

Appendix M



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A Division of GZA

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- ENVIRONMENTAL
- ECOLOGICAL
- WATER
- CONSTRUCTION MANAGEMENT

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RESIDENTIAL WELL RESAMPLING STATEMENT OF WORK

North Kent Study Area

January 31, 2020
 File No. 16.0062335.60

PREPARED FOR:
 Wolverine World Wide, Inc.
 Rockford, Michigan

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Residential Well Resampling Statement of Work
Kent County, Michigan
File No. 16.0062335.60
TOC i

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 BACKGROUND 1

3.0 GENERAL APPROACH 1

4.0 ANTICIPATED SCHEDULE 3

APPENDED FIGURES

- FIGURE 1 FILTER AREA SAMPLING FREQUENCY
- FIGURE 2 PROPOSED RESAMPLING PARCELS
- FIGURES A-D RESIDENTIAL WELL SCREEN INTERVAL ELEVATIONS – VARIOUS FILTER AREAS



1.0 INTRODUCTION

On behalf of Wolverine World Wide, Inc. (Wolverine), Rose & Westra, a Division of GZA GeoEnvironmental, Inc. (R&W/GZA), prepared this Statement of Work (SOW) summarizing the approach and rationale for proposed residential well resampling in filter areas as set forth in the Consent Decree (CD).

2.0 BACKGROUND

This SOW addresses residential well resampling in the areas which are not receiving municipal water (i.e. filter areas). The proposed activities in this SOW are intended to provide testing data to supplement the Perimeter Wells SOW to monitor for PFAS migration from the Municipal Water Areas.

3.0 GENERAL APPROACH

The following information was reviewed and utilized to develop the basis for the proposed sampling:

- The estimated extent of perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) exceeding 70 nano-gram per liter (ng/L), based on the analytical results for the residential drinking water wells, the vertical aquifer profiling samples, and the groundwater monitoring well samples. See **Figure 1**.
- The estimated extent of PFOA+PFOS exceeding 10 ng/L, based on the analytical results for the residential drinking water wells, the vertical aquifer profiling samples, and the groundwater monitoring well samples. The extent of PFOA+PFOS exceeding 10 ng/L is reviewed with the extent exceeding 70 ng/L to evaluate PFOA+PFOS migration. See **Figure 1**. The parcels in the filter areas, excluding vacant parcels, parcels receiving municipal water, and those parcels with a point of entry (POET) installed, are outlined in **Figure 1**.
- Use of groundwater contours and flow to identify downgradient area of the source(s).
- Review of isoconcentration maps of the following six perfluoroalkyl substance (PFAS) which are on the list of the draft State Maximum Contaminant Levels (MCLs) for the respective PFAS proposed by the Michigan Department of Environment, Great Lakes and Energy (EGLE).

Contaminant	Proposed Maximum Contaminant Level (MCL) in ng/l
Perfluorobutane sulfonic acid (PFBS)	420
Perfluorohexane sulfonic acid (PFHxS)	51
Perfluorohexanoic acid (PFHxA)	400,000
Perfluorononanoic acid (PFNA)	6
Perfluorooctane sulfonic acid (PFOS)	16
Perfluorooctanoic acid (PFOA)	8

Based on drinking water well data (including POET influent sampling), vertical aquifer profiling data and monitoring well data received as of January 6, 2020, the isoconcentration maps for PFBS, PFHxS, PFHxA, PFNA, PFOS and PFOA were interpolated. In addition, the isoconcentration map for PFOA+PFOS was also interpolated. The extent of these compounds exceeding the proposed MCLs were evaluated along with



the estimated extents of PFOA+PFOS exceeding 10 and 70 ng/L. The evaluation indicates the extent of PFOA+PFOS exceeding 10 ng/L was the controlling factor in terms of spatial distribution. Therefore, the estimated extent of PFOA+PFOS exceeding 10 ng/L isoconcentration map was used to select parcels for residential well resampling.

- The parcels within the filter areas that do not have a POET installed were identified and overlain onto the PFOA+PFOS isoconcentration map. The parcels within the filter areas and without a POET, but within or in contact with the PFOA+PFOS isoconcentration extent exceeding 10 ng/L are selected for resampling within the first year after the Effective Date of the CD. Parcels within the filter areas which have a POET installed will not be resampled because they have already been resampled at least twice during the POET monitoring.
- In certain areas, residential well depths, where estimable, were evaluated in comparison to the known depths of contamination nearby so that a representative portion of parcels in the area could be selected for the initial resampling event.

Resampling will be conducted using a staggered approach, with the ultimate goal of resampling each residence within the filter areas of the North Kent Study Area that has not already been sampled two or more times as of the Effective Date of the CD. As of the Effective Date of the CD, there are 590 parcels within the filter areas which do not have a POET system. Of those parcels, 477 have been sampled only one time and are included in this SOW. Of the 477 only sampled once, 32 have maximum PFOS+PFOA concentrations exceeding 10 ppt. Additionally, there are 11 addresses that have been sampled more than one time where the PFOS+PFOA concentration exceeds 10 ppt. The 43 parcels having PFOS+PFOA concentrations exceeding 10 ppt will be sampled at least twice as described below.

