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SIXTH FIVE-YEAR REVIEW REPORT FOR KYSOR INDUSTRIAL CORP. SUPERFUND SITE WEXFORD COUNTRY, MICHIGAN

Prepared by

U.S. Environmental Protection Agency
Region 5
Chicago, Illinois

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Signed by: THOMAS SHORT

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APPENDICES

LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
CIP	Cadillac Industrial Park
COC	Contaminant of Concern
DCE	Dichloroethene
EGLE	Michigan Department of Environment, Great Lakes and Energy
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
EW	Extraction Well
FYR	Five-Year Review
GAC	Granular Activated Carbon
IC	Institutional Control
ICIAP	Institutional Controls Implementation and Assurance Plan
LDFA	Local Development Finance Authority
LTS	Long-Term Stewardship
MCL	Maximum Contaminant Level
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MPART	Michigan PFAS Action Response Team
MW	Monitoring Well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ND	Non-detect
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PCE	Tetrachloroethylene or perchloroethylene
P&T	Pump-and-Treat
PFAS	Per- and polyfluoroalkyl substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
ppt	Parts-Per-Trillion
PQL	Practical Quantitation Limit
PMP	Performance Monitoring Plan
PMR	Performance Monitoring Report
PRP	Potentially Responsible Party
PTAS	Packed Tower Air Stripper
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design

RI/FS	Remedial Investigation and Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SDWA	Safe Drinking Water Act
SVE	Soil Vapor Extraction
SWRAU	Site-Wide Ready for Anticipated Use
TCA	Trichloroethane
TCE	Trichloroethylene
TCL	Target Cleanup Level
UAO	Unilateral Administrative Order
µg/L	Micrograms per liter or parts-per-billion
UU/UE	Unlimited Use and Unrestricted Exposure
VI	Vapor Intrusion
VOC	Volatile Organic Compound

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The United States Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with 40 CFR § 300.430(f)(4)(ii) of the National Contingency Plan (NCP) and considering EPA policy.

This is the sixth FYR for the Kysor Industrial Corp. Superfund Site (Site). The triggering action for this statutory review is the completion date of the previous FYR on August 28, 2020. The FYR has been prepared because hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Kysor Site consists of a single Operable Unit (OU) addressing Sitewide Remedial Actions (RAs) which will be addressed in this FYR report.

The Kysor Site FYR was led by the EPA Remedial Project Manager (RPM) Catherine Nield. Participants include Michigan Department of Environment, Great Lakes, and Energy (EGLE)[1] Site Manager Megan Cynar and Cadillac District Project Manager Brandi Wheeler. Participants also include the EPA Community Involvement Coordinator (CIC), Amelia Holcomb. The relevant entities such as the potentially responsible parties (PRPs) and EGLE were notified of the initiation of the FYR. The review began on July 18, 2024.

Site Background

The Kysor Site is located about one-half mile northwest of and within the limits of the City of Cadillac, Michigan (City) (Figure 1, Appendix C). The Kysor Site is defined by the former Kysor facility plume within the Cadillac Industrial Park (CIP) and areas in Haring Township to which the plume has migrated (Figure 2, Appendix C).

In 1955, Kysor Corporation began operating at 1100 Wright Street. The company manufactured truck parts and temperature control systems for the automotive industry. Processes at the plant included stamping, machining metal parts, and painting. A variety of solvents, degreasers and paints were used at the 30-acre facility (EPA 2000).

The Kysor facility and several other facilities contributed to six commingled groundwater contaminant plumes containing volatile organic compounds (VOCs) beneath the Site. The Kysor Site has long been

[1] In 2019, the Michigan Department of Environmental Quality (MDEQ) was renamed the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and is the state regulatory agency for the Superfund program. These terms are used throughout this FYR in historical context.

closely associated with the adjacent Northernaire Plating Superfund Site (Northernaire Site). The Northernaire Site is a former electroplating facility which operated from a prefabricated metal building on 12.75 acres of land at the corner of 6th Street and 8th Avenue (Figure 3, Appendix C). Northernaire released hexavalent chromium (Cr(VI)) to the groundwater, which commingled with the plume at the Kysor Site. Groundwater contamination emanating from the Northernaire Site consisted of two small Cr(VI) plumes in the shallow and intermediate aquifers (EPA 1989). Figure 2 (Appendix C) depicts the size and relative locations of the combined shallow and intermediate aquifer plumes at the time of the RI/FS.

The Kysor manufacturing facility still operates and is now owned and operated by Borg-Warner. The immediate surrounding area is largely industrial but also includes several residences and a trailer park. Haring Township, located north of the Site, is largely forest/recreational and rural however, the portion of the Township that is affected by the Site is a residential subdivision. Figure 4 and 5 (Appendix C) provide the land use designations (City of Cadillac Zoning, Haring Township Zoning).

A municipal well field was located on the Site (Figure 3, Appendix C). However, this well field closed in January 2023. Municipal water in Cadillac is now supplied by two well fields, the Crosby Wellfield and East 44 Wellfield, which are both located upgradient of the Kysor Site. The Crosby Wellfield opened in 2012 and the East 44 Wellfield opened in 2022.

Studies have shown that there are three distinct aquifers at or near the Site, referred to as shallow, intermediate, and deep aquifers. The shallow, intermediate, and deep aquifers consist of sand with some silty clay and gravel. Clay layers separating the three aquifers from one another are predominantly seen in the southwest part of the CIP. The shallow and intermediate aquifers are hydraulically connected northeast of the Kysor Facility, near the North Park Subdivision in Haring Township.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Kysor Industrial Corp. Site		
EPA ID: MID043681840		
Region: 5	**State:** MI	**City/County:** Cadillac/Wexford

SITE STATUS	
NPL Status: Final	
Multiple OUs? No	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: EPA
Author name (Federal or State Project Manager): Catherine Nield
Author affiliation: EPA
Review period: 7/18/2024 – 6/18/2025
Date of site inspection: 9/18/2024
Type of review: Statutory
Review number: 6
Triggering action date: 8/28/2020
Due date *(five years after triggering action date)*: 8/28/2025

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

In August 1988, the Michigan Department of Natural Resources (MDNR, now known as the Michigan Department of Environment, Great Lakes and Energy, or EGLE) initiated a RI/FS of area groundwater to address concerns of contaminants in the CIP (E.C. Jordan Co 1988). The CIP includes two Superfund sites: the Northernaire Site and the Kysor Site (Figure 3, Appendix C). This review focuses on the Kysor Site.

A 1989 Record of Decision (ROD) (EPA 1985) identified the following contaminants of concern (COCs) for the Site:

Non-Carcinogens	Carcinogens
Toluene	1,1-Dichloroethene (1,1-DCE)
1,1,1-Trichloroethane (1,1,1-TCA)	1,2-Dichloroethane (1,2-DCA)
Trans-1,2-dichloroethene (*trans*-1,2-DCE)	Methylene Chloride
Xylenes	Tetrachloroethane (PCE)
Hexavalent Chromium (Cr(VI))	Trichloroethane (TCE)

The 1989 ROD established that the principal threats posed at the Site was exposure to contaminated groundwater, contamination of the City wellfield through downward leaching of the contaminated groundwater, and continued contamination of the groundwater by the contaminated soils at Kysor.

In 1993, trichloroethylene (TCE) was detected in production well CW-7[2] at the former City wellfield (Appendix C, Figure 3). The TCE was above its federal Safe Drinking Water Act (SDWA) Maximum Contaminant Level (MCL)[3] of 5 micrograms per liter (µg/L). Groundwater in the shallow aquifer presented Excess Lifetime Cancer Risks (ELCR)[4] to receptors ranging from $4x10^{-4}$ to $5x10^{-2}$, while groundwater in the intermediate aquifer presented ELCRs ranging from $1x10^{-5}$ to $4x10^{-3}$. Hazard indices (HI) for non-carcinogenic health effects ranged from less than one to 11 in the shallow aquifer and from below 1 to 66[5] in the intermediate aquifer.

Future risks posed by ingestion of contaminated groundwater were modeled to theoretical receptor locations. Assuming no remediation was performed at the Sites, groundwater ingestion presented ELCRs to theoretical receptors ranging from $1x10^{-5}$ to $1x10^{-3}$ in the shallow aquifer and ranging from $6x10^{-5}$ to $5x10^{-3}$ in the intermediate aquifer for at least another 10 to 15 years. HIs for non-carcinogenic health effects presented by future consumption of the groundwater by theoretical receptors ranged from below one to 1.29 in the shallow aquifer and from below one to 17.14 in the intermediate aquifer.

Response Actions

Initial Response/Pre-ROD activities

On July 22, 1981, Kysor Corporation voluntarily excavated and disposed of approximately 700 cubic yards of contaminated soil from the two disposal areas, including the Ingraham property (Figure 2, Appendix C). The average depth of the excavation was six feet, and the average depth to the water table was 25 feet. Drums, buckets, rags, and paint sludge were removed along with the soil. MDNR noted strong odors remaining in the completed excavation pit. Samples taken by MDNR indicated

[2] This well was located in the original 8th street wellfield. This wellfield closed in January 2023.

[3] Maximum Contaminant Level (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards under the federal Safe Drinking Water Act.

[4] Excess lifetime cancer risks are probabilities that are generally expressed in scientific notation (e.g., $1x10^{-6}$ or $1x10^{-6}$). An excess lifetime cancer risk of $1x10^{-6}$ indicates that an individual has a one-in-one-million chance of developing cancer as a result of Site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at a Site.

[5] An HI greater than 1.0 indicates an unacceptable systemic or noncarcinogenic risk. The risk assessment assumed that a 70-kilogram (kg) adult would drink two liters of groundwater per day over a 70-year lifetime, and a 35-kg child would drink one liter of groundwater per day over a 10-year span.

greater than 100 parts per million (ppm) of TCE, TCA, PCE, ethylbenzene, toluene, and xylenes remained in the soils. The excavation was backfilled with clean material.

Other facilities that contributed to the commingled VOC plumes and the actions taken include the following (Figure 2, Appendix C):

- Northernaire Plating: located northeast of Kysor. Prior to the joint 1989 ROD for the Kysor and Northernaire Sites, a ROD was signed for the Northernaire Site in 1985. The selected remedy was for the soil cleanup at the Northernaire Site, which included excavation of contaminated soil and sewer line sediments and disposal at an off-site facility. The remedial action was implemented in 1988 and completed in 1991 (EPA 2010).
- Paulstra/CRC Corporation, formerly known as Cadillac Molded Rubber, Inc: located northeast of the Kysor Site. After an above-ground tank containing TCE ruptured in 1984, Paulstra installed recovery wells that operated until 1986. In 2011 the groundwater remediation and monitoring were completed, and all wells were abandoned.
- Mitchell-Bentley Corporation: located 1,400 feet east of, and side-gradient to Kysor, Mitchell-Bentley Corporation began operating in late 1960s. A 1991 investigation showed a PCE spill near a former underground tank. An extraction well (EW) system was installed to capture the PCE plume. After the company declared bankruptcy in 2006, Michigan Department of Environmental Quality (MDEQ) assumed operation of the extraction system until 2011.
- Rexair, Inc: located east-northeast of, and side-gradient to Kysor. A groundwater investigation in late 1980s revealed a TCE plume emanating from the facility. After a State of Michigan Consent Judgment in 1991, Rexair installed a number of EWs and monitoring wells (MWs). An MDEQ report stated that Rexair EWs did not adequately capture its plume, allowing it to commingle with the Kysor plume. As a result, the Kysor remediation system has been capturing and treating some of the contamination from Rexair since 1997.

Due to the number of groundwater plumes near the Kysor Site, more than a dozen different parties have installed MWs and EWs. Approximately 300 wells are present in the area. Some are seen in Figure 6 (Appendix C).

Decision Documents

In September 1989, the EPA issued a ROD to address:

- A VOC plume in the shallow aquifer containing up to 115 milligrams per liter (mg/L) of VOCs;
- A less concentrated VOC plume (up to 12 mg/L) in the intermediate aquifer;
- A Cr(Vl) plume in both the intermediate and shallow aquifers; and
- An area of soil contaminated with VOCs at the Kysor Site.

This remedy was the first and final ROD for the Kysor Site, and the second and final ROD for the Northernaire Site[6]. The Sites were addressed as one in the 1989 ROD because the designs for the treatment systems were developed jointly. In addition, the plume from Northernaire Site was contained within the Kysor Site plume, so designing separated groundwater extraction systems would not have been feasible.

The Remedial Action Objectives (RAOs) were:

- To eliminate any human exposure to residual hazardous waste disposed of or contaminated materials at the Site, and;
- To address all potential risks to human health and/or impacts to the environment.

The selected remedy addressed all Site concerns by a combination of treatment and use restrictions. In addition, the ROD stated that corrective action measures would be taken if monitoring indicated a failure of any component of the remedy. In 1994, the EPA issued an Explanation of Significant Differences (ESD) to formally expand the targeted area of the selected remedy to include a potentially impacted North Park Subdivision in Haring Township (Figure 2, Appendix C).

The selected remedy per the 1989 ROD, as modified by the 1994 ESD, included the following specific components:

- A groundwater extraction system consisting of 18 pumping wells;
- Pipelines to convey VOC and VOC/Cr(VI) contaminated groundwater from the wells to the treatment system;
- Discharge pipe to convey treated groundwater to the Clam River;
- Packed tower air stripper (PTAS) system to remove VOCs from groundwater;
- Granular activated carbon (GAC) contactors to remove Cr(VI) from groundwater;
- Treatment building to house the treatment system components;
- Expansion of a pilot soil vapor extraction (SVE) and treatment system to treat VOC-contaminated Source soils at the Kysor facility;
- Conducting long term groundwater monitoring to assess quality of area groundwater; and
- Imposing access and use restrictions.

Target Cleanup Levels (TCLs) were calculated for each of the groundwater COCs as site-specific risk-based values that were not to exceed their respective MCLs under the federal SDWA. Further, the additive risk of all contaminants was required to fall within the EPA's target ECLR range of $1x10x^{-4}$ to $1x10x^{-6}$.

[6] The Northernaire Site was initially addressed via a 1985 ROD for OU 1 - Soils. The groundwater for the Northernaire Site was addressed through the 1989 ROD and identified as OU2 for the Northernaire Site. The 1989 ROD was the only OU for the Kysor Site. The Sites are often referred to jointly as the Northernaire/Kysor Site.

COC	TCL (µg/L)
1,1,1-TCA	200
Trans-1,2-DCE	70
1,1-DCE	5
1,2-DCA	5
Methylene chloride	5
PCE	1
TCE	5
Cr(VI)	50
Xylenes	440
Toluene	40

Soil cleanup levels were calculated to ensure that residual contamination in the soil would not be a continuing source of groundwater contamination above groundwater TCLs. The TCLs for soils are as follows:

COCs	Soil TCLs (mg/kg)
1,1,1-TCA	7.60
TCE	0.07
Xylenes	141.00
Toluene	724.00

In 1994, Michigan prepared a Substantive Requirements Document (SRD) to establish requirements and limits for discharging treated groundwater to the Clam River. The limits were to meet the substantive requirements of a National Pollution Elimination Discharge System (NPDES) permit and the Michigan Wastewater Discharge Permit Rules. The surface water discharge limits for the Clam River that were established for VOCs have not changed and appear as below in the most recent NPDES (2022) permit.

COCs	Weekly Maximum Effluent Limit (µg/L)
1,1,1-TCA	5
1,2-DCA	5
PCE	5
TCE	5
Cr(VI)	Best Available Technology

Status of Implementation

In 1995, the EPA issued several Unilateral Administrative Orders (UAOs) to the Potentially Responsible Parties (PRPs) to implement the remedy selected per the 1989 ROD for the Site, as modified by the 1994 ESD. In June 1995, on-Site construction of the RA began. A public/private sector partnership was formed to construct the remedy and conduct operation and maintenance (O&M) between the City and the PRPs. While the City was not identified as a PRP and was not a respondent to the UAO, the City took lead in constructing and operating the remedy and implementing use restrictions on Site.

In the early 1990s, the City formed a Local Development Finance Authority (LDFA) to facilitate construction of the remedy and assist with the capital expenditures of building the treatment system. The City established a Special Assessment District to finance the O&M of the treatment plant, monitoring and other costs. By 1996, the groundwater P&T and SVE systems at the Kysor Site were built and operating.

The SVE system at the Kysor Site consisted of 23 extraction/induction wells at a depth of approximately 25 feet (about five feet above the water table). A mounted blower created a negative pressure in the system to pull contaminated vapors out of the ground. Collected vapors were blown through two vapor phase carbon units for VOC removal and then discharged through a stack. The SVE system operated from the spring through the fall each year from 1996 to 2010. From 1996 to 2000, 669 pounds of VOCs were removed. From 2000 to 2010, no VOCs were detected at the influent sampling ports, meaning no VOCs from the soil entered the system. These findings indicated that soil TCLs had been achieved. A change-out of the activated carbon had not been necessary since April 1999.

Completion of the soil remediation was correlated with the groundwater COC concentrations in the two closest wells downgradient of the Kysor Site. By December 1999, most VOC contaminants in these wells were below the groundwater TCLs and have remained so. With the approval of the EPA and MDEQ, in 2010, the LDFA decommissioned the SVE system, and it was dismantled in fall 2016. The soil remediation has addressed potential health risks due to direct contact and/or ingestion of VOC-contaminated soil and eliminated significant contaminant source areas.

The groundwater P&T system continues to operate. Groundwater captured by the EW network is conveyed to the treatment facility. The VOC treatment system consists of two PTAS units, centrifugal fans, transfer pumps, and associated valves and piping. In July 2024, the VOC treatment system was optimized allowing one of the two PTAS units to be shut off. Since switching the treatment system to one PTAS unit, all discharge requirements have continued to be met. One EW (I-5) is used to capture Cr(VI) contamination in groundwater. The Cr(VI) treatment system consists of two GAC contactors, a pH control system, and associated valving and piping. The discharge from the GAC system is combined with the influent groundwater from the remaining EWs to the VOC treatment system.

While there are two GAC contactors, EW I-5 is routed to go through one contactor. In November 2024, the GAC unit was changed to go through the unspent contactor to help reduce area-wide per- and polyfluoroalkyl substance (PFAS) concentrations. In May 2024, the LDFA began sampling for PFAS near the Site.

Historical groundwater monitoring data demonstrated a sustained reduction of Cr(VI) to concentrations below its TCL, which indicated that the majority of Cr(VI) had been effectively removed by the extraction systems. Even though the TCL was at the influent monitoring point, the chromium testing requirement remains on the NPDES permit. On August 3, 2020, the EPA and EGLE provided confirmation that operation of the Cr(VI) treatment system could be discontinued as documented in the 2010 FYR for the Northernaire Site. In 2010, the pH control system was shut off; however, EW I-5 continues to run through the GAC contactor.

Institutional Controls

Table 1: Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
On-Site and Off-Site Groundwater Areas with groundwater contamination do not support UU/UE. The current area that exceeds groundwater cleanup standards is within the CIP and areas north of 13th Street in Haring Township.	Yes	Yes	City of Cadillac	(1) Restrict groundwater use for drinking purposes in the shallow and intermediate aquifer. (2) Ensure that residences with contaminated wells are not using these wells for consumption purposes. (3) Take appropriate actions to ensure that current or future landowners do not use the contaminated groundwater as a drinking water source. (4) Ensure that no wells are installed that may interfere with the O&M of treatment and monitoring systems required by the UAO.	The City of Cadillac Ordinance No. 97-10, Sect. 42-164, implemented Nov. 3, 1997.
			City of Cadillac and Haring Township		The MDEQ Water Well Construction and Pump Installation Code (Part 127, Act 368, PA 1978, as amended), implemented Feb. 14, 1967, revised April 21, 1994.
			City of Cadillac		Cadillac Ordinance No. 2018-10, implemented Sept 24, 2018.
			Haring Township		Haring Township Water Ordinance No. 86-01 (Sect.2.1), implemented April 14, 1986.
			Haring Township		Haring Township Water Ordinance No. 12-1016 (Amendment to Ordinance No. 86-01, Sect. 2.2), implemented October 30, 2012.
			Haring Township		Haring Township Water Ordinance No. 2013-81 (amendment to Ordinance No. 86-01), implemented June 10, 2013.
			Haring Township		Haring Township Water Ordinance No. 2017-107, implemented June 28, 2017.

A map showing the area in which the institutional controls (ICs) apply is included in Figure 7 and 8 of Appendix C.

Status of Access Restrictions and ICs

The 1989 ROD required that access and use restrictions be imposed on groundwater use for drinking water purposes in the affected shallow and intermediate aquifers. The PRPs were required to install and maintain a fence to limit access to portions of the Site containing the remedy components. A six-foot high perimeter chain link fence topped by three-strand barbed wire surrounds the groundwater treatment facilities. Based on discussions with the City, the fence is well-maintained, and no trespassing has been evident.

The MDEQ Water Well Construction and Pump Installation Code requires well drillers and pump installers to notify and obtain a permit from the local health department before a well is installed.

City of Cadillac

The ICs also included deed restrictions or ordinances to prevent interference with remedial activities. As such, the City adopted ordinance No. 97-10 in November 1997 (see IC Table 1 above). The ordinance prohibits the installation of drinking water wells at the Site (except with written consent by the EPA) and prohibits tampering with or removing the containment or monitoring systems at the Site.

The 2015 FYR found that ordinance No. 97-10 was not sufficiently robust because while newly built structures were required to connect to the municipal water supply, the ordinance did not require property owners to abandon their residential wells. As a result of the 2015 FYR recommendations, the City strengthened ordinance 97-10, now identified as ordinance No. 2018-10 (*Ordinance Amending Chapter 42, Article II, Division 6 of the Cadillac City Code Regarding Institutional Controls for the Kysor Industrial Corporation/Northernaire Plating Company*), Attachment 1 (Appendix D). The amended ordinance, effective September 24, 2018, provides comprehensive requirements for the abandonment of existing wells and prohibits the installation and use of wells in the restricted zone. The ordinance provides exceptions for wells within the restricted zone under certain circumstances, such as if the well is needed for groundwater monitoring under a response activity, construction dewatering, non-contact processing operations (i.e., heating or cooling), or public emergencies. The ordinance also specifies enforcement procedures and penalties. Figure 7 (Appendix C) shows a map of the area covered by the updated ordinance. As part of this FYR period, it was discovered ordinance No. 2018-10 was not being properly enforced.

Haring Township

Haring Township adopted water Ordinance No. 86-01 in April 1986. The ordinance required property owners to connect to the Township water system if they were within 200 feet of a water line. Residents were allowed to keep and use their residential wells. In areas where public water lines were available, new users were required to hook up to the public system.

On October 30, 2012, Haring Township amended Ordinance No. 86-01 (Ordinance No. 12-1016) to require property owners to pay connection fees to the Township water system and to use water meters. Haring Township amended the ordinance a second time on June 10, 2013 (Ordinance No. 2013-81) to require mandatory connection of all structures to the distribution line at the owner's expense if the water line is within 200 feet from the nearest point of the structure. The ordinance prohibits the installation and use of residential wells on premises already connected to the water

system and requires the abandonment of residential wells when connecting to the system. Certain exceptions remain including wells that are required for groundwater monitoring. The ordinance established a timeline and procedures for achieving compliance, and the assessment of penalties.

On June 28, 2017, Haring Township adopted ordinance 2017-107 (Attachment 2, Appendix D), which is a comprehensive ordinance integrating the original ordinance 86-01 and all amendments thereto. The revision was to accommodate residents located along the 39 Road loop, where a new water transmission main was installed in 2017. The provision allowed residents with residential wells to maintain the well and postpone connecting to the Township system until the well fails, or if there is a change of ownership or change of use, at which time the owner is required to connect. This was a one-time allowance for specific residents to provide consistency between commercial and residential requirements as well as between the sewer and water ordinance with respect to mandatory connection distances and the establishment of connection charges. All other residential and commercial users must connect to the water system if they are located within 200 feet from the nearest point of the structure, as stated previously. Figure 8 (Appendix C) shows the area covered by the ordinance. It should be noted that the Haring Township water supply includes those areas, such as the North Park Subdivision, that were previously and/or potentially affected by the Site groundwater contamination plumes. Residences located outside the Township water supply use residential wells; however, these wells are not located in the Site plume area.

Current Compliance:

In August 2024, the City completed an updated residential drinking water survey as part of the review period for this FYR at the request of the EPA. As part of the Survey, it was discovered that three homes in the Cadillac ordinance No. 2018-10 area were using residential drinking water wells. It was incorrectly stated in the 2020 FYR that all residents in Cadillac ordinance No. 2018-10 area were connected to municipal water supply and all residential wells were abandoned[7]. It is likely these three homes received exemption at the time the original ordinance (No. 97-10) was put in place, however no documentation of exemption was found, and the updated ordinance (No. 2018-10) requirements were not provided to the homeowners. The current status of the three residential wells are as follows:

- Two homes have been connected to City water;
- One home has been demolished; and
- All three residential wells are scheduled to be abandoned by the City in summer 2025.

No penalties were levied on any of the three homeowners.

IC Follow up Actions Needed

Long-term protectiveness at the Site requires compliance with use restrictions to assure the remedy continues to function as intended. Since compliance with ICs is necessary to assure the long-term protectiveness of the remedy, planning for long-term stewardship (LTS) is required. LTS will ensure that

[7] There has been public confusion on a statement that was made in the 2020 FYR regarding the EPA's recommendation for residents of the City of Cadillac to be connected to municipal water and to whom this comment applied. This comment was made in regard to only those residents living within the Cadillac ordinance No. 2018-10 area and not the City as a whole. The EPA will only issue recommendations based on residents located in areas affected by the Superfund Sites.

effective ICs are maintained, monitored and enforced, and that the remedy continues to function as intended with regard to ICs. To assure proper maintenance and monitoring of effective ICs, LTS procedures will need to be included in an Institutional Control Implementation and Assurance Plan (ICIAP). An ICIAP should be developed by the LDFA to ensure ICs are functioning as intended.

Systems Operations/Operation & Maintenance

The City water utilities department acts on behalf of the LDFA to perform routine O&M activities for remedial system components, including regular groundwater monitoring in accordance with the O&M manual (Fishbeck, Thompson, Carr & Huber, Inc., 1995). The water utilities department has maintained the existing institutional and Site access controls. The groundwater treatment plant is checked daily. If a problem is detected, such as a low EW withdrawal rate, then maintenance/cleaning of the well is performed. Each EW vault and panel are opened and checked thoroughly three-to four times annually. All equipment, such as the blowers, well pumps, and both air stripping towers are checked three times per week. The towers are generally cleaned out every three years.

Per the 1989 ROD, long-term monitoring of groundwater is required at the Site to assess the effectiveness of the groundwater extraction and treatment system. Previously, the LDFA satisfied this requirement by submitting annual performance monitoring reports. Performance monitoring reports sampled Site COCs in extraction and monitoring wells in the shallow and intermediate aquifer. The last report submitted by the LDFA was the 2020 performance monitoring report (PMR) (Tetra Tech 2021). While the remediation system remained on and all discharge requirements continued to be met from 2020 through 2025, the LDFA failed to comply with the groundwater monitoring requirements outlined in the 1989 ROD. Based on other available data, O&M is proceeding appropriately, and the remediation system appears to be functioning as intended.

Due to miscommunication between the LDFA, the City, and the groundwater monitoring contractor, no groundwater monitoring has been completed since 2020. Since then, the LDFA has been working with the EPA to updated appropriate plans including a COC QAPP (Fleis & VandenBrink Engineering 2025a), a PFAS QAPP (Fleis & VandenBrink Engineering 2025b), and a groundwater monitoring plan (under EPA and EGLE review). Groundwater sampling is expected to take place fall 2025, and analysis of the data and submission of the monitoring report will follow.

Since monitoring has not occurred on Site since the 2020 some monitoring wells have not been maintained and are not useable. Monitoring well abandonment, rehabilitation, or repair should be performed before groundwater monitoring is resumed.

Remediation Facility Flow

The effluent from the discharge sump of the groundwater remediation facility is monitored at the discharge weir by an ultrasonic type of level indicator. The effluent flow is continually recorded on a circular chart recorder located at the main control panel. Effluent flow rates have been consistent from January 2020 through May 2025 and indicate no cause for concern. Approximately 106.1 lbs. of VOCs were removed in 2024, and 128.8 lbs. of VOCs were removed on average from 2020 to 2024.

