Republic Industrial & Energy Solutions LLC

28470 Citrin Drive
Romulus, MI

Operating License Application

Michigan Department of Environment, Great Lakes, and Energy

Form EQP 5111

For Submittal To:

Michigan Department of Environment, Great Lakes, and Energy

Date: April 28, 2021

Michigan Department of Environmental Quality – Waste Management and Radiological Protection Division (WMRPD)

OPERATING LICENSE APPLICATION FORM FOR
HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

Required under authority of Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Failure to submit this information may result in civil or criminal penalties.

Note: Copies of the current DEQ Site Identification Form, EQP 5150, and the EPA Part A Permit Application Form, 8700-23, must be submitted with this application.

I. FACILITY SITE ID NUMBER	MIR 000 016 055
II. FACILITY'S LEGAL OWNER	
A. Name	Republic Industrial and Energy Solutions LLC
B. Street or P.O. Box	18500 N Allied Way
C. City/State/ZIP	Phoenix, AZ 85054
D. Telephone Number (area code included)	1 (480) 627-2700
E. Owner Type: P	F. Ownership Change? Y: ☐ N: ☒ N/A: ☐ Date:
III. FACILITY OPERATOR	
A. Name	Republic Industrial and Energy Solutions LLC
B. Street or P.O. Box	28470 Citrin Drive
C. City/State/ZIP	Romulus, MI 48174
D. Telephone Number (area code included)	1 (734) 946-1000
E. Operator Type: P	F. Operator Change? Y: ☐ N: ☒ N/A: ☐ Date:
IV. TITLEHOLDER OF LAND	
A. Name	Republic Industrial and Energy Solutions LLC
B. Street or P.O. Box	18500 N Allied Way
C. City/State/ZIP	Phoenix, AZ 85054
D. Telephone Number (area coded included)	1 (480) 627-2700

V. OPERATING LICENSE APPLICATION

Place an "X" in the appropriate box under either A or B (select only one box)

A. Operating License Application

☐	First Application for *Existing Facility	Place an "X" here if application is for a facility that has not been previously licensed in Michigan to treat, store, or dispose of hazardous waste and has interim status pursuant to 40 CFR §270.70.
☒	Renewal Application for *Existing Facility	Place an "X" here if renewal application for a facility that was previously licensed in Michigan to treat, store, or dispose hazardous waste and whose hazardous waste operations have not had any new construction or been altered, enlarged, or expanded.
☐	Application for Modification of License	Place an "X" here if application is for a license modification.
☐	First Application for Research, Development, and Demonstration (RDD) License	Place an "X" here if application for a temporary license for RDD.
☐	Renewal Application for RDD License	Place an "X" here if application for the renewal of a temporary license for RDD.

B. Operating License Application for New, Altered, Enlarged, or Expanded Facility

☐	First Application	Place an "X" here if application is for a new facility or a facility that wishes to alter, enlarge, or expand its hazardous waste operations.

For existing facilities, provide date operation began.	Date	December 2005
For RDD activities, provide the date RDD began or expected to begin.	Date	
For new, altered, enlarged, or expanded facilities, provide date expected construction to begin.	Date	

***Existing Facility** means a hazardous waste treatment, storage, or disposal facility (TSDF) that either received all necessary state-issued environmental permits or licenses before January 1, 1980, or for which approval of construction was received from the Air Pollution Control Commission before November 19, 1980, or before promulgation of new federal rules that caused the facility to become subject to regulation as a TSDF. Existing facilities also include TSDFs that were operating before January 1, 1980, under existing authority, or before promulgation of new federal rules that caused the facility to become subject to regulation as a TSDF and that did not require state-issued environmental permits or licenses.

VI.	OPERATING LICENSE APPLICATION FEES		
☒	A. Operating License Application Fixed Fee	$	500
☐	B. Additional License Application Fees for New, Altered, Enlarged, or Expanded Facility	$	25,000
	Check Type of Facility		
☐	Land Disposal ($9,000)	$	
☐	Incineration or Other Treatment ($7,200)	$	
☐	Storage ($500)	$	
Total Operating License Fee		$	500

Note: Checks shall be made payable to the "State of Michigan" and the state accounting code "HWOL" written in the memo portion. Checks shall be mailed to DEQ, Cashier's Office, P.O. Box 30657, Lansing, Michigan 48909-8157, with a copy of payment included with application that is mailed to the DEQ, WMRPD, P.O. Box 30241, Lansing, Michigan 48909-7741.

VII.	EXISTING ENVIRONMENTAL PERMITS (attach copies of each as proof of issuance)	
☒	A. NPDES (Discharges to Surface Water) Permit Number	MI 0058 484
☒	B. UIC (Underground Injection of Fluids) Permit Number	MI-163-1W-C010, MI-163-1W-C011
☒	C. RCRA (Hazardous Waste) Permit Number	RCRA Part A MIR 000 016 055
☐	D. PSD (Air Emissions From Proposed Sources) Permit Number	
☒	E. Other (Specify below) Permit Number	Air Quality Permit PTI 539-97F

VIII. NATURE OF BUSINESS (Provide a brief description)

The purpose of the injection wells and the Romulus facility is to provide an environmentally safe option for generators to dispose of liquid wastes cost-effectively and efficiently. The deep injection well technology is suitable for disposal of non-flammable, non-explosive, and non-radioactive liquid wastes.

IX. MAP

Attach to this application a topographic map of the area extending at least one mile beyond the property boundaries. The map must show the legal boundaries of the facility; the location of each of its existing and proposed intake and discharge structures; each of its hazardous waste treatment, storage, or disposal facilities, including the location of all processes listed in Items XII and XIII identified by process code; and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area, plus all drinking water wells within a quarter mile of the facility that are identified in the public record or otherwise known to you. **PLEASE REFER TO ATTACHMENTS**

X. FACILITY DRAWING

All existing facilities must include a scale drawing of the facility showing the property boundaries of the facility; the areas occupied by treatment, storage, or disposal operations that will be used during interim status; the name of each operation (drum storage area, etc.); areas of past TSD operations; areas of future TSD; and the approximate dimensions of the property boundaries and all TSD areas. Where applicable, use the process codes listed in Items XII and XIII to indicate the location of all TSD. This drawing should fit on an 8.5 by 11 inch sheet of paper. **PLEASE REFER TO ATTACHMENTS**

XI. PHOTOGRAPHS

All existing facilities must include photographs that clearly delineate all existing structures; existing storage, treatment, and disposal areas; and sites of future storage, treatment, or disposal areas. Use the process codes and descriptions in Items XII and XIII to indicate the location of all TSD areas. Indicate the date of the photograph on the back of each photograph. Photographs may be in color or black and white, aerial or ground-level. **PLEASE REFER TO ATTACHMENTS**

XII. PROCESS CODES AND DESIGN CAPACITIES (see instructions)

Line Number	A. Process Code (from list)	B. Process Design Capacity			Line Number	A. Process Code (from list)	B. Process Design Capacity		
		B.1. Quantity	B.2. Unit of Measure	For Official Use Only			B.1. Quantity	B.2. Unit of Measure	For Official Use Only
1.	S01	11,000	G		6.				
2.	S01	92,000	G		7.				
3.	S02	267,900	G		8.				
4.	T01	396,000	U		9.				
5.					10.				

C. Additional Process Codes or Description of Nonlisted Processes (Codes "S99" and "T04").

Commented [HB1]: Values to be confirmed

Commented [FJ2R1]: All are correct except for T01 should be 396,000

XIII. DESCRIPTION OF HAZARDOUS WASTES

Line Number	A. Hazardous Waste Number (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Processes				
				D.1 Process Codes (enter code)				D.2 Process Description (if no code entered in D.1)
1	D002	75,000,000	T	S01	S02	T01		
2	D004							Included with above
3	D005							Included with above
4	D006							Included with above
5	D007							Included with above
6	D008							Included with above
7	D009							Included with above
8	D010							Included with above
9	D011							Included with above
10	D012							Included with above
11	D013							Included with above
12	D014							Included with above
13	D015							Included with above
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37	D039							Included with above
38	D040							Included with above
39	D041							Included with above
40	D042							Included with above
41	D043							Included with above
42	F001							Included with above
43	F002							Included with above
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59	F035							Included with above
60	F037							Included with above
61	F038							Included with above
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68	K006							Included with above
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495	U197							Included with above
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Commented [FJ3]: Is this list consistent with our permit?

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549	U389							Included with above
550	U394							Included with above
551	U395							Included with above
552	U396							Included with above
553	U409							Included with above
554	U410							Included with above
555	U411							Included with above

XIV. OTHER REQUIRED ATTACHMENTS

A. General Information (each item should be a separate attachment to the application)

1. General facility description
2. Chemical and physical analyses*
3. Waste Analysis Plan*
4. Security procedures and equipment
5. Inspection schedules*
6. Preparedness/prevention or waiver*
7. Contingency Plan*
8. Traffic information
9. Location information
10. Personnel training program*
11. Closure and Postclosure (C/PC) Plan*
12. C/PC cost estimates*
13. Topographic map
14. Liability mechanism
15. Financial assurance instrument

* Use template provided to complete application

B. Supplemental Information (each item, if needed, should be a separate attachment to the application)

1. Status of compliance with other federal laws
2. Corrective action information*
3. Hydrogeological Report*
4. Environmental Assessment*
5. Environmental monitoring Programs*
6. Engineering plans
7. Proof of issuance of other permits or licenses
8. Capability certification/compliance schedule
9. Restrictive covenant (landfills only)
10. Construction certification (new, altered, enlarged, or expanded)

* Use template provided to complete application

C. Facility Specific Information (each item, if needed, should be a separate attachment to the application)

1. Containers*
2. Tanks*
3. Incineration or thermal treatment
4. Treatment
5. Surface impoundments
6. Waste piles
7. Landfills
8. Land treatment
9. Miscellaneous units
10. Underground mines or caves
11. Drip pads
12. Boilers and industrial furnaces
13. Air emissions from process vents, equipment leaks, tanks, containers, and surface impoundments**

* Use template provided to complete application

** Use templates C.11-AA, C.11-BB, and C.11-CC provided to complete application

XV. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

OWNER NAME (type or print)	SIGNATURE	DATE SIGNED
Republic Industrial and Energy Solutions LLC	James Macaluso	04/28/2021
OPERATOR NAME (type or print)	SIGNATURE	DATE SIGNED
Republic Industrial and Energy Solutions LLC	James Macaluso	04/28/2021
TITLEHOLDEROF LAND NAME (type or print)	SIGNATURE	DATE SIGNED
Republic Industrial and Energy Solutions LLC	James Macaluso	04/28/2021

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Operating License Application Form (EQP 5111)

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Attachment A2 - Chemical And Physical Analyses
Attachment A3 - Waste Analysis Plan
Attachment A4 - Security Procedures And Equipment
Attachment A5 - Inspection Requirements
Attachment A6 - Preparedness And Prevention
Attachment A7 - Contingency Plan
Attachment A8 - Traffic Information
Attachment A9 - Location Information
Attachment A10 - Personnel Training
Attachment A11 - Closure And Postclosure Care Plan
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Attachment B1 - Status Of Compliance With Other Federal Laws
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Attachment C1 - Containers
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FORM EQP 5111 ATTACHMENT A1
GENERAL FACILITY DESCRIPTION

This license application attachment generally describes the hazardous waste management facility for the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility located at 28470 Citrin Drive, Romulus, Michigan.

This attachment is organized as follows:

Introduction
A1.A Location
A1.B Site Description
A1.C Facility Access
A1.D Facility Description
A1.E Description Of Above-Ground Waste Management Units
A1.F Description Of Site Features
A1.G Process Description
Appendix A1.A Site Plan Drawing Number C2.01
Appendix A1.B Grading Plan Drawing Number C2.02
Appendix A1.C Landscape Plan Drawing Number C2.06
Appendix A1.D Utilities Plan Drawing Number C2.03
Appendix A1.E Basic Site Plan Drawing Number C0.01
Appendix A1.F Storm Water Containment Plan Drawing Number C1.01
Appendix A1.G Storm Water Containment Profiles Drawing Number C1.02
Appendix A1.H Aerial Photograph
Appendix A1.I Facility Photographs

Introduction

The Facility is a commercial hazardous waste treatment and storage Facility located at 28470 Citrin Drive, Romulus, Michigan. The Facility also includes two multisource commercial hazardous waste disposal wells formerly owned and operated by Environmental Geo-Technologies, LLC ("EGT"). The original owner and operator was Environmental Disposal Systems, Inc. (EDS)

As of December 27, 2005, EDS had received all of the regulatory permits and licenses necessary to operate the Facility as a hazardous waste treatment and storage facility, specifically including: (i) Underground Injection Control ("UIC") permits issued by the United States Environmental Protection Agency pursuant to the Safe Drinking Water Act; (ii) Michigan Department of Environmental Quality("MDEQ" now Michigan Department of Environment, Great Lakes and Energy "EGLE") Hazardous Waste Management Facility Construction Permit, issued by MDEQ pursuant to Part 111 (Hazardous Waste) of the Natural Resources and Environmental Protection Act ("NREPA"); and (iii) MDEQ Hazardous Waste Management Facility Operating License, issued by MDEQ pursuant to Part 111 of NREPA.

EDS began commercial operation of the Facility in December 2005. Between December 2005 and October 2006, EDS safely processed and disposed of approximately 2.4 million gallons of hazardous waste at the Facility. In November 2006, MDEQ notified EDS that it had failed to comply with certain

conditions in the EDS Part 111 Hazardous Waste Operating License and directed EDS to cease operations.

Also in November 2006, EDS assigned its interest in the Facility to RDD Investment Corp. ("RDD"), a corporation formed by EDS's major creditor. The Facility had not been operated between November 2006 and Nov 2013. EGT agreed to purchase the Facility from RDD upon EGLE's issuance of a Part 111 operating license. Republic Industrial and Energy Solutions, LLC (Republic) subsequently purchase the facility on October 10, 2019.

Upon acquisition of the Facility, Republic immediately invested in the future of the Facility by rebuilding both deep injection wells, cleaning and epoxy coating all facility secondary containments, inspecting and repairing tanks and piping, upgrading pumps, mixers, instrumentation, and installing a new state of the art computer control system to more efficiently and safely operate and maintain the Facility.

A1.A Location

The Facility is located at 28470 Citrin Drive, Romulus, Wayne County, Michigan. The Facility location is shown on Dwg.No.C2.01 (attached as Appendix A1.A).

A1.B Site Description

The Facility is located on the west end of Citrin Drive, which runs along the west boundary line of the Marathon tank farm property. A legal description of the site is shown on Dwg.No.C2.01.

The site is 15 acres in size and is located in the City of Romulus, Wayne County, Michigan. Of these 15 acres, about 5.9 acres are associated with the hazardous waste management Facility that includes storage and treatment of hazardous wastes. Disposal of wastes is via two onsite injection wells. The remaining 9.1-acre area is located west of the active Facility and is not within the permitted area of the Facility.

The site is fairly level, having a difference in ground elevations of about four feet across the entire site with the higher elevations located along the south boundary.

The Godfrey Drain runs generally north and south across the Facility, as shown on Dwg.No.C2.02. (attached as Appendix A1.B). This drain only intermittently has water in it after significant rainfalls or significant snow melt.

The site is completely abutted and surrounded by heavy industrial properties (Romulus Zoning District - General Industrial (MT2)) as shown on Dwg.No.C2.02. The significant vegetation on the site is shown on the landscape plan, Dwg.No.C2.06 (attached as Appendix A1.C). Adjacent land uses consist of Interstate 1-94 to the north, Marathon's (formerly "Total") gasoline storage facility to the east, Norfolk and Southern Railroad to the south, and vacant industrial property to the west.

Man-made features on the Facility consist of a sanitary sewer system running along the north end of the property and along the west side of the Godfrey Drain extending all the way to Inkster Road, a pump house, two well buildings, the treatment building, an administrative office building, and a stormwater retention pond. All of these features are shown on Dwg.No.C2.01 and Dwg.No.C2.03 (attached as Appendices A1.A and A1.D, respectively).

A1.C Facility Access

The Facility is accessed from Citrin Drive which is an asphalt road built to class A road standards. Citrin Drive is accessed by Inkster Road, Wick Road, and Middlebelt Road from Interstate 1-94. Each of these access roads is or will be Class A roads per information from Wayne County.

Waste transport and supply vehicles will be required to enter the Facility from exit 198 off of Interstate I-94 followed by Middlebelt Road, Wick Road, Inkster Road and Citrin Drive. Railcars carrying waste will enter at the southwest corner of the Facility.

Information concerning the engineering details for the Facility and the access road is located in Attachment B6 (Engineering Plans) to this Application.

A1.D Facility Description

The Facility generally consists of an administrative office building, a fully-enclosed above-ground treatment and storage Facility, two deep injection wells, each well head contained within a structural enclosure, and a pump house. An aerial photograph of the Facility is provided in Appendix A1.H. The administrative office building is a one story structure with exterior landscaped areas. Access to the office building is located just west of the security station as shown on Dwg.No.C0.01 (see Appendix A1.E). The treatment and storage building consists of a concrete block and metal framed structure also with exterior landscaped areas. The two injection wells are enclosed in small housings located east of the Treatment and Storage Building. All structures are constructed using non-glare producing exterior materials. All areas of the site not used for structures are landscaped or provided with ground cover.

A security station is located at the northeast corner of the active area of the Facility. At this location access to the fenced Facility, including the hazardous waste management units is controlled. The entire Facility is surrounded by a security fence and is monitored 24 hours/day by a security surveillance system.

The western section of the site property, located west of the Godfrey Drain, is landscaped with earth berms, and some trees. These are shown on Dwg.No.C2.06 (Appendix A1.C).

A rail spur extends into and through the Treatment and Storage Building. All railcar unloading will occur within the enclosed building. All railcars containing wastes will be staged on the spur east of the Treatment and Storage Building within the security fencing.

The drawings of the exterior of the Republic Facility and buildings are shown on the "A" series of engineering plans referenced in Attachment B6 (Engineering Plans) to this Application.

A1.E Description Of Above-Ground Waste Management Units

The following above-ground waste management units at this Facility are housed within the single-story Treatment and Storage Building (see Facility photos, Appendix A1.I):

- One sampling bay for tanker trucks and railcars (sampling procedures are discussed in Attachment A3 (Waste Analysis Plan or "WAP") to this Application)
- Two tanker unloading bays
- Railcar container storage area (92,000 US gallon capacity)

- Container storage and handling area (11,000 US gallon capacity; (additional information on container storage may be found in Attachment C1 (Containers) to this Application)
- Waste storage and treatment tanks (267,900 US gallon total capacity) (additional information on the Facility's tanks may be found in Attachment C2 (Tank systems) to this Application)
- Solids removal filters and filter press system

The Facility is equipped with extensive features to prevent accidents, contain spills, and protect against fires and explosions. Personnel are trained to follow detailed operating procedures to minimize hazards and to follow a detailed contingency plan in the event of any emergency. The entire Facility is designed, constructed, operated and maintained in the interest of protecting human health and the environment from threats resulting from releases of hazardous wastes and its constituents to the air, soil, or surface water, pursuant to 40 CFR Part 264.31. Additional information on emergency preparedness, prevention, and response may be found in Attachment A6 (Preparedness and Prevention) and Attachment A7 (Contingency Plan) to this Application.

A1.F Description Of Site Features

The Facility is identified to approaching delivery trucks and other vehicles by a sign at the entrance to the Facility. This sign is built into the greenbelt berm located along the north edge of the property. Republic is currently coordinating the installation of a monument sign on the island at the entrance.

The Facility entrance provides separate access for waste delivery vehicles and automobiles going to the office. The security station located at the Facility entrance is positioned to allow trucks to park outside the active area of the Facility until Republic personnel review the vehicle's manifest information.

Once waste transport vehicles are allowed to enter the active area of the Facility, they are directed to the sampling bay located within the Treatment and Storage Building and the Laboratory personnel are alerted that the vehicle will be approaching. Traffic flow at the Facility is one-way (counter clockwise) for all bulk tanker truck vehicles.

Once a waste delivery truck is in the sampling bay, the Laboratory personnel obtain a sample from the vehicle for analysis in the on-site laboratory located adjacent to the sampling bay. This analysis will ensure that the waste has been approved for receipt at the Facility and is acceptable for off-loading. The vehicle operator remains with the vehicle during the sampling and analysis period.

If the laboratory testing indicates the waste is consistent with pre-acceptance approval and is appropriate for storage and treatment at the Facility, the vehicle will be unloaded. If a discrepancy is identified, either the discrepancy will be resolved, or the waste will be rejected.

After unloading, waste delivery vehicles are internally inspected to verify they have been emptied. Once they have been emptied, Facility personnel will approve the vehicle for departure to the security station. Republic personnel verifies that the manifest has been properly signed and then allows the vehicle to leave the Facility.

Railcars are sampled and unloaded similarly to the vehicle unloading procedure described above; however, the railcars can be brought onto the Facility in groups.

Container delivery vehicles are handled similarly to the waste delivery trucks and railcars, except they are directed to the container handling area for sampling, analysis and approval for storage and treatment. The container handling area is located inside the Treatment and Storage Building and is constructed to contain any accidental spills that may occur during container handling.

Facility drainage has been designed to contain in excess of a 24-hour, 100-year storm. Surface water on the west side of the Facility, including all roadways and parking areas, drains to the sedimentation basin where the water will be contained until it is mechanically pumped into the Godfrey drain. Such pumping shall only be done after laboratory analyses are performed. Storm water on the east side of the Facility, including the container unloading area and access roads, drains into the Storm Water Runoff Vault ("SWRV") shown on Dwg.No.C1.01 (attached as Appendix A1.F) and C1.02 (attached as Appendix A1.G). Water accumulating in this vault will be processed through the treatment system at the Facility and disposed of in the deepwells, or disposed of offsite at an appropriately licensed wastewater treatment facility.

Additional Facility information may be found in Attachment B6 (Engineering Plans) to this Application.

A1.G Process Description

The following briefly describes the treatment process conducted at the Facility. Additional detailed information on the processes conducted at the Facility may be found in Attachment C4 (Treatment Process Description) to this Application.

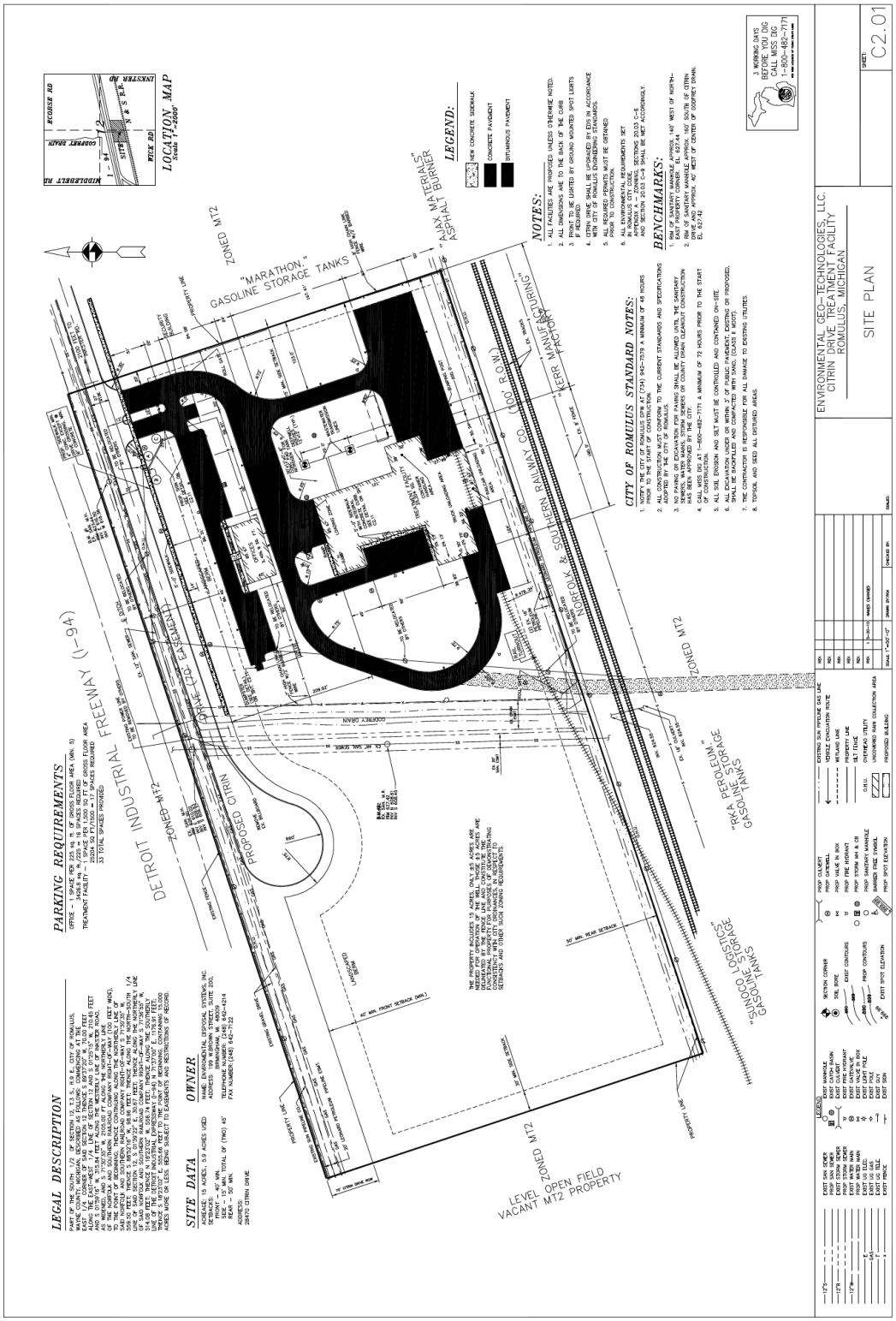
Solid removal: Solids are removed from liquids through a combination of chemical and physical treatment (filtration) prior to deep well injection. Chemical treatment may include adjusting the pH of the material in order to remove dissolved solids, and the addition of flocculants and modifiers to assist in gravity settlement of those solids. Treatment will take place in six tanks known as "Primary Settling Tanks." The treated waste then passes through a series of filters to remove any remaining solids. The waste is carefully tested between each step of the process to ensure that the treatment has been effective, and that waste can be safely disposed of in one or both of the deepwells.

Disposal of Solids: Solids removed from waste will be filter pressed and disposed of at an off-site licensed hazardous waste disposal facility or other facility authorized to receive such waste.

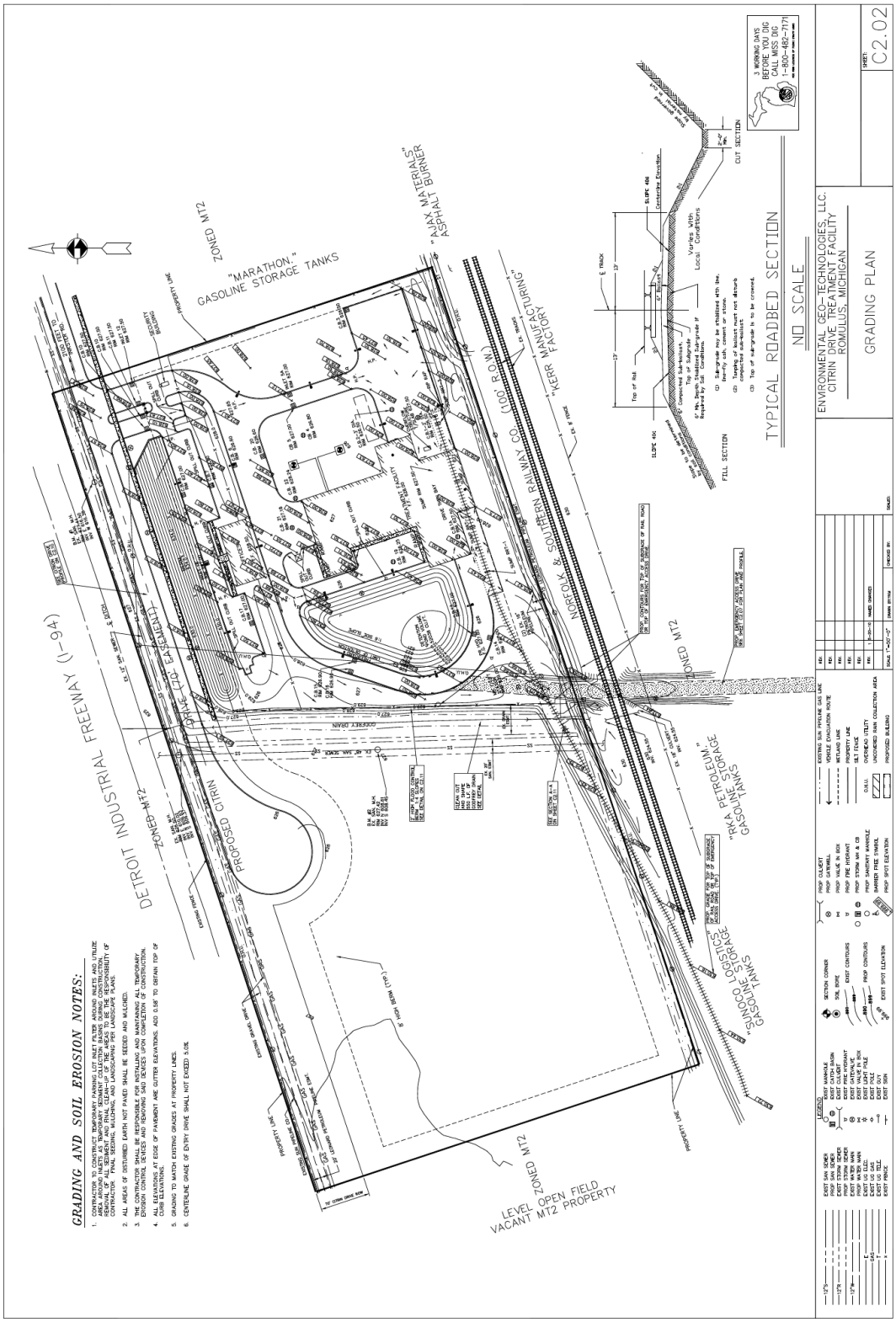
After the solids removal process is complete, the treated waste is accumulated in the secondary storage tank ("SST") and then pumped after final filtration into one of the deepwells. Prior to disposal, the waste is tested to ensure its compatibility with prior waste injections and with the deepwell injectate tube itself.