Based on the above approach, approximately 203 parcels have been selected for the initial year of residential resampling. This selection includes the 43 parcels where the concentration of PFOS+PFOA currently exceeds 10 ppt. The parcels selected for the initial sampling event are identified on **Figure 2** with additional details on **Figures A-D**.

During the second year following the Effective Date of the CD, approximately 150 additional parcels will be sampled. These 150 parcels will be selected once results are received from the initial year. All parcels within the filter areas which do not have a POET system with PFOA+PFOS concentrations greater than 10 ng/l or exceeding an applicable PFAS-cleanup criterion will be sampled annually until they have been sampled at least three times. Once these homes have a minimum of three sampling events, additional sampling will be re-evaluated.

During the third year following the Effective Date of the CD, the remaining approximately 135 parcels and any parcels with concentrations of PFOA+PFOS over 10 ppt exceeding or an applicable PFAS-cleanup criterion which have not been sampled three times (i.e. those whose PFOA+PFOS concentrations were found to be greater than 10 ppt while executing this SOW) will also be sampled.

R&W/GZA will contact the above identified property owners on behalf of Wolverine to arrange resampling of their wells. The samples will be collected at a location that is unfiltered and as close to the well as possible. Samples will be analyzed using US EPA Method 537, 1.1.

Relevant tasks completed under this SOW will be completed in accordance with the *Quality Assurance Project Plan, Former Wolverine Tannery, House Street Disposal Area, and Wolven/Jewell Area, Per- and Polyfluoroalkyl Substances Investigation Program, Revision 2 (QAPP)* prepared for Wolverine World Wide, Inc. by R&W/GZA and dated November 1, 2018.



R&W/GZA will provide the results to the MDEQ, KCHD, and MDHHS. R&W/GZA will also provide notice to the property owners promptly after receipt of the data.

In filter areas, if a parcel is resampled and a detection of PFOS+PFOA greater than 10 ppt or other applicable PFAS criterion is identified, that resident will be offered a POU which will be maintained in accordance with the POU O&M.

4.0 ANTICIPATED SCHEDULE

A formal Work Plan will be prepared for this work and submitted to EGLE no later than 75 days following the Effective Date of the CD between EGLE and Wolverine.

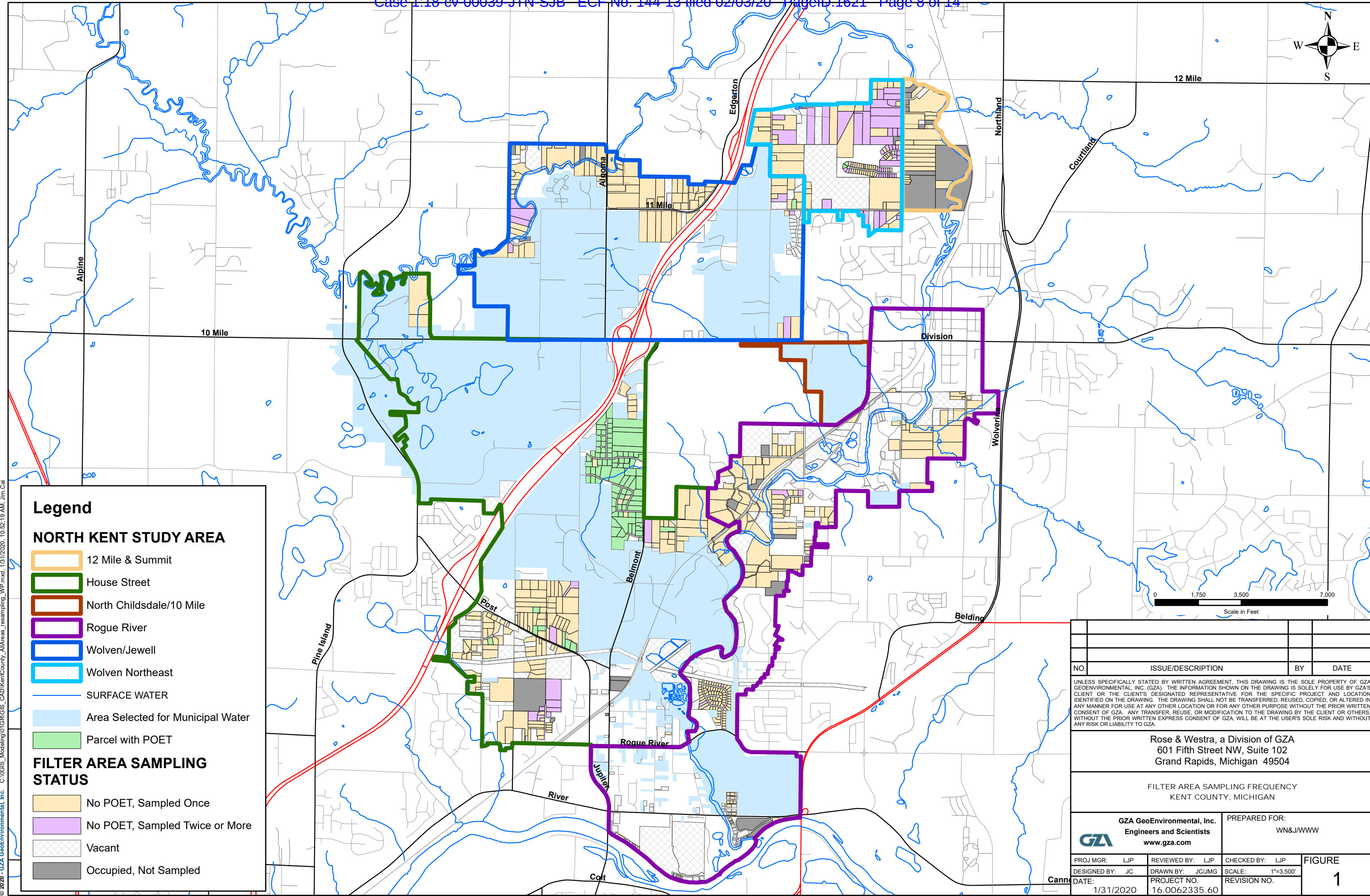
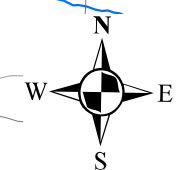
The schedule for implementation of the residential well resampling in the filter areas as described above will be as follows:

- Initial set of residential wells will be sampled within one year of the Effective Date of the CD.
- Second set of residential wells will be sampled within two years of the Effective Date of the CD.
- Third set of residential wells will be sampled within three years of the Effective Date of the CD.

Upon completion of the three years of residential well sampling outlined in this SOW, R&W/GZA will review the data in consultation with EGLE. Wolverine will submit a completion report summarizing the results of the sampling outlined in this SOW. Any next steps regarding residential well sampling, including any proposed cessation of residential well sampling, is subject to approval by EGLE.



FIGURES



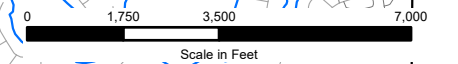
Legend

NORTH KENT STUDY AREA

- 12 Mile & Summit
- House Street
- North Childsdale/10 Mile
- Rogue River
- Wolven/Jewell
- Wolven Northeast
- SURFACE WATER
- Area Selected for Municipal Water
- Parcel with POET

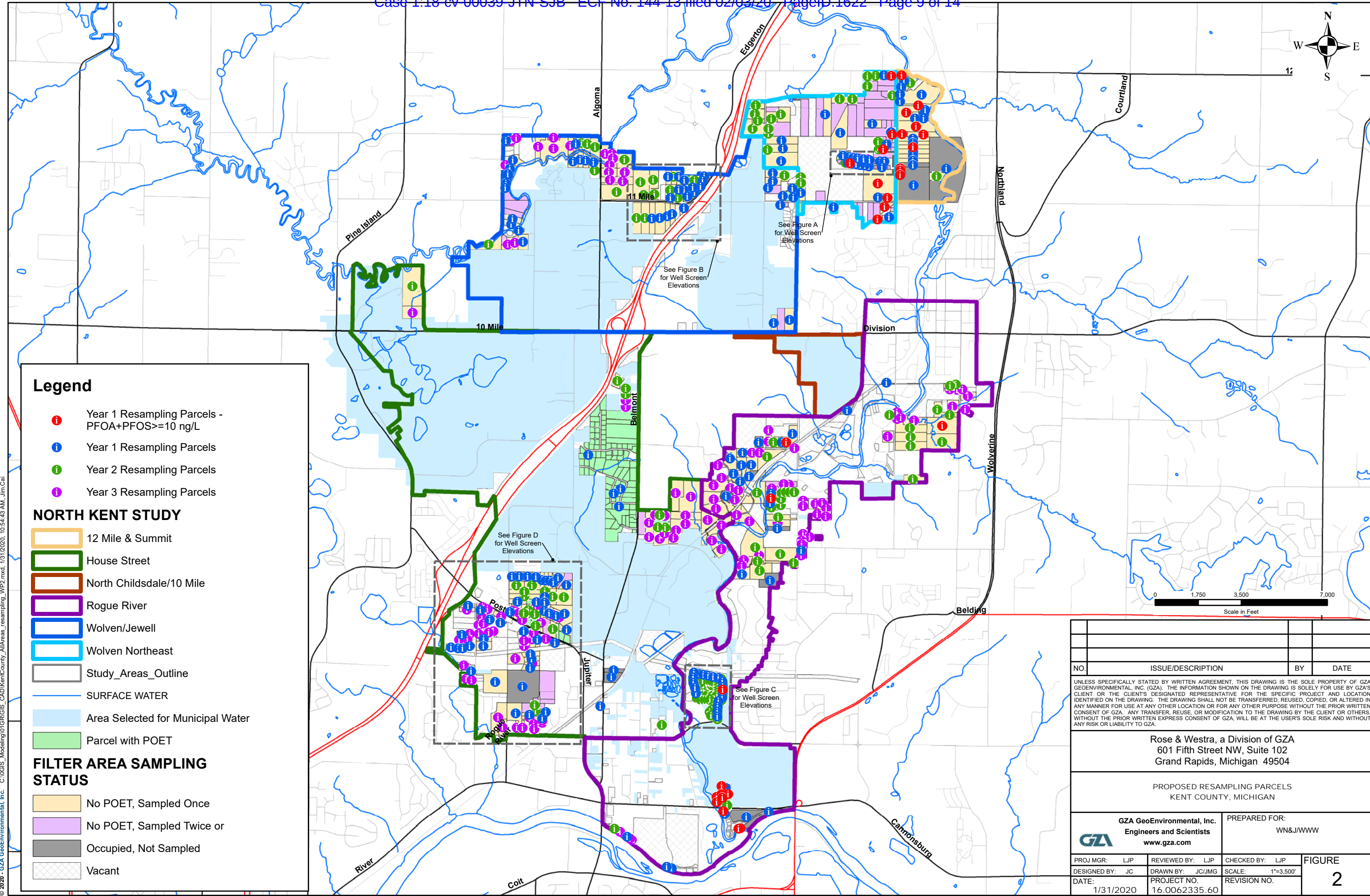
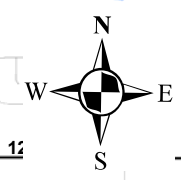
FILTER AREA SAMPLING STATUS

