by CCC&L according to other test methods, or for elements which are not included in the table fall outside of the current scope of laboratory accreditation.

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## ANALYTICAL LABORATORY REPORT

Monday, November 17, 2014

Page 2 of 3

**CUSTOMER:** Dixon Engineering - WI  
9415 West Forrest Home Suite 208  
Hales Corners, WI 53130

**DATE RECEIVED:** Monday, November 10, 2014  
**PO/PROJECT #:**  
**SUBMITTAL #:** 2014-11-11-005

**LAB NUMBER: AB87851****Sampled By:** Tom Van Gemert**Date Sampled:** Thursday November 6, 2014**Job Location:** Downers Grove, IL**Sample Description:** Paint Chips**Sample Identification:** 4 Exterior Flute**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)**Date Analyzed:** Tuesday, November 11, 2014

<u>ELEMENT</u>	<u>RESULT (by dry weight)</u>	<u>REPORTING LIMIT (RL)</u>
Lead	< RL	0.0025 %

CCC&L has obtained accreditation under the programs detailed on the final page of the laboratory report. The accreditations pertain only to the testing performed for the elements, and in accordance with the test methods listed in the scope of accreditation table. Testing which is performed by CCC&L according to other test methods or for elements which are not included in the table fall outside of the current scope of laboratory accreditation.

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## ANALYTICAL LABORATORY REPORT

Monday, November 17, 2014

Page 3 of 3

**CUSTOMER:** Dixon Engineering - WI  
9415 West Forrest Home Suite 208  
Hales Corners, WI 53130

**DATE RECEIVED:** Monday, November 10, 2014  
**PO/PROJECT #:**  
**SUBMITTAL #:** 2014-11-11-005

Unless otherwise noted, the condition of each sample was acceptable upon receipt, all laboratory quality control requirements were met, and sample results have not been adjusted based on field blank or other analytical blank results. Individual sample results relate only to the sample as received by the laboratory.

**Tests Reviewed By:** Michael J. Swiech, QA/QC Manager

*Michael J Swiech* Michael J Swiech  
2014 11 17 07 57 50 -05'00"

CCC&L has obtained accreditation under the following programs

- **National Lead Laboratory Accreditation Program (NLLAP)**  
ELLAP AIHA-LAP Laboratory ELLAP Accreditation Program Laboratory ID#101030 ([www.aihaaccreditedlabs.org](http://www.aihaaccreditedlabs.org))  
OH: Ohio Department of Health Lead Poisoning Prevention Program, Approval #E10013 ([www.odh.ohio.gov](http://www.odh.ohio.gov))
- **AIHA-LAP Laboratory IHLAP Accreditation Program ([www.aihaaccreditedlabs.org](http://www.aihaaccreditedlabs.org))**  
IHLAP: Laboratory ID#101030
- **National Environmental Laboratory Accreditation Program (NELAP)**  
NY: State of New York Department of Health, Laboratory ID#11609 (Serial # 50712, 50714-50716, 51544) (518-485-5570)  
LA: State of Louisiana Department of Environmental Quality, Laboratory ID#180321 (Certificate 05036) ([www.deq.louisiana.gov](http://www.deq.louisiana.gov))  
OK: Oklahoma Department of Environmental Quality, Laboratory ID#9993 (Certificate 2014-025) ([www.deq.state.ok.us](http://www.deq.state.ok.us))

Testing which is performed by CCC&L according to test methods, or for elements which are not included in the table below fall outside of the current scope of laboratory accreditation. Customers are encouraged to verify the current accreditation status with the individual accreditation programs by calling or visiting the appropriate website for the applicable program.

**SCOPE OF ACCREDITATION****Air and Emissions**

Element/Test	Method	Accreditation(s)
Suspended Particulates PM10 / TSP	40 CFR 50 Appendix J / 40 CFR 50 Appendix B	NY, LA
Lead in Airborne Dust	NIOSH 7300	ELLAP, OH, NY, LA
Lead in Airborne Dust	EPA 600/R-93/200/ EPA 6010C	ELLAP, OH
Metals in Airborne Dust	EPA 600/R-93/200/ NIOSH 7300/ EPA 6010C	IHLAP
Surface Coating Density	ASTM D1475	NY
Surface Coating Percent Solids	ASTM D2697	NY
Surface Coating Percent Water	EPA 24	NY
Surface Coating Volatile Content	EPA 24 / ASTM D2369	NY

**Solid Chemical Materials**

Element/Test	Method	Accreditation(s)
TCLP	EPA 1311(Sample Preparation Method)	NY, LA, OK
Lead in Soil	EPA 3050B/ EPA 6010C	ELLAP, OH, NY, LA, OK
Lead in Paint	EPA 3050B/ EPA 6010C	ELLAP, OH, NY, LA
Lead in Paint	ASTM D 3335-85A/ EPA 6010C	NY
Lead in Dust Wipes	EPA 3050B/ EPA 6010C	NY, LA
Lead in Dust Wipes	EPA 600/R-93/200/ EPA 6010C	ELLAP, OH
Ignitability	EPA 1010A	NY

**Non-Potable Water / Analysis by ICP**

Element/Test	Method	Accreditation(s)	Method	Accreditation(s)
Arsenic	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK	EPA 6010C	NY, LA
Barium	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK	EPA 6010C	NY, LA
Cadmium	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK	EPA 6010C	NY, LA
Chromium	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK	EPA 6010C	NY, LA
Copper	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK	EPA 6010C	NY, LA
Lead	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK	EPA 6010C	NY, LA, OK
Mercury	EPA 245 1 Rev 3/ EPA 7470A	NY, LA, OK	EPA 7471B	NY, LA
Nickel	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK	EPA 6010C	NY, LA
Selenium	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK	EPA 6010C	NY, LA
Silver	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK	EPA 6010C	NY, LA
Zinc	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK	EPA 6010C	NY, LA
Cobalt	----	----	EPA 6010C	NY, LA
Manganese	----	----	EPA 6010C	NY, LA
Acid Digestion	EPA 3010A	NY, LA	EPA 3050B	NY, LA

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**DIXON ENGINEERING, INC.**  
**STEEL TANK FIELD INSPECTION REPORT**  
**PEDESTAL TANK**

DATE: November 6, 2014

OWNER: Village of Downers Grove

CLIENT CODE: 13-22-16-02

LOCATION: Street: Finley Road

City: Downers Grove

State: Illinois

GPS coordinates: N 41° 49' 37.3" W 88° 01' 28.9"

Ground elevation (Above MSL): 794 feet

TANK SIZE: Capacity: 1,000,000 gallons

Height to bottom (LWL): 89 feet

CONSTRUCTION:

Type of structure: Fluted column

Type of roof: Hemisphere

Type of bowl: Hemisphere

DATE CONSTRUCTED: 1976

MANUFACTURER: CB&I(Horton)

CONTRACT NUMBER: 61175

COATING HISTORY	EXTERIOR	WET INTERIOR	DRY INTERIOR
COATING SAMPLES	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
HEAVY METAL	<u>No</u>	<u>No</u>	<u>No</u>

PERSONNEL: Inspector Josh Grover, Top person Kelly Green, Ground person Lane Tremblay

TYPE OF INSPECTION: Preliminary Maintenance

METHOD OF INSPECTION: Dry

## **SITE CONDITIONS**

Fenced: **Yes**  
Site large enough for contractors equipment: **Yes**  
Control building: **Yes**  
Antenna control site: **Yes**  
    Number: **1**  
    Location: **Adjacent to tank**  
    Would antenna sites interfere with containment: **Yes**  
SCADA controls: **No**  
Site conditions: **Well maintained**  
Neighborhood: **Industrial**  
    To the North: **Office buildings**  
    To the East: **Office buildings**  
    To the South: **Parking lot**  
    To the West: **Control building and street**  
Power lines within 50 feet: **No**  
Site drainage: **Away from tank**  
Indications of underground leakage: **No**  
Shrub, tree, etc. encroachment: **No**

## **EXPOSED PIPING**

Location: **Adjacent to tank (in control building)**  
Condition of structure: **Good**  
    Structure is: **Dry**  
    Pump present: **Yes**  
Condition of coating: **Fair**  
Describe coating: **Delaminating**  
Condition of metal: **Good**  
Piping comments: **New coating is in good condition. Old coating is in fair condition.**

## **FOUNDATION**

Foundation exposed: **Yes**  
Exposed height: **4-14 inches**  
Exposed foundation condition: **Good**  
Damage or deterioration: **Yes**  
    Type of damage: **Chips and cracks**  
    Severity: **Minor**  
    Crack location: **Random**  
    Total length of cracking: **3 feet**  
Foundation coated: **Yes**  
    Coating condition: **Fair**  
Type of grout: **Cement**  
    Condition: **Good**  
    Grout missing: **No**  
Indications of foundation settlement: **No**  
Undermining of foundation: **No**

## **EXTERIOR COATING**

### **Base cone:**

**N/A**

### **Stem:**

Topcoat condition: **Fair**

Previous coat condition: **Good**

Describe coating: **Chalking, fading, and spot coating breaks to substrate.**

Dry film thickness: **9-15 mils**

Mildew growth: **No**

Metal condition: **Good**

### **Bowl:**

Topcoat condition: **Fair**

Previous coat condition: **Good**

Describe coating: **Chalking and fading.**

Mildew growth: **Yes**

Amount: **Light**

Metal condition: **Good**

### **Sidewall:**

Lettering: **Yes**

Number: **2**

Lettering Content: **Downers Grove**

Style: **Block**

Logo: **Yes**

Number: **2**

Describe logo: **Trees and field underlining lettering**

Topcoat condition: **Fair**

Previous coat condition: **Good**

Describe coating: **Chalking and fading.**

Metal condition: **Good**

### **Roof:**

Topcoat condition: **Fair**

Previous coat condition: **Good**

Describe coating: **Chalking, fading, and spot coating breaks to substrate.**

Dry film thickness: **10-22 mils**

Metal condition: **Good**

## **EXTERIOR APPURTENANCES**

### **Access door:**

Size: **36 inches x 80 inches**

Coating condition: **Fair**

Metal condition: **Good**

Access door comments: **There is also a 12 foot by 12 foot overhead door.**

### **Anchor bolts:**

Number: **4**

Diameter: **1 3/4 inches**

Anchor bolt chairs: **Yes**

Coating condition: **Poor**

Metal condition: **Fair**

Comments: **There is minor steel loss of the bolts and chairs.**

### **Overflow pipe:**

Coating condition: **Fair**

Metal condition: **Good**

Inside diameter: **12 inches**

Condition of screen: **Good**

Percent of screen open: **99**

Flap gate: **Yes**

Design: **Screened**

Flap gate condition: **Good**

Air gap: **Yes**

Highest part of discharge to the ground distance: **16 inches**

Splash pad: **Yes**

Type: **Concrete pad**

Condition: **Good**

### **Roof handrail:**

**N/A**

Proposed Diameter: **20 feet**

### **Painter's rail:**

**N/A**

### **Roof hatches:**

Wet interior:

Coating condition: **Fair**

Metal condition: **Good**

Neck diameter: **30 inches**

Shape: **Round**

Hatch security: **None**

## **EXTERIOR APPURTENANCES**

Dry interior:

Coating condition: **Fair**

Metal condition: **Good**

Neck diameter: **30 inches**

Shape: **Round**

Hatch security: **Chain**

### **Bolted ventilation hatch:**

Coating condition: **Fair**

Metal condition: **Good**

Neck diameter: **30 inches**

### **Roof vent:**

Number: **2**

Type: **Screened pressure-vacuum and access tube air gap**

Neck diameter: **24 inches**

Vent material: **Aluminum**

Coating condition: **Fair**

Metal condition: **Good**

Screen condition: **Good**

Percent of screen open: **99**

Vent comments: **Access tube air gap cover does not seal properly.**

### **Aviation lights:**

**N/A**

### **Removable cathodic caps:**

**N/A**

### **Roof rigging points:**

Rigging couplings: **Yes**

Number: **38**

Couplings plugged: **Yes**

Rigging clips: **No**

Coating condition: **Fair**

Metal condition: **Good**

### **Antennas:**

Roof Number: **2**

Attached to: **Pole**

Cable runs: **In dry interior**

Stem number: **6**

Attached to: **Brackets**

Cable runs: **In dry interior**

## **EXTERIOR APPURTENANCES**

Cable penetrations sealed: **Yes**

Sealed with: **Spray foam**

Antennas or cables interference: **No**

### **Antenna pod:**

**N/A**

## **DRY INTERIOR COATING**

### **Below the bottom platform:**

Topcoat condition: **N/A**

Floor: **Concrete**

Comments: **From the ground to approximately 40 feet up the fluted column is covered with brick and insulation where the fire station was located.**

### **Bottom platform:**

Platform design: **Full**

Coating condition: **N/A**

Ladder opening size: **24 inches x 32 inches**

Shape: **Tombstone**

Opening covered: **No**

Metal condition: **Good**

Drain: **No**

Platform comments: **Covered with insulation and plastic.**

### **Stem above the bottom platform:**

Diameter: **55 feet**

Topcoat condition: **Good**

Prime coat condition: **Good**

Describe coating: **Spot coating breaks to substrate.**

Dry film thickness: **8-12 mils**

Metal condition: **Good**

### **Intermediate platforms/stiffeners:**

Number: **2**

Platform design: **Partial**

Coating condition: **Good**

Describe coating: **Spot coating breaks to substrate.**

Ladder opening size: **24 inches x 32 inches**

Shape: **Tombstone**

Opening covered: **No**

Metal condition: **Good**

## **DRY INTERIOR COATING**

### **Top platform:**

Platform design: **Partial**  
Coating condition: **Good**  
Describe coating: **Spot coating breaks to substrate.**  
Ladder opening size: **24 inches x 32 inches**  
Shape: **Tombstone**  
Opening covered: **No**  
Metal condition: **Good**

### **Stem above the top platform:**

Topcoat condition: **Good**  
Prime coat condition: **Good**  
Describe coating: **Spot coating breaks to substrate.**  
Dry film thickness: **6-13 mils**  
Metal condition: **Good**

### **Bowl:**

Material: **Metal**  
Topcoat condition: **Good**  
Prime coat condition: **Good**  
Describe coating: **Spot coating breaks to substrate.**  
Metal condition: **Good**  
Rigging point present above opening: **No**

### **Access tube:**

Diameter: **42 inches**  
Topcoat condition: **Fair**  
Prime coat condition: **Good**  
Describe coating: **Delaminating, spot coating breaks to substrate, and rust undercutting.**  
Dry film thickness: **7-12 mils**  
Metal condition: **Good**

## **DRY INTERIOR APPURTENANCES**

### **Base ladder:**

**N/A**

### **Stem ladder:**

Coating condition: **Good**  
Metal condition: **Good**  
Toe clearance: **7 inches or greater**  
Width of rungs: **16 inches**  
Thickness of rungs: **3/4-inch**  
Shape of rungs: **Diamond**

## **DRY INTERIOR APPURTENANCES**

Fall prevention device: **Yes**

Type: **Rail**

Condition: **Good**

Cage: **No**

### **Access tube ladder:**

Coating condition: **Good**

Metal condition: **Good**

Toe clearance: **7 inches or greater**

Width of rungs: **16 inches**

Thickness of rungs: **¾-inch**

Shape of rungs: **Diamond**

Fall prevention device: **Yes**

Type: **Rail**

Condition: **Good**

### **Painter's (bird) hatch:**

Coating condition: **Good**

Metal condition: **Good**

Size: **24 inches x 30 inches**

### **Manway to wet interior:**

Location: **In access tube**

Coating condition: **Good**

Metal condition: **Good**

Size: **12 inches x 18 inches**

Gasket leaking: **No**

Hinged: **No**

### **Second Manway to wet interior:**

Location: **In bowl**

Coating condition: **Good**

Metal condition: **Good**

Size: **24 inches**

Gasket leaking: **No**

Hinged: **No**

### **Expansion joint:**

Location: **Bottom of fill pipe**

Accessible for inspection: **No**

## **DRY INTERIOR APPURTENANCES**

### **Fill pipe insulation:**

Type: **Rigid foam**

Condition: **Fair**

Insulation cover: **Yes**

Type: **Paper**

Condition: **Fair**

Insulation comments: **The cover is coming off.**

### **Mud valve:**

**N/A**

### **Electrical:**

Lights functioning: **Yes**

Number burnt out: **2**

Grills present: **Yes**

Number damaged: **0**

Enough light for safety: **Yes**

Electrical outlets: **No**

Electrical comments: **There are no globes present.**

## **WET INTERIOR COATING**

### **Roof:**

Topcoat condition: **Good**

Primer coating condition: **Good**

Describe coating: **Spot coating breaks to substrate, crevice corrosion, and edge corrosion**

Metal condition: **Good**

Lap seams: **Caulked**

Condition of laps: **Good**

### **Sidewall:**

Topcoat condition: **Good**

Primer coating condition: **Good**

Describe coating: **Delaminating and spot coating breaks to substrate.**

Mineral deposits: **Light**

Metal condition: **Good**

Active pitting: **No**

Previous pitting: **No**

Previous pit filling: **No**

## WET INTERIOR COATING

### Access tube:

Topcoat condition: Fair

Primer coating condition: Good

Describe coating: Delaminating, spot coating breaks to substrate, and rust bleed through.