Water used at this Facility comes from city water accessible along Citrin Drive. Sanitary sewers which already exist adjacent to the Facility are used for sanitary wastewaters only. No waste is disposed of in the sanitary sewers.

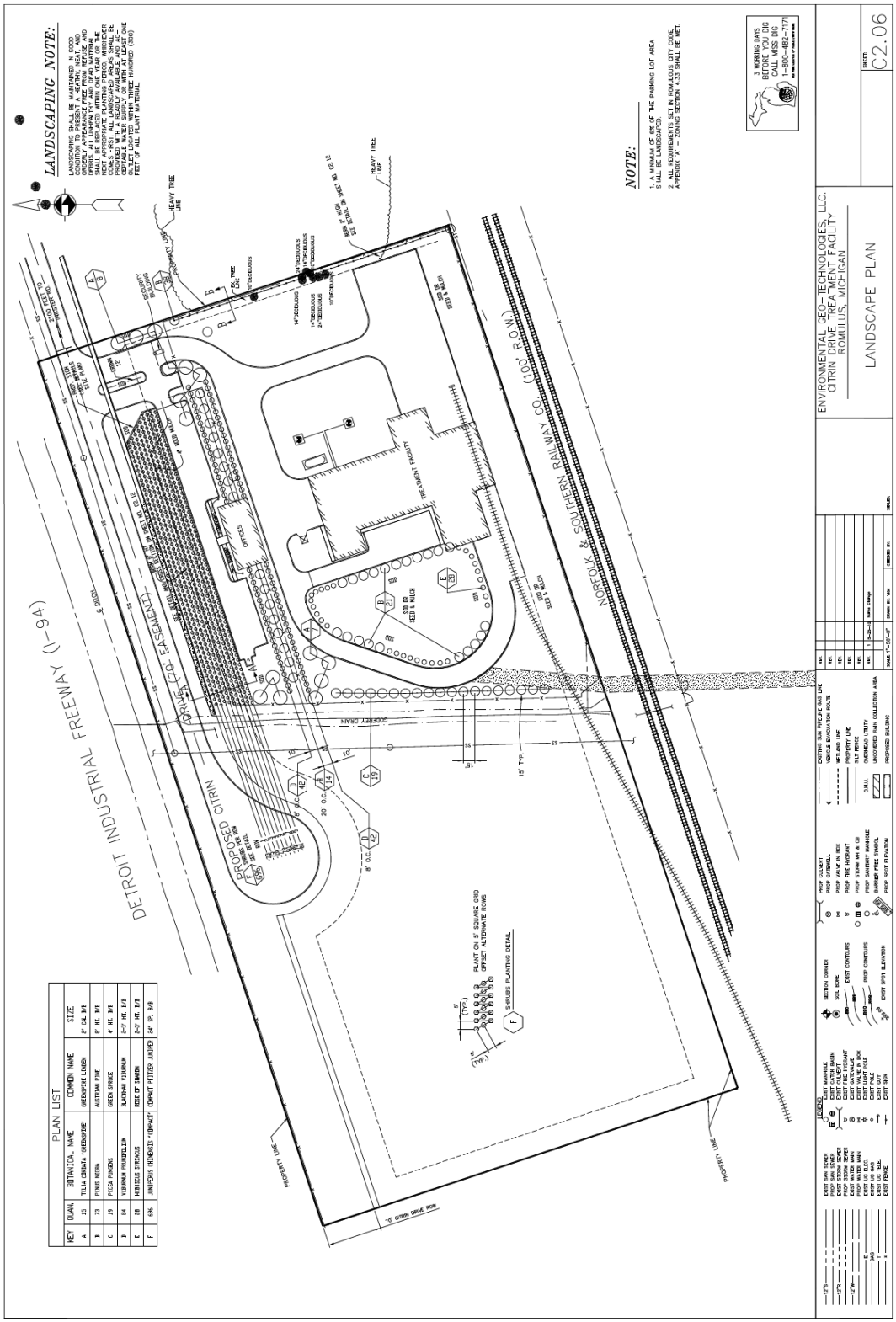
Appendix A1.A Site Plan Drawing Number C2.01



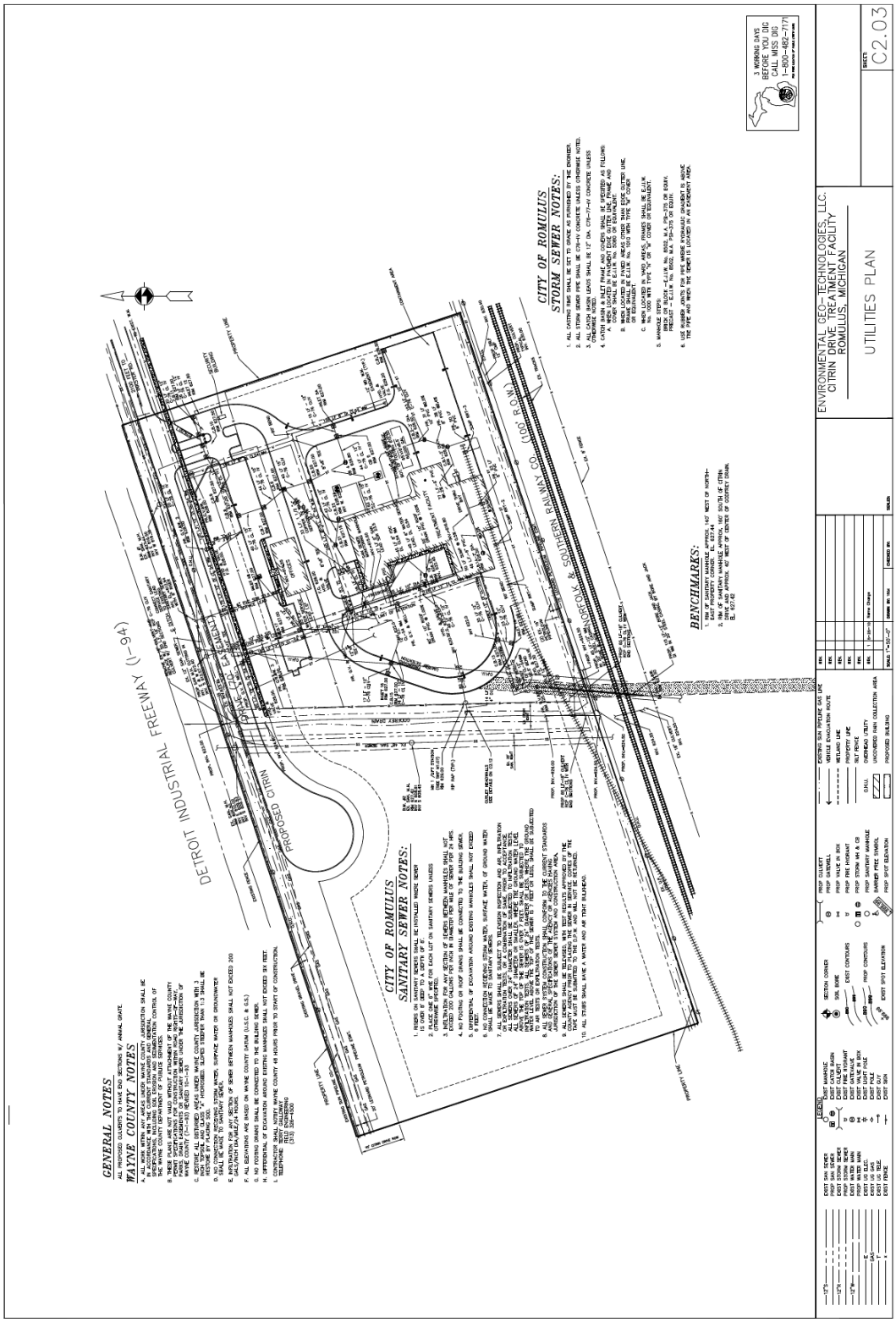
Appendix A1.B Grading Plan Drawing Number C2.02



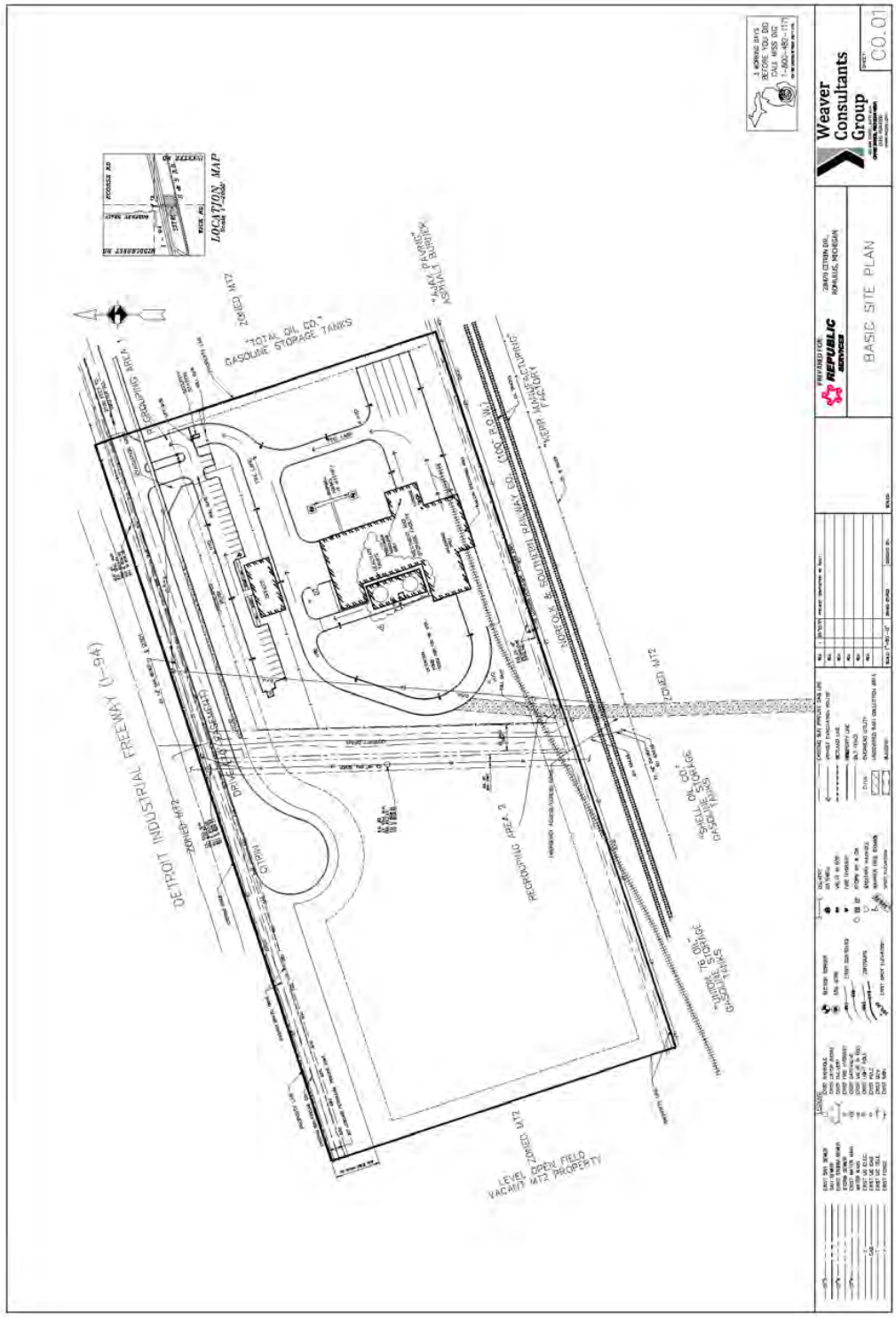
Appendix A1.C Landscape Plan Drawing Number C2.06



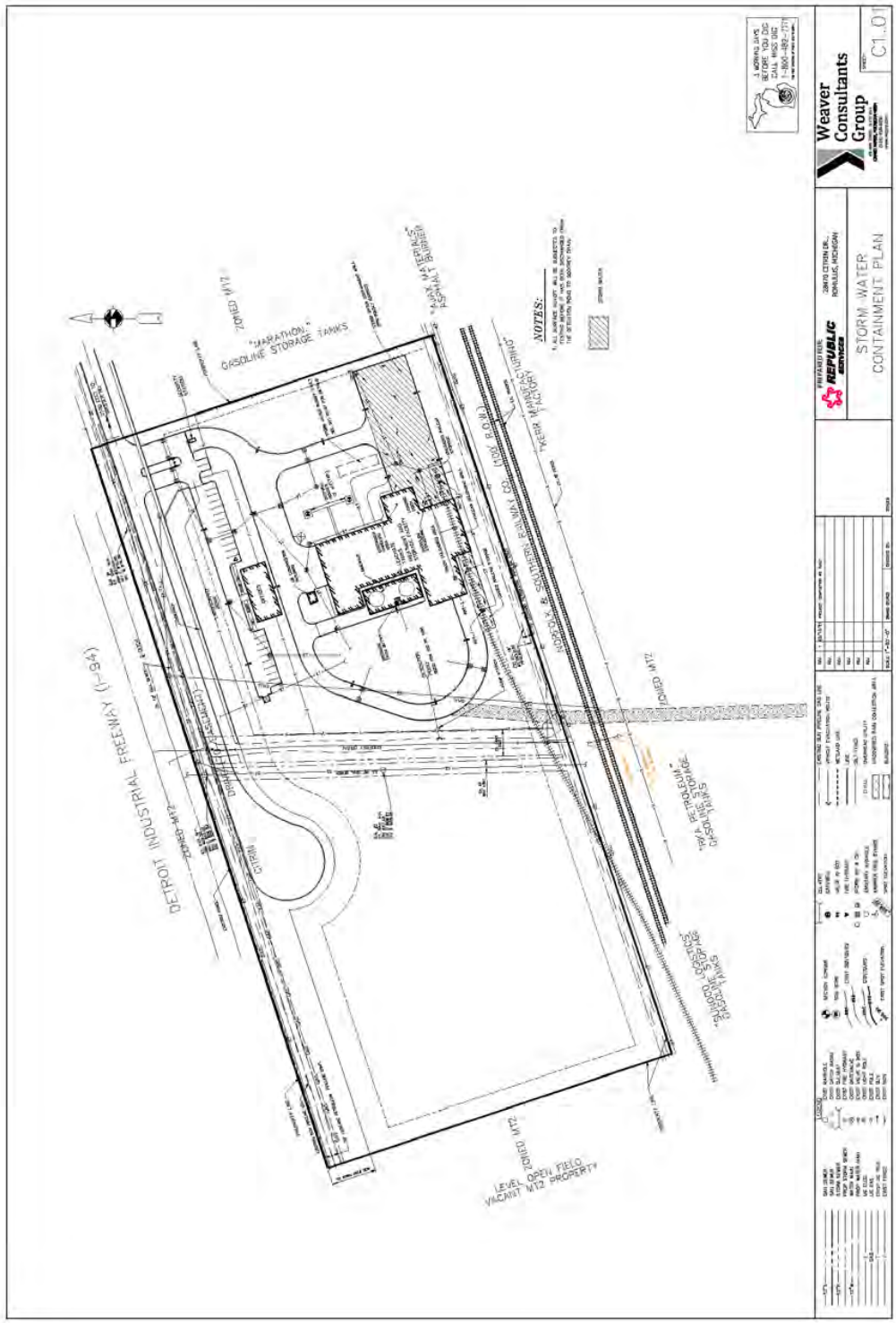
Appendix A1.D Utilities Plan Drawing Number C2.03



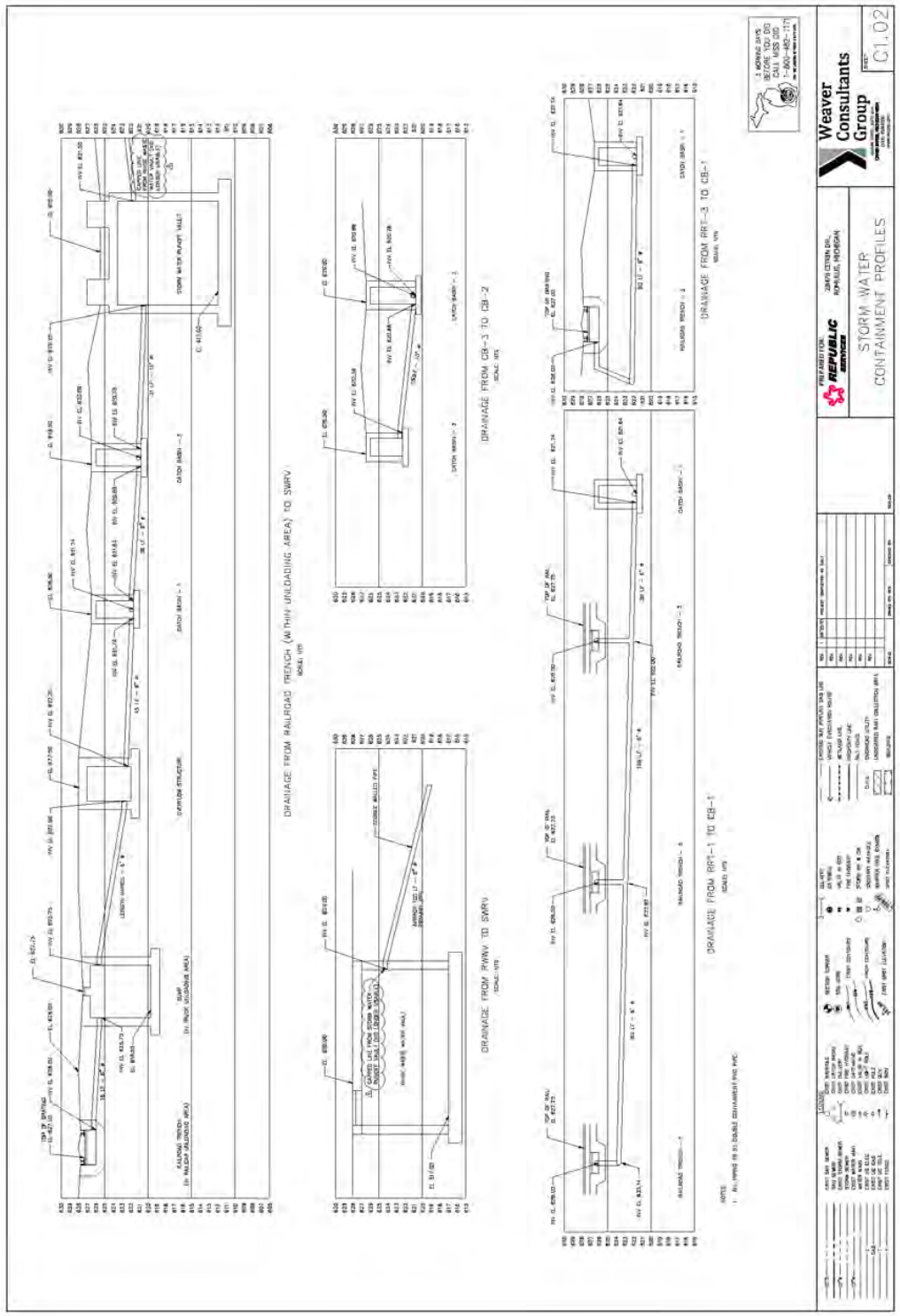
Appendix A1.E Basic Site Plan Drawing Number C0.01



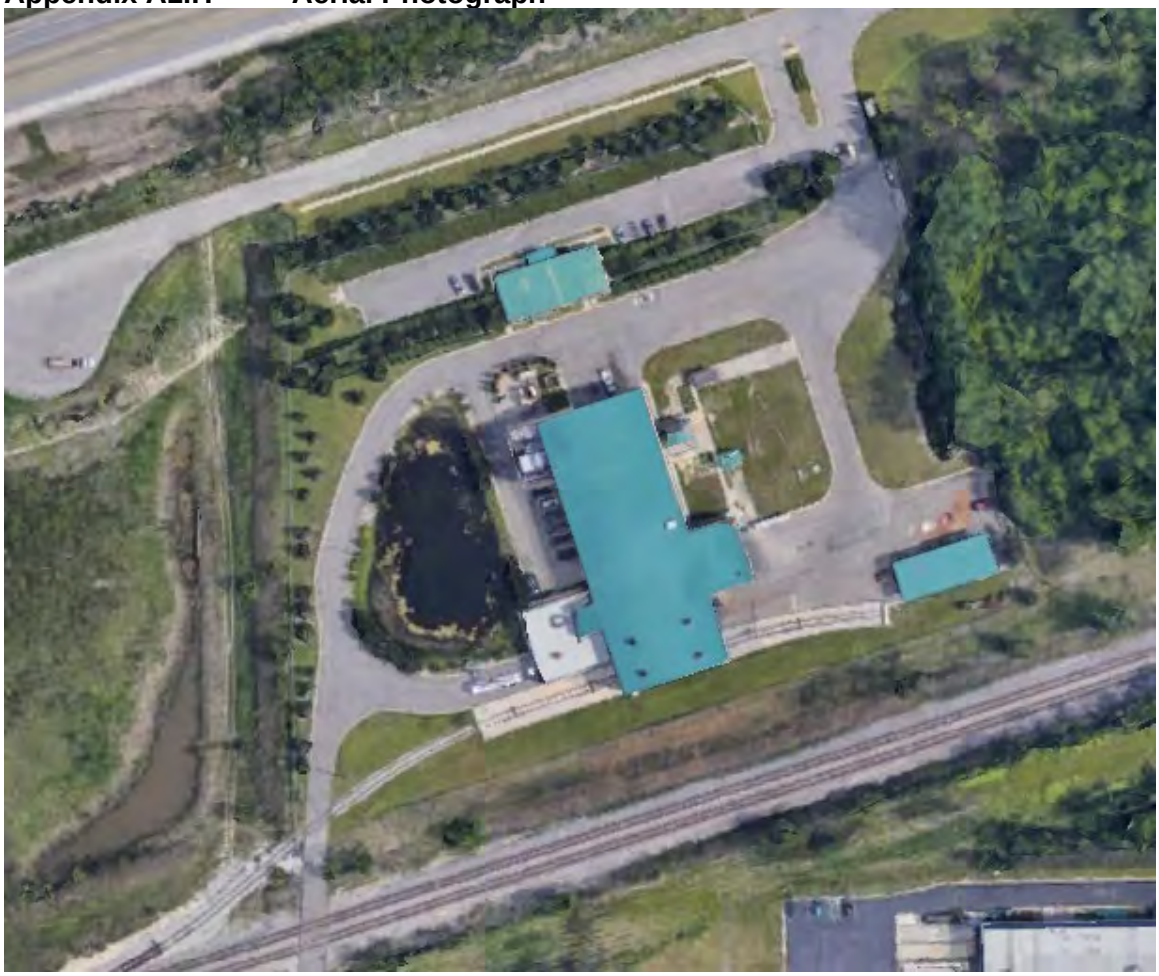
Appendix A1.F Storm Water Containment Plan Drawing Number C1.01



Appendix A1.G Storm Water Containment Profiles Drawing Number C1.02



Appendix A1.H Aerial Photograph



Appendix A1.I Facility Photographs

Front Entrance

Inside Overall Facility Entrance

Tanker & Railcar Facility Entrances

Container Storage Area Entrances

Wellheads, Pump, Treatment & Office Buildings

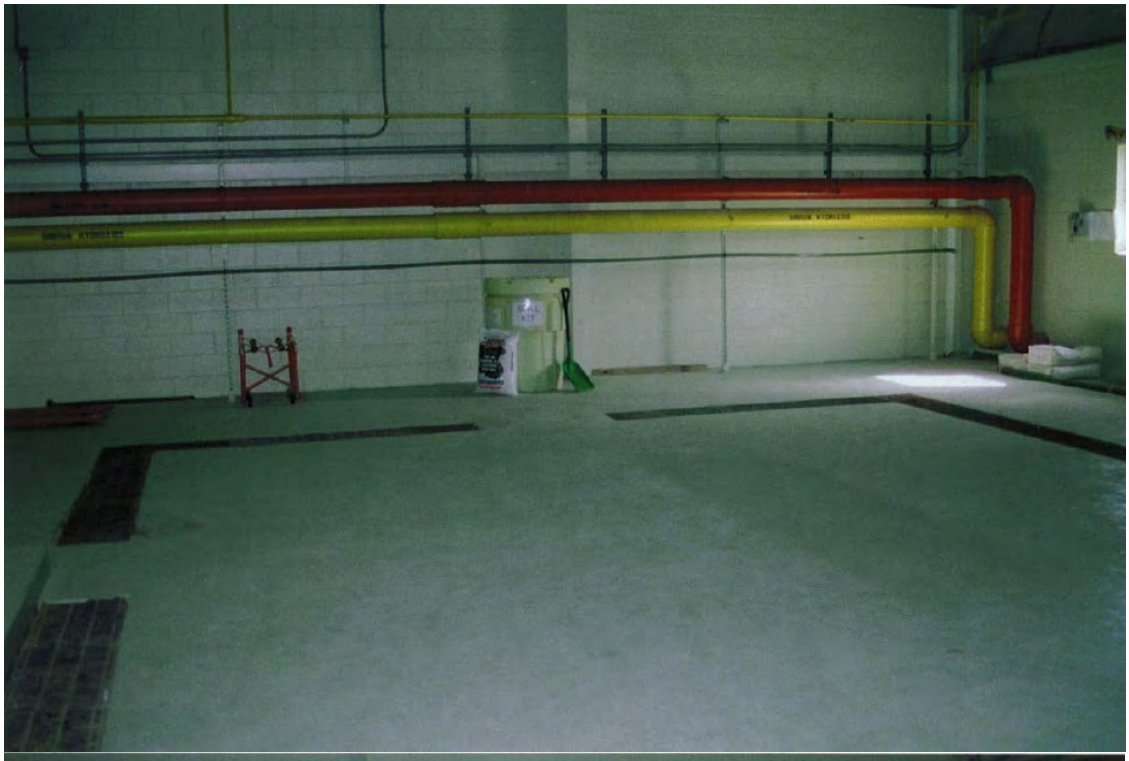
Unloading, Control Room & Receiving Tanks

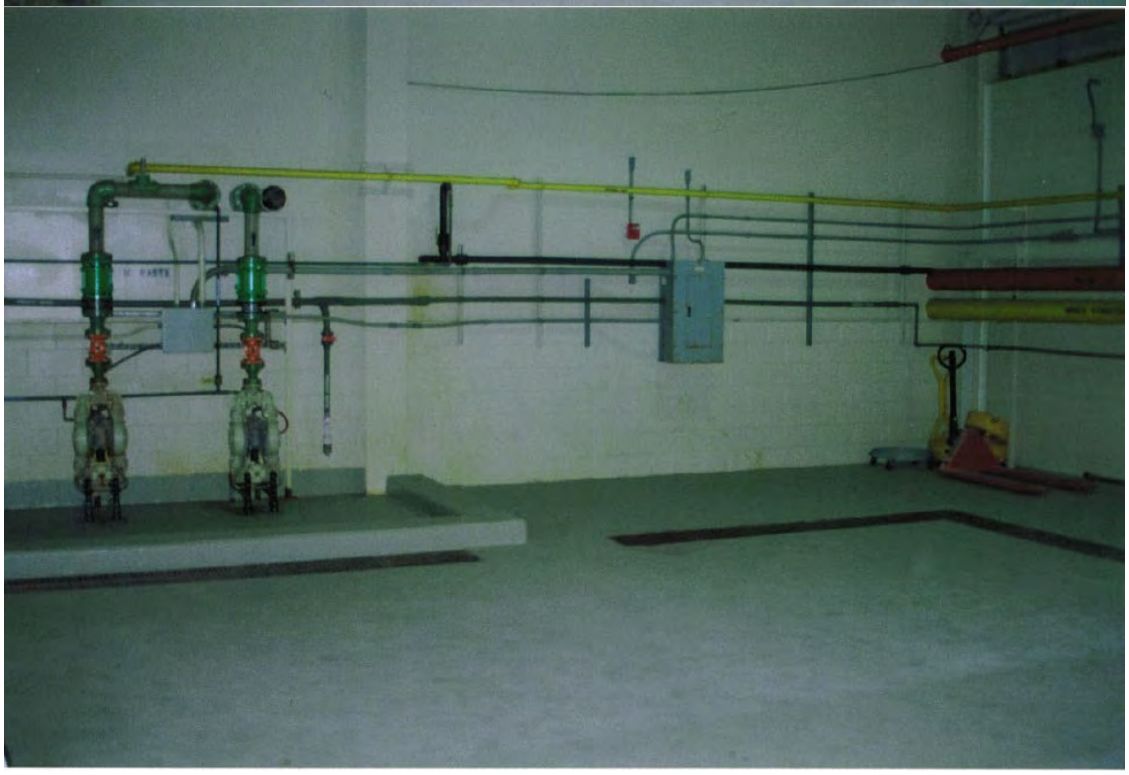
Sludge, Secondary Storage, Acid Reagent & Fire Suppression Tanks

Primary Settling Tanks

Unloading Pumps System

Container Storage Area





FORM EQP 5111 ATTACHMENT A2
CHEMICAL AND PHYSICAL ANALYSES

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities*. See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), being R 299.9504, R 299.9508, and R 299.9605, and Title 40 of the Code of Federal Regulations (CFR) §§264.13(a) and 270.14(b)(2), establish requirements for chemical and physical analyses at hazardous waste management facilities. All references to the 40 CFR citations specified herein are adopted by reference in R 299.11003

This license application attachment addresses requirements for chemical and physical analyses at the hazardous waste management facility for the Republic Industrial and Energy Solutions, LLC Facility ("Republic" or "Facility") in Romulus, Michigan. The information included in the attachment demonstrates how the facility meets the chemical and physical analyses requirements for hazardous waste management facilities.