Air Stripping System Performance

The PTAS system is sampled at the influent and effluent points of the system. The National Pollutant Discharge Elimination System (NPDES) permit was updated on October 1, 2022, and requires the effluent discharge be sampled once a month and the influent be sampled once a quarter. Analytical methods are in accordance with the performance monitoring plan (PMP)[8] (Fishbeck, Thompson, Carr & Huber, Inc. 1995) and the Site COC Quality Assurance Project Plan (QAPP) (Fleis & VandenBrink Engineering 2025a).

A summary of total system flow and annual VOC removal are provided in Table 2 below. As shown in Table 2, from January 2020 to December 2024, an estimated 644 pounds of VOCs were removed from the groundwater. Since 2008, influent concentrations have declined with a corresponding decline in VOC mass removed by the system.

Table 2: Mass Removal of VOCs from groundwater

Year	Influent VOC Concentration (µg/L)	Total System Flow (million gallons)	Estimated Mass of VOCs Removed (lbs)
2020	24.2	786	159
2021	21.2	781	138
2022	19.8	784	130
2023	18.1	736	111
2024	17.1	745	106
2020-2024 Totals		**3,832**	**644**

In order to track the comingled VOC contaminant plumes, the City, on behalf of the LDFA, monitors VOCs at 21 shallow and 21 intermediate MWs and EWs each year. The last round of groundwater monitoring was completed in 2020. The LDFA and the City are working to restart the groundwater monitoring program and submittal of annual groundwater monitoring reports. The LDFA has submitted an updated groundwater monitoring plan to EPA; however, the plan is still under EPA and EGLE review. It is expected that the updated monitoring plan will follow a similar breakdown of wells sampled in the previous PMP.

The shallow wells are screened between 35 and 70 feet below ground surface (bgs) and intermediate wells are screened between 120 to 200 feet bgs. Figure 6 (Appendix C) provides the locations of the MWs. Wells are sampled on quarterly and annual cycles. Well categorizations and sampling frequencies, as presented in monitoring reports from 2020 and prior years, are as follows:

[8] Under the UAO issued by the EPA in May 1990 for the Remedial Design, a PMP was prepared to define the data collection requirements for evaluating the effectiveness of the RA. An annual report is required by the PMP to summarize the data and to verify that RAOs are met. The last annual report submitted by the LDFA was the 2020 performance monitoring report.

Quarterly:
13 chromium MWs
3 VOC MWs (fringe wells F-6, CMS-5W, SLW-34)

Annually:
15 chromium MWs
15 shallow VOC MWs
10 intermediate VOC MWs
17 EWs

- 6 shallow wells (S-1 through S-6)
- 11 intermediate wells (I-1 through I-11)

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR, the recommendations from the last FYR and the current status of those recommendations.

Table 3: Protectiveness Determinations/Statements from the 2020 FYR

OU #	Protectiveness Determination	Protectiveness Statement
Sitewide	Short-term Protective	The remedy at the Kysor Site currently protects human health and the environment. The implemented remedy is functioning as intended and no complete exposure pathways are present that could result in unacceptable risks to human health or the environment. The P&T system is reducing concentrations of COCs in both aquifers, and ICs are in place in the form of local ordinances for the City of Cadillac and Haring Township which prohibit groundwater use. The existing Kysor Site use is consistent with the RAOs set forth in the ROD. In order for the remedy to be protective in the long term, the following actions need to be taken to ensure protectiveness: 1. The City of Cadillac and Haring Township should develop an ICIAP which includes a plan for: IC evaluation activity; taking corrective measures to existing ICs, if needed; placing additional ICs, if needed; and, ensuring LTS of the Site, which includes ongoing monitoring, maintenance, and enforcement of ICs. 2. 1,4-Dioxane should be added to the list of analytes for the City and Township during the next round of groundwater sampling. Analyses should continue at locations where 1,4-D concentrations exceed the State of Michigan and EPA residential drinking water screening levels. 3. Since PFAS is a common contaminant at plating sites, a select few wells around the Northernaire Site should be sampled for PFAS. Confirmatory analyses should be conducted as necessary. 4. The LDFA should continue to evaluate the regular groundwater monitoring data with respect to the nonresidential VI screening criteria in the Cadillac Industrial Park to ensure that VI is not a potential exposure pathway.

Table 4: Status of Recommendations from the 2020 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
Sitewide	LTS procedures should be developed and implemented to ensure that the required ICs are effective and properly maintained, monitored, and enforced.	The City of Cadillac and Haring Township should develop an ICIAP which includes a plan for: 1) IC evaluation activity; 2) taking corrective measures to existing ICs, if needed; 3) placing additional ICs, if needed; and 4) ensuring the LTS of the Site, which includes ongoing monitoring, maintenance, and enforcement of ICs.	Ongoing	During this FYR period it was discovered that the ICs in Cadillac to restrict groundwater use for drinking purposes and to ensure residences with contaminated wells are not using these wells for consumption purposes were not being properly followed or enforced. Three homes were identified in the Cadillac ordinance No. 2018-10 area that were using residential wells. Annual certification to EPA that ICs are in place and effective has not been performed consistently. The LDFA needs to develop an ICIAP which will include the required LTS elements. The ICIAP is expected to be completed by 12/31/2028.	N/A
Sitewide	No Site MWs are currently tested for PFAS; however, since PFAS is a common contaminant at plating sites, a select few wells around	The LDFA should work with EGLE to identify and monitor appropriate wells for PFAS. Confirmatory sampling should be conducted at locations where the groundwater concentrations	Ongoing	Select wells were sampled by EGLE in 2021 and 2022 and the LDFA in 2024. However, sampling was not conducted under an EPA-approved QAPP. The LDFA has since finalized a PFAS QAPP (Fleis & VandenBrink	N/A

	the Northernaire Site should be sampled for PFAS.	exceed the newly promulgated Michigan criteria of 8 ppt for PFOA and 16 ppt for PFOS.		Engineering 2025b). The sampling is expected to be completed by fall 2025.	
Sitewide	1,4-D is a likely contaminant at sites and may be present particularly when 1,1,1-TCA is detected because of the widespread use of 1,4-D as a stabilizer.	Since 1,1,1-TCA is a COC at the Site, 1,4-D should be added to the list of analytes for the City and Township during the next round of sampling. 1,4-D analysis should continue at locations where concentrations exceed Michigan and EPA residential drinking water screening levels	Ongoing	The LDFA has completed a PFAS QAPP which includes 1,4-D (Fleis & VandenBrink Engineering 2025b). The EPA and EGLE are currently reviewing the groundwater monitoring plan. The sampling is expected to be completed in fall 2025.	NA
Sitewide	Although it is unlikely that VI is a potential exposure pathway for an industrial worker within the Cadillac Industrial Park based on VI assessments performed to date, this should continue to be tracked.	The LDFA should continue to evaluate the regular groundwater monitoring data with respect to the nonresidential VI screening criteria in the Cadillac Industrial Park to ensure that VI is not a potential exposure pathway.	Ongoing	The LDFA has not continued to evaluate regular groundwater monitoring data with respect to the nonresidential VI screening criteria in the CIP to ensure that VI is not a potential exposure pathway. Protocol for VI screening should be included in the groundwater monitoring plan. Groundwater monitoring data will be screened and evaluated in future groundwater monitoring reports.	NA

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

A public notice was published in the *Cadillac News* on September 28, 2024, announcing that the EPA had begun a FYR and inviting the public to submit comments to the EPA (Attachment 3, Appendix D). The same announcement was published on the site profile page at https://www.epa.gov/superfund/kysor-industrial.

The public comments primarily followed the following themes:

1. Concern with the detections of PFAS both in the CIP and in the surrounding areas and how it relates to the Superfund Sites.
2. Concern with LDFA's non-compliance from 2021-2024 due to failure to complete required groundwater monitoring or submit necessary monitoring reports to the EPA.
3. Concern with the lack of enforcement of Cadillac ordinance No. 2018-10 by the City.
4. Confusion regarding the EPA's recommendation in the 2020 FYR, specifically whether all wells in Cadillac should be hooked up to city water or only those within the Cadillac ordinance No. 2018-10 area.
5. The escalating tone on social media and the need for more community resources to better understand PFAS contamination.

Additionally, the EPA received one comment from a resident who worked at Cadillac Industrial Supply in the summer of 1977 delivering supplies to local factories, including Northernaire Plating. This resident recalls faulty cleanup practices at the facility, specifically remembering one instance where a 55-gallon drum was purposely knocked over and a silver sludge spilled onto the ground. This narrative is similar to other recollections of the Northernaire Plating facility, and the EPA considers this addressed by existing remedies.

Additionally, the EPA received concerns regarding the LDFA board's noncompliance with the Michigan Open Meetings Act. However, the EPA clarified that it does not have the authority to enforce Michigan's open meeting laws.

There has been large public interest in the Site since 2024, particularly with whether the Site is related to local PFAS contamination. In September 2024 the Michigan PFAS Action Response Team (MPART) started a Cadillac Area of Interest investigation. As part of its investigation, MPART hosted an in-person town hall meeting in November 2024 and two virtual update meetings in February 2025. The purpose of the November 2024 meeting was to explain the goal of the investigation and encourage homeowners located in the area of interest to sign up for residential well sampling. The EPA RPM Catherine Nield participated in this town hall meeting by providing a history of the Superfund Sites and explained the EPA's interest in sampling for PFAS near the Sites. Prior to the February 2025 update meeting, MPART completed PFAS sampling at 84 private residential wells. The LDFA also sampled all

the LDFA treatment plant extraction wells and the treatment plant influent and effluent for PFAS. Based on the results of this sampling, it appeared the Kysor and Northernaire Sites were not the likely source of PFAS. At this time, EGLE and MPART consider the MPART investigation area associated with the industrial park complete.

The EPA thanks the community for their comments and dedication to transparency at the Site.

Data Review

Monitoring Reports

Long term monitoring has not occurred since the 2020 PMR was submitted (Tetra Tech 2021). Due to the lapse in monitoring reports from 2021-2024 limited data is included in the Data Review section of this FYR. The 2020 PMR was submitted during the reporting period for this FYR (Tetra Tech 2021). Data from the 2020 PMR is summarized in the subsequent sections. The 2020 monitoring follows the 1995 PMP which outlines the requirements necessary for evaluation of the effectiveness of the RA for the Site including groundwater monitoring locations and frequencies. The groundwater monitoring data analyzed in this report was collected in January 2020, July 2020, October 2020, and January 2021.

Municipal Water Systems

The City monitors its municipal wells annually for regulated contaminants under the federal SDWA. Additionally, VOCs are sampled every other month. No VOCs or other regulated contaminants have been detected in these wells over the past five years.

The Haring Township water is supplied by two production wells. The Site COCs are monitored every three years in township production wells, and no Site COCs have exceeded detection levels. The most recent monitoring was conducted in 2023. As required by EGLE, Haring Township annually monitors contaminants regulated under the federal SDWA.

Haring Township is currently working to complete a water system extension that will run down 13th St. East of the US 131 Expressway to the corner of Crosby St. This expansion will also include the residents on John R Rd., Bob Rd., and Meyer Ave. Additionally, they will be adding another water production well. This expansion is expected to be completed in late 2025.

Groundwater flow

Static water levels measured in January 2021 were used to create groundwater potentiometric surface elevation contours for the shallow and intermediate aquifer (Figure 9 and 10, Appendix C). The hydraulic gradient in the shallow aquifer is sloping to the north-northeast (Figure 9, Appendix C), which is consistent with previous observations. The hydraulic gradient in the intermediate aquifer slopes in a north, northwesterly direction (Figure 10, Appendix C), consistent with previous observations. Since January 2021, when the most recent data for this analysis were collected, the Cadillac Municipal wellfield located in the CIP was shut off. An updated groundwater flow survey in the CIP is needed to

assess the impacts of closing the municipal well field. Groundwater data collected by the LDFA in 2024 suggests the groundwater contamination plumes are adequately contained.

Hexavalent Chromium

Per the 1989 ROD issued jointly for the Northernaire and Kysor Sites, the TCL for hexavalent chromium is 50 µg/L. Hexavalent chromium was primarily attributed to the operations at Northernaire Platting. While the final FYR for the Northernaire Site was issued in 2010, monitoring for hexavalent chromium is ongoing. Hexavalent chromium results are summarized in Appendix D, Attachment 6.

None of the samples analyzed in the 2020 PMR exceeded the 50 µg/L TCL. The majority of the sample results from the monitoring and extraction wells were below the laboratory practical quantitation limit (PQL) of 2.0 µg/L. Sample results of note include concentrations of hexavalent chromium in extraction well I-4 ranging from 2.1 to 2.6 µg/L, and concentrations in well I-6 ranging 2.6 to 4.2 µg/L. In January 2020 there was an anomalous hexavalent chromium detection of 25.9 µg/L in well S-1. While the detection is still below the 50 µg/L TCL, this result has been shown to be anomalous. This well will continue to be analyzed in the next reporting period.

Results are otherwise consistent with historical monitoring data which indicate hexavalent chromium has not been detected at concentrations greater than the TCL since 2000. The data indicate a majority of the hexavalent chromium has been effectively removed by the extraction system and that the hexavalent chromium portion of the remedy is protective in both the short and long term. In 2010, the EPA gave the LDFA verbal approval to discontinue the operation of the hexavalent chromium treatment system.

Volatile Organic Compounds

Two COCs, PCE and TCE, were detected in the shallow aquifer at concentrations greater than their TCLs per the 1989 ROD of 1 µg/L and 5 µg/L, respectively. Site COC exceedances occurred at EWs S-2 (TCE, 6.5 µg/L) and S-4 (PCE, 18.4 µg/L) (Appendix D, Attachment 6). The plume extent and historically estimated capture zone for PCE and TCE in the shallow aquifer can be seen in Figure 11 and 12 (Appendix C), respectively.

Two COCs, PCE and TCE, were detected in the intermediate aquifer at concentrations greater than the TCLs of 1 µg/L and 5 µg/L, respectively. The maximum concentrations detected during the reporting period in the intermediate EWs were 3.4 µg/L for PCE at well I-1 and 93.5 µg/L for TCE at well I-10. The data for the intermediate EWs showed that wells I-1, I-2, I-5 and I-6 had PCE concentrations above the TCLs at 3.4, 3.3, 1.3, and 2.1 µg/L, respectively. Intermediate extraction wells I-1, I-2, I-3, I-4, I-6, I-9, and I-10 had TCE concentrations above the TCLs ranging from 5.8 (well I-6) to 93.5 (well I-10) µg/L. TCE concentrations continue to trend downward in these wells. The plume extent and historically estimated capture zone for PCE and TCE in the intermediate aquifer can be seen in Figure 13 and 14 (Appendix C), respectively.

Although not above the TCL of 200 µg/L., 1,1,1-TCA was detected in the shallow and intermediate aquifer extraction wells with maximum concentrations of 14.2 µg/L (EW S-2) and 13.7 µg/L (EW I-1), respectively.

Due to community concerns in the City and Haring Township, the City decided to sample 19 residential wells near the CIP for VOCs in October 2025 and November 2024. No residential wells sampled detected any Site COCs which suggests the plume is delineated and contained within the ordinance area.

Future groundwater monitoring is expected to continue by fall 2025 following finalization of the sampling plan, which is currently under review by the EPA and EGLE.

Vapor Intrusion

In the previous FYR (EPA 2020), it was listed as an Issue/Recommendation that vapor intrusion (VI) should be tracked on Site. Due to the gap in monitoring reports over this FYR period, this issue is ongoing and VI will be tracked in the upcoming monitoring reports. Based on previous assessments performed to date, it is unlikely VI is a potential exposure pathway for an industrial worker within the Cadillac Industrial Park hence, this issue is considered protective in the short term.

Site Inspection

The FYR Site Inspection was conducted on 9/18/2024. In attendance from the EPA were Catherine Nield, RPM, and Amelia Holcomb, CIC. Participants representing EGLE included Megan Cynar, Superfund Project Manager and Brandi Wheeler, Cadillac District Project Manager. Participants from Cadillac included Jeff Dietlin, Director of Cadillac Utilities, Patrick Miller, Cadillac Utilities and Derek Goodrich, O&M Site Manager.

A copy of the EPA's Kysor Site Inspection checklist, photographs and map are included in Appendix D, Attachment 4 and 5.

The purpose of the inspection was to assess the protectiveness of the remedy. Overall, the Site was found to be in good condition. The treatment facility appeared to be well-maintained and all machinery, equipment and electrical panels were labeled.

The following observations were noted during the inspection:

- One air stripper is in operation. The other air stripper was turned off in July 2024 because all discharge permit requirements continue to be met with one air stripper;
- Extraction wells are in good condition and properly secured; and
- Multiple monitoring wells were in poor condition, not properly secured or missing. Missing monitoring wells include MW-3 and MW-8. Damaged monitoring wells include SLW-8 and MW-18. An updated monitoring well survey needs to be done before a groundwater monitoring plan is submitted. Damaged/missing wells should be redeveloped/replaced if they are necessary to adequately monitor groundwater at the Kysor Site.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy**.** The RPM conducted interviews with the following representatives: 1) Jeffrey Dietlin,

Director of Cadillac Utilities; 2) Brian Warner, LDFA board member; and 3) Derek Goodrich, O&M groundwater treatment plant site manager.

Mr. Dietlin indicated that the remedy has performed well and there have been no unusual O&M issues or costs over the past five years. Additionally, there are no major changes to land use or notable industrial expansion in the Cadillac area.

During this FYR period it was discovered that the Cadillac ordinance No. 2018-10 was not being properly followed or enforced and three homes were found to be using residential wells in the Cadillac ordinance No. 2018-10 area. This was discussed with Dietlin who explained that these homes likely received an exemption at the time the Cadillac ordinance No. 2018-10 was put in place because the wells had no contaminant exceedances. However, there is no documentation of the exemption. Dietlin said that the City will work with homeowners in the Cadillac ordinance No. 2018-10 area and connect homes to City water to comply with the Cadillac ordinance No. 2018-10. It was also discussed that the LDFA needs to complete an ICIAP plan which will outline the proper procedures for ensuring the long-term stewardship at the Site and preventing this type of oversight in the future.

No groundwater monitoring reports have been submitted by the LDFA since the 2020 PMR (Tetra Tech 2021). The EPA discussed this issue with Dietlin and stressed that this should be an immediate priority for the LDFA. Dietlin explained that groundwater monitoring reports stopped in 2020 due to a miscommunication with the groundwater monitoring contractor. Since the EPA discovered this issue, the LDFA has been working to obtain regulatory approval of the appropriate quality assurance and monitoring plans so they can re-start the groundwater monitoring program. At the time the review period for this FYR concluded, the appropriate quality assurance plans (Fleis & VandenBrink Engineering 2025a, Fleis & VandenBrink Engineering 2025b) were approved, and the groundwater monitoring plan was submitted to the EPA. The groundwater monitoring plan is currently being reviewed by the EPA and the EGLE. Sampling is expected to take place by fall 2025.

Also discussed was the nearby Rexair facility which contributed VOC contamination at the Kysor Site. Rexair appears to be maintaining its P&T system and shares quarterly monitoring data with the City and EGLE. EGLE reviews the data and work conducted under its agreement with Rexair. Rexair is in a several stage shutdown program and is in the process of shutting down its extraction wells, as most of the VOC concentrations are below MCLs.

The LDFA responsibilities and functions were discussed with LDFA board member Brian Warner and Utilities Director Jeff Dietlin. Warner and Dietlin explained the LDFA was created by the City to treat Site COCs in the CIP. Land in the CIP is divided between principal contamination contributors and non-principal contributors, with principal contributors paying a higher tax per acre than non-principal contributors. However, the tax was suspended around 2014 to help industries who were struggling financially, enough money has been collected previously to fund O&M activities since the decision to pause the tax. Dietlin explained the LDFA has been successfully running the remediation for the past several decades and has made good progress in reducing the Kysor Site COCs from the groundwater. Dietlin and Warner expressed concern with PFAS misinformation in the community and the need for clarification of the LDFA's role in managing the Site cleanup.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:

Yes.

Remedial Action Performance

Based upon review of the relevant documents, the RPM interviews, remediation system performance data, air stripping system performance data, 2020 water level measurements, 2020 groundwater data for the MWs, and EW data from the past five years, the remedy continues to operate as designed and the plume appears to be contained. The average influent concentration exceeds the TCLs for PCE and TCE, but the discharge from the system exhibits no detectable concentrations of COCs and is in compliance with the NPDES Permit.

The 1989 ROD estimated a cleanup time of 64 years for the intermediate aquifer. Based on the remediation startup date of 1996, the cleanup date in the ROD was estimated to be 2060. The maximum Cadillac LDFA cleanup date was estimated to be 2046 in the April 2007 *Hydraulic Capture Zone Evaluation* (S.S. Papadopulos & Associates, Inc 2007).

It is noted that a component of the selected remedy, as listed in the ROD (EPA 1989), requires groundwater monitoring to assess the quality of area groundwater. The groundwater monitoring program has not been followed since 2020. However, the LDFA has taken the necessary steps to update the appropriate quality assurance plans (Fleis & VandenBrink Engineering 2025a, 2025b) and has submitted an updated groundwater monitoring plan (currently under the EPA/EGLE review) to restart the monitoring program by fall 2025. While the monitoring program was paused, the treatment system continuously ran and all NPDES permit requirements were met. Additionally, VOC samples collected by MPART and the LDFA in residential properties surrounding the Kysor Site have showed no exceedances of TCLs.

Opportunities for optimization exist. Influent VOC concentrations to the PTAS units are approaching very low levels allowing for the system to be optimized to retain efficiency while reducing system O&M resources. The LDFA is exploring the possibility of shutting down some of the shallow extraction wells.

Operation and Maintenance

The groundwater treatment system continues to operate as designed. However, monitoring wells have not been effectively maintained. Multiple monitoring wells are damaged or missing which will affect the ability to complete groundwater sampling. Monitoring wells required for sampling should be redeveloped in order to carry out O&M procedures. The groundwater treatment system continues to operate as designed. However, monitoring wells need to be in good condition and sampled according to the EPA approved sampling and analysis plans.

Implementation of ICs and Other Measures

Access controls in the form of perimeter fencing, locked gates, and signs are in place and effectively maintained as evidenced during the FYR Site Inspection. It was discovered during the review period for this FYR that the Cadillac ordinance No. 2018-10 was not being properly enforced, as three homeowners were using a residential well within the Cadillac ordinance No. 2018-10 area. At the time the FYR period concluded for this review, one property was demolished, and the other two properties were connected to City water. Tracking and certification of IC compliance should be submitted to the EPA and EGLE. This can be achieved by developing and implementing an ICIAP.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Question B Summary:

No. Screening for the emerging contaminants, PFAS and 1,4-D, is incomplete at the Site.

Emerging contaminants

1-4-Dioxane

In October 2017, MDEQ promulgated the 1,4-dioxane (1,4-D) rule that established Part 201 Residential Drinking Water Criterion (DWC) of 7.2 µg/L. A federal drinking water standard for 1,4-D has not been established. The EPA's current tap-water Regional Screening Level is 0.46 µg/L based on a carcinogenic risk of $1x10^{-6}$ and the EPA risk assessments indicate that the drinking water concentration representing a $1x10^{-6}$ ELCR level is 0.35 µg/L. 1,4-D is a likely contaminant at sites where 1,1,1-TCA is detected because of the widespread use of 1,4-D as a stabilizer. Since 1,1,1-TCA is a COC at the Site, 1,4-D should be added to the list of analytes for the LDFA during the next round of sampling. The LDFA has included 1,4-D in the updated PFAS QAPP (Fleis & VandenBrink Engineering 2025b) and will be included in the monitoring plan when finalized. Even though 1,4-D screening has not yet been completed thus far, the remedy is likely protective in the short term due to ICs that are in place on Site.

Per and Polyfluoroalkyl Substances (PFAS)

PFAS are a group of chemicals that are resistant to heat and water and have been used in many industrial applications and consumer products, such as carpeting, waterproofing, upholstery, fire-fighting foams, and metal plating. EGLE promulgated rules establishing MCLs for seven PFAS under the authority of the Michigan SDWA. Those rules went into effect on August 3, 2020. On April 10, 2024, the EPA announced the finalization of the National Primary Drinking Water Regulations for six PFAS, establishing MCLs for these six PFAS under the authority of the federal SDWA. This rulemaking became effective on July 8, 2024. The EPA's PFAS MCLs are generally more stringent than EGLE's PFAS MCLs. Michigan has not yet adopted federal standards.

Table 5: Federal and State PFAS MCLs expressed in parts-per-trillion (ppt).

Compound	EPA MCL (ppt)	EGLE MCL (ppt)
PFOA[1]	4	8
PFOS[2]	4	16
PFHxS[3]	10	51
PFNA[4]	10	6
HFPO-DA[5] (GenX)	10	370
PFBS[6]		420
PFHxA[7]		400,000
Mixture containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless)	

[1]PFOA = perfluorooctanoic acid
[2]PFOS = perfluorooctane sulfonic acid
[3]PFHxS = perfluorohexanesulfonic acid
[4]PFNA = perfluorononanoic acid
[5]HFPO-DA = hexafluoropropylene oxide dimer acid
[6]PFBS = perfluorobutanesulfonic acid
[7]PFHxA = perfluorohexanoic acid

Based on historical uses at the CIP PFAS sampling was conducted at select wells at the Site by EGLE in November 2021 and October 2022. The 2021 and 2022 sampling conducted by EGLE was not completed under an EPA-approved QAPP. Because of this, and because the EPA established more stringent PFAS MCLs in 2024, the EPA decided PFAS in groundwater at the CIP should be further investigated and requested that the LDFA sample for PFAS at monitoring wells near the Site under an EPA-approved QAPP. In May 2024, the LDFA agreed to sample for PFAS and began drafting a PFAS QAPP under which to complete this work. Because of the large amount of community interest in PFAS near the Sites and the discovery of three residential wells located within the Cadillac ordinance No. 2018-10 area, the LDFA decided to sample for PFAS in 2024 before the PFAS QAPP was approved by the EPA. The LDFA sampled 17 extraction wells in the CIP. Data from the LDFA and EGLE sampling are included as Appendix D, Attachment 6.

In August 2024, a homeowner located in the CIP sampled their well for PFAS and discovered PFOA in exceedance of EGLE MCL. After this discovery, in September 2024, MPART began the Cadillac Area of Interest PFAS investigation by sampling residential wells near the CIP for PFAS. Between October 2024 and February 2025, MPART sampled 84 residential wells. Of the 84 residential wells sampled, 11 residential wells exceeded EGLE MCL for PFOA, one exceeded EGLE MCL for PFOS, and 2 exceeded EGLE MCL for PFHxS. PFAS were detected below EGLE PFAS MCLs at 56 wells and results were non-detect at 15 wells (Figure 15, Appendix C). Results from the MPART investigation identified PFAS both side-gradient and upgradient from the Site in exceedance of EGLE's and/or the EPA's PFAS MCLs. The presence of PFAS at these locations indicates the Site is not the primary source of PFAS contamination in the surrounding residential wells.

The PFAS QAPP (Fleis & VandenBrink Engineering 2025b) has been approved and the LDFA will resample wells for PFAS to confirm the results from the previous sampling events. The EPA expects this sampling event to take place in fall 2025. The EPA anticipates that the fall 2025 sampling event will

confirm conclusions from the August 2024 Cadillac Area of Interest PFAS investigation by MPART that the Site is not the primary source of PFAS contamination in surrounding residential wells.

Changes in Exposure Pathways
As discussed, while the potential presence of two emerging groundwater contaminants, 1,4-D and PFAS should be assessed to determine if they are present at elevated concentrations, the principal exposure pathway has been largely eliminated through the implementation of the P&T system, monitoring, and ICs.

The Cadillac Municipal wellfield located in the CIP was shut off in January 2021. An updated groundwater flow survey in the CIP is needed to assess the impacts of closing the municipal well field. However, VOC sampling that was done off Site suggests the plume is adequately contained and ICs protect residents located within the plume boundaries. Otherwise, there have been no other land use changes at the Site, nor are any expected in the near future. No new human health or ecological routes of exposure or receptors have been identified or changed in a way that could affect the protectiveness of the remedy.