- No POET, Sampled Once
- No POET, Sampled Twice or More
- Vacant
- Occupied, Not Sampled



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<p>FILTER AREA SAMPLING FREQUENCY KENT COUNTY, MICHIGAN</p>			
<p>GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com</p>		<p>PREPARED FOR: WN&J/WWW</p>	
PROJ MGR: LJP	REVIEWED BY: LJP	CHECKED BY: LJP	FIGURE 1
DESIGNED BY: JC	DRAWN BY: JC/JMG	SCALE: 1"=3,500'	
DATE: 1/31/2020	PROJECT NO. 16.0062335.60	REVISION NO.	

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Legend

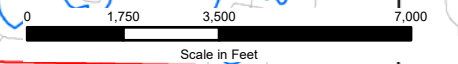
- ❶ Year 1 Resampling Parcels - PFOA+PFOS >= 10 ng/L
- ❷ Year 1 Resampling Parcels
- ❸ Year 2 Resampling Parcels
- ❹ Year 3 Resampling Parcels

NORTH KENT STUDY

- 12 Mile & Summit
- House Street
- North Childsdale/10 Mile
- Rogue River
- Wolven/Jewell
- Wolven Northeast
- Study_Areas_Outline
- SURFACE WATER
- Area Selected for Municipal Water
- Parcel with POET

