



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
LANSING



LIESL EICHLER CLARK
DIRECTOR

March 30, 2021

VIA E-MAIL & CERTIFIED MAIL – 7020 0090 0002 2356 8659
RETURN RECEIPT REQUESTED

ENFORCEMENT NOTICE

In the matter of:
Gerald R. Ford International Airport
5500 44th Street SE
Grand Rapids, Michigan 49512
Facility ID No.: 41001285

ATTENTION:
Mr. Casey Ries
Airport Engineering & Planning Director
Gerald R. Ford International Airport Authority
5500 44th Street SE
Grand Rapids, Michigan 49512

Dear Mr. Ries:

This Enforcement Notice serves as the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) formal and final notification to the Gerald R. Ford International Airport Authority (GFIAA) of its legal responsibility, relating to the release or threatened release of hazardous substances on and emanating from property located at 5500 44th Street SE, Grand Rapids, Michigan (Property) including the hazardous substances which have migrated off of the Property and contaminated residential drinking water wells. The Property is known to be a facility, as defined in Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The Gerald R. Ford International Airport (GFIA) Facility (Facility) also includes any area, place, parcel or parcels of property, or portion of a parcel of property where a hazardous substance in excess of the concentrations that satisfy the cleanup criteria for unrestricted residential use has been released, deposited, disposed of, or otherwise comes to be located. Facility conditions related to the GFIA include, but are not limited to: nearby affected residential drinking water wells with per- and polyfluoroalkyl substances (PFAS) detections exceeding EGLE's generic cleanup criteria for groundwater used as drinking water for PFAS; the contaminated deep aquifer below the Property that feeds groundwater flow north-northeast toward those residential wells; and contaminated areas exceeding criteria along the unnamed tributary commonly referred to as "Trout Creek." EGLE has determined that the existence of residential drinking water well contamination exceeding EGLE's generic cleanup criteria for groundwater used as drinking water for PFAS is an imminent and substantial endangerment to the public health, safety, or welfare, or the environment.

As previously explained in EGLE's correspondence dated May 1, 2020, October 9, 2020, and December 9, 2020, EGLE has a factual basis for asserting GFIAA is a person who is liable under Section 20126 of Part 201. Copies of the previously sent letters are attached as Attachment A. Additionally, EGLE's Remediation and Redevelopment Division (RRD) has

completed an evaluation of the local geologic conditions, historical surface water flow patterns, and PFAS data collected during EGLE's Cascade Township Residential Wells project (Geologic Review), which supplements RRD's January 2019 Geologic Review and further evaluates the risk to public health. The Geologic Review reinforces EGLE's factual basis for asserting GFIAA's liability and determination of an imminent and substantial endangerment to the public health, safety, or welfare, or the environment. The Geologic Review is attached as Attachment B.

As a liable person under Part 201, GFIAA is responsible for:

- Responding to releases at the Facility as provided in Section 20114 of Part 201;
- All costs lawfully incurred by the state relating to selection and implementation of response activities;
- Any other costs of response activity reasonably incurred under the circumstances by any other person;
- Damages for the value of injury to, destruction of, or loss of natural resources; and
- Civil fines for failure to comply with Part 201.

General Violations

In EGLE's May 1, 2020 Compliance Communication, October 9, 2020 Compliance Communication, and December 9, 2020 Violation Notice, EGLE notified GFIAA of GFIAA's affirmative obligations to perform response activities at the Facility in order to comply with Section 20114 of Part 201 and requested GFIAA perform response activities at the Facility pursuant to Section 20114 of Part 201 in their October 9, 2020 Compliance Communication and December 9, 2020 Violation Notice. As of the date of this Enforcement Notice, GFIAA has not undertaken the response activities at the Facility as requested and for which GFIAA is legally obligated to perform; therefore, and GFIAA is therefore in violation of Part 201. A list of GFIAA's Part 201 violations is included as Attachment C. EGLE reserves the right to assert new or additional violations if new information becomes available.

Due to GFIAA's failure to comply with Part 201, EGLE may initiate escalated enforcement actions against GFIAA including, but not limited to, issuance of an administrative order under Section 20119 of Part 201 and initiation of a civil action to seek injunctive relief and civil fines pursuant to Section(s) 20137(1)(e)-(f) and 20137(2) of Part 201, and other relief as may be necessary to address the violations.

Based on the information presently available to EGLE, GFIAA is subject to civil fines pursuant to Section(s) 20137(1)(e)-(f), 20137(2), and 20137(3) of Part 201; and the state is prepared to seek these civil fines for violations described in Attachment C of this Enforcement Notice.

Resolution of Liability and Violations

To avoid escalated enforcement and resolve GFIAA's liability under Part 201 and the violations presented in this Enforcement Notice, GFIAA can resolve this matter through entry of a legally enforceable administrative settlement agreement. Please contact Mr. William Depew, Case Coordinator, Compliance and Enforcement Section, RRD, EGLE, at 517-648-8508; or DepewW@Michigan.gov, within 10 days from receipt of this Enforcement Notice to schedule a

meeting to discuss entry of an administrative agreement. Please note that negotiations of this administrative agreement shall not, in general, exceed 90 days.

Be advised that failure to timely and adequately resolve or address the violations cited in this Enforcement Notice and GFIAA's liability under Part 201 may result in further enforcement proceedings, including, but not limited to, referral of the matter to the Michigan Department of Attorney General for commencement of civil litigation. Be further advised that this Enforcement Notice does not preclude or limit EGLE's ability to initiate any other enforcement action under state or federal law as appropriate.

A courtesy copy of this Enforcement Notice is being sent to the local units of government in which the Facility is located.

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

BY:  _____

Mike Neller, Director
Remediation and Redevelopment Division
Constitution Hall
525 W Allegan Street
Lansing, Michigan 48933

DATE: March 30, 2021

Attachments

ATTACHMENT A

PREVIOUS COMPLIANCE COMMUNICATIONS AND VIOLATION NOTICES



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
GRAND RAPIDS DISTRICT OFFICE



LIESL EICHLER CLARK
DIRECTOR

May 1, 2020

VIA EMAIL AND
CERTIFIED MAIL – 7017 2620 0000 2474 6503
RETURN RECEIPT REQUESTED

Mr. Casey Ries
Airport Engineering & Planning Director
Gerald R. Ford International Airport
5500 44th Street, SE
Grand Rapids, Michigan 49512

Dear Mr. Ries:

SUBJECT: Compliance Communication Regarding the Releases at Gerald R. Ford
International Airport, 5500 44th Street, SE, Kent County, Michigan;
Facility ID No.: 41001285

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) has information that environmental contamination is present on the Gerald R. Ford International Airport property at 5500 44th Street, SE (Property) for which Gerald R. Ford International Airport Authority (GFIAA) is liable. Therefore, GFIAA has obligations under Michigan's environmental cleanup law, Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Past use of Aqueous Film Forming Foam (AFFF) formulations containing per- and polyfluoroalkyl substances (PFAS) occurred on the Property at the former firefighting training area (FFTA), a paved area near "Ramp 5," and apron area near the Aircraft Rescue Fire Fighting (ARFF) building, Runway 26L and Taxiway D. GFIAA's investigation of the FFTA identified Perfluorooctane sulfonate (PFOS) and Perfluorooctanoic acid (PFOA) in shallow groundwater at 870 parts per trillion (ppt) and 103 ppt, respectively. GFIAA's investigation of surficial soils identified PFOS at 1,400 ug/kg, 0.639 ug/kg and 4,100 ug/kg at the FFTA, Ramp 5 and ARFF, respectively. PFOA and PFOS are hazardous substances under Part 201. The concentrations of PFOS and PFOA in groundwater exceed the criteria for unrestricted residential use, and the concentrations of PFOS in surficial soils exceed the groundwater-surface water interface protection criteria of 0.24 ug/kg. The presence of PFOS and PFOA in surficial soils and groundwater indicate that the Property is the source of environmental contamination. An area where hazardous substances exceed the criteria for unrestricted residential use is known as a Facility as defined in Part 201.

Persons who are liable for a Facility pursuant to Section 20126 of Part 201 include the owners or operators of the Facility who are responsible for an activity causing a release or threat of a release of a hazardous substance. EGLE has determined that GFIAA is liable under Section 20126(1)(a) of Part 201. GFIAA and its predecessor(s) have owned or operated on the Property since the late 1950s/early 1960s and have released PFAS containing AFFF to the environment at multiple locations on the Property during airport firefighting training, emergency response equipment testing and incidents requiring emergency response.

GFIAA is a person who is liable within the meaning of Section 20126(1) of Part 201. GFIAA is an operator of the Facility. The hazardous substances present in soils and groundwater at the Facility are due to the release of AFFF at various locations and periods since the 1960s. Therefore, GFIAA and its predecessor(s) are considered an owner or operator of the Facility at the time of the release of hazardous substances at the Facility, and responsible for an activity causing the release of hazardous substances into the environment.

As a liable party under Part 201, GFIAA is responsible for:

- (1) Response activities to address the environmental contamination at the Facility as provided in Section 20114 of Part 201,
- (2) All costs lawfully incurred by EGLE for addressing the environmental contamination or undertaking response activities,
- (3) Any other costs for response activity reasonably incurred by any other person, and
- (4) Damages for the value of injury to, destruction of, or loss of natural resources.

GFIAA has an affirmative obligation to comply with Section 20114 of Part 201, which lists the steps required of a liable party to address environmental contamination. These steps include, but are not limited to:

- Immediately taking measures to contain or remove the source of the environmental contamination,
- Notifying EGLE and affected neighbors if contamination has migrated off the Property, and
- Defining the nature and extent of the release and undertaking response activities to achieve Part 201 cleanup criteria.

Since environmental contamination is present on the Property, GFIAA also needs to take certain measures, commonly called due care, to ensure that existing contamination on the Property does not cause unacceptable risks and is not exacerbated. The due care provisions are found in Section 20107a of Part 201, and include:

- Preventing exacerbation of the existing contamination,
- Preventing unacceptable human exposure and mitigating fire and explosion hazards to allow for the intended use of the Facility in a manner that protects the public health and safety, and
- Taking reasonable precautions against the reasonably foreseeable acts or omissions of a third party.

Additional guidance on complying with due care is found in Part 10 (Compliance with Section 20107a of Act) of the Part 201 Administrative Rules.

EGLE is sending this compliance communication requesting that GFIAA continue to undertake response activities to comply with their obligations under Part 201. As before, all correspondence relating to this request should be sent to the following address:

Aaron Assmann, Project Manager
Grand Rapids District Office
Remediation and Redevelopment Division
Department of Environment, Great Lakes, and Energy

350 Ottawa Avenue, NW, Unit 10
Grand Rapids, Michigan 49503-2341
Telephone: 616-430-5275; Email: AssmannA@michigan.gov

Be advised that failure to voluntarily comply with the Part 201 obligations may result in EGLE asserting its authority under Section 20114(1)(h) or other action to compel compliance. If EGLE issues a Section 20114(h) demand, a person no longer has the option to self-implement a cleanup and GFIAA will be required to perform response activities in accordance with EGLE-approved response activity plans and schedules.

EGLE also has the authority to expend public funds to conduct response activities at facilities and recover those costs from the persons liable for the Facility. If GFIAA fails to implement response activities as required by Part 201, EGLE may perform response activities at the Facility and seek reimbursement for the costs. Failure to perform the response activities required by Part 201 may ultimately lead EGLE to take legal action to compel compliance with Part 201, including seeking civil fines. To avoid these consequences, EGLE requests that GFIAA continue to fulfill its Part 201 obligations.

The explanations of Part 201 in this letter should not be considered a complete listing of GFIAA's legal obligations. The Part 201 statute and rules can be found in its entirety at the EGLE website: www.michigan.gov/egle/, by clicking on 'Land,' 'Remediation,' then 'Site Investigation and Remediation.'

The information used to prepare this letter is located at EGLE's Grand Rapids District Office, 350 Ottawa Avenue, NW, Unit 10, Grand Rapids, Michigan 49503-2341. If GFIAA wishes to review this information or if you have questions regarding this letter, please contact the Project Manager, Aaron Assmann, at 616-430-5275 or via email at AssmannA@michigan.gov; or you may contact me at the telephone number listed below.

Sincerely,



Abigail Hendershott
District Supervisor
Grand Rapids District Office
Remediation and Redevelopment Division
616-888-0528
HendershottA@michigan.gov

cc: Mr. David O'Donnell, EGLE
Mr. Dan Rockafellow, EGLE
Mr. Darren Bowling, EGLE
Mr. Dan Yordanich, EGLE
Ms. Nancy Johnson, EGLE
Mr. Aaron Assmann, EGLE



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
GRAND RAPIDS DISTRICT OFFICE



LIESL EICHLER CLARK
DIRECTOR

October 9, 2020

VIA EMAIL AND
CERTIFIED MAIL – 7017 2620 0000 2474 6640
RETURN RECEIPT REQUESTED

Mr. Casey Ries
Airport Engineering & Planning Director
Gerald R. Ford International Airport
5500 44th Street, SE
Grand Rapids, Michigan 49512

Dear Mr. Ries:

SUBJECT: Compliance Communication Regarding the Releases at
Gerald R. Ford International Airport (GFIA),
5500 44th Street, SE, Kent County, Michigan;
Facility ID No.: 41001285

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) has information that environmental contamination on the Gerald R. Ford International Airport property at 5500 44th Street, SE (Property) has migrated off-site contaminating nearby residential drinking water wells for which Gerald R. Ford International Airport Authority (GFIAA) is liable. Therefore, GFIAA has obligations under Michigan's environmental cleanup law, Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201).

Past use of Aqueous Film Forming Foam (AFFF) formulations containing per- and polyfluoroalkyl substances (PFAS) occurred on the Property at the former firefighting training area (FFTA), a paved area near "Ramp 5," and apron area near the Aircraft Rescue Fire Fighting (ARFF) building, Runway 26L and Taxiway D. GFIAA's investigation of the FFTA identified Perfluorooctane sulfonate (PFOS) and Perfluorooctanoic acid (PFOA) in shallow groundwater at 870 parts per trillion (ppt) and 103 ppt, respectively. GFIAA's investigation of FFTA identified PFOS at 38 ppt and PFOA at 54 ppt in deep groundwater. GFIAA's investigation of surficial soils identified PFOS at 1,400 micrograms per kilogram (ug/kg), 0.639 ug/kg and 4,100 ug/kg at the FFTA, Ramp 5 and ARFF, respectively. PFOA and PFOS are hazardous substances under Part 201. The concentrations of PFOS and PFOA in shallow and deep groundwater exceed the criteria for unrestricted residential use, and the concentrations of PFOS in surficial soils exceed the groundwater-surface water interface protection criteria of 0.24 ug/kg. The presence of PFOS and PFOA in surficial soils and deep and shallow groundwater indicate that the Property is a source of environmental contamination. An area where hazardous substances exceed the criteria for unrestricted residential use is known as a Facility as defined in Part 201.

EGLE promulgated state drinking water standards for the following per- and polyfluoroalkyl substances (PFAS) that are effective August 3, 2020. State drinking water standards are also

commonly referenced as maximum contaminant levels and developed under section 5 of the Safe Drinking Water Act, 1976 PA 299 [MCL 325.1005].

As a result, the state drinking water standards of 8 parts per trillion (ppt) and 16 ppt respectively for PFOA and PFOS became the Part 201 residential and nonresidential drinking water criteria of 70 ppt for the combined concentrations of PFOA and PFOS.

EGLE's investigation of off-site residential drinking water wells downgradient of shallow groundwater and deep groundwater flow from the Facility has identified 39 locations where concentrations of PFOA and/or PFOS exceed unrestricted residential drinking water criteria. The maximum concentration for PFOA is 44.1 ppt and for PFOS is 51.9 ppt in a residential drinking water well.

Persons who are liable for a Facility pursuant to Section 20126 of Part 201 include the owners or operators of the Facility who are responsible for an activity causing a release or threat of a release of a hazardous substance. EGLE has determined that GFIAA is liable under Section 20126(1)(a) of Part 201. GFIAA and its predecessor(s) have owned or operated on the Property since the late 1950s/early 1960s and have released AFFF containing PFAS to the environment at multiple locations on the Property during airport firefighting training, emergency response equipment testing and incidents requiring emergency response.

GFIAA is a person who is liable within the meaning of Section 20126(1) of Part 201. GFIAA is an operator of the Facility. The hazardous substances present in soils and groundwater at the Facility are due to the release of AFFF at various locations and periods since the 1960s. Therefore, GFIAA and its predecessor(s) are considered an owner or operator of the Facility at the time of the release of hazardous substances at the Facility, and responsible for an activity causing the release of hazardous substances into the environment.

As a liable party under Part 201, GFIAA is responsible for:

- (1) Response activities to address the environmental contamination at the Facility as provided in Section 20114 of Part 201,
- (2) All costs lawfully incurred by EGLE for addressing the environmental contamination or undertaking response activities,
- (3) Any other costs for response activity reasonably incurred by any other person, and
- (4) Damages for the value of injury to, destruction of, or loss of natural resources.

GFIAA has an affirmative obligation to comply with Section 20114 of Part 201, which lists the steps required of a liable party to address environmental contamination. These steps include, but are not limited to:

- Immediately taking measures to contain or remove the source of the environmental contamination,
- Undertake interim response activities to provide a temporary source of water to residences whose drinking water wells have been unacceptably impacted by PFAS,
- Notifying EGLE and affected neighbors if contamination has migrated off the Property, and
- Defining the nature and extent of the release and undertaking response activities to achieve Part 201 cleanup criteria.