Type of applicant: *(Check as appropriate)*

- ☒ Applicant for Operating License for Existing Facility
- ☐ Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility

Type of Facility: *(Check as appropriate)*

- ☒ On-site Facility (generates hazardous waste)
- ☒ Off-site Facility (accepts hazardous waste from other generators)

Type of Units to be Constructed or Operated at the Facility: *(Check as appropriate)*

- ☒ Containers
- ☒ Tank(s)
- ☐ Waste Pile(s)
- ☐ Landfilled Waste
- ☐ Waste Incineration
- ☐ Land Treatment
- ☐ Miscellaneous Unit(s)

☐ Boilers and Industrial Furnaces

This attachment is organized as follows:

A2.A Waste Description
A2.A.1 Waste Description *(generate on-site wastes)*
A2.A.2 Waste Description *(receive wastes from off-site generators)*
A2.A.2(a) Procedures for Obtaining Chemical and Physical Analyses from Off-Site Generators
A2.B Containerized Waste
A2.B.1 Wastes Compatible with Container
A2.B.2 Containers without Secondary Containment System
A2.C Waste in Tank Systems
A2.C.1 Wastes Compatible with Tanks
A2.C.2 Tanks without Secondary Containment System
A2.D Waste in Piles
A2.E Landfilled Wastes
A2.F Wastes Incinerated and Wastes Used in Performance Tests
A2.G Wastes to be Land Treated
A2.H Waste in Miscellaneous Units
A2.I Waste in Boilers and Industrial Furnaces
Table A2.A.1 Hazardous Waste Generated at the Facility
Table A2.A.2 Hazardous Wastes Accepted at the Facility
Attachment A2.A.1 Laboratory Report Detailing Chemical and Physical Analyses of Representative Samples

A2.A WASTE DESCRIPTION

[R 299.9504(1)(c) and 40 CFR §270.14(b)(2)]

As a supplement to this Attachment A2, please see the Waste Analysis Plan (attached as Attachment A3 to this Application) for specific information regarding waste acceptance and characterization.

A2.A.1 Waste Description (generate on-site wastes)

[R 299.9504(1)(c) and 40 CFR §270.14(b)(2)]

Hazardous wastes generated on site will include filter press solids from treatment operations, laboratory sample wastes, and wash waters from cleaning of plant equipment. The facility will also manage storm water collected in the Storm Water Runoff Vault as a non-hazardous liquid industrial waste as appropriate. The on-site generated hazardous wastes are described below.

Filtered solids generated from the treatment operations may include any of the following waste codes acceptable for the Facility:

D Codes		F Codes	K Codes				P Codes			
D002	D039	F001	K001	K038	K102	K157	P001	P041	P084	P185
D004	D040	F002	K002	K039	K103	K158	P002	P042	P085	P188
D005	D041	F003	K003	K040	K104	K159	P003	P043	P087	P189
D006	D042	F004	K004	K041	K105	K161	P004	P044	P088	P190
D007	D043	F005	K005	K042	K106	K169	P005	P045	P089	P191
D008		F006	K006	K043	K107	K170	P006	P046	P092	P192
D009		F007	K007	K044	K108	K171	P007	P047	P093	P194
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D013		F011	K011	K048	K112	K176	P011	P051	P097	P199
D014		F012	K013	K049	K113	K177	P012	P054	P098	P201
D015		F019	K014	K050	K114	K178	P013	P056	P099	P202
D016		F024	K015	K051	K115		P014	P057	P101	P203
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D018		F032	K017	K060	K117		P016	P059	P103	P205
D019		F034	K018	K061	K118		P017	P060	P104	
D020		F035	K019	K062	K123		P018	P062	P105	
D021		F037	K020	K069	K124		P020	P063	P106	
D022		F038	K021	K071	K125		P021	P064	P108	
D023		F039	K022	K073	K126		P022	P065	P109	
D024			K023	K083	K131		P023	P066	P110	
D025			K024	K084	K132		P024	P067	P111	
D026			K025	K085	K136		P026	P068	P112	
D027			K026	K086	K140		P027	P069	P113	
D028			K027	K087	K141		P028	P070	P114	
D029			K028	K088	K142		P029	P071	P115	
D030			K029	K093	K143		P030	P072	P116	
D031			K030	K094	K144		P031	P073	P118	
D032			K031	K095	K145		P033	P074	P119	
D033			K032	K096	K147		P034	P075	P120	
D034			K033	K097	K148		P036	P076	P121	
D035			K034	K098	K149		P037	P077	P122	
D036			K035	K099	K150		P038	P078	P123	
D037			K036	K100	K151		P039	P081	P127	
D038			K037	K101	K156		P040	P082	P128	

Each filter press load will retain the waste codes from the waste streams that were pressed for that particular load.

Laboratory waste samples from customers will retain the waste code(s) associated with the incoming waste stream as confirmed by Republic and may contain one or more of the waste codes listed above. Republic will treat these samples as necessary for disposal via the two onsite disposal wells.

Wash waters from the operations that have come into contact with hazardous waste will carry waste codes from waste streams processed and may contain any of the waste codes accepted in the operations listed above. Wash waters will be treated as necessary for disposal via the two onsite disposal wells.

Table A2.A.1, below, summarizes the hazardous wastes generated at the Facility.

A2.A.2 Waste Description (receive wastes from off-site generators)

[R 299.9504(1)(c) and 40 CFR §270.14(b)(2)]

The chemical and physical characteristics of waste streams to be managed at the Republic Facility are discussed in this section. The Facility will typically accept liquid waste streams, including leachate, acids, caustics, and other wastewaters, that may have one or more of the waste codes listed above in Section A2.A.1 of this attachment. Waste anticipated to be considered for disposal at the Facility range from diluted acids and alkalis, to low concentration organic-water mixtures and leachates, and other Resource Conservation and Recovery Act (RCRA) and non-hazardous wastes. Dilute acid wastes are expected to be a significant component of the overall waste streams received at the Republic Facility. Such acids can be generated in the metal cleaning and pickling industries, but can also be generated from ore reduction, food processing and numerous other industries. Primary acid types expected to be received are hydrochloric and sulfuric.

Table A2.A.2, below, summarizes the hazardous waste that the Facility expects to receive from off-site generators.

A2.A.2(a) Procedures for Obtaining Chemical and Physical Analyses from Off-Site Generators

In order to qualify for management at the Facility, a candidate waste stream must be non-ignitable, non-reactive and non-radioactive waste that does not contain regulated PCBs (greater than or equal to 50 ppm), pesticides, herbicides, medical wastes, explosives, poisons, greater than 30 mg/L reactive cyanide, or greater than 200 ppm reactive sulfide. In addition, the candidate waste stream must have an organic content of less than 10 percent by weight. A detailed description of the procedures Republic will use to obtain chemical and physical analyses from off-site generators is contained in the Waste Analysis Plan, attached as Attachment A3.

Files for each waste stream are maintained in the administrative office at the Facility. These files are kept for each waste stream approved for management, and for those waste streams that may be disapproved.

Table A2.A.1 Hazardous Waste Generated at the Facility

Hazardous wastes generated on site will include filter press solids from treatment operations, laboratory sample wastes, and wash waters from cleaning of plant equipment. The facility will also manage storm water collected in the Storm Water Runoff Vault as a non-hazardous liquid industrial waste as appropriate.

Each filter press load will retain the waste codes from the waste streams that were pressed for that particular load.

Laboratory waste samples from customers will retain the waste code(s) associated with the incoming waste stream as confirmed by EGT and may contain one or more of the waste codes listed above. EGT will treat these samples as necessary for disposal via the two onsite disposal wells.

Wash waters from the operations that have come into contact with hazardous waste will carry waste codes from waste streams processed and may contain any of the waste codes accepted in the operations listed above. Wash waters will be treated as necessary for disposal via the two onsite disposal wells.

Table A.2.A.1, below, summarizes the hazardous wastes generated at the Facility

Table A2.A.2 Hazardous Wastes Accepted at the Facility

A2.B CONTAINERIZED WASTE

[R 299.9504(1)(c) and 40 CFR §264.172]

A2.B.1 Wastes Compatible with Container

All containerized waste arriving at the Facility shall be contained in DOT-approved containers that are compatible with the waste type. Metal, plastic or glass containers will be deemed acceptable unless Republic has determined through its waste acceptance procedures that a specific container material is required for a particular waste stream. Typically, containerized waste will be stored in its shipping container until the waste is transferred into the receiving tanks. Containers will be kept closed except when adding or removing waste. Containers will be inspected upon arrival and the container storage area will be inspected daily for leaking or damaged containers.

A2.B.2 Containers without Secondary Containment System

All containers will be stored within a secondary containment system. The containment system for the container storage is described in Attachment C.1 of this Application.

A2.C WASTE IN TANK SYSTEMS

[R 299.9504(1)(c) and 40 CFR §§264.190(a), 264.191(b)(2), 264.192(a)(2)]

A2.C.1 Wastes Compatible with Tanks

All tanks at the Facility are designed to be compatible with corrosive and all acceptable waste streams. Information on tank construction is located in Attachment C.2 of this Application.

A2.C.2 Tanks without Secondary Containment System

All tanks are located within a secondary containment system. The secondary containment systems for the tank storage areas are described in Attachment C.2 of this Application.

A2.D WASTE IN PILES

[R 299.9504(1)(c) and 40 CFR §264.250(c)(1) and (4)]

There is no waste pile at the Facility

A2.E LANDFILLED WASTES

[R 99.9504(1)(c) and 40 CFR §§264.13(c)(3) and 264.314]

There is no landfill unit at the Facility

A2.F WASTES INCINERATED AND WASTES USED IN PERFORMANCE TESTS

[R 299.9504(1)(c) and 40 CFR §264.341]

There is no incinerator unit at the Facility

A2.G WASTES TO BE LAND TREATED

[R 299.9504(1)(c) and 40 CFR §§264. 271(a)(1) and (2), 264.272, and 264.276]

A2.G.1 Treatment Zone Demonstration

There is no land treatment at the Facility

A2.H WASTE IN MISCELLANEOUS UNITS

[R 299.9504(1)(c) and 40 CFR §270.13(d)]

There is no miscellaneous unit at the Facility

A2.I WASTE IN BOILERS AND INDUSTRIAL FURNACES

There is no boiler or industrial furnace at the Facility

TABLE A2.A.1 HAZARDOUS WASTE GENERATED AT THE FACILITY
Site ID No. MIR 000 016 055

Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
Includes any Waste Codes listed in Section A2.A.1	Solids from filter press treatment process	Based on waste codes from waste streams processed in the filter press	Based on waste codes from waste streams processed in the filter press	Filter press solids to be accumulated onsite in roll-off box and disposed of offsite.
Includes any Waste Codes listed in Section A2.A.1	Wash water generated by facility cleaning operations	Wash waters will carry waste codes from waste streams processed	Wash waters will carry waste codes from waste streams processed	Container storage area, tanks
Includes any Waste Codes listed in Section A2.A.1	Laboratory waste fingerprint samples	Waste samples will carry waste codes from incoming wastes	Wastes samples will carry waste codes from incoming wastes	Container storage area, tanks

TABLE A2.A.2 HAZARDOUS WASTES ACCEPTED AT THE FACILITY
Site ID No. MIR 000 016 055

Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
Includes any Waste Codes listed in Section A2.A.1	Leachates, waste waters, waste acids, waste pickle liquors, and other waste streams that may carry the waste codes.	Characteristic waste, or waste with the listed waste codes accepted at Facility	Characteristic waste, or waste with the listed waste codes accepted at Facility	Container storage area, tanks

FORM EQP 5111 ATTACHMENT A3
WASTE ANALYSIS PLAN (WAP)

This document is an attachment to the Republic Industrial and Energy Solutions, LLC's *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.*

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), being R 299.9504, R 299.9508, and R 299.9605, and Title 40 of the Code of Federal Regulations (CFR) §270.14(b)(3) and 264.13(b) and (c), establish requirements for Waste Analysis Plans (WAPs) for hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application attachment addresses requirements for a Waste Analysis Plan (WAP) for the hazardous waste management units and the hazardous waste management facility for the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility. All activities associated with the WAP are conducted at the Facility located at 28470 Citrin Drive, Romulus, Michigan.

This attachment is organized as follows:

A3.A COMMERCIAL FACILITY
- A3.A.1 Initial Waste Characterization Requirements for Generators
  - A3.A.1(a) Generator Waste Characterization Discrepancies
  - A3.A.1(b) Subsequent Waste Shipment Procedures
  - A3.A.1(c) Additional Waste Analysis Requirements
- Figure A3.A.1 Information to be on Each Generator's Waste Profile Form
- Table A3.A.1 Waste Analysis Procedures
- Appendix A3.A.1 Waste Profile Sheet
- A3.A.2 Waste Acceptance Procedures
  - A3.A.2(a) Review Paperwork
  - A3.A.2(b) Visual Inspection of Waste
  - A3.A.2(c) Waste Screening/Fingerprinting
    - A3.A.2(c)(i) Shipment Acceptance Evaluation Logic
    - A3.A.2(c)(ii) Evaluation of Potential Acceptance of Non-Conformance
    - A3.A.2(c)(iii) PCB Analysis
    - A3.A.2(c)(iv) Supplemental Analyses
  - A3.A.2(d) Waste Receipt Sampling Procedures
    - A3.A.2(d)(i) Containerized Wastes
    - A3.A.2(d)(ii) Bulk Shipments
- Table A3.A.2 Sampling Procedures
- Appendix A3.A.2 Fingerprint Form
- A3.A.3 Procedures to Ensure Compliance with Land Disposal Restrictions (LDR) Requirements
  - A3.A.3(a) Spent Solvent and Dioxin Wastes
  - A3.A.3(b) Listed Wastes

A3.A.3(c) Characteristic Wastes
A3.A.3(d) Radioactive Mixed Waste
A3.A.3(e) Leachates
A3.A.3(f) Laboratory Packs
A3.A.3(g) Contaminated Debris
A3.A.3(h) Waste Mixtures and Wastes with Overlapping Requirements
A3.A.3(i) Dilution and Aggregation of Wastes
Table A3.A.3 Container Sampling
A3.B CAPTIVE FACILITY
A3.C NOTIFICATION, CERTIFICATION, AND RECORD KEEPING REQUIREMENTS
A3.C.1 Retention of Generator Notices and Certifications
A3.C.2 Notification and Certification Requirements for Treatment Facilities
A3.C.3 Waste Shipped to Subtitle C Facilities
A3.C.4 Waste Shipped to Subtitle D Facilities
A3.C.5 Recyclable Materials
A3.C.6 Record Keeping
A3.C.7 Required Notice
A3.C.8 Quality Assurance/Quality Control Plan

A3.A COMMERCIAL FACILITY

Republic is a commercial facility that receives wastes generated off site. Republic has developed a WAP to ensure that its facility at 28470 Citrin Dr., Romulus, MI will accept only wastes that it is authorized to accept. The hazardous wastes stored at Republic will be properly characterized prior to waste acceptance. All generators will be required to provide a complete waste characterization, including chemical analysis when appropriate. Waste screening will be conducted on every shipment of waste to ensure that the waste conforms to the waste profile for the generator and information on incoming manifests and to ensure that the waste is properly managed within the facility.
In addition, Republic will also generate several hazardous wastes, including a solid filter cake waste, wash waters and laboratory samples. Republic has reviewed this WAP to ensure that these on-site generated wastes are also properly characterized.

All analysis performed pursuant to this application will be consistent with the QA/QC Plan available at the Facility. All samples for the purpose of waste characterization will be collected, transported, stored, and disposed by trained and qualified individuals in accordance with the QA/QC Plan. These forms may change to equivalent or alternate forms as regulations, client needs, operations, or company policy dictate. The Facility will handle form changes in accordance with the requirements of R 299.9519 as appropriate.

In accordance with R 299.9609 and 40 CFR §264.73 and Part 264, Appendix I, Republic will retain all records and results of waste determinations performed as specified in 40 CFR §§264.13, 264.17, 264.314, 264.1034, 264.1063, 264.1083, 268.4(a), and 268.7 in the facility operating record until closure of the facility.

A3.A.1 Initial Waste Characterization Requirements for Generators
[R 299.9605(1) and R 299.9504(1)(c) and 40 CFR §264.13(b)(5)]

Figure A3.A.1 Information to be on Each Generator Waste Profile Form.

Prior to accepting a waste stream at the Facility, Republic will characterize the waste stream in accordance with this WAP. The Facility requires the waste profile information for initial waste shipments from all off-site generators prior to shipment as indicated on the Waste Profile Sheet ("WPS"), attached as Appendix A3.A.1. In addition to the waste profile information submitted by the generator, the Republic Facility:

☒ Require submittal of a representative waste sample

☐ Conduct an audit of the generator facility

☐ Review industry literature to identify typical waste streams

☐ Other:

In lieu of a representative sample, Republic can rely on analytical information provided by the generator.

The Facility (or contract) laboratory will analyze the generator-supplied representative waste sample using Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) or equivalent methods as approved by the DNRE. The analytical results, together with the information contained in the WPS and any additional available analytical data or Material Safety Data Sheets ("MSDS") on the waste stream, will be used to determine whether the waste stream will be accepted by the Facility.

A3.A.1(a) Generator Waste Characterization Discrepancies
[R 299.9605(1) and R 299.9504(1)(c) and 40 CFR §§264.13(a)(3) and (4), 264.13(b)(c), and 264.72]

Each incoming waste shipment is screened in accordance with this WAP to ensure that the waste shipment is consistent with the waste stream that has been approved for management at the Facility in accordance with Section A3.A.1, above. If any significant discrepancies are identified suggesting that the waste shipment is not the pre-approved waste stream, Republic will assure contact with the generator in order to resolve those discrepancies. Republic may require the generator to provide additional information concerning the waste shipment or the waste stream, including analytical data or additional representative samples. If Republic cannot resolve the discrepancy, Republic will reject the shipment, and may cancel the approval for the waste stream.

A3.A.1(b) Subsequent Waste Shipment Procedures
[R 299.9605(1) and R 299.9504(1)(c) and 40 CFR §§264.13(a)(3) and 264.13(b)(4)]

The initial analysis of waste from each generator will be reviewed or repeated annually to ensure that the analysis is accurate and up-to-date. In addition, the analysis will be repeated each time the generating process changes.

A3.A.1(c) Additional Waste Analysis Requirements

[R 299.9605(1) and R 299.9504(1)(c) and 40 CFR §§264.13(b)(6) and 264.13(c(3)]

Facility personnel review the waste profile information to ensure that the Facility is authorized to receive the waste, and can manage the waste in conformance with the following:

☒ R 299.9605 and 40 CFR §264.17	General requirements for ignitable, reactive, or incompatible wastes (not accepted at the Republic facility)
☒ R 299.9605 and 40 CFR §264.314	Special requirements for bulk and containerized liquids
☐ R 299.9630 and 40 CFR §264.1034(d)	Test methods and procedures (Subpart AA) [Attachment A3, Section A3.A.2(c)]
☐ R 299.9631 and 40 CFR §264.1063(d)	Test methods and procedures (Subpart BB) [Attachment A3, Section A3.A.2(c)]
☒ 40 CFR §264.1083	Waste determination procedures (Subpart CC) [Attachment A3, Section A3.A.2(c)]
☒ R 299.9627 and 40 CFR §268.7	Waste analysis and record keeping LDR requirements See Sections A3.A.3, A3.B.3
☐ R 299.9228	Universal waste requirements

A3.A.2 Waste Acceptance Procedures

[R 299.9605(1) and R 299.9504(1)(c), and 40 CFR §§264.13(c), 264.72(a) and (b), and 264.73(b)]

Waste shipments arrive at the facility in the following containers:

☒ Drums	☒ Totes	☒ Tanker trucks
☐ Carboys	☐ Wrangler box	☐ Filter bags
☐ Roll-off boxes	☒ Vacuum trucks	☒ Other: Railcars

Upon receipt of wastes from an off-site generator, Republic will perform all of the following tasks prior to acceptance:

- Review paperwork (waste profile, manifest, etc.)
- Visually inspect the waste
- Perform waste screening/fingerprint analysis of waste

These tasks are discussed below.

A3.A.2(a) Review Paperwork
[R 299.9605(1) and R 299.9504(1)(c), and 40 CFR §§264.13(c), 264.72(a) and (b), and 264.73(b)]

Republic personnel review all paperwork, including manifests and LDR notifications, before any wastes are accepted by the Facility. Republic will review all paperwork for completeness. In addition, the manifest and any LDR notification are compared for consistency. The manifest will also be compared to the waste profile and analytical information provided by the generator and to the waste shipment to ensure the accuracy of information provided on shipment paperwork. The manifest will also be compared to the number of containers, the volume, and/or the weight of the waste in the shipment. All discrepancies are resolved before processing the waste. The information on the WPS is also reviewed to determine whether the waste is a Subpart CC waste, and if it is, the material is dedicated to RT-10.

A3.A.2(b) Visual Inspection of Waste
[R 299.9605(1) and R 299.9504(1)(c) and 40 CFR §264.13(c)]

Facility personnel visually inspect a minimum of one container and up to a maximum of 100 percent of the containers for each waste stream from each generator. The contents of the container are visually inspected for the following:

☒ Color ☒ pH ☒ Physical State ☒ Consistency ☒ Other: Oil

Visual observations will be recorded and compared to the waste profile information. The pH is also measured. All discrepancies are resolved before processing the waste.

Waste shipments found to have a significant discrepancy (ies) or non-conformance(s) that cannot be corrected, will either be rejected and returned to the generator (or appropriate alternate facility) or re-evaluated for acceptance by the Facility or for trans-shipment to another licensed hazardous waste management facility.

This evaluation is based on the following criteria, as appropriate:

- Permits conditions, compliance history, and, current regulations;
- Discussions with the generator;
- Need for any additional supplemental analyses;
- Alternate facility's ability to handle the material in a safe and environmentally sound manner; and
- Division Manager or Laboratory Manager's judgment.

In addition to the evaluation and pursuant to 40 CFR Part 264.72, Republic discusses and attempts to resolve with the generator, any discrepancies between the actual waste shipment and that shown on the manifest. If the load is found to be acceptable at the Facility, a waste shipment acceptance can be initiated. Describe all actions conducted by the facility to address discrepancies, such as contacting the generator or rejecting the waste shipment.

A3.A.2(c) Waste Screening/Fingerprinting

[R 299.9605(1) and R 299.9504(1)(c) and 40 CFR §§264.13(b)(14) and 264.13(c)(2)]

Table A3.A.1, below, lists the waste analysis procedures, including screening parameters for each hazardous waste, the rationale for the selection of these parameters, test methods that are used to test for these parameters, the appropriate reference, whether the waste is specified in R 299.9216, the frequency of waste screening, and the rationale for the frequency. The sampling methods that will be used to obtain a representative sample of the waste to be analyzed and the sampling equipment and rationale are summarized in Table A3.A.2 and Table A3.A.3, respectively. The results of the waste screening/fingerprint analysis will be compared to the waste profile information and analytical results provided by the generator during the initial waste characterization process. All discrepancies are resolved before processing the waste.

An example of the form utilized to document the fingerprint analysis is attached as Appendix A3.A.2.

A3.A.2(c)(i) Shipment Acceptance Evaluation Logic

The decision whether to accept or reject a particular waste stream shipment is made by evaluating whether the as-shipped waste is in conformance or non-conformance with this WAP and the WPS. The waste shipment is classified as being in "non-conformance" if its composition is significantly different from the information shown on the WPS, the pre-acceptance results, the manifest, or, if it is significantly different in quantity (e.g., weight, volume, container count) from the information shown on the manifest.

Facility personnel use the following three primary criteria to determine the existence of a significant manifest discrepancy or non-conformance of the waste shipment:

- For bulk wastes, variations greater than 10% in weight;
- For batch wastes, (e.g., drums or any other DOT-approved container, etc.) any variation in piece count (such as discrepancy of one drum in a waste load); or,
- Obvious differences such as waste acid or toxic constituents not reported on the manifest or shipping document, determined by inspection or analysis of any waste shipment

Discrepancies or non-conformances that do not fall within these criteria are considered to be "minor." If Facility personnel have reason to believe that a minor discrepancy is not a one-time variation and that a particular waste shipment indeed is different from the pre-approved waste stream, the generator is required to repeat the pre-acceptance procedures prior to the waste stream being accepted. The detection of a waste constituent that was not recorded on the WPS or manifest would not necessarily trigger a repeat of pre-acceptance procedures for the waste stream (unless it met the preceding criteria) if the discrepancy can be justified by the generator.

A3.A.2(c)(ii) Evaluation of Potential Acceptance of Non-Conformance

Waste shipments found to have a significant discrepancy (ies) or non-conformance(s) that cannot be corrected will either be rejected and returned to the generator (or appropriate alternate facility) or re-evaluated for acceptance by the Facility for transshipment to another licensed hazardous waste management facility.

This evaluation is based on the following criteria:

- Republic's license conditions, generator compliance history and current regulations;
- Discussions with the generator;
- Need for any additional supplemental analyses;
- Facility ability to handle the material in a safe and environmentally sound manner, and
- Division Manager or Laboratory Manager Judgment.

In addition to the Republic Facility evaluation and pursuant to 40 CFR Part 264.72, Republic personnel will discuss and attempt to resolve with the generator, any discrepancies between the actual waste shipment and that shown on the manifest. If the load is found to be acceptable at the Facility, a waste shipment acceptance can be initiated.

A3.A.2(c)(iii) PCB Analysis

Republic does not accept waste containing Toxic Substances Control Act (TSCA)-regulated PCBs. No waste streams will be accepted or off-loaded for treatment, storage or management at the Facility unless the pre-acceptance procedures in Section A3.A.1, above, are met and the generator submits to the Facility either the concentration or the absence of detection of PCBs in the waste stream. If the generator does not provide any PCB information for a waste stream, Republic will analyze a pre-acceptance sample for PCBs.

A3.A.2(c)(iv) Supplemental Analyses

Republic may perform supplemental analyses at the discretion of the Laboratory Manager or his/her designee during pre-acceptance testing or fingerprint testing of incoming shipments to further characterize the waste streams, or to ensure that the proper waste management techniques are utilized. The decision to use one or more of these supplemental analyses will be based on knowledge of the waste and the technical expertise of the Laboratory Manager or his/her designee. The results of these discretionary analyses provide another level of confidence concerning the proper means of disposal. Some of these additional supplemental analyses utilize procedures and protocol developed by Facility personnel, in the absence of other standard procedures. Other analyses utilize standard analytical techniques recognized by the EPA, the American Society for Testing & Materials ("ASTM"), or similar techniques.

The applicability of these analyses, as described below, are based on procedures and protocol formulated for hazardous waste management with Underground Injection Control ("UIC") disposal.

- Timed Filtration Tests allow the Facility laboratory to quickly ascertain the filter loadings caused by suspended solids in the wastes and gain a rough approximation of potential filtering in the underground injection formation.
- Calcium Hydroxide - Ca (OH)2. Testing is performed as a screen for potential formation compatibility problems because a minor reactive component of the injection formation at the Republic Facility consists of dolomite materials.
- Process Blend Testing is performed to identify other wastes with which the waste stream can be mixed to yield a UIC mixture. The testing is also performed to identify potential problems that could result in adding a waste stream or blend to existing tank contents. The testing can also be

used to determine proper spacer fluids to be used during injection of otherwise incompatible wastes.

