

Mr. Brandon Alger
Warren District Office
Remediation and Redevelopment Division
Michigan Department of Energy, Great Lakes and Environment
2770 Donald Court
Warren, Michigan 48092

Arcadis of Michigan, LLC
28550 Cabot Drive
Suite 500
Novi
Michigan 48377
Tel 248 994 2240
Fax 248 994 2241
www.arcadis.com

Subject:
Interim Groundwater Monitoring Plan
Ford Livonia Transmission Plan, Livonia, Michigan

ENVIRONMENT

Date:
January 26, 2021

Dear Mr. Alger

Contact:
Kristoffer Hinskey

Arcadis of Michigan LLC (Arcadis), on behalf of Ford Motor Company (Ford) has prepared this revised Interim Groundwater Monitoring Plan (IGMP) for the Livonia Transmission Plant (LTP) property located in Livonia, Michigan (Site). This memorandum has been prepared for the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to request altering the sampling frequency at several on-site monitoring well locations.

Phone:
248-994-2240

As described in the approved *Remedial Investigation Response Activity Plan* ([RI ResAP] Arcadis 2018a), Ford has met the obligation of quarterly groundwater sampling at all available monitoring well locations beginning in 2017, as described in the approved RI RespAP. Ford has continued the quarterly groundwater sampling voluntarily since 2019. Below details the correspondence between EGLE, Ford, and Arcadis.

Email:
Kristoffer.Hinskey
@arcadis.com

- On May 20, 2020, Arcadis submitted on Ford's behalf an IGMP. The document provides a rationale to reduce the sampling frequency for select monitoring wells located on-site and off-site.
- On August 3, 2020, EGLE sent a letter to Ford denying the request to reduce sampling frequency suggesting additional data would be needed for the individual wells prior to approval.
- On October 22, 2020, a virtual meeting was conducted with EGLE, Ford, and Arcadis. The meeting discussed the denial letter and a path forward for resubmittal of the IGMP. It was agreed that a stepwise approach to modifying the sampling locations and/or frequency would be used to gradually reduce the sampling frequency where data supports that quarterly sampling is no longer appropriate. Based on the October 22, 2020 meeting a revised IGMP is detailed below.

Our ref:
30050315

Hydrogeology

The aquifer at the site is generally thin, consisting of a fining downward sequence of shallow sand/gravel transitioning to interbedded silt and fine sands and then clay at 20 to 30 feet below grade. Groundwater is encountered between 2 and 7 feet below grade; shallower in topographically low areas. The dominant groundwater flow direction is to the east/southeast on-site, and more easterly off-site. Based on the measured hydraulic conductivity and groundwater gradient, groundwater velocity likely ranges from 0.5 to 2 feet per day in the most permeable zones. Additional hydrogeologic data is provided as part of the 2017 draft Conceptual Site Model report provided to EGLE on August 25, 2017.

Site Investigation

Groundwater at the Site has been characterized using a combination of monitoring well sampling, vertical aquifer profile (VAP) sampling, and whole core saturated soil sampling (WCSS). Much of the work was performed as part of two adaptive phases (2015 and 2018), with smaller prescriptive phases of work completed in 2016, 2019, and 2020. The 2015 scope of work was a rapid characterization of the extent of impact focused primarily around the perimeter of the Site, near the primary suspected source area in the southern part of the LTP building, and within and around the LNAPL located beneath the LTP building. The 2018 adaptive phase focused on identification, delineation, and characterization of potential source areas beneath the LTP building, as described in the EGLE-approved RI RespAP; (Arcadis 2018a). The off-site investigation activities were completed over several phases and included VAP sampling and monitoring well sampling. The main objective of the initial response in 2015 was to rapidly delineate groundwater impacts, primarily vinyl chloride (VC), east of the Site across the commercial and residential properties within the Alden Village Subdivision and to determine the approximate monitoring well screen placement. Follow-up work in 2016 and 2017 included delineation of various areas considered to be data gaps and the installation of a permanent monitoring network within the rights-of-way based on the high-resolution characterization. In 2018 and 2019, additional monitoring wells were installed to evaluate vapor intrusion risk to properties located above or near the low-level VC detections in groundwater off-site.

Monitoring

Ford has completed site-wide groundwater sampling events in 2016 and 2017 and has completed quarterly monitoring at all available wells since third quarter 2017 (13 total quarterly events) as described in the approved RI RespAP. There are currently 284 monitoring wells included as part of the quarterly monitoring program for on-site (129 wells) and off-site (155 wells) as of 2020. The monitoring wells installed on-site as part of the initial investigation activities (2015-2017, 93 total) have been sampled up to 17 times (excluding the Light Non-Aqueous Phase Liquid [LNAPL] monitoring wells).

The purpose of the LNAPL monitoring wells (LMWs) are to monitor the LNAPL characteristics and complete LNAPL testing. The screen intervals and screen lengths of the LMWs are optimized for LNAPL monitoring and not the groundwater impacts present on the site.

A well construction summary table for all monitoring wells on-site and off-site including the install date is included as **Table 1** and a figure illustrating the location and the current number of samples for each well on-site and off-site is provided as **Figure 1**.

Since 2015, Ford has collected 2,429 samples from the existing monitoring well network which includes on-site and off-site monitoring wells. Based on the quarterly monitoring and the results of the remedial investigation work, the groundwater impacts have been delineated to applicable Criteria provided in the

Consent Decree (No: 2:1712372-GAD-RSW) and in conjunction with the Target Detection Limit modification request approved by EGLE on December 20, 2017. The monitoring wells upgradient (west), side-gradient (north and south) and downgradient (east), including the off-site are delineated to the criteria provided by EGLE. In addition, analytical results of the monitoring wells both for on-site and off-site, along with the detailed remedial investigation, provide evidence that groundwater impacts are statistically stable to decreasing, which is presented in the quarterly progress reports.