Expected Progress Towards Meeting RAOs
The remedy is progressing and is expected to meet all cleanup goals of the 1989 ROD within a reasonable time frame.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

No. There is no new information that has come to light that could impact the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations

Issues and Recommendations Identified in the Five-Year Review:

OU 1 and Sitewide	**Issue Category: Institutional Controls**			
	Issue: LTS procedures are not in place.			
	Recommendation: The LDFA should develop an ICIAP which includes a plan for: 1) IC evaluation activity; 2) taking corrective measures to existing ICs, if needed; 3) placing additional ICs, if needed; and 4) ensuring the LTS of the Kysor Site, which includes ongoing monitoring, maintenance, and enforcement of ICs.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	12/31/2028

OU 1 and Sitewide	**Issue Category: Monitoring**			
	Issue: 1,4-D may be present, particularly when 1,1,1-TCA is present because of the widespread use of 1,4-D as a stabilizer for 1,1,1-TCA. 1,1,1-TCA is a COC at the Kysor Site, however, 1,4-D screening has not been conducted.			
	Recommendation: Conduct 1,4-D sampling under an EPA approved QAPP and assess whether 1,4-D is associated with the Kysor Site. Continue monitoring where 1,4-D is present above appropriate screening levels.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	12/31/2026

OU 1 and Sitewide	Issue Category: Monitoring			
	Issue: Vapor intrusion (VI) has not been tracked on Site since the 2020 FYR.			
	Recommendation: The LDFA should evaluate the regular groundwater monitoring data with respect to VI screening criteria in the Cadillac Industrial Park to ensure that VI is not a potential exposure pathway.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	12/31/2027

OU 1 and Sitewide	Issue Category: Monitoring			
	Issue: PFAS have been detected in area groundwater, but PFAS sampling to-date have not been completed under an EPA-approved QAPP.			
	Recommendation: Conduct PFAS sampling under an EPA approved QAPP and assess whether PFAS are associated with the Site. Continue monitoring where PFAS are detected above appropriate screening levels.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	12/31/2026

OU 1 and Sitewide	Issue Category: Changed Site Conditions			
	Issue: Groundwater flow has not been studied since the municipal well field was moved.			
	Recommendation: Groundwater flow direction should be studied on and around the Kysor Site to determine whether or not moving the municipal well field impacted site hydrology.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	12/31/2027

OU 1 and Sitewide	Issue Category: Monitoring			
	Issue: Long term groundwater monitoring to assess quality of area groundwater has not occurred at the Site since 2020, as required by the ROD.			
	Recommendation: The LDFA should work with the EPA and the EGLE to approve the updated sampling and analysis plan, restart groundwater monitoring, and submit annual groundwater monitoring reports for regulatory review and approval.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	12/31/2027

OTHER FINDINGS

In addition, the following are recommendations that were identified during the FYR but do not affect current nor future protectiveness:

- Residential wells in the Cadillac ordinance No, 2018-10 area should be abandoned.

VII. PROTECTIVENESS STATEMENT

OU 1/Sitewide Protectiveness Statement

Protectiveness Determination:
Short-term Protective

Protectiveness Statement:
The remedy at the Kysor Site currently protects human health and the environment. The implemented remedy is functioning as intended and no complete exposure pathways are present that could result in unacceptable risks to human health or the environment. The P&T system is reducing concentrations of COCs in both aquifers, and ICs are in place in the form of local ordinances for the City and Haring Township which prohibit groundwater use. The remedy is on track to achieve RAOs within a reasonable timeframe. The existing site use is consistent with the RAOs set forth in the ROD. For the remedy to be protective in the long term, the following actions need to be taken to ensure protectiveness:

1. The City of Cadillac and Haring Township should develop an ICIAP which includes a plan for: 1) IC evaluation activity; 2) taking corrective measures to existing ICs, if needed; 3) placing additional ICs, if needed; and 4) ensuring the LTS of the Kysor Site, which includes ongoing monitoring, maintenance, and enforcement of ICs;
2. Complete revisions to the PFAS QAPP (which include 1,4-D as an analyte) necessary for the EPA approval and conduct the sampling event planned for fall 2025 to assess whether 1,4-D is present at and associated with the Kysor Site. Continue monitoring where 1,4-D is present above appropriate screening levels. 1,4-D should be added to the list of analytes for the City and Township during the next round of sampling. 1,4-D analysis should continue at locations where concentrations exceed Michigan and EPA residential drinking water screening levels;
3. The LDFA should continue to evaluate the regular groundwater monitoring data with respect to VI screening criteria in the Cadillac Industrial Park to ensure that VI is not a potential exposure pathway;
4. Complete revisions to the PFAS QAPP necessary for the EPA approval and conduct the sampling event planned for fall 2025 to assess whether PFAS are associated with the Kysor/Northernaire Sites. Continue monitoring where PFAS are detected above appropriate screening levels.
5. Groundwater flow direction should be studied on and around the Site to determine whether or not moving the municipal well field impacted site hydrology; and
6. The LDFA should work with the EPA and EGLE to approve updated sampling and analysis plan, restart groundwater monitoring, and submit annual groundwater monitoring reports for regulatory review and approval.

VIII. NEXT REVIEW

The next FYR report for the Kysor Industrial Corp. Superfund Site is required five years from the completion date of this review.

APPENDIX A–REFERENCE LIST

Record of Decision, Northernaire Plating Company, Wexfor County, Cadillc, Michigan, EPA, September 11th, 1985.

Michigan Ordinance No. 86-01 Water Ordinance (Ord. No. 86-01, Sect. 2.1), Charter Township of Haring, Wexford Co., 1986.

Cadillac Area Groundwater Contamination Remedial Investigation, E.C. Jordan. Co, 1988.

Record of Decision, Northernaire/Kysor Sites, EPA, September 29, 1989.

Explanation of Significant Differences, Northernaire/Kysor Sites, EPA, March 3, 1994.

Unilateral Administrative Order for Remedial Action, EPA, January 30, 1995.

Performance Monitoring Ploan for Northernaire/Kysor Sites remediation, Fishbeck, Thompson, Carr & Huber, Inc., April, 1995.

Operation & Maintenance Manual for Northernaire/Kysor Sites Remediation, Fishbeck, Thompson, Carr & Huber, Inc., April, 1995.

Ordinance No. 97-10, ch.25, sect. 2.300, Title II, Chpt. 24, City of Cadillac, 1997. See Fourth Five-Year Review.

Hydraulic Capture Zone Evaluation, S.S. Papadopulos and Associates, Inc., April 2007.

Third Five-Year Review Report, Kysor Industrial Corp. Site. Cadillac, Michigan, EPA, August 31, 2010.

Fourth Five Year Review Report, Northernaire Plating Superfund Site, EPA, September 17th, 2010.

Amendment to Michigan Ordinance No.86-01 Water Ordinance (12-1016), Charter Township of Haring, Wexford Co. October 30, 2012.

Amendment to Michigan Water Ordinance (2013-81)—Amendment to Ordinance No. 86-01, Charter Township of Haring, Wexford County, MI., June 10, 2013.

Fourth Five-Year Review Report, Kysor Industrial Corp. Site. Cadillac, Michigan, EPA, August 31, 2015.

Ordinance No. 2017-107: Water Ordinance, Charter Township of Haring, 2017.

2015 Annual Performance Monitoring Report, Cadillac Local Development Finance Authority, Tetra-Tech, 2017.

Authorization to Discharge under the National Pollutant Discharge Elimination System to the Clam River by the Cadillac Financing Authority GWCU (Permit No. MI0054925), State of Michigan, Department of Environmental Quality, June 2017.

New Well Location Report for the Charter Township of Haring Wellhead Protection Program, Gosling Czubak Engineering Sciences, Inc., September 2017,

Cadillac Ordinance No. 2018-10, City of Cadillac, September 4, 2018.

Site-Wide Ready for Anticipated Use (SWRAU), Kysor Industrial Corp. Site. Cadillac, Michigan, EPA, September 21, 2018.

2016-2019 Compendium Performance Monitoring Report, Cadillac Local Development Finance Authority, Tetra-Tech, 2020.

Fifth Five-Year Review Report, Kysor Industrial Corp. Site. Cadillac, Michigan, EPA, August 28, 2020.

2020 Performance Monitoring Report, Tetra Tech, June 2021.

Quality Assurance Project Plan, Fleis &VandenBrink Engineering, January, 2025a.

Quality Assurance Project Plan for the Sampling and Analysis of Per-and Polyfluoroalkyl Substances (PFAS) and 1,4-Dioxane, Fleis & VandenBrink Engineering, April, 2025b.

Zoning, City of Cadillac Michigan. April 23rd, 2025, City of Cadillac Zoning.

Planning and Zoning, Charter Township of Haring Cadillac, MI, April 23rd, 2025, Haring Township Zoning.

APPENDIX B – SITE CHRONOLOGY

EVENT	DATE
Kysor Corporation begins operations	1955
Disposal practices at Kysor include dumping barrels of spent solvent directly on the ground behind the plant	As early as 1955 (exact date unknown) to 1980s
Four Winns (Frisbie Street) begins operations	1975
A.H. Joynt begins operations	1977
Voluntary excavation of some soils from waste pits behind Kysor plant and from nearby property	July 22 and 23, 1981
Hydrogeological Study, Kysor of Cadillac, Inc.	March 1982 (Phase I) and August 1983 (Phase II)
MDNR inspection of Four Winns (Frisbie Street)	1986
Re-proposal of Kysor Site to NPL	June 24, 1988 (initially proposed in September 1985)
General notice letters and 104(e) requests sent	May 20, 1988
Feasibility Study for Cadillac area groundwater completed	August 1988
ROD (OU2) for groundwater cleanup signed	September 29, 1989
Final NPL listing	October 4, 1989
UAO issued for Remedial Design of OU2	May 16, 1990
Remedial Design Additional Studies report	October 1992
TCE detected above its MCL in City drinking well	1993
ESD signed	March 3, 1994
Two separate UAOs for RA issued (Kysor Corporation and Four Winns/A.H. Joynt)	January 30, 1995
Third UAO for RA issued (Northernaire Plating)	April 11, 1995
On-site construction for OU2 begins	June 29, 1995
Groundwater extraction and treatment begins	August 1996
Final inspection of RA construction by EPA	September 19, 1996
Construction Completion	January 24, 1997
First FYR completed	July 26, 2000
Second FYR completed	September 30, 2005
Approval for City of Cadillac to shut down SVE system	April 16, 2010
Third FYR completed	August 31, 2010
Fourth FYR completed	August 31, 2015
City amends Ordinance 97-10, now identified as Ordinance No. 2018-10	September 24, 2018

EPA issues Sitewide Ready for Anticipated Use determination	September 21, 2018
Fifth FYR completed	August 30, 2020
Sixth FYR Site Inspection Conducted	September 18th, 2024

APPENDIX C - FIGURES

SCALE 1:25000

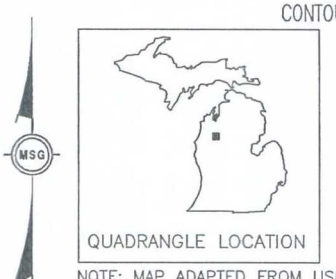
1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 3 METERS / SUPPLEMENTAL CONTOUR INTERVAL 1.5 METERS

NATIONAL GEODETIC VERTICAL DATUM OF 1929

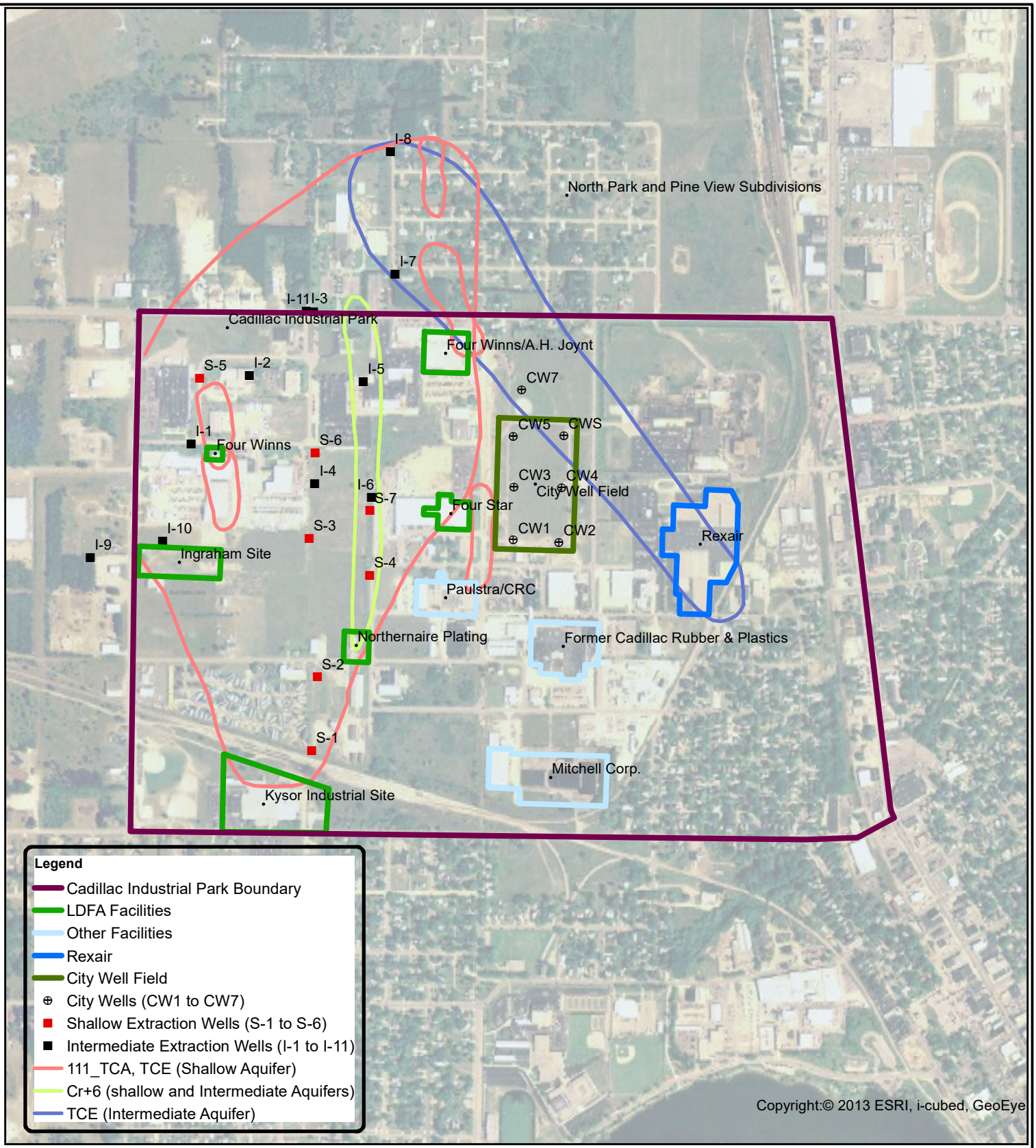


NOTE: MAP ADAPTED FROM USGS IN COOPERATION WITH THE STATE OF MICHIGAN. CADILLAC NORTH, PROVISIONAL EDITION (1983), DATUM IS MEAN SEA LEVEL, PHOTO COMPILED (1981), FIELD CHECKED (1981), EDITED (1983) QUADRANGLE 7.5 MINUTE SERIES.

Mannik & Smith Group, Inc.
2365 Haggerty Road South Canton, Michigan 48188
Telephone: (734) 397-3100

Figure 1

S:\Projects\Projects A-E\DEQA3\CAD\BASE\03-18-08_Revisions\DEQA3A_A_FIG1.dgn 3/19/2008 11:15:20 AM



Note: The illustrated generalized extent of groundwater contamination is based from the work of Weston (2003) and is illustrated soley for the purpose of spacial reference.

	DESIGNED BY: KVM	NORTHERNAIRE FINAL CLOSE OUT REPORT LDFA CADILLAC INDUSTRIAL PARK/CADILLAC, MI GENERAL EXTENT OF GROUNDWATER IMPACTS	FIGURE 2
	DATE: 6/22/2020		
	CHECKED BY: DRB		
	DATE: 6/26/2020		

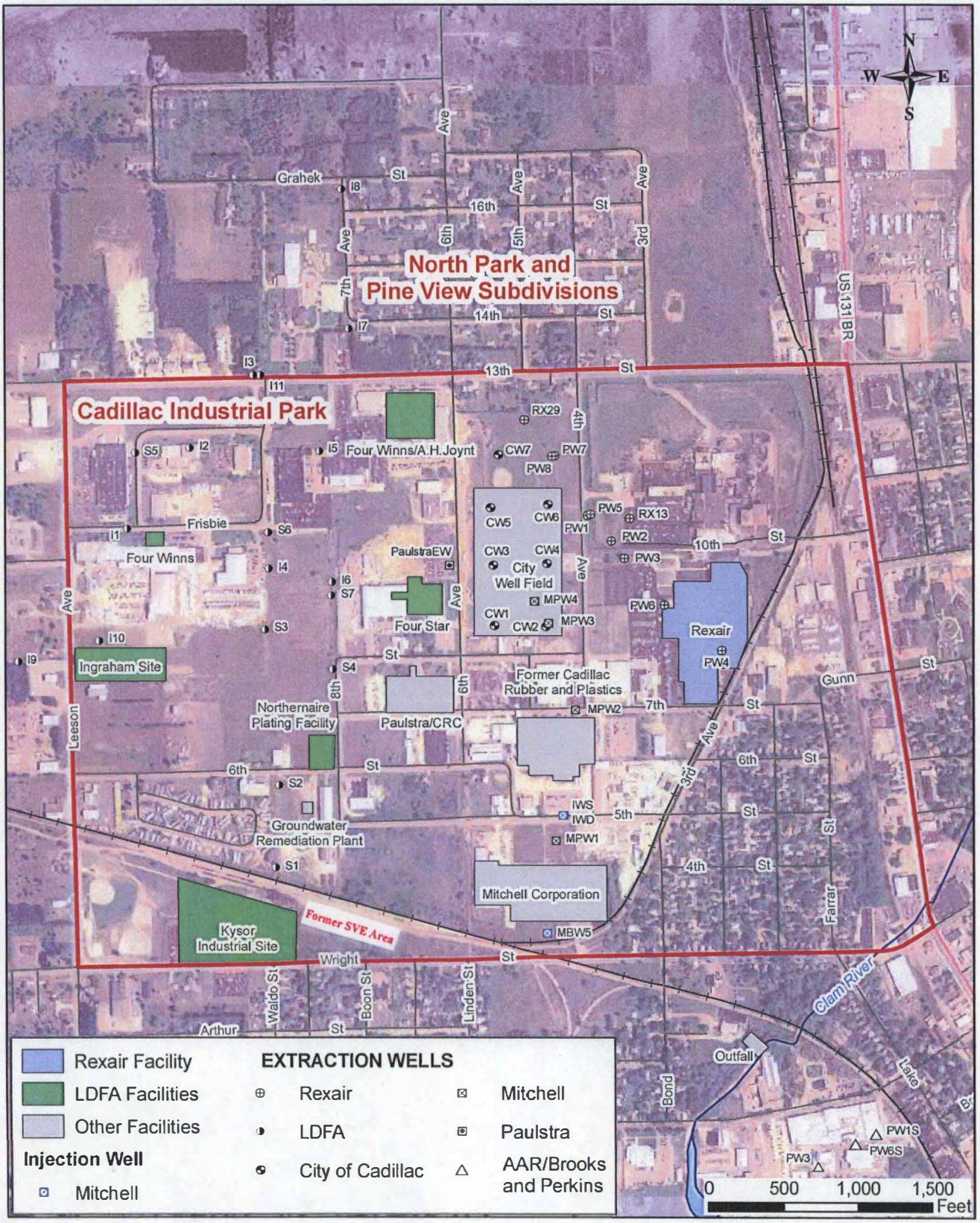


Figure 3 Cadillac Area Location Map

Figure 4: City of Cadillac Zoning Map

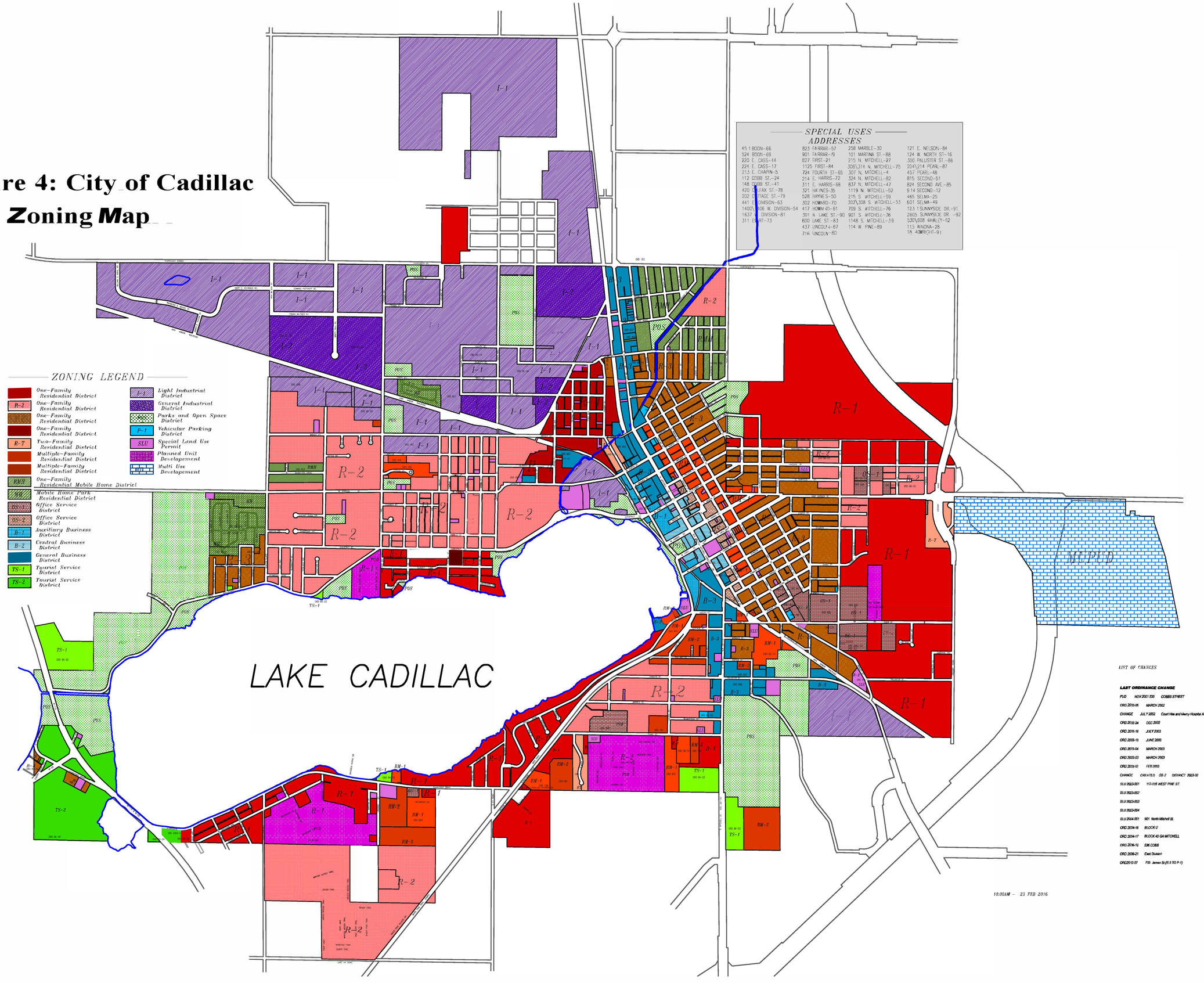


Figure 5: Haring Township Zoning Overlay

Legend

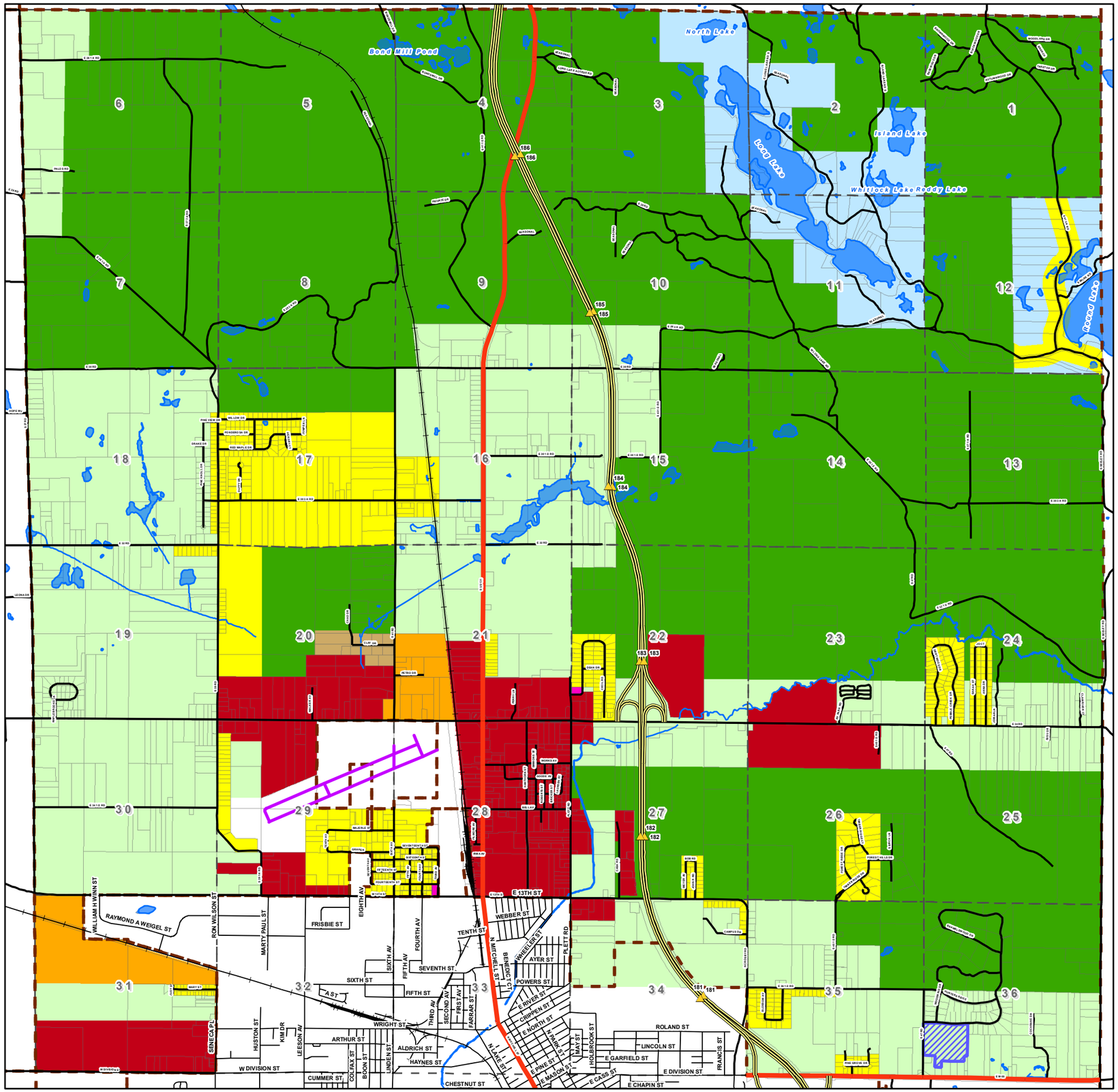
- Other Road
- State Highway
- Interstate Highway
- Mile Marker
- Railroad
- Airport Runway
- Hydrology
- Township Boundary
- Water Body
- Parcel Boundary
- AGRICULTURE
- COMMERCIAL
- FOREST/RECREATIONAL
- INDUSTRIAL
- LIGHT INDUSTRIAL
- OFFICE RESIDENTIAL
- RESIDENTIAL
- RESORT/LAKE
- PUD Overlay Zone