Since environmental contamination is present on the Property, GFIAA also needs to take certain measures, commonly called due care, to ensure that existing contamination on the Property does not cause unacceptable risks and is not exacerbated. The due care provisions are found in Section 20107a of Part 201, and include, but are not limited to:

- Preventing exacerbation of the existing contamination,
- Preventing unacceptable human exposure and mitigating fire and explosion hazards to allow for the intended use of the Facility in a manner that protects the public health and safety, and
- Taking reasonable precautions against the reasonably foreseeable acts or omissions of a third party.

Additional guidance on complying with due care is found in Part 10 (Compliance with Section 20107a of Act) of the Part 201 Administrative Rules.

EGLE is sending this compliance communication requesting the following actions from GFIAA:

- Within 14 days, provide to EGLE a Response Activity Plan for how GFIAA will temporarily mitigate the risks and exposures to offsite residential drinking water users. Include an implementation schedule that commences within 30 days after EGLE approval of the workplan.
- Within 30 days, provide Notices of Migration to all property owners downgradient of the FFTA investigation area per the requirements of Section 324.20114(1)(b)(ii).
- Within 60 days, provide EGLE a Response Activity Plan that evaluates and identifies a long-term remedy to permanently mitigate the risks for off-site residential drinking water users.
- Within 60 days, provide EGLE a Response Activity Plan to continue on-going investigations to define the nature and extent of PFAS contamination on-site and off-site attributable to AFFF releases at the GFIA.

As before, all correspondence relating to this request should be sent to the following address:

Aaron Assmann, Project Manager
Grand Rapids District Office
Remediation and Redevelopment Division
Department of Environment, Great Lakes, and Energy
350 Ottawa Avenue, NW, Unit 10
Grand Rapids, Michigan 49503-2341
Telephone: 616-430-5275; Email: AssmannA@michigan.gov

Be advised that failure to voluntarily comply with the Part 201 obligations may result in EGLE asserting its authority under Section 20114(1)(h) or other action to compel compliance. If EGLE issues a Section 20114(h) demand, a person no longer has the option to self-implement a cleanup, and GFIAA will be required to perform response activities in accordance with EGLE-approved response activity plans and schedules.

EGLE also has the authority to expend public funds to conduct response activities at facilities and recover those costs from the persons liable for the Facility. If GFIAA fails to implement response activities as required by Part 201, EGLE may perform response activities at the Facility and seek reimbursement for the costs. Failure to perform the response activities required by Part 201 may ultimately lead EGLE to take legal action to compel compliance with

Part 201, including seeking civil fines. To avoid these consequences, EGLE requests that GFIAA continue to fulfill its Part 201 obligations.

The explanations of Part 201 in this letter should not be considered a complete listing of GFIAA's legal obligations. The Part 201 statute and rules can be found in its entirety at the EGLE website: www.michigan.gov/egle/, by clicking on 'Land,' 'Remediation,' then 'Site Investigation and Remediation.'

The information used to prepare this letter is located at EGLE's Grand Rapids District Office, 350 Ottawa Avenue, NW, Unit 10, Grand Rapids, Michigan 49503-2341. If GFIAA wishes to review this information or if you have questions regarding this letter, please contact the Project Manager, Aaron Assmann, at 616-430-5275 or via email at AssmannA@michigan.gov; or you may contact me at the telephone number listed below.

Sincerely,



Abigail Hendershott
District Supervisor
Grand Rapids District Office
Remediation and Redevelopment Division
616-888-0528
HendershottA@michigan.gov

cc: Mr. David O'Donnell, EGLE
Mr. Darren Bowling, EGLE
Mr. Dan Yordanich, EGLE
Ms. Nancy Johnson, EGLE
Mr. Aaron Assmann, EGLE



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
GRAND RAPIDS DISTRICT OFFICE



LIESL EICHLER CLARK
DIRECTOR

December 9, 2020

VIA EMAIL AND
CERTIFIED MAIL – 7017 2620 0000 2474 6701
RETURN RECEIPT REQUESTED

Mr. Casey Ries
Airport Engineering & Planning Director
Gerald R. Ford International Airport
5500 44th Street, SE
Grand Rapids, Michigan 49512

Dear Mr. Ries:

SUBJECT: Violation Notice Regarding the Releases at Gerald R. Ford International Airport (GFIA), 5500 44th Street, SE, Kent County, Michigan
Facility ID No.: 41001285

The Gerald R. Ford International Airport Authority (GFIAA) was informed by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) in a letter dated October 9, 2020, (attached as Exhibit A) of its liability for both the environmental contamination on the property located at 5500 44th Street, SE, Kentwood, Michigan (Property), as well as the environmental contamination which has migrated off of the Property and has, subsequently, contaminated residential wells. Therefore, GFIAA has obligations under Michigan's environmental cleanup law, Part 201, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201).

In its October 9, 2020, letter, EGLE outlined its basis for asserting GFIAA is a liable party under Part 201; explained Part 201 obligations for liable parties and owners and operators of contaminated properties; and requested GFIAA perform certain response activities at the Facility.

Because it appears that GFIAA has not undertaken the necessary response activities requested in the October 9, 2020, letter, EGLE is sending this Violation Notice and requesting that GFIAA provide EGLE a written commitment to comply with Part 201 by January 4, 2021. The actions requested to be performed by GFIAA that were outlined in the October 9, 2020, correspondence are provided below:

- Provide to EGLE a Response Activity Plan for how GFIAA will mitigate the short-term risks and exposures to off-site residential drinking water users. Include an implementation schedule that commences within 30 days after EGLE approval of the workplan.
- Provide Notices of Migration to all property owners downgradient of the former firefighting training investigation area (FFTA) per the requirements of Section 324.20114(1)(b)(ii).
- Provide EGLE a Response Activity Plan that evaluates and identifies a long-term remedy to permanently mitigate the risks for off-site residential drinking water users.

- Provide EGLE a Response Activity Plan to continue on-going investigations to define the nature and extent of per- and poly-fluoroalkyl substances (PFAS) contamination on-site and off-site attributable to aqueous film forming foam (AFFF) releases at the GFIA.

As before, all correspondence relating to this request should be sent to the following address:

Aaron Assmann, Project Manager
EGLE
Grand Rapids District Office
Remediation and Redevelopment Division
350 Ottawa Avenue, NW, Unit 10
Grand Rapids, Michigan 49503-2341
Telephone: 616-430-5275; Email: AssmannA@michigan.gov

Be advised that failure to voluntarily comply with the Part 201 obligations may result in EGLE asserting its authority under Section 20114(1)(h) or other action to compel compliance. If EGLE issues a Section 20114(h) demand, a person no longer has the option to self-implement a cleanup, and GFIAA will be required to perform response activities in accordance with EGLE-approved response activity plans and schedules.

EGLE also has the authority to expend public funds to conduct response activities at facilities and recover those costs from the parties liable for releases of hazardous substances at the Facility. EGLE has incurred and may continue to incur, costs for performing response activities at the Facility. Please see the attached cost summary reports summarizing EGLE's expenditures at the Facility through the date indicated. Failure to perform the response activities required by Part 201 may ultimately lead EGLE to take legal action to compel compliance with Part 201, including seeking civil fines.

The explanations of Part 201 in this letter should not be considered a complete listing of GFIAA's legal obligations. The Part 201 statute and rules can be found in its entirety at the EGLE website: www.michigan.gov/egle/, by clicking on 'Land,' 'Remediation,' then 'Site Investigation and Remediation.'

The information used to prepare this letter is located at EGLE's Grand Rapids District Office, 350 Ottawa Avenue, NW, Unit 10, Grand Rapids, Michigan 49503-2341. If GFIAA wishes to review this information or if you have questions regarding this letter, please contact the Project Manager, Aaron Assmann, at 616-430-5275, or via email at AssmannA@michigan.gov, or you may contact me at the information listed below.

Sincerely,



Abigail Hendershott
District Supervisor
Grand Rapids District Office
Remediation and Redevelopment Division
616-888-0528
HendershottA@michigan.gov

Enclosures:

- Exhibit A: Compliance Communication from EGLE to GFIAA – October 9, 2020
- Exhibit B: Cost Recovery Summary Report – Gerald R. Ford Airport
- Exhibit C: Cost Recovery Summary Report – Cascade Township Residential Wells

cc: Mr. Brian Budds, MDOT
Mr. Steve Houtteman, MDOT
Ms. Beth Vens, EGLE
Mr. Dan Yordanich, EGLE
Mr. Darren Bowling, EGLE
Mr. Will Depew, EGLE
Mr. Steve Sliver, EGLE
Ms. Amy Peterson, EGLE
Ms. Heidi Hollenbach, EGLE
Ms. Nancy Johnson, EGLE
Mr. Aaron Assmann, EGLE

EXHIBIT A



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

GRAND RAPIDS DISTRICT OFFICE



LIESL EICHLER CLARK
DIRECTOR

October 9, 2020

VIA EMAIL AND
CERTIFIED MAIL – 7017 2620 0000 2474 6640
RETURN RECEIPT REQUESTED

Mr. Casey Ries
Airport Engineering & Planning Director
Gerald R. Ford International Airport
5500 44th Street, SE
Grand Rapids, Michigan 49512

Dear Mr. Ries:

SUBJECT: Compliance Communication Regarding the Releases at
Gerald R. Ford International Airport (GFIA),
5500 44th Street, SE, Kent County, Michigan;
Facility ID No.: 41001285

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Past use of Aqueous Film Forming Foam (AFFF) formulations containing per- and polyfluoroalkyl substances (PFAS) occurred on the Property at the former firefighting training area (FFTA), a paved area near "Ramp 5," and apron area near the Aircraft Rescue Fire Fighting (ARFF) building, Runway 26L and Taxiway D. GFIAA's investigation of the FFTA identified Perfluorooctane sulfonate (PFOS) and Perfluorooctanoic acid (PFOA) in shallow groundwater at 870 parts per trillion (ppt) and 103 ppt, respectively. GFIAA's investigation of FFTA identified PFOS at 38 ppt and PFOA at 54 ppt in deep groundwater. GFIAA's investigation of surficial soils identified PFOS at 1,400 micrograms per kilogram (ug/kg), 0.639 ug/kg and 4,100 ug/kg at the FFTA, Ramp 5 and ARFF, respectively. PFOA and PFOS are hazardous substances under Part 201. The concentrations of PFOS and PFOA in shallow and deep groundwater exceed the criteria for unrestricted residential use, and the concentrations of PFOS in surficial soils exceed the groundwater-surface water interface protection criteria of 0.24 ug/kg. The presence of PFOS and PFOA in surficial soils and deep and shallow groundwater indicate that the Property is a source of environmental contamination. An area where hazardous substances exceed the criteria for unrestricted residential use is known as a Facility as defined in Part 201.

EGLE promulgated state drinking water standards for the following per- and polyfluoroalkyl substances (PFAS) that are effective August 3, 2020. State drinking water standards are also

commonly referenced as maximum contaminant levels and developed under section 5 of the Safe Drinking Water Act, 1976 PA 299 [MCL 325.1005].

As a result, the state drinking water standards of 8 parts per trillion (ppt) and 16 ppt respectively for PFOA and PFOS became the Part 201 residential and nonresidential drinking water criteria of 70 ppt for the combined concentrations of PFOA and PFOS.

EGLE's investigation of off-site residential drinking water wells downgradient of shallow groundwater and deep groundwater flow from the Facility has identified 39 locations where concentrations of PFOA and/or PFOS exceed unrestricted residential drinking water criteria. The maximum concentration for PFOA is 44.1 ppt and for PFOS is 51.9 ppt in a residential drinking water well.

Persons who are liable for a Facility pursuant to Section 20126 of Part 201 include the owners or operators of the Facility who are responsible for an activity causing a release or threat of a release of a hazardous substance. EGLE has determined that GFIAA is liable under Section 20126(1)(a) of Part 201. GFIAA and its predecessor(s) have owned or operated on the Property since the late 1950s/early 1960s and have released AFFF containing PFAS to the environment at multiple locations on the Property during airport firefighting training, emergency response equipment testing and incidents requiring emergency response.

GFIAA is a person who is liable within the meaning of Section 20126(1) of Part 201. GFIAA is an operator of the Facility. The hazardous substances present in soils and groundwater at the Facility are due to the release of AFFF at various locations and periods since the 1960s. Therefore, GFIAA and its predecessor(s) are considered an owner or operator of the Facility at the time of the release of hazardous substances at the Facility, and responsible for an activity causing the release of hazardous substances into the environment.

As a liable party under Part 201, GFIAA is responsible for:

- (1) Response activities to address the environmental contamination at the Facility as provided in Section 20114 of Part 201,
- (2) All costs lawfully incurred by EGLE for addressing the environmental contamination or undertaking response activities,
- (3) Any other costs for response activity reasonably incurred by any other person, and
- (4) Damages for the value of injury to, destruction of, or loss of natural resources.

GFIAA has an affirmative obligation to comply with Section 20114 of Part 201, which lists the steps required of a liable party to address environmental contamination. These steps include, but are not limited to:

- Immediately taking measures to contain or remove the source of the environmental contamination,
- Undertake interim response activities to provide a temporary source of water to residences whose drinking water wells have been unacceptably impacted by PFAS,
- Notifying EGLE and affected neighbors if contamination has migrated off the Property, and
- Defining the nature and extent of the release and undertaking response activities to achieve Part 201 cleanup criteria.

Since environmental contamination is present on the Property, GFIAA also needs to take certain measures, commonly called due care, to ensure that existing contamination on the Property does not cause unacceptable risks and is not exacerbated. The due care provisions are found in Section 20107a of Part 201, and include, but are not limited to:

- Preventing exacerbation of the existing contamination,
- Preventing unacceptable human exposure and mitigating fire and explosion hazards to allow for the intended use of the Facility in a manner that protects the public health and safety, and
- Taking reasonable precautions against the reasonably foreseeable acts or omissions of a third party.

Additional guidance on complying with due care is found in Part 10 (Compliance with Section 20107a of Act) of the Part 201 Administrative Rules.

EGLE is sending this compliance communication requesting the following actions from GFIAA:

- Within 14 days, provide to EGLE a Response Activity Plan for how GFIAA will temporarily mitigate the risks and exposures to offsite residential drinking water users. Include an implementation schedule that commences within 30 days after EGLE approval of the workplan.
- Within 30 days, provide Notices of Migration to all property owners downgradient of the FFTA investigation area per the requirements of Section 324.20114(1)(b)(ii).
- Within 60 days, provide EGLE a Response Activity Plan that evaluates and identifies a long-term remedy to permanently mitigate the risks for off-site residential drinking water users.
- Within 60 days, provide EGLE a Response Activity Plan to continue on-going investigations to define the nature and extent of PFAS contamination on-site and off-site attributable to AFFF releases at the GFIA.

As before, all correspondence relating to this request should be sent to the following address:

Aaron Assmann, Project Manager
Grand Rapids District Office
Remediation and Redevelopment Division
Department of Environment, Great Lakes, and Energy
350 Ottawa Avenue, NW, Unit 10
Grand Rapids, Michigan 49503-2341
Telephone: 616-430-5275; Email: AssmannA@michigan.gov

Be advised that failure to voluntarily comply with the Part 201 obligations may result in EGLE asserting its authority under Section 20114(1)(h) or other action to compel compliance. If EGLE issues a Section 20114(h) demand, a person no longer has the option to self-implement a cleanup, and GFIAA will be required to perform response activities in accordance with EGLE-approved response activity plans and schedules.

EGLE also has the authority to expend public funds to conduct response activities at facilities and recover those costs from the persons liable for the Facility. If GFIAA fails to implement response activities as required by Part 201, EGLE may perform response activities at the Facility and seek reimbursement for the costs. Failure to perform the response activities required by Part 201 may ultimately lead EGLE to take legal action to compel compliance with

Part 201, including seeking civil fines. To avoid these consequences, EGLE requests that GFIAA continue to fulfill its Part 201 obligations.

The explanations of Part 201 in this letter should not be considered a complete listing of GFIAA's legal obligations. The Part 201 statute and rules can be found in its entirety at the EGLE website: www.michigan.gov/egle/, by clicking on 'Land,' 'Remediation,' then 'Site Investigation and Remediation.'

The information used to prepare this letter is located at EGLE's Grand Rapids District Office, 350 Ottawa Avenue, NW, Unit 10, Grand Rapids, Michigan 49503-2341. If GFIAA wishes to review this information or if you have questions regarding this letter, please contact the Project Manager, Aaron Assmann, at 616-430-5275 or via email at AssmannA@michigan.gov; or you may contact me at the telephone number listed below.