Mineral deposits: Light

Metal condition: Good

Active pitting: No

Previous pitting: No

Previous pit filling: No

Access tube comments: There is damage at the high water line.

### Tank bottom:

Type: Bowl

Topcoat condition: Good

Primer coating condition: Good

Describe coating: Spot coating breaks to substrate.

Mineral deposits: Light

Metal condition: Good

Active pitting: No

Previous pitting: No

Previous pit filling: No

Depth of sediment: 3 inches

## WET INTERIOR APPURTENANCES

### Tank ladder:

Coating condition: Fair

Metal condition: Good

Toe clearance: 7 inches or greater

Width of rungs: 16 inches

Thickness of rungs: 3/4-inch

Shape of rungs: Diamond

Shape of side rails: Flat

Fall prevention device: Yes

Type: Rail

Condition: Good

### Cathodic protection:

Clips and pressure fitting present: Yes

Location of Clips: On sidewalls

Location of controls: In dry interior

Cathodic comments: Was removed by Corpro while tank drained for inspection. Clips are located too high up the sidewall. New clips should be installed for new system.

## **WET INTERIOR APPURTENANCES**

### **Fill pipe:**

Diameter: **12 inches**  
Height above floor: **24 inches**  
Deflector over end: **Yes**  
Removable silt ring: **No**  
Mixing system: **No**  
Coating condition: **Fair**  
Metal condition: **Good**

### **Separate draw pipe:**

**N/A**

### **Overflow pipe:**

Type: **Vortex break**  
Coating condition: **Fair**  
Metal condition: **Good**

### **Roof beams:**

Number: **31**  
Style: **Radial**  
Shape: **Angle**  
Dimensions: **4 inches x 4 inches**  
Connections: **Welded**  
Coating condition: **Fair**  
Metal condition: **Good**

### **Sidewall beams:**

Number: **1**  
Orientation: **Horizontal**  
Location: **Sidewall**  
Coating condition: **Fair**  
Metal condition: **Good**  
Sidewall beam comments: **Edge corrosion present.**

### **Interior balcony:**

**N/A**

Field Inspection Report is prepared from the contractor's viewpoint. It contains information the contractor needs to prepare his bid for any repair or recoating. The engineer uses it to prepare the engineering report. Cost estimates are more accurate if the contractor's problems can be anticipated. While prepared from the contractor's viewpoint, the only intended beneficiary is the owner. These reports are completed with diligence, but the accuracy is not guaranteed. The contractor is still advised to visit the site.



1. The 1,000,000-gallon fluted column water storage tank is located on Finley Road in the Village of Downers Grove, Illinois.



2. The roll up door for access into the base of the tank is in good condition.

3. The side access door is in good condition and operated properly during the inspection.

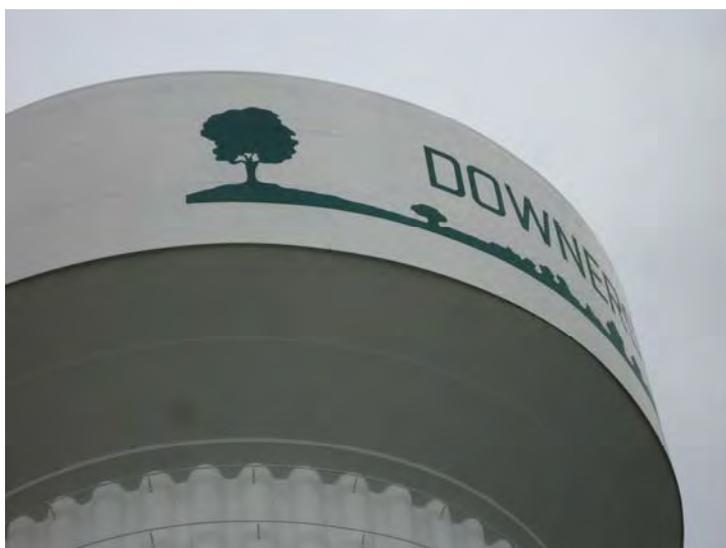


4. The foundation and grout are in good condition.



5.The exterior flute coating is in fair condition.

6.The exterior bowl coating is in fair condition.



7.The exterior sidewall coating is in fair condition.



8. The exterior overflow pipe coating is in fair condition.

9. The exterior roof coating is in fair condition.

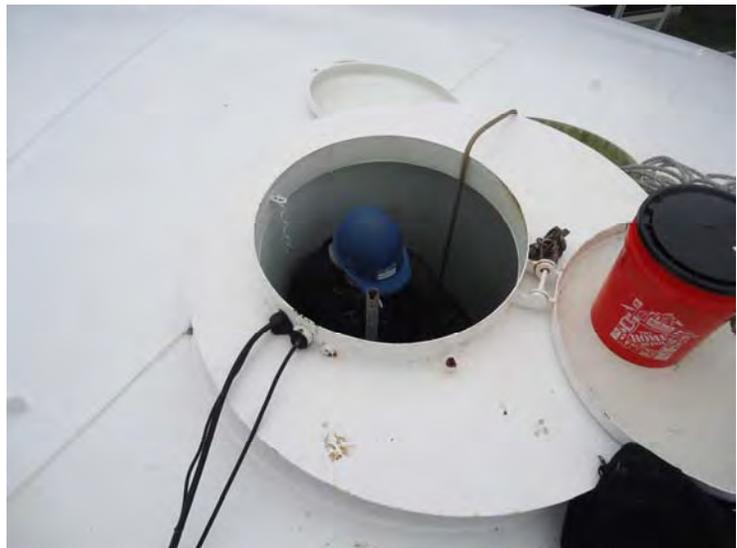


10. Same.



11. The exterior roof vent and screen are in good condition.

12. The dry interior roof hatch coating is in fair condition.



13. The access tube air gap cover does not seal the air gap properly.



14. The dry interior base of the tank is being used for storage.

15. The pit piping is above ground in the pump house adjacent to the tank.



16. The second floor in the dry interior was used for the living quarters for the old firehouse.



17. The dry interior condensate floor is covered in insulation and plastic.

18. The dry interior flute coating is in good condition.



19. The dry interior stiffener platform openings are 24-inch x 32-inch without lids.



20. The dry interior top platform coating is in good condition.

21. The wet interior manway is located in the bowl and access tube, the coating is in good condition.



22. The fill pipe insulation and cover is in fair condition, some sections of the cover is falling off.



23. The dry interior access tube coating is in fair condition.

24. The wet interior roof coating is in good condition, with minor deterioration.



25. The wet interior sidewall coating is in good condition, with spot coating breaks and delamination.



26. Top coat delamination on the wet interior sidewall and coating breaks.

27. The wet interior bowl coating is in good condition, with spot coating breaks



28. Same.



29. The wet interior access tube coating is in fair condition, with spot breaks, rust undercutting, and rust bleed through. There is damage at the high water line from ice.

30. The wet interior bowl manway coating is in good condition.



31. The wet interior fill pipe coating is in fair condition.



32. The cathodic protection pressure fitting was leaking through the original fitting. The cathodic was removed by Corpro and plugged with a new cap.

33. Spot coating break on the wet interior floor.



34. The fill pipe has old cathodic deposits around the neck.

# Dixon Engineering, Inc.

Preliminary Maintenance Inspection

500,000 Gallon  
Legged Tank

Summit Road  
Downer's Grove, Illinois

Dixon Engineering Inc.

9415 W. Forest Home #208

Hales Corners, WI 53130

Phone (414) 529-1859

Fax (414) 529-3120

<http://www.dixonengineering.net>

[wisconsin@dixonengineering.net](mailto:wisconsin@dixonengineering.net)

Inspection Performed: October 10, 2013

Report Prepared: November 22, 2013

## **CONCLUSIONS:**

1. The exterior coating is presumed to be a polyurethane coating system that is in fair condition overall. The coating has faded moderately and the primary modes of failure are delamination and spot coating breaks to the substrate with rust undercutting. The primer has good adhesion. There are numerous areas of spot coating failures on the leg, riser, sidewalls, and roof. The logo and lettering is moderately faded.
2. The wet interior coating is presumed to be a multi coat epoxy system that is in fair condition overall. The coating is brittle. Below the high water line the coating has delamination and spot failures on the floor and riser with spot failures on the sidewalls. Above the high water line, the coating is in good condition. The roof coating is deteriorating at the open lap seams and on the roof beam edges with minor corrosion.
3. Three exterior and one wet interior coating samples were taken and analyzed for metal content. Test results indicated the exterior is not a lead, chrome, or cadmium bearing coating; the wet interior is chrome bearing coating.

Details are included in the Summary of Test Results at the end of this report.

## **RECOMMENDATIONS:**

1. Schedule regular cleanings and inspections of the tank by an independent third party as recommended by AWWA, or once every five years.
2. Complete the recommended work in 2-5 years. The coating work is the greatest cost and largest part of the recommendations. The repairs and upgrades should be completed during the next major tank rehabilitation process when coating repairs are made.
3. High-pressure water clean (5,000-10,000 psi), spot power tool clean and recoat the exterior with a polyurethane system. The estimated cost is \$118,000 plus \$100,000 for containment.
4. Abrasive blast clean the entire wet interior to a near white metal condition (SSPC-SP10), and apply a three-coat epoxy polyamide system. The estimated cost is \$9,500.
5. After coating the wet interior, seam seal the roof lap joints with urethane caulk. The estimated cost is \$3,000.
6. Install a floating-type cathodic protection system on the interior. The estimated cost is \$17,000.

7. With the next major paint project, install cathodic clips and a pressure fitting for future installation of a submerged cathodic protection system. The estimated cost is \$1,500.
8. Abrasive blast clean the pit piping to a commercial grade (SSPC-SP6) and apply a two coat epoxy system. The estimated cost is \$3,000.
9. Remove soil on the foundations to expose the top 6 inches of the foundation, work can be performed by in-house personnel.
10. Repair the cracks in the foundation by routing and filling with a mortar material. The estimated cost is \$1,000.
11. Water clean and coat the foundations to prevent further deterioration. Cost would be incidental to exterior painting.
12. Install a 42-inch high railing and a painter's rigging rail on the roof. The estimated cost is \$15,000.
13. Install safety grabs on the exterior roof for temporary fall prevention of workers in the wet interior. Cost would be incidental to coating costs.
14. Install rigging couplings under the bowl, halfway between each leg and the riser. The clips would be used by contractors for rigging safety lines during exterior work. Cost would be incidental to repainting costs.
15. Replace screen on the discharge end of the overflow pipe. Cost would be incidental to exterior painting or could be performed by in-house personnel.
16. Install a hinged lid over the ladder opening in the balcony. The estimated cost is \$2000.
17. Replace the existing roof vent screen. Cost would be incidental to exterior repainting.
18. Annually inspect the roof vent screen.
19. Install a wet interior ladder with a fall prevention device. The estimated cost is \$8,000.
20. Replace the sidewall and roof ladders with a vertical ladder and a step-off platform. The estimated cost is \$10,000.
21. Weld pits deeper than one-half original metal thickness in the wet interior. The estimated cost is \$1,000 per 25 pits.
22. Fill pits with epoxy in the wet interior that are up to one-quarter original metal thickness. The estimated cost is \$1,000 per 200 pits.

## **A DISCUSSION ON RESCUE AND RETRIEVAL OPERATIONS FROM ELEVATED LEG STORAGE TANKS**

A series of accidents involving falls from or in water tanks has highlighted inadequacies in tank design and a potentially greater problem. The rescue may be more dangerous, with potential for more loss of life or injury, than the original accident. Contractors and engineers are responsible for their own employees. Even with safety training and proper equipment, accidents will occur. Most rescue squads are local or neighboring fire departments, some with more practice than other departments. Elevated tanks were designed to store water, not for rescue or retrieval convenience. The following items would make working on and retrieval from water tanks safer. This discussion is offered as a starting point. We recommend that you meet with your rescue personnel and draft a rescue plan. A copy of the plan should be kept at the tank and with the rescue crew.

OSHA now requires 30-inch manways and hatches, and roof ladders are to be replaced with platforms, steps, and railings. We have always objected to replacement of ladders as new regulations are passed relatively frequently, especially on retrofit of existing tanks. We recommend the changes for the convenience and safety of your employees rescue personnel, and others working on the tank. As far as we know, none of these conversion items to be discussed are required or mandated by any government agency for retrofits.

DIXON recommends these changes be made during the next major tank painting.

### RETRIEVAL FROM INTERIOR:

#### Current Access:

Access to the roof is from the leg ladder, the sidewall ladder, and the roof ladder. . All ladders do contain a fall prevention device. There is not a ladder in the wet interior from the roof hatch to the bowl area. There is a 30-inch manway and a 20 x 24-inch manway in the bottom of the riser. The roof has a 30-inch roof hatch for the wet interior. There is a grate over the top of the riser in the bowl. There is no roof railing.

#### Modified Access:

Providing safe access to rescue personnel is essential. Replace the sidewall ladder so it extends straight up to a work platform with railings that surrounds the roof edge hatch. Replace the roof ladder with a series of steps and railings to permit access to the center of the roof standing upright. Install a 42-inch high railing on the roof. The railing would allow tie-off locations and increase safety during routine maintenance. This ladder and railing can be used by your personnel for checking lights, vents, and security annually, or by antenna personnel. The railing can also be used for antenna mounting. Install a new wet interior ladder from the roof hatch to the wet interior floor. Install a grate over or a railing around the top of the riser.

Retrieval down the riser:

1. Retrieval down through the riser is usually the safest method. Remove the vent from the top center of the tank, and attach a winch or pulley system to a tripod set-up over the vent.
2. Raise and lower the basket through the riser and out the 30-inch diameter manway at the bottom of the riser. Rescue personnel would also raise and lower all their equipment through the riser, and then leave the wet interior using the wet interior ladder with fall prevention. On the roof, personnel would be working from inside the security of a roof railing around the center attachment area and the roof hatch.

Modifications Necessary (As stated in the recommendations):

1. Install a new sidewall ladder with a step-off platform and roof handrails.
2. Install a roof railing.
3. Install a new wet interior ladder.

Equipment:

Winch or pulley system and a tripod.  
Basket.  
Fall prevention sliders.

**COST SUMMARY:**

	<b>2 – 5 years</b>	<b>Now</b>
Exterior over coat	\$118,000	
Containment	100,000	
Abrasive blast clean the wet interior	95,000	
Seal lap seams	3,000	
Cathodic protection system		\$17,000
Cathodic protection clips and couplings	1,500	
Abrasive blast clean pit piping	3,000	
Repair foundations	1,000	
Handrail/painter's rail	15,000	
Install id over balcony opening	2,000	
Wet interior ladder	8,000	
Vertical sidewall ladder with step-off	10,000	
Pit welding	1,000	
Pit filling	2,000	
	359,500	17,000
Engineering and Contingencies	53,500	3,500
<b>Total</b>	<b>\$413,000</b>	<b>\$20,500</b>

## **INSPECTION:**

On October 10, 2013, Dixon Engineering, Inc. (DIXON) performed a preliminary maintenance inspection on the 500,000-gallon legged water storage tank owned by the Village of Downer's Grove, Illinois. Purposes of the inspection were to evaluate the interior and exterior coating's performance and life expectancy; assess the condition of metal surfaces and appurtenances; review safety and health aspects; and make budgetary recommendations for continued maintenance of the tank. All recommendations, with budgeting estimates for repairs are incorporated in this report. The inspection was performed by Josh M. Grover, staff technician. The inspector was assisted by Kayla S. Mulcahy and Lane M. Tremblay staff technicians. Scheduling and arrangements for the inspection were completed through Dave Yelton. A source of water for cleaning was provided by the Village. Following the inspection, chlorine was added to disinfect the tank per AWWA Standard C652-07 method No. 3.