- pH Spectrum is used to determine the phase behavior of a waste stream over a wide pH change and is uniquely applicable to UIC disposal wells.
- Heat Phase Separation is to determine phase behavior with respect to temperature fluctuation.
- Sulfate Screen is to determine presence of sulfates which can cause filter plugging and formation plugging.
- Radiation Screen is used to ensure that no radioactive materials above background are present in the waste stream.

Table A3.A.1 Waste Analysis Procedures
Site ID No. MIR 000 016 055

Screening Parameter (*Check as appropriate)*	Rationale for Parameter	Test Method	Reference	Frequency	Rationale for Frequency
☒ Waste Code(s)	Compare with Facility accepted waste codes	NA	40 CFR 261 R 299.217, 219, 220, 222, 224, 225	All shipments and containers	Compliance with permits
☐ Free Liquids					
☒ Ignitability	No D001 Accepted	1010A	SW-846	All shipments and containers	Compliance with permits
☐ Reactivity					NA – See below
☒ Compatibility	Check for compatibility	50/50 blend		All shipments and containers	Compliance with permits, maintain operations
☐ Land Disposal Restrictions	Compliance with permits	NA	NA		Note: Facility UIC wells are exempted from LDRs pursuant to No Migration Petition
☐ Volatile Organic Compound Content[1]					
☐ Radioactivity					
☒ Other: PCB	Compliance with permits	8082A	SW-846	Oily waste only	Generator certification required, PCB not typical in acid and caustic waste streams. Regulated PCB was not accepted at Facility.
☒ Other: pH	Compliance with permits & maintain operations	9041A and/or 9040C	SW-846	All shipments and containers	Compliance with permits

Screening Parameter (*Check as appropriate)*	Rationale for Parameter	Test Method	Reference	Frequency	Rationale for Frequency
		and/or 9045D			
☒ Other: Physical Description	Maintain operations	Visual inspection	Republic	All shipments and containers	Compliance with permits
☒ Other: Cyanide Screen	Compliance with permits & maintain operations	ITS484001*	Republic	All shipments and containers	Compliance with permits
☒ Other: Sulfide Screen	Compliance with permits & maintain operations	ITS481197-1*	Republic	All shipments and containers	Compliance with permits
☒ Other: Total Settable Solids	Maintain operations	EPA 160.2, 160.4	EPA	All shipments and containers	Maintain operations
☒ Other: Oil	Maintain operations	Republic PLA29*	Republic	All shipments and containers	Maintain operations
☐ Other: Solvent Screen					

[1] *According to R 299.9630 and 40 CFR §264.1034(d), TSDFs must identify and meet specific technical requirements for all process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air/stream stripping processes that manage wastes with a 1 part per million by weight (ppmw) or greater total organics concentration on a time-weighted annual average basis. Total organic concentrations in the waste can be measured using SW-846 Method 8260B. According to R 299.9631 and 40 CFR §264.1050, TSDFs must also determine if its equipment contains or contacts organic wastes with 10 percent or greater total organic content. The total organic content can be determined using (1) American Society of Testing and Materials Methods D2267-88, E169-87, or E260-85, (2) SW-846 Method 8260B, or (3) knowledge of the nature of the wastes stream or the waste generating process.*

* *Republic internal test method maintained at the Facility.*

Table A3.A.2 Representative Sampling Procedures
Site ID No. MIR 000 016 055

Container Type or Material	Sampling Method[1]	Sampling Equipment	Rationale
Tanker Truck, Vacuum Trucks, Rail Tankers	COLIWASA (ASTM D5495-03 or equivalent)	COLIWASA	Test Method for the evaluation of solid waste, Physical/chemical methods - US EPA
Totes, Drums or Containers	COLIWASA (ASTM D5495-03 or equivalent)	COLIWASA	Test Method for the evaluation of solid waste, Physical/chemical methods - US EPA
Tank Sampling	Sample Port	Sample Port	Fingerprint, compatibility, treatment verification

[1] The sampling method should demonstrate equivalence with the sampling methods described in 40 CFR, Part 261, Appendix I.

A3.A.2(d) Waste Receipt Sampling Procedures

Each incoming shipment of waste is sampled and analyzed in accordance with Tables A3.A.1 and A3.A.2, above, to ensure that it matches the overall description of the waste designated on the accompanying manifest and the WPS. Facility personnel document the inspection of and analysis of each hazardous waste shipment received at the Facility to determine whether it conforms to the information on the WPS and matches the description of the waste specified on the accompanying manifest, as required by 40 CFR 264.13.

A3.A.2(d)(i) Containerized Wastes

Vehicles carrying containerized waste stream(s) are directed to the container handling area. Container loads are checked visually to confirm that labeling and packaging of the containers are consistent with data listed on the manifest. The integrity of each container is also inspected to insure that all openings are closed, and that there is no damage to the container that could compromise its integrity. Once Facility personnel have determined that the paperwork is representative of the as-received load, the load is dispatched for off-loading, segregation, and sampling.
At least 10 percent of the containers from each manifest line item (i.e., each separate waste stream) associated with a containerized waste shipment (e.g., drums, or other DOT-approved containers of waste) are selected for sampling. Containerized shipments are sampled according to the frequency established in the table below.

Table A3.A.3 Container Sampling
Site ID No. MIR 000 016 055

Number of Containers in Shipment	Minimum Number of Separate Samples To Be Taken
1-5 Containers	1
6-10 Containers	2
11-25 Containers	4
26-30 Containers	6
31-80 Containers	8

The individual containers within a specific shipment (for each individual waste stream identified by line number on a manifest) are numbered. The specific individual containers to be sampled are then chosen by using a random number table. The samples are composited to provide a representative sample of each individual waste stream.
If the analysis of the representative sample of the waste stream matches the generator's waste profile description and the waste shipment is otherwise acceptable (i.e., no significant discrepancies), the shipment will be accepted and processed. If the analysis does not match the generator's waste profile description, Republic will either reconcile the discrepancy or reject the shipment.

A3.A.2(d)(ii) Bulk Shipments

Each bulk (tanker or railcar) waste delivery is sampled in accordance with Table A3.A.2 and analyzed in accordance with Table A3.A.1. If the analysis of the representative sample of the waste stream matches the generator's waste profile description and the waste shipment is otherwise acceptable (i.e., no significant discrepancies), the shipment will be accepted and processed. If the analysis does not match the generator's waste profile description, Republic will either reconcile the discrepancy or reject the shipment.

A3.A.3 Procedures to Ensure Compliance with Land Disposal Restrictions (LDR) Requirements

[R 299.9627 and 40 CFR, Part 268]

All shipments of wastes subject to LDR received at the facility will be accompanied by appropriate generator notification and LDR notification in accordance with R 299.9627 and 40 CFR §268.7. The LDR notification accompanying generator wastes will be reviewed, and any discrepancies in the LDR notification and the associated manifest, analytical records, or Waste Profile Form will require shipment rejection unless additional, satisfactory, clarifying information is provided by the generator. All information obtained to document LDR compliance will be maintained in the facility operating record until closure of the facility.

If the Facility receives a shipment of waste without LDR notification, or a notification with incorrect or incomplete information, Republic will assure contact with the generator in order to obtain the missing notification, or to correct or complete the notification. If the problem cannot be resolved, Republic will reject that waste.

In accordance with the LDR regulations, all wastes shipped off site are analyzed, or generator knowledge is used when appropriate, to determine whether the waste meets the applicable LDR treatment standards specified in R 299.9627 and 40 CFR §268.41-43. All analytical results will be maintained in the Facility operating record until closure of the Facility. Wastes that are determined through analysis to meet treatment standards as specified in R 299.9627 and 40 CFR §268.41-43 will be disposed of in a hazardous waste management landfill.

Republic will supply LDR notifications and certifications, including appropriate analytical records to support the certification, to the receiving facility with each shipment of waste. The notifications and certifications contain the information required under R 299.9627 and 40 CFR §268.7. Any additional data obtained from the generators (e.g., WPSs, original LDR notifications, analysis provided by generators) is provided to any licensed TSDF where the waste (solids) have been sent.

A3.A.3(a) Spent Solvent and Dioxin Wastes

[R 299.9627 and 40 CFR §§264.13(a)(1), 268.7, 268.30, 268.31, 268.40, 268.41, 268.42, and 268.43]

Spent solvent wastes (F001-F005) are accepted at the Facility. Typically generator process knowledge will be used to determine the presence of spent solvent wastes (F001-F005). Generator process knowledge is documented on the WPS and LDR notification. The LDR notification provides additional information regarding the appropriate treatment standards for the waste and whether it has already been treated to the appropriate standards.

A3.A.3(b) Listed Wastes
[R 299.9627, R 299.9213, and R 299.9214 and 40 CFR §§264.13(a)(1), 268.7, 268.33, 268.34, 268.35, 268.36, 268.39, 268.40, 268.41, 268.42, and 268.43]

Generator process knowledge will typically be used to determine whether listed waste meets the applicable treatment standards or to demonstrate that the waste has been treated by the appropriate specified treatment technology. In accordance with R 299.9627 and 40 CFR §268.41, where treatment standards are based on concentrations in the waste extract, the Facility uses the Toxicity Characteristic Leaching Procedure (TCLP) to determine if wastes meet treatment standards as appropriate. Generator process knowledge will be documented on the WPS and LDR notification.

A3.A.3(c) Characteristic Wastes
[R 299.9627, R 299.9208, and R 299.9212 and 40 CFR §§261.3(d)(1), 264.13(a)(1), 268.7, 268.9, 268.37, 268.40, 268.41, 268.42, 268.43 and Part 268, Appendix I and Appendix IX]

*Generator process knowledge*will typically be used to determine whether characteristic waste meets the applicable treatment standards or to demonstrate that the waste has been treated by the appropriate specified treatment technology. In accordance with R 299.9627 and 40 CFR §268.41, where treatment standards are based on concentrations in the waste extract, generators shipping waste to the Facility determine if their waste meets treatment standards.

Typically, generator process knowledge is used to identify the underlying hazardous constituents that are expected to be present in the waste. Generator process knowledge is documented on the material Waste Profile Sheet and LDR notification.

A3.A.3(d) Radioactive Mixed Waste
[R 299.9627 and 40 CFR §§268.7, 268.35(c), 268.35(d), 268.36, and 268.42(d)]

☞ *Choose the following as appropriate:*

☒ The facility does not accept radioactive mixed waste.

OR

☐ Generator process knowledge will be used to determine whether a radioactive mixed waste meets the applicable treatment standard.

A3.A.3(e) Leachates
[R 299.9627 and 40 CFR §260.10 and 40 CFR §§268.35(a) and 268.40]

☐ The facility does not accept single-source or multi-source F039 leachates.

OR

☒ Single-source leachate will not be combined to produce multi-source leachates.

A3.A.3(f) Laboratory Packs
[R 299.9627 and 40 CFR §§268.7and 268.42(c) and Part 268, Appendix IV and Appendix V]

☐ The facility does not accept laboratory packs.

OR

☒ The laboratory packs accepted at the facility are not land disposed.

A3.A.3(g) Contaminated Debris
[R 299.9627 and 40 CFR §§268.2(g), 268.7, 268.9, 268.36, 268.45, and 270.13(n)]

☐ The hazardous debris categories and the contaminant categories associated with the types of hazardous debris accepted at the facility are presented in Table A3.A.3.

Hazardous debris accepted at the facility that exhibits the characteristics of ignitability, corrosivity, or reactivity will be treated using one of the extraction, destruction, or immobilization technologies identified in Table 1 of 40 CFR §268.45.

OR

☒ Contaminated debris is not accepted at the facility.

A3.A.3(h) Waste Mixtures and Wastes with Overlapping Requirements
[R 299.9627 and 40 CFR §§264.13(a), 268.7, 268.41(b), 268.43(b), and 268.45(a)]

Generator process information and analytical data will be used to demonstrate that those waste mixtures and wastes with multiple waste codes are properly characterized. Each waste that has more than one characteristic will be identified with a number for each characteristic. Waste identified as meeting a listing and exhibiting a characteristic will be primarily identified with at least one of the listed waste codes for the purpose of manifesting, etc. consistent with listing up to six (6) waste codes per waste stream on a manifest.

A3.A.3(i) Dilution and Aggregation of Wastes
[R 299.9627 and 40 CFR §268.3]

Listed wastes, if destined for land disposal, may not be diluted from the point of generation to the point of land disposal. Characteristic wastes may only be diluted if, (1) the waste is managed in a Clean Water Act (CWA)/CWA-equivalent surface unit or a Class I Safe Drinking Water Act injection well, (2) the waste has a concentration-based treatment standard or is treated using the DEACT technology-based treatment standard, and (3) the waste is not a D003 reactive waste. [**Note**: these requirements may change in the future. At that time, this template may be amended.]

The Facility may not dilute or partially treat a listed waste to change its treatability category (i.e., from non-wastewater to wastewater), in order to comply with different treatment standards. If the wastes are all legitimately amenable to the same type of treatment to be performed, the Facility may aggregate wastes for treatment.

A3.B CAPTIVE FACILITY

The Facility is not a captive Facility

A3.C NOTIFICATION, CERTIFICATION, AND RECORDKEEPING REQUIREMENTS
[R 299.9627 and R 299.9609 and 40 CFR §§264.73, 268.7, and 268.9(d)]

The Facility performs the following procedures for preparing and/or maintaining applicable notifications and certifications to comply with LDRs.

A3.C.1 Retention of Generator Notices and Certifications
[R 299.9627 and 40 CFR §268.7(a)(7)]

The Facility will retain a copy of all notices, certifications, demonstrations, data, and other documentation associated with compliance to LDRs.

The following notices and certifications submitted by the initial generator of the waste are reviewed and maintained:

- Notices of restricted wastes not meeting treatment standards or exceeding levels specified in RCRA §3004(d), including the information listed in R 299.9627 and 40 CFR §268.7(a)(1).
- Notices of restricted wastes meeting applicable treatment standards and prohibition levels, including the information in R 299.9627 and 40 CFR §268.7(a)(2).

A3.C.2 Notification and Certification Requirements for Treatment Facilities
[R 299.9627 and 40 CFR §268.7(b)]

The treatment Facility will submit a notice and certification to any land disposal facility it uses with each shipment of restricted waste or treatment residue of a restricted waste. The notice includes the information specified in R 299.9627 and 40 CFR §268.7(b)(4) and 268.7(b)(5).

If the waste or treatment residue will be further managed at a different treatment or storage facility, the Facility will comply with the notice and certification requirements applicable to generators as specified in R 299.9627 and 40 CFR §268.7(b)(6).

A3.C.3 Waste Shipped to Subtitle C Facilities
[R 299.9627 and 40 CFR §§268.7(a) and 268.7(b)(6)]

☐ The facility does not ship waste to Subtitle C facilities.

OR

☒ For restricted waste or waste treatment residues that will be further managed at a Subtitle C (hazardous waste management) facility, the Facility will submit notifications and certifications in compliance with the notice and certification requirements applicable to generators under R 299.9627 and 40 CFR §268.7(a) and (b)(6).

A3.C.4 Waste Shipped to Subtitle D Facilities
[R 299.9627 and 40 CFR §§268.7(d) and 268.9(d)]

☒ The facility does not ship waste to Subtitle D facilities.

OR

☐ If the Facility ships [Insert type of waste (e.g., hazardous debris or characteristic waste)] to a Subtitle D facility, the Facility will submit a one-time notification and certification for characteristic wastes, or listed wastes that are listed only because they exhibit a characteristic, that have been treated to remove the hazardous characteristic and are no longer considered hazardous. The Facility will place a certification and all treatment records in the 'Facility's file and send a notification and certification to the Director, or delegated representative, describing the wastes and applicable treatment standards and identifying the Subtitle D (solid waste management) disposal facility receiving the waste. On an annual basis, the notification and certification will be updated and refiled if the process or operation generating the waste changes and/or if the Subtitle D facility receiving the waste changes.

A3.C.5 Recyclable Materials
[R 299.9627 and 40 CFR §268.7(b)(7)]

☒ The Facility does **not accept** recyclable materials used in a manner constituting disposal.

OR

☐ For wastes that are recyclable materials used in a manner constituting disposal, in accordance with R 299.9206 and 40 CFR §266.20(b), the facility will submit a notice and certification to the Director, or delegated representative, with each shipment of waste describing the waste and applicable treatment standards and identifying the facility receiving the waste.

A3.C.6 Record Keeping
[R 299.9608(4), R 299.9609, R 299.9610(3), and R 299.9627 and 40 CFR §§264.72, 264.73, 268.7(a)(5), 268.7(a)(6), 268(a)(7), and 268.7(d)]

Republic maintains a Facility operating log in accordance with R 299.9609 and 40 CFR §264.73. The operating log consists of at least waste characterizations, profiles, analytical results, fingerprint forms, LDR's, approvals and manifests.

Copies of all necessary notifications and certifications, as well as relevant inspection forms and monitoring data, are also maintained on file at the Facility. Files will be maintained for a minimum of three years (for inspection records and LDR notifications), or until Facility closure (for inventory records).

If a significant manifest discrepancy is discovered (such as variation in one-piece count or misrepresentation of the type of waste) that cannot be resolved with the generator or transporter within 15 days of receipt, Facility personnel submit to the EGLE Director and EPA Regional

Administrator a letter describing the discrepancy and all attempts to reconcile the discrepancy. The letter will include a copy of the discrepant manifest or shipping document.

A3.C.7 Required Notice

[R 299.9605(1) and 40 CFR §264.12(a) and (b))]

The Facility notifies the EGLE Environmental Resource Management Division Chief and EPA Region 5 in writing at least four weeks before the date the Facility expects to receive hazardous waste from a foreign source. Notice of subsequent shipments of the same waste from the same foreign source is not currently required. When receiving such hazardous waste, the Facility complies with applicable treaties or other agreements entered into between the country in which the foreign source is located and the United States. Republic will also comply with the promulgated manifest document attachment requirements.

When the Republic Facility receives hazardous waste from an off-site source, the Republic Facility informs the generator in writing that the Republic Facility has the appropriate license for, capacity, and, will accept the waste the generator is shipping. The Republic Facility keeps a copy of this written notice in the operating record.

A3.C.8 Quality ASSURANCE/Quality Control Plan

Republic's maintains a quality assurance/quality control plan at the Facility.

Appendix A3.A1

Deep Well Profile

REPUBLIC SERVICES

Disposal Facility: --Select--

Waste Profile #:

Sales Rep #:

I. Generator Information

Generator Name:

Address:

City: County: State: Zip:

State ID/Reg No: EPA ID #: NAICS #:

Generator Mailing Address ☐ (If different)

City: County: State: Zip:

Generator Contact Name: Email:

Phone Number: Ext: Fax Number:

II. Billing Information

Bill To: Contact Name:

Billing Address: Email:

City: State: Zip: Phone:

III. Waste Stream Information

Name of Waste:

Process Generating Waste:

Is Waste from a TSDF Like Consolidation Process?? ☐ Yes ☐ No Waste Type: --Select-- Container Type: --Select--

Container Size / Unit of Measure: Annual Volume: Volume Units: --Select-- Frequency: --Select--

IV. Federal and State Regulatory Information

Is this waste Benzene NESHAP regulated by 40 CFR 61.342? ☐ Yes ☐ No

Is this waste from State or Federal Superfund Subject to CERCLA? ☐ Yes ☐ No

State Waste Codes:

RCRA Waste Codes:

Remember to attach Laboratory Analytical Report (and/or Material Safety Data Sheet) including Chain of Custody and required parameters provided for this profil

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Deep Well Profile

REPUBLIC SERVICES

V. Shipping / Packaging Information

DOT Hazardous Material / Waste? ☐ Yes ☐ No UN / NA# Packaging Group: --Sel Hazardous Class(es):

DOT Proper Shipping Name:

NOS Hazardous Constituents:

ERG#: RQ: ☐ Yes ☐ No RQ Basis: RQ Value in lbs:

Marine Pollutant as defined by 49 CFR 171.8 ☐ Yes ☐ No If Yes, describe: 24 Hour Emergency Contact Number:

VI. Physical Characteristics

Primary Color: % Suspended Solids: --Sele Layers: --Select-- Specific Gravity: --Select Or Actual

Odor: --Select-- Odor (describe): pH: --Select-- Dry Weight Ton Per Gallon:

Flash Point: --Select-- Flash Point Test Method: --Select-- Total Alkalinity (mg/L): VOC Concentration (ppm): Ammonia / Ammonia Compounds ☐ Yes ☐ No

VII. Chemical Composition

Chemical Composition (Must add up to 100%) All compounds of >/=1% concentration must be listed.

Constituent (no trade names)	Min	Max	% or ppm	Constituent (no trade names)	Min	Max	% or ppm
			ppm				ppm
			ppm				ppm
			ppm				ppm
			ppm				ppm
			ppm				ppm

Waste Composition is determined by: ☐ Analysis ☐ Safety Data Sheet (SDS) ☐ Process Knowledge

Have you taken a sample? ☐ Yes ☐ No

Is the representative sample collected in accordance with US EPA 40 CFR 261.20 (c) or equivalent? ☐ Yes ☐ No

Sample Type: --Select-- Sample ID #: Sample Date (mm/dd/yy):

List additional sample ID#(s) and dates and/or list the product name of each SDS submitted:

Remember to attach Laboratory Analytical Report (and/or Material Safety Data Sheet) including Chain of Custody and required parameters provided for this profile

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Deep Well Profile

REPUBLIC SERVICES

VIII. Chemical Properties

RCRA Items:				State Regulated:				Operational:			
Arsenic	None		PPM	TPH (TX & CA)	None		PPM	Bromide	None		PPM
Barium	None		PPM	Antimony (TX &CA)	None		PPM	Calcium	None		PPM
Cadmium	None		PPM	Beryllium (TX & CA)	None		PPM	Chloride	None		PPM
Chromium	None		PPM	Nickel (TX & CA)	None		PPM	Fluoride (CA)	None		PPM
Lead	None		PPM	Chromium VI (CA)	None		PPM	Iodine	None		PPM
Mercury	None		PPM	Cobalt (CA)	None		PPM	Iron	None		PPM
Selenium	None		PPM	Copper (CA)	None		PPM	Magnesium	None		PPM
Silver	None		PPM	Molybdenum (CA)	None		PPM	Potassium	None		PPM
				Thallium (CA)	None		PPM	Sodium	None		PPM
				Vanadium (CA)	None		PPM	Sulfur	None		PPM
				Zinc (CA)	None		PPM				

IX. Chemical Properties Certification (Each item must be answered)

PCB's (per 40 CFR 761)	None		PPM	Pathogens	No	Yes. If Yes, please explain:	
Benzene	None		PPM	Pesticides	No	Yes. If Yes, please explain:	
Dioxins	None		PPM	Polymerizes	No	Yes. If Yes, please explain:	
Sulfides	None		PPM	Radioactives	No	Yes. If Yes, please explain:	
Cyanides	None		PPM	Water Reactives	No	Yes. If Yes, please explain:	
Oxidizer	None		PPM	Other Reactives	No	Yes. If Yes, please explain:	

Pentachlorophenol ☐ No ☐ Yes. If Yes, please explain:

OSHA Carcinogen ☐ No ☐ Yes. If Yes, please explain:

X. Certification

I hereby certify that to the best of my knowledge and belief, the information contained herein is a true, complete and accurate description of the waste material being offered for disposal and all known or suspected hazards have been disclosed. To the best of my knowledge, all Analytical Results/Material Safety Data Sheets submitted are truthful and complete and are representative of the waste. In addition, I certify that all known or suspected hazards involved in handling, transporting, storing, treating or processing, and disposing of the waste material that is the subject of this profile have been disclosed and that no deliberate or willful omissions or misrepresentations as to the composition and properties of the waste have been made. I shall immediately give written notice of any change or condition pertaining to the waste not provided herein. Our company hereby agrees to fully indemnify and hold harmless the disposal facility for any damages or losses resulting from this certification being inaccurate or untrue and for any damages or losses resulting from offering for disposal a waste material that does not conform to this waste profile and certification.

Authorized Representative Name (Printed)	Title (Printed)	Company Name
Representative Signature		Date

FORM EQP 5111 ATTACHMENT A4
SECURITY PROCEDURES AND EQUIPMENT

This license application attachment generally describes the measures used to maintain security for the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility located at 28470 Citrin Drive, Romulus, Michigan.

This Attachment is organized as follows:

Introduction
A4.A Security Procedures
A4.A.1 Access Control
A4.A.2 Communications Systems
A4.A.3 Surveillance System
A4.A.4 Barriers to Control Entry
A4.A.5 Treatment and Storage Building Doorways
A4.A.6 Warning Signs
A4.A.7 Lighting
A4.A.8 Inspection

Introduction

This Attachment describes the procedures and equipment that Republic Industrial and Energy Solutions, LLC ("Republic") uses to prevent the unknowing entry and minimizes the possibility of unauthorized entry by people or livestock onto the active portion of the facility in accordance with the requirements of 40 CFR § 264.14.

A4.A SECURITY PROCEDURES

A4.A.1 Access Control

The active portion of the Facility is completely fenced, as shown on Dwg.No.C1.00 (see Attachment B6 (Engineering Plans) of this Application for engineering drawings referenced herein). All ingress and egress to and from the fenced area is controlled by 'Republic's personnel through use of a surveillance system. The Facility has an agreement with the adjacent landowner to install paving striping and signs to assure adequate Facility egress prior to Facility operation.

Republic uses remote control gates and camera systems to control access to the facility. During operational hours the gate to the administration building is open to the free flow of traffic. The gate to the treatment facility has a camera speaker system with a button to alert Republic employees throughout the treatment facility and in the lobby of the administration building. When alerted by the security camera system Republic employees can communicate to arrivals at the gate with a two-way speaker and are able to allow the visitor access to the facility via remote control on the facility gate.

Republic employees maintain a running record of employees, contractors, and visitors entering and leaving the facility. Anyone other than a Republic employee or waste transporter needs to sign in at the front desk of the administration building. This allows Republic to identify all personnel that are on site at any given time. Waste transporters are tracked and controlled through manifesting and operations.

A4.A.2 Communications Systems

Republic uses several means of communication in order to maintain security. These communication systems include:

- Internal telephone intercom system
- Portable 2-way radio system
- Evacuation alarm button on the telephone system
- Outside fire alarm to alert of internal plant conditions
- Internal PA System

These systems allow for communication between all personnel at all times. Facility employees are responsible for supervising their visitor(s) and facility management is responsible for arranging contractor communications (i.e. portable 2-way radios) to ensure that lines of communications are maintained while the visitor or contractor is on site.

A4.A.3 Surveillance System

The Facility is secured year-round twenty-four hours a day by multiple closed-circuit cameras in a surveillance system. An outside third-party security company surveilles the system for trespassing, vandalism, theft, and fire. In the event of any of these issues at the Facility the security company contacts response personnel from Republic, and police and fire department if needed. Managers and supervisors can access the surveillance system remotely using laptop computers, tablets and telephones. Employees can monitor all Facility areas as needed.

A4.A.4 Barriers to Control Entry

The entire perimeter of the active area of the facility is surrounded by a seven-foot high cyclone fence with three strands of barbed wire on top, extending the total height of the fence to about nine feet. Ingress and egress to and from the fenced area during normal operations is primarily through the main access gate where the Security Station is located (refer to Dwg.No.C1.00). Ingress and egress to and from the fenced area is also provided by a gate over the railroad tracks leading into the Treatment and Storage Building. This gate is kept closed except when railcars are entering or leaving the facility. The gate is controlled by Republic employees and is operated when communications with the rail require access. An emergency exit gate is located at the southwest corner of the facility. The emergency exit gate is closed and locked except during emergencies.

A4.A.5 Treatment and storage Building Doorways

There are nine pedestrian doorways, six overhead truck-bay doorways, two railcar doors, and, two drum delivery doors into the Treatment and Storage Building. All doorways are locked during non-operational hours. Refer to Dwg..A6.01 and A6.02 for doorway locations and details.

A4.A.6 Warning Signs

Warning signs, reading "Danger-Unauthorized Personnel Keep Out," are affixed to the outside of the perimeter fencing at 50-foot intervals. The signs are placed at eye level, are visible from any exterior

angle of approach, and are legible from a distance of 25 feet. Similar signs are placed at all entrances.

A4.A.7 Lighting

Floodlights exist on the exterior of the Treatment and Storage Building and the Administrative Office Building. Additional lighting poles exist at strategic locations to illuminate Facility areas not covered by building floodlights. All exterior lighting is activated at dusk via photoelectric sensors and deactivated at dawn.

A4.A.8 Inspection

Security equipment (fences, gates, locks, lights and sign) are inspected per the Inspection Schedule provided in Attachment A5 of this Application.

FORM EQP 5111 ATTACHMENT A5
INSPECTION REQUIREMENTS

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), being R 299.9504, R 299.9508, R 299.9605 and Title 40 of the Code of Federal Regulations (CFR) §§264.15 and 270.14(b)(5), establish requirements for inspections at hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003

This license application attachment addresses requirements for inspections at the following hazardous waste management facility: Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") in Romulus, Michigan.
(Check as appropriate)

☒ Applicant for Operating License for Existing Facility

☐ Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility

This attachment is organized as follows:

INTRODUCTION
A5.A WRITTEN SCHEDULE
A5.A.1 Types of Problems and Frequency of Inspection

A5.B REMEDY SCHEDULE
A5.C INSPECTION LOG OR SUMMARY
Table A5.C.1 Container Storage Area Inspection Log Example

Introduction

This Attachment demonstrates how Republic regularly inspects the Facility for malfunctions and deterioration, operator errors, and discharges which may be causing or may lead to a release to the environment or a threat to human health.