Sincerely,



Abigail Hendershott
District Supervisor
Grand Rapids District Office
Remediation and Redevelopment Division
616-888-0528
HendershottA@michigan.gov

cc: Mr. David O'Donnell, EGLE
Mr. Darren Bowling, EGLE
Mr. Dan Yordanich, EGLE
Ms. Nancy Johnson, EGLE
Mr. Aaron Assmann, EGLE

EXHIBIT B

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY 11/20/2020
 REMEDIATION AND REDEVELOPMENT DIVISION Source: EXCEL
 Cost Recovery Summary Report

Site Name: Gerald R Ford Airport
 Site ID: 41001285
 Location Code: 6D80

County: Kent
 Package: Original
 Sub Location Code: N/A

Total for Employee Salaries and Wages		
Period Covered: 04/08/2018 through 10/31/2020	\$	54,570.79
Indirect	\$	7,020.19
Sub-Total	\$	<u>61,590.98</u>

Employee Travel Expenses for period :
 Period Covered:

Contractual Expenses		
Period Covered:	\$	-
Contract Sub-Total	\$	<u>-</u>

Miscellaneous Expenses for period covered:
 Period Covered:

MDNR/MDEQ Lab Expenses for period:
 Period Covered:

Attorney General Expenses for period:		
Period Covered: 9/1/2020 through 9/30/2020	\$	1,306.25

Other Expenses		
Period Covered:	\$	-

Sub-Total	\$	<u>62,897.23</u>
Interest Calculated from	\$	<u>-</u>
Total Combined Expenses for Site and Interest	\$	<u>62,897.23</u>

Run Date: 11/20/2020

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKE, AND ENERGY
REMEDATION AND REDEVELOPMENT DIVISION
Cost Recovery Summary Detail of Salaries, Fringes, Insurances, FICA, and Retirement

Site Name GR Ford Airport **Site ID or Facility ID** 41001285 **Location Code** 6D80 **SubLocation Code** NA **Package** O

Employee	Correction	Pay Cycle Expiration Date*	Pay Period Ending	FY	Pay Rate	Regular Hours	Regular Pay	OT Hours	OT Pay	Fringes and Insurances	FICA and Retirement	Sub Total	Indirect	Total
Activity E150 Enforcement														
JOHNSON, NANCY ROTTSCHAFER		08/08/2020	08/08/2020	2020	\$37.30	9.4	\$351.02			\$93.72	\$181.74	\$626.48	\$76.87	\$703.35
JOHNSON, NANCY ROTTSCHAFER		08/22/2020	08/22/2020	2020	\$37.30	1.0	\$39.01			\$11.28	\$20.19	\$70.48	\$8.65	\$79.13
JOHNSON, NANCY ROTTSCHAFER		09/05/2020	09/05/2020	2020	\$37.30	2.2	\$80.64			\$21.53	\$41.75	\$143.92	\$17.66	\$161.58
JOHNSON, NANCY ROTTSCHAFER		10/03/2020	10/03/2020	2021	\$38.05	4.0	\$152.20			\$42.41	\$82.71	\$277.32	\$40.60	\$317.92
JOHNSON, NANCY ROTTSCHAFER		10/03/2020	10/03/2020	2020	\$37.30	0.2	\$5.92				\$3.22	\$9.14	\$1.34	\$10.48
JOHNSON, NANCY ROTTSCHAFER		10/17/2020	10/17/2020	2021	\$38.05	2.8	\$104.97			\$21.98	\$57.06	\$184.01	\$26.94	\$210.95
JOHNSON, NANCY ROTTSCHAFER		10/31/2020	10/31/2020	2021	\$38.05	1.3	\$49.10			\$12.95	\$26.65	\$88.70	\$12.99	\$101.69
												\$1,400.05	\$185.04	\$1,585.09
Activity M100 Manage Response Actions														
JOHNSON, NANCY ROTTSCHAFER		02/22/2020	02/22/2020	2020	\$37.30	24.3	\$908.18			\$242.45	\$470.24	\$1,620.87	\$198.88	\$1,819.75
												\$1,620.87	\$198.88	\$1,819.75

Rounding disclaimer: Due to rounding, numbers presented may not add up precisely to the totals provided.

Employee	Correction	Pay Cycle Expiration Date*	Pay Period Ending	FY	Pay Rate	Regular Hours	Regular Pay	OT Hours	OT Pay	Fringes and Insurances	FICA and Retirement	Sub Total	Indirect	Total
Activity P120 PFAS														
ASSMANN, AARON A		04/21/2018	04/21/2018	2018	\$28.53	38.0	\$1,084.15			\$135.16	\$628.25	\$1,847.56	\$250.34	\$2,097.90
ASSMANN, AARON A		05/05/2018	05/05/2018	2018	\$28.53	22.0	\$627.67			\$78.24	\$363.71	\$1,069.62	\$144.93	\$1,214.55
BANDLOW, DAVID F		05/05/2018	05/05/2018	2018	\$39.11	2.0	\$78.22			\$18.47	\$44.78	\$141.47	\$19.17	\$160.64
ASSMANN, AARON A		05/19/2018	05/19/2018	2018	\$28.53	16.5	\$470.75			\$59.82	\$278.03	\$808.60	\$109.57	\$918.17
ASSMANN, AARON A		06/02/2018	06/02/2018	2018	\$28.53	16.1	\$459.66			\$61.79	\$266.47	\$787.92	\$106.76	\$894.68
ASSMANN, AARON A		06/16/2018	06/16/2018	2018	\$31.17	12.2	\$380.96			\$47.33	\$220.81	\$649.10	\$87.95	\$737.05
ASSMANN, AARON A		06/30/2018	06/30/2018	2018	\$31.17	40.0	\$1,246.80			\$154.93	\$722.75	\$2,124.48	\$287.87	\$2,412.35
ASSMANN, AARON A		07/14/2018	07/14/2018	2018	\$31.17	23.0	\$717.85			\$89.20	\$416.12	\$1,223.17	\$165.74	\$1,388.91
ASSMANN, AARON A		07/28/2018	07/28/2018	2018	\$31.17	11.7	\$365.30			\$45.40	\$211.77	\$622.47	\$84.34	\$706.81
ASSMANN, AARON A		08/11/2018	08/11/2018	2018	\$31.17	3.5	\$109.10			\$13.58	\$63.22	\$185.90	\$25.19	\$211.09
ASSMANN, AARON A		08/25/2018	08/25/2018	2018	\$31.17	4.2	\$129.56			\$16.95	\$79.04	\$225.55	\$30.56	\$256.11
ASSMANN, AARON A		09/08/2018	09/08/2018	2018	\$31.17	28.9	\$900.48			\$111.91	\$488.68	\$1,501.07	\$203.40	\$1,704.47
HENDERSHOTT, ABIGAIL S		09/08/2018	09/08/2018	2018	\$42.31	7.8	\$329.30			\$79.93	\$172.46	\$581.69	\$78.82	\$660.51
ASSMANN, AARON A		09/22/2018	09/22/2018	2018	\$31.17	2.0	\$62.35			\$3.92	\$33.89	\$100.16	\$13.57	\$113.73
ASSMANN, AARON A		10/06/2018	09/22/2018	2019	\$31.79					\$3.83		\$3.83	\$0.52	\$4.35
ASSMANN, AARON A		10/06/2018	10/06/2018	2018	\$31.17	4.0	\$124.68				\$72.00	\$196.68	\$26.65	\$223.33
ASSMANN, AARON A		10/06/2018	10/06/2018	2019	\$31.79	4.0	\$127.17			\$7.53	\$73.47	\$208.17	\$28.21	\$236.38
ASSMANN, AARON A		10/20/2018	10/20/2018	2019	\$31.79	9.5	\$302.01			\$9.93	\$195.23	\$507.17	\$68.72	\$575.89
ASSMANN, AARON A		11/03/2018	11/03/2018	2019	\$31.79	17.1	\$542.57			\$15.76	\$309.06	\$867.39	\$117.53	\$984.92
ASSMANN, AARON A		11/17/2018	11/17/2018	2019	\$31.79	12.5	\$397.37			\$11.53	\$226.35	\$635.25	\$86.08	\$721.33
ASSMANN, AARON A		12/01/2018	12/01/2018	2019	\$31.79	1.9	\$59.61			\$1.75	\$33.98	\$95.34	\$12.92	\$108.26
ASSMANN, AARON A		12/15/2018	12/15/2018	2019	\$31.79	9.0	\$286.11			\$8.27	\$162.92	\$457.30	\$61.96	\$519.26
ASSMANN, AARON A		01/12/2019	01/12/2019	2019	\$31.79	6.7	\$211.96			\$6.16	\$120.75	\$338.87	\$45.92	\$384.79
WORRALL, MARK C		01/12/2019	01/12/2019	2019	\$36.57	10.0	\$365.70			\$99.88	\$202.64	\$668.22	\$90.54	\$758.76
ASSMANN, AARON A		01/26/2019	01/26/2019	2019	\$31.79	39.4	\$1,253.95			\$36.42	\$714.31	\$2,004.68	\$271.63	\$2,276.31
WORRALL, MARK C		01/26/2019	01/26/2019	2019	\$36.57	6.7	\$246.45			\$69.48	\$140.98	\$456.91	\$61.91	\$518.82
ASSMANN, AARON A		02/09/2019	02/09/2019	2019	\$31.79	47.2	\$1,500.53			\$43.85	\$860.14	\$2,404.52	\$325.81	\$2,730.33
ASSMANN, AARON A		03/09/2019	03/09/2019	2019	\$31.79	8.0	\$254.32			\$7.38	\$144.90	\$406.60	\$55.09	\$461.69
ASSMANN, AARON A		04/06/2019	04/06/2019	2019	\$31.79	2.6	\$81.52			\$2.34	\$46.41	\$130.27	\$17.65	\$147.92
ASSMANN, AARON A		04/20/2019	04/20/2019	2019	\$31.79	5.0	\$158.95			\$4.62	\$90.55	\$254.12	\$34.43	\$288.55
ASSMANN, AARON A		05/04/2019	05/04/2019	2019	\$31.79	5.6	\$176.62			\$5.13	\$100.62	\$282.37	\$38.26	\$320.63
ASSMANN, AARON A		05/18/2019	05/18/2019	2019	\$31.79	3.3	\$105.98			\$3.08	\$60.38	\$169.44	\$22.96	\$192.40
ASSMANN, AARON A		06/15/2019	06/15/2019	2019	\$33.64	5.6	\$186.89			\$5.28	\$106.56	\$298.73	\$40.48	\$339.21
ASSMANN, AARON A		06/29/2019	06/29/2019	2019	\$33.64	2.0	\$67.28			\$1.91	\$38.35	\$107.54	\$14.57	\$122.11
ASSMANN, AARON A		07/13/2019	07/13/2019	2019	\$33.64	3.3	\$112.13			\$3.17	\$63.91	\$179.21	\$24.28	\$203.49
ASSMANN, AARON A		07/27/2019	07/27/2019	2019	\$33.64	1.0	\$33.64			\$0.97	\$19.18	\$53.79	\$7.29	\$61.08

Rounding disclaimer: Due to rounding, numbers presented may not add up precisely to the totals provided.

Employee	Correction	Pay Cycle Expiration Date*	Pay Period Ending	FY	Pay Rate	Regular Hours	Regular Pay	OT Hours	OT Pay	Fringes and Insurances	FICA and Retirement	Sub Total	Indirect	Total
ASSMANN, AARON A		08/10/2019	08/10/2019	2019	\$33.64	3.0	\$100.92			\$2.87	\$57.52	\$161.31	\$21.86	\$183.17
WORRALL, MARK C		08/24/2019	08/24/2019	2019	\$36.57	4.6	\$169.26			\$46.26	\$93.78	\$309.30	\$41.91	\$351.21
ASSMANN, AARON A		09/07/2019	09/07/2019	2019	\$33.64	6.3	\$213.59			\$6.06	\$121.77	\$341.42	\$46.26	\$387.68
ASSMANN, AARON A		10/05/2019	10/05/2019	2020	\$34.31					\$3.77		\$3.77	\$0.46	\$4.23
ASSMANN, AARON A		10/05/2019	10/05/2019	2019	\$33.64	4.0	\$134.56				\$71.67	\$206.23	\$25.30	\$231.53
WORRALL, MARK C		10/05/2019	10/05/2019	2020	\$37.30					\$44.62		\$44.62	\$5.47	\$50.09
WORRALL, MARK C		10/05/2019	10/05/2019	2019	\$36.57	4.4	\$160.18				\$82.61	\$242.79	\$29.79	\$272.58
WORRALL, MARK C		10/19/2019	10/19/2019	2020	\$37.30	2.0	\$75.54			\$12.85	\$39.09	\$127.48	\$15.64	\$143.12
ASSMANN, AARON A		11/16/2019	11/16/2019	2020	\$34.31	14.9	\$510.68			\$14.12	\$272.00	\$796.80	\$97.77	\$894.57
ASSMANN, AARON A		01/11/2020	01/11/2020	2020	\$34.31	30.3	\$1,037.95			\$28.68	\$552.89	\$1,619.52	\$198.72	\$1,818.24
ASSMANN, AARON A		01/25/2020	01/25/2020	2020	\$34.31	19.4	\$667.14			\$18.43	\$355.37	\$1,040.94	\$127.72	\$1,168.66
ASSMANN, AARON A		02/08/2020	02/08/2020	2020	\$34.31	3.0	\$102.93			\$2.83	\$54.83	\$160.59	\$19.70	\$180.29
WORRALL, MARK C		02/08/2020	02/08/2020	2020	\$37.30	14.0	\$522.20			\$143.82	\$267.36	\$933.38	\$114.53	\$1,047.91
ASSMANN, AARON A		02/22/2020	02/22/2020	2020	\$34.31	11.1	\$381.24			\$10.54	\$203.08	\$594.86	\$72.99	\$667.85
WORRALL, MARK C		02/22/2020	02/22/2020	2020	\$37.30	31.1	\$1,160.44			\$319.61	\$594.09	\$2,074.14	\$254.50	\$2,328.64
ASSMANN, AARON A		03/07/2020	03/07/2020	2020	\$34.31	5.5	\$188.71			\$5.21	\$100.51	\$294.43	\$36.13	\$330.56
WORRALL, MARK C		03/07/2020	03/07/2020	2020	\$37.30	16.5	\$615.45			\$169.52	\$315.09	\$1,100.06	\$134.98	\$1,235.04
ASSMANN, AARON A		03/21/2020	03/21/2020	2020	\$34.31	10.5	\$360.26			\$9.97	\$191.91	\$562.14	\$68.97	\$631.11
ASSMANN, AARON A		04/04/2020	04/04/2020	2020	\$34.31	7.5	\$257.34			\$7.11	\$137.08	\$401.53	\$49.27	\$450.80
YORDANICH, DANNY		04/04/2020	04/04/2020	2020	\$40.76	12.0	\$489.12			\$79.29	\$253.44	\$821.85	\$100.84	\$922.69
ASSMANN, AARON A		04/18/2020	04/18/2020	2020	\$34.31	14.0	\$480.34			\$13.28	\$255.87	\$749.49	\$91.96	\$841.45
WORRALL, MARK C		04/18/2020	04/18/2020	2020	\$37.30	10.0	\$373.00			\$102.74	\$190.97	\$666.71	\$81.81	\$748.52
YORDANICH, DANNY		04/18/2020	04/18/2020	2020	\$40.76	15.7	\$639.37			\$103.65	\$331.30	\$1,074.32	\$131.82	\$1,206.14
ASSMANN, AARON A		05/02/2020	05/02/2020	2020	\$34.31	8.5	\$291.65			\$8.06	\$155.35	\$455.06	\$55.84	\$510.90
WORRALL, MARK C		05/02/2020	05/02/2020	2020	\$37.30	49.1	\$1,830.19			\$504.07	\$937.00	\$3,271.26	\$401.38	\$3,672.64
YORDANICH, DANNY		05/02/2020	05/02/2020	2020	\$40.76	17.5	\$713.30			\$115.63	\$369.61	\$1,198.54	\$147.06	\$1,345.60
ASSMANN, AARON A		05/16/2020	05/16/2020	2020	\$34.31	3.2	\$110.70			\$3.12	\$60.10	\$173.92	\$21.34	\$195.26
WORRALL, MARK C		05/16/2020	05/16/2020	2020	\$37.30	57.0	\$2,126.10			\$585.57	\$1,091.19	\$3,802.86	\$466.61	\$4,269.47
YORDANICH, DANNY		05/16/2020	05/16/2020	2020	\$40.76	1.5	\$61.14			\$9.91	\$31.69	\$102.74	\$12.61	\$115.35
WORRALL, MARK C		05/30/2020	05/30/2020	2020	\$37.30	18.7	\$696.25			\$239.70	\$433.37	\$1,369.32	\$168.02	\$1,537.34
ASSMANN, AARON A		06/13/2020	06/13/2020	2020	\$34.31	2.0	\$68.62			\$2.36	\$44.25	\$115.23	\$14.14	\$129.37
WORRALL, MARK C		06/13/2020	06/13/2020	2020	\$37.30	23.3	\$868.07			\$298.86	\$540.29	\$1,707.22	\$209.48	\$1,916.70
YORDANICH, DANNY		06/13/2020	06/13/2020	2020	\$40.76	1.0	\$40.76			\$8.26	\$25.62	\$74.64	\$9.16	\$83.80
ASSMANN, AARON A		08/08/2020	08/08/2020	2020	\$34.31	5.5	\$188.71			\$5.21	\$100.62	\$294.54	\$36.14	\$330.68
ASSMANN, AARON A		08/22/2020	08/22/2020	2020	\$34.31	15.0	\$514.65			\$26.41	\$274.43	\$815.49	\$100.06	\$915.55
WORRALL, MARK C		08/22/2020	08/22/2020	2020	\$37.30	4.4	\$165.79			\$49.35	\$85.52	\$300.66	\$36.89	\$337.55
ASSMANN, AARON A		09/05/2020	09/05/2020	2020	\$34.31	7.5	\$257.33			\$7.11	\$137.23	\$401.67	\$49.28	\$450.95

Rounding disclaimer: Due to rounding, numbers presented may not add up precisely to the totals provided.