## **CONDITIONS AND RECOMMENDATIONS:**

### **EXTERIOR COATING CONDITIONS:**

The exterior coating system is presumed to be a multiple coat polyurethane coating system.

The riser coating is in good condition. There are minor coating breaks with small amounts of surface rust and rust staining. Primary methods of deterioration are spot coating breaks.

The coating on the bowl is in fair condition. There are minor coating breaks with small amounts of surface rust and rust staining. Primary methods of deterioration are spot coating breaks and delamination.

Coating on the balcony is in poor condition.

The sidewall coating is in fair condition. Primary methods of sidewall coating deterioration are delamination and spot coating breaks. No coating breaks were found on the sidewalls.

The roof coating is in poor condition. Primary methods of roof coating deterioration are delamination, rust bleed-through, spot coating breaks to the substrate, and rust undercutting. No coating breaks were found on the roof.

Good primer adhesion was noted on the ASTM x-cut test areas, with trace of peeling to the substrate in areas tested. The tank is a candidate for over-coating.

Lettering on the tank consists of DOWNER'S GROVE in two locations, and is block style.

There is a logo on the sidewall, it is trees.

#### **EXTERIOR COATING RECOMMENDATIONS:**

Plan and budget for exterior recoating in approximately two to five years. Fading will continue and more rust spots will occur, decreasing the tank's aesthetic appearance. Currently there are several exposed surfaces actively rusting.

The existing coating is presumed to be a polyurethane system. The recommended procedure is to high-pressure water clean (5,000-10,000 psi) the exterior to remove any delamination or flaking coating and any contaminants, followed by spot power tool cleaning to bare metal (SSPC-SP 11) any rusted or failed areas.

The coating system would consist of a spot prime coat on the bare metal, a full coat of epoxy, followed by a two full coats of polyurethane. The polyurethane system offers excellent abrasion resistance with high gloss and sheen retention. The expected life of this system is fifteen years. The system can be recoated again in fifteen years, and a second time approximately fifteen years after the first recoating, extending the life of the coating to forty-five years before total removal would be necessary again. The tank would be removed from service during the painting project. This is necessary to reduce moisture condensation on the tank's surface. Polyurethane coatings have a minimum temperature requirement for application and are sensitive to moisture during the curing process. If moisture is present during the curing process, the appearance will become cloudy with little or no gloss.

The estimated cost to abrasive blast clean and recoat with an epoxy polyurethane system is \$118,000 plus \$100,000 for containment.

#### **WET INTERIOR COATING CONDITIONS:**

The wet interior coating is presumed to be an epoxy system.

The roof coating is in good condition. The coating is 99 percent intact, with the primary areas of deterioration along the lap seams, the beam edges, and in the crevices. The tank's roof contains lap seams that have started to rust and streak. Staining is typical for a tank of this construction where the lap seams are not seal welded. Staining in the lap seams is not a concern, but should be monitored during future inspections for corrosion growth. Roof beam edge corrosion is typical but should be corrected before structural loss of steel occurs.

Coating deterioration is occurring along edges of all of the roof support beams. Rust is also occurring at the roof-to-beam junction.

The sidewall coating is in good condition. The coating on the sidewalls is 99 percent intact. There is not any significant damage at the high water line, which would be the area most affected by ice pressures and ice movement. Primary causes of deterioration are spot coating breaks.

The coating on the tank bottom is in poor condition, 99 percent intact. Primary causes of deterioration are spot coating breaks, delamination, rust bleed through, and rust undercutting.

The tank bottom was covered with less than 1/4-inch of mud sediment that was flushed from the interior.

The coating in the riser is in fair condition, 99 percent intact. Primary causes of deterioration are delamination, rust bleed through, and rust undercutting.

The sidewall, bowl, and riser are covered with light mineral staining, which does not affect the integrity of the coating system.

Minor active pitting of the metal was found on the sidewalls, floor, and riser. Pitting depth indicated that the surface has been corroding for a long time in some areas.

Minor previous pitting of the metal was found on the sidewalls, floor, and riser.

Overall adhesion of the coating is poor. Adhesion was tested by use of low-pressure washing. With poor adhesion, it would be possible to notice the coating fluctuate and layers of coating would be removed. With very poor adhesion, the existing coating may be removed.

This is a crude form of testing, yet the least destructive. A destructive test cuts the coating to the substrate. The test area is then susceptible to corrosion because it may have been scratched to bare metal.

#### **WET INTERIOR COATING RECOMMENDATIONS:**

When the coating is no longer protecting the metal at coating breaks, the cathodic protection system will prevent corrosion. When the coating deterioration goes beyond the cathodic protection's ability to protect the metal, then it is time for total removal and replacement of the coating.

Remove the coating system by abrasive blast cleaning the metal to a near white metal grade (SSPC-SP 10) and apply a new epoxy coating system. Paint systems are to be approved for potable storage tanks contingent upon meeting requirements of National Sanitation Foundation Standard 60/61.

Epoxy paint systems are recommended in most applications. Their drawbacks are a minimum application temperature of 50°F or 35°F for fast cure; and long cure times, 7 days at 70°F and up to 28 days at 35°F. The coatings are formulated in high solids form to reduce VOC emissions and have good adhesion and abrasion resistant qualities. The coatings are normally applied in three coats with recoat times up to twenty-four hours. The estimated cost to apply the three-coat epoxy system is \$95,000

After coating the roof, use a urethane caulk to fill gaps between roof sheets. The caulk will fill open joints and seal edges, extending the life of the wet interior coating. The estimated cost is \$3,000.

#### **CATHODIC PROTECTION CONDITIONS:**

The tank does not contain a cathodic protection system.

The tank does not have clips and a pressure fitting installed for a future cathodic protection installation.

#### **CATHODIC PROTECTION RECOMMENDATIONS:**

As soon as budgeting allows, install an impressed current cathodic protection system. The system is designed with a horizontal ring configuration. The anode is suspended into the lower one-third of the tank by floats. As water fills the tank, the anode takes the desired ring configuration. This design is considered ice-free. Formation of ice normally occurs at the high water level and some along the sidewalls. As long as the tank is operated in the upper one-half of its capacity, the probability of ice damage is very low. The anode used is a platinized niobium or titanium wire with a design life of ten years. The system also incorporates copper/copper sulfate reference anodes.

The system is automatically controlled by monitoring the water-to-tank potential. It provides protection to steel surfaces where holidays (coating pinholes) or coating breaks exist. Cathodic protection operates by inhibiting galvanic cell corrosion where steel is exposed. The system creates an equipotential across the tank and drives the tank potential down to a point (-850 millivolts) where corrosion is essentially non-existent. Only surfaces that are in contact with water are protected because water acts as the electrolyte for the circuit. Therefore, areas of the roof and upper sidewalls are not protected by the system. The estimated cost is \$17,000.

If installation of a cathodic protection system is delayed, during the next major paint rehabilitation, install cathodic clips and couplings for future installation of floating-type cathodic protection system. The estimated cost is \$1,500.

**PIT AND PIT PIPING CONDITIONS:**

The tank is operated by an electronic control system located in the pump house adjacent to the tank.

The piping is in good condition. Coating on the pipes is in fair condition. The pipes and valves have general surface rust

The pit was dry during the inspection.

**PIT AND PIPING RECOMMENDATIONS:**

Abrasive blast clean the piping to a commercial blast condition (SSPC-SP 6), and apply an epoxy system. The estimated cost is \$3,000.

**SITE CONDITIONS:**

The size of the tank site is small and is fenced with a locking gate.

The site is well maintained

There is residential development to the north and west. It is adjacent to a fire house to the east and south.

The neighbors are close to the tank and extra precautions will need to be taken to keep from getting paint or debris on the neighbors' properties.

The site is accessible from a municipal street.

Grass is encroaching on the foundations.

There are one antenna control site adjacent to the tank.

Power lines are within 50-feet from the tank.

Antennas or buildings ay need to be temporarily or permanently relocated in order to provide room to install anchors for the containment system needed during exterior abrasive blast cleaning.

**SITE RECOMMENDATIONS:**

Regularly mow the grass near the tank.

Remove growth next to the footings to prevent encroachment on the foundations.

**FOUNDATION CONDITIONS:**

The top 0 -2 inches of the leg and riser foundations are exposed. Soil is covering the rest of the foundations.

The exposed leg and riser foundations are in good condition and showed minor amounts of deterioration. Deterioration includes cracking and chipping with no rebar exposed.

Corrosion is not occurring on the anchor bolts.

**FOUNDATION RECOMMENDATIONS:**

Repair the cracks in the foundations by routing and filling with mortar material. The estimated cost is \$1,000.

Pressure wash the leg and riser concrete and coat the exposed concrete to prevent further deterioration with an epoxy coating system. The cost would be incidental to exterior painting.

Using high-pressure air, annually blowout any vegetation, grass clippings, etc. from behind the anchor bolts.

Excavate to expose the top 6 inches of the foundation. Remove the soil piled up against the leg and riser.

**GROUT CONDITIONS:**

The grout is in good condition.

**LEG CONDITIONS:**

The tank is supported by ten H-beam leg columns that attach to large radial arms under the bowl, which extend to the top of the riser.

The legs are in good condition and appeared to be in alignment.

### **BALCONY CONDITIONS:**

The exterior balcony is in good condition. The balcony on the exterior sidewall is 27-inches wide with a 42-inch high handrail. The handrail has three mid-rail and a kick plate at the balcony floor.

The vertical balcony posts are channel, and the top rail is angle iron. The mid-rails are angle iron. There is a flat stock toe plate.

### **ROOF HANDRAIL AND PAINTER'S RAILS:**

The tank has no roof handrail or painter's rail.

### **ROOF HANDRAIL AND PAINTER'S RAIL RECOMMENDATIONS:**

Install a 42-inch high railing on the roof. Railing will allow tie-off locations and safety during routine vent screen and obstruction light inspections, and would provide a work area for retrieval personnel performing roof extraction. The railing should provide sufficient area to rest a basket for a helicopter lift, or for stabilizing before lowering down over the side or through the riser. Install a painter's rail outside the railing so contractor rigging does not interfere with the railing's interior clear area. The estimated cost is \$15,000.

Install safety grabs and rigging couplings on the exterior roof for fall prevention of workers in the wet interior. These grabs would allow a contractor working in the wet interior to be completely tied off to a fall prevention device at all times. The cost would be incidental to the recoating.

### **ANTENNAS**

The roof area contains one antenna. The antenna is attached to mounting pole.

The mounting pole is in good condition.

The balcony has thirteen antennas attached to mounting brackets.

### **ROD/SAFETY CONDITIONS:**

The tank's sway rods are in good condition.

The coating on the sway rods is in fair condition with minor coating failures and surface rust on the rods and turnbuckles, and on the struts between the leg columns.

Because of the inaccessibility of the sway rods, the exact tension could not be determined. However, based on the amount of coating loss on the sway rods where they cross, it was evident the rods are tight.

The tank has riser tie rods that extend from the leg columns to the riser with fixed connections. The riser tie rods are in good condition.

There are no rigging couplings under the bowl.

**SAFETY RECOMMENDATIONS:**

Install rigging couplings on the bowl halfway between each leg and the riser. The couplings would be used by contractors for rigging safety lines. Currently the contractor has no separate, independent tie off location for safety lines. The rigging and safety lines are tied to the same location. Cost would be incidental to repainting costs.

**OVERFLOW PIPE CONDITIONS:**

The tank has a 6-inch diameter overflow pipe that exits the roof knuckle, extends down along the sidewall, through the balcony, and down along a leg column to ground level.

The discharge end of the overflow pipe is screened. The screen is in good condition.

The end of the pipe has a screened flap gate that is in good condition.

The pipe discharges to a storm drain with the required air gap. The discharge area is in good condition.

**HATCH AND MANWAY CONDITIONS:**

The tank has a 30-inch diameter flip-top, roof access hatch to the wet interior. The hatch is in good condition.

The roof wet interior hatch was secured with a padlock matching the owner's master key system.

The tank has a 30-inch manway and a 20 x 24-inch manway in the riser that are in good condition.

The tank has a 20x 24-inch diameter painter's hatch (bird hatch) at the top of the dry riser. The hatch is in good condition.

The 30-inch manway is hinged; the gasket showed no signs of leaking. The other manways are not hinged; the gasket showed no signs of leaking.

### **HATCH AND MANWAY RECOMMENDATIONS:**

Install a hatch cover at the balcony to prevent equipment or people from accidentally going through the opening. The estimated cost is \$2,000.

### **VENT CONDITIONS:**

The roof vent is an 18-inch pressure-vacuum design. The vent is in good condition.

The vent is properly screened.

### **VENT RECOMMENDATIONS:**

Replace the existing roof vent screen, the screen is starting to deteriorate. Cost would be incidental to exterior repainting.

Annually inspect the vent to make sure the screen is open and not damaged.

### **LADDER CONDITIONS:**

#### **Exterior:**

The tank has an exterior leg ladder that starts approximately 15-feet above ground level, and extends up to a small platform near the top of the leg column, with a stairway and ladder that go from the platform to the balcony. The ladder is caged and is in good condition. The ladder contains a rail-type fall prevention device.

#### **Wet:**

There is no ladder in the wet interior.

### **LADDER RECOMMENDATIONS:**

With antennas being installed on towers, the ladders will be used more often. OSHA requires a fall prevention device on ladders in excess of 20 foot, or 30 foot if a cage is present. There are two major types of fall prevention devices. One uses a rail; the other a cable.

#### **Exterior:**

The roof and sidewall shell ladder should be replaced with a vertical sidewall ladder that runs up to a step-off platform surrounded with handrails at the roof hatch. The step-off platform will provide a safe working area around the roof hatch. Estimated cost is \$10,000.

Wet:

Install a ladder on the wet interior from the roof to the bowl with a fall prevention device to match the existing fall prevention device. The estimated cost is \$8,000.

**FILL PIPE CONDITIONS:**

The 12- inch diameter pipe into the bottom of the riser.

The pipe extends 51-inches into the bottom of the riser.

There is a deflector plate over top of the line.

**WET INTERIOR METAL CONDITIONS:**

The steel structure is in good condition above the high water line and in good condition below it.

Minor pitting had occurred prior to the current coating.

Active pitting was observed on the floor. Pit depth is up to 1/16-inch. Active pitting was observed on the riser. Pit depth is up to 1/8-inch.

Roof Beams:

The interior roof is supported by 25 beams that are in good condition with minor corrosion in the crevices and at the edges.

Sidewall Stiffeners:

The tank contains a stiffener ring that is angular in construction and situated at the equator of the sidewall. It is in good condition.

Riser:

There is a grate over the riser opening.

### **WET INTERIOR METAL RECOMMENDATIONS:**

Weld pits in the tank floor and riser that exceed half the original steel thickness. The purpose is to eliminate deeper pits that are closest to rupture of the steel plate. This type of repair is not intended to return the structure back to its original condition; however, it is a cost effective method of extending the life of the tank. An exact estimated cost cannot be determined until the surface is abrasive blast cleaned. A dummy figure of \$1,000 should be used for bidding.

Fill pits in the tank floor and riser with 100% solids pit filler that are less than one-quarter in depth the thickness of original steel thickness. The purpose of filling the pits is to smooth rough surfaces. This helps create a holiday-free coating. An exact estimated cost cannot be determined until the surface is abrasive blast cleaned. A dummy figure of \$1,000 should be used for bidding.

### **Roof Beams:**

Monitor the corrosion on the edges of the beams. Recoat the roof before metal loss becomes significant.