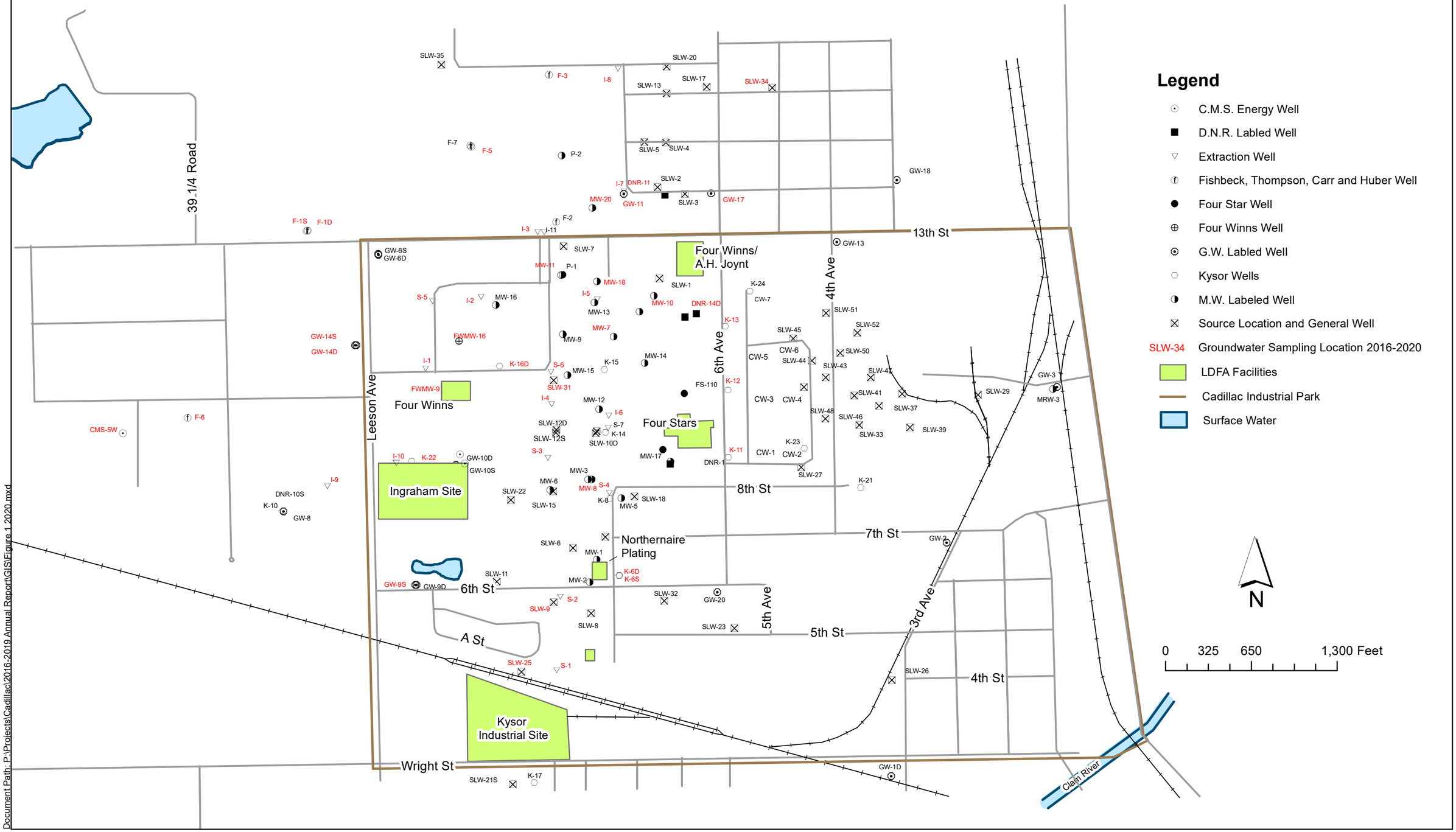
Adopted By the Haring Township Board of Supervisors.
Updated: July 15, 2016

0 3,075 6,150 Feet

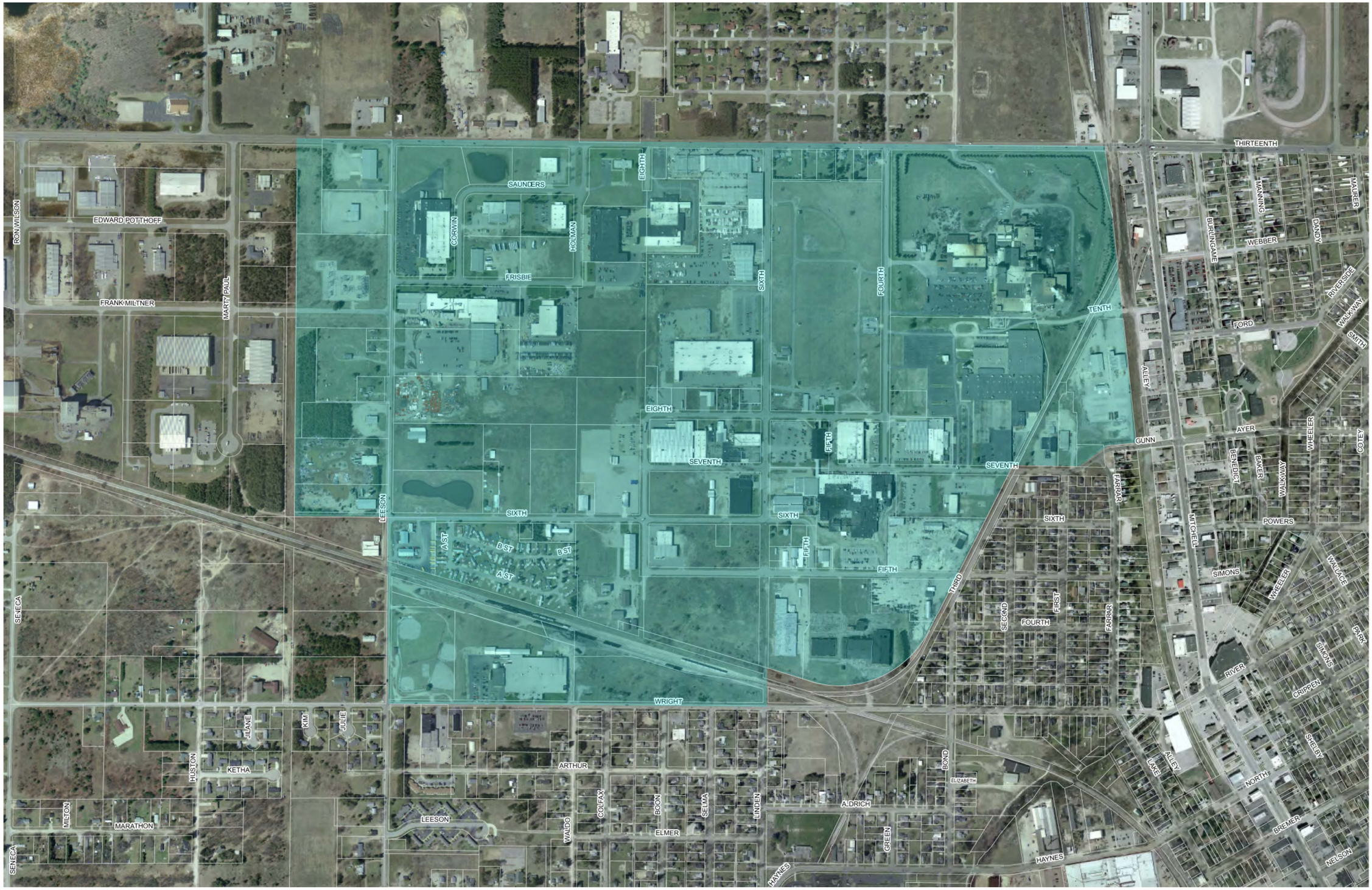
1 inch = 3,075 feet

All communities in Wexford County are zoned. Cedar Creek and Haring Townships, as well as all incorporated areas, maintain their own zoning ordinance. Please contact their zoning administrator for current information.



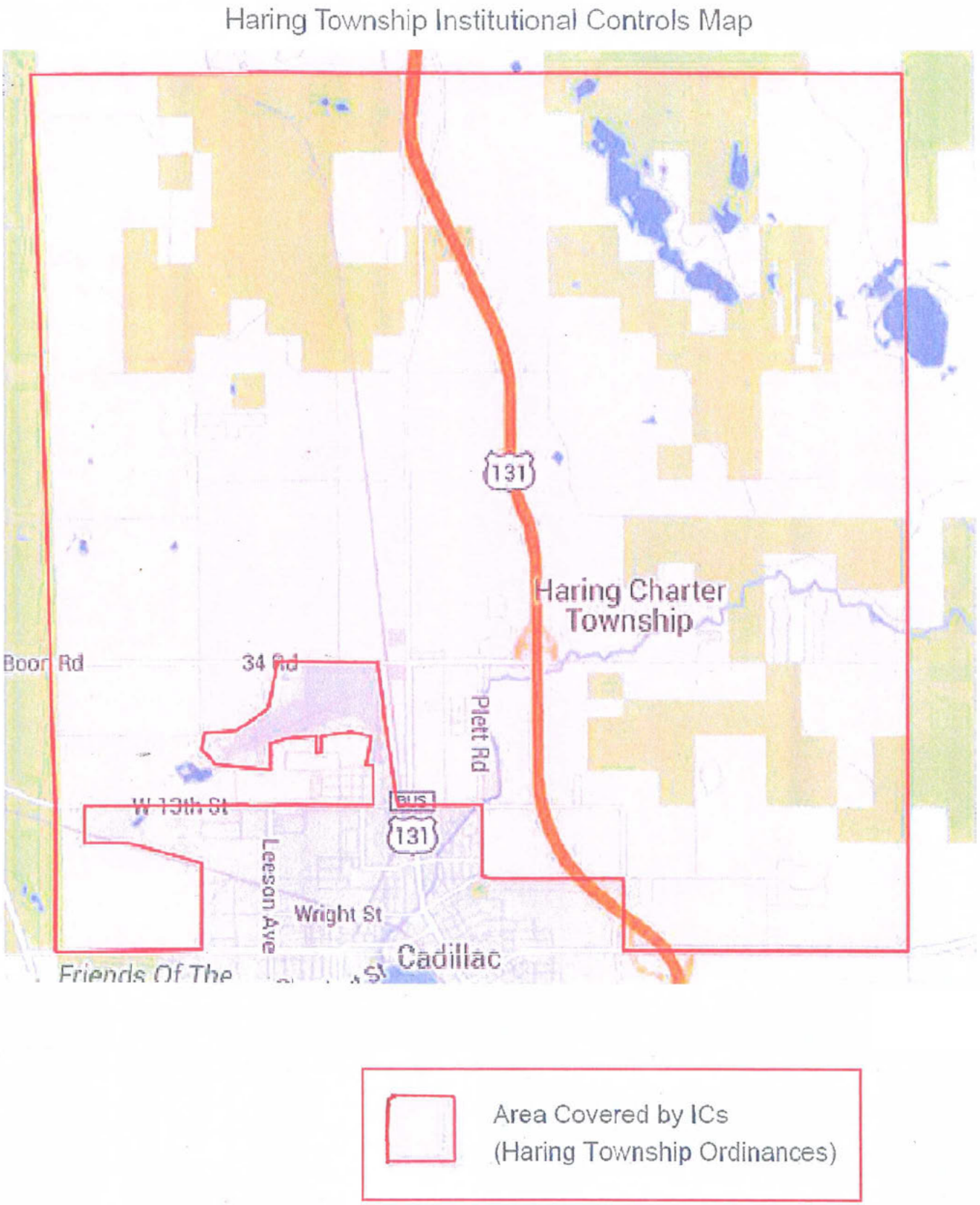


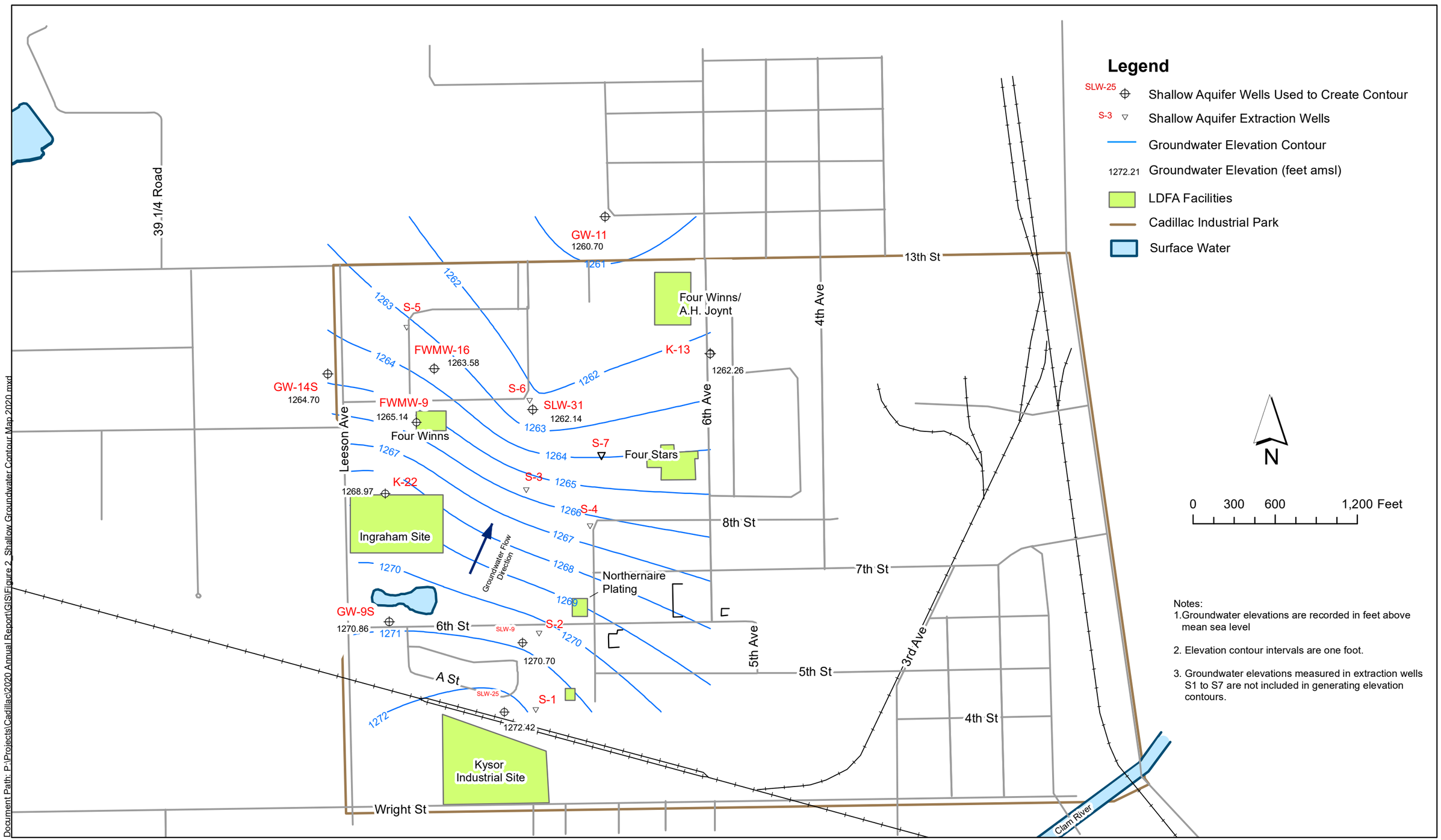
ORIGINAL: E. BAYS	2016 - 2019 COMPENDIUM PERFORMANCE MONITORING REPORT CADILLAC LDFA NORTHERNAIRE/KYSOR SITES CADILLAC, MICHIGAN
DATE: 7/9/2015	GROUNDWATER SAMPLING LOCATIONS
REVISED BY: J. MCFETERS	FIGURE 6
DATE: 03/18/2020	



	DATE: 8/16/18	FIGURE 7: CITY OF CADILLAC EXHIBIT A

Figure 8


Haring Township Institutional Controls Map
131
Haring Charter Township
Boon Rd
34 Rd
Platt Rd
W 13th St
BUS
131
Leeson Ave
Wright St
Cadillac
Friends Of The
Area Covered by ICs
(Haring Township Ordinances)



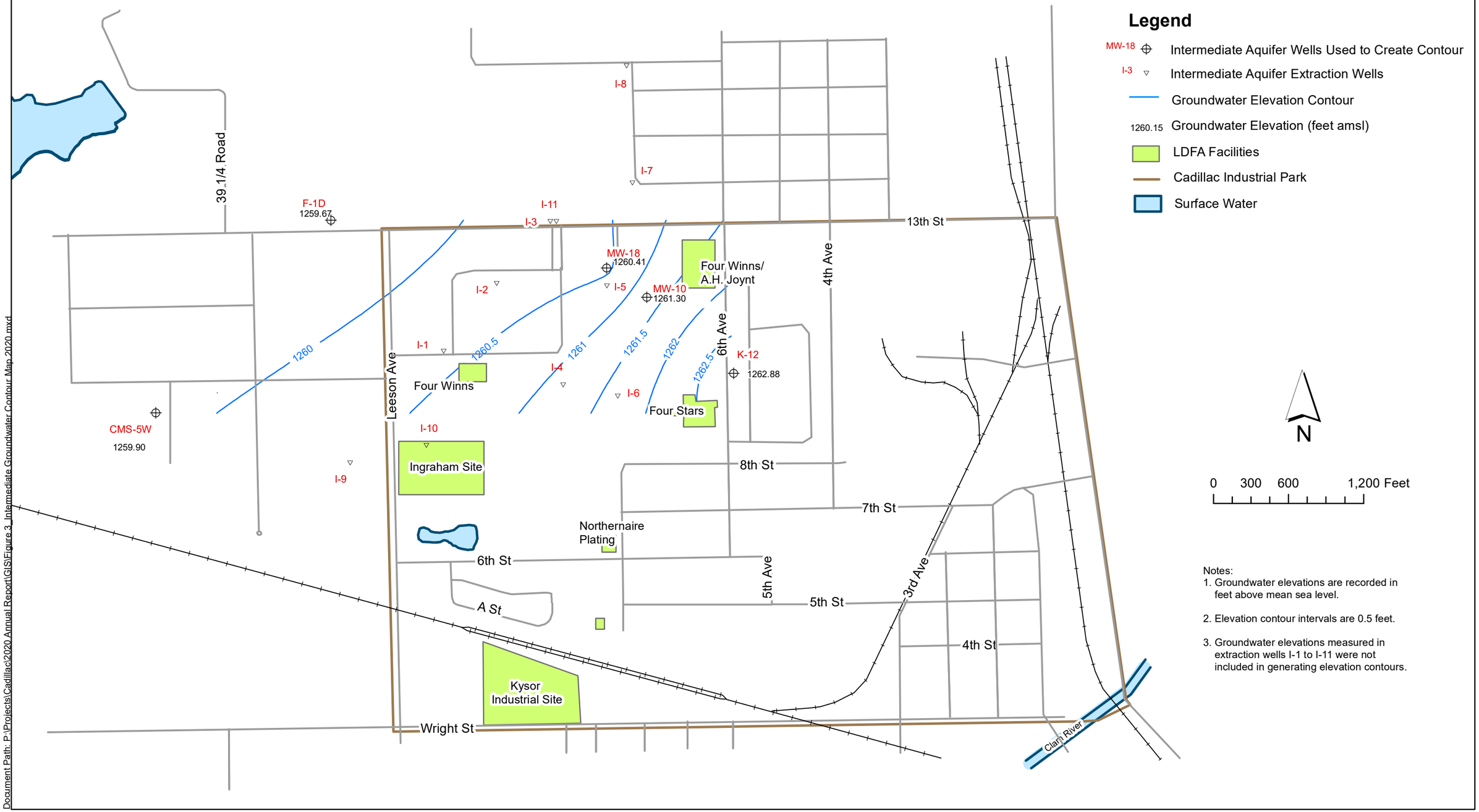
BASE MAP: CITY OF CADILLAC CADD DRAWING

ORIGINAL: E. BAYS	
DATE: 7/9/2015	
REVISED BY: J. MCFETERS	
DATE: 02/26/2021	

2020 PERFORMANCE MONITORING REPORT
CADILLAC LDFA NORTHERNAIRE/KYSOR SITES
CADILLAC, MICHIGAN

SHALLOW AQUIFER GROUNDWATER CONTOURS, JANUARY 2021

FIGURE
9



Notes:
1. Groundwater elevations are recorded in feet above mean sea level.
2. Elevation contour intervals are 0.5 feet.
3. Groundwater elevations measured in extraction wells I-1 to I-11 were not included in generating elevation contours.

Document Path: P:\Projects\Cadillac\2020 Annual Report\GIS\Figure 3_Intermediate Groundwater Contour Map 2020.mxd

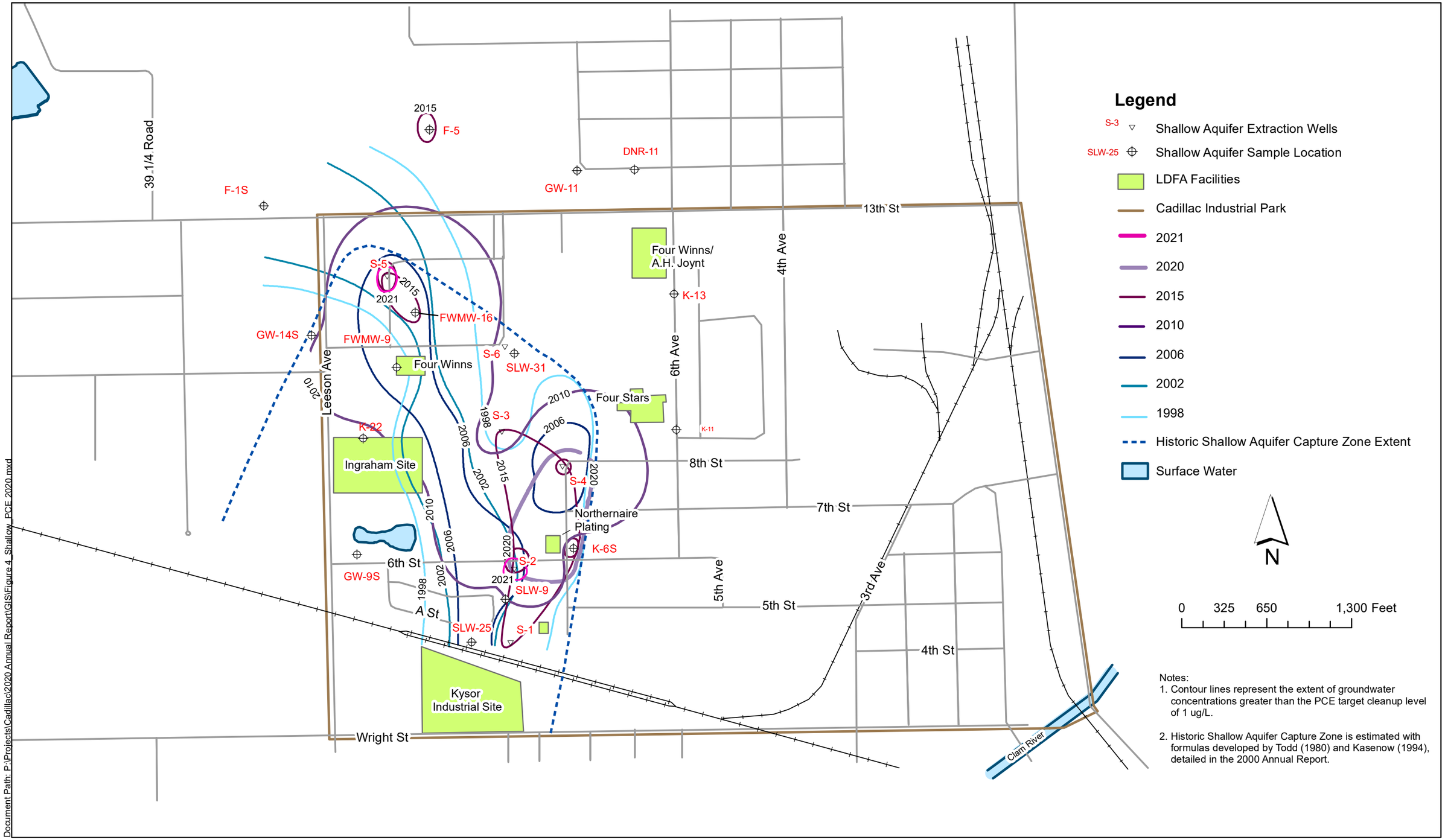
BASE MAP: CITY OF CADILLAC CADD DRAWING

ORIGINAL: E. BAYS	
DATE: 7/9/2015	
REVISED BY: J. MCFETERS	
DATE: 02/26/2021	

2020 PERFORMANCE MONITORING REPORT
CADILLAC LDFA NORTHERNAIRE/KYSOR SITES
CADILLAC, MICHIGAN

INTERMEDIATE AQUIFER GROUNDWATER CONTOURS, JANUARY 2021

FIGURE
10



Document Path: P:\Projects\Cadillac\2020 Annual Report\GIS\Figure 4_Shallow_PCE 2020.mxd