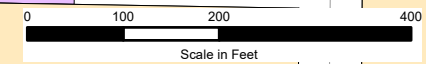
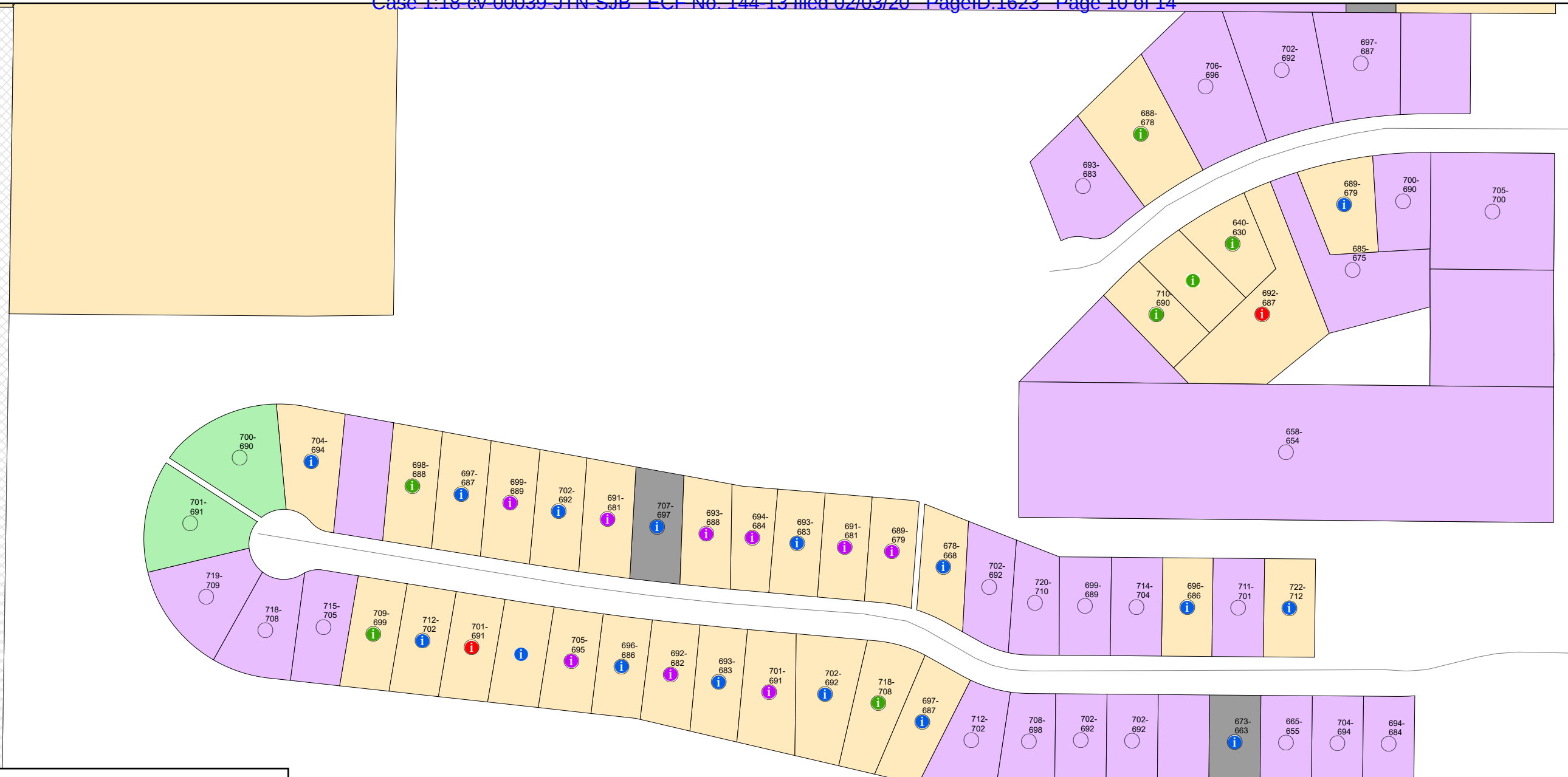
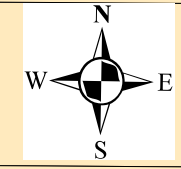
FILTER AREA SAMPLING STATUS

- No POET, Sampled Once
- No POET, Sampled Twice or
- Occupied, Not Sampled
- Vacant



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PROPOSED RESAMPLING PARCELS KENT COUNTY, MICHIGAN			
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: WN&J/WWW	
PROJ MGR: LJP	REVIEWED BY: LJP	CHECKED BY: LJP	FIGURE 2
DESIGNED BY: JC	DRAWN BY: JC/JMG	SCALE: 1"=3,500'	
DATE: 1/31/2020	PROJECT NO. 16.0062335.60	REVISION NO.	

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Legend

- Residential Well Screen Elevation (Ft)
- Year 1 Resampling Parcels - PFOA+PFOS >= 10 ng/L
- Year 1 Resampling Parcels
- Year 2 Resampling Parcels
- Year 3 Resampling Parcels
- Parcel with POET

FILTER AREA SAMPLING STATUS

- No POET, Sampled Once
- No POET, Sampled Twice or More
- Occupied, Not Sampled
- Vacant

NOTE:
 1. THE WELL SCREEN ELEVATIONS WERE BASED ON WELL SCREEN DEPTH DATA FROM WELL LOGIC DATABASE AND GROUND SURFACE ELEVATION ESTIMATED FROM KENT COUNTY LIDAR DATA.