A5.A WRITTEN SCHEDULE
[R 299.9605 and 40 CFR §264.15(b)(1)]

The Facility has developed and follows the following written schedule encompassing elements that are important in preventing, detecting or responding to environmental or human health hazards.

A5.A.1 Types of Problems and Frequency of Inspection

[R 299.9605 and 40 CFR §264.15(b)(3)]

The following areas of the Facility will be inspected for the types of problems, and at a frequency indicated below. Further details on the specific inspections conducted by the Facility are provided in the Inspections Forms (Forms A5-1 through A5-10), which are included with this Attachment.

A5.A.1(a) Daily Inspection Schedule

The following forms are used to inspect certain items on a daily basis:

Tanks, Ancillary Equipment (including piping from the treatment process to the pump house) and Associated Containment (Form A5-1)

- Check for corrosion, damage, releases, labeling, and presence of cracks, deterioration, or liquids or materials in containment area

Container Storage Area Containment (Form A5-1)

- Check for presence of cracks, deterioration, or liquids or materials in containment area

Treatment Area and Associated Containment (Form A5-1)

- Check for presence of cracks, deterioration, or liquids or materials in containment area
- Check that aisle ways are free from obstruction

Un/loading and Sampling Area Containment (Form A5-1)

- Check for presence of cracks, deterioration, or liquids or materials in containment area

Rinse Water Waste Vault (Form A5-1)

- Check for presence of cracks, deterioration
- Check water level

Storm Water Runoff (Form A5-1)

- Check for presence of material needing management

Security Rounds (Form A5-2)

- Fences and Signs – Check for damage, breaches, missing signs
- Gates – Chained and secure
- Building Doors – Closed and locked
- Building Alarm Lights – Operational status

A5.A.1(b) Weekly Inspection Schedule

The following form is used to inspect certain items on a weekly basis:

Weekly Inspection Log (Form A5-3)

- pH Meters – Calibration, functionality
- Flow Meters/Totalizers – Calibration, functionality
- Liquid Level Indicators – Calibration, functionality
- Temperature Probes – Calibration, functionality
- Storm Water Runoff Vault – Depth to liquid, cracks and deterioration
- Roll Off Box – Check for corrosion, damage, releases, labelling
- Containers Storage Area – Check aisle spacing, leakage, open or damaged containers, proper labeling, cracks and deterioration in secondary containment
- Railcar Storage Area (leakage, cracks and deterioration in secondary containment)
- Alarm and Automatic Shutoff System – audible and visual alarms, functionality

A5.A.1(c) Monthly Inspection Schedule

The following forms are used to inspect certain items on a monthly basis:

Monthly (Or After Storm Event) Storm Water Inspection Report (Form A5-4)

- Pavement and Curbing – Check for cracks, deterioration
- Material Leaks or Spills – Check for material leaks or spills
- Hazardous Material Storage – Confirm no storage outside of authorized areas
- Vegetative Areas – Check for stressed vegetation
- Vehicle Leaks – Check for evidence of oil or other vehicle fluid leaks

Monthly Safety Equipment Inspection Log (Form A5-5)

- Inspect eyewash stations, showers, safety room equipment, first aid boxes, fire extinguishers, fire blankets, and emergency escape equipment for sufficient inventory, expiration dates, damage, missing equipment, and functionality

Monthly Waste Inventory Verification Log (Form A5-6)

- Waste Inventory Report - The manifested quantity of waste accepted for treatment will be reconciled on a mass-balance basis. Specifically, the waste accepted should approximately equal the amount disposed (of in a deepwell) plus the amount in process, plus the amount of sludge produced (within EPA "empty" specifications). The amount of waste accepted but not yet processed and the quantity of waste in process will be determined by physical inventory, whereas the volume of waste disposed of into the wells will be derived from the tracking record. This is performed by the equation: **WASTE ACCEPTED = WASTE IN PROCESS (LIQUID + SLUDGE) + WASTE**

DISPOSED (OF INTO THE DEEP WELLS + ROB) and identified in the Monthly Waste Inventory Verification Log **Form A5-6.** If the waste report indicates a significant discrepancy, the system records and equipment will be evaluated, and the cause of the discrepancy identified for appropriate action (i.e., equipment recalibration, inventory adjustment, reconciliation calculation or other mechanism).

Monthly Communication and Security Equipment Inspection Log
(Form A5-7)

- Inspect the P.A. system, surveillance cameras, fire alarms, and process alarms for functionality

Monthly Spill Control Decontamination and Equipment Inspection Log
(Form A5-8)

- Inspect the pumps, hoses, and emergency spill kits for sufficient inventory, damage, missing equipment, and functionality

A5.A.1(d) Annual Inspection Schedule

Annual Tank Inspection Log
(Form A5-9)

- X-Ray Shell Thickness Test - Measurements shall be concentrated at those areas on the tank shell which are most likely to be in frequent contact with stored liquid. For the tank wall, measurements will be taken along four vertical rows designated along north, south, and, east, west axis 90 degrees apart, at not less than three-foot vertical intervals. At least one measurement in each row shall be taken within one foot of the bottom of the tank. For the tank bottom, no fewer than four measurements will be taken, at least two feet from the center point of the tank bottom, spaced at the same 90 degree intervals.
- Interior Condition Inspection - Each tank is emptied of its contents. Any tanks with connections above the bottom of the tank are emptied by a tanker truck with a suction hose placed inside the tank through the manhole. All steel tanks are inspected along the walls for corrosion with special attention to welded seams. All tanks have the integrity of their bolts checked. The interior inspection must be coordinated with the shell thickness inspection. An exterior inspection of the seals and bolts will also be performed.

Annual Oily Waste Tank Inspection Log
(Form A5-10)

- Tanks used for oily waste storage during the prior year will be opened and inspected for oily sludge buildup

A5.B REMEDY SCHEDULE
[R 299.9605 and 40 CFR §264.15(c)]

For all inspections conducted pursuant to the Forms included with this Attachment, all non-conformances are reported to management, and corrective and preventive actions are

determined on a case-by-case basis. All necessary actions will be performed on a schedule to ensure that the matter does not lead to an environmental or human health hazard. If a hazard has occurred or is imminent, it will be addressed under the Facility's Contingency Plan (refer to Attachment A7).

A5.C INSPECTION LOG OR SUMMARY

[R 299.9605 and 40 CFR §264.15(d)]

The written schedule is maintained in the Administrative Office file cabinets under "Inspection Schedules," and the recorded inspection logs and blank inspection forms are found in both the Administrative Office file cabinets and control room file cabinet under "Inspection Log". These logs are kept in the files for a minimum of three years from the inspection date. Separate files are provided for daily, weekly, monthly and yearly inspection logs to facilitate organization.

Appendix A5.A Example Inspection Forms

Form A5-1 - Daily Inspection Report

Form A5-2 - Daily Security Rounds Report

Form A5-3 - Weekly Inspection Log

Form A5-4 - Monthly Storm Water Inspection Report

Form A5-5 – Monthly Safety Equipment Inspection Log

Form A5-6 – Monthly Waste Inventory Verification Log

Form A5-7 - Monthly Communication and Security Equipment Inspection Log

Form A5-8 – Monthly Spill Control and Decontamination Equipment Inspection Log

Form A5-9 - Annual Tank Inspection Log – Interior Condition

Form A5-10 - Annual Tank Inspection for Oily Waste - Interior Condition

Form A5-1

Daily Inspection Report

Inspector: _____

Date and Time: _____

Indicate (x) for satisfactory conditions. All unacceptable conditions must be numbered sequentially (e.g., 1, 2, 3 ….) and explained in remarks section; include corrective action necessary, estimated date of completion, and actual action (including date) taken		
General Category	**Specific Item (Describe Problem, If Any)**	**Status**
Container Storage Area Containment	Secondary containment cracked or deteriorated?	
	Presence of liquids or materials in containment area?	
Un/loading and Sampling Area Containment	Building floor and containment curbs cracked or deteriorated?	
	Presence of liquids or materials in containment area?	
Treatment Area and Associated Containment	Building floors cracked or deteriorated? Presence of liquids or materials in containment area?	
	Aisle ways free from obstruction?	
Rinse Water Waste Vault	Rinse water vault cracked or deteriorated? Water Level _____	
Tanks, Ancillary Equipment and Associated Containment	No corrosion, deterioration, cracks, damage, standing liquid, dripping or weeping into the containment pit, adequate labeling:	
	Tanker Off-loading Containment 1 – 6	
	RT (1 - 10) Labeled? Y/N	

Indicate (x) for satisfactory conditions. All unacceptable conditions must be numbered sequentially (e.g., 1, 2, 3 ….) and explained in remarks section; include corrective action necessary, estimated date of completion, and actual action (including date) taken		
General Category	**Specific Item (Describe Problem, If Any)**	**Status**
	PST (1 - 6) Labeled? Y/N	
	ST (1 and 2) Labeled? Y/N	
	SST Labeled? Y/N	
	Acid/Base Product Tanks Labeled? Y/N	
	Bag Filter Units	
Activated Carbon Adsorption System	Breakthrough?	
Storm Water Runoff Vault	Contains material needing management?	
Remarks (Attach additional pages if necessary):		

Form A5-2

Daily Security Rounds Report

Inspector: _____

Date and Time: _____

Indicate (x) for satisfactory conditions. All unacceptable conditions must be numbered sequentially (e.g., 1, 2, 3 ….) and explained in remarks section; include corrective action necessary, estimated date of completion, and actual action (including date) taken		
Time Of Inspection	**Specific Item (Describe Problem, If Any)**	**Status**
	Security station, main gates, # 2,3 secure? Y/N	
	Administration Office Building access gate # 1 secure? Y/N	
	Emergency access gates, # 7. Chained and secure? Y/N	
	Railroad spur gate # 6. Chained and secure? Y/N	
	Perimeter fencing damaged or breached is signage missing? Y/N	
	Treatment and Storage Building doors (10 personnel & 9 role-up) in good physical condition able to be locked and secured.? Y/N	
	Administration Office Building doors (3). Closed and locked? Y/N	
	Cameras Functioning Properly?	
	Injection Pump House building amber alarm light. Illuminated? Y/N	
	Injection Pump House building door & role-up. Closed and locked? Y/N	
	Well head buildings. Closed and locked? Y/N	
Remarks (Attach additional pages if necessary):		

Form A5-3

Weekly Inspection Log

Inspector: _____

Date and Time: _____

Indicate (x) for satisfactory conditions. All unacceptable conditions must be numbered sequentially (e.g., 1, 2, 3 ….) and explained in remarks section; include corrective action necessary, estimated date of completion, and actual action (including date) taken		
General Category	**Specific Item (Describe Problem, If Any)**	**Status**
Container Storage Area	Containers properly closed?	
	Containers properly labeled?	
	Aisle spacing adequate three feet between containers?	
	Containers damaged or leaking?	
	Cracks and deterioration in secondary containment?	
Filter Press and Roll Off	Corrosion, damage, or spills?	
	Container properly labeled?	
Liquid Level Indicators	Tank overfill alarm system functioning?	
	Injection Well containment alarm system functioning?	
pH Meter and Temperature Probes	Clean Probe Surface?	
	Check reading against known pH solution	

Indicate (x) for satisfactory conditions. All unacceptable conditions must be numbered sequentially (e.g., 1, 2, 3 ….) and explained in remarks section; include corrective action necessary, estimated date of completion, and actual action (including date) taken		
General Category	**Specific Item (Describe Problem, If Any)**	**Status**
	Temperature probes calibrated according to manufacturer's instructions?	
Railcar Storage	Railcars damaged or leaking? Cracks or deterioration in secondary containment?	
Alarm and Automatic Shutoff System	Audible alarm working?	
	Visual alarm working?	
Flow Meter and Totalizers	Note: Use SST tank to test. Take initial depth to liquid reading, discharge volume of tank, take final depth to liquid measurement and determine volume pumped. Calculate percent difference between tank volume and meter reading. Known Volume: _____ Totalizer Reading: _____ Percent Difference:_____%	
Storm Water Runoff Vault	Deterioration, damage? Depth to Liquid: _____	
Remarks (Attach additional pages if necessary):		

FORM A5-4

MONTHLY STORM WATER INSPECTION REPORT

Inspector: _____

Date and Time: _____

Indicate (x) for satisfactory conditions. All unacceptable conditions must be numbered sequentially (e.g., 1, 2, 3 ….) and explained in remarks section; include corrective action necessary, estimated date of completion, and actual action (including date) taken		
General Category	**Specific Item (Describe Problem, If Any)**	**Status**
East Side of Treatment and Storage Building (Storm Water Runoff Vault)	Cracks or deterioration in pavement or curbing?	
	Evidence of leaks or spills to pavement (including vehicle leaks)?	
	Stressed or missing vegetation?	
	Excess turbidity, oily sheen, unusual color in SWRV water?	
	Pump operational?	
	Discharge pipe flow adequate?	
	Hazardous waste storage outside of authorized areas?	
West Side of Treatment and Storage Building (Storm Water Detention Pond)	Cracks or deterioration in pavement or curbing?	
	Evidence of leaks or spills to pavement (including vehicle leaks)?	
	Erosion in Detention Basin?	

Indicate (x) for satisfactory conditions. All unacceptable conditions must be numbered sequentially (e.g., 1, 2, 3 ….) and explained in remarks section; include corrective action necessary, estimated date of completion, and actual action (including date) taken		
General Category	**Specific Item (Describe Problem, If Any)**	**Status**
	Stressed or missing vegetation?	
	Loading in ditches?	
	Excess turbidity, oily sheen, or unusual color in detention pond water?	
	Pump operational?	
	Discharge pipe flow adequate?	
	Hazardous waste storage outside of authorized areas?	
Remarks (Attach additional pages if necessary):		

FORM A5-5

MONTHLY SAFETY EQUIPMENT INSPECTION LOG

Inspector: _____

Date and Time: _____

Indicate (x) for satisfactory conditions. All unacceptable conditions must be numbered sequentially (e.g., 1, 2, 3 ….) and explained in remarks section; include corrective action necessary, estimated date of completion, and actual action (including date) taken		
General Category	**Specific Item (Describe Problem, If Any)**	**Status**
Eyewash and Shower	Do the eyewashes work with sufficient pressure?	
	Do the showers work with sufficient pressure?	
Fire Fighting	All Extinguishers available, functional and in designated locations?	
	Fire blankets available and in designated locations?	
First Aid Boxes	Are medical supplies fully stocked? (Note: List of supplies are provided in individual boxes)	
Emergency Air Escape Units (Located in Upstairs office, Control Room and Laboratory)	Cracks, rips, or holes in the face pieces, hoses or belts?	
	Tank pressure?	
Safety Equipment Room	Confined Space Entry Tripod warped, bent, or corroded?	
	PPE check list in safety equipment room	
Remarks (Attach additional pages if necessary):		

FORM A5-6

MONTHLY WASTE INVENTORY VERIFICATION LOG

Inspector: _____

Date and Time: _____

Volume Manifested		Volume Disposed Injected + ROB		Volume in Process		Difference		% Change
	=		+					

If manifested volume is larger than injected and remaining volume put a minus sign in the difference column. If the recorded volume and remaining volume is larger than the manifested volume put a plus sign in the difference column.

Determine whether difference is within acceptable accuracy (i.e. EPA definition of empty).
Yes:_____ No:_____

Attach spreadsheet of manifested volumes and the tanks that received the manifested waste for the period of this inspection.

Comments:_____.

_____

_____

_____

_____

Corrective Action and Date:

_____

_____

_____

_____

FORM A5-7

MONTHLY COMMUNICATION AND SECURITY EQUIPMENT INSPECTION LOG

Inspector: _____

Date and Time: _____

Indicate (x) for satisfactory conditions. All unacceptable conditions must be numbered sequentially (e.g., 1, 2, 3 ….) and explained in remarks section; include corrective action necessary, estimated date of completion, and actual action (including date) taken		
General Category	**Specific Item (Describe Problem, If Any)**	**Status**
Communications	P.A. system functional? (**The P.A. and the evacuation function on each of the phones in the Lab, Unloading Area, Treatment Area, Control Room, Security Station and Administration Office Building are to be tested)**	
Alarms	Fire alarm functional (Test pull switch)?	
	Tank containment alarm functional?	
	Injection system alarms functional?	
Documents (File Cabinets)	Are contingency plans and backup plans up to date?	
	Is a Contingency Plan in designated locations?	
Surveillance	Is surveillance system functioning properly?	
Remarks (Attach additional pages if necessary):		

FORM A5-8

MONTHLY SPILL CONTROL AND DECONTAMINATION EQUIPMENT INSPECTION LOG

Inspector: _____

Date and Time: _____

Indicate (x) for satisfactory conditions. All unacceptable conditions must be numbered sequentially (e.g., 1, 2, 3 ….) and explained in remarks section; include corrective action necessary, estimated date of completion, and actual action (including date) taken		
General Category	**Specific Item (Describe Problem, If Any)**	**Status**
Portable Pumps	Submersible pumps?	
Hoses (Treatment and Storage Building)	Are the hoses in good repair?	
	Are the couplings present?	
	Are there signs of deterioration?	
Treatment and Storage Building Spill Kits: 4 bags of soda ash 5 bags of absorbent material Over-pack drum in good condition Polyethylene shovel Absorbent pads and socks	Unloading Bay?	
	Drum Room?	
	Treatment Area?	
	Sampling Bay?	
	Safety Room?	
Remarks (Attach additional pages if necessary):		

FORM A5-9

ANNUAL TANK INSPECTION LOG – INTERIOR CONDITION

Inspector:

Date and Time:

Tank	Y / N	Type of Problem	Acceptable (Y/N)
Any crackling, bubbling, corrosion, or wear in the tanks?	( )	_____	( )
Are tanks properly labeled?	( )	_____	( )
Are Reagent tanks properly labeled?	( )	_____	( )
Are bolt heads corroded on the fiberglass tanks?	( )	_____	( )
Can you see leakage?	( )	_____	( )

Observation of Non-acceptability: _____
_____
_____
_____

Corrective Action and Completion date: _____
_____
_____
_____

SHELL THICKNESS
Predetermined Marked Locations

Tank I.D.	RT1	RT2	RT3	RT4	RT5	RT6	RT7	RT8	RT9	RT10	PST1	PST2	PST3

Tank I.D.

	RT1	RT2	RT3	RT4	RT5	RT6	RT7	RT8	RT9	RT10	PST1	PST2	PST3

Tank I.D.

	PST4	PST5	PST6	SST	ST1	ST2							

Observation of Non-acceptability: _____
_____
_____
_____

Remedial Action and Completion date: _____
_____
_____

FORM A5-10

ANNUAL TANK INSPECTION FOR OILY WASTE – INTERIOR CONDITION

Inspector:

Date and Time:

Tank No.: _____ **Acceptable (Y/N)**

Sludge Level _____ (_____)

Observation of Non-acceptability: _____
_____
_____
_____

Corrective Action and Completion date:_____
_____
_____

FORM EQP 5111 ATTACHMENT A6
PREPAREDNESS AND PREVENTION

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Manageme0.nt, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9504, R 299.9508, and R 299.9606 and Title 40 of the Code of Federal Regulations (CFR) §§264.30 through 264.37 establish requirements for preparedness for and prevention of releases of hazardous wastes or constituents at hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application attachment addresses requirements for preparedness for and prevention of releases of hazardous wastes or constituents at the following hazardous waste management facility for the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") in Romulus_, Michigan.

(Check as appropriate)

Applicant for Operating License for Existing Facility:

- ☒ No waiver requested
- ☐ Waiver requested for one or more units for required equipment
- ☐ Waiver requested for one or more units for required aisle space

Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility:

- ☐ No waiver requested
- ☐ Waiver requested for one or more units for required equipment
- ☐ Waiver requested for one or more units for required aisle space

This attachment is organized as follows:

INTRODUCTION
A6.A REQUIRED EQUIPMENT
- A6.A.1 Internal Communication System
- A6.A.2 Emergency Response Communication System
- A6.A.3 Fire, Spill, and Decontamination Equipment
  - A6.A.3(a) Fire
  - A6.A.3(b) Spill and Decontamination Equipment
- A6.A.4 Adequate Water Volume

A6.B TESTING AND MAINTENANCE OF EQUIPMENT
A6.C ACCESS TO COMMUNICATIONS OR ALARM SYSTEM
A6.C.1 Multiple Employees Present
A6.C.2 Single Employee Present
A6.D REQUIRED AISLE SPACE
A6.E STATE OR LOCAL AUTHORITIES
A6.E.1 Arrangements with State or Local Authorities
A6.E.2 Refusal of State or Local Authorities to Enter into Emergency Response Agreements

Introduction

The following describes how the Facility is designed, constructed, maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

A6.A REQUIRED EQUIPMENT

[R 299.9606 and 40 CFR §264.32]

A6.A.1 Internal Communication System

[R 299.9606 and 40 CFR §264.32(a)]

Republic uses several methods to maintain communications at the Facility. These communication systems include:

- Internal telephone intercom system
- Portable 2-way radio system
- Fire alarm system that can be activated automatically (smoke and heat sensors) or manually (wall-mounted pull down switches)
- Outside fire alarm to alert of internal plant conditions
- Internal PA System for Evacuation announcements

These systems allow for communication between all on-site personnel at all times.

A6.A.2 Emergency Response Communication System

[R 299.9606 and 40 CFR §264.32(b)]

The Facility is equipped with a local telephone network and utilizes two-way radios to directly report any emergency and to initiate and maintain communications with coordinators, local authorities, and employees during an emergency. The phone system throughout the Facility is also equipped with a public address system linked to speakers throughout the complex to provide instructions to employees in the event of an emergency. Additionally, the fire alarm system automatically telephones an outside communication service, who will notify the local fire department.

A6.A.3 Fire, Spill, and Decontamination Equipment
[R 299.9606 and 40 CFR §264.32(c)]

Due to the non-flammable nature of the wastes managed at the Facility, the risk of fire at the Facility is considered remote. Nonetheless, the tanks are equipped with an inert nitrogen blanket system designed to suppress the buildup of gases within these tanks. Republic also maintains approximately thirty (30) handheld fire extinguishers placed throughout the Facility in plainly marked locations.
In addition, critical areas of the Treatment and Storage Building are equipped with an automatic water sprinkler system, as depicted on Dwg. No. F1.01 and Dwg. No. F1.02 (see Attachment B6 (Engineering Plans) of this Application for engineering drawings referenced herein). Water is supplied by fire hydrants connected to the City of Romulus water system.

A6.A.3(b) Spill and Decontamination Equipment

All waste is stored with secondary containment areas designed to capture any spill and prevent releases to the environment. Spill kits are located in the unloading bay, drum room, treatment area, sampling bay, safety room, and sludge processing area. Each spill kit container has four bags of soda ash, another container has five bags of absorbent material, an over-pack drum, a polyethylene shovel, absorbent socks, absorbent pads and disposal bags with ties. In addition, flexible hoses and a portable pump are located in the railcar unloading area to be used to remove spilled material as necessary.

Emergency response procedures to be used in controlling a potential fire and preventing the spread or reoccurrence of chemical releases are described in the Attachment A7 (Contingency Plan) of this Application.

A6.A.4 Adequate Water Volume
[R 299.9606 and 40 CFR §264.32(d)]

Water is supplied by fire hydrants connected to the City of Romulus water system.

A6.B TESTING AND MAINTENANCE OF EQUIPMENT
[R 299.9606 and 40 CFR §264.33]

The emergency equipment used at the Facility is inspected, tested, and maintained to ensure proper operation during an emergency. All safety equipment, security devices, and communications equipment are inspected regularly. The frequency and descriptions of these inspections are provided in Attachment A5 (Inspection Requirements) to this Application. The inspection logs for the Facility's emergency equipment are attached to Attachment A5 as Forms A5-3 (Alarm and Automatic Shutoff System), A5-5, A5-7 and A5-8.

A6.C ACCESS TO COMMUNICATIONS OR ALARM SYSTEM
[R 299.9606 and 40 CFR §264.34]

All Facility personnel working within the active area of the Facility are equipped with two-way radios, and telephone equipment is located in easily accessible areas throughout the Facility. Workers are

instructed to maintain the surrounding working areas free from obstructions that would impair access to the communication equipment. The Facility's PA system will also communicate instructions in the event of an emergency. In the event of a fire, the automated fire detection system automatically phones an outside agency that will contact emergency service providers as necessary.

A6.C(1) Multiple Employees Present
[R 299.9606 and 40 CFR §264.34(a)]

At no time will the Facility operate with just one employee on the premises. The Facility will only be operated with the required number of employees per OSHA regulations.

A6.C(2) Single Employee Present
[R 299.9606 and 40 CFR §264.34(b)]

At no time will the Facility operate with just one employee on the premises. The Facility is monitored by a security system during non-business hours.

A6.D REQUIRED AISLE SPACE
[R 299.9606 and 40 CFR §264.35]

Four feet of aisle space is maintained in the container handling and all other areas of the treatment building to allow unobstructed movement of personnel, fire protection equipment and spill containment equipment throughout the Facility. This four-foot aisle spacing assures personnel and equipment can easily gain access to all areas. Aisles in the Treatment and Storage Building are kept clear of obstructions.

A6.E STATE AND LOCAL AUTHORITIES
[R 299.9606 and 40 CFR §264.37]

A6.E.1 Arrangements with State and Local Authorities
[R 299.9606 and 40 CFR §264.37(a)(1)]

The Facility maintains contact with local police and fire departments, health care providers, and waste management facilities and has provided those entities with copies of the Facility's Contingency Plan (refer to Attachment A7). Arrangements made with local authorities with respect to the Facility are as follows:

- Familiarize police and fire departments, and emergency response contacts with the Facility layout and with the properties of hazardous wastes handled. Also, familiarize these contacts with the potential hazards associated with the Facility, places where personnel normally work, entrances to and roads inside the Facility, and evacuation routes.
- Designate primary emergency authority to a specific police or fire department, in the event that more than one department was to respond.
- Familiarize a local hospital with the properties of hazardous wastes handled and the type of injuries or illnesses that could result from fires, explosions, or releases.
- Maintain agreements with emergency response contractors and equipment suppliers.

An inspector with the Romulus Fire Department has been given a tour of the Facility, and has been informed of the types and properties of all hazardous materials handled at the Facility.

A6.E.2 Refusal of State or Local Authorities to Enter into Emergency Response Agreements

[R 299.9606 and 40 CFR §264.37(b)]

There has been no refusal of entrance into Emergency Response Agreements.

FORM EQP 5111 ATTACHMENT A7
CONTINGENCY PLAN

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities*. See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9501, R 299.9508(1)(b), R 299.9504(1)(c), R 299.9521(3)(b), R 299.9607, and Title 40 of the Code of Federal Regulations (CFR) §§264.50 through 264.56, and 270.14(b)(7), establish requirements for contingency plans at hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.
This license application template addresses requirements for a contingency plan at the hazardous waste management facility for the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") in Romulus, Michigan. It is recommended that Republic perform annual drill exercises with the local fire department and emergency responders using the contingency plan to make sure all staff are familiar with the plan and determine whether the plan needs any updating.

(Check as appropriate)

☒ Applicant for Operating License for Existing Facility

☐ Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility

This template is organized as follows:

INTRODUCTION
A7.A BACKGROUND INFORMATION
- A7.A.1 Purpose of the Contingency Plan
- A7.A.2 Description of Facility Operations
- A7.A.3 Identification of Potential Situations

A7.B EMERGENCY COORDINATORS
- A7.B.1 Identification of Primary and Alternate Emergency Coordinators
- A7.B.2 Qualifications of the Emergency Coordinators
- Table A7.B.1 Identification of Primary and alternate Emergency Coordinators
- A7.B.3 Authority to Commit Resources

A7.C IMPLEMENTATION OF THE CONTINGENCY PLAN

A7.D EMERGENCY PROCEDURES
- A7.D.1 Immediate Notification Procedures for Facility Personnel and State and Local Agencies with Designated Response Roles
- A7.D.2 Procedures to Be Used for Identification of Releases
- A7.D.3 Procedures to Be Used to Assess Potential Hazards to Human Health and the Environment
- A7.D.4 Procedures to Determine if Evacuation is Necessary and Immediate Notification of Michigan Pollution Emergency Alerting System and National Response Center

A7.D.5 Procedures to Be Used to Ensure That Fires, Explosions, and Releases Do Not Occur, Reoccur, or Spread During the Emergency
Table A7.D.1 Federal, State, and Local Response Contacts
A7.D.6 Procedures to Be Used to Monitor Equipment Should Facility Operations Cease
A7.D.7 Procedures to Provide Proper Treatment, Storage, and Disposal for Any Released Materials
A7.D.8 Procedures for Cleanup and Decontamination
A7.E RESUMPTION OF OPERATIONS AND RECORD KEEPING REQUIREMENTS
A7.E.1 Procedures to Be Used Prior to Resuming Operations
A7.E.2 Record Keeping Requirements
A7.E.2(a) Operating Record
A7.E.2(b) Written Incident Report
*A7.*F PROCEDURE FOR ASSESSING OFFSITE RISK DURING AND AFTER A FIRE/EXPLOSION INCIDENT OR SIGNIFICANT RELEASE
A7.G PROCEDURES FOR REVIEWING AND AMENDING THE CONTINGENCY PLAN
Appendix A7.1 Documentation of Arrangements with Local Authorities
Appendix A7.2 Evacuation Plan and Routes
Appendix A7.3 Emergency Equipment Description

Introduction

A7.A BACKGROUND INFORMATION

A7.A.1 Purpose of the Contingency Plan

[R 299.9607 and 40 CFR §§264.51 and 264.53]

This Contingency Plan has been prepared in accordance with the requirements of 40 CFR, Part 264, Subpart D, and R 299.9607. It is designed to establish the necessary planned procedures to be followed in the event of an emergency situation at the Republic Facility located in Romulus, Michigan, such as a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or water.