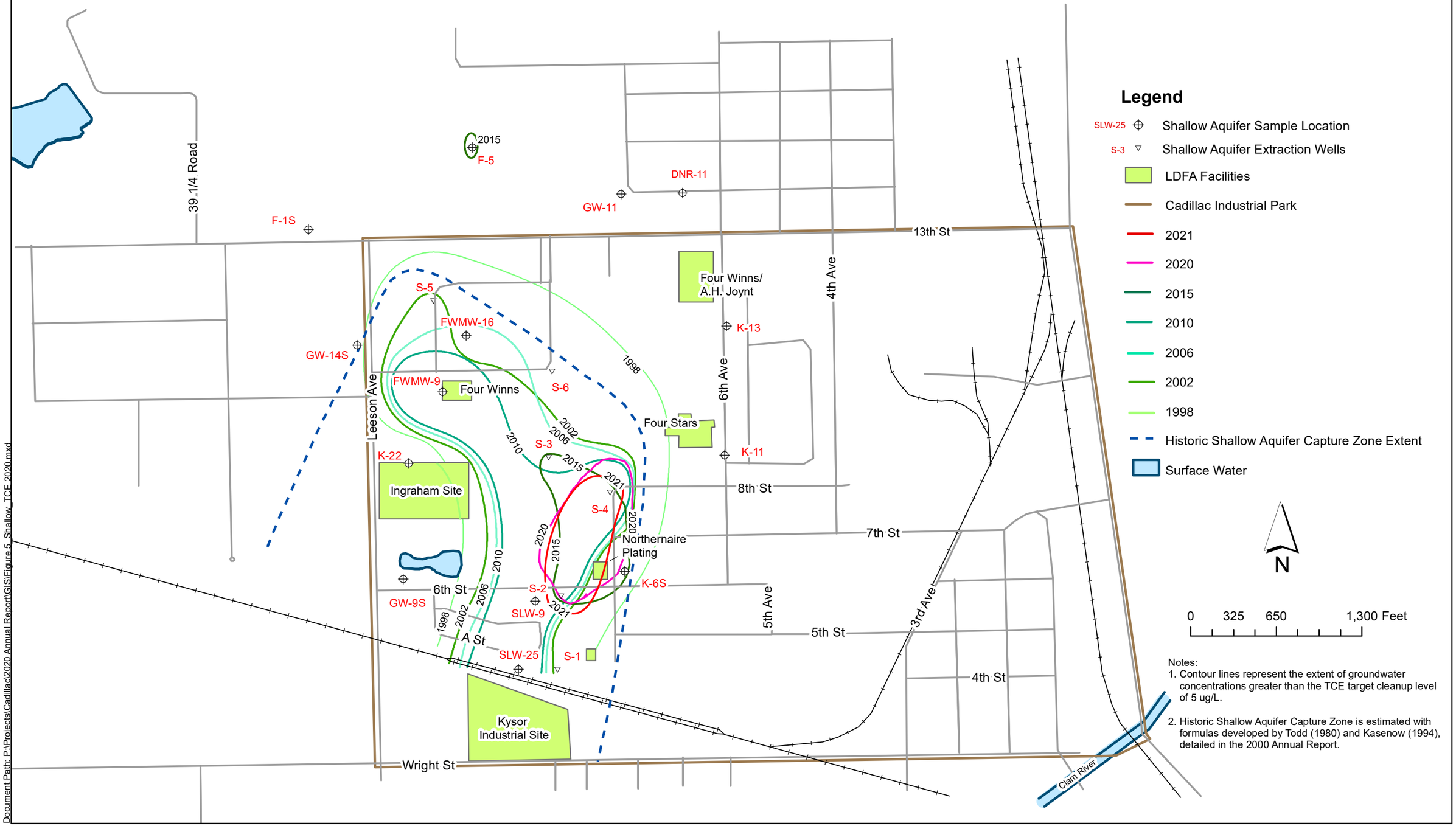
BASE MAP: CITY OF CADILLAC CADD DRAWING

ORIGINAL: E. BAYS	
DATE: 7/9/2015	
REVISED BY: J. MCFETERS	
DATE: 02/22/2021	

2020 PERFORMANCE MONITORING REPORT
CADILLAC LDFA NORTHERNAIRE/KYSOR SITES
CADILLAC, MICHIGAN

EXTENT OF TETRACHLOROETHENE IMPACTS IN THE SHALLOW AQUIFER FROM 1998-2021

FIGURE
11



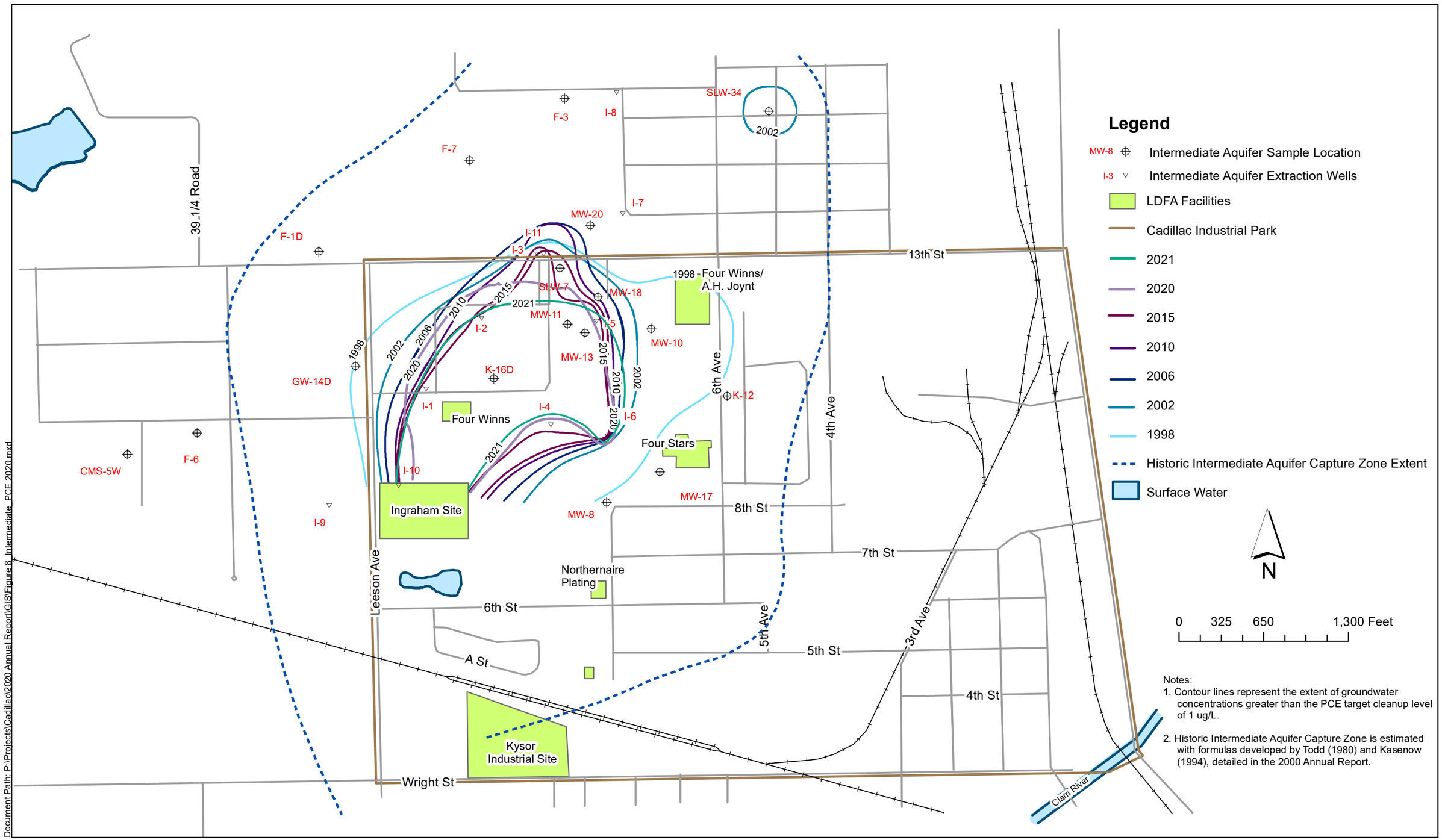
BASE MAP: CITY OF CADILLAC CADD DRAWING

ORIGINAL: E. BAYS	
DATE: 7/9/2015	
REVISED BY: J. MCFETERS	
DATE: 02/26/2021	

2020 PERFORMANCE MONITORING REPORT
CADILLAC LDFA NORTHERNAIRE/KYSOR SITES
CADILLAC, MICHIGAN

EXTENT OF TRICHLOROETHENE IMPACTS IN THE SHALLOW AQUIFER FROM 1998-2021

FIGURE
12



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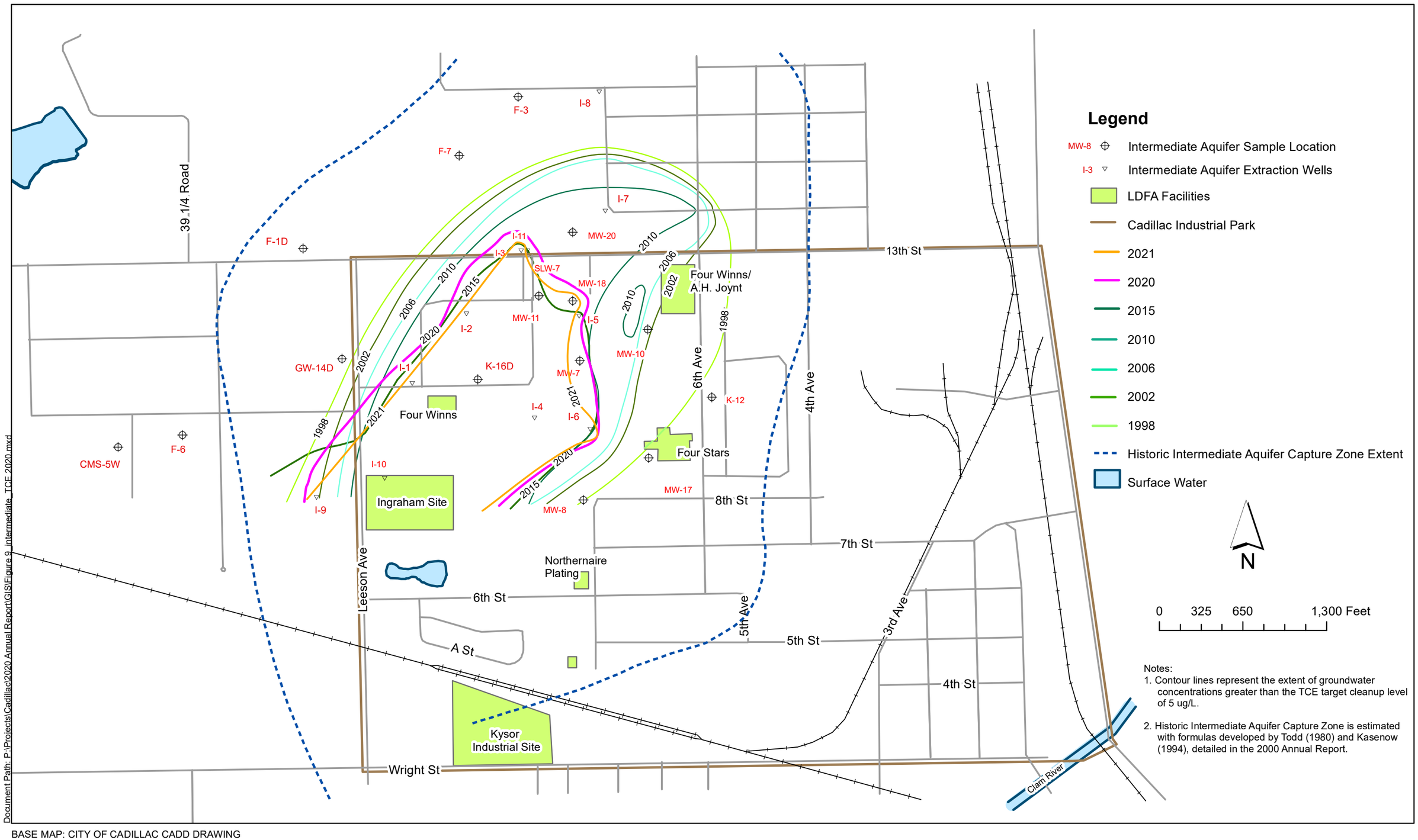
BASE MAP: CITY OF CADILLAC CADD DRAWING

ORIGINAL: E. BAYS	
DATE: 7/9/2015	
REVISED BY: J. MCFETERS	
DATE: 02/26/2021	

2020 PERFORMANCE MONITORING REPORT
CADILLAC LDFA NORTHERNAIRE/KYSOR SITES
CADILLAC, MICHIGAN

EXTENT OF TETRACHLOROETHENE IMPACTS IN THE INTERMEDIATE AQUIFER FROM 1998-2021

FIGURE
13



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BASE MAP: CITY OF CADILLAC CADD DRAWING

ORIGINAL: E. BAYS	
DATE: 7/9/2015	
REVISED BY: J. MCFETERS	
DATE: 02/26/2021	

2020 PERFORMANCE MONITORING REPORT
CADILLAC LDFA NORTHERNAIRE/KYSOR SITES
CADILLAC, MICHIGAN

EXTENT OF TRICHLOROETHENE IMPACTS IN THE INTERMEDIATE AQUIFER FROM 1998-2021

FIGURE
14

Rexair

Clam River

Kysor

Lake Cadillac

AECOM

Drawn: DP	Date: 3/12/2025
Approved: DB	Date: 3/12/2025
Project #: 60560354	

Legend

Sample Types
- Residential Wells Sample
- Cadillac Industrial Park Extraction Well
- Cadillac Industrial Park Monitoring Well

PFAS Criteria Heat Map
- No Detections of the Analyzed PFAS Substances
- One or more of the Analyzed PFAS Substances Detected
- One or more of the 7 PFAS Substances with Detections at or Above Michigan DWC

- Surface Water Body
- Proposed Additional Sampling Area
- Sampling Request Area
- Cadillac Industrial Park
- Area Evaluated, no wells
- LDFA Facility
- Rexair Facility
- Other Industrial Facilities

Michigan Drinking Water Criteria (DWC), ppt:
PFHxA = 400,000
PFOA = 8
PFNA = 6
PFBS = 420
PFHxS = 51
PFOS = 16
HFPO-DA = 370

N

0 1,600 3,200 Feet

FIGURE 15
PFAS CRITERIA HEAT MAP

CADILLAC INDUSTRIAL PARK
AREA OF INTEREST
WEXFORD COUNTY, MI

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APPENDIX D- Attachments

Attachment 1- City of Cadillac Groundwater Restriction Ordinance and Certification

Attachment 2- Haring Township Groundwater Restriction Ordinances

Attachment 3- Public Notice Announcing Start of Sixth-Year Review

Attachment 4- Site Inspection Checklist

Attachment 5- Photo Log

Attachment 6- PFAS/Site COC Data

Attachment 1

943505

City Council

200 North Lake Street
Cadillac, Michigan 49601
Phone (231) 775-0181
Fax (231) 775-8755

CITY OF CADILLAC MICHIGAN

ORDINANCE NO. 2018-10

ORDINANCE AMENDING CHAPTER 42, ARTICLE II, DIVISION 6 OF THE CADILLAC CITY CODE REGARDING INSTITUTIONAL CONTROLS FOR KYSOR INDUSTRIAL CORPORATION/NORTHERNAIRE PLATING COMPANY

THE CITY OF CADILLAC ORDAINS:

Section 1. Amendment of Chapter 42, Article II, Division 6

Chapter 42, Article II, Division 6 of the City Code entitled "Institutional Controls for Kysor Industrial Corporation/Northernaire Plating Company" is hereby amended to incorporate additional institutional controls on the Kysor Site restricting groundwater use to prevent exposures and identify the site as Unrestricted Use/Unrestricted Exposure. The section, as amended, shall read in its entirety as follows:

Sec. 42-164. - Purpose.

(a) The purpose of this division is for protecting the public health, welfare and the environment, and for implementing the remedial action plan at the site commonly known as the Kysor Industrial Corporation/Northernaire Plating Company Superfund Site.

Sec. 42-165. – Definitions.

(a) *Contaminated Groundwater* means groundwater in which there is present concentrations of materials that exceed drinking water criteria under the Safe Drinking Water Act, 1976 PA 399, as amended, or the residential drinking water criteria established by the MDEQ in the operational memoranda or rules promulgated pursuant to Part 201, Environmental Remediation (MCL 324.20101 *et seq.*).

(b) *Domestic Use* means the use of water by humans for drinking, cooking, food preparation and other food-related services, cleaning, washing, bathing and similar household-type water uses in any dwelling, or in any building in which commercial/business, governmental/public or industrial activities are conducted. The term does not include

water used solely for closed-loop heat pumps, non-contact cooling, production and/or processing purposes of commercial or industrial enterprises.

(c) *Irrigation use* means the use of water for lawn, garden or landscaping irrigation on a residential parcel of land. The term does not include water used for commercial, agricultural, or farm irrigation, except as specifically directed by the MDEQ.

(d) *MDEQ* means the Michigan Department of Environmental Quality or its successor agency.

(e) *Person* means any individual, partnership, corporation, association, club, joint venture, estate, trust, and any other group or combination acting as a unit, and the individuals constituting such group or unit.

(f) *Restricted Zone* means an area or areas described within Section 42-166 of this Ordinance for which the prohibition of Wells and the use of groundwater applies and includes parcels of lands that are legally described in the map attached as **Exhibit A**.

(g) *Well* means an opening in the surface of the earth for the purpose of removing fresh water through non-mechanical or mechanical means for any purpose other than a public emergency or conducting response actions that are consistent with the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended ("NREPA"), the Comprehensive Environmental Response, Compensation and Liability Act, 42 USC § 9601 *et seq.*, the Resource Conservation and Recovery Act, 42 USC § 6901 *et seq.,* and other applicable laws.

Sec. 42-166. – Restricted Zone.

The following described area(s) in the City shall be Restricted Zone(s) under this Division. Additional Restricted Zones may be added by amending this Ordinance.

(a) All land located in Township 22 North, Range 9 West, City of Cadillac, Wexford County, Michigan, described as follows:

(1) The East Quarter (E¼) of the Northwest Quarter (NW¼) of Section 32.

(2) The Northeast Quarter (NE¼) of Section 32.

(3) The North Half (N½) of the Southeast Quarter (SE¼) of Section 32.

(4) The Southwest Quarter (SW¼) of Section 33 lying North and West of the Tuscola-Saginaw Bay Railroad.

(5) The Northwest Quarter (NW¼) of Section 33, except the following: South of Gunn Street and Seventh Street which is East of the Ann Arbor Railroad; the property lying

East of the Pennsylvania Central Railroad; and also commencing as the Point of Beginning at the Southwest corner of Block 179 of the Improvement Board Addition; thence North to the Northwest corner of Block 188; thence East along the North line of Block 188 to the Northwest corner of Block 189; thence East along the North block line, 220 feet; thence South 71 feet; thence East 107.43 feet; thence North 71 feet; thence East 212.83 feet; thence South 16°2'30" East, 331.74 feet; thence South 3°28'30" East, 246.56 feet to the West right-of-way line of the Ann Arbor Railroad; thence Southwesterly along the West right-of-way line of the Ann Arbor Railroad to the Southeast corner of Block 177; thence West along the South line of Block 177 to the centerline of Third Avenue; thence North on the centerline of Third Avenue to the South line of Block 179 and Block 178, if extended; thence West to the Point of Beginning of the Improvement Board Addition, City of Cadillac, Wexford County, Michigan.

Hereafter referred to as the Kysor Industrial Corporation/Northernaire Plating Company Site (the "Site").

Sec. 42-167. – Prohibition.

Except as provided in Section 42-168, no person shall install or utilize, or allow, permit or provide for the installation or utilization of a Well in any Restricted Zone. Any existing Well at the time of the enactment of a Restricted Zone within the Restricted Zone shall be plugged/abandoned at the expense of an applicant for that particular Restricted Zone and as provided for in this Ordinance in accordance with applicable laws, regulations and ordinances, unless such existing Well falls within one of the exceptions provided in Section 42-168. Except as provided in Section 42-168, no person shall use any groundwater from a Restricted Zone.

Sec. 42-168. – Exceptions.

A person may install or utilize, or allow, permit or provide for the installation or utilization of a Well in any Restricted Zone if any of the following exceptions apply and the requirements of the exceptions are complied with. The party proposing an exception to the Well prohibition shall conduct all appropriate inquiry and prepare a due care analysis pursuant to Part 201 of NREPA:

(a) *Proof of No Influence*. If the MDEQ determines based on information provided to it by the person seeking an exception (1) that the use of a Well in the Restricted Zone will not exacerbate existing groundwater contamination, and (2) that the water from the proposed Well will not be affected by Contaminated Groundwater, the Well may be so used. The party proposing the exception shall deliver proof/notice of those determinations to the City prior to Well operation..

(b) *Groundwater Monitoring/Remediation*. A Well may be used for groundwater monitoring and/or remediation as part of a response activity approved by the MDEQ or the United

States Environmental Protection Agency (EPA). The party proposing the exception shall deliver proof of the MDEQ or EPA approval to the City prior to Well operation.

(c) *Construction Dewatering.* A Well may be used for construction dewatering upon approval by the MDEQ if the following conditions are satisfied:

(1) The use of the dewatering Well will not result in unacceptable exposure to Contaminated Groundwater, possible cross-contamination between saturated zones, or exacerbation of Contaminated Groundwater as defined in Part 201 of NREPA; and

(2) The water generated by that activity is properly handled and disposed of in compliance with all applicable laws, rules, regulations, permit and license requirements, and orders and directives of any governmental entity or agency of competent jurisdiction.

Any exposure, cross-contamination, or exacerbation caused by the use of the Well under this exception shall be the responsibility of the person operating the dewatering Well as provided in Part 201 of NREPA.

The party proposing the exception shall deliver proof/notice of MDEQ approval to the City prior to Well operation.

(d) *Processing Activities.* If the MDEQ determines that the use of a Well for non-contact heating, cooling, production, or processing involved in industrial, commercial or residential activities will not cause migration or exacerbation of Contaminated Groundwater, such use of the Well under terms and conditions specified by the MDEQ will be allowed. All information necessary for the MDEQ determination described in this subsection shall be provided by the person seeking this exception. Upon MDEQ approval, the party proposing the exception shall deliver proof/notice of those MDEQ determinations to the City prior to Well operation.

(e) *Public Emergencies.* A Well may be used in the event of a public emergency. Notice of such use shall be provided to the MDEQ within a reasonable time thereafter.

Sec. 42-169. – Enforcement.

The City Manager, or his/her designee, shall be the official having the authority to enforce this Ordinance. After the Effective Date of this Ordinance, the enforcement official shall contact all owners of Restricted Zone parcels, which appear to have Wells prohibited under this Ordinance, giving written notice of the need to cease using such Wells and of the need for (1) establishment of a Domestic Use and/or Irrigation Use water source by connecting to the City water system or (2) obtaining approval or acknowledgment of an exception under Section 42-168. The owner of a Restricted Zone parcel shall comply with the provisions of this Ordinance with regard to the provision of Domestic or Irrigation Use water within sixty (60) days from the date of such

notice. Any existing Well in violation of this Ordinance shall be plugged or abandoned in conformance with applicable legal requirements. Where, upon information available to the enforcement official, it is suspected that a Well is being used within the Restricted Zone in violation of this Ordinance, the enforcement official may inspect the Restricted Zone and serve appropriate notice and order of such violation requiring that action be taken promptly by the owner to bring the Restricted Zone in compliance. If the owner fails to act in accordance with such order, the enforcement official may seek remedies and penalties as provided in this Ordinance including, but not limited to, suspension or revocation of a previously granted exception.

Sec. 42-170. – Penalties.

Any person who violates any provision of this Ordinance shall be liable for a municipal civil infraction under Section 38-135 of the City's Code. In addition, the City may also seek an order from a court of appropriate jurisdiction requiring compliance with this Ordinance and may seek costs and attorney fees associated with such enforcement action. Any violation of this Ordinance is a public nuisance, subject to abatement, and any Well in violation of this Ordinance shall be immediately taken out of service and lawfully abandoned in compliance with applicable legal requirements. A court of competent jurisdiction may order any person violating any provision of this Ordinance to properly and lawfully remove or abandon a Well. **Sec. 42-171. – Administrative Liability.**

No officer, agent or employee of the City or member of the City Council shall render himself or herself personally liable for any damage which may occur to any person as a result of any act or decision performed in the discharge of his or her duties pursuant to this Ordinance.

Sec. 42-172. – Notice of Amendments/Repeal.

The MDEQ, an applicant, an owner, or any other interested party may request to add parcels or delete parcels from a Restricted Zone or to establish an additional Restricted Zone or to otherwise amend or repeal this Ordinance and shall provide thirty (30) days' advance notice to the MDEQ, including the reasons supporting such request. The City, upon thirty (30) days' advance notice to the MDEQ, EPA and any applicant, may also take action to amend or repeal this Ordinance as it deems appropriate. The City shall also notify the MDEQ, EPA and any applicant that this Ordinance may lapse at least thirty (30) days prior to the Ordinance being allowed to lapse.

Section 2. Validity and Severability.

Any section or subsection not expressly amended by this Ordinance shall remain in full force and effect. Should any portion of this Ordinance be found invalid for any reason, such holding shall not be construed as affecting the validity of the remaining portions of this Ordinance.

Section 3. Repealer.

All other ordinances inconsistent with the provisions of this Ordinance are hereby repealed but only to the extent necessary to give this Ordinance full force and effect.

Section 4. Effective Date

This Ordinance shall take effect twenty (20) days after its adoption.

Approved this 4th day of September, 2018.

Sandra Wasson

Sandra Wasson, Clerk

Carla J Filkins

Carla Filkins, Mayor

I, Sandra Wasson, City Clerk of the City of Cadillac, Michigan, do hereby certify that a summary of Ordinance No. 2018-10 was published in the Cadillac News on the 7th day of September, 2018.

Sandra Wasson

Sandra Wasson, City Clerk

TOWNSHIP BOARD
CHARTER TOWNSHIP OF HARING
WEXFORD COUNTY, MICHIGAN

ORDINANCE NO. 2017-107

WATER ORDINANCE

The Charter Township of Haring ordains:

1. ARTICLE I: DEFINITIONS

1.1. Definitions. In the interpretation of this ordinance, the following definitions shall apply unless the context clearly indicates otherwise:

(a) "Backflow" means water of questionable quality, wastes or other contaminants entering a public water supply system due to a reversal of flow.

(b) "Commercial user" means a person whose premises are used to offer services and/or products such as, for example, retail and wholesale stores, gasoline stations, restaurants, schools, churches, hotels, motels, nursing homes, private clubs, theaters and governmental buildings.

(c) "Commodity Charge". A periodic charge levied on Users for use of the Public Water System on the basis of water consumption. The charge represents a portion of (a) that User's proportionate share of the fixed and variable Cost of Operation and Maintenance and (b) the benefit to that User derived from the use of the Public Water System. The charge may include a debt service component, as necessary, to pay all or a portion of the principal, interest and administrative costs of retiring Public Water System indebtedness.

(d) "Connection Fee". The charge imposed by the Township to regulate the connection of a Water Service connection, either directly or indirectly, to the Public Water System. This fee represents (a) the proportional cost attributable to each Structure in which Water Service is provided to regulate access to the Public Water System and ensures that sufficient capacity exists to accommodate the additional use without overburdening the Public Water System or adversely affecting the ability of the Township to provide service to the Public Water System's existing and future customers; and (b) the benefit to the owner of a Structure to which Water Service is provided derived from the connection to the Public Water System. See also Direct Connection and Indirect Connection.

(e) "Cross-connection" means a-connection or arrangement of piping or appurtenances through which a backflow could occur.

(f) "Direct Connection". The connection of the Structure directly to the Public Water System in a manner such that the Premises served by the Water Service utilizes the existing watermain, and Water System components of the Public Water System.

(g) "Designated Agent" means person or persons that have been designated by the Township Board to act on behalf of the Township in enforcing and/or monitoring this Ordinance.

(h) "Domestic user" means a person whose premises are domiciles for single or multiple family use.

(i) "Indirect Connection". The connection of a Structure to a water system which is installed to applicable Township specifications and with Township approval that is:

(1) paid for by special assessment or private funds;
(2) serves multiple users; and
(3) is connected to the Public Water System and, after construction, turned over to the Township and becomes part of the Public Water System.
(4) For example, if a developer constructs a water system in a plat and connects the water system to the Public Water System, the connection of each lot in the plat would be an Indirect Connection.

(j) "Industrial user" means a person who operates a manufacturing or process facility that is engaged in producing a product.

(k) "Local distribution lines" means those pipes that serve only the abutting property within only one local service area.

(l) "Potable water" means water intended for human consumption or prolonged bodily contact that is free from impurities in amounts sufficient to cause disease or harmful physiological effects. Its bacteriological and chemical quality shall conform to the applicable requirements of the Federal Drinking Water Standards and to the regulations of District Health Department #10 and the Michigan Department of Environmental Quality.

(m) "Premises" means the lands included within the boundaries of a single description as set forth, from time to time, on the general tax rolls of the Township as a single taxable parcel of property, including all structures located thereon.

(n) "Public Water System or Water System". All Township or other publicly owned facilities and all subsequent additions and expansions, including wells, pumps, water treatment facilities, transmission and distribution mains, hydrants, storage tanks, meters, and all other facilities used or useful in the pumping, treatment, and distribution of public water to properties in the Township.

(o) "Readiness to Serve Charge". A periodic charge levied on a User based upon the size of the User's public water meter. The charge represents a portion of (a) that User's proportionate share of the fixed and variable cost of operation and maintenance of the Public Water System and (b) the benefit to that User derived from the availability of the Public Water System and the peak usage that User may demand from the Public Water System. The charge may include a debt service component, as necessary, to pay all or a portion of the principal, interest and administrative costs of retiring Public Water System indebtedness.

(p) "Secondary water supply" means a water supply system maintained in addition to a public water supply, including but not limited to water systems from ground or surface sources not meeting the requirements of Act No. 98 of the Public Acts of 1913, as amended, being Sections 325.201 to 325.214 of the Compiled Laws of 1948, or water from a public water supply which in any way has been treated, processed or exposed to any possible contaminant or stored in other than an approved storage facility.

(q) "Service Connection". The portion of the Public Water System which extends either to or onto the parcel of land adjacent to the path of the Public Water System, and includes the tee, valve, connector pipes, shut off valve, meter, and appurtenances, but not including the water piping on private property between the shut off valve and the Structure served.

(r) "Structure". A building in which toilet, kitchen, laundry, bathing, or other facilities which need or are required to have Potable water for use for domestic, commercial, industrial, or other purposes.

(s) "Submerged inlet" means a water pipe or extension thereto from a public water supply terminating in a tank, vessel, fixture or appliance which may contain water of questionable quality, waste or other contaminants and which is unprotected against backflow.

(t) "System" or "Water distribution system" means the Township water supply and distribution system to water service customers within the Township.

(u) "Township" means the Charter Township of Haring, Wexford County, Michigan.

(v) "Unit or Residential Equivalent Unit (REU)". A factor established for each type of User as shown on Appendix A, which is based upon an average daily Water usage of 200 gallons for one Unit and which represents the quantity of Water ordinarily required from the occupancy of a freestanding single-family residential dwelling by a single family of ordinary size and the benefit derived from the provision thereof. A listing of the relative relationships between the various Users of the Public Water System is hereby determined by the Township and set forth in Appendix A. The assignment of Unit(s) to a particular User shall be determined from time to time by the Township, based upon available information and investigation of the use to which the User's property is put. The assignment of Unit(s) for any use not enumerated in Appendix A shall, in the sole discretion of the Township, be based upon the most similar use enumerated in Appendix A.