## **SUMMARY OF TEST RESULTS**

By William J Dixon, P.E., Esquire

DIXON collected four coating samples for analysis. One sample was taken from the wet interior and three samples were taken from the exterior. Only one sample was taken from the wet interior because wet interior coatings are almost always uniform. Very seldom is the coating system repaired; therefore, one sample is representative of the entire system. The one problem found too frequently is an incomplete abrasive blast cleaning prior to the last repaint. Multiple samples would not be beneficial because the chance of sampling a poorly cleaned spot would be random. In addition, testing is destructive exposing bare steel to the water. Sampling should be on the roof or if the tank has cathodic protection, then a bowl or riser sample is more representative. Your sample was taken from the roof.

On the exterior, usually there are multiple repaints with spot repair, and there are different weathering conditions on the roof versus the legs, the riser, and the sidewalls, giving different lead results. For proper analysis, multiple samples are preferred. The primers of either the exterior or interior are generally the same as the dry interior. If a repair is required in the dry interior, the tank itself acts as a containment device. One sample is sufficient, and the area then can be grouped with the wet interior and exterior.

<u>Test Locations</u>	<u>Lead</u>	<u>Chrome</u>	<u>Cadmium</u>
Wet Interior:	<b><u>0.0027</u></b> % ( <b><u>27</u></b> ppm)	<b><u>0.0073</u></b> % ( <b><u>73</u></b> ppm)	<b><u>N/A</u></b>
Exterior Leg:	<b><u>0.015</u></b> % ( <b><u>150</u></b> ppm)	<b><u>N/A</u></b>	<b><u>N/A</u></b>
Exterior Sidewall:	<b><u>0.0027</u></b> % ( <b><u>27</u></b> ppm)	<b><u>N/A</u></b>	Below reporting limits of <b><u>0.00075</u></b> % ( <b><u>7.5</u></b> ppm)
Exterior Roof:	<b><u>0.0025</u></b> % ( <b><u>25</u></b> ppm)	<b><u>N/A</u></b>	<b><u>N/A</u></b>

Eight metals have waste disposal problems. The ones most frequently encountered in the coating industry are lead, cadmium, and chromium. Samples taken were tested for total metals, which tells us what percent the metals are in reference to the coating only. When it is time for disposal, a TCLP test will be run on the waste that tests for the metals leachability. A correlation has not been made between the results of total lead tests and TCLP results. It is possible to have a low amount of lead, but highly soluble lead that could result in a hazardous waste because it is highly leachable. Conversely, a high amount of total lead, that is insoluble, could have minimal leaching and not result in a hazardous waste. The total metal testing completed is needed for use in the preparation of specifications, waste disposal, and OSHA considerations.

### **Lead:**

For reference, housing paint is considered lead free if it is below 0.06% (600 ppm) by volume. Lead has a TCLP leachable limit of 5mg/l, anything greater than 5 mg/l is considered a hazardous waste. Therefore, the contractor must employ special storage, transportation, and disposal procedures. Based on your test results of 0.015 percent (150 ppm) average on the exterior, waste disposal should not require special considerations in the specifications.

During abrasive blast cleaning procedures, the waste generated may be considered a hazardous waste (groundwater leachable). In addition, the airborne particulate of spent abrasive and lead paint may be considered a threat to public health, not only to workers, but also to pedestrians and business owners in the immediate vicinity. The EPA and their local divisions or state primary agencies are the enforcement agencies. Enforcement on these issues has been stepped up and fines of up to \$25,000/day for non-compliance are possible. Several techniques have been developed for containment. These include vertical and horizontal tarping, negative pressure, vacuum blasting, water blasting, and chemical strippers. Each method has advantages, disadvantages, and related costs. Cost depends on the level of containment required and complexity of the structure.

Lead also has OSHA standards with 30 micrograms per cubic meter action level, and 50 micrograms per cubic meter permissible exposure limit. This is tested when the project begins to determine the amount of lead to which a worker is exposed. The total lead test completed by DIXON is used in preparing the engineering analysis to evaluate the alternative methods of surface preparation to minimize workers' exposure. There is no correlation between respirable lead and total lead yet because of the variables between the different methods of surface preparation, engineering, and administrative controls. Based on your test results, the action limit should not be triggered when work is completed on the wet interior or exterior.

Personal air monitoring is required regardless of the total lead test because under the OSHA standard there is the presumption that lead is present in sufficient quantities to expose workers. OSHA has actually set what the exposure can be by the type of surface preparation. Until it can be proven otherwise by the exposure monitoring, work must progress under the presumption that the action level will be reached.

### **Chromium:**

Chromium also has a waste disposal concern. If leachable chromium exceeds the 0.0005 percent, 5-ppm limit, then the waste also is considered a hazardous material. Based on test results of in the wet interior 0.0073 percent (73 ppm), there may be a waste disposal concern that must be addressed in the specifications.

### **Cadmium:**

Cadmium also was tested. Cadmium is tested because there is a waste disposal problem if cadmium is leached at greater than 0.0001 percent, 1 ppm. The main concern with cadmium is the OSHA standard. The action level for OSHA is only 2 micrograms per cubic meter; as compared to lead at 30 micrograms per cubic meter, and the permissible exposure limit is 5 micrograms per cubic meter, as compared to lead at 50 micrograms per cubic meter for lead. These limits are exceptionally low. The cadmium standard does not require the presumption of the presence of cadmium. Cadmium was not used as often in coating systems as was the lead. The test results on the exterior for cadmium, of 0.00075 percent (7.7ppm), indicates there is no concern for cadmium.

## ANALYTICAL LABORATORY REPORT

Friday, October 18, 2013

Page 1 of 3

**CUSTOMER:** Dixon Engineering - WI  
9415 West Forrest Home Suite 208  
Hales Corners, WI 53130

**DATE RECEIVED:** Wednesday, October 16, 2013  
**PO/PROJECT #:**  
**SUBMITTAL #:** 2013-10-16-007

**LAB NUMBER: AB65223**

**Sampled By:** Tom Van Gemert  
**Job Location:** Summit St Tank, Downers Grove, IL  
**Sample Identification:** 1 Exterior Legs

**Date Sampled:**  
**Sample Description:** Paint Chps

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)  
**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)  
**Date Analyzed:** Thursday, October 17, 2013

<u>ELEMENT</u>	<u>RESULT (by dry weight)</u>	<u>REPORTING LIMIT (RL)</u>
Lead	0.015 %	0.0025 %

**LAB NUMBER: AB65224**

**Sampled By:** Tom Van Gemert  
**Job Location:** Summit St Tank, Downers Grove, IL  
**Sample Identification:** 2 Exterior Sidewall

**Date Sampled:**  
**Sample Description:** Paint Chps

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)  
**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)  
**Date Analyzed:** Thursday, October 17, 2013

<u>ELEMENT</u>	<u>RESULT (by dry weight)</u>	<u>REPORTING LIMIT (RL)</u>
Cadmium	< RL	0.00075 %
Lead	0.0027 %	0.0025 %

**LAB NUMBER: AB65225**

**Sampled By:** Tom Van Gemert  
**Job Location:** Summit St Tank, Downers Grove, IL  
**Sample Identification:** 3 Exterior Roof

**Date Sampled:**  
**Sample Description:** Paint Chps

**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)  
**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)  
**Date Analyzed:** Thursday, October 17, 2013

<u>ELEMENT</u>	<u>RESULT (by dry weight)</u>	<u>REPORTING LIMIT (RL)</u>
Lead	< RL	0.0025 %

CCC&L has obtained accreditation under the programs detailed on the final page of the laboratory report. The accreditations pertain only to the testing performed for the elements, and in accordance with the test methods, listed in the scope of accreditation table. Testing which is performed by CCC&L according to other test methods, or for elements which are not included in the table fall outside of the current scope of laboratory accreditation.

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## ANALYTICAL LABORATORY REPORT

Friday, October 18, 2013

Page 2 of 3

**CUSTOMER:** Dixon Engineering - WI  
9415 West Forrest Home Suite 208  
Hales Corners, WI 53130

**DATE RECEIVED:** Wednesday, October 16, 2013  
**PO/PROJECT #:**  
**SUBMITTAL #:** 2013-10-16-007

**LAB NUMBER: AB65226****Sampled By:** Tom Van Gemert**Date Sampled:****Job Location:** Summit St Tank, Downers Grove, IL**Sample Description:** Paint Chips**Sample Identification:** 4 Wet Interior Roof**Preparation Method:** EPA 3050B-P-M (Acid Digestion for Paints)**Analysis Method:** EPA 6010C (ICP-AES Method for Determination of Metals)**Date Analyzed:** Thursday, October 17, 2013

<u>ELEMENT</u>	<u>RESULT (by dry weight)</u>	<u>REPORTING LIMIT (RL)</u>
Chromium	0.0073 %	0.0013 %
Lead	0.0027 %	0.0025 %

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**DATE RECEIVED:** Wednesday, October 16, 2013  
**PO/PROJECT #:**  
**SUBMITTAL #:** 2013-10-16-007

Unless otherwise noted, the condition of each sample was acceptable upon receipt, all laboratory quality control requirements were met, and sample results have not been adjusted based on field blank or other analytical blank results. Individual sample results relate only to the sample as received by the laboratory.

**Tests Reviewed By:** Michael J. Swiech, QA/QC Manager

*M. Swiech* Michael J Swiech  
2013 10 18 09 28 46 -04'00

CCC&L has obtained accreditation under the following programs

- **National Lead Laboratory Accreditation Program (NLLAP)**  
ELLAP: AIHA Laboratory ELLAP Accreditation Program Laboratory, ID#101030 ([www.aiha.org](http://www.aiha.org))  
OH: Ohio Department of Health Lead Poisoning Prevention Program, Approval #E10013 ([www.odh.ohio.gov](http://www.odh.ohio.gov))
- **AIHA Laboratory IHLAP Accreditation Program** ([www.aiha.org](http://www.aiha.org))  
IHLAP: Laboratory ID#101030
- **National Environmental Laboratory Accreditation Program (NELAP)**  
NY: State of New York Department of Health, Laboratory ID#11609 (Serial # 48735 through 48739) (518-485-5570)  
LA: State of Louisiana Department of Environmental Quality, Laboratory ID#180321 (Certificate 05036) ([www.deq.louisiana.gov](http://www.deq.louisiana.gov))  
OK: Oklahoma Department of Environmental Quality, Laboratory ID#9993 (Certificate 2013-040) ([www.deq.state.ok.us](http://www.deq.state.ok.us))

The accreditations pertain only to the testing performed for the elements, and in accordance with the test methods, listed in the table below. Testing which is performed by CCC&L according to other test methods, or for elements which are not included in the table below fall outside of the current scope of laboratory accreditation. Customers are encouraged to verify the current accreditation status with the individual accreditation programs by calling or visiting the appropriate website for the applicable program.

#### SCOPE OF ACCREDITATION

##### Air and Emissions

<u>Element/Test</u>	<u>Method</u>	<u>Accreditation(s)</u>
Particulates (PM10)	40 CFR 50 Appendix J	NY, LA
Total Suspended Particulates (TSP)	40 CFR 50 Appendix B	NY, LA
Lead in Airborne Dust	NIOSH 7300	ELLAP, OH, NY, LA
Lead in Airborne Dust	EPA 600/R-93/200/ EPA 6010C	ELLAP, OH
Metals in Airborne Dust	EPA 600/R-93/200/ NIOSH 7300/ EPA 6010C	IHLAP

##### Solid Chemical Materials

<u>Element/Test</u>	<u>Method</u>	<u>Accreditation(s)</u>
TCLP	EPA 1311(Sample Preparation Method)	NY, LA, OK
Acid Digestion	EPA 3050B	NY, LA
Lead in Soil	EPA 3050B/ EPA 6010C	ELLAP, OH, NY, LA, OK
Lead in Paint	EPA 3050B/ EPA 6010C	ELLAP, OH, NY, LA
Lead in Paint	ASTM D 3335-85A/ EPA 6010C	NY
Lead in Dust Wipes	EPA 3050B/ EPA 6010C	NY, LA
Lead in Dust Wipes	EPA 600/R-93/200/ EPA 6010C	ELLAP, OH

##### Non-Potable Water / Analysis by ICP

<u>Element/Test</u>	<u>Method</u>	<u>Accreditation(s)</u>
Arsenic	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Barium	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Cadmium	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Chromium	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Copper	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Lead	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Mercury	EPA 245 1 Rev 3	NY, LA, OK
Mercury	EPA 7470A	NY, LA, OK
Nickel	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Selenium	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Silver	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Zinc	EPA 6010C/ EPA 200 7 Rev 4 4	NY, LA, OK
Acid Digestion	EPA 3010A	NY, LA

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**STEEL TANK FIELD INSPECTION REPORT**  
**LEG TANK**

DATE: **October 10, 2013**

**I. TANK DATA**

OWNER: **Village of Downer's Grove**

CLIENT CODE: **13-22-16-01**

TANK NAME: **Summit**

LOCATION: Street: **1037 Summit**

City: **Downer's Grove**

State: **Illinois**

GPS coordinates: **N 41 ° 47 '18.7 " W 88 ° 00 ' 35.5 "**

Ground elevation (Above MSL): **705 feet**

TANK SIZE: Capacity: **500,000 gallons**

Height to bottom (LWL): **≈95 feet**

CONSTRUCTION: **Welded and riveted**

Type of structure: **Radial Arm**

Type of Roof: **Hemisphere**

Type of Bowl: **Radial**

COATING HISTORY	<b><u>EXTERIOR</u></b>	<b><u>WET INTERIOR</u></b>
DATE LAST COATED	<b><u>Between 1993 and 1998</u></b>	<b><u>Between 1993 and 1998</u></b>
COATING SYSTEM	<b><u>Presumed polyurethane</u></b>	<b><u>Presumed epoxy</u></b>
SURFACE PREPARATION	<b><u>SSPC SP-6</u></b>	<b><u>SSPC SP-10</u></b>
COATING SAMPLES	<b><u>Yes</u></b>	<b><u>Yes</u></b>
HEAVY METAL	<b><u>No</u></b>	<b><u>Yes 0.0073% (73ppm)</u></b>

INSPECTED BY: **Dixon Engineering, Inc.**

PERSONNEL: Inspector **Josh M. Grover**, Top person **Lane M. Tremblay**, Ground person **Kayla S. Mulcahy**

TYPE OF INSPECTION: **Preliminary Maintenance Dry**

**II. INSPECTION DATA**  
**SITE CONDITIONS**

Fenced: **Yes**  
Control building: **Yes**  
    Location: **Adjacent to tank**  
Antenna control site: **Yes**  
    Location: **Adjacent to tank**  
SCADA controls: **Yes**  
Site conditions: **Well maintained**  
Neighborhood: **Residential**  
To the North: **Homes**  
To the East: **Fire Department**  
To the South: **Fire Department**  
To the West: **Homes**  
Power lines within 50 feet: **Yes**  
Site drainage: **Away from tank**  
Indications of underground leakage: **No**  
Shrub, tree, etc. encroachment: **No**

**Piping:**

Location: **In the building**  
Piping: **In pit**  
Condition of pit structure: **Good**  
    Structure is: **Dry**  
    Sump Pump: **Yes**  
Altitude valve: **No**  
Condition of coating: **Fair**  
    Describe coating: **Rust bleed through**  
Condition of metal: **Good**

**FOUNDATION**

**Riser:**

Foundation exposed: **Yes**  
Height exposed: **0 - 5 inches**  
Undermining of foundation: **No**  
Exposed foundation condition: **Good**  
Damage or deterioration: **Yes**  
    Type of damaged: **Chipped**  
    Severity: **Minor**  
    Location: **Random**  
    Exposed rebar: **No**  
Type of grout: **Cement**  
    Condition: **Good**  
    Grout missing: **No**  
Indications of riser settlement: **No**

## **FOUNDATION**

### **Legs:**

Foundation exposed: **Yes**  
Exposed height: **0 - 12 inches**  
Undermining of foundation: **No**  
Exposed foundation condition: **Good**  
Damage or deterioration: **Yes**  
Type of damaged: **Chipped and cracked**  
    Severity: **Minor**  
    Crack location: **Random**  
    Exposed rebar: **No**  
Type of grout: **Cement**  
    Condition: **Good**  
    Grout missing: **No**  
Indications of leg settlement: **No**

## **EXTERIOR COATING**

### **Legs:**

Number: **10**  
Type: **H-beam**  
    Dimensions: **14 x 14-1/2 inches**  
Exterior connection to tank: **Good**  
Topcoat condition: **Fair**  
Primer coating condition: **Good**  
    Describe coating: **Chalking, fading, delaminating, spot coating breaks to substrate, and erosion**  
Dry film thickness: **10 – 20- mils**  
Coating adhesion: **5A**  
Metal condition: **Good**