The provisions of this plan will be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment.

Copies of the Facility's Contingency Plan have been provided to emergency response agencies (refer to Appendix A7.1-Documentation of Arrangements with Local Authorities) in order to familiarize them with the Facility layout, the properties of the materials handled, locations of the working areas, access routes into and within the Facility, possible evacuation routes from the Facility, and types of injuries or illnesses that could result from releases of materials at the Facility. This information has been submitted to:

- Romulus City Fire
- Romulus City Police
- Oakwood Annapolis Hospital
- Marine Pollution Control
- MIEGLE

Upon the EGLE's approval of this Contingency Plan, Republic will submit this Contingency Plan to the above-listed entities and provide verification of these submittals to the EGLE. Whenever this Contingency Plan is modified in the future, the Facility will provide the entities with a copy of the modified plan.

It should be noted that the Facility has an agreement with adjacent landowner (i.e. Kerr Manufacturing and Norfolk Southern)to keep the evacuation routes clear and to install paving striping and signs to assure adequate Facility egress prior to Facility operation.

A7.A.2 Description of Facility Operations

The Facility consists of hazardous waste treatment and tank and container storage operations. The treated wastes are disposed of onsite in one of the two injection wells. Hazardous waste is managed at the Facility in tanks, railcars and containers. The Facility currently has a maximum licensed hazardous waste storage capacity (tanks and containers) of 370,900 gallons, 92,000 gallons of which is for storage in railcar containers. The fenced active Facility area is approximately 5.9 acres in size. The "Basic Site Plan" (Dwg. No. C0.01) of this Contingency Plan provides the location for the Facility. The "Site Plan" (Dwg. No. C2.01) provides additional details showing Facility features. The Facility consists of a Treatment and Storage building (for the acidic, caustic, and aqueous wastes the Facility processes), two injection wells for disposal, an administrative office building and a security station. The "Process Plan, Main Level" (Dwg. No. M2.01) shows the details inside the Treatment and Storage building. The engineering drawings are available at the Site.

This Facility has been designed to accept acidic and alkaline (i.e. caustic) wastes, low concentration organic-water wastes, brines, and other hazardous and non-hazardous liquid wastes. The wastes proposed to be received by the Facility are best described by three general categories of wastes, those being waste acids, waste caustics and organic-water mixtures. The U.S. Environmental

Protection Agency ("EPA") hazardous waste numbers (i.e. codes) for those wastes accepted at the Facility are as follows:

D Codes		F Codes	K Codes				P Codes			
D002	D039	F001	K001	K038	K102	K157	P001	P041	P084	P185
D004	D040	F002	K002	K039	K103	K158	P002	P042	P085	P188
D005	D041	F003	K003	K040	K104	K159	P003	P043	P087	P189
D006	D042	F004	K004	K041	K105	K161	P004	P044	P088	P190
D007	D043	F005	K005	K042	K106	K169	P005	P045	P089	P191
D008		F006	K006	K043	K107	K170	P006	P046	P092	P192
D009		F007	K007	K044	K108	K171	P007	P047	P093	P194
D010		F008	K008	K045	K109	K172	P008	P048	P094	P196
D011		F009	K009	K046	K110	K174	P009	P049	P095	P197
D012		F010	K010	K047	K111	K175	P010	P050	P096	P198
D013		F011	K011	K048	K112	K176	P011	P051	P097	P199
D014		F012	K013	K049	K113	K177	P012	P054	P098	P201
D015		F019	K014	K050	K114	K178	P013	P056	P099	P202
D016		F024	K015	K051	K115		P014	P057	P101	P203
D017		F025	K016	K052	K116		P015	P058	P102	P204
D018		F032	K017	K060	K117		P016	P059	P103	P205
D019		F034	K018	K061	K118		P017	P060	P104	
D020		F035	K019	K062	K123		P018	P062	P105	
D021		F037	K020	K069	K124		P020	P063	P106	
D022		F038	K021	K071	K125		P021	P064	P108	
D023		F039	K022	K073	K126		P022	P065	P109	
D024			K023	K083	K131		P023	P066	P110	
D025			K024	K084	K132		P024	P067	P111	
D026			K025	K085	K136		P026	P068	P112	
D027			K026	K086	K140		P027	P069	P113	
D028			K027	K087	K141		P028	P070	P114	
D029			K028	K088	K142		P029	P071	P115	
D030			K029	K093	K143		P030	P072	P116	
D031			K030	K094	K144		P031	P073	P118	
D032			K031	K095	K145		P033	P074	P119	
D033			K032	K096	K147		P034	P075	P120	
D034			K033	K097	K148		P036	P076	P121	
D035			K034	K098	K149		P037	P077	P122	
D036			K035	K099	K150		P038	P078	P123	
D037			K036	K100	K151		P039	P081	P127	
D038			K037	K101	K156		P040	P082	P128	

U Codes						
U001	U039	U079	U118	U156	U194	U243
U002	U041	U080	U119	U157	U196	U244
U003	U042	U081	U120	U158	U197	U246
U004	U043	U082	U121	U159	U200	U247
U005	U044	U083	U122	U160	U201	U248
U006	U045	U084	U123	U161	U202	U249
U007	U046	U085	U124	U162	U203	U271
U008	U047	U086	U125	U163	U204	U278
U009	U048	U087	U126	U164	U205	U279
U010	U049	U088	U127	U165	U206	U280
U011	U050	U089	U128	U166	U207	U328
U012	U051	U090	U129	U167	U208	U353
U014	U052	U091	U130	U168	U209	U359
U015	U053	U092	U131	U169	U210	U364
U016	U055	U093	U132	U170	U211	U365
U017	U056	U094	U133	U171	U213	U367
U018	U057	U095	U134	U172	U214	U372
U019	U058	U096	U135	U173	U215	U373
U020	U059	U097	U136	U174	U216	U387
U021	U060	U098	U137	U176	U217	U389
U022	U061	U099	U138	U177	U218	U394
U023	U062	U101	U140	U178	U219	U395
U024	U063	U102	U141	U179	U220	U396
U025	U064	U103	U142	U180	U221	U409
U026	U066	U105	U143	U181	U222	U410
U027	U067	U106	U144	U182	U223	U411
U028	U068	U107	U145	U183	U225	
U029	U069	U108	U146	U184	U226	
U030	U070	U109	U147	U185	U227	
U031	U071	U110	U148	U186	U228	
U032	U072	U111	U149	U187	U234	
U033	U073	U112	U150	U188	U235	
U034	U074	U113	U151	U189	U236	
U035	U075	U114	U152	U190	U237	
U036	U076	U115	U153	U191	U238	
U037	U077	U116	U154	U192	U239	
U038	U078	U117	U155	U193	U240	

The wastes that Republic will receive will be non-ignitable, non-reactive, and non-radioactive wastes that do not contain regulated polychlorinated biphenyls (PCBs), pesticides, herbicides, medical wastes, explosives, poisons, greater than 30 mg/kg reactive cyanides, greater than 200 ppm reactive sulfides, or more than ten percent volatile organics.

A7.A.3 Identification of Potential Situations

An emergency is considered to have occurred when any situation involving an imminent, or probable fire, explosion, or spillage, leakage, or release of a hazardous substance(s) onto land, water, or the atmosphere that could create an immediate or potential danger to the public and/or Facility personnel health or safety because of its quantity, strength, and toxicity; its mobility in the environment; and/or its persistence. A remote example would be a significant tanker spill occurring outside containment.

A7.B EMERGENCY COORDINATORS
[R 299.9607 and 40 CFR §§264.52 and 264.55]

A7.B.1 Identification of Primary and Alternate Emergency Coordinators
[R 299.9607 and 40 CFR §§264.52 and 264.55]

At all times there is at least one employee, either on the Facility premises or on call and within reasonable travel distance of the Facility, with the responsibility for coordinating all emergency response measures. The current list of employees designated as emergency coordinators is contained in Table A7.B.1 below. The coordinators are listed in the order in which they will assume responsibility.

A7.B.2 Qualifications of the Emergency Coordinators
[R 299.9607 and 40 CFR §264.55]

The Emergency Coordinator's training includes, (a) Training in this Contingency Plan, (b) 40 hr. HAZWOPER Training with Annual Refresher course per 29 CFR 1910.120, (c) First Aid, (d) use of fire extinguishers and fire control measures, and (e) knowledge of facility operations.

Table A7.B.1 Identification of Primary and Alternate Emergency Coordinators
Site ID No. MIR 000 016 055

Republic Industrial and Energy Solutions, LLC, Romulus

Priority	Name	Address	Work Phone	Home Phone	Cell (optional)
Primary Coordinator	**John Frost**	**11290 Glenn Rd ,Grass Lake 49240**	**734 664-3394**		734 693-2870
First Alternate Coordinator	**Rick Sauve**	**5344 Julie Dr, Trenton, MI 48183**	**313 674-1706**		
Second Alternate Coordinator					
Third Alternate Coordinator					

A7.B.3 Authority to Commit Resources
[R 299.9607 and 40 CFR §264.55]

The Emergency Coordinators have the authority to commit Republic's resources whenever this Contingency Plan is activated.

A7.C IMPLEMENTATION OF THE CONTINGENCY PLAN
[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56]

The Emergency Coordinator must be contacted immediately if any situation occurs that may result in potential or actual threats to human health or the environment. The Emergency Coordinator must implement the plan whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents that the Emergency Coordinator determines could threaten human health or the environment. Typically, any explosion or fire involving hazardous waste, or any release of hazardous waste to the environment that cannot be immediately cleaned up will require implementation of this Contingency Plan.

The Facility is equipped with automated fire alarm systems with a communications network to alert both on-site and off-site resources. Off-site communications are available via the telephone system. The telephone system will serve as the primary means of communicating with external emergency response units such as the Fire Department, Police Department, Emergency Response contractor(s), etc. All telephones can be used for this purpose. All of the phones have a listing of required emergency contact phone numbers which would be reviewed for assistance in the event of an emergency. These phone numbers are attached to the wall by the phones in the Treatment and Storage Building, Control Room, Security Station, Laboratory, Container Handling Area, Maintenance, and Sampling Bay. A list of emergency phone numbers is also supplied to all offices within the Administrative Office Building. In the event of a power failure, two-way radios and cell phones can be used for intra- and extra-site communications.

When off-site emergency response assistance is required from a government agency, such as the Fire Department, the Emergency Coordinator shall make available to the designated Emergency Incident Commander from that agency a two-way radio.

When personnel are in personnel protective equipment, communication will be maintained during emergency response activities using one or more of the following methods: (1) Two-way radios; or (2) Hand signals which are universally understood or which are discussed by the emergency response team members prior to entering the hot zone.
The following situations are provided as guidance to facility personnel as the conditions or circumstances under which the plan must be implemented:

- Fires - Larger than 3 feet in diameter and out of control or impacting a system that will become out of control.
- Explosions – Any explosion or chemical reaction that is large enough to threaten human health or the environment.
- Spills – A release of materials that is a reportable quantity thatis leaving the containment of the Facility or the site.
- An unintended release to air, water or soil that is not contained and or threatens human health and the environment.

In the event that any of the above listed situations are in occurrence the Emergency Coordinator (EC) is immediately contacted and the Contingency plan is enacted. The EC is to be contacted via cell phone if off site, or by cell phone or two-way radio if on site. A list of EC phone numbers is posted by treatment plant phones, and by administration building phones and also in the Contingency Plan.

A7.D EMERGENCY PROCEDURES

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56]

The following general procedures have been established for implementation by facility personnel and the emergency coordinator in order to efficiently respond to the release of hazardous waste or hazardous waste constituents that could threaten human health or the environment. The facility's procedure for assessing offsite risk during and after a significant release are provided in this section.

A7.D.1 Immediate Notification Procedures for Facility Personnel and State and Local Agencies with Designated Response Roles

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56]

The Treatment and Storage Building is equipped with a fire alarm system that can be activated automatically through the use of smoke and sprinkler units or manually by wall-mounted pull-down switches located at various points throughout the building. A signal relay switch box is located at the west end of the Laboratory. This relay, upon receipt of a signal from either the smoke/heat sensors or one of the pull down switches, sends an electrical impulse which activates the building's evacuation sirens. At approximately the same time, a signal is sent through a designated telephone line to an outside communication service which quickly contacts/dispatches the local fire department. A second call is initiated by an outside security contractor to the facility manager informing of the alarm condition Spill alarm equipment is also installed in each of the wellhead vaults.

The list of emergency contacts in Table A7.D.1 identifies local emergency response agencies, and state and federal authorities that must be notified in the event of an imminent hazard or actual emergency situation requiring response.

The Emergency Coordinator will be responsible for ensuring that all appropriate authorities are notified as necessary.

In addition to the required notices, the Facility may contact Marine Pollution Control(313) 849.2333, Valicor Environmental (313) 724.8600, or other appropriate emergency contractors for emergency response services as necessary.

A7.D.2 Procedures to Be Used for Identification of Releases

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56]

The emergency coordinator will identify the location, type, source, amount, and extent of any release based on, among other things, automated alarms, visual observations, tank and container logs, manifests, approval documents, and other documentation maintained by the facility.

A7.D.2(a) Daily Inspections

Daily inspection addresses all tanks, containers, unloading areas and the entire containments in these areas for spill, releases, leaks and degradation of containment (refer to Attachment A5).

A7.D.2(b) Annual Training

Employees are trained in multiple aspects of hazardous waste management operations, regulations, and health and safety at annual intervals. This training includes the identification of a release and spill response procedures.

A7.D.3 Procedures to Be Used to Assess Potential Hazards to Human Health and the Environment

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56]

The Emergency Coordinator will assess possible hazards, both direct and indirect, to human health or the environment that may result from any release, fire, or explosion by evaluating the character, source and extent of any released materials by visual inspection, and, by reference to manifests, sample analyses, Material Safety Data Sheets and any other available sources of information. This assessment will consider, as applicable, the following factors:

- The source of the release, fire, explosion, or release.
- Proximity to pathways such as drainage features, surface water, etc
- Whether a spill has been contained within a secondary containment system or has entered the environment
- Proximity to other secondary release areas where chemicals or wastes are stored
- Whether a spill can be immediately contained and cleaned up.
- The condition of the source (e.g., label or placard information, type and size of individual container[s], accessibility, manifests, in house records)
- The volume of the material involved
- The physical state and nature of the material (e.g., solid [powder, pellet, granular], liquid or gas)
- The presence of any noticeable odor (e.g., a pleasant smell [almond, benzene, vinegar] or an unpleasant smell [sulfur, skunk, onion, sharp, biting, cleaning fluid, or paint])
- Any noticeable reaction (e.g., fuming, flaming or gas evolution)
- The potential for direct and indirect hazards to human health or the environment
- Weather conditions (e.g., raining, wind direction, etc)

Based on the Emergency Coordinator's assessment of the conditions, the Emergency Coordinator will determine the following:

- Whether to implement the Contingency Plan
- Whether Facility personnel can control the incident. If not, the Emergency Coordinator will notify the appropriate local, state and federal agencies for assistance.
- Whether a Facility evacuation is necessary. If so, the Emergency Coordinator will evacuate the Facility (see Appendix A7.2 – Evacuation Plan and Routes). If partial evacuation is required, the Facility personnel will be instructed as to which of the two on-site regrouping areas will be used.

- Whether evacuation of the local area around the Facility perimeter is advisable. If so, the Emergency Coordinator will communicate the necessary information to the Romulus Fire Department.

The emergency coordinator will assess possible hazards, both direct and indirect, to human health or the environment that may result from the release, fire, explosion, or release.

The assessment will consider the effects of any gases that may be generated, surface runoff from water or chemical reagents used to control fires, and any chemical or physical reactions with equipment or structures.

A7.D.4 Procedures to Determine if Evacuation Is Necessary and Immediate Notification of Michigan Pollution Emergency Alerting System and the National Response Center

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56]

You must identify the procedures that the emergency coordinator will use to determine whether evacuation is necessary and how appropriate agencies will be notified.

The Emergency Coordinator may call for an evacuation of the Facility based upon an assessment of the situation, or at the request of an outside agency authority. This assessment will take into consideration the magnitude of any spill, fire, explosion or similar incident, the characteristics of the materials involved (e.g., flammability, potential to produce gases), weather (wind direction), proximity of receptors, and the threat that the event poses to Facility personnel.

If the Emergency Coordinator's assessment indicates that evacuation of Facility areas may be advisable, the Emergency Coordinator will implement the evacuation plan for the Facility, located in Appendix A7.2. If the Emergency Coordinator's assessment indicates that evacuation of the surrounding local areas is also advisable, the appropriate local authorities will be immediately notified (see Table A7.D.1) by the Emergency Coordinator. The National Response Center will also be notified (see Table A7.D.1), and the following information will be provided:

1. Name and telephone number of the reporting individual
2. Name and address of the Facility
3. Time and type of incident
4. Type and quantity of materials involved
5. Possible hazards to human health or the environment
6. Extent of injuries, if applicable

The facility's evacuation plan is included in this Contingency Plan as Appendix A7.2.

A7.D.5 Procedures to Be Used to Ensure that Fires, Explosions, and Releases Do Not Occur, Reoccur, or Spread During the Emergency

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(e), 264.227, and 264.200]

The Facility is designed and operated to prevent fires, explosions and releases. All hazardous waste is stored inside closed tanks or containers in designated storage areas with secondary containment. All waste is segregated by characteristic and stored in appropriate waste management units. All waste management units incorporate secondary containment designed to control the migration of released waste to adjacent waste management units. Containers are opened only when necessary to add or remove waste.

Whenever there is an imminent or actual emergency situation where the potential or actual release of hazardous waste or hazardous waste constituents may threaten human health or the environment, the Facility will implement the following procedures:

Spill Response Procedures
The Facility is provided with dry soda ash for use as decontamination and absorbent material in controlling and cleaning up a spill. Most of the hazardous wastes managed at the Facility are expected to be acidic and, should a spill occur, the soda ash would be used to neutralize the waste. A bin of this material is provided next to and as part of the spill kits in designated areas throughout the plant. In the event of a spill, the following procedures will be instituted:

For spills from pipes, pumps or valves, the Emergency Coordinator shall:

- Evaluate the extent of the spill and associated hazards
- Discontinue transfer operation, if in process
- Isolate leaking equipment with the use of valves
- Ensure that secondary containment contains released material and remedy any leak sources.
- Initiate cleanup when practicable

For spills from tanks, the Emergency Coordinator shall:

- Evaluate the extent of the spill and associated hazards
- Discontinue transfer operation, if in process
- Identify, lowest point of break in tank surface
- Reduce liquid level in tank below lowest point of break by transfer to another tank or tanker truck
- Ensure that secondary containment contains released materials and remedy leak sources.
- Initiate cleanup when practicable

For spills from containers, the Emergency Coordinator shall:

- Evaluate the extent of the spill and associated hazards
- Ensure that secondary containment contains released material
- Overpack container or transfer contents from leaking container
- Initiate cleanup

For spills from Transport Vehicles, the Emergency Coordinator shall:

- Evaluate the extent of the spill and associated hazards
- Cover drains

- Contain the spill
- Initiate cleanup

Fire or Explosion Response Procedures
Upon discovery of a fire or explosion at the Republic Facility, the Emergency Coordinator will direct the necessary personnel to shut down process operations, extinguish the fire and contact any outside agency, if necessary. . All remaining personnel will be required to evacuate the area. In addition, the Emergency Coordinator directs all cleanup operations, determines the level of personnel protective equipment (PPE) needed, and decides on the appropriate cleanup materials.

On-site fire fighting equipment that may be used to control fires/explosions will include the overhead sprinkler system and the hand-held fire extinguishers that are present throughout the Facility and on company-owned vehicles.

The City of Romulus Fire Department is the primary local emergency responder. Arrangements for emergency response would be coordinated with this agency and with the Romulus Police Department, state emergency response teams, and/or emergency response contractors. These entities have been supplied with copies of the Contingency Plan including evacuation routes. The Beaument Hospital-Wayne has been familiarized with the hazardous waste properties and the types of injuries which could result from activities at the Facility.

Appendix A7.3 is a detailed description of the type, amount, and location of all emergency equipment at the Republic Facility.

During an emergency, the Emergency Coordinator must take all reasonable measures necessary to ensure that fires, explosions, or releases do not recur or spread to other areas of the facility, or off site.

Table A7.D.1 Federal, State, and Local Response Contacts
Site ID No. MIR 000 016 055

Local:	City of Romulus Fire Department	**Phone:**	911 or 734.941.8585
	City of Romulus Police Department	**Phone:**	911 or 313.941.8400
	Beaument Hospital-Wayne	**Phone:**	734.467.4042
State:	Michigan State Police- Metro South Post	**Phone:**	734.287.5000
State:	EGLE Southeast Michigan District	**Phone:**	586.753.3700
State:	EGLE -Lansing	**Phone:**	517.284.6651
State:	PEAS (Michigan EGLE Pollution Emergency Alerting System)	**Phone:**	800.292.4706
National Response Center:		**Phone:**	800.424.8802
Federal Agencies:	EPA Region 5 - Chicago	**Phone:**	312.886.7561
Other Agencies:		**Phone:**	

A7.D.6 Procedures to Be Used to Monitor Equipment Should Facility Operations Cease

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(f)]

The Emergency Coordinator will take all necessary steps to ensure that a secondary release, spill, fire or explosion does not occur or recur. If the Facility stops operations in response to a release, spill, fire or explosion, the Emergency Coordinator must ensure that the following procedures are carried out:

- Plant power down procedures (disconnect breakers MCC1 & MCC2)
- Inspection for any leaks or cracks in pipes, valves, and tanks
- Inspection for gas generation
- Isolation of all collected waste materials

A7.D.7 Procedures to Provide Proper Treatment, Storage, and Disposal for Any Released Materials

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(g)]

Clean up of residuals involving hazardous wastes from fires, explosions, and/or releases is aimed at collecting as much of the hazardous waste as possible for treatment and/or disposal. Several techniques are available for on-site cleanup, and their use will be determined at the time of the incident, considering the extent of the release. Procedures may require the use of sorbents, portable pumps, vac trucks, and tanker trucks, and/or soil removal equipment. Similarly, the type of personnel protective equipment depends upon the type of material(s) involved.

After an emergency, the Emergency Coordinator or designee will collect representative samples of all recovered wastes, contaminated soils, and waters, for analysis and characterization. Arrangements for any necessary off-site treatment (including recycling) and/or disposal will be

completed within 90 days or as soon as practicable after the conclusion of the emergency. Wastewaters to be handled onsite will be stored, treated, and disposed of expeditiously. Accumulated materials will be containerized for storage, transportation and off-site disposal.

A7.D.8 Procedures for Cleanup and Decontamination
[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(h)]

All emergency equipment (refer to Appendix A7.3-Emergency Equipment Description) used in responding to a spill, fire, explosion, or release will be decontaminated and repaired or replaced prior to reuse. The Emergency Coordinator will ensure that:

- Cleanup of the affected areas has been completed so that treatment and/or storage operations may be resumed without risk of an incompatible material coming in contact with spilled material(s)
- All emergency equipment is cleaned and ready for its intended use.
- Decontaminated materials, decontamination solutions, and absorbents will be containerized in appropriate, DOT approved containers. Decontamination solutions and decontaminated disposable equipment will be containerized, appropriately labeled, and stored in accordance with applicable requirements pending shipment offsite to a licensed TSDF.

A7.E RESUMPTION OF OPERATIONS AND RECORD KEEPING REQUIREMENTS
[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(h) and (i)]

The following subsections identify procedures that must be followed to meet the notification and record keeping requirements.

A7.E.1 Procedures to Be Used Prior to Resuming Operations
[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(h)]

Prior to resuming operations in the affected area(s), Republic will inspect all emergency equipment to ensure that the proper cleanup procedures have been implemented and all equipment has been cleaned and is fit for its intended use.

A7.E.2 Record Keeping Requirements
[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(i)]

A7.E.2(a) Operating Record

In the event of an emergency situation that requires implementation of the Contingency Plan, the Emergency Coordinator will record in the Facility's operating record the time, date, and description of the event. The operating record is maintained by Republic and is located at 28470 Citrin Drive, Romulus, Michigan, 48174.

A7.E(2)(b) Written Incident Report

Within 15 days of an incident requiring implementation of the Contingency Plan, the Republic Facility will submit a written incident report to ELGE at the following address:

Division Director
Waste Management and Radiological Protection Division
Environment, Great Lakes, and Energy P.O. Box 30241
Lansing, MI 48909

The report will contain the following information:

1. Name, address, telephone number, and site identification number of the facility and the owner/operator.
2. Date, time, and type of incident.
3. Type and quantity of materials involved.
4. Assessment of actual or potential hazards to human health and the environment.
5. Extent of injuries, if applicable.
6. Estimated quantity and disposition of recovered materials that resulted from the incident.

A7.F Procedure for Assessing Offsite Risk During and After a fire/explosion incident or Significant Release

[R 299.9521(3)(b) and R 299.9607 and 40 CFR §264.56(d)]

Republic shall maintain a contingency plan for the facility and comply with 40 C.F.R. part 264, subpart D, regarding the plan and emergency procedures. If there is a fire, explosion, or other release of hazardous waste or hazardous waste constituents that could threaten human health or the environment, or could reached surface water or groundwater, then Republic as owner and operator shall immediately notify EGLE's pollution emergency alerting system - telephone number 800-292-4706 and an emergency response contractor to evaluate offsite risk.

The notification to EGLE shall include all of the following information:

(a) The name and telephone number of the person who is reporting the incident.

(b) The name, address, telephone number, and site identification number of the facility.

(c) The name, address, and telephone number of the owner or operator.

(d) The date, time, and type of incident.

(e) The name and quantity of the material or materials involved and released.

(f) The extent of injuries, if any.

(g) The estimated quantity and disposition of recovered material that resulted from the incident, if any.

(h) An assessment of actual or potential hazards to human health or the environment.

(i) The immediate response action taken.

A7.G PROCEDURES FOR REVIEWING AND AMENDING THE CONTINGENCY PLAN
[R 299.9607 and 40 CFR §264.54]

This Contingency Plan is subject to review and amendment at least annually, and, if:

1. Deficiencies in the Contingency Plan are noted.
2. The Facility license is revised.
3. The Facility changes in design, construction, operation, or other circumstances develop that change the potential for releases, spills, fires, or explosions of hazardous materials.
4. The list of Emergency Coordinators or alternates changes.
5. The list of emergency equipment changes substantially.
6. The applicable regulations are revised.
7. The Contingency Plan fails in an emergency.

Any significant change in the Contingency Plan that impacts an agency will be reviewed and discussed with that agency or emergency response authority. New Contingency Plan documents will be prepared and distributed by certified and/or registered mail return receipt requested mail to local, state, and federal agencies and other appropriate entities who are current copy holders. Facility personnel will be informed of material changes in the Contingency Plan with copies available to personnel responsible for its implementation.

The Division Manager or Laboratory Manager of Republic will be responsible for any revisions to the Contingency Plan.

In addition to the above conditions, to ensure that the Plan is always updated, the primary or alternate Emergency Coordinator must review the plan on a regular basis, at least annually, and amend the Plan if necessary. Amendments will be submitted to MDNRE and all copy holders of the Plan.