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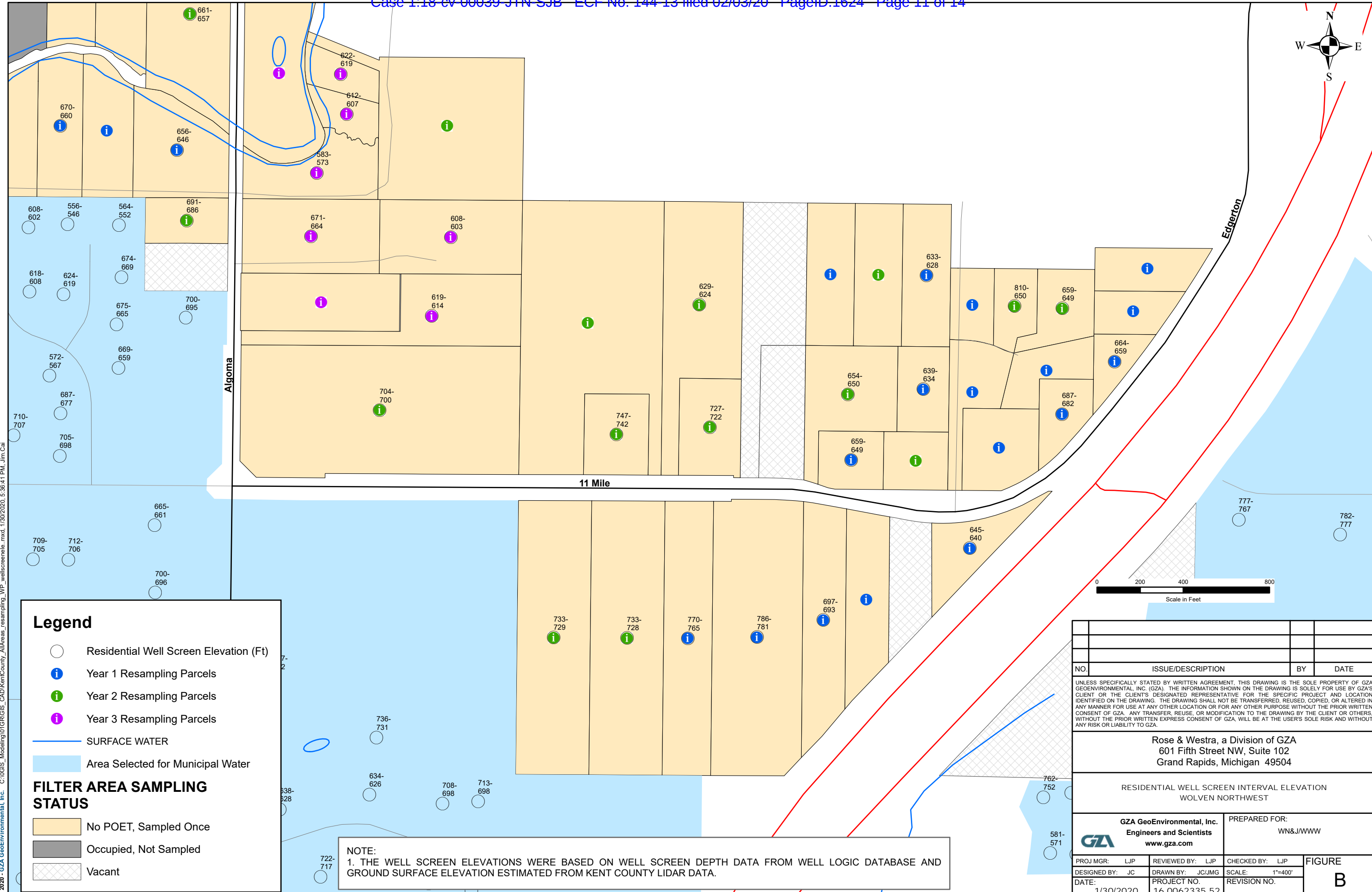
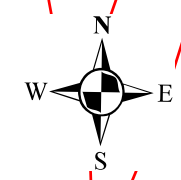
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 Grand Rapids, Michigan 49504

RESIDENTIAL WELL SCREEN INTERVAL ELEVATION
 WOLVEN NORTHEAST

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--	---------------------------

PROJ MGR: LJP	REVIEWED BY: LJP	CHECKED BY: LJP	FIGURE A
DESIGNED BY: JC	DRAWN BY: JC/JMG	SCALE: 1"=200'	
DATE: 1/30/2020	PROJECT NO. 16.0062335.52	REVISION NO.	