(w) "User" means the owner, lessee or occupant of any premises connected to or served by the System.

(x) "Water connection" means that part of the water distribution system connecting the watermain at the curb stop with the premises served.

(y) "Watermain" means the primary and intermediate transmission and local distribution lines of the water distribution system.

2. ARTICLE II: CONNECTIONS

2.1. Water Connection Required.

(a) Connection Required. As a matter of public health, the owners of all improved premises in the Township that are used for human occupancy, employment, recreation, or other purposes, which require or need the use of potable water and which abut any right-of-way, easement, highway, street, alley, or public way in which there is located, or in the future may be located, an available watermain or local distribution line of the System, are hereby required, at the owners sole expense, to directly connect all buildings and structures on the premises used for said purpose(s) to the water distribution system, provided that said watermain or local distribution line is within 200 feet from the nearest point of a premises using or requiring potable water.

(1) A separate and independent Service Connection shall be provided for every building. Where, however, one building stands at the rear of another on an interior lot and no private water is available or can be constructed to the rear through an adjoining alley, court, yard, or driveway, the Service Connection from the front building may be extended to the rear building and the whole considered as one Building Service upon application to and approval by the Township. Other exceptions may be allowed only by special permission granted by the Township Board acting as the Board of Appeals in accordance with Article X of this Ordinance.

(2) Leased spaces within a common Structure may each have an independent Service Connection only if the provisions of section 4.3.a are met.

(3) Existing Structures that are connected to the Public Water System at the time of adoption of this Ordinance will not be required to modify an existing Service Connection to comply with section 2.1.a.1 unless the Structure undergoes a change in use, ownership, or as may be directed by the Township as required to protect public health.

(b) Connection Deadline. When connection to an available watermain or local distribution line is declared a necessity by the Township for the public health and welfare, or as required under this Ordinance, all such connections required hereunder shall be completed no later than 180 days after the last to occur of (i) the date the watermain or local distribution line becomes available to the premises, or (ii) the modification of a building so as to become a building using or requiring potable water. Newly constructed structures required to connect shall be connected prior to occupancy thereof. Notwithstanding the preceding, if the Township Board or Health Department requires completion of a connection within a shorter period of time for reasons of public health, such connection shall be so completed. Persons who fail to complete a required connection when required shall be liable for a penalty equal in amount to the Availability Charge and Commodity Charge that, based upon similarly situated Customers, the System would have accrued and been payable, effective upon the expiration of the connection period, had the connection been made as required.

(c) Enforcement in the Event of Failure to Connect to System. In the event a required connection is not made within the time provided by Subsection (b), the Township shall require the connection to be made immediately after notice given by first class or certified mail or by posting on the property. The notice shall give the approximate location of the available watermain or local distribution line and shall advise the owner of the affected property of the requirement and enforcement provisions provided by Township ordinance. In the event the required connection is not made within 90 days after the date of mailing or posting of the written notice, the Township may bring an action in court of competent jurisdiction for a mandatory injunction or court order to compel the property owner to immediately connect the affected property.

(d) Private Wells Prohibited. Except as otherwise provided by Section 2.1(e), private water wells are prohibited on premises connected to the System. Pre-existing private water wells located on premises that are to be subsequently connected to the System shall be abandoned prior to or upon physical connection of the premises to the System. Wells shall be abandoned in accordance with applicable state law and District Health Department #10 regulations. Residential premises serviced by a permitted private well shall be allowed to maintain their well and postpone connecting to the System until such time as their existing well fails. Once the private well fails the premises shall be required to connect to the System and abandon their existing well.

(e) Exceptions. Notwithstanding Section 2.1(d), private water wells may be maintained on premises that are connected to the System where (i) the premises maintains a closed geothermal heating system and the private well is an integral part of said system, or (ii) the premises is required by applicable federal or state law, regulation or order to monitor ground water on the premises, and the well is used for groundwater monitoring purposes only. Any such private well must be physically and completely separated from all plumbing used for potable water. All piping for a private water well is subject to the cross connection provisions of this Ordinance.

2.2. Service Connections:

(a) Permit Application. A connection to the Public Water System shall be made only by an authorized contractor or plumber upon written authorization and a connection permit issued by the Township. Prior to said connection, the property owner or his agent shall submit a permit application to the Township. This permit application shall be on a form furnished by the Township, an example or which is included in Appendix B, and shall be accompanied by payment of the applicable Connection Fee determined in accordance with Section 2.2.i, any civil penalty which has accrued, and the Inspection and Administration Fee, the plans and specifications of all plumbing construction within the Premises (when requested), and all other information required by the Township.

(b) Length of permits. Any water connection permit issued by the Township shall be valid for a period of three (3) years from the date of issuance. Following the expiration of the three (3) year period, a water connection permit may be continued to be held for as long as the holder of the permit pays a periodic ready to serve charge for all permitted but not yet active water use equivalents. The amount and frequency of the payment of such charges shall be established from time to time by resolution of the Township. The failure of a permit holder to make a ready to serve charge payment within 30 days of its due date will result in the revocation of the permit.

(c) Inspection. A connection permittee shall notify the Inspector 48 hours in advance of when the Water Connection and Service Connection are ready for inspection. The excavation shall be left open until inspection is complete. If the Inspector determines that the Water Connection and Service Connection have been constructed and installed in accordance with the requirements of the permit and this Ordinance, a water connection approval shall be issued and the Water Connection shall then be connected with the Public Water System under the observation of the Inspector.

(d) Plan review/inspection. If the Township determines that the standard application/inspection fees will not cover the actual costs for review of a water plan or inspection of a water connection, or that it is necessary or advisable to have any portion of the plan reviewed or inspected by other engineers or other consultants, then the applicant shall be required to pay the actual costs of this additional review or inspection. Such actual costs shall be billed to and paid by the applicant, and no occupancy permit shall be issued or maintained for the subject premises until such actual costs have been paid in full.

(e) Escrow deposit. The Township may require an applicant to deposit an amount equal to the estimated actual costs associated with the review of an application or an inspection. This amount shall be held in escrow in the applicant's name and may be used solely to pay the actual costs associated with the subject application or inspection. Any unexpended funds held in escrow shall be returned to the applicant, without interest. Any actual costs in excess of the

amount held in escrow shall be billed to the applicant and no occupancy permit shall be issued or maintained for the subject premises until such actual costs have been paid in full.

(f) Installation costs; Indemnification. All costs and expenses incidental to the installation of the Water Connection from the Building and the connection of the Water Connection to the Public Water System shall be borne by the owner of the property being connected. Any Person is authorized to install a Water Service Connection, subject to applicable building and plumbing codes and inspection in accordance with Section 2.2.c. Only an authorized contractor or plumber approved by the Township in accordance with Section 2.2.f.1 may connect the Water Connection to the Public Water System, subject to the requirements of this Ordinance, including inspection in accordance with Section 2.2.c. No such work shall be commenced before such owner obtains any necessary permission to work in the public right of way from the County Road Commission or MDOT, as the case may be. Said owner shall indemnify the Township from all loss or damage that may directly or indirectly be caused by the installation and connection of the Water Connection and the installation and connection of the Water Connection to the Public Water System.

(1) Contractor Requirements. Any Person desiring to construct a Service Connection or connect a Water Connection to a Service Connection or uncover, make any connection with or opening into, use, alter or disturb any Public Water or appurtenances thereof, must be approved by the Township. Approval may include placing a deposit with the Township, a cash bond or irrevocable letter of credit in the sum of $5,000, conditioned that he will faithfully perform all work with due care and skill, and in accordance with the laws, rules codes, and regulations established under the authority of the Township pertaining to water services and plumbing. This bond shall state that the Person will indemnify and save harmless the Township and the owner of the Premises against all damages, costs, expenses, outlays and claims of every nature and kind arising out of mistakes or negligence on his part in connection with the installation and/or connection as prescribed in this Ordinance. Such bond shall remain in force for the duration of the work, except that, upon completion, the bond shall remain in force as to all penalties, claims and demands that may have accrued thereunder prior to such expiration. The approval process shall also provide to the Township, evidence of public liability insurance insuring the interests of the Township, the property owner, and all Persons, for all damages caused by accidents attributable to the work, with limits of $100,000 for one (1) Person, $300,000 for bodily injuries per accident, and $100,000 for property damages.

(g) Change in use of premises. In the event there is an increase or change in the use of any particular multi-family, commercial, or industrial user's premises being served by the Public Water System, or a change in use from a single family residential use to another type of use, additional connection charges consistent with the new or increased use shall be assessed and shall be payable in the same manner as a water use charge when billed. This charge shall be based upon the difference of the then applicable connection charges for the new or increased use and the then applicable connection charges for the immediately preceding use.

(h) No refunds. There shall be no refund of any water connection charges paid to the Township under this ordinance or any predecessor thereof.

(i) Connection Fee. For a direct connection to the water system, a user shall pay a direct connection fee. For purposes of this section, a "direct connection" is a connection of the premises to a system watermain. For an indirect connection to the water system, a user shall

pay an indirect connection fee. For purposes of this section, an "indirect connection" is the connection of a premise to a watermain or local distribution line installed and paid for by the user. The direct connection fee and indirect connection fees shall be established in accordance with this section and as determined from time to time by resolution of the Township Board. The Connection Fee shall be determined based on the Residential Equivalent Unit table provided in Appendix "A" and the applicable direct or indirect connection charge per REU.

(j) Installment Payment of Connection Fee. The property owner may elect to pay the Connection Fee either by a single payment or in installments over a period not to exceed five (5) years. The property owner electing to pay by the installment method shall in writing agree to pay the Connection Fee in five (5) or fewer equal annual installments of principal, plus interest of ten percent (10%) per annum. Any annual installment, including interest due, not paid when due, from and after the date when due, shall be subject to a one-time four percent (4%) penalty charge, plus interest at the rate of seventy-five hundredths of one percent (0.75%) for each month or portion thereof payment is past due. In addition, interest at the rate of ten percent (10.0%) per annum shall continue to accrue on the entire amount of unpaid principal including any late installment subject to the penalties. The first installment shall be due and payable prior to the issuance of a connection permit.

(k) Meters. Water meters shall be installed by the Township, unless otherwise provided by resolution of the Township Board. The meter installation fee shall be established in accordance with this section and as determined from time to time by resolution of the Township Board. All meters and water connections shall be the property of the Township.

(l) Water Service. Water service will not commence until payment in full for the installation has been made to the Township. Construction of a water service line shall be done as expeditiously as possible after written notice to proceed, but the time for construction shall be at the convenience of the Township.

2.3. Institution of or Restarting Water Service. Written notice given not less than 48 hours in advance shall be made to the Township by the property owner and/or occupant of the premises when water service is desired to be activated. It shall be unlawful for any person to connect to or use water supplied by the Township without first giving notice as provided herein. The Township reserves the right to require that an amount of money equal to an anticipated bill for three months of water service be placed on deposit with the Township for the purpose of establishing or maintaining any customer's credit. No person, other than an authorized employee of the Township, shall turn on or off any water service, except that a licensed plumber may, with the prior express approval of the Township, turn on water service for testing his work (after which it must be immediately turned off) or upon receiving a written order from the Township; provided, that upon written permit from the Township, water may be turned on for construction purposes upon payment to the Township of the charges applicable thereto.

2.4. Meters. The Township reserves the right to determine the size and type of meter used. The Township reserves the right to require the installation of remote meter reading equipment. The cost of that equipment and its installation shall be charged to the user at the prevailing rates and actual cost of material and labor.

2.5. Access to Meters. The Township shall have the right to shut off the supply of water to any premises where the Township is not able to obtain access to the meter. Any qualified employee of the Township shall, at all reasonable hours, have the right to enter the premises where such meters are installed for the purpose of reading, testing, removing or inspecting the same and no person shall hinder, obstruct,

or interfere with such employee in the lawful discharge of his duties in relation to the care and maintenance of such water meter.

2.6. Curb Box. No person shall remove the cover from any curb box or place any dirt, stone or other obstruction in it or tamper with any meter or valve or commit any act tending to obstruct the use thereof.

2.7. Injury to Facilities. No person, except an employee of the Township in the performance of his duties, shall break, damage, destroy, uncover, deface or tamper with any structure, appurtenance or equipment which is a part of the water distribution system.

2.8. Reimbursement for Damage. Any damage which a meter may sustain resulting from carelessness of the owner, agent, or tenant or from neglect of either of them to properly secure and protect the meter, as well as any damage which may be wrought by frost, hot water, or steam backing from a boiler, shall be paid by the owner of the property to the Township on presentation of a bill therefor; and in cases where the bill is not paid, the water may be shut off and shall not be turned on until all charges have been paid to the Township.

2.9. Responsibility for Damages. The Township will not be responsible for any damages because of failures of or within the System, or actions by the Township to correct such failures.

2.10. Water Leakage. It shall be the responsibility of the owner to repair any leaks between the meter and the curb valve within 72 hours of notice by the Township or an additional fee shall be charged for water loss. Water leakage within the structure that is metered shall be billed and paid unless the leakage is due to a sudden, one time event and is reported to the Township within thirty (30) days.

2.11. Hydrant Use. No person, except an employee of the Township in the performance of his duties, shall open or use any fire hydrant, except in case of emergency, without first securing a written permit from the Township and paying such charges as may be prescribed by the Township.

2.12. Unlawful Connections. No person shall make a connection on a service line between the water meter and the street mains, or install a by-pass around the meter.

2.13. Cross-Connections Control. The Township shall eliminate and prevent all cross-connections pursuant to the plan submitted to and approved by the Department of Public Health, pursuant to the requirements of Sections 325.11401 through 325.11407 of the 1979 Michigan Administrative Code, as the same may be amended from time to time.

(a) Cross-Connections Prohibited:

(1) A cross-connection shall not be made between the water distribution system and a secondary water supply.

(2) A cross-connection shall not be made by submerged inlet.

(3) A cross-connection shall not be made between the water distribution system and piping which may contain sanitary waste or a chemical contaminant.

(4) A cross-connection shall not be made between the water distribution system and piping immersed in a tank or vessel which may contain a contaminant.

(b) Inspections. It shall be the duty of the Township to cause inspections to be made of all properties served by the public water supply where cross connections with the public water supply is deemed possible. The frequency of inspections and re-inspections based on potential health hazards involved shall be as established by the Township.

(c) Right of Entry. The representative of the Township shall have the right to enter at any reasonable time any property served by a connection to the water distribution system for the purpose of inspecting the piping system or systems thereof for cross-connections. On request, the owner, lessees or occupants of any property so served shall furnish to the Township any pertinent information regarding the piping system or systems on such property. The refusal of such information or refusal of access, when reasonably requested, shall be deemed evidence of the presence of cross connections.

2.14. Protection of Water Supply. The potable water supply made available on the premises served by the System shall be protected from possible contamination as specified by this ordinance and by the State of Michigan's and any other applicable plumbing codes. Any water outlet which could be used for potable or domestic purposes and which is not supplied by the water distribution system must be labeled in a conspicuous manner as water unsafe for drinking.

2.15. Discontinuance of Service. In the event a water customer desires water service to be discontinued, said customer shall so request in writing not less than 48 hours prior to time of such discontinuance of service is desired. The Township will not recognize the discontinuance of water service unless the provisions of the foregoing sentence have been fully met. Under any other circumstances, discontinuance of service will be charged to the customer at the actual cost of labor, materials and equipment. The Township may refuse or discontinue water service for any violation of any rule, regulation, or condition of service.

2.16. Shut off of Water. The Township reserves the right at all times (and will endeavor to give due notice) to shut off the water at the watermains or local distribution lines or to require reduced use or no use of the System for the purpose of making repairs or extensions or for other purposes. All persons having equipment on their premises and depending on water from the water-mains or local distribution lines are hereby cautioned against danger which might arise from emergency shutting off of water. In the event of such emergency, the Designated Agent may designate in any notice the extent of any regulation, limitation or prohibition and the date and time on which it shall take effect.

2.17. Additional Regulations. The Township Board may make and issue additional rules and regulations concerning the water distribution system, connections thereto, meter installations and maintenance, connection and meter installation fees, hydrants and watermains and the appurtenances thereto, not inconsistent herewith. Such rules and regulations shall be effective upon approval by the Township Board.

2.18. Other Laws. If any other ordinances of the County or Township or any statutes of the State of Michigan shall impose greater restrictions than herein set forth, then such ordinances or statutes shall control.

3. ARTICLE III: CONTROLLED USE

3.1. Limitation of Water Use. The Township Board, may regulate, limit or prohibit the use of water for any purpose. Such regulations shall restrict less essential water uses to the extent deemed necessary to assure an adequate supply for essential domestic and commercial needs and for fire fighting. No such regulation, limitation or prohibition shall be effective until twenty-four (24) hours after the publication thereof in a newspaper of general circulation in the Township, except in an emergency as may be deemed by the Designated Agent. In the case of such emergency the regulation, limitation or prohibition shall be and take effect as indicated by the Township Board and notice shall be given on a local radio station. Any person violating such rule or regulation shall, upon conviction thereof, be punished as prescribed in this ordinance.

4. ARTICLE IV: WATER RATES

4.1. Basis of Charges. Except as otherwise provided in this ordinance, all water service shall be charged for on the basis of water consumed as determined by the meter installed in the premises of water customers by the Township. No free water service shall be furnished to any person.

4.2. Water Rates and Charges.

(a) Water rates and charges shall be levied monthly against each premises having any water connection to the water distribution system.

(b) Said water rates and charges shall be based on the quantity of water used on or in the property, as measured by the water meter therein used, except as otherwise provided. If a meter cannot be read, an estimated charge will be made and adjustment, if necessary, will be made when the meter reading can be obtained. Rates and charges for users inside and outside the Township shall be in amounts to be established from time to time by the Township Board.

(c) Any charges remaining unpaid shall be charged against the real property on which the service was rendered, and may be spread on the next regular Township ad valorem property tax roll after the date on which such charge shall become due and payable, and shall become a lien of the same character and effect as the lien created by State of Michigan and County taxes, until paid,

4.3. Billing and Penalties and Remedies for Nonpayment or Late Payment.

(a) The owner of the premises serviced and the occupants thereof shall be jointly and severally liable for the water service provided to said premises.

A lien shall not attach for Water Rates and Charges to a Premises which is subject to a legally executed lease or land contract that expressly provides that the tenant (and not the landlord) of the Premises or a dwelling unit thereon shall be liable for payment of Water Rates and Charges, effective for services which accrue after the date an affidavit is filed by the landlord with the Township. This affidavit shall include the names and addresses of the parties, the expiration date of the lease and an agreement by the landlord to give the Township thirty (30) days written notice of any cancellation, change in or termination of the lease. The filing of the affidavit by the landlord shall be accompanied by a true copy of the lease and a security deposit in the amount equal to the Debt Service Charge and the User Charge for the preceding twelve (12) monthly billing periods or four (4) quarterly billing periods. Upon the failure of the tenant to pay the Water Rates and Charges when due, the security deposit shall be applied by the Township against the unpaid balance, including time price differential, interest and penalties. The tenant shall immediately make sufficient payment to the Township to cover the amount of the security deposit so advanced. Upon the failure of the tenant to do so within ten (10) days of said advance, the penalties, rights and remedies set forth in ARTICLE 6 shall be immediately applicable with respect to the unpaid Water Rates and Charges, including time price differential, interest and penalties. The security deposit shall be held by the Township without interest and shall be returned to the landlord upon proof of termination of the lease. In the case of land contract purchasers, the deposit shall be returned less any balance due when the service is discontinued or the purchaser obtains a deed for the premises.

(b) Bills for rates and charges as herein established shall be mailed to users monthly. All bills shall be payable on the 20th day of the month following the period of service and shall payable to the Township. If any bill shall not be paid by the 25th of the month in which it is due, a late charge of ten percent (10%) of the amount billed shall be applied to the current amount past due and collected

therewith. Late charges will not be compounded.

(c) Water service may be discontinued to any premises to enforce the payment of rates and charges after the user has been given the opportunity for a hearing before the Township Supervisor or his designated representative to show cause why service should not be discontinued. Services so discontinued shall not be restored until such time as all the rates, charges, and penalties are paid or satisfactory arrangements made for the payments thereof.

(d) Delinquent bills may be collected by any method authorized by the law including, without limitation, making such amounts due a lien on the premises served.

4.4. Meter Failure. If any meter shall fail to register properly, the Township shall estimate the consumption on the basis of former consumption and bill accordingly.

(a) Inaccurate Meters. A user may require that the meter be tested. If the meter is found accurate, a charge as set from time to time by the Township Board will be made. If the meter is found defective, it shall be repaired or an accurate meter installed and no charge shall be made.

(b) Accuracy Required. A meter shall be considered accurate if, when tested, it registers not to exceed two percent (2%) more to two percent (2%) less than the actual quantity of water passing through it. If a meter registers in excess of two percent (2%) more than the actual quantity of water passing through it, it shall be considered "fast" to that extent. If a meter registers in excess of two percent (2%) less than the actual quantity of water passing through it, it shall be considered "slow" to that extent.

(c) Bill Adjustment. If a meter has been tested at the request of a user and shall have been determined to register "fast," the Township shall credit the consumer with a sum equal to the percent "fast" multiplied by the amount of all bills incurred by said 'consumer, within the three (3) months prior to the test, and if a meter so tested is determined to register "slow," the Township may collect from the consumer a sum equal to the percent "slow" multiplied by the amount of the bills incurred by the consumer for the prior three (3) months. When the Township, on its own initiative, makes a test of a water meter, it shall be done without cost to the consumer, other than his paying the amount due the Township for water used by him as above provided, if the meter is found to be "slow."

5. ARTICLE V: WATER DISTRIBUTION LINES

5.1. Purpose of Rates and Charges. Charges for the installation of local water distribution lines of the water distribution system are hereby established for the purpose of recovering the costof construction, reconstruction, maintenance, operation and replacement of said local water distribution lines. Such charges shall be made in accordance with the provisions hereinafter set forth.

5.2. Local Distribution Line Installation Charges:

(a) Payment of Local Distribution Line Installation Charges. Whenever a watermain used for local distribution is constructed, except if pursuant to a special assessment project or if funded entirely by State or federal grants, the property owners whose property is served by the line and on which property the line is used by a commercial user, a domestic user or an industrial user shall pay their share of the cost of construction and installation as herein established at the time of construction. Any property owner requesting service who has not previously paid his share of the cost of constructing the watermain used for local distribution shall pay those costs as

established by the then effective resolution of the Township Board setting the local water distribution installation charges.

(b) Computation of Local Distribution Charges and Annual Review. The charge shall be known as the "front foot rate" and be determined by multiplying the rate per foot by the number of feet the property owner has fronting on the watermain used for local distribution. The front foot rate shall be as set from time to time by resolution of the Township Board. Following an annual review of the charges, the Township Board may change the charges to reflect the current cost of construction and installation of local distribution lines.

(c) Assessment of Charges. Upon completion of construction or at the time connection is requested (if this cost has not been paid at the time of construction), the Township shall certify the cost to be charged to the property owner. The Township shall bill the owner of the premises affected, advising him that the amount so billed is to be paid prior to connection to the local distribution line serving the property of said property owner.

(d) Deferral of Assessments. If the Township Board so decides, such installations and connections may be made at the expense of the System when the owner of the premises signs a written agreement agreeing to pay the expense of such installation' and connections upon terms agreeable to the Township Board and that the unpaid balance shall constitute a lien upon his property of the same character and subject to the same methods of collection as prescribed for special assessments.

5.3. Technical Standards. Materials and methods of construction of the Public Water System shall conform to the most current version of the "Water System Guidelines for Haring Township", attached as Appendix B which may be revised from time to time by a Resolution of the Board.

6. ARTICLE VI: ENFORCEMENT

6.1. Penalties for Violation of Ordinance. Whoever violates or fails to comply with any provision of this ordinance shall be fined up to Five Hundred Dollars ($500.00), imprisoned not more than ninety (90) days, or both. A separate offense shall be deemed committed each day during or which a violation or non-compliance occurs or continues. The Township Supervisor or the County Sheriff or his deputies may issue appearance citations for violations of this ordinance.

6.2. Civil Action. The Township may institute any action at law or equity to compel compliance with this ordinance or to collect amounts due under this ordinance. If such action is instituted the Township shall recover the costs and expenses incurred to bring and maintain the action including, without limitation, actual reasonable attorneys' fees.

6.3. Lien. All rates, fees and charges billed or due here-under including those due pursuant to section 6.2 hereof shall to the extent permitted by law be liens upon the premises served from the delivery of such service which shall be enforceable in the same manner as ad valorem property tax liens.

7. ARTICLE VII: REPEAL CLAUSE

7.1. All ordinances or parts of ordinances in conflict herewith are repealed to the extent necessary to give this ordinance full force and effect.

8. ARTICLE VIII: SEVERABILITY

8.1. If any section, clause, sentence or provision of this Ordinance is determined to be invalid, said invalidity shall not affect the validity of any other part of this Ordinance which can be given effect without such invalid part or parts.

9. ARTICLE IX: PUBLICATION; EFFECTIVE DATE

9.1. Publication. A true copy or a summary of this Ordinance shall be published in The Cadillac News, a newspaper of general circulation within the boundaries of the Township qualified under state law to publish legal notices within thirty (30) days after the adoption of the Ordinance by the Township. This Ordinance shall be recorded in the minutes of the Township Board of the meeting at which this Ordinance was adopted and, in addition, shall be recorded in the Ordinance Book of the Township.

9.2. Effective Date. This Ordinance shall be in full force and effect thirty (30) days after its publication as provided by law.

10. ARTICLE X: APPEALS

10.1. Informal Hearing. In order that the provisions of this Ordinance may be reasonably applied and substantial justice done in instances where this Ordinance is misapplied or unnecessary financial hardship would result from carrying out the strict letter of this Ordinance, an informal hearing before the Township Utilities Committee may be requested in writing by any Person deeming itself aggrieved by a citation, order, charge, fee, surcharge, penalty or action within ninety (90) days after the date thereof, stating the reasons therefore with supporting documents and data. The informal hearing shall be scheduled at the earliest practicable date, but not later than thirty (30) days after receipt of the request, unless extended by mutual written agreement. The hearing shall be conducted on an informal basis at the Township offices or at such place as designated by the Township Utilities Committee. The Township Utilities Committee may grant the appeal, reject the appeal or schedule a second informal hearing not more than thirty (30) days after the initial hearing to allow time for study or to gather additional information. The Township Utilities Committee shall issue a written statement of its decision within fifteen (15) business days after the informal hearing.

10.2. Board of Appeals. In order that the provisions of this Ordinance may be reasonably applied and substantial justice done in instances where this Ordinance is misapplied or unnecessary hardship would result from carrying out the strict letter of this Ordinance, the Township Board shall serve as a Board of Appeals. The duty of such Board shall be to consider appeals from the decision of the Township Utilities Committee and to determine, in particular cases, whether this Ordinance has been misapplied or any deviation from strict enforcement will violate the intent of the Ordinance or jeopardize the public health, safety or welfare. In all appeals, the appellant shall have the burden of proof.

10.3. Appeals from Informal Hearing. Appeals from the written decisions of the Township Utilities Committee may be made to the Township Board, acting as a Board of Appeals, within thirty (30) days from the date of the written decision of the Township Utilities Committee. Such appeal may be taken by any Person aggrieved. The appellant shall file a Notice of Appeal with the Township Utilities Committee and with the Board of Appeals, specifying the ground therefore. Prior to a hearing, the Township Utilities Committee shall transmit to the Board of Appeals a summary report of all previous action taken. The Board of Appeals may, at its discretion, call upon the Township Utilities Committee to explain the action. The final disposition of the appeal shall be in the form of a resolution either reserving, modifying, or affirming, in whole or in part, the appealed decision or determination. In order to find for the appellant, a majority of the Board of Appeals must concur. The Board of Appeals shall fix a reasonable time for the hearing of the appeal, give due notice thereof to interested parties, and decide the same within a reasonable time. Within the limits of its jurisdiction, the same Board of Appeals may reserve or affirm, in whole or in part, or may make such order, requirements, decision or determination as, in its opinion, ought to be made in the case under consideration, and to that end have

all the powers of the official from whom said appeal is taken. The decision of said Board of Appeals shall be final.