Proposed Modifications

Based on multiple lines of evidence outlined above and detailed below, Arcadis proposes altering the voluntary sampling frequency at the on-site well locations that have been determined to be redundant, at off-site well locations that are located on upgradient commercial properties and not related to the impacts onsite, and at locations where the original installed purpose of the well is not to monitor for groundwater impacts. The proposed well locations are listed on the table below. In addition, the well locations are presented on **Figure 2**.

Table 1: Proposed Sampling Modifications

Monitoring Well Identification	Current Sampling Frequency	Proposed Sampling Frequency	Technical Justification
TW-16-01	Quarterly Sampling	No Further Sampling	<ul style="list-style-type: none"> Installed as a test well for the pumping well location PW-16-01 to measure aquifer conditions during pumping. 13 samples have been collected to date. Redundant to PW-16-01.
TW-16-02	Quarterly Sampling	No Further Sampling	<ul style="list-style-type: none"> Installed as a test well for the pumping well location PW-16-01 to measure aquifer conditions during pumping. 14 samples have been collected to date. Redundant to PW-16-01.
TW-16-03	Quarterly Sampling	No Further Sampling	<ul style="list-style-type: none"> Installed as a test well for the pumping well location PW-16-02 to measure aquifer conditions during pumping. 13 samples have been collected to date. Redundant to PW-16-02.
TW-16-04	Quarterly Sampling	No Further Sampling	<ul style="list-style-type: none"> Installed as a test well for the pumping well location PW-16-02 to measure aquifer conditions during pumping. 14 samples have been collected to date. Redundant to PW-16-02.

Monitoring Well Identification	Current Sampling Frequency	Proposed Sampling Frequency	Technical Justification
MW-26	Quarterly Sampling	No Further Sampling	<ul style="list-style-type: none"> MW-26 is screened from 4.5-14.5 feet below ground surface (bgs) and is redundant to MW-113 which is screened from 5.0-10.0 feet bgs. 12 samples have been collected to date.
MW-27	Quarterly Sampling	No Further Sampling	<ul style="list-style-type: none"> Arcadis has been unable to locate this monitoring well. It is believed to have been paved over and additional wells have since been installed.
MW-28	Quarterly Sampling	No Further Sampling	<ul style="list-style-type: none"> MW-28 is screened from 2.0-12.0 feet bgs and is redundant to MW-120 which is screened from 7.0-12.0 feet bgs. 14 samples have been collected to date.
LMW Wells (28 total wells) LMW-15-01 through LMW-15-10 LMW-20-11 through LMW-20-28	Quarterly Sampling	No Further Sampling	<ul style="list-style-type: none"> The purpose of the LNAPL monitoring wells is to monitor the LNAPL stability and complete LNAPL testing. Quarterly gauging of the LNAPL wells will continue.
MW-202, MW-202S, MW-203, MW-203S, MW-204, MW-204S, MW-205, MW-205S, MW-206, MW-206S	Quarterly Sampling	Annual Sampling	<ul style="list-style-type: none"> These wells are located on a commercial property upgradient of the Site. Impacts detected in these wells are not related to any releases from the Site and are from a separate source. Therefore, the recommendation is to sample the monitoring wells annually to monitor potential migration or significant changes in analytical trends.

For the well locations proposed to move to annual sampling a comprehensive site-wide sampling event will be conducted on an annual basis. Annual sampling events will be cycled between the second and fourth quarters to capture seasonal variability.

Closing

As described above, only wells on-site that are deemed redundant or little continuing monitoring value will be proposed to be eliminated from the monitoring program. Once approved, future updates to the groundwater monitoring program will be made as needed based on observed changes in condition and will be documented in the quarterly progress report. Even after these modifications, 239 monitoring wells will continue to be sampled on a quarterly basis.

Mr. Brandon Alger
EGLE
January 26, 2021

If this approach is acceptable, the sampling frequency for the well locations listed above will be modified for the first quarter groundwater sampling event in 2021. Please let us know if you have questions or concerns or if you would like to discuss further.

Sincerely,

Arcadis of Michigan, LLC



Kris Hinskey
Certified Project Manager II, Arcadis

Copies:
File

Enclosures:

Tables

- 1 Interim Groundwater Monitoring Summary Table

Figures

- 1 Site Layout and Sampling Summary
- 2 Proposed Modified Groundwater Sampling Locations

TABLE 1



Table 1
Interim Groundwater Monitoring Summary Table
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan

Well ID	Install Date	Screen Interval (ft. bgs)	On-Site/Off-Site	Proposed Sampling Frequency
LMW-15-01	10/27/2015	7.0-12.0	On-Site	No Further Sampling
LMW-15-02	11/1/2015	7.0-12.0	On-Site	No Further Sampling
LMW-15-03	11/4/2015	7.0-12.0	On-Site	No Further Sampling
LMW-15-04	10/26/2015	6.0-11.0	On-Site	No Further Sampling
LMW-15-05	10/27/2015	7.0-12.0	On-Site	No Further Sampling
LMW-15-06	11/2/2015	7.0-12.0	On-Site	No Further Sampling
LMW-15-07	11/4/2015	7.0-12.0	On-Site	No Further Sampling
LMW-15-08	11/3/2015	7.5-12.5	On-Site	No Further Sampling
LMW-15-09	11/3/2015	7.0-12.0	On-Site	No Further Sampling
LMW-15-10	11/2/2015	7.0-12.0	On-Site	No Further Sampling
LMW-20-11	2/24/2020	5.0-15.0	On-Site	No Further Sampling
LMW-20-12	2/27/2020	7.0-17.0	On-Site	No Further Sampling
LMW-20-13	2/28/2020	6.0-16.0	On-Site	No Further Sampling
LMW-20-14	3/2/2020	6.0-16.0	On-Site	No Further Sampling
LMW-20-15	3/2/2020	7.5-17.5	On-Site	No Further Sampling
LMW-20-16	3/3/2020	7.5-17.5	On-Site	No Further Sampling
LMW-20-17	3/3/2020	7.0-17.0	On-Site	No Further Sampling
LMW-20-18	3/3/2020	6.5-16.5	On-Site	No Further Sampling
LMW-20-19	3/4/2020	6.0-16.0	On-Site	No Further Sampling
LMW-20-20	3/4/2020	4.0-14.0	On-Site	No Further Sampling
LMW-20-21	3/5/2020	7.0-17.0	On-Site	No Further Sampling
LMW-20-22	3/5/2020	6.5-16.5	On-Site	No Further Sampling
LMW-20-23	3/5/2020	5.0-15.0	On-Site	No Further Sampling
LMW-20-24	6/8/2020	2.0-12.0	On-Site	No Further Sampling
LMW-20-25	6/8/2020	3.0-13.0	On-Site	No Further Sampling
LMW-20-26	6/9/2020	5.0-15.0	On-Site	No Further Sampling
LMW-20-27	6/9/2020	5.0-15.0	On-Site	No Further Sampling
LMW-20-28	7/2/2020	4.5-14.5	On-Site	No Further Sampling
MW-1	2/10/2015	14.0-19.0	On-Site	Quarterly
MW-2	2/5/2015	15.5-20.5	On-Site	Quarterly
MW-3	2/4/2015	14.0-19.0	On-Site	Quarterly
MW-4	2/6/2015	15.5-20.5	On-Site	Quarterly
MW-5	2/5/2015	15.5-20.5	On-Site	Quarterly
MW-7	2/10/2015	18.0-23.0	On-Site	Quarterly
MW-9	2/11/2015	19.5-24.5	On-Site	Quarterly
MW-10	2/12/2015	16.5-21.5	On-Site	Quarterly
MW-14	2/11/2015	15.0-20.0	On-Site	Quarterly
MW-15-59D	12/21/2015	94.0-99.0	On-Site	Quarterly
MW-15-60D	12/22/2015	93.0-98.0	On-Site	Quarterly
MW-15-61D	12/28/2015	88.0-93.0	On-Site	Quarterly
MW-18	2/17/2015	13.0-18.0	On-Site	Quarterly
MW-19	2/9/2015	15.0-20.0	On-Site	Quarterly
MW-20	2/17/2020	13.5-18.5	On-Site	Quarterly
MW-21	2/17/2015	13.5-18.5	On-Site	Quarterly
MW-22	2/19/2015	16.5-20.5	On-Site	Quarterly
MW-23	2/19/2015	15.0-20.0	On-Site	Quarterly
MW-24	2/20/2015	19.0-24.0	On-Site	Quarterly
MW-25	2/20/2015	16.0-21.0	On-Site	Quarterly
MW-26	2/23/2015	4.5-14.5	On-Site	No Further Sampling
MW-27	4/17/2015	CNL	On-Site	No Further Sampling
MW-28	3/24/2015	2.0-12.0	On-Site	No Further Sampling
MW-29	3/23/2015	5.0-15.0	On-Site	Quarterly
MW-30	4/9/2015	19.0-24.0	On-Site	Quarterly
MW-31	4/9/2015	17.0-22.0	On-Site	Quarterly
MW-32	4/10/2015	18.0-23.0	On-Site	Quarterly
MW-33	4/10/2015	14.0-19.0	On-Site	Quarterly
MW-34	4/16/2015	16.5-21.5	On-Site	Quarterly
MW-35	4/16/2015	19.5-24.5	On-Site	Quarterly
MW-36	4/17/2015	20.0-25.0	On-Site	Quarterly
MW-37	4/17/2015	18.0-23.0	On-Site	Quarterly
MW-38	6/1/2015	15.0-20.0	On-Site	Quarterly
MW-39	6/1/2015	19.5-24.5	On-Site	Quarterly
MW-40	5/27/2015	15.0-20.0	On-Site	Quarterly
MW-41	5/27/2015	16.0-21.0	On-Site	Quarterly
MW-42	5/26/2015	16.0-21.0	On-Site	Quarterly
MW-43	5/26/2015	17.0-22.0	On-Site	Quarterly
MW-44	5/28/2015	16.0-21.0	On-Site	Quarterly
MW-45	6/2/2015	15.0-20.0	On-Site	Quarterly
MW-46	6/2/2015	16.0-21.0	On-Site	Quarterly
MW-47	6/3/2015	16.0-21.0	On-Site	Quarterly
MW-48	5/29/2015	17.0-22.0	On-Site	Quarterly
MW-49	6/3/2015	12.5-17.5	On-Site	Quarterly
MW-50	5/29/2015	16.0-21.0	On-Site	Quarterly
MW-51	5/28/2015	15.0-20.0	On-Site	Quarterly
MW-52	6/22/2015	15.0-20.0	On-Site	Quarterly
MW-53	6/22/2015	16.0-21.0	On-Site	Quarterly
MW-54	6/23/2015	16.0-21.0	On-Site	Quarterly
MW-54S	4/10/2019	4.5-9.5	On-Site	Quarterly
MW-55	6/23/2015	15.0-20.0	On-Site	Quarterly
MW-55D	1/24/2018	19.0-24.0	On-Site	Quarterly
MW-56	6/24/2015	16.0-21.0	On-Site	Quarterly
MW-57	6/24/2015	17.0-22.0	On-Site	Quarterly
MW-58	6/24/2015	15.0-20.0	On-Site	Quarterly

See Notes on last page.