Appendix A7.1: Documentation of Arrangements with Local Authorities

Appendix A7.2: Evacuation Plan and Routes

Appendix A7.3: Emergency Equipment Description

Appendix A7.1 Documentation of Arrangements with Local Authorities

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
ROMULUS FIRE/EMERGENCY MGMT
28777 EUREKA ROAD
ROMULUS, MI 48174
ATTN: EMERGENCY MANAGER

9590 9402 6015 0069 2338 54

2. Article Number (Transfer from service label)
7019 1640 0001 1821 0243

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X CO19 ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery
10-24-20

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature ☐ Priority Mail Express®
☐ Adult Signature Restricted Delivery ☐ Registered Mail™
☐ Certified Mail® ☐ Registered Mail Restricted Delivery
☐ Certified Mail Restricted Delivery ☐ Return Receipt for Merchandise
☐ Collect on Delivery ☐ Signature Confirmation™
☐ Collect on Delivery Restricted Delivery ☐ Signature Confirmation Restricted Delivery
☐ Insured Mail
Insured Mail Restricted Delivery (over $500)

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
BEAUMONT HOSPITAL-WAYNE
33155 ANNAPOLIS STREET
WAYNE, MI 48184
ATTN: EMERGENCY DEPT

9590 9402 6015 0069 2338 85

2. Article Number (Transfer from service label)
7019 1640 0001 1821 0274

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X CHoward ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery
Cedric Howard 10.26.20

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

OCT 26 2020

3. Service Type
☐ Adult Signature ☐ Priority Mail Express®
☐ Adult Signature Restricted Delivery ☐ Registered Mail™
☐ Certified Mail® ☐ Registered Mail Restricted Delivery
☐ Certified Mail Restricted Delivery ☐ Return Receipt for Merchandise
☐ Collect on Delivery ☐ Signature Confirmation™
☐ Collect on Delivery Restricted Delivery ☐ Signature Confirmation Restricted Delivery
☐ Insured Mail
Insured Mail Restricted Delivery (over $500)

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
ROMULUS POLICE DEPT
11165 OLIVE STREET
ROMULUS MI 48174
ATTN: EMERGENCY RESPONSE

9590 9402 6015 0069 2339 08

2. Article Number (Transfer from service label)
7019 1640 0001 1821 1004

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X CO ES ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery
7461 C19 10/24/20

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature ☐ Priority Mail Express®
☐ Adult Signature Restricted Delivery ☐ Registered Mail™
☐ Certified Mail® ☐ Registered Mail Restricted Delivery
☐ Certified Mail Restricted Delivery ☐ Return Receipt for Merchandise
☐ Collect on Delivery ☐ Signature Confirmation™
☐ Collect on Delivery Restricted Delivery ☐ Signature Confirmation Restricted Delivery
☐ Insured Mail
☐ Insured Mail Restricted Delivery (over $500)

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

VALICOR ENVIRONMENTAL SERVICES
27140 PRINCETON STREET
INLESTER, MI 48141
ATTN: ENERGENCY RESPONSE

9590 9402 6015 0069 2338 78

2. Article Number (Transfer from service label)

7019 1640 0001 1821 0267

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Valicor
☐ Agent
☐ Addressee

B. Received by (Printed Name) Covid

C. Date of Delivery 10/23/20

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Insured Mail
☐ Insured Mail Restricted Delivery (over $500)
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

MPC ENVIRONMENTAL
8631 W. JEFFERSON
DETROIT, MI 48209
ATTN: EMERGENCY RESPONSE MGR

9590 9402 6015 0069 2338 92

2. Article Number (Transfer from service label)

7019 1640 0001 1821 0281

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X LS R14
☐ Agent
☐ Addressee

B. Received by (Printed Name) C19

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

SPRINGFIELD ILLS STA
OCT 27 2020

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Insured Mail
☐ Insured Mail Restricted Delivery (over $500)
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

Appendix A7.2 Evacuation Plan and Routes

Republic Industrial and Energy Solutions, LLC

Evacuation Plan and Routes

Evacuation Routes

The evacuation routes for the building and for the Facility are shown on the attached drawings (SAF3 and C0.01, respectively).

Evacuation Procedures

The following actions will be taken when the Emergency Coordinator orders a Facility evacuation:

1. The Emergency Coordinator will activate emergency services by calling 911 and/or the Romulus Police Department at 313.941.8400 for assistance, reporting any casualties and arranging for any emergency response.
2. The Emergency Coordinator will determine if the gate on Citrin Drive will be used depending upon wind direction and the locations of the incident and personnel. The Emergency Coordinator will utilize the windsock located at the Administrative Office to ascertain wind direction and velocity.
3. The Emergency Coordinator will broadcast evacuation instructions via the Facility's telephone paging system and two-way radio system.
4. All personnel, including visitors and contractors, will be instructed to leave through the exit gates designated by the Emergency Coordinator.
5. The EC will designate employees or third party contractors to both control traffic at the entrance gate, and monitor the surveillance system. These designations will remain at their stations to assist in accounting for outside contractors and maintain communications until they are relieved by the Emergency Coordinator, or until such time as the emergency situation becomes a threat to their safety or health.
6. Evacuation will proceed as follows:
   - If downwind of incident, evacuate perpendicularly (at 90 degrees) to wind direction over the most accessible route.
   - If upwind of incident, evacuate in upwind direction.
7. Personnel will regroup at one of the following areas as designated by the Emergency Coordinator:
   - Regrouping Area 1 – Gate #2 Main Gate entrance location by security station ("booth").
   - Regrouping Area 2 – Southwest Facility Gate
8. Once all personnel have been evacuated, plant gates are to be closed to prevent unauthorized personnel from entering the Facility. If gates must remain open to facilitate entrance by emergency crew(s), a representative of the company designated by the Emergency Coordinator will be stationed at the gate entrance. Another Facility representative will be stationed at the entrance to the Administrative Office building to prevent unauthorized

entrance into the office or plant through the Administrative Office Building.

9. The Emergency Coordinator will initiate a head count and check it against the Facility security attendance system.

10. All attempts to rescue or find persons will be directed by the Emergency Coordinator or his designee in conjunction with the responding agencies.

11. Upon activation of the fire alarm system, the following actions will be taken:
    - If a fire is out of control, the Emergency Coordinator shall make sure that all personnel maintain a safe distance away from the fire. In addition, if possible, all adjacent vehicles are to be moved to another location to reduce the likelihood of further involvement.
    - The Facility fire response will be one of an incipient nature. That is, Facility personnel may only respond to fires of a magnitude which may be suppressed with extinguishers or a water hose. Grass/brush fires are an exception where heavy equipment or flooding techniques may be employed.

12. The evacuation routes from the Treatment and Storage Building are indicated by the lighted emergency exit signs located within the building.

Appendix A7.3 Emergency Equipment Description And Location

Republic Industrial and Energy Solutions, LLC

Emergency Equipment

The Facility maintains at least all of the following equipment for responding to an emergency. A map showing the location of this equipment follows this table.

Equipment	Capability	Quantity	Equipment Location
Hand tools: • shovels • brooms • mops •	Small spill cleanup	2 of each	Maintenance Room
Portable wet/dry shop vacuum	Small to medium spill cleanup	1	Maintenance Room
Pumps and Hoses	Any spill	1 pump 8 hoses @ 15-50' each	Railcar Unloading Area
Fire extinguisher (ABC)	Handheld Fire Fighting	30	Throughout Facility including, 3 in the Administrative Office Building, 1 in the pump house and 1 in work truck
Spill kit: • 4 bags soda ash • 95-gallon over pack • polyethylene shovel • min. of 3 50-lb bags Labsorb absorbent • Sorbent booms • Sorbent pads	Waste Cleanup	7	Throughout Plant
Personnel Protective Equipment: • Tyvek level B suits • Nitrile rubber gloves • Safety Glasses • Respirators • Face Shields	Hazard Access	2/operations employee	Safety Equipment Room
Emergency Eyewash Stations with Showers	Emergency Care	8	Treatment and Storage Building

Equipment	Capability	Quantity	Equipment Location
Two-Way Radios	Emergency Communication	10	Carried by Facility Personnel
Blood borne pathogen equipment (Body Fluid Clean-up Kit)	OSHA Compliance	3	2 in Treatment and Storage Building and 1 in Administrative Office Building
First aid stations	Non-significant Injuries	11	Treatment and Storage Building, Security Station, and, Administrative Office Building
• Nylon rope (25 feet) • Duct tape (2 rolls)	Support Materials	1 set	Maintenance Room
Emergency Air Escape Unit	Emergency Escape	1	Safety Equipment Room

The Facility also maintains an alarm system that is activated automatically through the use of smoke and heat sensor units or manually by wall-mounted pull down switches located at various points throughout the building. In addition, the Facility is provided with an overhead sprinkler system.

A wind sock is located on top of the Administrative Office Building. The wind sock is a reliable device to Facility personnel in determining wind direction and approximate velocity.

Supplemental emergency equipment, supplies, and contracting services are available, if needed, from off-site sources. The following contractors may be contacted by Republic for assistance:

1. MPC Environmental 313.849.2333
2. Valicor Environmental 313.724.8600

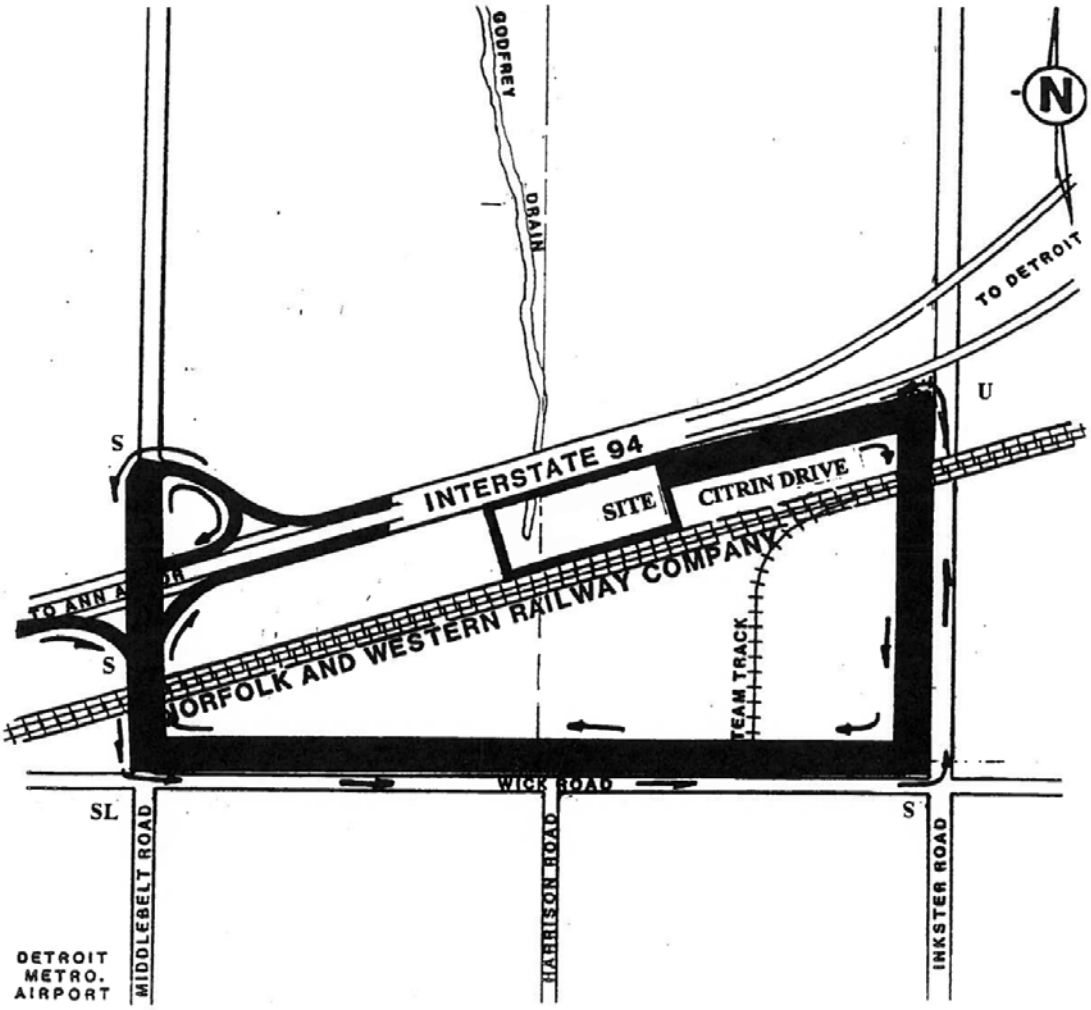
FORM EQP 5111 ATTACHMENT A8
TRAFFIC INFORMATION

This license application Attachment generally describes the traffic routes for the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility located at 28470 Citrin Drive, Romulus, Michigan.

The traffic route for hazardous waste transport vehicles to enter the Republic Facility is shown in Appendix A8.A. This route is provided to all commercial hazardous waste transportation firms that plan to transport hazardous wastes to the facility.

APPENDIX A8.A TRAFFIC ROUTES

Figure A9-1



FORM EQP 5111 ATTACHMENT A9
LOCATION INFORMATION

This license application Attachment demonstrates that the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility located at 28470 Citrin Drive, Romulus, Michigan meets the location standards of 40 C.F.R. § 268.18.

This attachment is organized as follows:

A9.A Location
A9.B Seismic Considerations
A9.C Floodplains
Appendix A9.A Flood Stage Analysis

A9.A LOCATION

The Republic Facility is located at 28470 Citrin Drive, Romulus, Michigan, 48174. The active portion of the Facility occupies approximately 5.9 acres of the larger 15 acre site/parcel. The Facility location and legal description of the site are shown on Dwg. No. C2.01, attached as Appendix A1.A of Attachment A1 to this Application. An aerial photograph of the existing Facility is provided as Appendix A1.H of Attachment A1 to this Application. Topographic details of the Facility are shown on Dwg. No. C2.02 of Appendix A1.B of Attachment A1. A topographic map of the Facility and surrounding areas is provided as Appendix A13.A of Attachment A13 of this Application.

A9.B SEISMIC CONSIDERATIONS

The State of Michigan is not listed in Appendix VI of 40 CFR 264 as one of the political jurisdictions in which compliance with 40 CFR 264.18(a), seismic considerations, must be demonstrated: therefore, no further information is required to demonstrate compliance with the regulation.

A9.C FLOODPLAINS

The Republic Facility is not within a 100-year floodplain. The Godfrey Drain, which is adjacent to the Facility, had its discharge rates analyzed by Ayres, Lewis, Norris and May ("Ayres Lewis") of Ann Arbor, Michigan (prior to Facility construction) using the 100-year, 24-hour storm run-off flow rates because the Godfrey Drain had not been modeled as part of the Federal Insurance Administration Flood Insurance Program. Based on Ayres, Lewis analysis of the data, a 100-year floodplain elevation was determined for the Godfrey Drain to be 627 MSL. Thus, the Facility is not within a 100-year floodplain.

The Flood Stage Analysis prepared by Ayres Lewis, was attached as Appendix 10.00-3 to the Hazardous Waste Management Facility Construction Permit application for the Facility. A copy of this report is attached hereto as Appendix A9.A.

APPENDIX A9.A FLOOD STAGE ANALYSIS

REPORT

ENVIRONMENTAL DISPOSAL SYSTEMS, INC.
FLOOD STAGE ANALYSIS
FOR THE
GODFREY DRAIN

September, 1996

Ayres, Lewis, Norris & May, Inc.
Engineers - Planners - Surveyors

The Godfrey Drain, which traverses the property for the propsed EDS project provides drainage for approximately 92 acres of developed and undeveloped land. The Godfrey Drain has not been modeled as part of the Flood Insurance Program and because the drainage area, at this location, is less than two square miles there has not been any analysis by the Michigan Department of Environmental Quality.

In the review of this site the drainage area was determined to be approximately 91 acres. Because of this limited size the Rational Formula was used to determine the flow for the drainage area. The existing drainage consists of primarily fields and woodland areas with a railroad track and a small industrial area. A weighted average "c" factor was calculated for the drainage area and used in the calculation. The 100 year rainfall intensity equation was used to determine the peak flow.

RATIONAL FORMULA

Q = cIA

I = 275/(t+25)

t = 100

I = 275/125

I = 2.20

Q = (.2)*(2.20)*(91)

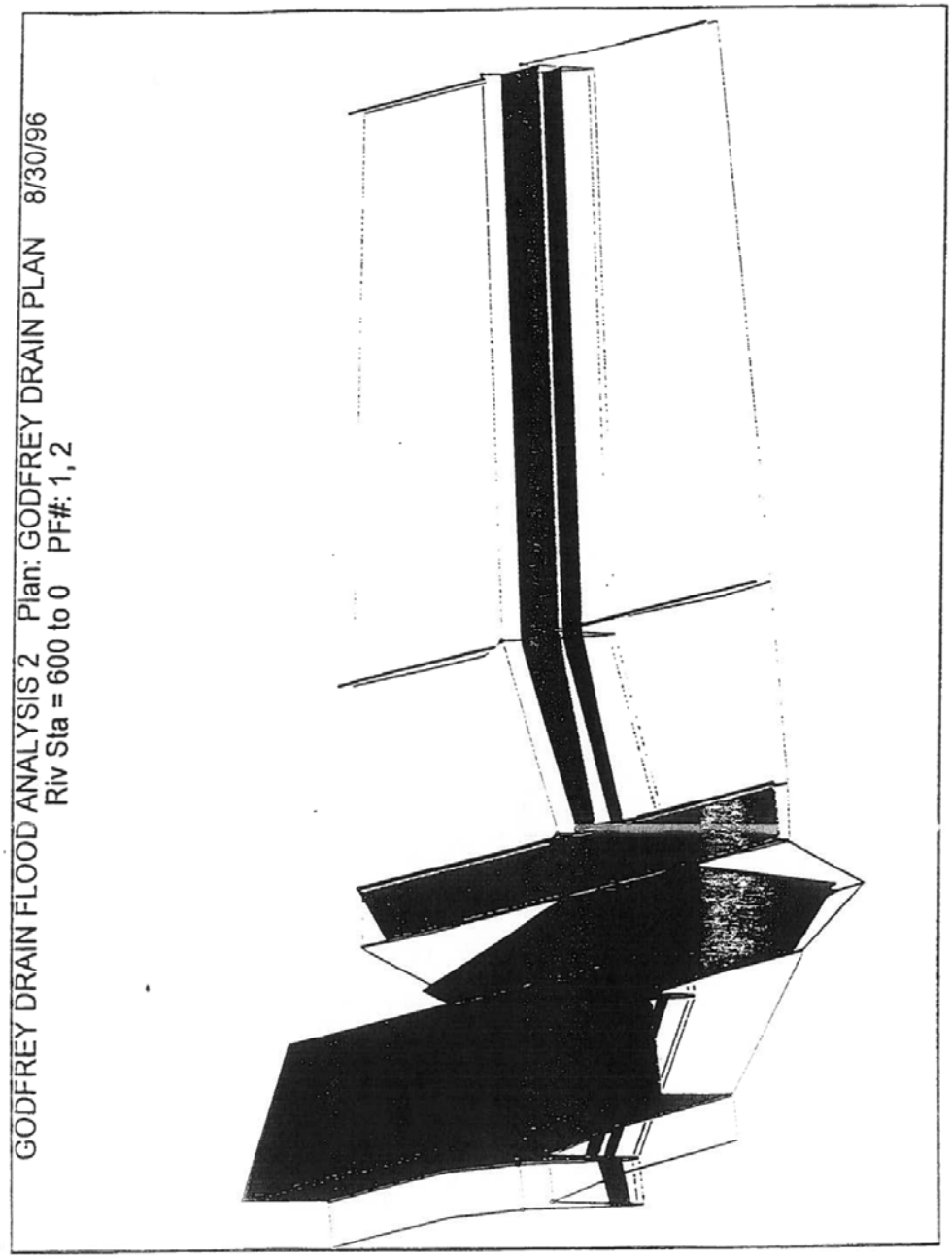
Q = 40 cfs

The calculated flows were modeled using the U. S. Army Corps of Engineers HEC - RAS Program. The n values were selected based upon V. T. Chows guidelines, as described in his text. Cross sections were taken from topographic maps of the site as well as field checks of the inverts of the existing culverts. The output of this analysis is presented in the following pages. A plot of the the three dimensional view of the cross sections and the water surface elevations is presented on page 3, with I - 94 to the left side of the page. A table of the calculated values for the analyzed conditions is

1

presented on pages 4 and 5 . A plot of the water surface profile with the channel invert and top of banks is presented on page 6 , with I - 94 to the left of the page.

2


GODFREY DRAIN FLOOD ANALYSIS 2 Plan: GODFREY DRAIN PLAN 8/30/96
Riv Sta = 600 to 0 PF#: 1, 2

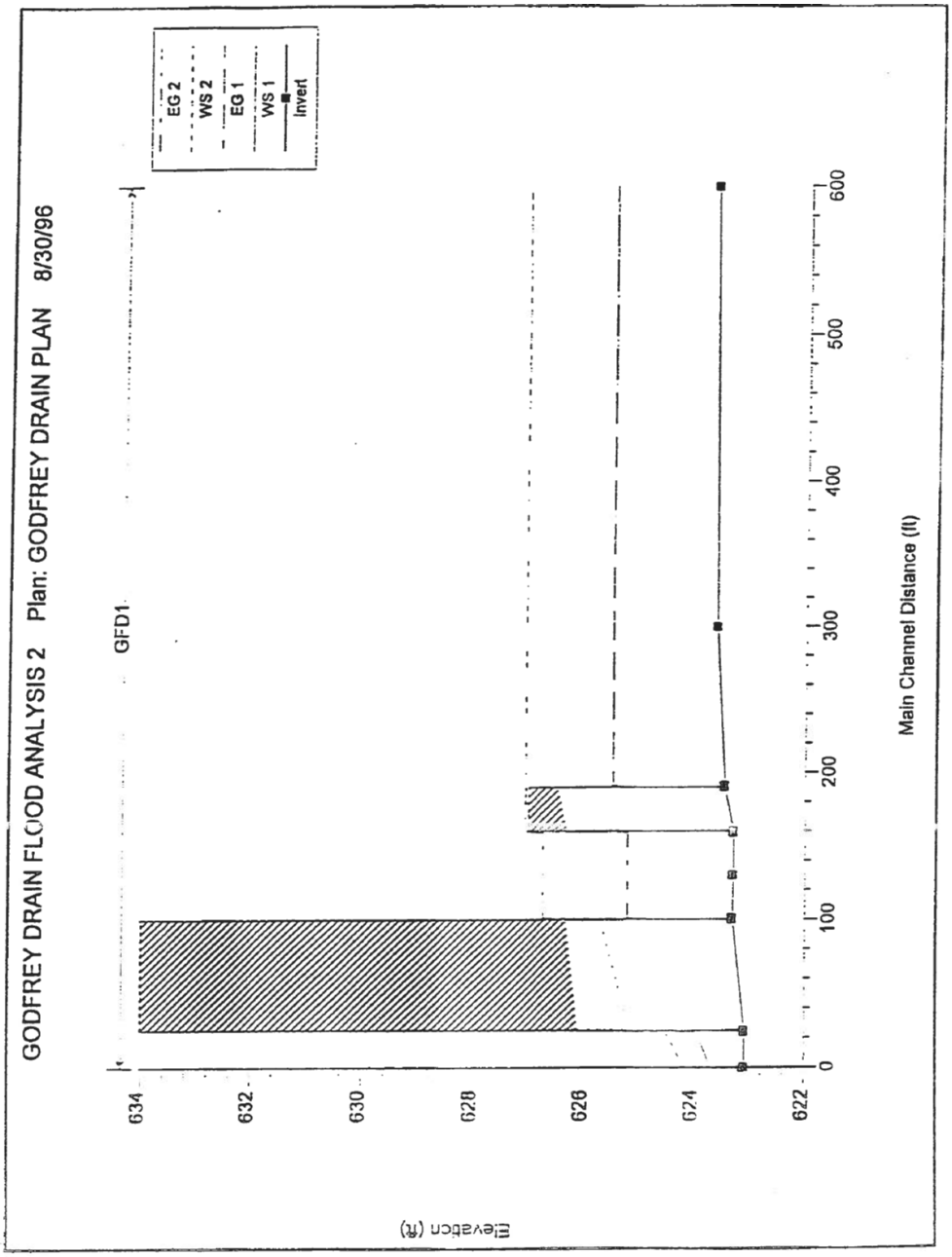
3

HEC-RAS Plan: GFD Reach: GFD1 9/10/96

River Sta.	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top width (ft)
[illegible]	15.00	623.68	625.52	624.24	625.52	0.000073	0.69	21.77	18.70
[illegible]	40.00	623.68	627.08	624.60	627.09	0.000033	0.67	60.10	30.02
[illegible]	15.00	623.61	625.50	624.16	625.50	0.000071	0.62	24.13	20.58
[illegible]	40.00	623.61	627.07	624.57	627.08	0.000032	0.60	66.77	33.00
[illegible]	15.00	623.46	625.47	624.16	625.49	0.000204	1.12	13.37	9.31
[illegible]	40.00	623.46	627.04	624.72	627.07	0.000145	1.28	31.30	13.47
[illegible]	Culvert								
[illegible]	15.00	623.30	[illegible]	623.9	625.22	0.000171	0.99	15.17	11.94
[illegible]	40.00	623.30	[illegible]	[illegible]	626.73	0.000068	0.93	65.70	138.21
[illegible]	15.00	623.30	[illegible]	[illegible]	625.21	0.000018	0.37	120.09	290.20
[illegible]	40.00	623.30	[illegible]	[illegible]	626.73	0.000003	0.23	635.57	350.00
[illegible]	15.00	623.31	[illegible]	[illegible]	625.21	0.000131	0.89	16.89	12.89
[illegible]	40.00	623.31	[illegible]	[illegible]	626.72	0.000064	0.86	71.33	241.55
[illegible]	Culvert								
[illegible]	15.00	623.09	[illegible]	[illegible]	624.06	0.002502	2.55	5.87	[illegible]
[illegible]	40.00	623.09	[illegible]	[illegible]	624.71	0.002839	3.55	11.25	[illegible]
[illegible]	15.00	623.09	[illegible]	[illegible]	623.94	0.009142	3.99	3.76	[illegible]
[illegible]	40.00	623.09	[illegible]	[illegible]	624.58	0.008168	5.18	7.72	[illegible]

HEC-RAS Plan: GFD Reach: GFD1 9/10/96

River Sta	E/G Elev (ft)	W/S Elev (ft)	Crit Depth (ft)	Q & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
600	625.52	625.52	0.02	0.00		15.00		18.70
600	627.09	627.08	0.01	0.00		40.00		30.02
300	625.50	625.50	0.01	0.00		15.00		20.58
300	627.08	627.07	0.01	0.00		40.00		33.00
191	625.49	625.47	0.00	0.00		15.00		9.31
191	627.07	627.04	0.00	0.00		40.00		13.47
159	625.22	625.20	0.00	0.00		15.00		11.94
159	626.73	626.72	0.00	0.00	4.04	34.88	1.08	138.21
130	625.21	625.21	0.00	0.00	3.28	10.84	0.89	290.20
130	626.73	626.73	0.00	0.00	15.78	13.79	10.43	350.00
101	625.21	625.20	0.00	0.00		15.00		12.89
101	626.72	626.71	0.00	0.00	4.35	35.40	0.24	241.55
23	624.06	623.96	0.10	0.01		15.00		8.54
23	624.71	624.51	0.11	0.02		40.00		10.80
0	623.94	623.69	0.00	0.00		15.00		7.46
0	624.58	624.16	0.00	0.00		40.00		9.38


GODFREY DRAIN FLOOD ANALYSIS 2 Plan: GODFREY DRAIN PLAN 8/30/96
GFD1
EG 2
WS 2
EG 1
WS 1
Invert
Elevation (ft)
634
632
630
628
626
624
622
0
100
200
300
400
500
600
Main Channel Distance (ft)

6

FORM EQP 5111 ATTACHMENT A10
PERSONNEL TRAINING

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of the Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9501, R 299.9605 and Title 40 Code of Federal Regulations (CFR) §§264.16 and 270.14(b)(12), establish requirements for personnel training programs at hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template addresses requirements for a personnel training program at the hazardous waste management Facility for the Republic Facility in Romulus, Michigan. The information included in the template demonstrates how the Facility meets the personnel training requirements for hazardous waste management facilities.

This template is organized as follows:

A10.A CONTENT OF INTRODUCTORY AND CONTINUING EDUCATION PROGRAMS
- A10.A.1 Outline for Introductory Training Program
- A10.A.2 Outline for Continuing Education

A10.B PERSONNEL SUBJECT TO TRAINING REQUIREMENTS
- A10.B.1 Job Titles and Job Descriptions
- A10.B.2 Description of How Training is Designed to Meet Actual Job Tasks
- Table A10.B.1 Job Titles/Descriptions

A10.C FREQUENCY OF REQUIRED TRAINING
- A10.C.1 Initial Training
- A10.C.2 Continuing Education

A10.D TRAINING DIRECTOR

A10.E DOCUMENTATION AND RECORD KEEPING
- A10.E.1 Documentation
  - A10.E.1(a) Job Titles
  - A10.E.1(b) Written Job Descriptions
  - A10.E.1(c) Written Description of Type and Amount of Training Given to Each Position
  - A10.E.1(d) Documentation That Training Has Been Given to and Completed by Facility Personnel
- A10.E.2 Record Keeping
- Appendix A10-1 Organization Chart

A10.A CONTENT OF INTRODUCTORY AND CONTINUING EDUCATION TRAINING PROGRAMS

[R 299.9605 and 40 CFR §264.16(a)]

The Republic Training Program encompasses both Introductory and Continuing Education (i.e., "Refresher") Training in conformance with R299.9605 and 40 CFR 264.16 (a).