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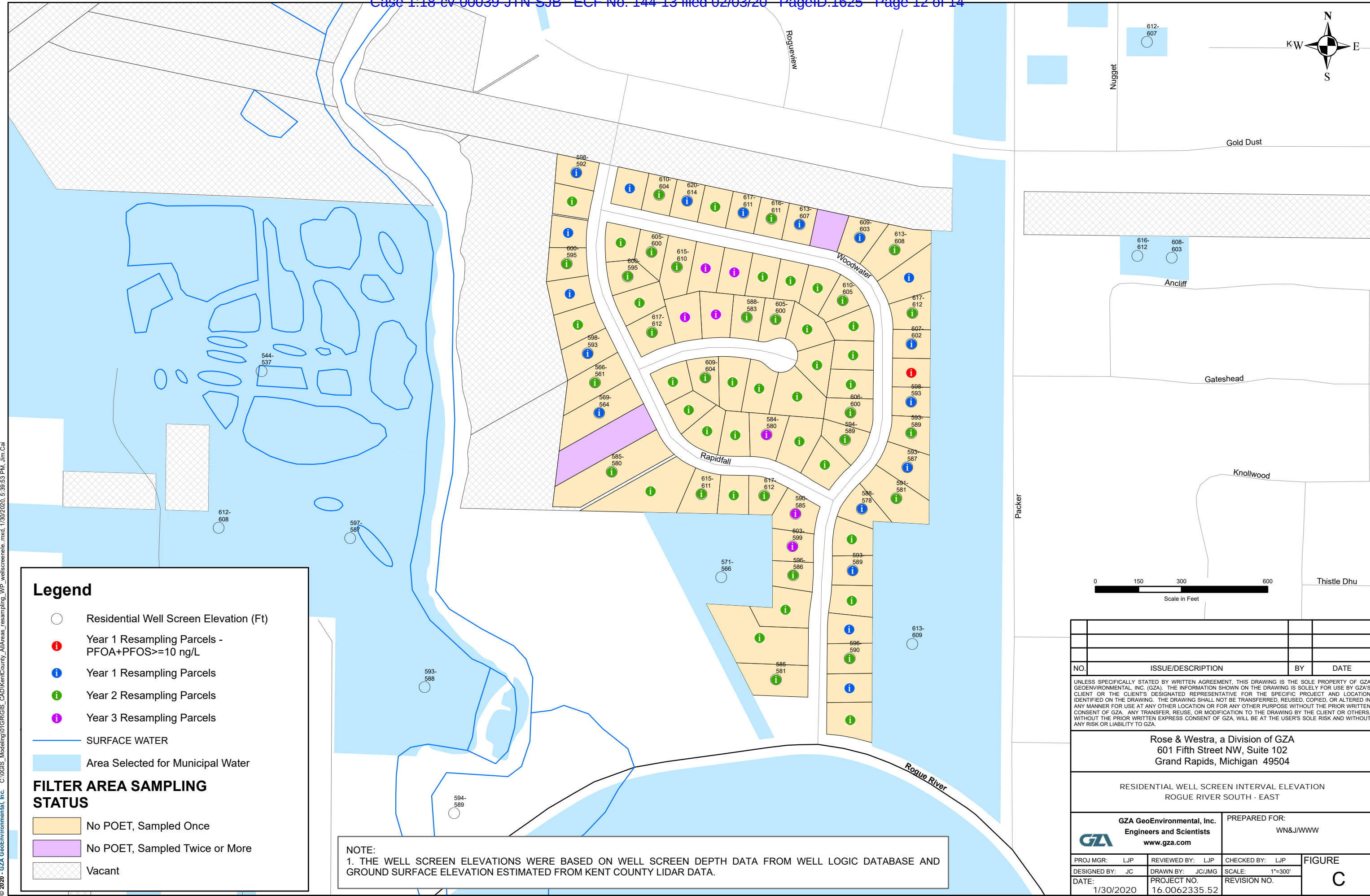
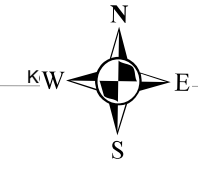
Legend

- Residential Well Screen Elevation (Ft)
 - i Year 1 Resampling Parcels
 - i Year 2 Resampling Parcels
 - i Year 3 Resampling Parcels
 - SURFACE WATER
 - Area Selected for Municipal Water
- FILTER AREA SAMPLING STATUS**
- No POET, Sampled Once
 - Occupied, Not Sampled
 - Vacant

NOTE:
 1. THE WELL SCREEN ELEVATIONS WERE BASED ON WELL SCREEN DEPTH DATA FROM WELL LOGIC DATABASE AND GROUND SURFACE ELEVATION ESTIMATED FROM KENT COUNTY LIDAR DATA.

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RESIDENTIAL WELL SCREEN INTERVAL ELEVATION WOLVEN NORTHWEST			
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: WN&J/WWW	
PROJ MGR: LJP	REVIEWED BY: LJP	CHECKED BY: LJP	FIGURE B
DESIGNED BY: JC	DRAWN BY: JC/JMG	SCALE: 1"=400'	
DATE: 1/30/2020	PROJECT NO: 16.0062335.52	REVISION NO:	

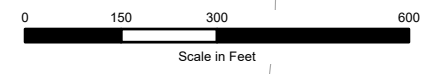
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Legend

- Residential Well Screen Elevation (Ft)
 - Year 1 Resampling Parcels - PFOA+PFOS >= 10 ng/L
 - Year 1 Resampling Parcels
 - Year 2 Resampling Parcels
 - Year 3 Resampling Parcels
 - SURFACE WATER
 - Area Selected for Municipal Water
- FILTER AREA SAMPLING STATUS**
- No POET, Sampled Once
 - No POET, Sampled Twice or More
 - Vacant