The Board of Appeals shall meet at such times as the Board of Appeals may determine. There shall be a fixed place of meeting and all meetings shall be open to the public in accordance with applicable laws. The Board of Appeals shall adopt its own rules or procedure and keep a record of its proceedings, showing findings of fact, the action of the Board of Appeals, and the vote of each member upon each question considered. The presence of four (4) members shall be necessary to constitute a quorum.

Board member Whetstone, seconded by Board member Olson, moved the adoption of the "Water Ordinance 2017-107"

YEAS: Board member(s) Soule, Scarbrough, McCain, Whetstone, Baldwin, Olson, Dewey

NAYS: Board member(s) None

ABSENT: Board member(s) None

Passed and adopted by the Township Board of the Charter Township of Haring, County of Wexford, Michigan on June 28, 2017

Robert Scarbrough, Supervisor
Charter Township of Haring

Attest:

Kirk Soule, Clerk

Charter Township of Haring

CLERK'S CERTIFICATE

I hereby certify that the foregoing is a true and complete copy of an Ordinance adopted by the Township Board of the Charter Township of Haring, County of Wexford, State of Michigan, at a meeting held on the 28th day of June, 2017, and that public notice of said meeting was given pursuant to Act No. 267, Public Acts of Michigan, 1976, including in the case of a special or rescheduled meeting, notice by posting at least eighteen (18) hours prior to the time set for said meeting.

I further certify that said Ordinance has been recorded in the Ordinance Book of the Township and such recording has been authenticated by the signatures of the Supervisor and the Township Clerk.

Kirk Soule

Kirk Soule, Township Clerk

Attachment 3

TNS

Atlanta fire rescue came to the aid of Hyde Manor residents Friday morning, Sept. 27, 2024.

Helene kills 21, unleashes floods and knocks out power to millions

BY BRIAN K. SULLIVAN
BLOOMBERG NEWS

Helene is triggering dangerous rain and flooding across the U.S. South, where it has killed at least 21 people and cut power to over 4 million customers after coming ashore in Florida as a major hurricane.

More than 5.2 million people face a moderate or high risk of excessive rain Friday as Helene, with winds of 35 miles per hour, pushes inland across North Carolina, said Scott Kleebauer, a forecaster at the Weather Prediction Center. The heaviest rain will now be shifting into Tennessee and Kentucky after pummeling portions of Georgia and the Carolinas.

The storm, which has weakened to a tropical depression, is forecast to stall out over the Tennessee Valley late Friday and stay there through the weekend as it merges with a larger weather system.

"This will be one of the most significant weather events to happen in the western portions of the area in the modern era," the National Weather Service said as the storm dumped rain across the southern Appalachian Mountains, where rivers have already begun flooding and could reach record heights.

Residents downstream of the dam at Lake Lure in western North Carolina were urged to leave their homes as officials feared the structure would give way and flood the valley, the weather service said. The lake was featured in the 1987 film "Dirty Dancing." Nearby Cove Creek has reached a record height.

"I would be surprised if there are not multiple" dam failures throughout the area, Brigadier General Daniel H. Hibner of the U.S. Army Corps of Engineers said at a briefing. "It's not uncommon to see a dam failure during an event like this."

TNS

A home at Harbor Lights Club mobile home park in Pinellas County in the aftermath of Hurricane Helene on Friday, Sept. 27, 2024.

There were at least 21 storm-related deaths, according to the Associated Press. Florida Gov. Ron DeSantis said late Thursday that the first fatality was in Tampa, where a sign fell into a car on the highway.

Utility giant Duke Energy Corp. reported nearly 1.7 million homes and businesses were without power in the Carolinas and Florida. The utility said the storm inflicted damage to about 23,000 locations on its system, including broken poles and downed electrical lines.

"We are still facing storm conditions in the Carolinas," said Duke Energy spokesman Jeff Brooks. "We are still seeing a lot of water and a lot of wind. We've had challenges accessing outages because of flooding and mudslides in the mountains."

In Atlanta, where a rare flash-flood emergency had been issued earlier, Peachtree Creek is at major flood stage and has risen by more than 21 feet since Wednesday. The Georgia city has seen nearly 8 inches of rain in the last two days and heavy showers will continue through midday.

Asheville had its rainiest-ever September day Thursday with a record 5.78 inches, the weather service said. The Swannanoa River at Biltmore reached a record crest Friday, rising more than 21 feet since Wednesday.

Helene came ashore late Thursday as a Category 4 hurricane on the five-step Saffir-Simpson scale, with 140 mile-per-hour winds, near the mouth of the Aucilla River in Florida's Big Bend region on its western coast. That's close to where Hurricane Debby struck in August and major Hurricane Idalia hit in 2023, the National Hurricane Center said.

The deadly storm has shuttered transportation, threatened crops and is so massive that rain could fall from Springfield, Illinois, to Myrtle Beach, South Carolina — a distance of more than 700 miles. Damages and losses may reach $25 billion, according to Chuck Watson, a disaster modeler with Enki Research.

Asian markets follow Wall Street higher on upbeat news from China, United States

BY ZIMO ZHONG
THE ASSOCIATED PRESS

HONG KONG — Stocks in Asia advanced on Friday, led by gains in Hong Kong and other Chinese markets fueled by China's moves to rev up its economy.

Japan's Nikkei 225 index was up more than 1% as the ruling Liberal Democratic Party conducted a leadership election that will determine who is Japan's next prime minister. The change in leadership is not expected to lead to any major policy shifts, given the similarities between the leading contenders.

China's central bank cut its reserve requirement for banks as of Friday as part of measures announced this week to help the property industry and support financial markets.

The Hang Seng in Hong Kong advanced 3.7% to 20,659.03 and the Shanghai Composite index jumped 2.1% to 3,065.29.

Meanwhile, the Shanghai Stock Exchange encountered glitches that hindered order processing and caused delays after the market opened on Friday. This led to a 6.4% increase in the Shenzhen index, as local media reported that investors flocked to that smaller market during the delay.

Trading returned to normal by noon, and the Shanghai Stock Exchange later said in a statement that it was still investigating the causes.

In the latest sign of the malaise hindering growth in the world's second-largest economy, the government reported that industrial profits fell nearly 18% year-on-year in August.

Shares of Hong Kong's property giant New World Development surged 21.5% on Friday trading after Adrian Cheng, the third-generation scion at the helm of the conglomerate, had been replaced. The firm reported an annual loss of over $2.4 billion in a profit warning last month, its first loss in nearly 20 years.

In Japan, the Nikkei 225 index edged 1.4% higher to 39,451.25 after Tokyo's consumer inflation, considered a leading indicator of nationwide trends, cooled to 2.2% year-on-year in September, in line with the market consensus.

Elsewhere in Asia, Australia's S&P/ASX 200 added nearly 0.1% to 8,208.70. South Korea's Kospi shed 0.2% to 2,666.01.

On Thursday, the S&P 500 added 0.4% to 5,745.37, setting an all-time high for the third time this week and the 42nd time this year. The Dow Jones Industrial Average gained 0.6% to 42,175.11, while the Nasdaq composite rose 0.6% to 18,190.29.

Micron Technology led the way with a jump of 14.7% after the maker of computer memory and storage products delivered stronger profit for the latest quarter than analysts expected. It benefited from sales related to artificial-intelligence technology, where a boom has helped drive some stocks to astounding heights.

Jabil climbed 11.7% after the electronics manufacturer likewise reported stronger profit and revenue than expected. It also announced a plan to plow cash to its shareholders by buying back up to $1 billion of its stock.

Wall Street roundup

Dow Jones Industrial Average

+137.89 (+0.3%)

Close	42,313.00

S&P 500

-7.20 (-0.1%)

Close	5,738.17

Nasdaq

-70.70 (-0.4%)

Close	18,119.59

Source: AP

Auction

Clare County Livestock Auction

Auction for Monday, Sept. 23:

Butcher Cattle: choice colored steers, $165 to $189.50; choice colored heifers, $150 to $180; good colored steers and heifers, $115 to $170; choice Holstein steers, $155 to $180; heavy bulls, $117 to $184; heifer cows, $125 to $135; commercial utility cows, $115 to $130; thin lean cows, $20 to $100; cow/calf pairs and bred females, $1300 to $1400. Feeder Cattle: colored feeder steers 500 pounds and under, $200 to $260; colored feeder steers 500 pounds and over, $150 to $250; colored feeder heifers 500 pounds and under, $200 to $310; colored feeder heifers 500 pounds and over, $150 to $280; Holstein feeder steers 500 pounds and under, $1525to $220; Holstein feeder steers 500 pounds and over, $150 to $200 colored feeder bulls 800 pounds and under, $100 to $220 Holstein feeder bulls 800 pounds and under, $100 to $175. Calves: heifer calves, $200 to $400; Beef calves 300 pounds and under, $300 to $590; calves 1, $350 to $490; calves 2, $250 to $350; calves 3, $100 to $225. Sheep and Goats: lambs, $140 to $160; ewes, $6 to $145; rams, $80 to $90; goats, $60 to $270. Hogs: butcher hogs (200-299 pounds), $50 to $105; fleshy sows, $35 to $45; boars and stags, $5 to $40; feeder pigs, $40 to $60; Hay and Straw: (77) 1st cutting hay (per bale), $3 to $4; (559) 2nd and 3rd cutting hay (per bale), $6 to $6.75; (20) straw (per bale), $3.50 to $3.50.

Upcoming Special Feeder Auctions Oct. 3, Nov. 7 and Dec. 5.

Public Notices

EPA BEGINS FIVE-YEAR REVIEW OF KYSOR INDUSTRIAL CORP. SUPERFUND SITE CADILLAC, MICHIGAN

The U.S. Environmental Protection Agency is conducting its sixth five-year review of the Kysor Industrial Corp. Superfund Site.

The Superfund law requires regular checkups of sites that have been cleaned up - with waste managed on-site - to make sure the cleanup continues to protect people and the environment. A summary of the cleanup activities and an evaluation of the protectiveness of the implemented cleanup remedies will be included in the five-year review report.

Cleanup actions at the site included extracting and treating contaminated groundwater, installing a soil vapor extraction (SVE) system to pull vapors out of contaminated soil, and limiting groundwater use at the site.

The review is expected to be completed in August 2025.

Site information is available at www.epa.gov/superfund/kysor-industrial.

You may comment on the site conditions and any concerns you have. Submit comments by June 1, 2025 to: Catherine Nield, EPA Remedial Project Manager, at nield.catherine@epa.gov or 312-353-6318; or Amelia Holcomb, EPA Community Involvement Coordinator, at holcomb.amelia@epa.gov or 312-886-6242.

CADILLAC WATER MAIN FLUSHING NOTICE

Water mains will be flushed, and fire hydrants inspected during the weekdays of Sept. 30th-Oct. 11th, 2024.

This activity will result in cloudy water in many areas which should clear up after running your cold water for a short period. Flushing will take place between 8 a.m. and 5 p.m. each weekday.

September 27, 28, October 4, 5

NOTICE OF PUBLIC ACCURACY TEST OF VOTING EQUIPMENT

Notice is hereby given that a Public Accuracy Test for the electronic equipment to be used in the City of Cadillac for the November 5, 2024 General Election is scheduled for October 1, 2024 at 9:15 a.m. at the following location:

City Municipal Complex
200 N. Lake Street
Cadillac, MI 49601

The Public Accuracy Test is conducted to demonstrate that the computer programming used to tabulate the votes cast at the election meets the requirements of Michigan Election Law.

Sandra L. Wasson, City Clerk, 200 N. Lake Street,, Cadillac, MI 49601, (231) 775-0181

September 28

LAKE CITY AREA SCHOOLS
SNOW PLOWING BIDS

Lake City Area Schools is accepting bids for snow plowing the following buildings: Middle/High School on Russell Street; Elementary School on Davis Road; Central Office/Transportation on Mitchell St. Contractor must have sufficient equipment to perform the work prior to 7:00 a.m. as well as equipment to remove the snow banks. Request for bid document available at www.lakecityschools.net or by calling 231-839-4333. Please submit bid to Lake City Area Schools, PO Box 900, 710 E. Mitchell St., Lake City, MI 49651, by Friday, October 11, 2024 at 1:00 p.m.

September 29, 30

MEETING OF ELECTION COMMISSION
October 1, 2024 • 9:00 a.m.

There will be a meeting of the City of Cadillac Election Commission on Tuesday, October 1, 2024 at 9:00 a.m. in the Municipal Complex, 200 N. Lake Street, Cadillac, Michigan for the purpose of approving the election inspectors for the November 5, 2024 General Election.

Individuals with disabilities requiring auxiliary aids or services in order to attend should notify the City Clerk at (231) 775-0181 within a reasonable time in advance of the meeting.

Sandra L. Wasson, City Clerk, 200 N. Lake Street, Cadillac, MI 49601, (231) 775-0181

September 28

Site Inspection Checklist

I. SITE INFORMATION	
Site name: **Kysor Industrial Corp.**	**Date of inspection:** **9/18/2024**
Location and Region: **Cadillac, MI Region 5**	**EPA ID:** **0502480**
Agency, office, or company leading the FYR: EPA	**Weather/temperature:** 80°F, sunny

Remedy Includes: (Check all that apply)

☐ Landfill cover/containment	☐ Monitored natural attenuation
☒ Access controls	☐ Groundwater containment
☒ Institutional controls	☐ Vertical barrier walls
☒ Groundwater pump and treatment	☐ Other: Click or tap here to enter text.
☐ Surface water collection and treatment	

Attachments:

☐ Inspection team roster attached	☒ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M Site Manager** — **Jeffery Dietlin, Director of Utilities for the City of Cadillac, 9/18/2024**

   Interviewed: ☒ at site ☒ at office ☐ by phone Phone Number: 231 779 7346

   Problems, suggestions: ☒ Report attached

   None reported

2. **O&M Staff** — **Derek Goodrich, O&M site manager, 9/18/2024**

   Interviewed: ☒ at site ☐ at office ☐ by phone Phone Number: 231 775 2841

   Problems, suggestions: ☒ Report attached

   None reported

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

   Agency: EGLE

   Contact: Brandi Wheeler, Project Manager, 9/18/2024, P: 231 878 8066

   Problems, suggestions: ☒ Report attached

   None reported

   Agency: EGLE

   Contact: Megan Cynar, SEMD Project Manager, 9/18/2024, P: 517 256 2681

   Problems, suggestions: ☒ Report attached

   None reported

4. **Other Interviews (optional):** ☒ Report attached

   (1) Brian Warner, board member of the Local Development Finance Authority (LDFA) (2) Patrick Miller, City of Cadillac O&M systems manager (3) Bill Barnet, Community member/activist

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

☒ O&M manual	☒ Readily available	☐ Up to date	☐ N/A
☒ As-built drawings	☒ Readily available	☐ Up to date	☐ N/A
☐ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A

Remarks: Click or tap here to enter text.

2. **Site-Specific Health and Safety Plan** ☒ Readily available

☐ Contingency Plan/Emergency Response Plan ☐ Readily available

Remarks: Click or tap here to enter text.

3. O&M and OSHA Training Records

☒ Readily available ☒ Up to date ☐ N/A

Remarks: Click or tap here to enter text.

4. Permits and Service Agreements

☐ Air discharge permit	☐ Readily available	☐ Up to date	☐ N/A
☒ Effluent discharge	☒ Readily available	☒ Up to date	☐ N/A
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A

☐ Other permits: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

5. Gas Generation Records

☐ Readily available ☐ Up to date ☒ N/A

Remarks: Click or tap here to enter text.

6. Settlement Monument Records

☐ Readily available ☐ Up to date ☒ N/A

Remarks: Click or tap here to enter text.

7. Groundwater Monitoring Records

☒ Readily available ☐ Up to date ☐ N/A

Remarks: Click or tap here to enter text.

8. Leachate Extraction Records

☐ Readily available ☐ Up to date ☒ N/A

Remarks: Click or tap here to enter text.

9. Discharge Compliance Records

☐ Air	☐ Readily available	☐ Up to date	☐ N/A
☒Water (effluent)	☒ Readily available	☒ Up to date	☐ N/A

Remarks: Click or tap here to enter text.

10. Daily Access/Security Logs

☐ Readily available ☐ Up to date ☒ N/A

Remarks: Click or tap here to enter text.

IV. O&M COSTS

1. O&M Organization

☐ State in-house ☐ Contractor for State

☐ PRP in-house ☐ Contractor for PRP

☐ Federal Facility in-house ☐ Contractor for Federal Facility

Remarks: Other: City of Cadillac and Contractor

2. O&M Cost Records

☐Readily available ☒ Up to date ☒ Funding mechanism/agreement in place

Original O&M cost estimate Click or tap here to enter text. ☐ Breakdown attached

Total annual cost by year for review period if available

From	To	Total cost	
Click or tap to enter a date.	Click or tap to enter a date.	Click or tap here to enter text.	☐ Breakdown attached
From	To	Total cost	
Click or tap to enter a date.	Click or tap to enter a date.	Click or tap here to enter text.	☐ Breakdown attached
From	To	Total cost	
Click or tap to enter a date.	Click or tap to enter a date.	Click or tap here to enter text.	☐ Breakdown attached
From	To	Total cost	
Click or tap to enter a date.	Click or tap to enter a date.	Click or tap here to enter text.	☐ Breakdown attached
From	To	Total cost	
Click or tap to enter a date.	Click or tap to enter a date.	Click or tap here to enter text.	☐ Breakdown attached

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons:

No unusual cost issues.

V. ACCESS AND INSTITUTIONAL CONTROLS

☒ Applicable ☐ N/A

1. Fencing Damaged ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: Click or tap here to enter text.

2. Other Access Restrictions ☐ Location shown on site map ☐ Gates secured

Remarks: Click or tap here to enter text.

3. Institutional Controls (ICs)

A. Implementation and Enforcement

Site conditions imply ICs not properly implemented	☐ Yes	☒ No	☐ N/A
Site conditions imply ICs not being fully enforced	☒ Yes	☐ No	☐ N/A
Type of monitoring (*e.g.*, self-reporting, drive by)	Self reporting		
Frequency	Click or tap here to enter text.		
Responsible party/agency	LDFA		
Contact: Jeff Dietlin, Director of Utilities, P: 231 779 7346			
Reporting is up-to-date	☐ Yes	☒ No	☐ N/A
Reports are verified by the lead agency	☐ Yes	☐ No	☒ N/A
Specific requirements in deed or decision documents have been met	☐ Yes	☒ No	☐ N/A
Violations have been reported	☒ Yes	☐ No	☐ N/A

Other problems or suggestions:

It was discovered that three homeowners were using private wells in the Cadillac Ordinance area. The ordinances prohibits the use of private wells for drinking water purposes. Some residents were not aware of the ordinance. An ICIAP should be developed by the LDFA to ensure ICs are functioning as intended.

B. Adequacy ☐ ICs are adequate ☒ ICs are inadequate ☐ N/A

Remarks: ICs are not properly enforced in Cadillac.

4. General

A. Vandalism/Trespassing ☐ Location shown on site map ☒ No vandalism evident

Remarks: Click or tap here to enter text.

B. Land use changes on site ☐ N/A

Remarks: The city well field was moved downgradient of site.

C. Land use changes off site ☒ N/A

Remarks: Click or tap here to enter text.

VI. GENERAL SITE CONDITIONS

1. Roads ☒ Applicable ☐ N/A

A. Roads damaged ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks: Click or tap here to enter text.

B. Other Site Conditions

Remarks: NA

VII. LANDFILL COVERS

1. Landfill Surface ☐ Applicable ☒ N/A

A. Settlement (Low Spots) ☐ Location Shown on Site Map ☐ Settlement Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Cracks ☐ Location Shown on Site Map ☐ Cracking Not Evident

Lengths: Click or tap here to enter text. Widths: Click or tap here to enter text. Depths: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

C. Erosion ☐ Location Shown on Site Map ☐ Erosion Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

D. Holes ☐ Location Shown on Site Map ☐ Holes Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

E. Vegetative Cover ☐ Grass ☐ Cover Properly Established

☐ Tress/Shrubs (indicate size and locations on a diagram ☐ No Signs of Stress

Remarks: Click or tap here to enter text.

F. Alternative Cover (armored rock, concrete, etc.) ☐ N/A

Remarks: Click or tap here to enter text.

G. Bulges ☐ Location Shown on Site Map ☐ Bulges Not Evident

Areal Extent: Click or tap here to enter text. Height: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

H. Wet Areas/Water Damage ☐ Wet Areas/Water Damage Not Evident

☐ Wet Areas ☐ Location Shown on Site Map Areal Extent: Click or tap here to enter text.

☐ Ponding ☐ Location Shown on Site Map Areal Extent: Click or tap here to enter

text.

☐ Seeps ☐ Location Shown on Site Map Areal Extent: Click or tap here to enter text.

☐ Soft Subgrade ☐ Location Shown on Site Map Areal Extent: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

I. Slope Instability ☐ Location Shown on Site Map ☐ Slope Instability Not Evident

☐ Slides Areal Extent: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

2. Benches ☐ Applicable ☒ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

A. Flows Bypass Bench ☐ Location Shown on Site Map ☐ N/A or Okay

Remarks: Click or tap here to enter text.

B. Bench Breached ☐ Location Shown on Site Map ☐ N/A or Okay

Remarks: Click or tap here to enter text.

C. Bench Overtopped ☐ Location Shown on Site Map ☐ N/A or Okay

Remarks: Click or tap here to enter text.

3. Letdown Channels ☐ Applicable ☒ N/A

(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

A. Settlement ☐ Location Shown on Site Map ☐ Settlement Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Material Degradation ☐ Location Shown on Site Map ☐ Degradation Not Evident

Material Type: Click or tap here to enter text. Areal Extent: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

C. Erosion ☐ Location Shown on Site Map ☐ Erosion Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

D. Undercutting ☐ Location Shown on Site Map ☐ Undercutting Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

E. Obstructions ☐ Location Shown on Site Map ☐ Undercutting Not Evident

Type: Click or tap here to enter text.

Areal Extent: Click or tap here to enter text. Size: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

F. Excessive Vegetative Growth ☐ Location Shown on Site Map ☐ Excessive Growth Not Evident

Areal Extent: Click or tap here to enter text. ☐ Vegetation in channels does not obstruct flow

Remarks: Click or tap here to enter text.

4. Cover Penetrations ☐ Applicable ☒ N/A

A. Gas Vents ☐ Active ☐ Passive

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled

☐ Good condition ☐ Evidence of leakage at penetration

☐ Needs Maintenance ☐ N/A

Remarks: Click or tap here to enter text.

B. Gas Monitoring Probes

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled

☐ Good condition ☐ Evidence of leakage at penetration

☐ Needs Maintenance ☐ N/A

Remarks: Click or tap here to enter text.

C. Monitoring Wells

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled

☐ Good condition ☐ Evidence of leakage at penetration

☐ Needs Maintenance ☐ N/A

Remarks: Click or tap here to enter text.

D. Leachate Extraction Wells

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled

☐ Good condition ☐ Evidence of leakage at penetration

☐ Needs Maintenance ☐ N/A

Remarks: Click or tap here to enter text.

E. Settlement Monuments ☐ Located ☐ Routinely Surveyed ☐ N/A

Remarks: Click or tap here to enter text.

5. Gas Collection and Treatment ☐ Applicable ☒ N/A

A. Gas Treatment Facilities

☐ Flaring ☐ Thermal Destruction ☐ Collection for Reuse

☐ Good condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

B. Gas Collection Wells, Manifolds, and Piping

☐ Good condition ☐ Needs Maintenance ☐ N/A

Remarks: Click or tap here to enter text.

C. Gas Monitoring Facilities (e.g. gas monitoring of adjacent homes or buildings)

☐ Good condition ☐ Needs Maintenance ☐ N/A

Remarks: Click or tap here to enter text.

6. Cover Drainage Layer ☐ Applicable ☒ N/A

A. Outlet Pipes Inspected ☐ Functioning ☐ N/A

Remarks: Click or tap here to enter text.

B. Outlet Rock Inspected ☐ Functioning ☐ N/A

Remarks: Click or tap here to enter text.

7. Detention/Sediment Ponds ☐ Applicable ☒ N/A

A. Siltation ☐ Siltation Not Evident ☐ N/A

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Erosion ☐ Erosion Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

C. Outlet Works ☐ Functioning ☐ N/A

Remarks: Click or tap here to enter text.

D. Dam ☐ Functioning ☐ N/A

Remarks: Click or tap here to enter text.

8. Retaining Walls ☐ Applicable ☒ N/A

A. Deformations ☐ Location Shown on Site Map ☐ Deformation Not Evident

Horizontal Displacement: Click or tap here to enter text.

Vertical Displacement: Click or tap here to enter text.

Rotational Displacement: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Degradation ☐ Location Shown on Site Map ☐ Deformation Not Evident

Remarks: Click or tap here to enter text.

9. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☒ N/A

A. Siltation ☐ Location Shown on Site Map ☐ Siltation Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Vegetative Growth ☐ Location Shown on Site Map ☐ N/A

☐ Vegetation Does Not Impede Flow

Areal Extent: Click or tap here to enter text. Type: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

C. Erosion ☐ Location Shown on Site Map ☐ Erosion Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

D. Discharge Structure ☐ Functioning ☐ N/A

Remarks: Click or tap here to enter text.

VIII. VERTICAL BARRIER WALLS

☐ Applicable | ☒ N/A

1. Settlement ☐ Location Shown on Site Map ☐ Settlement Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

2. Performance Monitoring Type of Monitoring: Click or tap here to enter text.

☐ Performance Not Monitored ☐ Evidence of Breaching

Frequency: Click or tap here to enter text. Head Differential: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

IX. GROUNDWATER/SURFACE WATER REMEDIES

☒ Applicable | ☐ N/A

1. Groundwater Extraction Wells, Pumps, and Pipelines ☒ Applicable ☐ N/A

A. Pumps, Wellhead Plumbing, and Electrical ☐ N/A

☒ Good Condition ☐ All Required Wells Properly Operating ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

B. Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances

☒ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

C. Spare Parts and Equipment ☐ Needs to be Provided

☒ Readily Available ☐ Good Condition ☐ Requires Upgrade

Remarks: Click or tap here to enter text.

2. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

A. Collection Structures, Pumps, and Electrical

☐ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

B. Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances

☐ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

C. Spare Parts and Equipment ☐ Needs to be Provided

☐ Readily Available ☐ Good Condition ☐ Requires Upgrade

Remarks: Click or tap here to enter text.

3. Treatment System ☒ Applicable ☐ N/A

A. Treatment Train (Check components that apply)

☐ Metals removal ☐ Oil/Water Separation ☐ Bioremediation

☒ Air Stripping ☐ Carbon Absorbers

☐ Filters Click or tap here to enter text.

☐ Additive (e.g. chelation agent, flocculent) Click or tap here to enter text.

☐ Others Click or tap here to enter text.

☒ Good Condition ☐ Needs Maintenance

☐ Sampling ports properly marked and functional

☐ Sampling/maintenance log displayed and up to date

☐ Equipment properly identified

☐ Quantity of groundwater treated annually Click or tap here to enter text.

☐ Quantity of surface water treated annually Click or tap here to enter text.

Remarks: Only one air stripper is currently in use.

B. Electrical Enclosures and Panels (properly rated and functional)

☐ N/A ☒ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

C. Tanks, Vaults, Storage Vessels ☐ N/A

☐ Proper Secondary Containment ☒ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

D. Discharge Structure and Appurtenances

☐ N/A ☒ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

E. Treatment Building(s)

☐ N/A ☒ Good condition (esp. roof and doorways)

☐ Needs repair ☐ Chemicals and equipment properly stored

Remarks Click or tap here to enter text.

F. Monitoring Wells (Pump and Treatment Remedy) ☐ N/A

☐ Properly secured/locked ☐ Functioning

☐ Routinely sampled ☐ All required wells located

☐ Good condition ☒ Needs Maintenance

Remarks Some monitoring wells are damaged, missing, or not secure. An updated well survey is needed.

4. Monitoring Data

A. Monitoring Data:

☐ Is Routinely Submitted on Time ☐ Is of Acceptable Quality

Data has not been submitted since 2020.