### **Riser:**

Type: **Wet**  
Diameter: **60 inches**  
Exterior connection to tank: **Good**  
Topcoat condition: **Good**  
Primer coating condition: **Good**  
    Describe coating: **Chalking, fading, and minor spot coating breaks to substrate**  
Mildew growth: **No**  
Dry film thickness: **13 - 20 mils**  
Coating adhesion: **5A**  
Metal condition: **Good**

## **EXTERIOR COATING**

### **Bowl:**

Topcoat condition: **Fair**  
Primer coating condition: **Good**  
Describe coating: **Chalking, fading, spot coating breaks to substrate, and rust undercutting, and topcoat delamination**  
Mildew growth: **No**  
Metal condition: **Good**

### **Sidewall:**

Lettering: **Yes**  
Number: **2**  
Describe lettering: **DOWNER'S GROVE**  
Logo: **Yes**  
Describe logo: **Trees**  
Topcoat condition: **Fair**  
Primer coating condition: **Good**  
Describe coating: **Chalking, fading, delaminating to intermediate and prime coat, spot coating breaks to substrate, and erosion**  
Dry film thickness: **8 - 12 mils**  
Coating adhesion: **5A/ primer and 3A/top coat**  
Metal condition: **Good**

### **Roof:**

Topcoat condition: **Poor**  
Primer coating condition: **Fair**  
Describe coating: **Chalking, fading, delaminating, spot coating breaks to substrate, rust bleed through, erosion, and rust undercutting**  
Dry film thickness: **13 - 17 mils**  
Coating adhesion: **5A/ primer and 0A/ top coat**  
Metal condition: **Good**

## **EXTERIOR APPURTENANCES**

### **Riser access:**

Type: **Bottom manway (2)**  
Dimensions: **20 x 24 inches and 30 inches**  
Coating condition: **Fair**  
Metal condition: **Good**  
Gasket: **Yes**  
Leaking: **No**  
Hinged: **Yes/ 30 inch and No/20 x 24 inches**

## **EXTERIOR APPURTENANCES**

### **Anchor bolts:**

Number of bolts per leg: 2  
Diameter: 1-1/2 inches  
Anchor bolt chairs: No  
Number of riser bolts: 0  
Coating condition: Fair  
Metal condition: Good

### **Overflow pipe:**

Coating condition: Fair  
Metal condition: Good  
Inside diameter: 6 inches  
Condition of screen: Good  
Percent of screen open: 99  
Flap gate: Yes  
Design: Screened  
Flap gate condition: Good  
Air gap: Yes  
Bottom of pipe to ground distance: 18 inches  
Splash pad: Yes  
Type: Storm drain  
Condition: Good

### **Mud valve:**

N/A

### **Struts and Rods:**

Number of bays: 5  
Sway rod condition: Fair  
Metal condition: Good  
Loose rods: No  
Number of loose rods: 0  
Strut coating condition: Fair  
Metal condition: Good  
Riser rod coating condition: Fair  
Metal condition: Good

### **Rigging points:**

Under bowl: 0  
Number at top of legs: 0

## **EXTERIOR APPURTENANCES**

### **Leg ladder:**

Coating condition: **Fair**  
Metal condition: **Good**  
Height to start of ladder: **15 feet**  
Toe clearance: **7 inches or greater**  
Width of rungs: **16 inches**  
Thickness of rungs: **3/4 inches**  
Shape of rungs: **Diamond**  
Fall prevention device: **Yes**  
    Type: **Rail**  
    Condition: **Good**  
Cage: **No**  
Step off platform: **Yes**  
    Dimensions: **42 x 57 inches**  
    Railing height: **42 inches**  
    Midrail: **14 inches, 24 inches, and 36 inches**  
    Toe plate height: **3 inches**  
    Coating condition: **Fair**  
    Metal conditions: **Good**

### **Balcony:**

Balcony width: **27 inches**  
Railing height: **42 inches**  
Midrail: **Mid-rail at 36, 26, and 16 inches**  
Toe plate height: **7 inches**  
    Vertical posts: **C- Channel**  
        Size: **2 x 6 inches**  
    Top Rail: **Angle**  
        Size: **2-1/2 x 2-1/2 inches**  
    Mid Rail: **Angle**  
        Size: **3 x 3 inches at top mid rail and 1 x 2-1/2 x 2-1/2 inches at other mid rails**  
Balcony coating condition: **Poor**  
    Describe coating: **Chalking, fading, delaminating, spot coating breaks to substrate, and rust undercutting**  
Exterior connection to tank: **Good - Rivet**  
Missing any bolts or rivets: **No**  
Number of penetrations: **1**  
    Penetrations reinforced: **Yes**  
    Penetration uses: **Overflow pipe**  
Accumulation of bird droppings: **No**  
Water pooling: **No**  
Metal condition: **Good**

## **EXTERIOR APPURTENANCES**

### **Sidewall ladder:**

Type: **Follows roof**

Design: **Fixed**

Coating condition: **Fair**

Metal condition: **Good**

Toe clearance: **7 inches or greater**

Width of rungs: **16 inches**

Thickness of rungs: **¾ inches**

Shape of rungs: **Diamond**

Fall prevention device: **Yes**

Type: **Rail**

Condition: **Fair – missing a bracket and bows out before contours**

Cage: **No**

### **Sidewall Manway:**

Dimensions: **20 x 24 inches**

Hinged: **Yes**

Gasket: **Yes**

Gasket leaking: **No**

Coating condition: **Fair**

Metal conditions: **Good**

Manway comments: **Ladder leading to manway in the wet interior is in poor condition and coating is in poor condition.**

### **Step-off platform:**

**N/A**

### **Roof ladder:**

Design: **Continuation of sidewall ladder**

Style: **Ladder**

Coating condition: **Fair**

Metal condition: **Good**

Toe clearance: **7 inches or greater**

Width of rungs: **16 inches**

Thickness of rungs: **¾ inches**

Shape of rungs: **Diamond**

Fall prevention device: **Yes**

Type: **Rail**

Condition: **Good**

Cage: **No**

### **Roof handrail:**

**N/A**

## **EXTERIOR APPURTENANCES**

### **Painter's rail:**

N/A

### **Roof hatches:**

Wet interior:

Coating condition: **Poor**

Metal condition: **Good**

Neck diameter: **30 inches**

Shape: **Round**

Hatch security: **Lock**

Dry interior: **N/A**

Coating condition: **Good**

### **Bolted ventilation hatch:**

N/A

### **Roof vent:**

Number: **1**

Type: **Screened pressure-vacuum**

Neck diameter: **18 inches**

Vent material: **Steel**

Coating condition: **Fair**

Metal condition: **Good**

Screen condition: **Good**

Percent of screen open: **99**

### **Aviation lights:**

N/A

### **Removable cathodic caps:**

Number: **42**

Coating condition: **Poor**

Metal condition: **Good**

Cap comments: **Caps are welded shut**

### **Rigging points:**

Rigging couplings: **Yes**

Number: **14**

Rigging clips: **No**

Coating condition: **Fair**

Metal condition: **Good**

## **EXTERIOR APPURTENANCES**

### **Antennas:**

Roof number **1**  
Attached to: **Pole**  
Sidewall number: **13 attached to balcony**  
Stem number: **0**  
Cable runs: **exterior**  
Antennas or cables interfere with climbing: **No**  
Are antennas 4G or microwave type: **Yes 9**  
Location: **Balcony**

### **Antenna pod:**

**N/A**

## **DRY INTERIOR COATING**

**N/A**

## **WET INTERIOR COATING**

### **Roof:**

Topcoat condition: **Good**  
Primer coating condition: **Good**  
Describe coating: **Spot coating breaks to substrate, crevice corrosion, edge corrosion, and rust undercutting**  
Metal condition: **Good**  
Lap seams: **Caulked**  
Condition of laps: **Good**

### **Sidewall:**

Topcoat condition: **Good**  
Primer coating condition: **Good**  
Describe coating: **Spot coating breaks to substrate**  
Mineral deposits: **None**  
Metal condition: **Good**  
Active pitting: **No**  
Previous pitting: **Yes**  
Deepest pit depth: **1/16 inch**  
Number of pits: **25 - 100**  
Previous pit filling: **No**

## **WET INTERIOR COATING**

### **Tank bottom:**

Topcoat condition: **Poor**

Primer coating condition: **Fair**

Describe coating: **Delamination, spot coating breaks to substrate, minor and isolated rust bleed through, and rust undercutting**

Mineral deposits: **Light**

Metal condition: **Good**

Active pitting: **Yes**

Deepest pit depth: **Up to 1/8 inch**

Number of pits: **25 - 100**

Previous pitting: **Yes**

Deepest pit depth: **1/16 inch**

Number of pits: **25 - 100**

Previous pit filling: **No**

Depth of sediment: **1/16 inches**

Bottom comments: **Low pressure water cleaning was removing section of the coating to the intermediate coat in some areas and to the primer in other areas**

### **Riser:**

Topcoat condition: **Fair**

Primer coating condition: **Fair**

Describe coating: **Delamination, spot coating breaks to substrate, rust bleed through and rust undercutting**

Mineral deposits: **Yes**

Severity: **Light**

Metal condition: **Good**

Active pitting: **Yes**

Deepest pit depth: **Up to 1/4 inch**

Number of pits: **25 - 100**

Previous pitting: **Yes**

Deepest pit depth: **1/16 inch**

Number of pits: **25 - 100**

Previous pit filling: **No**

## **WET INTERIOR APPURTENANCES**

### **Tank ladder:**

**N/A**

### **Cathodic protection:**

**N/A**

## **WET INTERIOR APPURTENANCES**

### **Fill pipe:**

Diameter: **12 inches**  
Height above floor: **51 inches**  
Deflector over end: **Yes**  
Removable silt ring: **No**  
Mixing system: **No**  
Coating condition: **Fair**  
Metal condition: **Good**

### **Separate draw pipe:**

**N/A**

### **Overflow pipe:**

Type: **Weir box**  
Coating condition: **Poor**  
Metal condition: **Good**

### **Roof beams:**

Number in inner ring: **25**  
Style: **Radial**  
Shape: **Angle**  
Connections: **Bolted**  
Coating condition: **Fair**  
Metal condition: **Good**

### **Sidewall beams:**

Number: **1**  
Orientation: **Horizontal**  
Location: **At equator**  
Coating condition: **Fair**  
Metal condition: **Good**

### **Riser safety:**

Riser grate: **Yes**  
Opening size: **60 x 20 inches – moon shaped**  
Opening hinged: **Yes**  
Coating condition: **Poor**  
Metal condition: **Good**  
Riser railing: **No**

### **Siphon:**

**N/A**

## **WET INTERIOR APPURTENANCES**

**Interior balcony:**

N/A

**Spider:**

N/A

Field Inspection Report is prepared from the contractor's viewpoint. It contains information the contractor needs to prepare his bid for any repair or recoating. The engineer uses it to prepare the engineering report. Cost estimates are more accurate if the contractor's problems can be anticipated. While prepared from the contractor's viewpoint, the only intended beneficiary is the owner. These reports are completed with diligence, but the accuracy is not guaranteed. The contractor is still advised to visit the site.

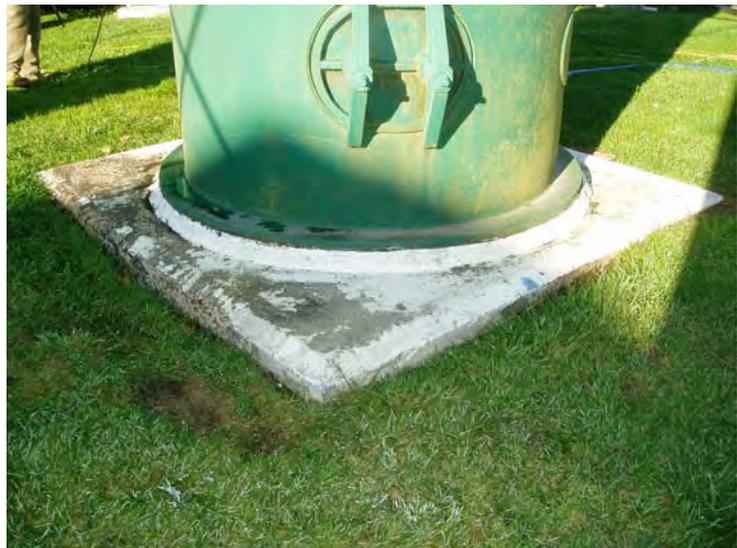


1. The 500,000-gallon legged tank is located in the Village of Downers Grove, Illinois.



2. The piping located in the pit of the building adjacent to the tank is in good condition. The coating is in fair condition. There is rust bleed through.

3. The riser foundation is in good condition and showed minor amounts of deterioration including chipping.

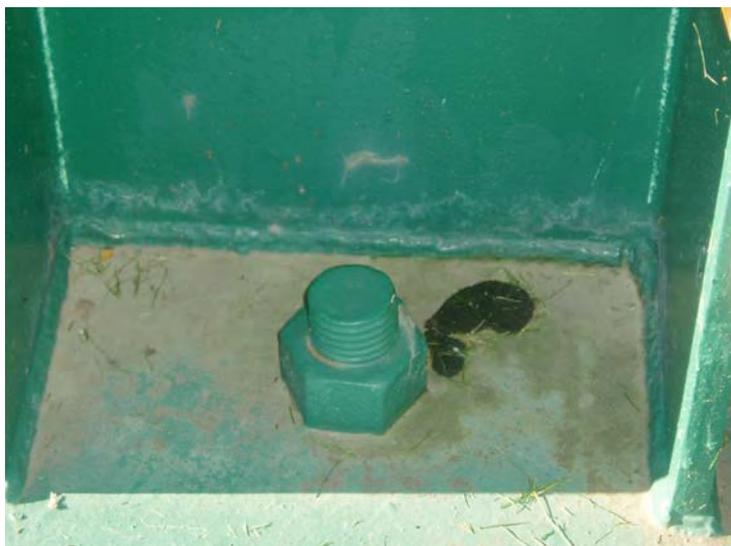


4. The riser foundation grout is in good condition and showed minor amount of deterioration. No grout is missing between the foundation and the base plate.



5. The leg foundations are in good condition and showed minor amounts of deterioration including chipping and cracking.

6. The cement grout is in good condition.



7. The leg anchor bolts are in good condition. The coating is in fair condition.



8. The overflow pipe is in good condition. The coating is in fair condition. The overflow pipe discharges to a storm drain with the required air gap. The discharge area is in good condition.

9. The discharge end of the overflow pipe has a screened flap gate that is in good condition. The screen is in good condition.



10. The leg ladder contains a rail-type fall prevention device. The ladder and fall prevention device are in good condition. The coating is in fair condition.



11. There is a step-off platform located at the top of the leg ladder. The platform is in good condition. The coating is in fair condition.