Table 1
Interim Groundwater Monitoring Summary Table
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan

Well ID	Install Date	Screen Interval (ft. bgs)	On-Site/Off-Site	Proposed Sampling Frequency
MW-62	4/12/2017	16.0-21.0	On-Site	Quarterly
MW-63	4/12/2017	7.0-12.0	On-Site	Quarterly
MW-64	4/19/2017	15.0-20.0	On-Site	Quarterly
MW-65	4/13/2017	16.0-21.0	On-Site	Quarterly
MW-66	4/14/2017	15.0-20.0	On-Site	Quarterly
MW-67	4/13/2017	9.0-14.0	On-Site	Quarterly
MW-68	4/17/2017	15.0-20.0	On-Site	Quarterly
MW-69	4/18/2017	15.0-20.0	On-Site	Quarterly
MW-70	4/17/2017	15.0-20.0	On-Site	Quarterly
MW-71	4/17/2017	15.0-20.0	On-Site	Quarterly
MW-72	5/2/2017	15.0-20.0	Off-Site (ROW)	Quarterly
MW-72S	12/5/2018	3.0-13.0	Off-Site (ROW)	Quarterly
MW-73D	5/1/2017	13.5-18.5	Off-Site (ROW)	Quarterly
MW-73SR	12/6/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-74	5/3/2017	14.0-19.0	Off-Site (ROW)	Quarterly
MW-74S	12/5/2018	3.0-13.0	Off-Site (ROW)	Quarterly
MW-75D	5/3/2017	12.0-17.0	Off-Site (ROW)	Quarterly
MW-75SR	12/6/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-76	5/4/2017	15.0-20.0	Off-Site (ROW)	Quarterly
MW-76S	12/4/2018	4.5-14.5	Off-Site (ROW)	Quarterly
MW-77	5/5/2017	9.0-14.0	Off-Site (ROW)	Quarterly
MW-77S	11/28/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-78	5/10/2017	7.0-12.0	Off-Site (ROW)	Quarterly
MW-78S	11/29/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-79D	5/11/2017	10.0-15.0	Off-Site (ROW)	Quarterly
MW-79SR	12/3/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-80SR	12/3/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-81	5/8/2017	8.0-13.0	Off-Site (ROW)	Quarterly
MW-81S	12/4/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-82D	5/9/2017	18.0-23.0	Off-Site (ROW)	Quarterly
MW-82SR	12/4/2018	5.0-15.0	Off-Site (ROW)	Quarterly
MW-83	5/8/2017	8.0-13.0	Off-Site (ROW)	Quarterly
MW-83S	12/6/2018	3.0-13.0	Off-Site (ROW)	Quarterly
MW-84	5/16/2017	8.0-13.0	Off-Site (ROW)	Quarterly
MW-84S	11/30/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-85	5/11/2017	8.0-13.0	Off-Site (ROW)	Quarterly
MW-85SR	4/5/2019	4.5-9.5	Off-Site (ROW)	Quarterly
MW-86	5/15/2017	12.0-17.0	Off-Site (ROW)	Quarterly
MW-86S	11/29/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-87	5/16/2017	14.0-19.0	Off-Site (ROW)	Quarterly
MW-87S	11/29/2018	4.5-14.5	Off-Site (ROW)	Quarterly
MW-88S	10/31/2018	3.0-13.0	Off-Site (Residential)	Quarterly
MW-89S	10/31/2018	3.0-13.0	Off-Site (Residential)	Quarterly
MW-90S	11/1/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-91S	11/1/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-92S	11/1/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-93S	11/2/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-94S	11/2/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-95S	11/2/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-96S	11/28/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-97S	11/28/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-98S	11/30/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-99S	12/5/2018	3.0-13.0	Off-Site (ROW)	Quarterly
MW-100S	12/5/2018	3.0-13.0	Off-Site (ROW)	Quarterly
MW-101S	12/4/2018	4.5-14.5	Off-Site (ROW)	Quarterly
MW-102	12/11/2018	10.0-15.0	Off-Site (ROW)	Quarterly
MW-102S	12/11/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-103S	1/22/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-104S	1/23/2019	9.0-14.0	Off-Site (Residential)	Quarterly
MW-105S	12/11/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-106S	12/4/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-107S	12/4/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-108S	12/4/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-109S	12/17/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-110S	1/23/2019	8.0-13.0	Off-Site (Residential)	Quarterly
MW-111S	1/29/2019	8.0-13.0	Off-Site (Residential)	Quarterly
MW-112S	12/17/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-113	1/24/2019	5.0-10.0	On-Site	Quarterly
MW-114	1/24/2019	5.0-10.0	On-Site	Quarterly
MW-115S	12/13/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-116S	12/17/2018	3.0-13.0	Off-Site (Residential)	Quarterly
MW-117S	12/13/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-118S	12/13/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-119S	12/13/2018	2.5-12.5	Off-Site (Residential)	Quarterly

See Notes on last page.

Table 1
Interim Groundwater Monitoring Summary Table
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan

Well ID	Install Date	Screen Interval (ft. bgs)	On-Site/Off-Site	Proposed Sampling Frequency
MW-120	2/7/2019	7.0-12.0	On-Site	Quarterly
MW-121S	12/17/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-122	1/23/2019	16-20	On-Site	Quarterly
MW-123S	12/13/2018	2.5-12.5	Off-Site (Residential)	Quarterly
MW-124	1/25/2019	5.0-10.0	On-Site	Quarterly
MW-125	2/7/2019	7.0-12.0	Off-Site (Commercial)	Quarterly
MW-125S	2/7/2019	2.0-7.0	Off-Site (Commercial)	Quarterly
MW-126S	12/17/2018	3.0-13.0	Off-Site (Residential)	Quarterly
MW-127S	12/12/2018	3.0-13.0	Off-Site (Residential)	Quarterly
MW-128S	12/12/2018	4.0-14.0	Off-Site (Residential)	Quarterly
MW-129	2/8/2019	10.0-15.0	Off-Site (Commercial)	Quarterly
MW-129S	2/8/2019	2.0-7.0	Off-Site (Commercial)	Quarterly
MW-130S	12/13/2018	3.0-13.0	Off-Site (Residential)	Quarterly
MW-131S	12/11/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-132S	12/11/2018	2.5-12.5	Off-Site (ROW)	Quarterly
MW-133S	2/11/2019	4.0-9.0	Off-Site (ROW)	Quarterly
MW-134S	2/11/2019	5.0-10.0	Off-Site (ROW)	Quarterly
MW-135S	2/12/2019	5.0-10.0	Off-Site (ROW)	Quarterly
MW-136S	2/13/2019	2.0-7.0	Off-Site (ROW)	Quarterly
MW-137S	2/13/2019	2.0-7.0	Off-Site (ROW)	Quarterly
MW-138S	2/13/2019	2.0-7.0	Off-Site (ROW)	Quarterly
MW-139S	2/14/2019	2.0-7.0	Off-Site (ROW)	Quarterly
MW-140S	2/13/2019	2.0-7.0	Off-Site (ROW)	Quarterly
MW-141S	2/13/2019	3.0-8.0	Off-Site (ROW)	Quarterly
MW-142S	2/14/2019	2.5-7.5	Off-Site (ROW)	Quarterly
MW-143S	2/14/2019	5.5-10.5	Off-Site (Residential)	Quarterly
MW-144S	2/14/2019	7.0-12.0	Off-Site (Residential)	Quarterly
MW-145S	2/15/2019	6.0-11.0	Off-Site (Residential)	Quarterly
MW-146S	2/15/2019	6.0-11.0	Off-Site (Residential)	Quarterly
MW-147S	2/15/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-148S	2/15/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-149S	2/15/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-150S	2/18/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-151S	2/20/2019	2.5-7.5	Off-Site (Residential)	Quarterly
MW-152S	2/18/2019	2.5-7.5	Off-Site (Residential)	Quarterly
MW-153S	2/18/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-154S	2/18/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-155S	2/18/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-156S	2/19/2019	3.0-8.0	Off-Site (Residential)	Quarterly
MW-157S	2/18/2019	2.5-7.5	Off-Site (Residential)	Quarterly
MW-158S	2/19/2019	2.5-7.5	Off-Site (Residential)	Quarterly
MW-159S	2/19/2019	4.0-9.0	Off-Site (Residential)	Quarterly
MW-160S	2/19/2018	4.0-9.0	Off-Site (Residential)	Quarterly
MW-161S	2/21/2019	2.5-7.5	Off-Site (Residential)	Quarterly
MW-162S	2/20/2019	3.0-8.0	Off-Site (Residential)	Quarterly
MW-163S	2/19/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-164S	2/19/2019	3.0-8.0	Off-Site (Residential)	Quarterly
MW-165S	3/7/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-166S	3/8/2019	6.0-11.0	Off-Site (Residential)	Quarterly
MW-167S	2/20/2019	5.0-10.0	Off-Site (Residential)	Quarterly
MW-168S	2/20/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-169S	2/20/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-170S	2/27/2019	4.5-9.5	Off-Site (Residential)	Quarterly
MW-171S	2/20/2019	2.0-7.0	Off-Site (Residential)	Quarterly
MW-172S	2/21/2019	4.5-9.5	Off-Site (Residential)	Quarterly
MW-173S	2/21/2019	5.5-10.5	Off-Site (Residential)	Quarterly
MW-174S	2/26/2019	5.5-10.5	Off-Site (Residential)	Quarterly
MW-175S	2/22/2019	6.0-11.0	Off-Site (Residential)	Quarterly
MW-176S	2/21/2019	5.0-10.0	Off-Site (Residential)	Quarterly
MW-177S	2/22/2019	4.0-9.0	Off-Site (Residential)	Quarterly
MW-178S	2/21/2019	4.5-9.5	Off-Site (Residential)	Quarterly
MW-179S	2/22/2019	6.0-11.0	Off-Site (Residential)	Quarterly
MW-180SR	3/1/2019	6.5-11.5	Off-Site (Residential)	Quarterly
MW-181S	2/27/2019	3.5-8.5	Off-Site (Residential)	Quarterly
MW-182S	2/22/2019	4.0-9.0	Off-Site (Residential)	Quarterly
MW-183S	2/21/2019	8.0-13.0	Off-Site (Residential)	Quarterly
MW-184S	3/7/2019	4.5-9.5	Off-Site (Residential)	Quarterly
MW-185S	3/1/2019	6.0-11.0	Off-Site (Residential)	Quarterly
MW-186S	4/3/2019	2.5-7.5	Off-Site (Commercial)	Quarterly
MW-187	4/9/2019	8.0-13.0	Off-Site (Commercial)	Quarterly
MW-187S	4/9/2019	3.0-8.0	Off-Site (Commercial)	Quarterly
MW-188S	4/3/2019	3.0-8.0	Off-Site (Commercial)	Quarterly
MW-189	4/4/2019	10.0-15.0	Off-Site (Commercial)	Quarterly
MW-189S	4/4/2019	4.5-9.5	Off-Site (Commercial)	Quarterly

See Notes on last page.