Employee	Correction	Pay Cycle Expiration Date*	Pay Period Ending	FY	Pay Rate	Regular Hours	Regular Pay	OT Hours	OT Pay	Fringes and Insurances	FICA and Retirement	Sub Total	Indirect	Total	
ASSMANN, AARON A		09/19/2020	09/19/2020	2020	\$34.31	1.1	\$38.12			\$0.85	\$20.32	\$59.29	\$7.27	\$66.56	
ASSMANN, AARON A		10/03/2020	09/19/2020	2021	\$35.00					\$0.21		\$0.21	\$0.03	\$0.24	
ASSMANN, AARON A		10/03/2020	10/03/2020	2020	\$34.31	1.5	\$51.47				\$29.64	\$81.11	\$11.87	\$92.98	
ASSMANN, AARON A		10/03/2020	10/03/2020	2021	\$35.00	2.0	\$70.00			\$3.38	\$40.33	\$113.71	\$16.65	\$130.36	
WORRALL, MARK C		10/17/2020	10/17/2020	2021	\$38.05	4.2	\$160.20			\$39.66	\$89.70	\$289.56	\$42.39	\$331.95	
												\$51,549.87	\$6,636.27	\$58,186.14	
												Report Total:	\$54,570.79	\$7,020.19	\$61,590.98

Count: 86
 Run Date: 11/19/2020
 Report: rpt_Indirect_LOC

*The Pay Cycle Expiration Date is the pay period end date in which the hours worked/expenses were incurred and pay period end date is the pay period the charges were paid/distributed. If the pay cycle expiration date and the pay period end date are the the same, there were no corrections. Corrections are indicated if the pay cycle expiration date and the pay period end date are different; the corrections for insurances, fringes, FICA and retirement are in the pay period the correction was processed. Correction Key: M=Manual Correction C=System Correction.

The indirect rate reflects the costs of operational services provided to the Remediation and Redevelopment Division by the Department of Environment, Great Lakes and Energy (EGLE) and other State agencies. Each division is charged a percentage of their direct labor costs (includes salaries and fringes) to cover the indirect operational expenses of the Department and other State agencies.

These include the operations of EGLE's Executive Office (non-program costs), administrative services (non-program costs), building rent, data processing, and the costs of using the State of Michigan's State Central Services.

The indirect rates used by EGLE vary each fiscal year and prior to 10/1/97 were negotiated between the U. S. Department of the Interior, Office of Inspector General (Eastern Region) and EGLE. It is now negotiated between with the U. S. Environmental Protection Agency (EPA) and EGLE. These rates are the same as those charged for grants and contracts with the Federal Government and is applicable to the Office of Management and Budget Circular A-87.

**REMEDIATION DIVISION
ATTORNEY GENERAL COSTS**

Site Name: Gerald Ford Airport

Location Code: 6D80

Sub Location Code

Site ID:

Package: 0

The hourly billing rate of \$275 is in effect beginning May 1, 2020 and is based upon the median hourly billing rate for attorneys whose field of practice was transactional Environmental Law as shown in the "Economics of Law Practice in Michigan: 2017 Attorney Income and Billing Rate Summary Report" produced by the State Bar of Michigan.

The hourly billing rate of \$110 was used for those hours charged before May, 1994. The hourly billing rate of \$135 was in effect May 1, 1994 through March 31, 2010. The hourly billing rate of \$182.50 was in effect April 1, 2010 through April 30, 2020.

Month	Attorney	Hours For Month	Total
9/30/2020	Synk, Polly A.	4.75	\$1,306.25
Attorney General Total:		4.75	\$1,306.25

EXHIBIT C

**MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY
 REMEDIATION AND REDEVELOPMENT DIVISION
 Cost Recovery Summary Report**

Date: 11/20/2020

Source: EXCEL

Site Name: Cascade Township Res Wells
 Site ID: 41001231
 Location Code: 6E75

County: Kent
 Package: Original
 Sub Location Code: N/A

Total for Employee Salaries and Wages

Period Covered: 02/24/2019 through 10/03/2020	\$28,252.13	
Indirect	\$3,649.38	
Sub-Total		<u>\$31,901.51</u>

Employee Travel Expenses for period:

Period Covered:

Contractual Expenses

AMEC ENGINEERING & CONSULTING OF MICHIGAN
 INC. (Y19160)

Period Covered: 04/24/2019 through 10/19/2020	\$212,474.15	
Contract Sub-Total		<u>\$212,474.15</u>

Miscellaneous Expenses for period covered:

Period Covered: 08/18/2020 through 08/18/2020		\$219.01
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MDNR/MDEQ Lab Expenses for period:

Period Covered:		\$0.00
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Attorney General Expenses for period:

Period Covered:		\$0.00
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Other Expenses

Period Covered:		\$0.00
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Sub-Total		<u>\$244,594.67</u>
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Interest Calculated from	through:	<u>\$0.00</u>
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Total Combined Expenses for Site and Interest		<u>\$244,594.67</u>
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Run Date: 11/20/2020

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKE, AND ENERGY
REMEDIATION AND REDEVELOPMENT DIVISION
Cost Recovery Summary Detail of Salaries, Fringes, Insurances, FICA, and Retirement

Site Name	Cascade Township Res Wells	Site ID or Facility ID	41001231	Location Code	6E75	SubLocation Code	NA	Package	O					
Employee	Correction	Pay Cycle Expiration Date*	Pay Period Ending	FY	Pay Rate	Regular Hours	Regular Pay	OT Hours	OT Pay	Fringes and Insurances	FICA and Retirement	Sub Total	Indirect	Total
Activity M100	Manage Response Actions													
ASSMANN, AARON A		03/09/2019	03/09/2019	2019	\$31.79	16.0	\$508.64			\$14.76	\$289.73	\$813.13	\$110.18	\$923.31
												\$813.13	\$110.18	\$923.31

Rounding disclaimer: Due to rounding, numbers presented may not add up precisely to the totals provided.

Employee	Correction	Pay Cycle Expiration Date*	Pay Period Ending	FY	Pay Rate	Regular Hours	Regular Pay	OT Hours	OT Pay	Fringes and Insurances	FICA and Retirement	Sub Total	Indirect	Total
Activity P120 PFAS														
ASSMANN, AARON A		03/23/2019	03/23/2019	2019	\$31.79	21.6	\$686.00			\$19.93	\$390.78	\$1,096.71	\$148.60	\$1,245.31
ASSMANN, AARON A		04/06/2019	04/06/2019	2019	\$31.79	9.7	\$309.75			\$9.00	\$176.45	\$495.20	\$67.10	\$562.30
ASSMANN, AARON A		04/20/2019	04/20/2019	2019	\$31.79	14.0	\$445.06			\$12.92	\$253.53	\$711.51	\$96.41	\$807.92
ASSMANN, AARON A		05/04/2019	05/04/2019	2019	\$31.79	7.8	\$247.27			\$7.19	\$140.85	\$395.31	\$53.56	\$448.87
ASSMANN, AARON A		05/18/2019	05/18/2019	2019	\$31.79	36.1	\$1,147.99			\$33.34	\$653.94	\$1,835.27	\$248.68	\$2,083.95
ASSMANN, AARON A		06/01/2019	06/01/2019	2019	\$31.79	6.3	\$199.97			\$5.96	\$116.84	\$322.77	\$43.74	\$366.51
ASSMANN, AARON A		06/29/2019	06/29/2019	2019	\$33.64	10.5	\$353.22			\$10.00	\$201.38	\$564.60	\$76.50	\$641.10
ASSMANN, AARON A		07/13/2019	07/13/2019	2019	\$33.64	22.2	\$747.55			\$21.13	\$426.19	\$1,194.87	\$161.90	\$1,356.77
ASSMANN, AARON A		07/27/2019	07/27/2019	2019	\$33.64	18.0	\$605.52			\$17.13	\$345.21	\$967.86	\$131.15	\$1,099.01
ASSMANN, AARON A		08/10/2019	08/10/2019	2019	\$33.64	7.0	\$235.48			\$6.66	\$134.24	\$376.38	\$51.00	\$427.38
ASSMANN, AARON A		08/24/2019	08/24/2019	2019	\$33.64	53.9	\$1,812.43			\$55.42	\$1,117.08	\$2,984.93	\$404.46	\$3,389.39
HENDERSHOTT, ABIGAIL S		08/24/2019	08/24/2019	2019	\$43.16	8.0	\$345.28			\$82.41	\$191.02	\$618.71	\$83.84	\$702.55
ASSMANN, AARON A		09/07/2019	09/07/2019	2019	\$33.64	10.2	\$341.75			\$9.67	\$194.84	\$546.26	\$74.02	\$620.28
ASSMANN, AARON A		09/21/2019	09/21/2019	2019	\$33.64	6.0	\$201.84			\$3.42	\$115.08	\$320.34	\$43.41	\$363.75
ASSMANN, AARON A		10/05/2019	09/21/2019	2020	\$34.31					\$2.29		\$2.29	\$0.28	\$2.57
ASSMANN, AARON A		10/05/2019	10/05/2019	2020	\$34.31	12.5	\$428.88			\$12.02	\$228.41	\$669.31	\$82.12	\$751.43
HENDERSHOTT, ABIGAIL S		10/05/2019	10/05/2019	2019	\$43.16	4.0	\$172.64				\$88.89	\$261.53	\$32.09	\$293.62
HENDERSHOTT, ABIGAIL S		10/05/2019	10/05/2019	2020	\$44.02	0.3	\$11.65			\$44.09	\$6.00	\$61.74	\$7.58	\$69.32
ASSMANN, AARON A		10/19/2019	10/19/2019	2020	\$34.31	12.5	\$428.88			\$8.16	\$238.44	\$675.48	\$82.88	\$758.36
ASSMANN, AARON A		11/02/2019	11/02/2019	2020	\$34.31	42.4	\$1,454.40			\$40.71	\$784.51	\$2,279.62	\$279.71	\$2,559.33
ASSMANN, AARON A		11/30/2019	11/30/2019	2020	\$34.31	32.5	\$1,115.07			\$30.82	\$593.94	\$1,739.83	\$213.48	\$1,953.31
ASSMANN, AARON A		12/14/2019	12/14/2019	2020	\$34.31	9.0	\$309.89			\$8.56	\$165.07	\$483.52	\$59.33	\$542.85
ASSMANN, AARON A		01/11/2020	01/11/2020	2020	\$34.31	6.7	\$230.67			\$6.37	\$122.87	\$359.91	\$44.16	\$404.07
ASSMANN, AARON A		01/25/2020	01/25/2020	2020	\$34.31	2.2	\$76.24			\$2.10	\$40.62	\$118.96	\$14.60	\$133.56
ASSMANN, AARON A		02/08/2020	02/08/2020	2020	\$34.31	16.0	\$548.96			\$15.18	\$292.41	\$856.55	\$105.10	\$961.65
ASSMANN, AARON A		02/22/2020	02/22/2020	2020	\$34.31	5.6	\$190.61			\$5.27	\$101.53	\$297.41	\$36.49	\$333.90
ASSMANN, AARON A		03/21/2020	03/21/2020	2020	\$34.31	5.5	\$188.71			\$5.21	\$100.51	\$294.43	\$36.13	\$330.56
ASSMANN, AARON A		04/04/2020	04/04/2020	2020	\$34.31	5.5	\$188.71			\$5.21	\$100.51	\$294.43	\$36.13	\$330.56
ASSMANN, AARON A		04/18/2020	04/18/2020	2020	\$34.31	5.0	\$171.55			\$4.74	\$91.38	\$267.67	\$32.84	\$300.51
ASSMANN, AARON A		05/02/2020	05/02/2020	2020	\$34.31	4.5	\$154.41			\$4.27	\$82.24	\$240.92	\$29.56	\$270.48
ASSMANN, AARON A		05/16/2020	05/16/2020	2020	\$34.31	15.1	\$516.54			\$14.55	\$280.40	\$811.49	\$99.57	\$911.06
ASSMANN, AARON A		05/30/2020	05/30/2020	2020	\$34.31	12.6	\$431.34			\$14.84	\$277.85	\$724.03	\$88.84	\$812.87
ASSMANN, AARON A		06/13/2020	06/13/2020	2020	\$34.31	19.0	\$651.90			\$22.42	\$420.41	\$1,094.73	\$134.32	\$1,229.05
ASSMANN, AARON A		06/27/2020	06/27/2020	2020	\$34.31	7.2	\$245.94			\$8.46	\$158.60	\$413.00	\$50.68	\$463.68
ASSMANN, AARON A		07/25/2020	07/25/2020	2020	\$34.31	10.1	\$345.80			\$11.89	\$223.01	\$580.70	\$71.25	\$651.95
ASSMANN, AARON A		08/08/2020	08/08/2020	2020	\$34.31	11.0	\$377.41			\$10.42	\$201.25	\$589.08	\$72.28	\$661.36
ASSMANN, AARON A		08/22/2020	08/22/2020	2020	\$34.31	12.8	\$438.41			\$22.50	\$233.77	\$694.68	\$85.24	\$779.92

Rounding disclaimer: Due to rounding, numbers presented may not add up precisely to the totals provided.

Employee	Correction	Pay Cycle Expiration Date*	Pay Period Ending	FY	Pay Rate	Regular Hours	Regular Pay	OT Hours	OT Pay	Fringes and Insurances	FICA and Retirement	Sub Total	Indirect	Total	
ASSMANN, AARON A		09/05/2020	09/05/2020	2020	\$34.31	3.0	\$102.93			\$2.83	\$54.89	\$160.65	\$19.71	\$180.36	
ASSMANN, AARON A		09/19/2020	09/19/2020	2020	\$34.31	8.9	\$304.99			\$6.74	\$162.63	\$474.36	\$58.20	\$532.56	
ASSMANN, AARON A		10/03/2020	09/19/2020	2021	\$35.00					\$1.69		\$1.69	\$0.25	\$1.94	
ASSMANN, AARON A		10/03/2020	10/03/2020	2021	\$35.00	9.0	\$315.00			\$9.72	\$181.47	\$506.19	\$74.11	\$580.30	
ASSMANN, AARON A		10/03/2020	10/03/2020	2020	\$34.31	1.0	\$34.31				\$19.77	\$54.08	\$7.92	\$62.00	
												\$27,439.00	\$3,539.20	\$30,978.20	
												Report Total:	\$28,252.13	\$3,649.38	\$31,901.51

Count: 43
 Run Date: 11/16/2020
 Report: rpt_Indirect_LOC

*The Pay Cycle Expiration Date is the pay period end date in which the hours worked/expenses were incurred and pay period end date is the pay period the charges were paid/distributed. If the pay cycle expiration date and the pay period end date are the the same, there were no corrections. Corrections are indicated if the pay cycle expiration date and the pay period end date are different; the corrections for insurances, fringes, FICA and retirement are in the pay period the correction was processed. Correction Key: M=Manual Correction C=System Correction.

The indirect rate reflects the costs of operational services provided to the Remediation and Redevelopment Division by the Department of Environment, Great Lakes and Energy (EGLE) and other State agencies. Each division is charged a percentage of their direct labor costs (includes salaries and fringes) to cover the indirect operational expenses of the Department and other State agencies.

These include the operations of EGLE's Executive Office (non-program costs), administrative services (non-program costs), building rent, data processing, and the costs of using the State of Michigan's State Central Services.

The indirect rates used by EGLE vary each fiscal year and prior to 10/1/97 were negotiated between the U. S. Department of the Interior, Office of Inspector General (Eastern Region) and EGLE. It is now negotiated between with the U. S. Environmental Protection Agency (EPA) and EGLE. These rates are the same as those charged for grants and contracts with the Federal Government and is applicable to the Office of Management and Budget Circular A-87.