12. There are antennas attached to the legs that appear to be in good condition.

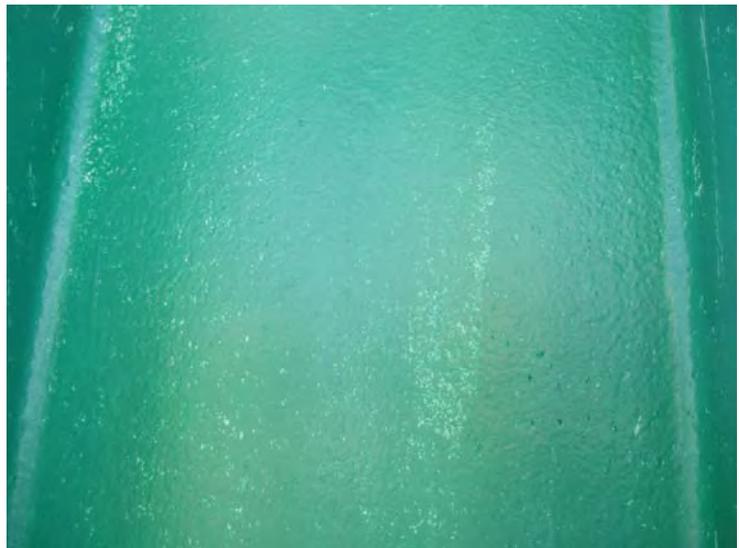


13. The exterior leg coating is in fair condition. The coating is chalking, fading, and eroding.



14. There is topcoat delamination and erosion.

15. Same.

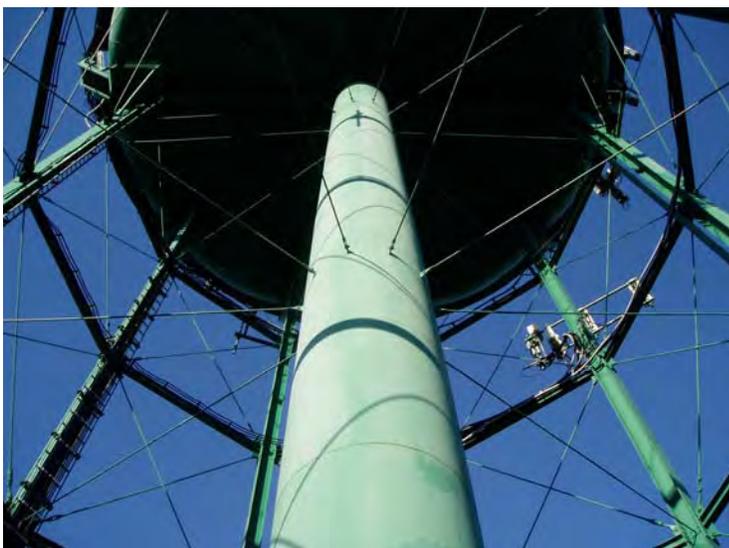
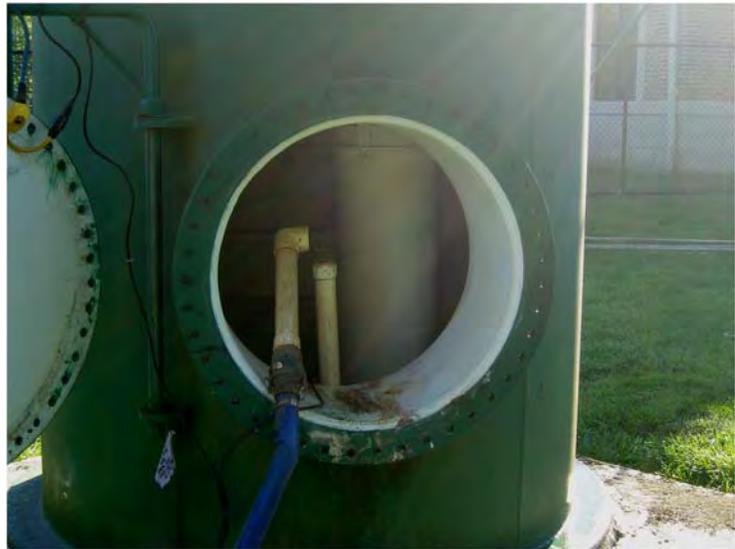


16. There are spot coating breaks to the substrate.



17. There is a manway located in the bottom of the riser that is not hinged and the gasket showed no signs of leaking. The manway is in good condition. The coating is in fair condition.

18. There is a second manway located in the bottom of the riser that is hinged and the gasket showed no signs of leaking. The manway is in good condition and functioned properly during the inspection. The coating is in fair condition.



19. The exterior riser coating is in good condition. The coating is chalking and fading. There are minor spot coating breaks to the substrate.



20. The exterior bowl coating is in fair condition. The coating is chalking and fading. There are minor spot coating breaks to the substrate.

21. There is topcoat delamination.



22. The balcony is in good condition with no missing bolts or rivets.



23. The balcony coating is in poor condition. The coating is chalking and fading. There is topcoat delamination and spot coating breaks to the substrate with rust undercutting.

24. The sidewall manway is hinged and the gasket showed no signs of leaking. The manway is in good condition. The coating is in fair condition.



25. The sidewall ladder contains a rail-type fall prevention device. The ladder is in good condition. The fall prevention device is in fair condition. The fall prevention device is missing a mounting bracket. The coating is in fair condition.



26. The exterior sidewall coating is in fair condition. The coating is chalking, fading, and eroding.

27. There are spot coating breaks to the substrate.



28. There is topcoat delamination.



29. The roof ladder contains a rail-type fall prevention device. The ladder and fall prevention device are in good condition. The coating is in fair condition.

30. The wet interior roof hatch is in good condition and functioned properly during the inspection. The coating is in poor condition. The hatch was secured with a padlock.



31. The pressure-vacuum roof vent is in good condition. The coating is in fair condition. The roof vent screen is in good condition.



32. The cathodic caps on the roof are welded and in good condition. The coating is in poor condition.

33. The roof couplings are in good condition. The coating is in fair condition.



34. The pole antenna on the roof appears to be in good condition.



35. The exterior roof coating is in poor condition. The coating is chalking, fading, and eroding.

36. There is topcoat delamination.



37. There are areas of rust bleed through and spot coating breaks to the substrate with rust undercutting.



38. The wet interior roof beams are in good condition. The coating is in fair condition. There is edge and crevice corrosion.

39. The wet interior roof coating is in good condition. There are spot coating breaks to the substrate with rust undercutting.



40. The overflow weir box located at the top of the sidewall in the wet interior is in good condition. The coating is in poor condition.



41. The ladder leading up to the sidewall manway in the wet interior is in poor condition. The ladder is corroding and bent. The coating is in poor condition.

42. The sidewall beam is in good condition. The coating is in fair condition.

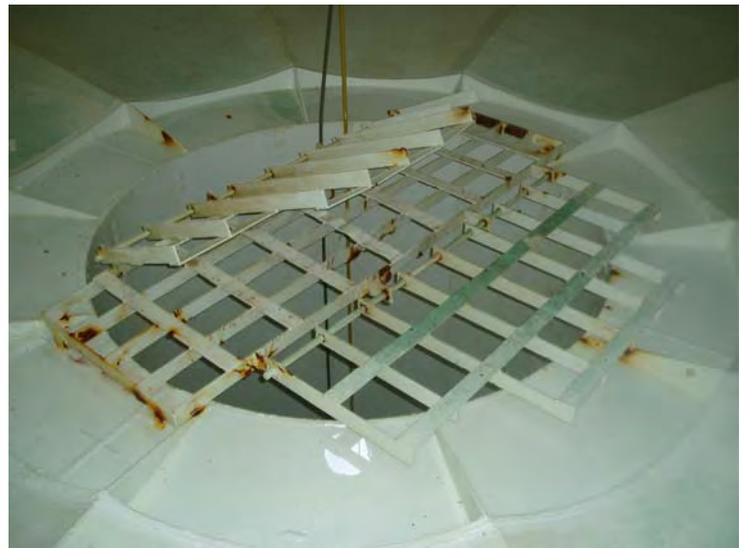


43. The wet interior sidewall coating is in good condition overall.



44. There are spot coating breaks to the substrate.

45. The grate located at the top of the riser in the wet interior is in good condition. The coating is in poor condition.



46. Approximately 1/16-inch of mud sediment was flushed from the wet interior.



47. The wet interior bowl coating is in poor condition. There are areas of rust bleed through.

48. There is topcoat delamination.



49. There are spot coating breaks to the substrate with rust undercutting.



50. The fill pipe has a deflector plate. The fill pipe and deflector plate are in good condition. The coating is in fair condition.

51. The wet interior riser coating is in fair condition.



52. There are areas of rust bleed through.



53. There are spot coating breaks to the substrate with rust undercutting.

54. Same.



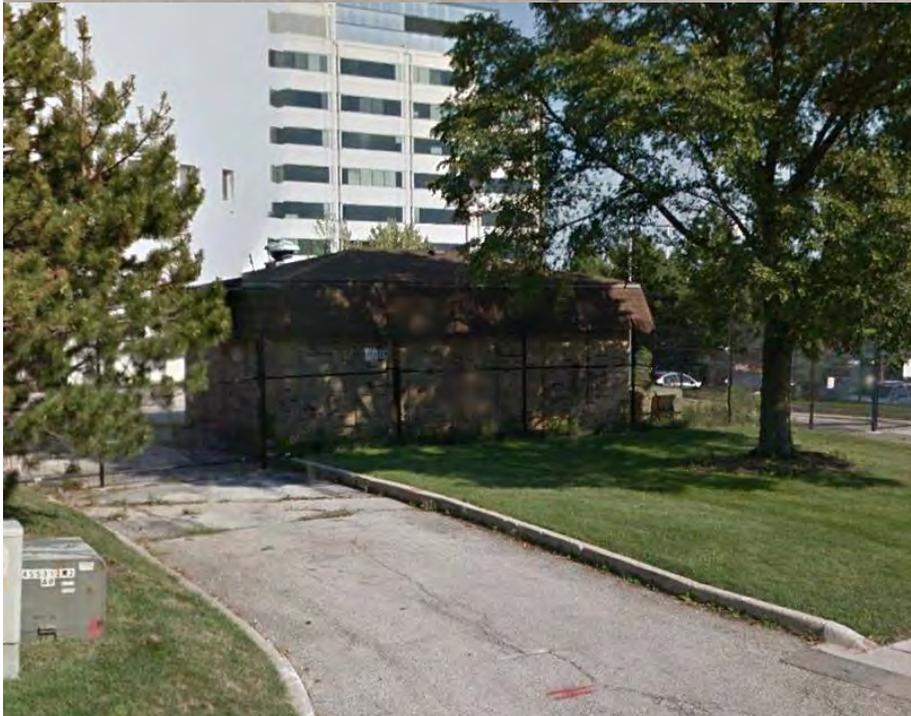
55. There is topcoat delamination.

**APPENDIX B**

**EXISTING EMERGENCY WELL HOUSE PHOTOGRAPHS**

**APPENDIX B PHOTOS OF EMERGENCY WELL HOUSES**

**WELL NO. 12 (FINLEY ROAD) EMERGENCY WELL HOUSE**



**WELL NO. 9 (DOWNERS DRIVE) EMERGENCY WELL HOUSE**

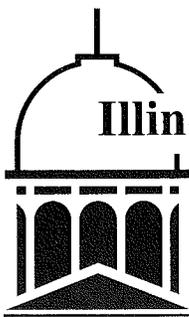


**WELL NO. 14 (71ST STREET) EMERGENCY WELL HOUSE**



**APPENDIX C**

**IHPA SECTION 106 SIGN-OFF APPROVAL**



# Illinois Historic Preservation Agency

1 Old State Capitol Plaza, Springfield, IL 62701-1512

FAX (217) 524-7525

[www.illinoishistory.gov](http://www.illinoishistory.gov)

DuPage County

Downers Grove

Rehabilitation Steel Elevated Water Storage Tanks and Emergency Well Houses & Water Main Replacement

Water Storage Tanks - 4318 Downers Dr., 1037 Summit St., 6801 S. Main St., 3301 Finley Rd.; Emergency Well Houses - 4318 Downers Dr., 3301 Finley Rd., 1724 71st St.; Water Main Replacement - Village Wide

IHPA Log #007030515

March 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 S. Houbolt Road  
Joliet, IL 60431

Dear Mr. Scholz:

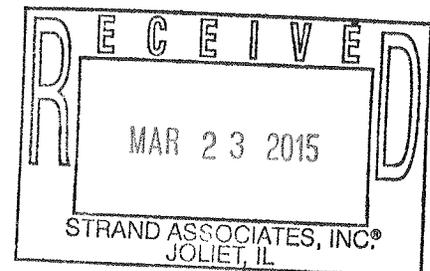
We have reviewed the documentation submitted for the referenced project in accordance with 36 CFR Part 800.4. Based upon the information provided, no historic properties are affected. We, therefore, have no objection to the undertaking proceeding as planned.

Please retain this letter in your files as evidence of compliance with section 106 of the National Historic Preservation Act of 1966, as amended. This clearance remains in effect for two years from date of issuance. It does not pertain to any discovery during construction, nor is it a clearance for purposes of the Illinois Human Skeletal Remains Protection Act (20 ILCS 3440).

If you have any further questions, please contact me at 217/785-5031.

Sincerely,

Rachel Leibowitz, Ph.D.  
Deputy State Historic  
Preservation Officer



**APPENDIX D**  
**ECOCAT AND IDNR REVIEW DOCUMENTATION**

*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509367  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* 39th Street (from Forest to Main) Water Main Replacement  
*Address:* 39th Street from Forest Avenue to Main Street, Downers Grove

*Description:* This is to replace 650 feet of the Village's existing 8" water main on 39th Street from Forest Avenue to Main Street.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Lyman Woods INAI Site

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*

38N, 11E, 5  
39N, 11E, 32



### IL Department of Natural Resources

#### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

### Disclaimer

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1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

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## **Privacy**

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509346  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* 61st Street (from Blodgett to Fairmount) Water Main Replacement  
*Address:* 61st Street from Blodgett Avenue to Fairmount Avenue, Downers Grove

*Description:* This is to replace 700 feet of the Village's existing 6" water main on 61st Street from Blodgett Avenue to Fairmount Avenue.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 17



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509360  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* 63rd Street (from Puffer to Belmont) Water Main Replacement  
*Address:* 63rd Street from Puffer Road to Belmont Road, Downers Grove

*Description:* This is to replace 450 feet of the Village's existing 12" water main on 63rd Street from Puffer Road to Belmont Road.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

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### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 10E, 13



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509252  
*Date:* 02/16/2015  
*Alternate Number:* 6939008

*Project:* 63rd Street Well House Rehabilitation  
*Address:* 6235 Stonewall Avenue, Joliet

*Description:* This is the rehabilitation of 63rd Street well house.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 18



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
1021 N. Grand Avenue East,  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509241  
*Date:* 02/16/2015  
*Alternate Number:* 6939008

*Project:* 67th Street Tank Rehabilitation  
*Address:* McCollum Park - 6801 S. Main Street, Downers Grove

*Description:* This is the rehabilitation and repainting of the Village's existing 1,000,000 gallon capacity, 67th Street steel elevated water storage tank.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 20



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509256  
*Date:* 02/16/2015  
*Alternate Number:* 6939008

*Project:* 71st Street Well House  
*Address:* 1724 71st Street, Joliet

*Description:* This is the rehabilitation of the Village's existing 71st Street well house

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Black-Crowned Night Heron (*Nycticorax nycticorax*)

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

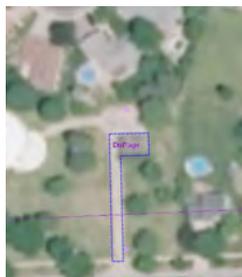
The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*

38N, 11E, 19

38N, 11E, 30



### IL Department of Natural Resources

#### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
1021 N. Grand Avenue East,  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509372  
*Date:* 02/19/2015  
*Alternate Number:* 6939008

*Project:* Almond Court (from Almond Cul-de-sac Northbound to Snowberry) Water Main  
*Address:* Replacement  
Almond Court from Almond cul-de-sac northbound to Snowberry Court, Downers Grove

*Description:* This is to replace 500 feet of the Village's existing 6" water main on Almond Court from Almond cul-de-sac northbound to Snowberry Court.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Lyman Woods INAI Site  
Morton Arboretum INAI Site  
Blanding's Turtle (*Emydoidea blandingii*)  
Least Bittern (*Ixobrychus exilis*)

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
39N, 11E, 31



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509311  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Chicago Avenue (from Lee to Northcott) Water Main Replacement  
*Address:* Chicago Avenue from Lee Avenue to Northcott Avenue, Downers Grove

*Description:* This is to replace 550 feet of the Village's existing 4" water main on Chicago Avenue from Lee Avenue to Northcott Avenue.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Maple Grove Forest Preserve INAI Site  
Morton Arboretum INAI Site

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*

38N, 11E, 7



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509329  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Douglas Road (from Prairie to Wilson) Water Main Replacement  
*Address:* Douglas Road from Prairie Avenue to Wilson Street, Downers Grove

*Description:* This is to replace 350 feet of the Village's existing 6" water main on Douglas Road from Prairie Avenue to Wilson Street.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 8



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509240  
*Date:* 02/16/2015  
*Alternate Number:* 6939008

*Project:* Downers Drive Tank Rehabilitation  
*Address:* 4318 Downers Drive, Downers Grove

*Description:* This is the rehabilitation and repainting of the Village's existing 2,000,000 gallon capacity, Downers Drive steel elevated water storage tank.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Maple Grove Forest Preserve INAI Site  
Morton Arboretum INAI Site  
Least Bittern (*Ixobrychus exilis*)

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 6



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509310  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Dunham Road (from 63rd to Norfolk) Water Main Replacement  
*Address:* Dunham Road from 63rd Street to Norfolk Street, Downers Grove

*Description:* This is to replace 1100 feet of the Village's existing 8" water main on Dunham Road from 63rd Street to Norfolk Street.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*

38N, 11E, 18

38N, 11E, 19



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509330  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Fairmount Avenue (from 55th to South of 57th Extended) Water Main Replacement  
*Address:* Fairmount Avenue from 55th Street to south of 57th extended, Downers Grove

*Description:* This is to replace 1600 feet of the Village's existing 6" water main on Fairmount Avenue from 55th Street to south of 57th Street extended.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory shows wetlands within 250 feet of the project location.