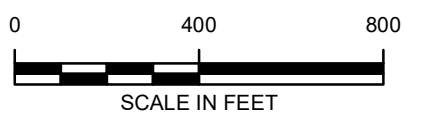
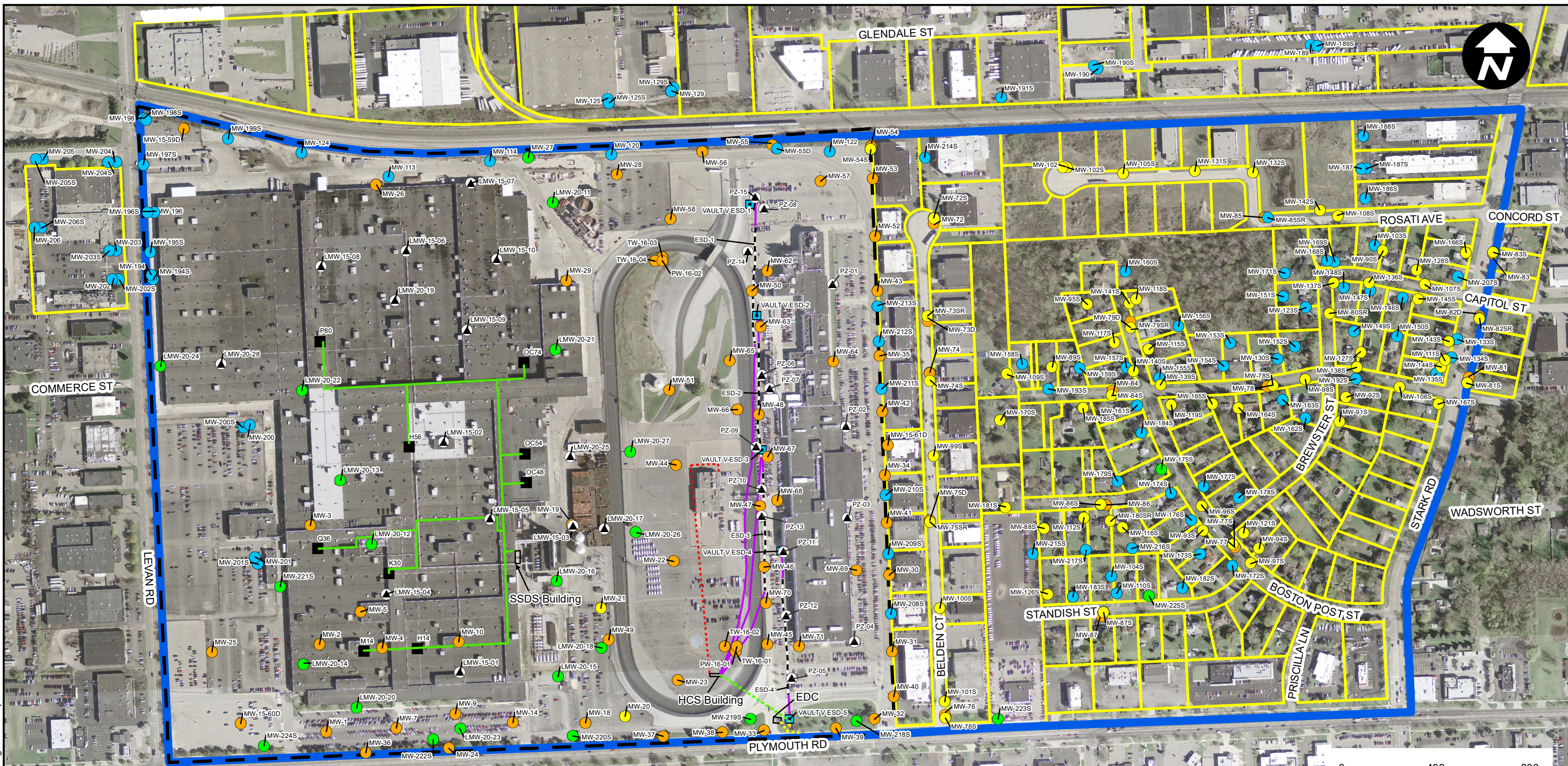
Well ID	Install Date	Screen Interval (ft. bgs)	On-Site/Off-Site	Proposed Sampling Frequency
MW-190	4/4/2019	9.0-14.0	Off-Site (Commercial)	Quarterly
MW-190S	4/4/2019	2.5-7.5	Off-Site (Commercial)	Quarterly
MW-191S	4/3/2019	2.5-7.5	Off-Site (Commercial)	Quarterly
MW-192S	4/9/2019	2.5-7.5	Off-Site (ROW)	Quarterly
MW-193S	8/6/2019	3.0-8.0	Off-Site (Residential)	Quarterly
MW-194	11/1/2019	12.0-17.0	On-Site	Quarterly
MW-194S	11/1/2019	2.0-7.0	On-Site	Quarterly
MW-195S	10/31/2019	2.0-7.0	On-Site	Quarterly
MW-196	10/31/2019	12.0-17.0	On-Site	Quarterly
MW-196S	10/31/2019	2.0-7.0	On-Site	Quarterly
MW-197S	11/4/2019	3.0-8.0	On-Site	Quarterly
MW-198	11/1/2019	12.0-17.0	On-Site	Quarterly
MW-198S	11/1/2019	2.5-7.5	On-Site	Quarterly
MW-199S	11/1/2019	2.0-7.0	On-Site	Quarterly
MW-200	11/5/2019	15.0-20.0	On-Site	Quarterly
MW-200S	11/4/2019	5.0-10.0	On-Site	Quarterly
MW-201	11/4/2019	17.0-22.0	On-Site	Quarterly
MW-201S	11/4/2019	3.5-8.5	On-Site	Quarterly
MW-202	12/17/2019	12.0-17.0	Off-Site (Commercial)	Annually
MW-202S	12/13/2019	3.5-8.5	Off-Site (Commercial)	Annually
MW-203	12/17/2019	13.0-18.0	Off-Site (Commercial)	Annually
MW-203S	12/13/2019	3.0-8.0	Off-Site (Commercial)	Annually
MW-204	12/19/2019	12.0-17.0	Off-Site (ROW)	Annually
MW-204S	12/16/2019	4.0-9.0	Off-Site (ROW)	Annually
MW-205	12/19/2019	12.0-17.0	Off-Site (ROW)	Annually
MW-205S	12/16/2019	4.5-9.5	Off-Site (ROW)	Annually
MW-206	12/19/2019	14.0-19.0	Off-Site (Commercial)	Annually
MW-206S	12/19/2019	6.5-11.5	Off-Site (Commercial)	Annually
MW-207S	12/17/2019	4.5-9.5	Off-Site (Residential)	Quarterly
MW-208S	1/17/2020	9.0-14.0	On-Site	Quarterly
MW-209S	1/17/2020	8.0-13.0	On-Site	Quarterly
MW-210S	1/17/2020	8.0-13.0	On-Site	Quarterly
MW-211S	1/20/2020	7.0-12.0	On-Site	Quarterly
MW-212S	1/20/2020	6.5-11.5	On-Site	Quarterly
MW-213S	1/20/2020	6.0-11.0	On-Site	Quarterly
MW-214S	1/21/2020	3.0-8.0	Off-Site (Commercial)	Quarterly
MW-215S	1/21/2020	5.5-10.5	Off-Site (Commercial)	Quarterly
MW-216S	1/21/2020	6.0-11.0	Off-Site (Residential)	Quarterly
MW-217S	1/22/2020	6.0-11.0	Off-Site (Residential)	Quarterly
MW-218S	1/22/2020	9.0-14.0	On-Site	Quarterly
MW-219S	1/22/2020	7.0-12.0	On-Site	Quarterly
MW-220S	1/23/2020	6.0-11.0	On-Site	Quarterly
MW-221S	1/23/2020	6.5-11.5	On-Site	Quarterly
MW-222S	1/24/2020	5.5-10.0.5	On-Site	Quarterly
MW-223S	1/28/2020	8.5-13.5	Off-Site (Commercial)	Quarterly
MW-224S	1/29/2020	7.0-12.0	On-Site	Quarterly
MW-225S	1/30/2020	5.5-10.5	Off-Site (Residential)	Quarterly
PW-16-01	6/6/2016	9.7-19.7	On-Site	Quarterly
PW-16-02	8/3/2016	12.0-17.0	On-Site	Quarterly
PZ-01	11/14/2018	15.0-20.0	On-Site	Not Sampled
PZ-02	11/15/2018	15.0-20.0	On-Site	Not Sampled
PZ-03	11/15/2018	15.0-20.0	On-Site	Not Sampled
PZ-04	11/16/2018	16.0-21.0	On-Site	Not Sampled
PZ-05	11/20/2018	15.0-20.0	On-Site	Not Sampled
PZ-06	11/20/2018	16.0-21.0	On-Site	Not Sampled
PZ-07	11/26/2018	15.0-20.0	On-Site	Not Sampled
PZ-08	12/17/2018	15.0-20.0	On-Site	Not Sampled
PZ-09	12/17/2018	15.0-20.0	On-Site	Not Sampled
PZ-10	12/18/2018	15.0-20.0	On-Site	Not Sampled
PZ-11	12/18/2018	15.0-20.0	On-Site	Not Sampled
PZ-12	12/19/2018	15.0-20.0	On-Site	Not Sampled
PZ-13	12/19/2018	15.0-20.0	On-Site	Not Sampled
PZ-14	4/10/2019	13.0-18.0	On-Site	Not Sampled
PZ-15	4/10/2019	13.0-18.0	On-Site	Not Sampled
TW-16-01	6/6/2016	12.0-17.0	On-Site	No Further Sampling
TW-16-02	6/7/2016	12.0-17.0	On-Site	No Further Sampling
TW-16-03	8/4/2016	9.0-19.0	On-Site	No Further Sampling
TW-16-04	8/4/2016	10.0-19.0	On-Site	No Further Sampling