CONTRACT REPORT
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
REMEDATION AND REDEVELOPMENT DIVISION

Site ID No 41001231 **Site Name** Cascade Township Res Wells **Location Code:** 6E75 **Sub Location Code** **Package:** O

PAYMENT DATE	INVOICE#	PURCHASE DESCRIPTION	Doc Code	Doc ID	Amount
VENDOR CODE CV0035901					
VENDOR AMEC ENGINEERING & CONSULTING OF MICHIGAN INC					
4/24/2019	H06957855	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06957855 18,827.21	EFT	190000521284	\$18,827.21
7/8/2019	H06958245	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06958245 8,084.03 H06958186 6,062.58	EFT	190000718691	\$14,146.61
8/16/2019	H06958419	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06958419 2,509.22	EFT	190000819258	\$2,509.22
9/10/2019	H06958506	Y19160 CASCADE TWP RES H06958506 23,984.82	EFT	190000880754	\$23,984.82
10/10/2019	H06958736	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06958736 13,674.06	EFT	200000036400	\$13,674.06
1/22/2020	H06958922	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06958922 3,652.78	EFT	200000291343	\$3,652.78
3/9/2020	.H06959081	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06959081 5,359.59 INVOICE SPLIT; DIFFERENT FUNDING	EFT	200000423134	\$5,359.59

Site ID No 41001231 Site Name Cascade Township Res Wells Location Code: 6E75 Sub Location Code Package: 0

PAYMENT DATE	INVOICE#	PURCHASE DESCRIPTION	Doc Code	Doc ID	Amount
3/9/2020	H06959081	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06959081 495.48 INVOICE SPLIT; DIFFERENT FUNDING	EFT	200000423133	\$495.48
3/18/2020	.H06959468	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06959468 32,764.34 INVOICE SPLIT; DIFFERENT FUNDING	EFT	200000448579	\$32,764.34
3/18/2020	H06959468	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06959468 16,280.00 INVOICE SPLIT; DIFFERENT FUNDING	EFT	200000448578	\$16,280.00
5/13/2020	H06959598	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06959598 5,194.82	EFT	200000587815	\$5,194.82
6/29/2020	H06959342	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06959342 15,908.05	EFT	200000685138	\$15,908.05
7/15/2020	H06959437	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06959437 4,692.60	EFT	200000729334	\$4,692.60
7/15/2020	H06959917	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06959917 2,820.37	EFT	200000729335	\$2,820.37
7/15/2020	H06959995	Y19160 CASCADE TWP RES WELLS/NEAR FORD AIRPORT H06959995 1,062.82	EFT	200000729336	\$1,062.82
9/22/2020	H06960179	Y19160 CASCADE TWP RES WELLS YH06960179 41,155.48	EFT	200000904022	\$41,155.48
10/19/2020	H06960096	Y19160 CASCADE TWP RES H06960096 5,041.96	EFT	210000056333	\$5,041.96

Site ID No 41001231

Site Name Cascade Township Res Wells

Location Code: 6E75

Sub Location Code

Package: 0

PAYMENT DATE	INVOICE#	PURCHASE DESCRIPTION	Doc Code	Doc ID	Amount
10/19/2020	H06960298	Y19160 CASCADE TWP RES H06960298 4,903.94	EFT	210000056334	\$4,903.94
				Vendor Total	\$212,474.15

Run Date 11/16/2020

rpt_CG_contract_loc

Report Total \$212,474.15

MISCELLANEOUS REPORT
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
REMEDATION AND REDEVELOPMENT DIVISION

Site ID No 41001231 **Site Name** Cascade Township Res Wells **Location Code:** 6E75 **Sub Location Code** **Package:** 0

PAYMENT DATE	INVOICE#	PURCHASE DESCRIPTION	Doc Code	Doc ID	Amount
VENDOR DTMB					
8/18/2020		DTMB Mail Services Monthly Bill - Mail Labor JUL 2020[LAB D45737]	CA9	MM2076116882	\$219.01
				Vendor Total	\$219.01
Run Date 11/20/2020				Report Total	\$219.01

rpt_CG_Misc_loc

ATTACHMENT B
EGL E GEOLOGIC REVIEW

Geologic Review Part 2

**Department of Environment, Great Lakes, and Energy
Remediation and Redevelopment Division
Grand Rapids District Office**

Gerald R. Ford International Airport, PFAS Investigation Review – March 2021

*This **Geologic Review Part 2** supplements the previous Geologic Review dated January 2019 (Attachment 1) and should be reviewed as one document.*

Purpose:

Due to the use of Aqueous Film Forming Foam (AFFF) at the Gerald R. Ford International Airport (GFIA), as part of the fire fighter training and emergency responses, and the resulting per- and polyfluoroalkyl substance (PFAS) groundwater contamination, the Department of Environment, Great Lakes, and Energy (EGLE), Remediation and Redevelopment Division (RRD), evaluated the potential risk to public health by sampling residential drinking water wells in the neighborhoods to the northeast. This sampling effort is called the “Cascade Township Residential Wells PFAS Sampling Area.” This Geologic Review Part 2 report is an evaluation of the geologic conditions, historical surface water flow patterns, and the PFAS data collected as part of the EGLE residential well sampling that occurred in an area bounded by I-96 and the Thornapple River (Attached Figure 1). The Cascade Township residential wells project sampled 364 wells. PFAS was detected in 222 residences (Attached Figure 2) and 40 residences had an exceedance of the drinking water criteria under the Part 201 of NREPA for one or more regulated PFAS compounds: perfluorooctanoic acid (PFOA) (39 residences), perfluorooctane sulfonate (PFOS) (10 residences) and/or perfluorononanoic acid (PFNA) (two residences) as shown on attached Figure 3.

PFAS Sources

Potential sources of PFAS in the area around the GFIA have been considered. However, no evidence of PFAS releases to the environment by any other sources or potential contributors to the groundwater contamination in the Cascade Township Residential Wells PFAS Sampling Area have been found other than GFIA.

In the Cascade Township Residential Wells PFAS Sampling Area, 364 residential wells were sampled over five phases. PFAS was detected in 222 residences (Attached Figure 2) and 40 residences had an exceedance of the drinking water criteria under the Part 201 of NREPA for one or more regulated PFAS compounds. 32 parcels have total PFAS concentrations greater than 50 parts per trillion (ppt) (shown on Figure 4).

Of the 32 parcels that have a total PFAS concentration greater than 50 ppt, (with 28 parcels exceeding Part 201 criteria) 6 do not have well logs available. Based on the 26 available residential well logs, 24 have multiple clay layers or one significant clay layer above the aquifer in which the well is screened. This indicates that the PFAS groundwater contamination is not related to on-parcel sources such as septic tanks.

Of the 40 parcels that exceed Part 201 drinking water criteria, well logs are available for 28 of the drinking water wells, which are all screened from 676' - 568' in elevation. Similar to the drinking water wells with total PFAS concentrations above 50 ppt, 26 of the wells have multiple clay layers or one significant clay layer above the aquifer where the well is screened, which, again, indicates that an on-parcel source is not likely.

Because this PFAS impact to the drinking water aquifer is located beneath an aquitard(s) in the area of criteria exceedances, the PFAS contamination must have been introduced into the aquifer at an up-gradient location. Upgradient and in proximity to the Cascade Township Residential Wells PFAS Sampling Area, there is only one known release of PFAS to the environment: the releases at the GFIA.

Although the entire GFIA has yet to be evaluated for PFAS contamination, the areas known to date to have PFAS in the soils are Ramp 5, ARFF, the former Fire Fighting Training Area (FFTA) and the north retention basin which was immediately adjacent to the FFTA (see Figure 1).

Previous environmental drilling completed by GFIA has demonstrated that the airport is underlain by thick clay sequences (as documented in GFIA PFAS investigation reports) that occur at the surface or near surface to depth. This would likely prevent downward migration of PFAS on-site. However, current/historic stormwater drainage at the GFIA does flow into the neighborhoods to the northeast where massive clays are not always present (as indicated on the drinking water well logs). In the area of the north retention basin, that is north of the FFTA, a shallow groundwater sample collected from boring B2018-27s indicates a possible source area for PFAS. Until 2015, this north retention basin was directly connected to the headwaters of the unnamed tributary commonly referred to as "Trout Creek" (see attached Figure 5).

Stormwater runoff from the GFIA FFTA and north retention basin, which likely contained PFAS, would have flowed in and along the permeable material of these features off-site and towards the neighborhoods that are northeast of the airport (the Cascade Township Residential PFAS Wells Sampling Area). Another possible pathway of PFAS movement off GFIA property is along the route of the airport's natural treatment system (NTS) (shown on Figure 1). The NTS was constructed in 2015, along with the stormwater Outfall 011 drainage area, and is designed to treat storm water from airfield de-icing and anti-icing area. Stormwater from the Outfall 011 drainage area collects in the north retention basin connected to the NTS by a storm drain. Since 2015, AFFF use locations have existed within the Outfall 011 drainage area. If run-off and stormwater encountered PFAS impacted soils during the migration to the NTS, PFAS could be transported off GFIA property. These two pathways of PFAS migration have the potential to impact different parts of the near-by neighborhoods and will be discussed further below.

Because 39 of the 40 exceedances of the Part 201 drinking water cleanup criteria have an exceedance of PFOA, PFOA will be the primary discussion of groundwater contamination within these neighborhoods. Distribution of the PFOA exceedances for the drinking water cleanup criteria occurs in two principal areas based on geographical distribution: West Grouping and East Grouping (shown in attached Figure 3). The 'West Grouping' is at the east end of

Brookhills Court and Tanglewood Drive, north of Trout Creek. The other is the 'East Grouping' and is located along Cimarron Drive, along Tuscany Drive, south of Burger Drive that runs east/west and west of Burger Drive that runs north/south. Also, there are subtle chemical differences between the West and East Groupings that will be discussed further below. Additionally, there are three outliers of PFOA exceedances (3770 Goodwood Drive, 6790 Woodbrook Drive, and 6565 Tanglewood Drive) that will also be discussed further below.

West Grouping

This area lies north/west of Trout Creek, east of Tricklewood Drive with four exceedances laying on the east end of Brookhills Court, one exceedance on Burger Drive, and 10 exceedances on the east end of Tanglewood Drive (see Figure 3). Geologically, these residential wells predominantly have multiple clay layers or significant clay above the PFAS contaminated aquifer in which the residential well is screened. Exceedances of PFOS occurs between 644 - 611 feet in elevation, however, it should be noted that no groundwater monitoring wells have been installed to fully assess the vertical extent of impact.

This area is in proximity to the Trout Creek tributary that connects back to the FFTA, a known PFAS source area on the GFIA property (see attached Figure 6).

Examination of the residential boring logs indicate that between the predominantly clay setting of the GFIA property and the mixed lithology in the area of PFOA residential well exceedances, there are areas where the geological lithology is predominantly sand (see attached Figure 7). This sand occurs from the ground surface to depths where the PFAS groundwater contamination has been found and shows that the PFAS contamination could reach the portion of the aquifer used to supply drinking water. This would be the area where the PFAS groundwater plume dropped from migrating along the surficial water feature's permeable material and migrated into the aquifer that the affected wells are screened.

Besides the difference in geographical distribution, the West Grouping has slightly different PFAS chemistry from the East Grouping. PFNA occurrence is primarily found within the West Grouping; this is discussed in further detail below. All 10 PFOS criteria exceedances fall within the West Grouping. This slight difference in PFAS occurrence between the groupings aligns with possible separate transport pathways between the source area at the GFIA and the PFAS impacted neighborhoods.

East Grouping

This area lies south/east of Trout Creek, south and west of Burger Drive and along/north of Cimarron Drive (see Figure 3). Only PFOA exceeded criteria in this grouping with one exceedance located on Tricklewood Court, two on Burger Drive, four on Tuscany Drive, four on Tripoli Street, one on Tripoli Court and eight on Cimarron Drive. These residential wells have multiple clay layers or significant clay above the PFAS contaminated aquifer in all the well logs that are available. Exceedances of PFOA have been observed in wells screened between 652 - 568 feet in elevation, however, it should be noted that no groundwater monitor wells have been installed to fully assess the vertical extent of impact.

This area or portions of this area may fall outside of the area that could have been impacted by PFAS migrating along the Trout Creek drainage, this area instead could be from PFAS that migrated off GFIA property along the NTS channel. In the vicinity of where the CSX railroad track crosses Thornapple River Drive, the NTS channel would encounter natural drainage that runs south to north or south to northeast originating in the vicinity of the Cascade Township Park. Permeable materials along these natural features would allow the PFAS groundwater plume to move to areas where sands extend from the surface to deeper portions of the aquifer and thus allowing PFAS to impact the areas that have clay(s) above the drinking water aquifer (see Figure 8). Installation of monitor wells up-gradient of the East Grouping would determine if this hypothesis for the path of PFAS migration is supported and impacting the aquifer.

Outlier at 6565 Tanglewood Drive

The drinking water well at 6565 Tanglewood Drive sits further up-gradient of the West Grouping of PFAS and exceeds the criteria for PFOA. Unfortunately, no well log was available for this address to aid in the understanding of PFAS distribution at this location. This location does fall between the West Grouping and the areas of predominant sand occurrence. The PFAS contamination at this location would seem to fit the model of how PFAS contamination reached the aquifer here and in the West Grouping from the GFIA property along Trout Creek.

Outlier at 6790 Woodbrook Drive

PFOA was detected above drinking water criteria at 6790 Woodbrook Drive and sits farther up-gradient from the East Grouping. Unfortunately, no well log was available for this address to aid in the understanding of PFAS distribution at this location. This location does fall between the East Grouping and areas of more predominant sand. The PFOA exceedance here would seem to fit the model of how PFAS contamination reached the aquifer here from the airport NTS (see attached Figure 9).

Outlier at 3770 Goodwood Drive

PFOA was detected above drinking water criteria at 3770 Goodwood Drive and is located to the southeast of the two main groupings (West and East) and not on the Trout Creek drainage system. This parcel is located on an unnamed drainage that originates south of the Cascade Township Park in the vicinity of where the CSX railroad line crosses Thornapple River Drive and the GFIA NTS (see Figure 10). There are no other exceedances along this unnamed drainage, which may be explained by the lithology of the drinking water wells. The drinking water well log for 3770 Goodwood Drive indicates that the lithology at this location is all sand (85 feet). The majority of other drinking water well logs for drinking water wells located between 3770 Goodwood Drive and the Cascade Township Park have a clay layer between the surface and the well screen that would impede the downward migration of PFAS. Because municipal water will not be available in the short-term, additional remedial investigation work should be considered to assess risk to future drinking water wells. A nested monitoring well set should be installed between 3770 Goodwood Drive and the GFIA NTS within the drainage feature to assess if PFAS is moving along the de-icing infrastructure and affecting wells in this area.

PFNA

EGLE sampled 364 residential wells to investigate if the AFFF releases at the GFIA property had impacted surrounding neighborhoods. 23 of the residential wells tested had a detection of PFNA with concentrations ranging from 1.58 ppt to 10.4 ppt. Two results exceed the Part 201 drinking water cleanup criteria of 6 ppt (6717 Tanglewood Drive and 6681 Tanglewood Drive). Of these 23 residences where PFNA was detected, 20 are clustered within the footprint of the West Grouping (see attached Figure 11 and compare to Figure 3). These PFNA detections occur on or adjacent to parcels that also had PFOA criteria exceedances or are within 100 feet of a parcel that had a PFOA criteria exceedance. Of the remaining three locations with PFNA detections, one lies within the confluence of Trout Creek and the drainage from the south (3453 Tuscany Drive [1.79 ppt]), and two are associated with the East Grouping footprint (7031 Burger Drive [1.48 ppt] and 6901 Cimarron Drive [2.26 ppt]). The distinct difference of PFNA occurrence between the East and West Groupings suggests that the eastern area of PFAS contamination followed a different path between GFIA and residences as suggested above.

Potential Field Work

No groundwater monitoring wells have been installed in the Cascade Township Residential Wells Sampling Area. Additionally, lithology of the neighborhood thus far has been derived from drinking water wells which typically are not logged by geoscientists. In-lieu of municipal water, a necessity exists to have an established groundwater monitoring well network to provide an understanding of the lithology of the impacted residential area and true spatial distribution of PFAS in groundwater to aid and guide the Kent County Health Department (KCHD).

Because of the manner in which PFAS behaves in the environment, a more complex groundwater monitoring well network may be necessary than with other contaminants. This manifests itself in both needing location to be nested as well as a closer spacing of the well network.

To aid in understanding of the West Grouping, as well as the 6565 Tanglewood outlier, fence rows of nested groundwater monitoring well sets (fence row) should be installed along Thornapple River Drive between 3290 and 3530 Thornapple River Drive, a fence row along Brookhills-Tricklewood from 6317 Brookhills Court to 3493 Tricklewood Drive, and a fence row along Burger from 6590 to 6881 Burger Drive. These wells will assess the areas of known impact in this area and groundwater flow along Trout Creek from the GFIA (see Figure 12).

To aid in gaining insight to the East Grouping and the outlier at 6790 Woodbrook Drive, the eastern/southern drainages need to be vetted to see if PFAS impact is coming from the GFIA NTS. Two areas of nested groundwater monitoring wells should be installed within the Cascade Township Park. A fence row of nested groundwater monitoring wells should be installed along Woodbrook Drive between 6669 and 6958 Woodbrook Drive and a fence row along Tuscany-Cimarron Drive from 3590 Tuscany Drive to 6865 Cimarron Drive to 6985 Cimarron Drive (see Figure 12).

To gain an understanding of the PFAS groundwater contamination at 3770 Goodwood Drive, the groundwater monitoring wells proposed at the Cascade Township Park will be beneficial. In addition, a fence row of nested groundwater monitoring wells should be installed between 3720 to 3840 Oak Tree Drive (see Figure 12).

The groundwater monitoring wells described above will provide an understanding of risk to the existing drinking water wells in this area as well as provide critical information for any future drinking water wells. Without the lithology information that is generated during the installation and sampling of groundwater monitoring wells, EGLE-RRD and KCHD will have limited data to use to help determine the viability of any potential installation of future residential drinking water wells in this area of Cascade Township.