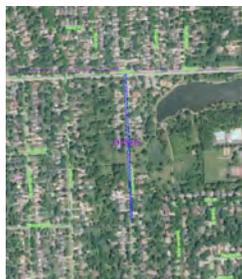
**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 17



### IL Department of Natural Resources

#### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

### Disclaimer

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509244  
*Date:* 02/16/2015  
*Alternate Number:* 6939008

*Project:* Finley Road Tank Rehabilitation  
*Address:* 3301 Finley Road, Downers Grove

*Description:* This is the rehabilitation and repainting of the Village's existing 1,000,000 gallon capacity, Finley Road steel elevated water storage tank.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Lyman Woods INAI Site  
Morton Arboretum INAI Site  
Blanding's Turtle (*Emydoidea blandingii*)  
Least Bittern (*Ixobrychus exilis*)

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
39N, 11E, 31



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509255  
*Date:* 02/16/2015  
*Alternate Number:* 6939008

*Project:* Finley Road  
*Address:* 3301 Finley Road, Downers Grove

*Description:* This is the rehabilitation of the Village's existing Finley Road well house.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Lyman Woods INAI Site  
Morton Arboretum INAI Site  
Blanding's Turtle (*Emydoidea blandingii*)  
Least Bittern (*Ixobrychus exilis*)

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
39N, 11E, 31



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
1021 N. Grand Avenue East,  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509358  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Florence Avenue (from Frontage to South of Village Limits) Water Main Replacement  
*Address:* Florence Avenue from Frontage Road to south fo Village limits, Downers Grove

*Description:* This is to replace 1600 feet of the Village's existing 6" water main on Florence Avenue from Frontage Road to south of Village limits.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Black-Crowned Night Heron (*Nycticorax nycticorax*)

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory shows wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 28



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509317  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Gierz Avenue (from Fairview to Florence) Water Main Replacement  
*Address:* Gierz Avenue form Fairview Avenue to Florence Avenue, Downers Grove

*Description:* This is to replace 800 feet of the Village's existing 4" water main on Gierz Avenue from Fairview Avenue to Florence Avenue.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 9



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509321  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Grand Avenue (from 55th to Hill) Water Main Replacement  
*Address:* Grand Avenue from 55th Street to Hill Street, Downers Grove

*Description:* This is to replace 1400 feet of the Village's existing 4" and 6" water main on Grand Avenue from 55th Street to Hill Street.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory shows wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 8



### IL Department of Natural Resources

#### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509308  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Grand Ave (from 62nd to 61st) Water Main Replacement  
*Address:* Grand Avenue from 62nd Street to 61st Street, Downers Grove

*Description:* This is to replace 700 feet of the village's existing 6" water main on Grand Avenue from 62nd Street to 61st Street.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 17



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509258  
*Date:* 02/16/2015  
*Alternate Number:* 6939008

*Project:* Grant Street (from Prince to Linscott) Water Main Replacement  
*Address:* Grant Street from Prince Street to Linscott Avenue, Joliet

*Description:* This is to replace 800 feet of the Village's existing 4" water main on Grant Street from Prince Street to Linscott Avenue.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Maple Grove Forest Preserve INAI Site

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*

38N, 11E, 5

38N, 11E, 6



### IL Department of Natural Resources

#### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
1021 N. Grand Avenue East,  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509313  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Indianapolis Avenue (from Douglas to Fairview) Water Main Replacement  
*Address:* Indianapolis Avenue from Douglas Road to Fairview Avenue, Downers Grove

*Description:* This is to replace 800 feet of the Village's existing 4" water main on Indianapolis Avenue from Douglas Road to Fairview Avenue.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 5



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509352  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Jay Drive (from Lyman to Webster) Water Main Replacement  
*Address:* Jay Drive from Lyman Avenue to Webster Street, Downers Grove

*Description:* This is to replace 750 feet of the Village's existing 6" water main on Jay Drive from Lyman Avenue to Webster Street.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Black-Crowned Night Heron (*Nycticorax nycticorax*)

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 20



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509350  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Jefferson Avenue (from Middaugh to Dunham) Water Main Replacement  
*Address:* Jefferson Avenue from Middaugh Street to Dunham Road, Downers Grove

*Description:* This is to replace 700 feet of the Village's existing 8" water main on Jefferson Avenue from Middaugh Street to Dunham Road

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Maple Grove Forest Preserve INAI Site

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 18



#### IL Department of Natural Resources

##### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

#### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509253  
*Date:* 02/16/2015  
*Alternate Number:* 6939008

*Project:* Katrine Avenue Well House Rehabilitation  
*Address:* 5235 Katrine Avenue, Downers Grove

*Description:* This is the rehabilitation of the Village's existing Katrine Avenue well house.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Belmont Prairie INAI Site  
Belmont Prairie Nature Preserve

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*

38N, 10E, 12



### IL Department of Natural Resources

#### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
1021 N. Grand Avenue East,  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509369  
*Date:* 02/19/2015  
*Alternate Number:* 6939008

*Project:* Leonard Avenue (from 62nd to 63rd) Water Main Replacement  
*Address:* Leonard Avenue from 62nd Street to 63rd Street, Downers Grove

*Description:* This is to replace 750 feet of the Village's existing 6" water main on Leonard Avenue from 62nd Street to 63rd Street.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 10E, 13



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
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Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509312  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Lincoln Avenue (from Douglas to Fairview) Water Main Replacement  
*Address:* Lincoln Avenue from Douglas Road to Fairview Avenue, Downers Grove

*Description:* This is to replace 800 feet of the Village's existing 4" water main on Lincoln Avenue from Douglas Road to Fairview Avenue.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 5



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509315  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Linden Place (from Gierz to Prairie) Water Main Replacement  
*Address:* Linden Place from Gierz Street to Prairie Avenue, Downers Grove

*Description:* This is to replace 350 feet of the Village's existing 4" water main on Linden Place from Gierz Street to Prairie Avenue

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

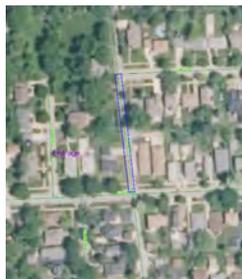
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### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 8



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509370  
*Date:* 02/19/2015  
*Alternate Number:* 6939008

*Project:* Lyman Avenue (from Valley View to North End) Water Main Replacement  
*Address:* Lyman Avenue from Valley View Drive to the north end, Downers Grove

*Description:* This is to replace 500 feet of the Village's existing 6" water main on Lyman Avenue from Valley View Drive to the north end.

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### Natural Resource Review Results

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#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Black-Crowned Night Heron (*Nycticorax nycticorax*)

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 20



#### **IL Department of Natural Resources**

##### **Contact**

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

#### **Local or State Government Jurisdiction**

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509351  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Maple Avenue (from Lane to Carpenter) Water Main Replacement  
*Address:* Maple Avenue from Lane Place to Carpenter Street., Downers Grove

*Description:* This is to replace 350 feet of the Village's existing 8" water main on Maple Avenue from Lane Place to Carpenter Street.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Maple Grove Forest Preserve INAI Site

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 8



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509348  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Northcott Avenue (from Prairie Heading Southbound) Water Main Replacement  
*Address:* Northcott Avenue from Prairie Avenue heading southbound, Downers Grove

*Description:* This is to replace 600 feet of the Village's existing 8" water main on Northcott Avenue from Prairie Avenue heading southbound on Northcott Avenue

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Maple Grove Forest Preserve INAI Site  
Morton Arboretum INAI Site  
Pretty Sedge (*Carex woodii*)  
Shadbush (*Amelanchier interior*)

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 7



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509361  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Ogden Avenue (from Saratoga to Forest Extended) Water Main Replacement  
*Address:* Ogden Avenue from Saratoga Avenue to Forest Avenue extended, Downers Grove

*Description:* This is to replace 750 feet of the Village's existing 6" water main on Ogden Avenue from Saratoga Avenue to Forest Avenue extended.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Lyman Woods INAI Site

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 5



#### IL Department of Natural Resources

##### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

#### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509375  
*Date:* 02/19/2015  
*Alternate Number:* 6939008

*Project:* Parkview Drive (from Fairmount to Claremont) Water Main Replacement  
*Address:* Parkview Drive from Fairmount Avenue to Claremont Drive, Downers Grove

*Description:* This is to replace 1200 feet of the Village's existing 6" water main on Parkview Drive from Fairmount Avenue to Claremont Drive.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Black-Crowned Night Heron (*Nycticorax nycticorax*)

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 20



**IL Department of Natural Resources  
Contact**  
Pat Malone  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Emergency Management Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509374  
*Date:* 02/19/2015  
*Alternate Number:* 6939008

*Project:* Pomeroy Road (from Acorn Northbound to Cul-de-sac)  
*Address:* Pomeroy Road from Acorn Avenue northbound to cul-de-sac, Downers Grove

*Description:* This is to replace 350 feet of the Village's existing 6" water main on Pomeroy Road from Acorn Avenue northbound to cul-de-sac.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Lyman Woods INAI Site  
Least Bittern (*Ixobrychus exilis*)

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*

39N, 11E, 31



#### IL Department of Natural Resources

##### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

#### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509362  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Prairie Avenue/Puffer Road ROW (from Belmont to Chicago) Water Main Replacement  
*Address:* Prairie Avenue and Puffer Road right-of-way from Belmont Road to Chicago Avenue,  
Downers Grove

*Description:* This is to replace 1100 feet of the Village's existing 6" water main on Prairie Avenue and Puffer Road right-of-way from Belmont Road to Chicago Avenue.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

- Belmont Prairie INAI Site
- Maple Grove Forest Preserve INAI Site
- Morton Arboretum INAI Site
- Belmont Prairie Nature Preserve
- Least Bittern (*Ixobrychus exilis*)

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory shows wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 10E, 12



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509259  
*Date:* 02/16/2015  
*Alternate Number:* 6939008

*Project:* Prospect Avenue (from Prairie to Rogers) Water Main Replacement  
*Address:* Prospect Avenue from Prairie Avenue to Rogers Street, Joliet

*Description:* This is to replace 1400 feet of the Village's existing 4" water main on Prospect Avenue from Prairie Avenue to Rogers Street.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 8



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
1021 N. Grand Avenue East,  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509373  
*Date:* 02/19/2015  
*Alternate Number:* 6939008

*Project:* Puffer Road (from 61st to 62nd Extended) Water Main Replacement  
*Address:* Puffer Road from 61st Street to 62nd Street extended, Downers Grove

*Description:* This is to replace 600 feet of the Village's existing 6" water main on Puffer Road from 61st Street to 62nd Street extended.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 10E, 13



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509334  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Stonewall Avenue (from 63rd to North of Village Limits) Water Main Replacement  
*Address:* Stonewall Avenue from 63rd Street to north of Village limits, Downers Grove

*Description:* This is to replace 750 feet of the Village's existing 6" water main on Stonewall Avenue from 63rd Street to north of Village limits.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 18



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509242  
*Date:* 02/16/2015  
*Alternate Number:* 6939008

*Project:* Summit Street Tank Rehabilitation  
*Address:* 1037 Summit Street, Downers Grove

*Description:* This is the rehabilitation and repainting of the Village's existing 500,000 gallon capacity, Summit Street steel elevated water storage tank.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Maple Grove Forest Preserve INAI Site

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

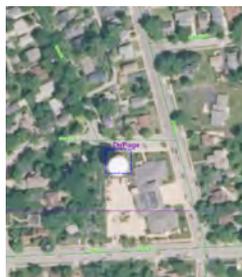
**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 8



### IL Department of Natural Resources

#### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509366  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Valley View Drive (from Fairmount Heading Southbound) Water Main Replacement  
*Address:* Valley View Drive from Fairmount Avenue heading southbound, Downers Grove

*Description:* This is to replace 900 feet of the Village's existing 6" water main on Valley View Drive from Fairmount Avenue heading southbound.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Black-Crowned Night Heron (*Nycticorax nycticorax*)

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 20



#### IL Department of Natural Resources

##### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

#### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509365  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Venard Road (from Janet Extended to 41st Extended) Water Main Replacement  
*Address:* Venard Road from Janet Street extended to 41st Street extended, Downers Grove

*Description:* This is to replace 550 feet of the Village's existing 12" water main on Venard Road from Janet Street extended to 41st Street extended.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Lyman Woods INAI Site  
Morton Arboretum INAI Site  
Least Bittern (*Ixobrychus exilis*)

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 6



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509335  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Washington Street (from Summit to 55th) Water Main Replacement  
*Address:* Washington Street from Summit Street to 55th Street, Downers Grove

*Description:* This is to replace 700 feet of the Village's existing 6" water main on Washington Street from Summit Street to 55th Street.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Maple Grove Forest Preserve INAI Site

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*

38N, 11E, 8  
38N, 11E, 17



### IL Department of Natural Resources

#### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
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Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509354  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Webster Street (from Valley View to North of Jay) Water Main Replacement  
*Address:* Webster Street from Valley View Drive to north of Jay Drive, Downers Grove

*Description:* This is to replace 500 feet of the Village's existing 6" water main on Webster Street from Valley View Drive to north of Jay Drive.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Black-Crowned Night Heron (*Nycticorax nycticorax*)

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 20



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509359  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Williams Street (from 2nd to 6th) Water Main Replacement  
*Address:* Williams Street from 2nd Street to 6th Street, Downers Grove

*Description:* This is to replace 1350 feet of the Village's existing 6" water main on Williams Street from 2nd Street from 6th Street.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 9



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509323  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Williams Street (from Tower to South of 40th) Water Main Replacement  
*Address:* Williams Street from Tower Road to south of 40th Street, Downers Grove

*Description:* This is to replace 700 feet of the Village's existing 6" water main on Williams Street from Tower Road to south of 40th Street.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 4



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

## **Disclaimer**

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## **Terms of Use**

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## **Privacy**

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509320  
*Date:* 02/18/2015  
*Alternate Number:* 6939008

*Project:* Williams Street (from 55th to 6th) Water Main Replacement  
*Address:* Williams Street from 55th Street to 6th Street, Downers Grove

*Description:* This is to replace 1000 feet of the Village's existing 4" and 6" water main on Williams Street from 55th Street to 6th Street.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location. **Therefore, consultation under part 1075 is terminated.**

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location. **Therefore, the wetland review under Part 1090 is terminated.**

This review is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, Natural Areas, or wetlands are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 11E, 9



**IL Department of Natural Resources**  
**Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509376  
*Date:* 02/19/2015  
*Alternate Number:* 6939008

*Project:* Wisconsin Avenue (from Katrine West to Janes) Water Main Replacement  
*Address:* Wisconsin Avenue from Katrine Avenue (West) to Janes Avenue, Joliet

*Description:* This is to replace 1650 feet of the Village's existing 12" water main on Wisconsin Avenue from Katrine Avenue (West) to Janes Avenue.

### Natural Resource Review Results

#### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Belmont Prairie INAI Site  
Maple Grove Forest Preserve INAI Site  
Belmont Prairie Nature Preserve

#### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

#### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*  
38N, 10E, 12



**IL Department of Natural Resources  
Contact**  
Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

**Local or State Government Jurisdiction**  
IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
Springfield, Illinois 62794

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*Applicant:* Strand Associates, Inc.  
*Contact:* Timothy J. Scholz  
*Address:* 1170 South Houbolt Road  
Joliet, IL 60431

*IDNR Project Number:* 1509371  
*Date:* 02/19/2015  
*Alternate Number:* 6939008

*Project:* Wisconsin Avenue (from Walnut to Katrine West) Water Main Replacement  
*Address:* Wisconsin Avenue from Walnut Avenue to the west intersection of Katrine Avenue,  
Downers Grove

*Description:* This is to replace 850 feet of the Village's existing 12" water main on Wisconsin Avenue from Walnut Avenue to the west intersection of Katrine Avenue.