Notes:
ft. bgs = feet below ground surface
CNL = Could not locate

FIGURES



CITY: Novi; DIV: ENV; DB: MG; PIC: R. ELLIS; PM: K. HINSKEY; PROJECT NUMBER: 30050315; COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet; T: \\ENV\Novi\Brighton_MIFordLivonia\GISdocs\2020-09\Figure 1 Sample Count.mxd; PLOTTED: 9/24/2020 1:11:09 PM; BY: msmiller



LEGEND

- | | | | | | | |
|---|-------------------------------------|-----|--|-----|---------------------|---------------------------|
| ▲ | PIEZOMETER OR LNAPL MONITORING WELL | --- | HYDRAULIC CONTROL SYSTEM WELL SCREEN | --- | ESD-4 CARRIER PIPE | SAMPLE EVENT COUNT |
| ● | TEST WELL | --- | WELL BLANK CASING | --- | HCS ELECTRICAL LINE | ● 0-3 EVENTS |
| ■ | VAULT | --- | SSDS CONVEYANCE PIPING | --- | EDC DISCHARGE LINE | ● 4-7 EVENTS |
| ■ | SUCTION PITS | --- | FORD PROPERTY BOUNDARY | --- | | ● 8-11 EVENTS |
| | | --- | COMMERCIAL/RESIDENTIAL PROPERTY BOUNDARY | --- | | ● >11 EVENTS |
| | | --- | AREA OF CONCERN | | | |

NOTES:
 SAMPLE COUNT INCLUDES ALL GROUNDWATER SAMPLES COLLECTED FROM 2015 THROUGH FOURTH QUARTER 2020.
 ATNPC = AUTOMATIC TRANSMISSION NEW PRODUCT CENTER
 EDC = EASTERN DIVERSION CHAMBER
 ESD = EASTERN STORM DRAIN
 HCS = HYDRAULIC CONTROL SYSTEM
 SSDS = SUB-SLAB DEPRESSURIZATION SYSTEM