Geologic Review prepared and conducted by EGLE-RRD-GRDO staff:

Mark Worrall, District Senior Geologist

Aaron Assmann, District Project Manager

Attachments:

Figure 1: Overview

Figure 2: Total PFAS Detections – Cascade Township Residential Wells

Figure 3: Exceedances of PFOA, PFOS, and PFNA

Figure 4: Total PFAS Greater Than 50 ppt

Figure 5: Historic Drainage at the FFTA

Figure 6: Drainage Pathways

Figure 7: Surficial Sand Thickness – West Grouping

Figure 8: Surficial Sand Thickness – East Grouping

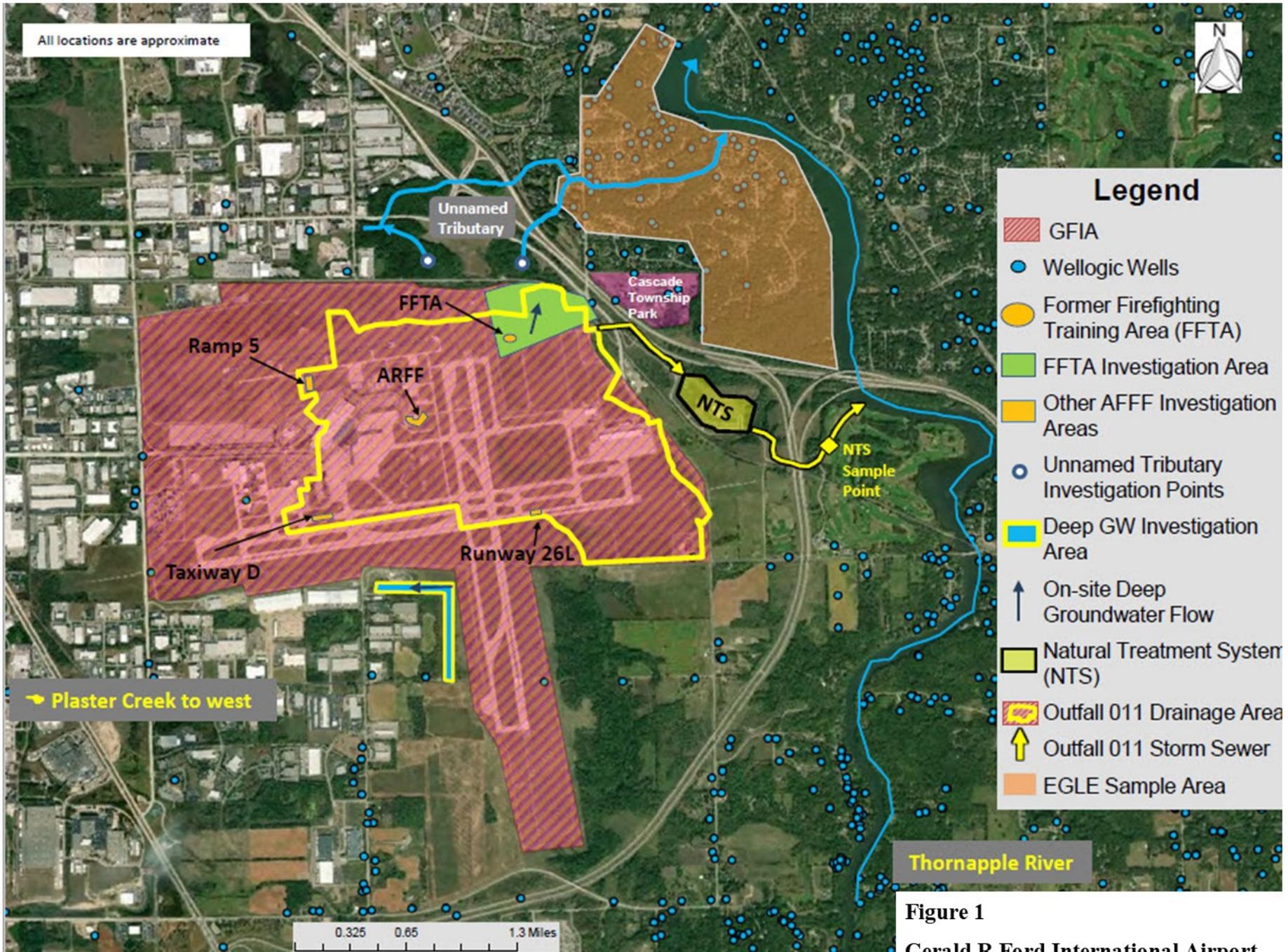
Figure 9: Surficial Sand Thickness – Outlier 6790 Woodbrook

Figure 10: Surficial Sand Thickness – Outlier 3770 Goodwood

Figure 11: Occurrences of PFNA

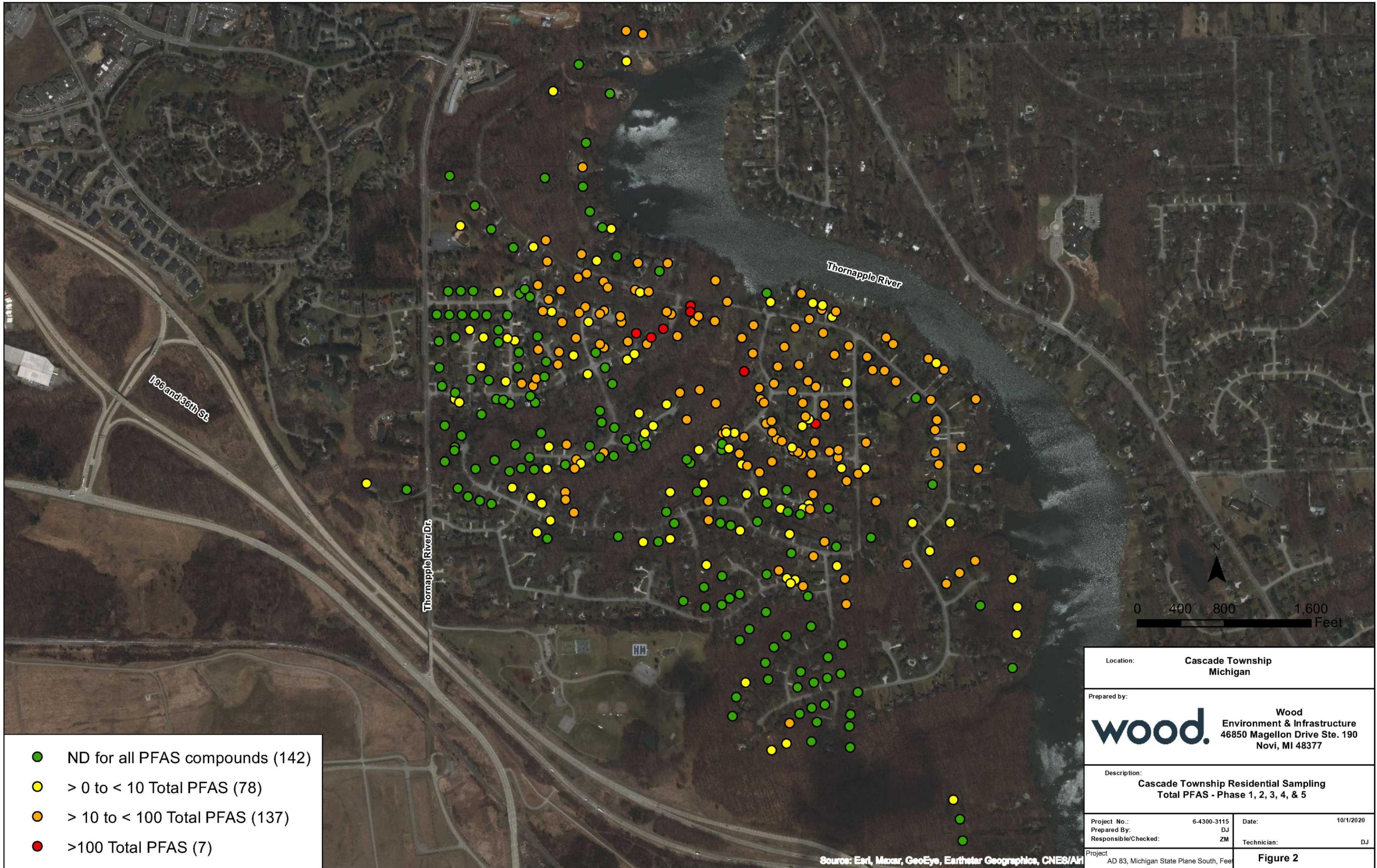
Figure 12: Proposed Monitor Well Locations

Attachment 1: EGLE Geologic Review (January 2019)



Last Modified: 2/22/2021

Figure 1
Gerald R Ford International Airport
Overview



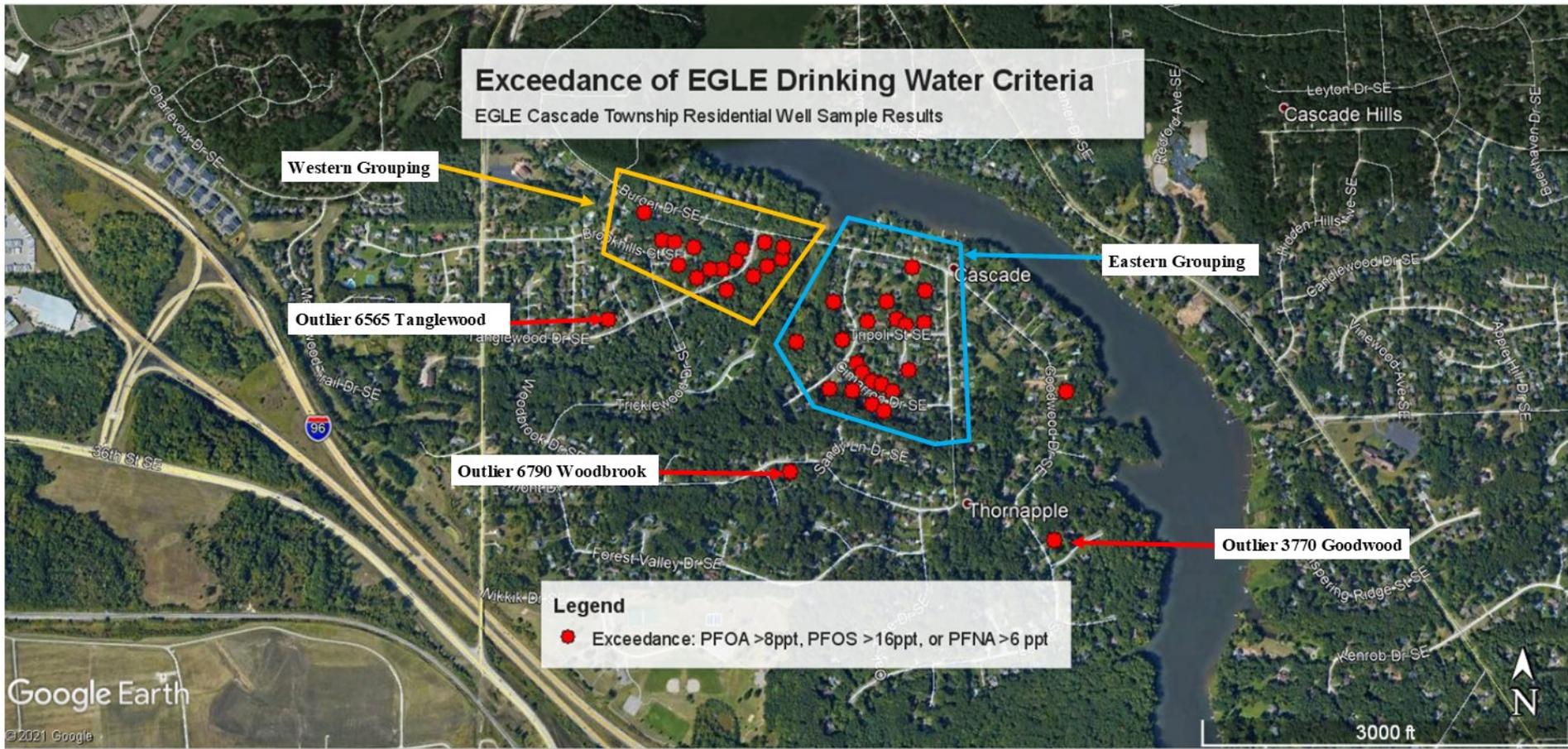


Figure 3
Gerald R Ford International Airport
Exceedances of PFOA, PFOS, and PFNA

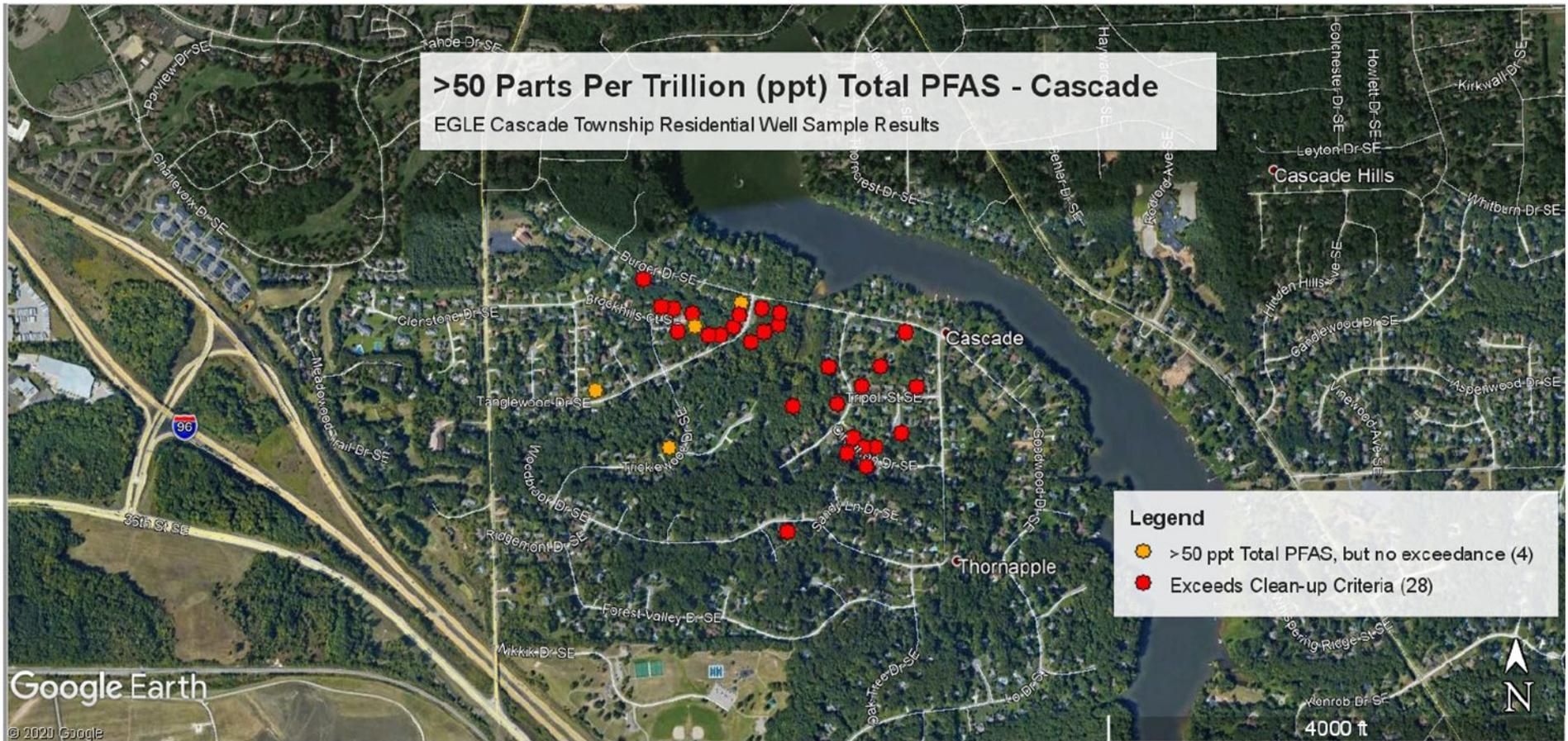


Figure 4
Gerald R Ford International Airport
Total PFAS Greater Than 50ppt



Figure 3. Approximate Surface Drainage Pre-1994.



Figure 4. Approximate Surface Drainage 1994-2015.



Figure 5. Approximate Surface Drainage Post-2015.

Figures adapted from GFIA submittals.