## Natural Resource Review Results

### Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Belmont Prairie INAI Site  
Belmont Prairie Nature Preserve

### Wetland Review (Part 1090)

The Illinois Wetlands Inventory does not show wetlands within 250 feet of the project location.

**An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.**

### Location

The applicant is responsible for the accuracy of the location submitted for the project.

*County:* DuPage

*Township, Range, Section:*

38N, 10E, 12



### IL Department of Natural Resources

#### Contact

Karen Miller  
217-785-5500  
Division of Ecosystems & Environment

### Local or State Government Jurisdiction

IL Environmental Protection Agency  
Illinois Environmental Protection Agency  
Division of Public Water Supplies - Permit  
Section  
1021 N. Grand Avenue East, Box 19276  
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# Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271  
<http://dnr.state.il.us>

Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Downers Drive Tank Rehabilitation**  
**Project Number(s): 1509240 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

Consultation for Part 1075 is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Consultation for Part 1090 (Interagency Wetland Policy Act) is valid for three years.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database and the Illinois Wetlands Inventory at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, you must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

Karen Miller  
Division of Ecosystems and Environment  
217-785-5500



# Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271  
<http://dnr.state.il.us>

Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Summit Street Tank Rehabilitation**  
**Project Number(s): 1509242 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Division of Ecosystems and Environment  
217-785-5500



# Illinois Department of Natural Resources

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Finley Road Tank Rehabilitation**  
**Project Number(s): 1509244 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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# Illinois Department of Natural Resources

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Katrine Avenue Well House Rehabilitation**  
**Project Number(s): 1509253 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Finley Road**  
**Project Number(s): 1509255 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: 71st Street Well House**  
**Project Number(s): 1509256 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Grant Street (from Prince to Linscott) Water Main Replacement**  
**Project Number(s): 1509258 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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# Illinois Department of Natural Resources

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Chicago Avenue (from Lee to Northcott) Water Main Replacement**  
**Project Number(s): 1509311 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Division of Ecosystems and Environment  
217-785-5500



# Illinois Department of Natural Resources

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<http://dnr.state.il.us>

Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Grand Avenue (from 55th to Hill) Water Main Replacement**  
**Project Number(s): 1509321 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

Consultation for Part 1075 is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Consultation for Part 1090 (Interagency Wetland Policy Act) is valid for three years.

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Karen Miller  
Division of Ecosystems and Environment  
217-785-5500



# Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271  
<http://dnr.state.il.us>

Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Grant Street (from Seeley to Oakwood) Water Main Replacement**  
**Project Number(s): 1509325 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Please contact me if you have questions regarding this review.

Karen Miller  
Division of Ecosystems and Environment  
217-785-5500



# Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271  
<http://dnr.state.il.us>

Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Fairmount Avenue (from 55th to South of 57th Extended) Water Main Replacement**  
**Project Number(s): 1509330 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Washington Street (from Summit to 55th) Water Main Replacement**  
**Project Number(s): 1509335 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Northcott Avenue (from Prairie Heading Southbound) Water Main Replacement**  
**Project Number(s): 1509348 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 18, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Jefferson Avenue (from Middaugh to Dunham) Water Main Replacement**  
**Project Number(s): 1509350 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Maple Avenue (from Lane to Carpenter) Water Main Replacement**  
**Project Number(s): 1509351 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Jay Drive (from Lyman to Webster) Water Main Replacement**  
**Project Number(s): 1509352 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Webster Street (from Valley View to North of Jay) Water Main Replacement**  
**Project Number(s): 1509354 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Florence Avenue (from Frontage to South of Village Limits) Water Main Replacement**  
**Project Number(s): 1509358 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Ogden Avenue (from Saratoga to Forest Extended) Water Main Replacement**  
**Project Number(s): 1509361 [6939008]**  
**County: DuPage**

Dear Applicant:

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Bruce Rauner, Governor

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February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Prairie Avenue/Puffer Road ROW (from Belmont to Chicago) Water Main Replacement**  
**Project Number(s): 1509362 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Venard Road (from Janet Extended to 41st Extended) Water Main Replacement**  
**Project Number(s): 1509365 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

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February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Valley View Drive (from Fairmount Heading Southbound) Water Main Replacement**  
**Project Number(s): 1509366 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: 39th Street (from Forest to Main) Water Main Replacement**  
**Project Number(s): 1509367 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Lyman Avenue (from Valley View to North End) Water Main Replacement**  
**Project Number(s): 1509370 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Wisconsin Avenue (from Walnut to Katrine West) Water Main Replacement**  
**Project Number(s): 1509371 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Almond Court (from Almond Cul-de-sac Northbound to Snowberry) Water Main Replacement**

**Project Number(s): 1509372 [6939008]**

**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Bruce Rauner, Governor

Wayne Rosenthal, Director

February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Pomeroy Road (from Acorn Northbound to Cul-de-sac)**  
**Project Number(s): 1509374 [6939008]**  
**County: DuPage**

Dear Applicant:

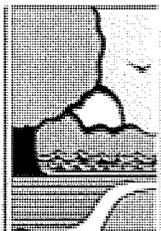
This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

Consultation for Part 1075 is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Consultation for Part 1090 (Interagency Wetland Policy Act) is valid for three years.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database and the Illinois Wetlands Inventory at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, you must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

Karen Miller  
Division of Ecosystems and Environment  
217-785-5500



# Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271  
<http://dnr.state.il.us>

Bruce Rauner, Governor

Wayne Rosenthal, Director

February 20, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Parkview Drive (from Fairmount to Claremont) Water Main Replacement**  
**Project Number(s): 1509375 [6939008]**  
**County: DuPage**

Dear Applicant:

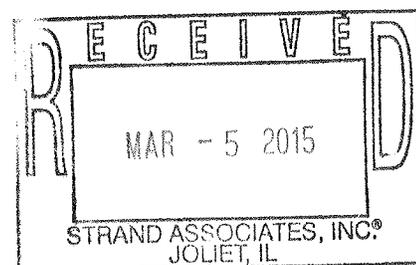
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Please contact me if you have questions regarding this review.

Pat Malone  
Division of Ecosystems and Environment  
217-785-5500





# Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271  
<http://dnr.state.il.us>

Bruce Rauner, Governor

Wayne Rosenthal, Director

February 19, 2015

Timothy J. Scholz  
Strand Associates, Inc.  
1170 South Houbolt Road  
Joliet, IL 60431

**RE: Wisconsin Avenue (from Katrine West to Janes) Water Main Replacement**  
**Project Number(s): 1509376 [6939008]**  
**County: DuPage**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

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Please contact me if you have questions regarding this review.

Karen Miller  
Division of Ecosystems and Environment  
217-785-5500

**APPENDIX E**

**OPINIONS OF PROBABLE PROJECT COST BREAKDOWN**

**APPENDIX E Proposed Water Main Replacements**

Village of Downers Grove												
Tentative List of Watermain Replacement Projects												
2016 - 2020												
Street	From	To	Exist. Pipe Size	Prop. Pipe Size	Length (Ft)	Est. Const. Cost/Ft	Approx. Constr. Cost	Cumulative Cost	On 5-Yr Road Plan?	3-yr. Break History	Cast Iron?	Comments
Grant	Prince	Linscott	4"	8"	800	\$385	\$308,000	\$308,000	Y	<=2	Y	
Prospect	Prairie	Rogers	4"	8"	1400	\$385	\$539,000	\$847,000	Y	<=2	Y	
Grand	62nd	61st	6"	8"	700	\$385	\$269,500	\$1,116,500	Y	<=2	Y	
Dunham	63rd	Norfolk	8"	8"	1100	\$385	\$423,500	\$1,540,000	Y	<=2	Y	
Chicago	Lee	Northcott	4"	N/A	550	\$150	\$82,500	\$1,622,500	Y	0	Y	Abandon and connect services to exist. 12"
Lincoln	Douglas	Fairview	4"	8"	800	\$385	\$308,000	\$1,930,500	Y	0	Y	
Indianapolis	Douglas	Fairview	4"	8"	800	\$385	\$308,000	\$2,238,500	Y	0	Y	
Linden	Gierz	Prairie	4"	8"	350	\$385	\$134,750	\$2,373,250	Y	0	Y	
Gierz	Fairview	Florence	4"	8"	800	\$385	\$308,000	\$2,681,250	Y	0	Y	Through Year 1 (2016)
Williams	55th	6th	4"/6"	8"	1000	\$385	\$385,000	\$3,066,250	Y	0	Y	
Grand	55th	Hill	4"/6"	8"	1400	\$385	\$539,000	\$3,605,250	Y	0	Y	
Williams	Tower Rd.	S. of 40th	6"	8"	700	\$385	\$269,500	\$3,874,750	Y	0	Y	
Grant	Seeley	Oakwood	6"	8"	700	\$385	\$269,500	\$4,144,250	Y	0	Y	
Douglas	Prairie	Wilson	6"	8"	350	\$385	\$134,750	\$4,279,000	Y	0	Y	
Fairmount	55th	S. of 57th Extended	6"	8"	1600	\$385	\$616,000	\$4,895,000	Y	0	Y	
Stonewall	63rd	N. to Vill Limits	6"	8"	750	\$385	\$288,750	\$5,183,750	Y	0	Y	Through Year 2 (2017)
Washington	Summit	55th	6"	8"	700	\$385	\$269,500	\$5,453,250	Y	0	Y	
61st	Blodgett	Fairmount	6"	8"	700	\$385	\$269,500	\$5,722,750	Y	0	Y	
Northcott	Prairie	S. of Prairie	8"	8"	600	\$385	\$231,000	\$5,953,750	Y	0	Y	
Jefferson	Middaugh	Dunham	8"	8"	700	\$385	\$269,500	\$6,223,250	Y	0	Y	
Maple	Lane Pl	Carpenter	8"	8"	350	\$385	\$134,750	\$6,358,000	Y	0	Y	
Jay Dr.	Lyman	Webster	6"	8"	750	\$385	\$288,750	\$6,646,750	Y	<=2	N	
Webster	Valley View Dr.	N. of Jay	6"	8"	500	\$385	\$192,500	\$6,839,250	Y	<=2	N	
Florence	Frontage Rd.	S. to Vill Lmt/Queens	6"	8"	1600	\$385	\$616,000	\$7,455,250	Y	0	N	Through Year 3 (2018)
Williams	2nd	6th	6"	8"	1350	\$385	\$519,750	\$7,975,000	Y	0	N	
63rd	Puffer	Belmont	12"	12"	450	\$550	\$247,500	\$8,222,500	N/A	>2	Y	
Ogden (North Pkwy)	Saratoga	Forest Extended	6"	8"	750	\$350	\$262,500	\$8,485,000	N/A	<=2	Y	In North Parkway of Ogden just behind C/G
Prairie/Puffer ROW	Belmont	Chicago	6"	8"	1100	\$350	\$385,000	\$8,870,000	N/A	<=2	N	Mostly within parkway or unimproved ROW
Venard	Janet Extended	41st Extended	12"	12"	550	\$435	\$239,250	\$9,109,250	N	>2	Y	
Valley View Drive	Fairmount	South of Fairmount	6"	8"	900	\$385	\$346,500	\$9,455,750	N	<=2	Y	
39th	Forest	Main	8"	8"	650	\$385	\$250,250	\$9,706,000	N	<=2	Y	
Leonard	62nd	63rd	6"	8"	750	\$385	\$288,750	\$9,994,750	N	0	Y	
Lyman	Valley View Dr.	N. End	6"	8"	500	\$385	\$192,500	\$10,187,250	N	0	Y	Through Year 4 (2019)
Wisconsin Ave.	Walnut	Katrine (West)	12"	12"	850	\$435	\$369,750	\$10,557,000	N	0	Partial	
Almond Ct	Cul-de-sac	N to Snowberry Ct	6"	8"	500	\$385	\$192,500	\$10,749,500	N	>2	N	
Puffer	61st	62nd Extended	6"	8"	600	\$385	\$231,000	\$10,980,500	N	>2	N	
Pomeroy Rd.	Acorn	N to Cul-de-sac	6"	8"	350	\$385	\$134,750	\$11,115,250	N	<=2	N	
Parkview Dr.	Fairmount	Claremont	6"	8"	1200	\$385	\$462,000	\$11,577,250	N	<=2	N	
Wisconsin Ave.	Katrine (West)	Janes	12"	12"	1650	\$435	\$717,750	\$12,295,000	N	0	N	Through Year 5 (2020)

**TENTATIVE LIST OF TANK REHABILITATION PROJECTS  
2016 TO 2020**

Item	Cost
<b>Downers Drive Elevated Tank (2016)</b>	
Abrasive blast clean the exterior	\$553,000
Containment	\$100,000
Abrasive blast clean the wet interior	\$336,000
Seal lap seams	\$3,000
Cathodic clips and couplings	\$1,500
Abrasive blast clean the pit piping	\$3,000
Repair grout	\$1,000
Install painter's rail	\$3,000
Install 30-inch roof hatch	\$3,000
Install hatch over ladder opening	\$2,000
Install wet interior ladder	\$10,000
Install a new sidewall/roof ladders	\$12,000
Fill pits	\$1,000
Repair sidewall stiffener	\$1,000
Install riser grate	\$1,000
<b>SUM</b>	<b>\$1,030,500</b>
Engineering and Contingencies	\$24,500
<b>TOTAL</b>	<b>\$1,155,000</b>
Item	Cost
<b>Summit Street Elevated Tank (2017)</b>	
Exterior over coat	\$118,000
Containment	\$100,000
Abrasive blast clean the wet interior	\$95,000
Seal lap seams	\$3,000
Cathodic protection clips and couplings	\$1,500
Abrasive blast clean pit piping	\$3,000
Repair foundations	\$1,000
Handrail/painter's rail	\$26,000
Install lid over balcony opening	\$2,000
Wet interior ladder	\$8,000
Vertical sidewall ladder with step-off	\$10,000
Pit welding	\$1,000
Pit filling	\$2,000
<b>SUM</b>	<b>\$359,500</b>
Engineering and Contingencies	\$53,500
<b>TOTAL</b>	<b>\$413,000</b>

Item	Cost
<b>67th Street Elevated Tank (2018)</b>	
Exterior coating	\$200,000
Dry interior coating	\$12,000
Wet interior coating	\$150,000
Cathodic clips	\$1,500
Weld roof cathodic openings	\$1,000
Pit piping coating	\$4,000
Repair foundation	\$1,000
Grout repair	\$1,000
Roof handrail	\$10,000
Mud valve	\$4,500
<b>SUM</b>	<b>\$385,000</b>
Engineering and Contingencies	\$65,000
<b>TOTAL</b>	<b>\$450,000</b>
<b>Finley Road Elevated Tank (2020)</b>	
Exterior coating	\$295,000
Containment	\$100,000
Dry interior coating	\$40,000
Wet interior coating	\$100,000
Cathodic clips	\$1,500
Floating cathodic system	\$17,000
Weld roof cathodic openings	\$1,000
Repair foundation	\$1,000
Rubber condensate platform	\$15,000
Roof handrail and painters rigging	\$20,000
Mud valve	\$4,500
<b>SUM</b>	<b>\$595,000</b>
Engineering and Contingencies	\$65,000
<b>TOTAL</b>	<b>\$660,000</b>

For more location information  
please visit [www.strand.com](http://www.strand.com)

## Office Locations

Brenham, TX | 979.836.7937

Cincinnati, Ohio | 513.861.5600

Columbus, Indiana | 812.372.9911

Columbus, Ohio | 614.835.0460

Indianapolis, Indiana | 317.423.0935

Joliet, Illinois | 815.744.4200

Lexington, Kentucky | 859.225.8500

Louisville, Kentucky | 502.583.7020

Madison, Wisconsin\* | 608.251.4843

Milwaukee, Wisconsin | 414.271.0771

Phoenix, Arizona | 602.437.3733

\*Corporate Headquarters