NOTE:
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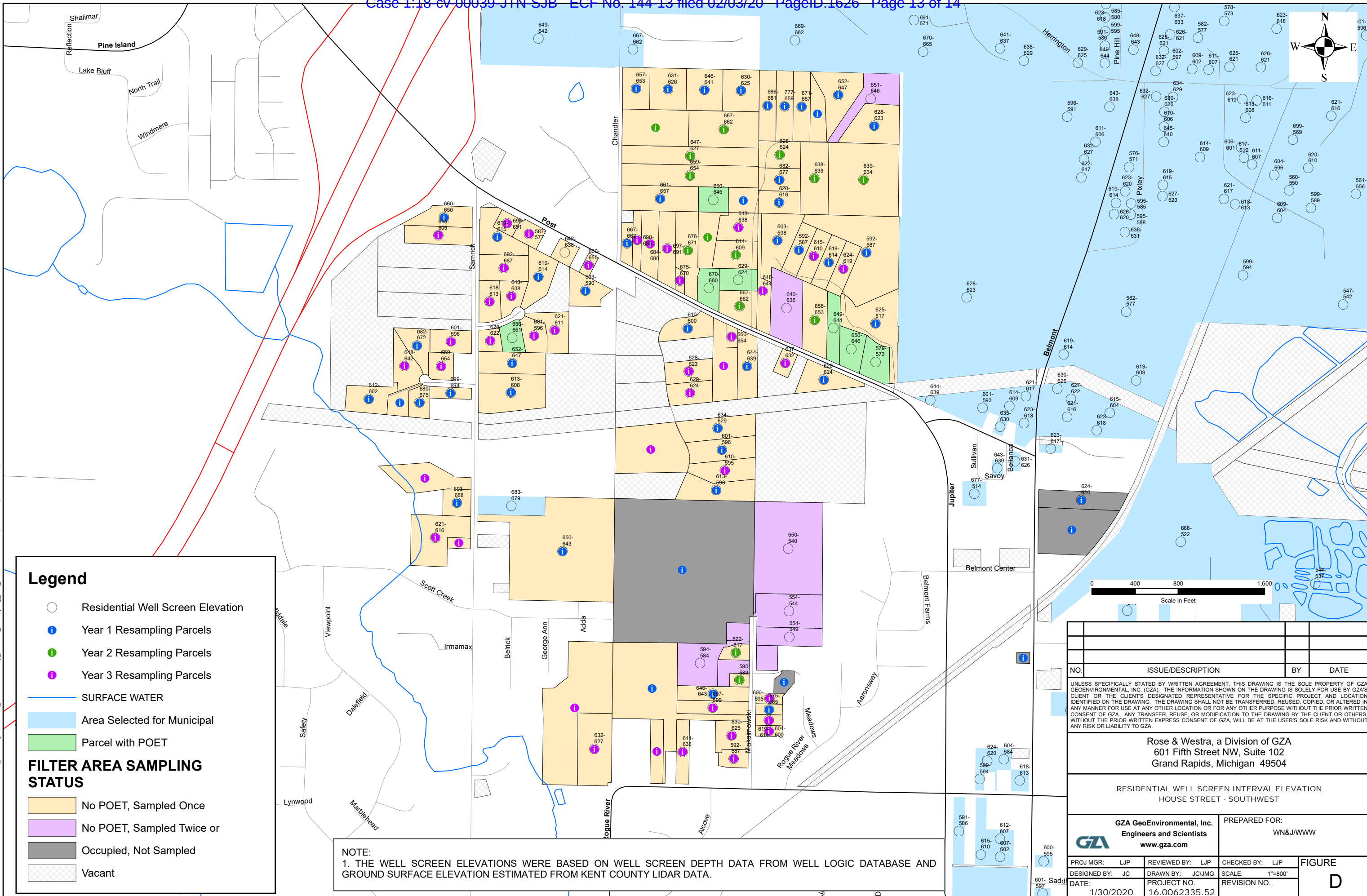
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 Grand Rapids, Michigan 49504

RESIDENTIAL WELL SCREEN INTERVAL ELEVATION
 ROGUE RIVER SOUTH - EAST

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PROJ MGR: LJP	REVIEWED BY: LJP	CHECKED BY: LJP	FIGURE C
DESIGNED BY: JC	DRAWN BY: JC/JMG	SCALE: 1"=300'	
DATE: 1/30/2020	PROJECT NO: 16.0062335.52	REVISION NO.	



Legend

- Residential Well Screen Elevation
 - Year 1 Resampling Parcels
 - Year 2 Resampling Parcels
 - Year 3 Resampling Parcels
 - SURFACE WATER
 - Area Selected for Municipal
 - Parcel with POET
- FILTER AREA SAMPLING STATUS**
- No POET, Sampled Once
 - No POET, Sampled Twice or
 - Occupied, Not Sampled
 - Vacant

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RESIDENTIAL WELL SCREEN INTERVAL ELEVATION HOUSE STREET - SOUTHWEST			
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: WN&J/WWW	
PROJ MGR: LJP	REVIEWED BY: LJP	CHECKED BY: LJP	FIGURE D
DESIGNED BY: JC	DRAWN BY: JC/JMG	SCALE: 1"=800'	
DATE: 1/30/2020	PROJECT NO. 16.0062335.52	REVISION NO.	



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