Figure 5 Gerald R Ford International Airport Historic Drainage by the FFTA

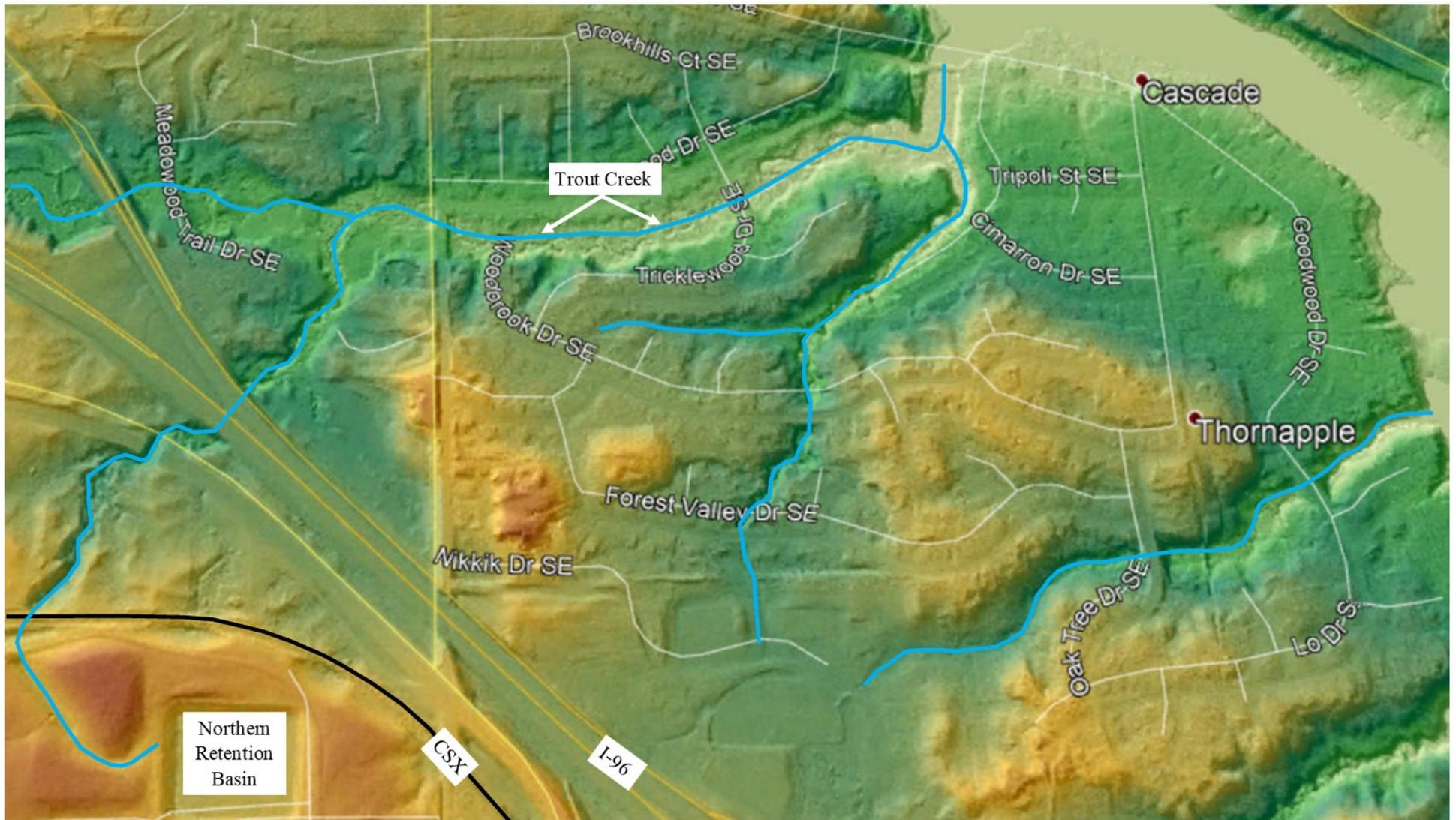


Figure 6
Gerald R Ford International Airport
Drainage Pathways



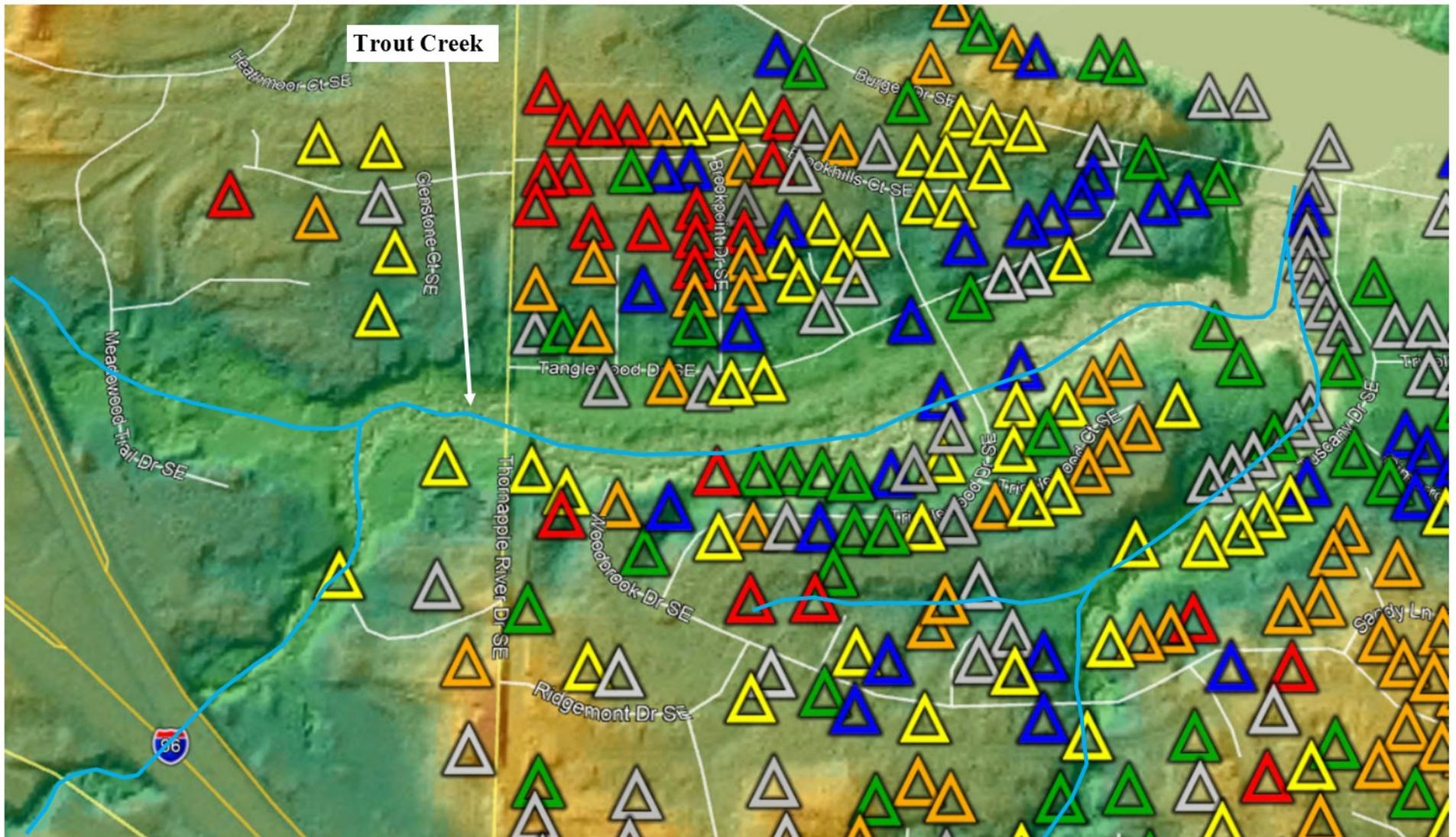
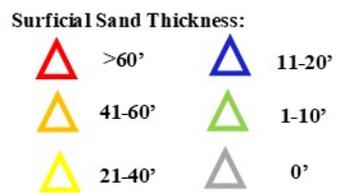
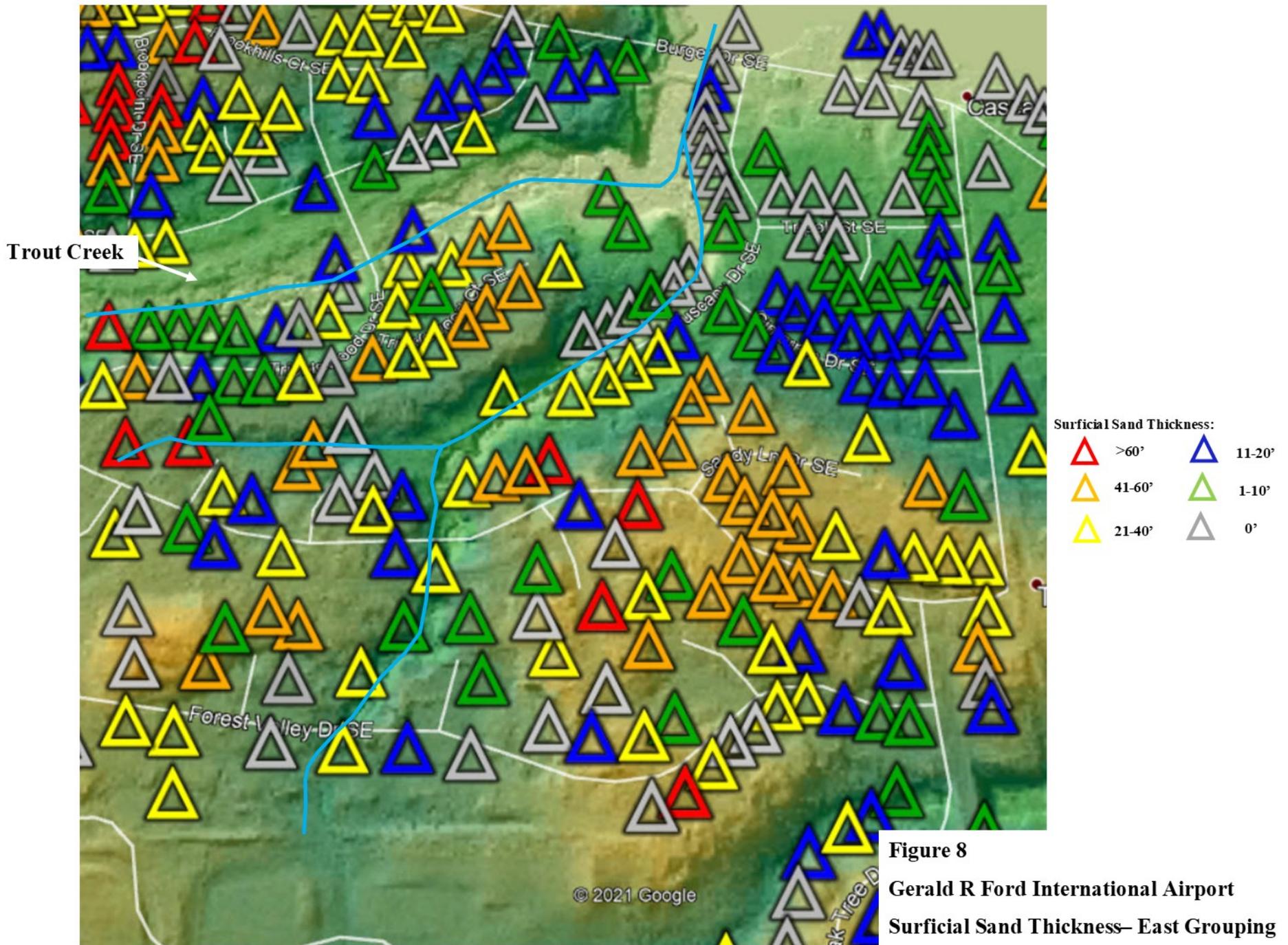


Figure 7
Gerald R Ford International Airport
Surficial Sand Thickness– West Grouping





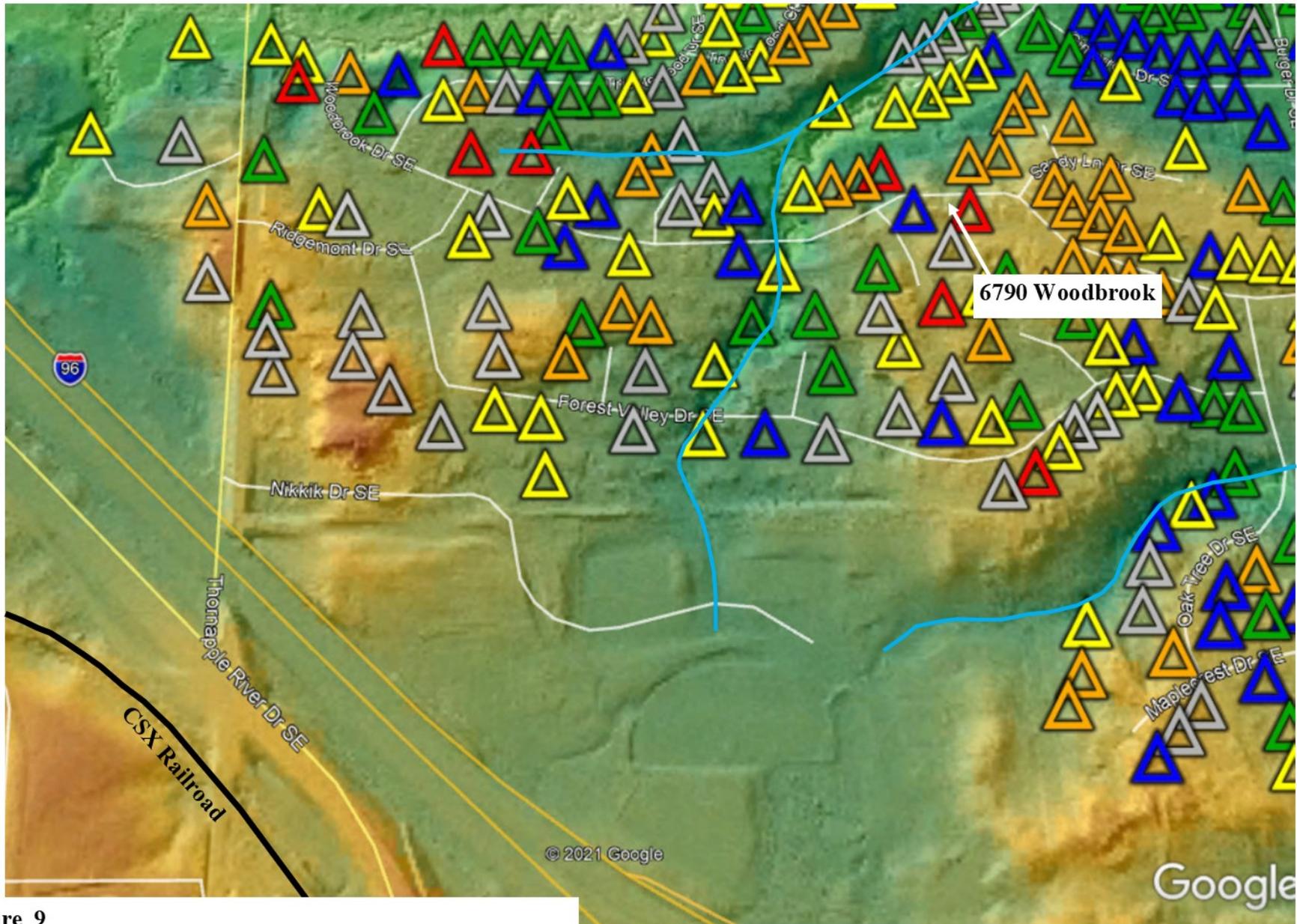


Figure 9

Gerald R Ford International Airport

Surficial Sand Thickness– Outlier at 6790 Woodbrook

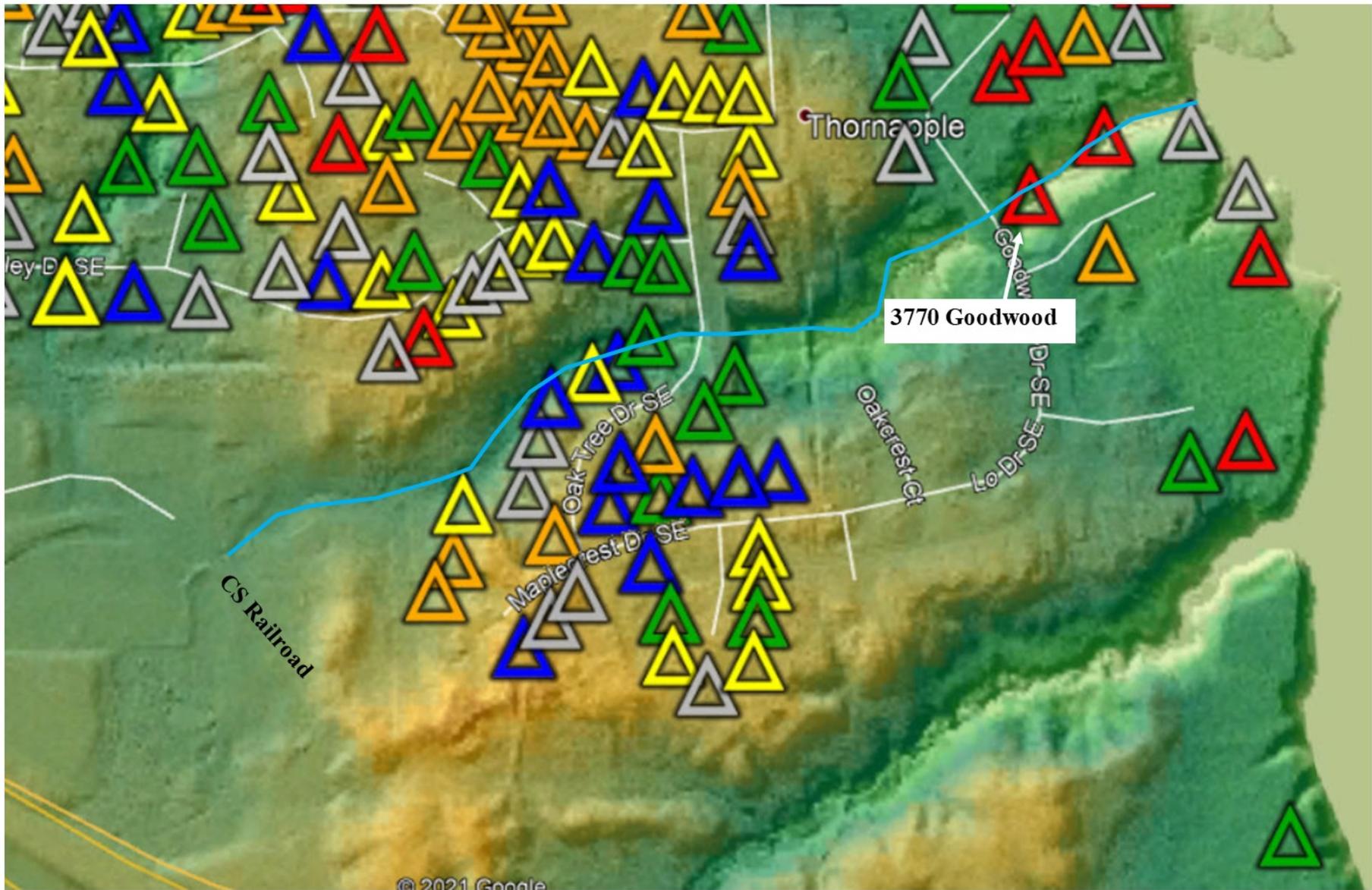


Figure 10
 Gerald R Ford International Airport
 Surficial Sand Thickness– Outlier at 3770 Goodwood