B. Monitoring Data Suggests:

☐ Groundwater plume is effectively contained ☒ Contaminant concentrations are declining

5. Monitored Natural Attenuation

A. Monitoring Wells (natural attenuation remedy) ☐ N/A

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled

☐ All required wells located ☒ Needs Maintenance ☐ Good condition

Remarks: Required groundwater monitoring data has not been submitted since 2020.

X. OTHER REMEDIES

None

XI. OVERALL OBSERVATIONS

1. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy is designed to pump and treat contaminated groundwater and discharge treated water into the Clam River. Groundwater monitoring has not been complete since 2020. The required annual monitoring needs to be restarted to confirm the remedy is functioning as intended.

2. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

Monitoring wells are damaged, missing, or not properly secured. An updated well inventory is needed.

3. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

PFAS was recently discovered at low levels on Site. Please refer to the main text of the FYR documents for a discussion on PFAS.

4. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Please refer to the main text of the FYR document for discussion on optimization.

Attachment 5

PHOTOGRAPH LOG

Site Name: Kysor Industrial Corp**.**

Site Address, City, State, Zip: 1100 Wright Street Cadillac, MI 49601

Facility EPA ID#: 0502480
Date: 9/18/2024
Photographer: Amelia Holcomb and Catherine Nield
Type of Camera: Sony Cyber Shot, Cam #1

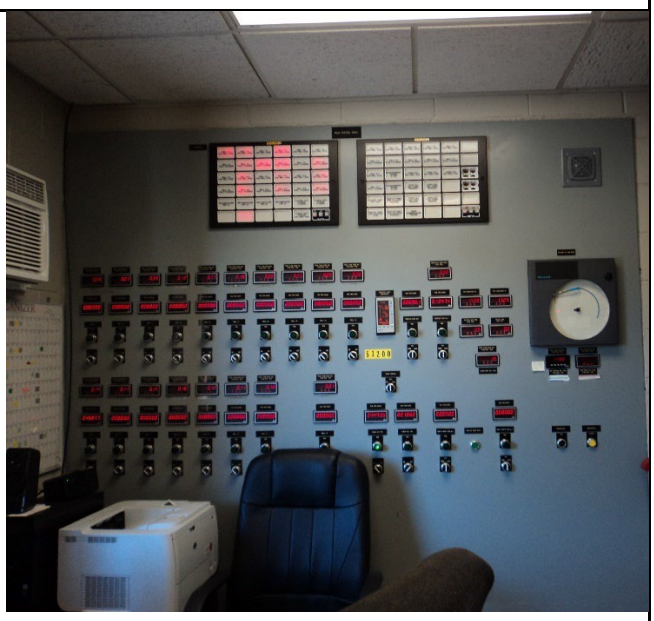
Digital Recording Media: Flashcard

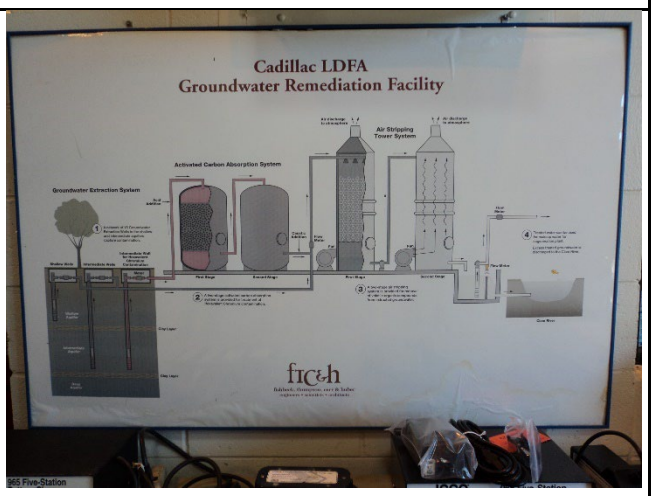
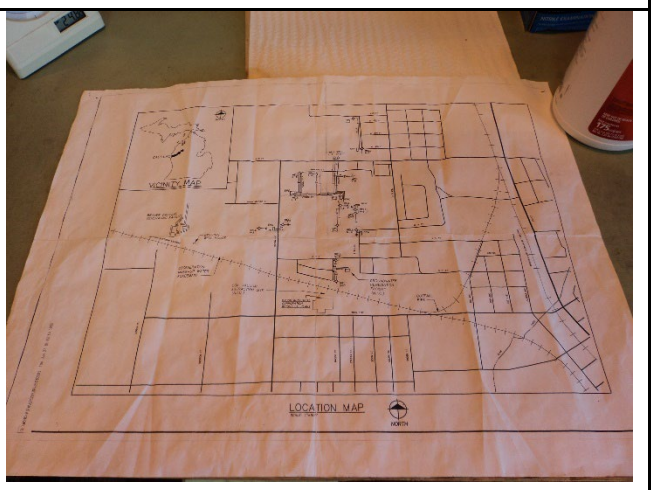
All digital photos were copied by: Catherine Nield on 9/19/24

All digital photos were copied to: OneDrive

Original copy is stored in: OneDrive. All digital photos were downloaded to OneDrive by Catherine Nield. No changes were made in the original image files prior to storage on OneDrive.

Report Photo #	Photographer	Date	Approx. Time	Flashcard Name	Description
1	Amelia Holcomb	9/18/2024	12:25 PM	101-0834	 Carbon tower in the groundwater treatment plant building. Only the left tower is in use. The last time the carbon was changed was around 2005. The LDFA has discussed switching to the right carbon tower which has not been used previously. Only groundwater extracted from I5 goes through the carbon tower.
2	Amelia Holcomb	9/18/2024	12:25 PM	101-0835	 I5 influent before entering carbon tower.

Report Photo #	Photographer	Date	Approx. Time	Flashcard Name	Description
3	Amelia Holcomb	9/18/2024	12:30 PM	101-0836	 Piping for carbon treated groundwater from I5 before entering the air stripper.
4	Amelia Holcomb	9/18/2024	12:30 PM	101-0838	 Control panel in groundwater treatment plant.

Report Photo #	Photographer	Date	Approx. Time	Flashcard Name	Description
5	Amelia Holcomb	9/18/2024	12:30 PM	101-0839	 Remediation diagram.
6	Amelia Holcomb	9/18/2024	12:35 PM	101-0841	 Site map.

Report Photo #	Photographer	Date	Approx. Time	Flashcard Name	Description
7	Amelia Holcomb	9/18/2024	12:40 PM	101-0843	 Transfer pump from air stripper 1 to 2. Not currently in use because only air stripper 1 is on.
8	Amelia Holcomb	9/18/2024	12:45 PM	101-0845	 Air stripper. Currently only the left air stripper is on.

Report Photo #	Photographer	Date	Approx. Time	Flashcard Name	Description
9	Amelia Holcomb	9/18/2024	12:50 PM	101-0847	 S-1 extraction well and control box.
10	Amelia Holcomb	9/18/2024	12:50 PM	101-0850	 Kysor property in distance. Photo taken from air stripper facing southwest. Now operated by BorgWarner.

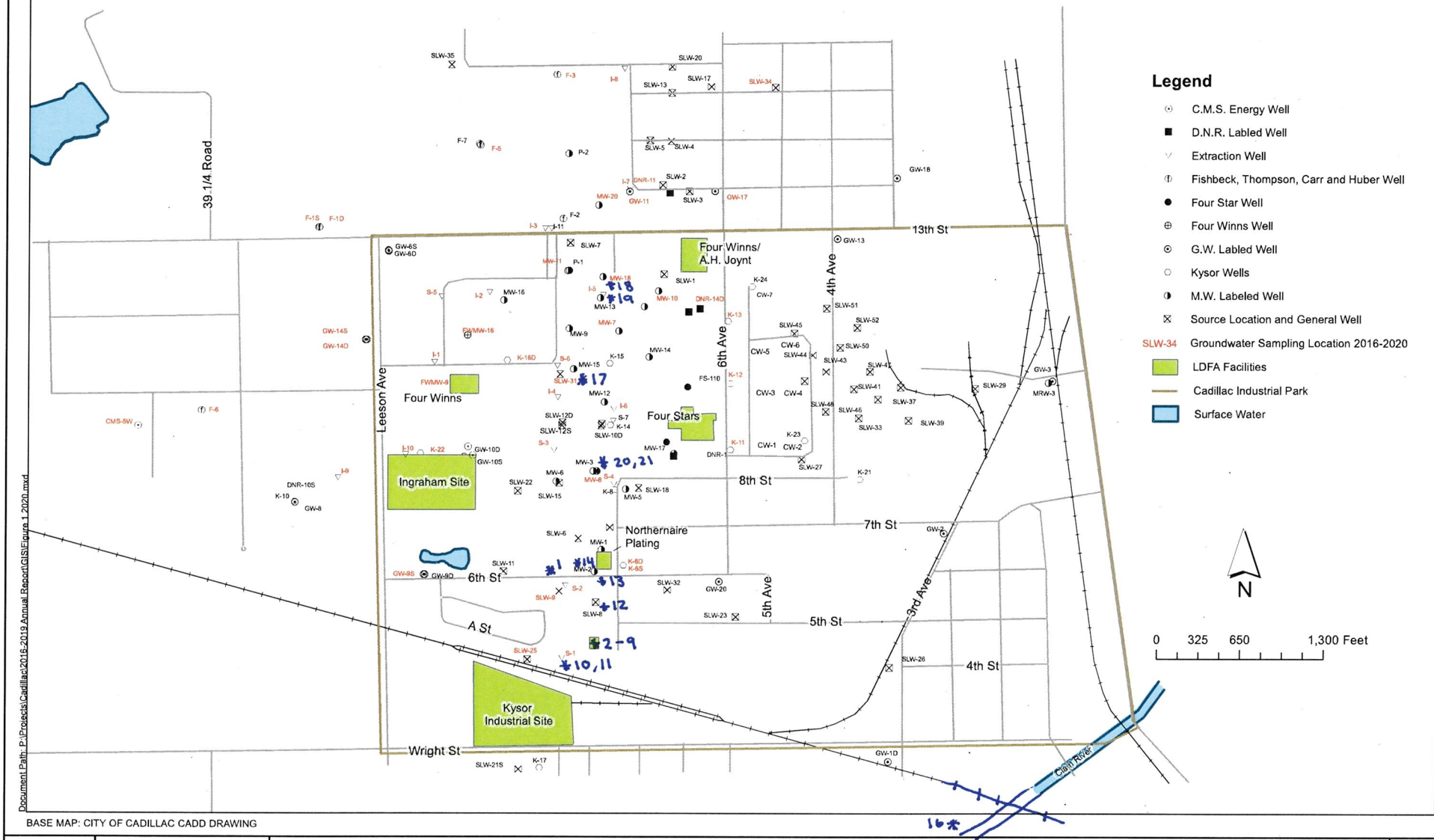
Report Photo #	Photographer	Date	Approx. Time	Flashcard Name	Description
11	Amelia Holcomb	9/18/2024	1:00 PM	101-0855	 SLW-8. Hit by a car. Casing rusted and cap damaged. Needs repairs.
12	Amelia Holcomb	9/18/2024	1:00 PM	101-0856	 Location where Northernaire was located. Now owned by TJ's trucking.

Report Photo #	Photographer	Date	Approx. Time	Flashcard Name	Description
13	Amelia Holcomb	9/18/2024	1:00 PM	101-0858	 MW-1, good condition.
14	Amelia Holcomb	9/18/2024	1:15 PM	101-0861	 Where treated groundwater discharges into the clam river.

Report Photo #	Photographer	Date	Approx. Time	Flashcard Name	Description
15	Amelia Holcomb	9/18/2024	1:30 PM	101-0862	 SLW-31, good condition.
16	Amelia Holcomb	9/18/2024	1:35 PM	1011-0864	 MW-18, lock is missing.
17	Amelia Holcomb	9/18/2024	1:40 PM	101-0865	 I5 extraction well.

Report Photo #	Photographer	Date	Approx. Time	Flashcard Name	Description
18	Amelia Holcomb	9/18/2024	2:10 PM	101-0866	 Field north of Northernaire where some monitoring wells are damaged or destroyed.
19	Amelia Holcomb	9/18/2024	2:15 PM	101-0869	 Parking lot was recently expanded by MI rubber. MW-3 and MW-8 are missing, it is possible they have been paved over.

Photo Map



BASE MAP: CITY OF CADILLAC CADD DRAWING

ORIGINAL: E. BAYS	
DATE: 7/9/2015	
REVISED BY: J. MCFETERS	
DATE: 03/18/2020	

2016 - 2019 COMPENDIUM PERFORMANCE MONITORING REPORT
CADILLAC LDFA NORTHERNAIRE/KYSOR SITES
CADILLAC, MICHIGAN

GROUNDWATER SAMPLING LOCATIONS

FIGURE 7

Attachment 6

EGLE samples

Well Number					MW-1	MW-1	SLW-10D	SLW-10S	SLW-10D	SLW-10S	M-1
Collected By					EGLE	EGLE	EGLE	EGLE	EGLE	EGLE	EGLE
Test Method					533	533	533	533	533	533	533
Date Collected			Michigan Safe Drinking Water Act MCL[1] and Groundwater Cleanup Std	National Primary Drinking Water Regulation MCL[2]	9/1/2021	9/1/2021	9/1/2021	9/1/2021	10/19/2022	10/19/2022	10/19/2022
Date Analyzed					10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/27/2022	10/27/2022	10/27/2022
CAS#	Analyte	Units									
13252-13-6	HFPO-DA	ppt	370	10	<2	<2	<2	<2	<2	<2	<2
375-73-5	PFBS	ppt	420	NA	**5.59**	**5.29**	**1.23**	**2.17**		<2	**11.0**
307-24-4	PFHxA	ppt	400,000	NA	**1.94**	**2.26**	<2	**1.26**	<2	<2	<2
355-46-4	PFHxS	ppt	51	10	**1.47**	**1.51**	**1.24**	**6.43**	**6.4**	**2.7**	<2
375-95-1	PFNA	ppt	6	10	<2	<2	<2	<2	<2	<2	<2
335-67-1	PFOA	ppt	8	4	**6.5**	**7.2**	**1.95**	**1.62**	<2	**2.1**	**4.8**
1763-23-1	PFOS	ppt	16	4			**1.05**				

LDFA samples

Well Number					I-1	I-2	I-3	I-4	I-5 Influent	I-5 Influent	I-6
Collected By					LDFA	LDFA	LDFA	LDFA	LDFA	LDFA	LDFA
Test Method					8327	8327	8327	8327	537.1(M)	537.1(M)	8327
Date Collected			Michigan Safe Drinking Water Act MCL[1] and Groundwater Cleanup Std	National Primary Drinking Water Regulation MCL[2]	1/27/2025	1/27/2025	1/27/2025	1/27/2025	6/4/2024	10/14/2024	11/18/2024
Date Analyzed					1/31/2025	1/31/2025	1/31/2025	2/1/2025	7/2/2024	10/24/2024	11/27/2025
CAS#	Analyte	Units									
13252-13-6	HFPO-DA	ppt	370	10	<4.0	<4.0	<4.0	<4.0	<2.0	<2.0	<4.0
375-73-5	PFBS	ppt	420	NA	**5.2**	**20**	<2.0	**5.7**	**12.8**	**15.2**	**8.4**
307-24-4	PFHxA	ppt	400,000	NA	**2.3**	**5.7**	<2.0	<2.0	**4.1**	**4.6**	**2.7**
355-46-4	PFHxS	ppt	51	10	**4.3**	**2.8**	<2.0	**5.1**	**5.2**	**6.0**	**5.9**
375-95-1	PFNA	ppt	6	10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
335-67-1	PFOA	ppt	8	4	**4.3**	**6.1**	<2.0	**2.5**	**5.5**	**5.9**	**3.5**
1763-23-1	PFOS	ppt	16	4	**2.2**	**4.2**	<2.0	<2.0	**2.4**	**2.4**	<2.0

LDFA samples cont.

Well Number					I-7	I-8	I-9	I-10	I-11	S-1	S-2	S-2	S-3	S-4	S-5	S-6	Michigan Rule 57 Surface Water Quality Values[5]	Plant Effluent	Plant Effluent
Collected By					LDFA	LDFA	LDFA	LDFA	LDFA	LDFA	LDFA	LDFA	LDFA	LDFA	LDFA	LDFA		LDFA	LDFA
Test Method					8327	8327	8327	8327	8327	8327	537.1(M)	8327	537.1(M)	537.1(M)	537.1(M)	537.1(M)		537.1(M)	537.1(M)
Date Collected			Michigan Safe Drinking Water Act MCL[1] and Groundwater Cleanup Std	National Primary Drinking Water Regulation MCL[2]	1/27/2025	1/27/2025	1/27/2025	1/27/2025	1/27/2025	11/18/2024	10/14/2024	11/18/2024	10/14/2024	10/14/2024	10/14/2024	10/14/2024		9/10/2024	10/14/2024
Date Analyzed					2/1/2025	2/1/2025	2/1/2025	2/1/2025	2/1/2025	11/27/2025	10/24/2024	11/27/2025	10/24/2024	10/24/2024	10/24/2024	10/24/2024		9/20/2024	10/24/2024
CAS#	Analyte	Units																	
13252-13-6	HFPO-DA	ppt	370	10	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<2.0	<4.0	<2.0	<2.0	<2.0	<2.0	NA	<2.0	<2.0
375-73-5	PFBS	ppt	420	NA	**3.6**	**5.1**	**8.4**	**2.8**	**28**	**5.7**	**48.7**	**47**	**38.8**	**11.7**	**33.1**	**24.5**	670,000	**10.7**	<2.0
307-24-4	PFHxA	ppt	400,000	NA	**2.3**	**2.3**	**2.3**	**2.0**	**6.4**	**2.4**	**3.8**	**3.7**	**3.4**	**3.2**	**3.1**	**3.0**	NA	**3.2**	<2.0
355-46-4	PFHxS	ppt	51	10	**3.4**	**2.9**	**7.7**	**16**	**5.3**	**3.4**	**4.0**	**3.5**	<2.0	**4.8**	<2.0	<2.0	210	**4.4**	<2.0
375-95-1	PFNA	ppt	6	10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	30	<2.0	<2.0
335-67-1	PFOA	ppt	8	4	**3.5**	**2.6**	**2.8**	**4.5**	**12**	**7.7**	**10.8**	**14**	**3.2**	**3.5**	**3.3**	**4.2**	170	**3.9**	<2.0
1763-23-1	PFOS	ppt	16	4	<2.0	<2.0	**2.3**	<2.0	**6.7**	<2.0	<2.0	<2.0	**3.8**	**2.3**	**4.6**	**4.6**	12	**2.4**	<2.0

Exceeds Nat'l Primary Drinking Water MCL

Exceeds Nat'l Primary Drinking Water MCL and/or MI SDWA MCL

"NA" means a criterion or value is not available

[1] Maximum Contaminant Level (MCL) is the maximum amount of a contaminant allowed in drinking water. Applies only to public drinking water supplies covered under the Michigan Safe Drinking Water Act. Private residential wells are not regulated under the Michigan Safe Drinking Water Act, but Michigan uses the MCLs along with other factors when evaluating private residential well results.

[2] Compliance with MCLs is determined by running annual averages at the sampling point.

[3] Michigan's Rule 57 Water Quality Values apply to NPDES discharges. If a waterbody is also used as a source for drinking water, water quality values are lower than those shown.

Summary of Intermediate Aquifer Hexavalent Chromium Results

Intermediate Well	I-1				I-2				I-3			
Sample Date	1/20/2020	7/14/2020	10/6/2020	1/30/2021	1/20/2020	7/14/2020	10/7/2020	1/30/2021	1/20/2020	7/15/2020	10/6/2020	1/30/2021
Hexavalent Chromium	1.1 U	0.74 U	0.74 U	0.76 U	1.1 U	0.74 U	0.74 U	0.74 U	1.1 U	0.74 U	0.74 U	0.74 U

Intermediate Well	I-4				I-5				I-6			
Sample Date	1/20/2020	7/14/2020	10/6/2020	1/30/2021	1/20/2020	7/14/2020	10/6/2020	1/30/2021	1/20/2020	7/14/2020	10/6/2020	1/30/2021
Hexavalent Chromium	1.4 J	**2.1**	1.7 J	**2.6**	1.1 U	0.74 U	0.74 U	0.74 U	**2.6**	**3.2**	**3.2**	**4.2**

Intermediate Well	I-8				I-9				I-10			
Sample Date	1/20/2020	7/15/2020	10/6/2020	1/30/2021	1/20/2020	7/15/2020	10/6/2020	1/30/2021	1/20/2020	7/14/2020	10/6/2020	1/30/2021
Hexavalent Chromium	1.1 U	0.74 U	0.74 U	0.74 U	1.1 U	0.74 U	0.74 U	0.74 U	1.1 U	0.74 U	0.74 U	0.74 U

Intermediate Well	F-2		F-6		SLW-7	K-12	MW-16	
Sample Date	1/20/2020	7/14/2020	1/20/2020	1/31/2021	1/20/2020	10/7/2020	1/20/2020	1/30/2021
Hexavalent Chromium	1.1 U	0.74 U	1.1 U	1.2 J	1.1 U	<0.74	1.1 U	<0.74

Intermediate Well	MW-10		MW-13		MW-11	MW-20	MW-18	
Sample Date	10/7/2020	1/30/2021	1/20/2020	1/30/2021	1/30/2021	10/7/2020	7/14/2020	10/6/2020
Hexavalent Chromium	<0.74	0.74 U	1.1U	0.74 U	0.74 U	<0.74	<0.74	<0.74

Notes: µg/l = micrograms per liter

U = Parameter not detected greater than the laboratory method detection limit.

J = Reported value is less than the laboratory reporting limit but greater than the method detection limit.

Bolded values are detected concentrations above the laboratory reporting limit.

Summary of Shallow Aquifer Hexavalent Chromium Results

Shallow Well	S-1				S-2				S-3				F-12
Sample Date	1/20/2020	7/14/2020	10/7/2020	1/30/2021	1/20/2020	7/14/2020	10/7/2020	1/30/2021	1/20/2020	7/14/2020	10/6/2020	1/30/2021	1/20/2020
Hexavalent Chromium	**25.9**	0.74 U	0.74 U	0.74 U	1.1 U	0.74 U	0.74 U	0.74 U	1.1 U	0.74 U	0.74 U	0.74 U	1.1 U

Shallow Well	S-4				S-5				S-6			
Sample Date	1/20/2020	7/14/2020	10/7/2020	1/30/2021	1/20/2020	7/14/2020	10/6/2020	1/30/2021	1/20/2020	7/14/2020	10/8/2020	1/30/2021
Hexavalent Chromium	1.1 U	0.74 U	0.74 U	0.74 U	1.1 U	0.74 U	0.74 U	0.74 U	1.1 U	0.74 U	0.74 U	0.74 U

Notes: µg/l = micrograms per liter
U = Parameter not detected greater than the laboratory method detection limit.
J = Reported value is less than the laboratory reporting limit but greater than the method detection limit.
Bolded values are detected concentrations above the laboratory reporting limit.

Summary of VOC Results

Shallow Well	K-13		K-22		FWMW-9		FWMW-16		GW-9S		GW-11		GW-14S		K-11
Sample Date	1/19/2020	1/30/2021	1/19/2020	1/30/2021	1/19/2020	1/30/2021	1/20/2020	1/30/2021	1/24/2020	1/30/2021	1/19/2020	1/30/2021	1/19/2020	1/30/2021	1/19/2020
1,1,1-TCA	0.18 U	0.53 U	0.18 U	0.53 U	0.18 U	0.63 U	0.18 U	0.53 U	0.18 U	0.53 U	0.29 U	0.63 U	0.18 U	0.53 U	0.18 U
PCE	0.35 U	0.71 U	0.35 U	0.71 U	0.35 U	0.61 U	0.35 U	0.71 U	0.35 U	0.71 U	0.46 U	0.61 U	0.35 U	0.71 U	0.35 U
TCE	0.21 U	0.60 U	0.21 U	0.60 U	0.21 U	0.63 U	0.21 U	0.60 U	0.21 U	0.60 U	0.24 U	0.63 U	0.21 U	0.60 U	0.21 U

Shallow Well	SLW-9		SLW-25		SLW-31		S-1		S-2		S-3		S-4		S-5		S-6	
Sample Date	1/19/2020	1/30/2021	1/19/2020	1/30/2021	1/19/2020	1/30/2021	1/20/2020	1/30/2021	1/20/2020	1/30/2021	1/20/2020	1/30/2021	1/20/2020	1/30/2021	1/20/2020	1/30/2021	1/20/2020	1/30/2021
1,1,1-TCA	0.18 U	0.53 U	0.18 U	0.53 U	0.18 U	0.53 U	0.18 U	0.63 U	**14.2**	**11.6**	0.29 U	0.63 U	**1.9**	0.63 U	0.51 J	0.63 U	0.18 U	0.63 U
PCE	0.35 U	0.71 U	0.35 U	0.71 U	0.35 U	0.71 U	0.35 U	0.71 U	**1.4**	**1.3**	0.46 U	0.61 U	**1.3**	0.97 J	0.88 JU	**1.1**	0.35 U	0.61 U
TCE	0.21 U	0.60 U	0.21 U	0.60 U	0.21 U	0.60 U	0.75 U	0.63 U	**6.5**	**5.3**	**2.8**	**2.5**	**18.4**	**14.6**	**1.1**	**1.4**	0.21 U	0.63 U

Intermediate Well	K-12	F-3	MW-10	MW-11	K-1D	K-16D	GW-14D	MW-8
Sample Date	1/30/2021	1/19/2020	1/30/2021	1/30/2021	1/23/2020	1/19/2020	1/19/2020	1/19/2020
1,1,1-TCA	0.53 U	0.18 U	0.63 U	0.53 U	0.18 U	0.29 U	0.18 U	0.18 U
PCE	0.71 U	0.35 U	0.61 U	0.80 J	0.35 U	**2.1**	0.35 U	0.35 U
TCE	0.60 U	0.21 U	0.61 U	**44.4**	0.21 U	**24.2**	0.21 U	0.21 U

Intermediate Well	F-6		CMS-5W		F-1D		MW-18		I-1		I-2	
Sample Date	7/15/2020	10/7/2020	1/19/2020	1/30/2021	1/19/2020	1/20/2021	1/19/2020	1/30/2021	1/20/2020	1/30/2021	1/20/2020	1/30/2021
1,1,1-TCA	0.91 J	2.3	0.18 U	0.53 U	0.18 U	0.53 U	**2**	0.63 U	**13.7**	**10.7**	**3.5**	0.63 U
PCE	**1**	**1**	0.35 U	0.71 U	0.35 U	0.71 U	0.93 J	0.87 J	**3.1**	**3.4**	**3.2**	**3.3**
TCE	**5.6**	**20.2**	0.21 U	0.61 U	0.21 U	0.60 U	**23.6**	**17.8**	**44.2**	**37.5**	**16.6**	**13.6**

Intermediate Well	I-3		I-4		I-5		I-6		I-8		I-9		I-10	
Sample Date	1/20/2020	1/30/2021	1/20/2020	1/30/2021	1/20/2020	1/30/2021	1/20/2020	1/30/2021	1/20/2020	1/30/2021	1/20/2020	1/30/2021	1/20/2020	1/30/2021
1,1,1-TCA	**2.1**	0.63 U	**1.9**	0.63 U	0.18 U	0.63 U	1.5	0.63 U	0.18 U	0.63 U	0.18 U	0.63 U	**5.4**	0.63 U
PCE	0.66 J	0.77 J	0.84 J	0.98 J	**1.3**	**1.1**	**2.1**	**1.9**	0.35 U	0.61 U	0.35 U	0.61 U	0.99 J	1
TCE	**20.4**	**17.7**	**10.4**	**8.6**	**3.4**	**2.7**	**7.1**	**5.8**	0.21 U	U.63 U	**17.7**	**14.9**	**93.5**	**87.1**

Notes: µg/l = micrograms per liter

C = Result based on manual spectrophotometric reading.

U = Parameter not detected greater than the laboratory method detection limit.

J = Reported value is less than the laboratory reporting limit but greater than the method detection limit.

B = Parameter detected in the associated method blank.

Bolded values are detected concentrations above the laboratory reporting limit.