FORD MOTOR COMPANY
 LIVONIA TRANSMISSION PLANT
 LIVONIA, MICHIGAN

SITE LAYOUT AND SAMPLING SUMMARY

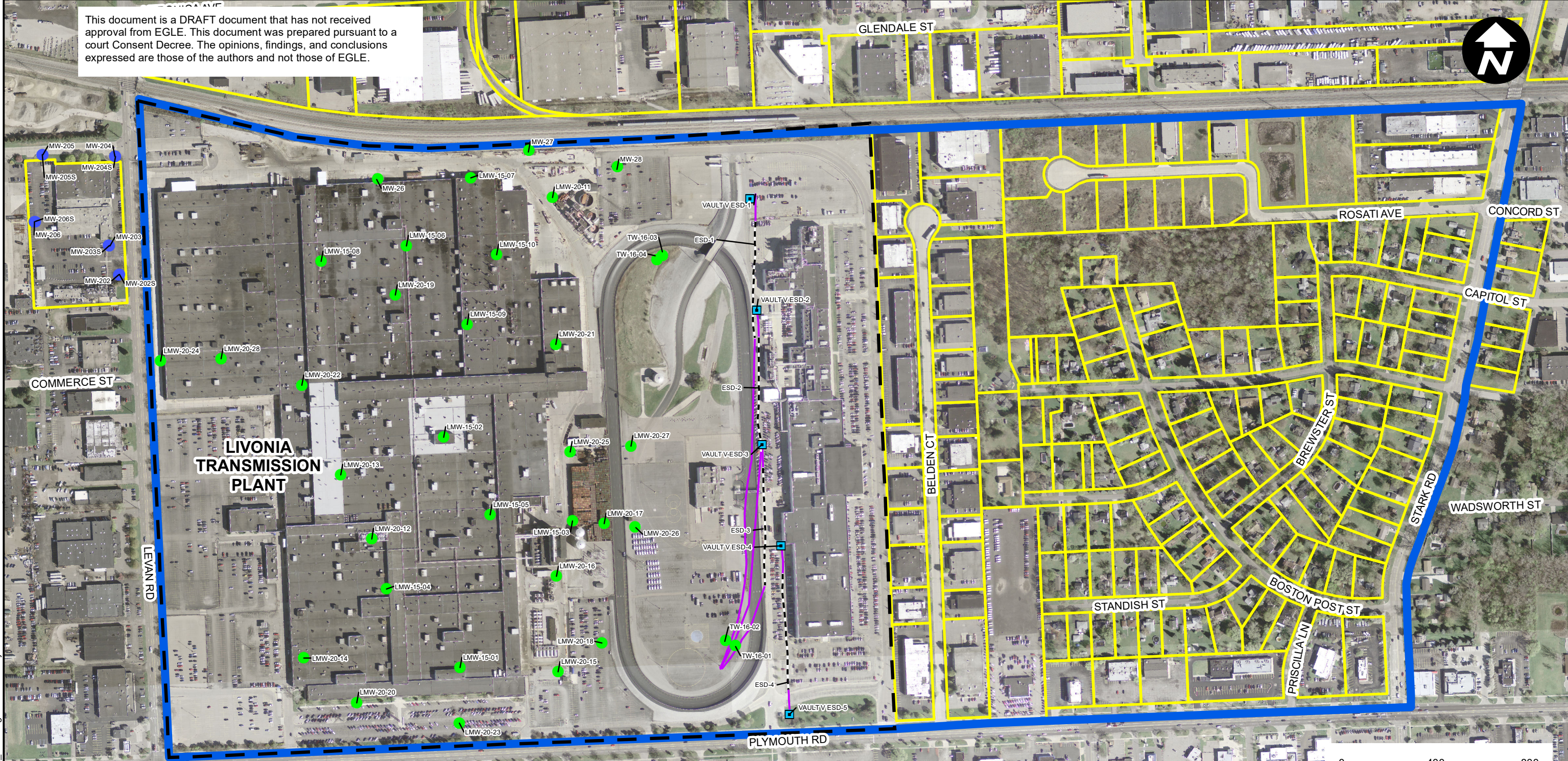
ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

This document is a DRAFT document that has not received approval from EGLE. This document was prepared pursuant to a court Consent Decree. The opinions, findings, and conclusions expressed are those of the authors and not those of EGLE.

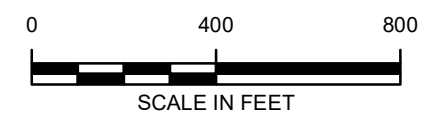


CITY: Novi; DIV: ENV; DB: MG; PIC: R. ELLIS; PM: K. HINSKEY; PROJECT NUMBER: 30050315; COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet; T: \\ENV\Novi\Brighton_M\Novi\Novia\GIS\docs\GEC\4Q_2020\Figure 2 - Site Layout On-site and Off-site MW.mxd; PLOTTED: 01/13/2021 2:35:29 PM; BY: P. SELVARAJ



LEGEND

- PROPOSED ANNUAL SAMPLING LOCATION
- PROPOSED NO FURTHER SAMPLING LOCATION
- VAULTS
- AREA OF CONCERN
- HYDRAULIC CONTROL SYSTEM WELL SCREEN
- WELL BLANK CASING
- FORD PROPERTY BOUNDARY
- COMMERCIAL/RESIDENTIAL PROPERTY BOUNDARY



NOTES:
 EGLE = MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
 ESD = EASTERN STORM DRAIN

FORD MOTOR COMPANY
 LIVONIA TRANSMISSION PLANT
 LIVONIA, MICHIGAN

PROPOSED MODIFIED GROUNDWATER SAMPLING LOCATIONS



Arcadis of Michigan, LLC

28550 Cabot Drive

Suite 500

Novi, Michigan 48377

Tel 248 994 2240

Fax 248 994 2241

www.arcadis.com