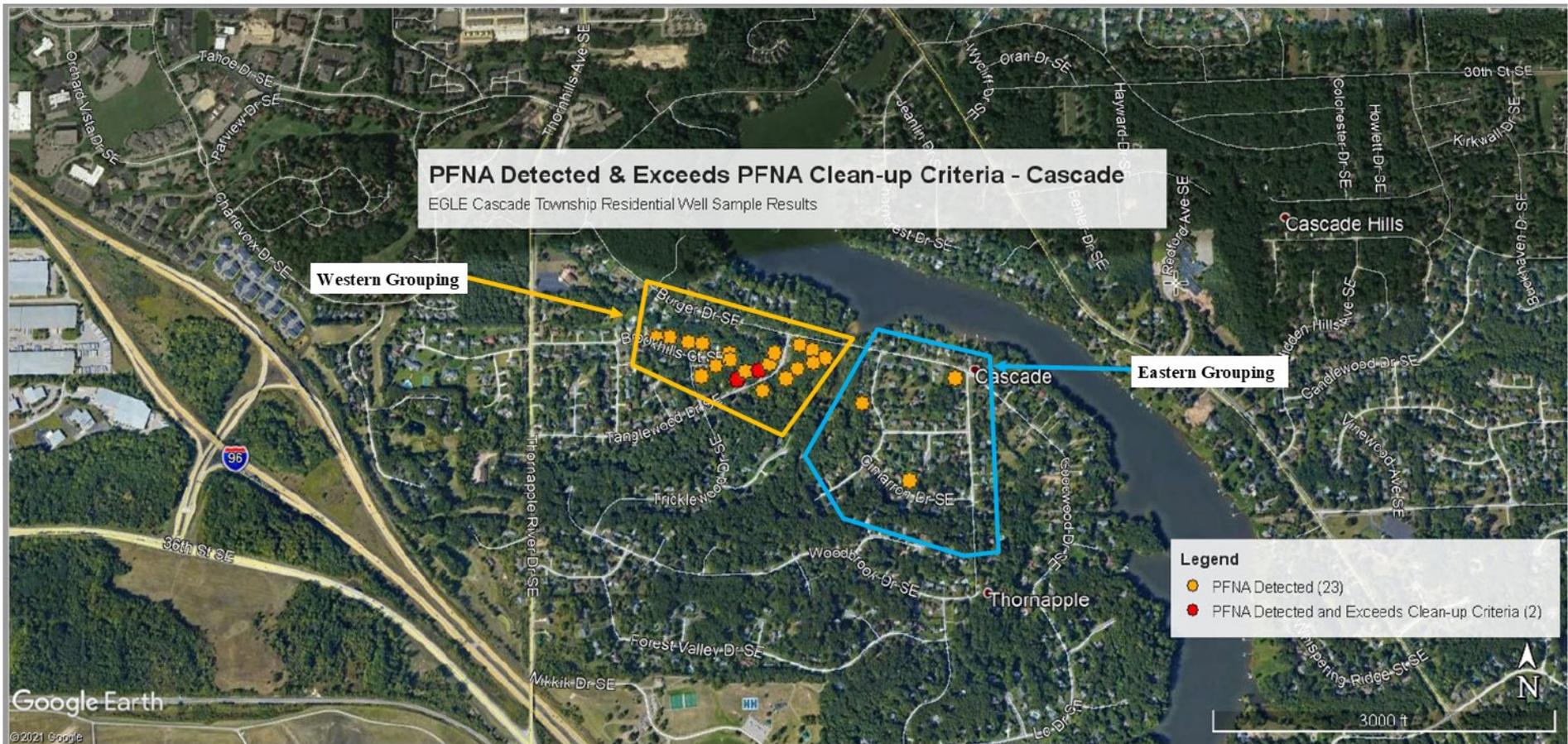


Figure 11
Gerald R Ford International Airport
Occurrences of PFNA

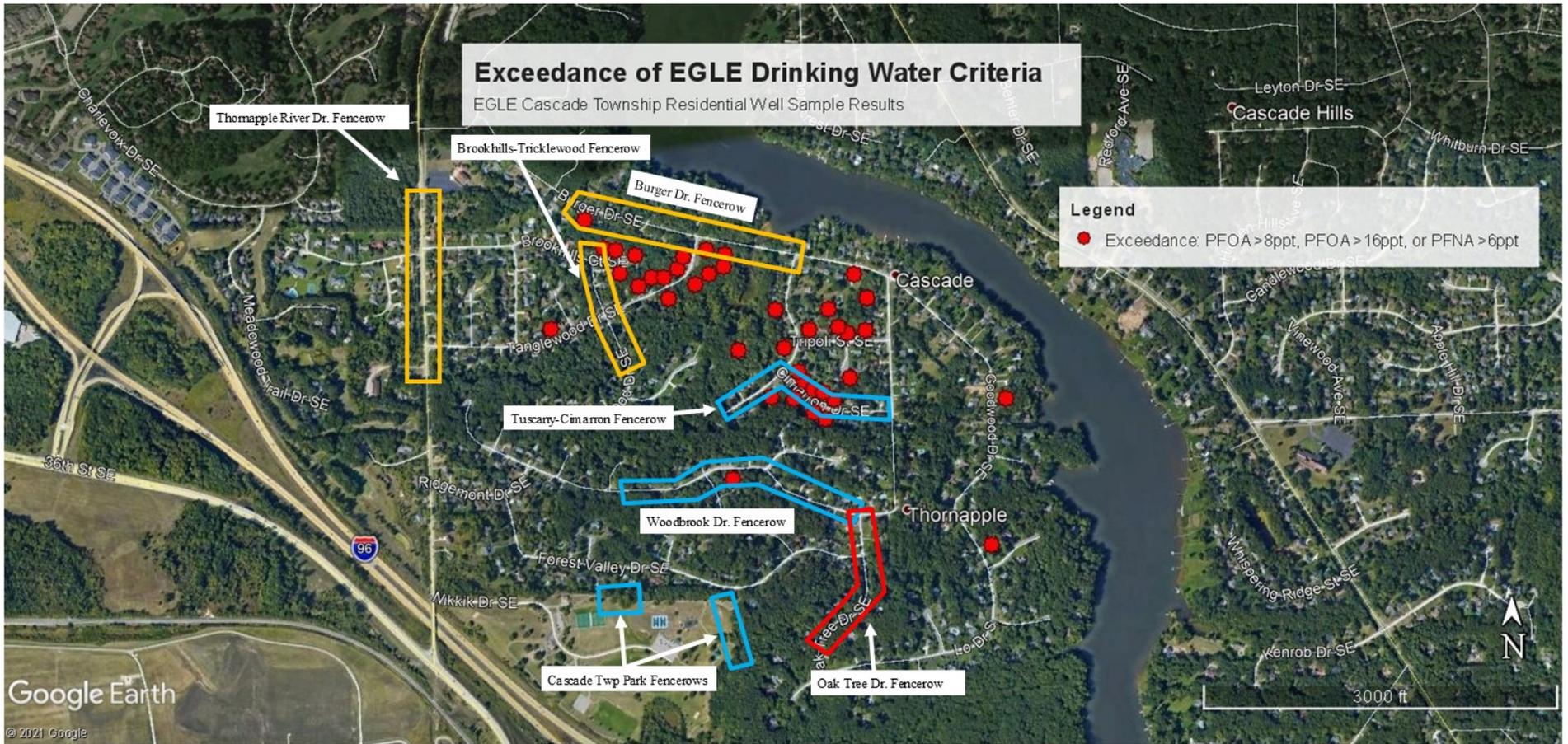


Figure 12
Gerald R Ford International Airport
Proposed Monitor Well Locations

- Proposed Wells for the Western Grouping
- Proposed Wells for the Eastern Grouping
- Proposed Wells for Goodwood Outlier

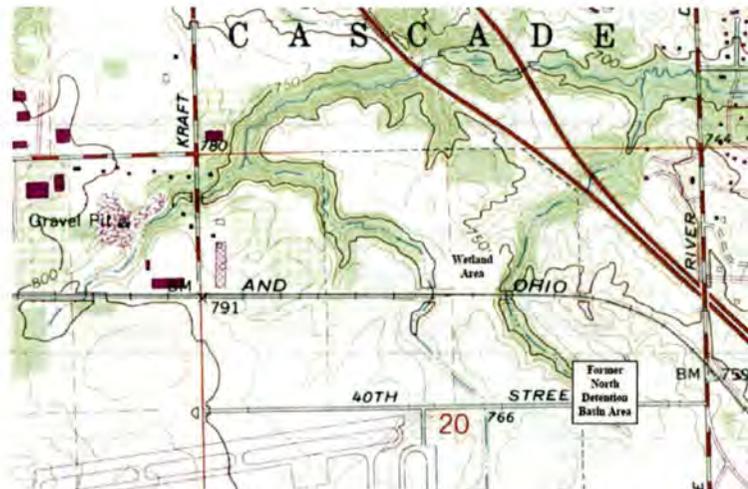
Geologic Review

DEQ-RRD Grand Rapids District

Gerald R. Ford International Airport PFAS Investigation Review – January 2019

Observations:

- Deeper PFAS impact (elevation ~700 feet) beneath the clay at the former firefighting training area does not appear to be related to the training activities at that location. The unknown source of the impact may be other areas on the airport property or an up-gradient source.
- The highest PFAS impact is in shallow groundwater on top of the clay (elevation ~760 feet) in the former North Detention Basin area. This basin is where materials from the former Firefighting Training Area would have drained. This basin drains(ed) to a wetland to the northwest and in turn this wetland feeds an un-named tributary to the Grand River (this stream or creek has been colloquially referred to as “Trout Creek”) at two points (See figure Below).



Extracted from the 1967/82 USGS Topographical Map

Figure 2
Streams in Vicinity to the former North Detention Basin
Gerald R. Ford International Airport
Grand Rapids MI



Updated by the MDEQ-RRD-GR 1/7/2019

Extract from the 1967/82 USGS Topographic Map illustrating creek drainage from the wetland to the northwest of the former North Detention Basin.

- Between the lacustrine depositional environment illustrated by the drilling on the airport property and the fluvial depositional environment of the paleo Grand River valley, there is an area where no clays are present on the well boring logs filed with Kent County.

Area of recommended residential well sampling.

- Based on the results of the recommended residential well sampling, additional monitor wells may need to be installed to delineate the PFAS plume as well as to evaluate risk to GSI. Because of the behavior of PFAS in the environment, these monitor wells will need to be installed in nested vertical sets and in nested fence row sets.
- Installation of monitor wells and soil sampling in the former North Detention Basin to evaluate the former structure as a source area for PFAS.
- The source of the deeper groundwater PFAS impact at the former firefighting training area is unclear. To evaluate if the deeper PFAS impact on the airport property is from an up-gradient source, monitor wells should be installed at the west property line and the south property line of the airport property.

Geologist Signature: _____



Date: 1-11-2019

Mark C. Worrall, District Geologist, DEQ-RRD-Grand Rapids District

ATTACHMENT C

LIST OF PART 201 VIOLATIONS

Gerald R. Ford International Airport
5500 44th Street, Grand Rapids, Kent County, Michigan
Facility ID No. 41001285

1. Violation of Section 20114(1)(a)

“...an owner or operator of property who has knowledge that the property is a facility and who is liable under section 20126 shall do all of the following:

(a) Determine the nature and extent of the release at the facility.”

EGLE informed GFIAA of their obligation to define the nature and extent of the releases at the Facility in their May 1, 2020 Compliance Communication, October 9, 2020 Compliance Communication, and December 9, 2020 Violation Notice. As of the date of this Enforcement Notice, GFIAA has failed to determine the nature and extent of releases at the Facility.

2. Violation of Section 20114(1)(b)

“...an owner or operator of property who has knowledge that the property is a facility and who is liable under section 20126 shall do all of the following:

(b) Make the following notifications:

(ii) If the owner or operator has reason to believe that 1 or more hazardous substances are emanating from or have emanated from and are resent beyond the boundary of [their] property at a concentration in excess of cleanup criteria for unrestricted residential use, notify the department and the owners of property where hazardous substances are present within 30 days after obtaining knowledge that the release has migrated.”

EGLE informed GFIAA of GFIAA’s obligation to notify affected neighbors if contamination has migrated off the property under Section 20114 in EGLE’s May 1, 2020 Compliance Communication, October 9, 2020 Compliance Communication, and December 9, 2020 Violation Notice, requesting Notices of Migration be provided to all property owners downgradient of the FFTA per the requirements of this section. As of the date of this Enforcement Notice, GFIAA has failed to provide Notices of Migration to property owners downgradient of the FFTA.

3. Violation of Section 20114(1)(c)

“...an owner or operator of property who has knowledge that the property is a facility and who is liable under section 20126 shall do all of the following:

(c) Immediately stop or prevent the release at the source.”

EGLE informed GFIAA of GFIAA’s obligation to immediately take measures to contain or remove the source of the environmental contamination under Section 20114 in EGLE’s May 1, 2020 Compliance Communication, October 9, 2020 Compliance Communication, and December 9, 2020 Violation Notice. GFIAA has not documented measures taken to contain or remove the source of the environmental contamination that has migrated off of the Property and contaminated residential drinking water wells.

4. Violation of Section 20114(1)(d)

“... an owner or operator of property who has knowledge that the property is a facility and who is liable under Section 20126 shall do all of the following:

Immediately implement source control or removal measures or contain hazardous substances that are released after the effective date of the 1995 amendments to this section.”

GFIA has failed to undertake any actions to remove, contain, or control the sources of contamination in the soils or property.

5. Violation of Section 20114(1)(g)

“...an owner or operator of property who has knowledge that the property is a facility and who is liable under section 20126 shall do all of the following:

(g) Diligently pursue response activities necessary to achieve the cleanup criteria specified in the part and the rules promulgated under this part.”

EGLE informed GFIAA of GFIAA’s liability for the Facility under Part 201 and subsequent obligations under Section 20114 in EGLE’s May 1, 2020 Compliance Communication, October 9, 2020 Compliance Communication, and December 9, 2020 Violation Notice. Additionally, EGLE notified GFIAA in each of the letters that a failure to perform the response activities required by Part 201 may ultimately lead to EGLE to take legal action to compel compliance with Part 201, including seeking civil fines. As of the date of this Enforcement Notice, GFIAA has not diligently pursued performing the response activities necessary to achieve Part 201 cleanup criteria.

6. Violation of Section 20114(1)(h)

“...an owner or operator of property who has knowledge that the property is a facility and who is liable under section 20126 shall do all of the following:

(h) Upon written request by the department, take the following actions:

(i) Provide a plan for and undertake interim response activities.

(ii) Provide a plan for and undertake evaluation activities.

(iii) Take any other response activity determined by the department to be technically sound and necessary to protect the public health, safety, welfare, or the environment.

(iv) Submit to the department for approval a remedial action plan that, when implemented, will achieve the cleanup criteria specified in this part and the rules promulgated under this part.”

EGLE requested in the October 9, 2020 Compliance Communication that GFIAA:

- Provide EGLE a Response Activity Plan for how GFIAA would temporarily mitigate the risks and exposures to off-site residential drinking water users;
- Provide EGLE a Response Activity Plan that evaluates and identifies a long-term remedy to permanently mitigate the risks for off-site residential drinking water users; and
- Provide EGLE a Response Activity Plan to continue ongoing investigations to define the nature and extent of PFAS contamination on-site and off-site attributable to AFFF releases at the GFIA.

EGLE requested in the December 9, 2020 Violation Notice that GFIAA:

- Provide EGLE a Response Activity Plan for how GFIAA would mitigate the short-term exposures to off-site residential drinking water users, including an implementation schedule that would commence within 30 days after EGLE approval of the workplan;
- Provide EGLE a Response Activity Plan that evaluates and identifies a long-term remedy to permanently mitigate the risks for off-site residential drinking water users; and
- Provide EGLE a Response Activity Plan to continue on-going investigations to define the nature and extent of PFAS contamination on-site and off-site attributable to AFFF releases at the GFIA.

As of the date of this Enforcement Notice, GFIAA has not provided the Response Activity Plans requested by EGLE.