A10.A.1 OUTLINE FOR INTRODUCTORY TRAINING PROGRAM

[R 299.9605 and 40 CFR §§264.16(a)(1) and 264.16(d)(3)]

1. Introduction to the Quality Assurance Program (i.e., SOPs).
2. RCRA Training (pursuant to 40 CFR 264.16) including:
   a. Review of RCRA definitions and terminology
   b. Generator Responsibilities & Identification of Hazardous Wastes
   c. Handling, Labeling, Marking & Storage Requirements
   d. Universal waste, non-hazardous wastes & Waste Minimization
   e. Manifesting, Transportation, Treatment & Disposal
   f. Contingency Plan & Emergency Response
3. The Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard Initial and 8-Hour Refresher Training
   a. Contingency Plan Review
      i. Spill Response Procedures
      ii. Work Zones
      iii. Decontamination
      iv. Fire Emergency Response
      v. Evacuation Protocol and Procedures
         1. Automatic Waste Feed Cutoff System Operation
         2. Emergency Equipment Shutdown
   b. Hazard Recognition
      i. Physical Hazards
      ii. Chemical Hazards
      iii. Chemical Properties
      iv. Working With Hazardous Wastewater
      v. Health Effects of Working With Hazardous Wastewater
   c. Air Monitoring
      i. Types of Monitoring Equipment
      ii. Proper Use of Equipment
      iii. Equipment Capabilities and Limitations
      iv. Equipment Maintenance and Calibration
      v. Action Levels

   d. Personal Protective Equipment
      i. Level of PPE
      ii. Proper Use of PPE
      iii. Limitations of PPE
   e. Respiratory Protection
      i. Types of Respiration
      ii. Proper Use of Respirators
      iii. Respirator Maintenance and Inspection
      iv. Fit Test
   f. Emergency Equipment
      i. Types of Equipment
      ii. Proper Use of Equipment
      iii. Maintenance and Inspection
   g. Discussion of Past Incidences
   h. Discussion of Conducting Emergency Response Scenarios
      i. Fire
      ii. Spill
      iii. Evacuation
4. Hydrogen Sulfide Emergency Procedures
5. Heat Stress Program and Procedures
6. Hazard Communication Program
7. Reporting Injury/Illness and OSHA Recordkeeping Requirements
8. OSHA Laboratory Standards (including QA/QC Program)
9. Bloodborne Pathogens (general requirements)
10. Lockout/Tagout (general requirements)
11. Safety Information and Requirements for Visitors
12. Confined Space
    a. Review Procedures
    b. Walkthrough
13. Republic Security Procedures and Traffic Control Plan
14. Vehicle, Railcar and Container Unloading Procedures
15. Sampling Procedures
16. Treatment Operations
    a. Review Procedures
    b. Walkthrough
17. Deepwell Operations
    a. Review Procedures
    b. Walkthrough
18. Tank Cleaning
19. Handling Drums
20. Substance Abuse

21. Continuous Improvements
22. Customer Service
23. 360 Degree Feedback
24. Review
25. Administer QAP Examination

A10.A.2 Outline for Continuing Education

[R 299.9605 and 40 CFR §§264.16(a)(1) and 264.16(d)(3)]

All onsite personnel employed by Republic are trained and tested annually on the location and use of emergency equipment and receive the training outlined in A10.A.1 above. This is verified by training records.

A10.B PERSONNEL SUBJECT TO TRAINING REQUIREMENTS

[R 299.9605 and 40 CFR §§264.16(a),(d)]

All onsite personnel employed by Republic are required to complete the training requirements listed in A10.A1 and A10.A2 and be certified that they have received the training.

A10.B.1 Job Titles and Job Descriptions

[R 299.9605 and 40 CFR §§264.16(d)(1),(2)]

The following table provides the job descriptions for significant positions with Republic . An organization chart is attached as Appendix A10-1. Appropriate personnel will be on Site for treatment and/or deepwell operations.

TABLE A10.B.1 JOB TITLES/DESCRIPTIONS SITE ID NO. MIR 000 016 055

Title	Duties	Minimum Skills/Education
Division Manager	• Oversee operation of Facility treatment processes, storage facilities, and environmental control systems • Serve as primary Emergency Coordinator. • Manage implementation of the Contingency Plan. (Attachment A.7) • Supervise compliance and health, safety and environment	M.S. or B.S. in a relevant science or engineering degree. Need at least 5 years of related job experience, including environmental regulations and management of hazardous waste. 40-Hour HAZWOPER Training (29 CFR 1910.120) Applicable Republic Training

TABLE A10.B.1 JOB TITLES/DESCRIPTIONS SITE ID NO. MIR 000 016 055

Title	Duties	Minimum Skills/Education
Deepwell Operator*	• Supervise and/or perform all deepwell operations	High school diploma 40-Hour HAZWOPER Training (29 CFR 1910.120). Applicable Republic training, and EGLE certification to operate deepwell.
Treatment Operator*	• Supervise and/or perform all treatment operations	High school diploma 40-Hour HAZWOPER Training (29 CFR 1910.120). Applicable Republic training.
Plant Staff**	• Assist in Facility operations at the direction of the Division Manager, Deepwell Operator, Treatment Operator, or Laboratory Manager	High school diploma. 40-Hour HAZWOPER Training (29 CFR 1910.120). Applicable Republic Training

TABLE A10.B.1 JOB TITLES/DESCRIPTIONS
SITE ID NO. MIR 000 016 055

Title	Duties	Minimum Skills/Education
Laboratory Manager*	• Oversee sampling and analysis activity at plant. • Maintain inventory of hazardous wastes. • Prepare outgoing wastes for off-site shipment, including completion of accompanying manifest paperwork. • Take representative samples of all incoming hazardous wastes following the sampling protocol set out in the Waste Analysis Plan. • Analyze the key parameters of hazardous waste samples for their respective key parameters. Follow the methodology stated in the Waste Analysis Plan. • Inform the Treatment Operator if waste samples exceed process tolerance. • Review proposed incoming waste streams. • Coordinate receipt of approved wastes. • Supervise manifest checking regarding acceptability of shipments and the logging of required information.	M.S. or B.S. in Chemistry At least 2 years of related job experience. 40-Hour HAZWOPER Training (29 CFR 1910.120). Applicable Republic Training
Training Director (May be outsourced)	• Implement training and review programs. • Respond to staff questions and concerns regarding health and safety issues.	Minimum B.S. in chemistry, engineering, or environmental science. 40-Hour HAZWOPER Training (29 CFR 1910.120). Applicable Republic Training

*These positions may function as Alternate Emergency Coordinator.
**Plant Staff that meet the qualifications of the Deepwell Operator, Treatment Operator, or Laboratory Manager may also serve as Alternate Emergency Coordinator.

A10.B.2 Description of How Training is Designed to Meet Actual Job Tasks

[R 299.9605 and 40 CFR §§264.16(a)(1) and (d)(3)]

All new employees are given two weeks of supervised on the job training. Once training is complete the supervisor tests the training of the new hire. If that person is lacking the proper skills or knowledge another week of training will be provided. After three weeks of training the new employee will be tested again and established as an employee or removed to another position or terminated from Republic employment. A detailed list of the Training's design to meet actual job tasks by individual Training Elements follows:

1. Quality Assurance/Quality Control ("QA/QC") Program
2. Health & Safety ("H&S")
3. Hazardous Waste Operations and Emergency Response ("HAZWOPER")
4. CPR and first aid
5. Right to Know ("RTK")
6. Ergonomics
7. Evacuation
8. Facility security procedures
9. Working with hazardous wastes
10. Spill Prevention, Control and Countermeasure ("SPCC") and Contingency Plans ("CP")
11. Health effects of working with hazardous wastes
12. Personal Protective Equipment ("PPE")
13. Fire prevention and protection
14. Confined Space Entry ("CSE")
15. Environmental monitoring
16. Using, inspecting, repairing equipment
17. Communications and alarms systems
18. Response to fire and explosions
19. Response to groundwater contamination
20. Shutdown operations
21. Handling drums
22. Manifests
23. Recordkeeping
24. Tank cleaning
25. Vehicle unloading
26. Sampling
27. Documentation
28. Treatment operations
29. Deepwell operations
30. Bloodborne pathogens
31. Lock-out/Tag-out ("LOTO")
32. OSHA lab safety
33. Emergency planning
34. Automatic waste feed cutoff system
35. *Republic* work rules
36. Vacuum truck operation
37. Injury, illness reporting
38. Accident avoidance guidelines

39. Decontamination procedures
40. Heat stress
41. Spill response
42. Reporting procedures
43. Back injury
44. Crisis procedures
45. Hydrogen sulfide emergency
46. Safety awareness
47. Substance abuse
48. Continuous improvement
49. Client service
50. 360 degree feedback
51. Work procedures

The following categories of Republic personnel will be trained in all of the above elements: Division Manager, Treatment Operator, Deepwell Operator, Laboratory Manager, and Plant Staff. If Security staff is employed, they will be trained in at least the following elements; 1, 5-10, 17, 18, 30, 33, 41, and 44-50.

A10.C FREQUENCY OF REQUIRED TRAINING

[R 299.9605 and 40 CFR §§264.16(b), (c)]

An annual refresher to the training program is an annual requirement. All operations personnel attend certification classes or seminars and are certified every year. The training program described in A10.A.1 is also given to each operations employee within six months of hire.

A10.C.1 Initial Training

[R 299.9605 and 40 CFR §264.16(b)]

New employees receive the initial training outlined in section A10.A.1 within six months of hire. Existing employees that are transferring into a new position within the company receive job specific onsite training and supervision for the new position. For employees transferring to a new position, the initial training is not required since existing employees have had the initial training.

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A10.C.2 Continuing Education

[R 299.9605 and 40 CFR §264.16(c)]

Republic has internal company training modules that are required training on an annual basis to keep employees familiar with the inherent dangers on the job. This refresher supplements the initial training.

A10.D TRAINING DIRECTOR

[R 299.9605 and 40 CFR §264.16(a)(2)]

Republic will use outside contractors, or internal company trainers to provide the necessary annual and ongoing training for employees.

A10.E DOCUMENTATION AND RECORD KEEPING REQUIREMENTS
[R 299.9605 and 40 CFR §§264.16(d) and (e)]

The Facility maintains all job descriptions, tests, certifications, training logs and descriptions on site in both electronic form and paper file form. The Facility will also maintain information, such as resumes, documenting operations personnel qualifications, as necessary.

A10.E.1 Documentation
[R 299.9605 and 40 CFR §264.16(d)]

The Facility maintains all job descriptions, tests, certifications, training logs and descriptions on site in both electronic form and paper file form. Each training is documented by sign-in sheets for the attendees.

A10.E.1(a) Job Titles and Names of Employees Filling Each Job
[R 299.9605 and 40 CFR §264.16(d)(1)]

For job titles, refer to section A10.B.1.

Division Manager- John Frost
Deep Well Operator- Jim Forman, Anthony Warlix, Marvin Beier
Treatment Operator- Dalton Mullins, Tracy Lester, Dave Greggo, Gary Williams
Plant Staff- None at this time
Laboratory Manager- Jim Hawkins
Training Director- Christina Yancer

A10.E.1(b) Written Job Descriptions
[R 299.9605 and 40 CFR §264.16(d)(2)]

Refer to section A10.B.1. Republic may refine these job descriptions ,as needed, and provide such detail to EGLE in accordance with applicable Part 111 Rules.

A10.E.1(c) Written Description of Type and Amount of Training Given to Each Position
[R 299.9605 and 40 CFR §264.16(d)(3)]

All job required training is currently provided by an outside contractor and/or key management personnel by means of conference room lecture with familiarization of specific plant operations by Facility walk through. Job required training is performed annually. Individual job training is developed by on-the-job training in a two-week supervised period. This two-week period is supervised by senior staff or management where the individual employee performs tasks only as allowed by his/her supervisor after being shown how to perform job tasks by that supervisor. This training period is evaluated by the supervisor at the end of two weeks to determine if the employee is task sufficient or if additional training is required.

A10.E.1(d) Documentation That Training Has Been Given to and Completed by Facility Personnel

[R 299.9605 and 40 CFR §264.16(d)(4)]

All personnel that receive training sign an Attendance Sign-in Sheet that is filed with certifications and exam results that are maintained in an employee training file. Current training and curriculum vitae information is also on file with the EGLE, in the possession of the Southeast Michigan District Office inspector.

A10.E.2 Record Keeping

[R 299.9605 and 40 CFR §264.16(e)]

The Facility maintains all training documentation on file for the life of the Facility.

FORM EQP 5111 ATTACHMENT A11
CLOSURE AND POSTCLOSURE CARE PLANS

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (DEQ) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, (Act 451), R 299.9613 and Title 40 of the Code of Federal Regulations (CFR), Part 264, Subpart G, establishes requirements for the closure and, if necessary, postclosure care of hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003. This license application attachment addresses requirements for the proper closure and, if necessary, postclosure care of the hazardous waste management units and the hazardous waste management facility for the Republic Industrial and Energy Solutions, LLC in Romulus, Michigan. The information provided in this attachment was used to prepare the closure and postclosure care cost estimate provided in Attachment A12, "Closure and Postclosure Care Cost Estimates."

This attachment is organized as follows:

A11.A CLOSURE PLAN
- A11.A.1 Closure Performance Standard
- A11.A.2 Unit-Specific Information
- Table A11.A.1 Hazardous Waste Management Unit Information
- A11.A.3 Schedule of Final Facility Closure
- Table A11.A.2 Closure Activity Timing
- A11.A.4 Notification and Time Allowed for Closure
  - A11A.4(a) Extensions for Closure Time
- A11.A.5 Unit-Specific Closure Procedures
  - A11.A.5(a) Closure of Container Storage Areas
  - A11.A.5(b) Closure of Tank Systems
    - A11.A.5(b)(i) Closure of Receiving Tanks
    - A11.A.5(b)(ii) Closure of Primary Settling Tanks
    - A11.A.5(b)(iii) Closure of Sludge Tanks
    - A11.A.5(b)(iv) Closure of Secondary Storage Tank
  - A11.A.5(c) Closure of Surface Impoundments
  - A11.A.5(d) Closure of Waste Piles
  - A11.5.A(e) Closure of Landfills
  - A11.5.A(f) Closure of Incinerators
  - A11.5.A(g) Closure of Miscellaneous Units
    - A11.A.5(g)(i) Closure of Railcar Storage Area
    - A11.A.5(g)(ii) Unloading and Sampling Bay
  - A11.5.A(h) Closure of Boilers and Industrial Furnaces
  - A11.A.5(i) Other Closure Activities

A11.A.6 Certification of Closure
A11.A.7 Postclosure Notices Filed
A11.B POSTCLOSURE CARE PLAN
A11.B.1 Applicability
A11.B.2 Postclosure Care Objectives
A11.B.3 Postclosure Care Period Point of Contact
A11.B.4 Postclosure Care Activities
Table A11.B.1 Postclosure Monitoring and Maintenance
A11.B.5 Postclosure Care Plan Amendment
A11.B.6 Certification of Postclosure
Appendix A11.A Tank Cleaning Removal Procedures
Appendix A11.B Closure Plan Functional Elements Drawing
Appendix A11.C Closure Confirmation Soil Sampling And Analysis Procedures
Appendix A11.D Notice Letter (Expected)

A11.A CLOSURE PLAN

A11.A.1 Closure Performance Standard
[R 299.9613 and 40 CFR §264.111]

This Closure Plan is designed to ensure that the Facility will be closed in a manner that achieves the following:

a. Minimizes the need for further maintenance
b. Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, postclosure escape of hazardous wastes, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition byproducts to the groundwater, surface water, or atmosphere; and, as applicable
c. Complies with the unit-specific closure requirements for each of the following units:

(Check as appropriate)

☒ Use and management of containers	R 299.9614 and 40 CFR §264.178
☒ Tank systems	R 299.9615 and 40 CFR §264.197
☐ Surface impoundments	R 299.9616 and 40 CFR §264.228
☐ Waste piles	R 299.9617 and 40 CFR §264.258
☐ Land treatment[a]	R 299.9618 and 40 CFR §264.280
☐ Landfill	R 299.9619 and 40 CFR §264.310
☐ Incinerators	R 299.9620 and 40 CFR §264.351
☐ Drip pads[b]	R 299.9621 and 40 CFR §264.575

☒ Miscellaneous units	R 299.9623 and 40 CFR §§264.601-603
☐ Hazardous waste munitions and explosive storage[b]	R 299.9637 and 40 CFR §264.1202
☐ Boilers and industrial furnaces	R 299.9808 and 40 CFR §266.102(e)(11)

[a] Not included in the attachment
[b] *Not yet included in 40 CFR §264.111; therefore not considered*

Unit-specific closure procedures are discussed in Section A11.A.5 of this attachment for each unit type indicated above.

Republic will achieve the closure performance standard for the Facility by performing the following:

- Removal of the hazardous waste inventory from the Facility
- Decontaminating equipment used for operations and final Facility closure and managing decontaminated material at a permitted offsite facility if the onsite deepwells are unable to be used for liquid materials
- Cleaning and decontaminating access roads, storm sewers, catch basins, vaults, sumps, unloading area, and the Storm Water Runoff Vault ("SWRV")
- Dismantling and removing tanks, piping, pumps, filters and related components for reuse or salvage
- Sampling and testing of soils beneath and adjacent to the access roads, parking areas, railcar unloading area, and, the storm water detention pond
- Maintaining a groundwater monitoring system to monitor for constituent migration into the groundwater until at least Closure is certified
- Periodically conducting inspections of closed areas and performing maintenance/ replacement activities required to keep the monitoring system(s) in order until at least Closure is certified
- Properly managing decontaminated (and contaminated if present) equipment and materials in conformance with then-applicable regulations

In the event that contaminated soils require removal, Republic will submit a written removal plan to EGLE for approval and will amend this Closure Plan as necessary.

A11.A.2 Unit-Specific Information

[R 299.9613 and 40 CFR §§264.112(b)(3) and (6)]

The following table identifies each hazardous waste management unit at the Republic Facility subject to the closure requirements of this hazardous waste management facility operating license. The table also includes: each unit's maximum licensed hazardous waste inventory, a list of the waste codes managed in the unit, the anticipated date of closure (if known), and the estimated duration of closure activities once closure begins. Unit-specific methods for closure and detailed schedules are discussed in Section A11.A.3 and A11A.5 of this attachment.

TABLE A11.A.1 HAZARDOUS WASTE MANAGEMENT UNITS INFORMATION SITE ID NO. MIR 000 016 055				
Unit Designation	**Maximum Inventory (gallons)****	**HWM Codes**	**Scheduled Closure Date(est.)**	**Estimated Duration of Closure (days)**
Receiving Tanks	156,416	All*	2050	180
Primary Settling Tanks	40,620	All*	2050	180
Container Storage Area	11,000	All*	2050	180
Railcar Storage Area	92,000	All	2050	180
Sludge Tanks	40,000	All*	2050	180
Secondary Storage Tank	16,950	All*	2050	180
Sum	370,900			
* = All hazardous waste numbers ("codes") specified in Attachment A2, Section A2.A1, specifically; D002, D004 – D043, F001 – F012, F019, F024, F025, F032, F034, F035, F037 – F039, K001 – K011, K013 – K052, K060 – K062, K069, K071, K073, K083 – K088, K093 – K118, K123 – K126, K131, K132, K136, K140 – K145, K147 – K151, K156 – K159, K161, K169 – K172, K174 – K178, P001 – P018, P020 – P024, P026 – P031, P033, P034, P036 – P051, P054, P056 – P060, P062 – P078, P081, P082, P084 – P089, P092 – P099, P101 – P106, P108 – P116, P118 – P123, P127, P128, P185, P188 – P192, P194, P196 – P199, P201 – P205, U001 – U012, U014 – U039, U041 – U053, U055 – U064, U066 – U099, U101 – U103, U105 – U138, U140, U141 – U174, U176 – U194, U196 – U211, U213 – U223, U225 – U228, U234 – U240, U243, U244, U246 – U249, U271, U278 – U280, U328, U353, U359, U364, U365, U367, U372, U373, U387, U389, U394 – U396, U409 – U411.				
** = Reserved, unused capacity				

A11.A.3 Schedule of Final Facility Closure
[R 299.9613 and 40 CFR §264.112(b)(6)]

The Republic Facility:

(Check as appropriate)

☐ Anticipates completing final closure of the entire facility by *[insert estimated date]*

☒ Has not determined when the facility will close and does not anticipate completing final closure of the entire facility prior to expiration of the facility's hazardous waste operating license.

Republic is not expected to be closed before the license expires.

For purpose of this Closure Plan, Republic has divided the Facility into the fourteen functional elements depicted in the drawing attached as Appendix A11.B.

The following Table A11.A.3 is a detailed estimate of the amount of time needed to perform the closure activities for the fourteen elements.

TABLE A11.A.2 CLOSURE ACTIVITY TIMING
SITE ID NO. MIR 000 016 055

	Schedule Element	Day Starting Schedule Element	Day Ending Schedule Element
1.	**Removal of onsite tankers and railcars**		
	• Obtain disposal site approvals	1	15
	• Disposal	10	15
2.	**Closure of railcar storage area**		
	• Sampling	10	16
	• Analysis	10	26
	• Certification of Closure	12	30
3.	**Storm Water Runoff Vault**		
	• Emptying tank	10	15
	• Sampling	15	18
	• Analysis	18	28
	• Decommissioning Vault	28	35
	• Certification of Closure	35	40
4.	**Container Storage Area**		
	• Inventory existing containers	1	2
	• Sampling	1	5
	• Analysis	5	15
	• Waste mgmt. approvals	15	25
	• Removal of containers	25	30
	• Decontamination (i.e., Decon)	30	32
	• Decon verification sampling	32	34
	• Decon verification analysis	34	50
	• Certification of Closure	50	60

TABLE A11.A.2 CLOSURE ACTIVITY TIMING
SITE ID NO. MIR 000 016 055

	Schedule Element	Day Starting Schedule Element	Day Ending Schedule Element
5.	**Closure of Receiving Tanks**		
	• Inventory, sampling, testing, waste mgmt. approval	1	20
	• Waste removal	20	35
	• Sludge removal	22	35
	• Tank cleaning	22	40
	• Tank cleaning verification sampling	40	44
	• Tank cleaning lab analysis	44	54
	• Absorption system removal	54	54
	• Tank removal	54	65
	• Cleaning of containment areas, and sump areas	65	70
	• Sampling for verification of Clean Closure of secondary containment areas	70	72
	• Analysis for verification samples	72	82
	• Certification of Closure	82	100
6.	**Primary Settling Tanks**		
	• Inventory, sampling, testing, waste mgmt. approval	1	32
	• Waste removal	32	36
	• Sludge removal	36	38
	• Tank cleaning	38	45
	• Tank cleaning–verification sampling	45	46
	• Tank cleaning–lab analysis	46	56
	• Scrubber removal	56	56
	• Tank removal	56	60
	• Cleaning of containment areas	60	65

TABLE A11.A.2 CLOSURE ACTIVITY TIMING SITE ID NO. MIR 000 016 055			
	Schedule Element	**Day Starting Schedule Element**	**Day Ending Schedule Element**
	• Sampling of containment areas	65	66
	• Lab analysis – containment areas	66	76
	• Certificate of Closure	76	90
8.	**Secondary Storage Tank, Rinse Wastewater Vault, Sludge Tanks, Filters, Filter Press**		
	• Inventory, sample, test, obtain waste mgmt. approvals	1	15
	• Wastes and sludge removal	38	45
	• Cleaning of units	45	50
	• Cleaning – verification sampling	50	52
	• Cleaning – verification analysis	52	62
	• Remove equip./adsorption system	62	72
	• Cleaning containment areas	65	75
	• Sampling containment areas	70	75
	• Testing containment areas	75	85
	• Certification of Closure	85	100
9.	**Reagent Tanks**		
	• Inventory, analysis, remove product for reuse	1	15
	• Clean and rinse tanks	15	18
	• Cleaning – verification samples	18	18
	• Cleaning – verification analyses	18	28
	• Tank and adsorption system removal, reuse offsite	28	30
	• Clean containment areas	28	30
	• Sample containment areas	30	35
	• Analyze containment samples	35	45
	• Certification of Closure	45	50

TABLE A11.A.2 CLOSURE ACTIVITY TIMING SITE ID NO. MIR 000 016 055			
	Schedule Element	**Day Starting Schedule Element**	**Day Ending Schedule Element**
10.	**Laboratory**		
	• Inventory, sampling	1	5
	• Analysis	5	15
	• Closure – consolidate with 5 & 6 above, and/or Lab packing, cleaning	15	30
	• Certification of Closure	30	45
11.	**Unloading and Sampling Bay Closure**		
	• Clean general area	100	105
	• Sample surface areas	105	110
	• Analyze samples	110	120
	• Certification of Closure	120	180
12.	**General Plant Area including roads, sewers, and catch basins**		
	• Sampling	100	105
	• Sample analyses	105	115
	• Certification of Closure	115	120
13.	**Stormwater Detention Pond Closure**		
	• Sampling	100	105
	• Sample analyses	105	115
	• Certification of Closure	115	180
14.	**Groundwater Monitoring and Soil Sampling and Analyses**		
	• Sampling	100	105
	• Sample analyses	105	115
	• Certification of Closure	115	180
	Total Closure Period		180 days

A11.A.4 Notification and Time Allowed for Closure
[R 299.9613 and 40 CFR §§264.112(d)(2) and 264.113(a) and (b)]

Final closure activities will be initiated within 90 days of receipt of the final volume of hazardous wastes and will be completed within 180 days of receipt of the final volume of waste. The tasks and estimated time required for partial closure shall follow the schedule specified in Section A11.A.3. The EGLE Director will be

notified by Republic 60 days before final closure begins. Final closure will be certified by both the Republic Division Manager and a an independent, qualified, registered professional engineer of the State of Michigan.

A11.A.4(a) Extensions for Closure Time

[R 299.9613 and 40 CFR §264.113(a) and (b)]

(Complete if applicable)

In the event that an extension for closure for the Facility or any HWM unit is necessary, Republic will request an extension in accordance with the requirements of 40 CFR 264.113 (a).

A11.A.5 Unit-Specific Closure Procedures

Unit-specific closure procedures are provided above for each unit identified in Section A11.A.2 of this attachment. Piping associated with all units to be closed and as described below will be drained to the appropriate connected unit prior to closing, removed as required and triple rinsed. Once all surfaces are triple-rinsed, each of these areas will be examined visually. Any structural components which cannot be decontaminated by triple rinsing shall be removed and managed off site. Any piping removed will be scrapped, or, if required, disposed of at a licensed hazardous waste management facility. To the extent closure will involve environmental sampling under secondary containment systems or other structures, sample areas will be focused in areas where breaches of containment or releases are evident.

A11.A.5(a) Closure of Container Storage Area

[R 299.9614 and 40 CFR §264.178]

This section describes the procedures for closure of the Container Storage Area at the Facility.

The Container Storage Area is the area where containerized wastes are off-loaded from trucks, stored within the Facility, and processed and transferred to the Receiving Tanks ("RT"s). The entire Container Storage Area consists of reinforced concrete containment areas, coated with a chemically-resistant sealant. Collection trenches are located within the containment area.

To meet the requirements of the closure performance standard, high-pressure hot water cleaning equipment will be used. Prior to cleaning a containment unit, the unit will be inspected to confirm its integrity. All equipment coming into contact with hazardous waste will be decontaminated at closure or will be characterized, packaged, manifested and transported to a disposal facility authorized to accept the waste.

Decontamination will be confirmed by visual inspections.

Closure of the Container Storage Area will consist of the following four major work activities:

1. Removal of the waste inventory from the staging area
2. Decontamination of the containment areas
3. Decontamination of the auxiliary equipment
4. Closure certification testing and documentation

Approvals for off-site recycling and/or disposal of containers will be obtained and the containers and their contents (if any) will be shipped offsite for recovery, reuse and/or disposal.

Because the floor within the container storage area is constructed of reinforced concrete coated with a chemically-resistant coating, and since spill cleanup procedures will be followed within the building, contamination of soil beneath the building is unlikely. However, the soil beneath the concrete flooring will be sampled at four locations.

There is no partial closure anticipated for the Container Storage Area. Under no condition will be contaminated materials remain within the Container Storage Area following closure. Because the unit will be closed "clean", no post-closure is required. The Container Storage Area will be closed when operations permanently cease at the Facility.

Liquids generated during high-pressure cleaning of the containment areas will be collected within the trenches and pumped into a (vacuum) truck that will transfer the liquids into the treatment system for treatment and disposal, or they will be disposed off-site. Precautions will be taken during decontamination procedures to ensure that all such liquids are collected.

The concrete containment areas (curbs, floors and walls) will not be removed as part of closure because they may be utilized after closure for other purposes.

A11.A.5(b) Closure of Tank Systems
[R 299.9615 and 40 CFR §264.197]

This section describes the procedures for closure of tank systems at the Facility. The general closure requirement and specific closure procedures are discussed below.

At closure of a tank system, the Republic Facility will remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment contaminated with waste, and manage them as hazardous waste, unless 40 CFR §264.3(d) applies. If the Republic Facility demonstrates that not all contaminated soils can be practicably removed or decontaminated, then the tank system will be managed in accordance with the closure and postclosure care requirements that apply to landfills.

A11.A.5(b)(i) Closure of Receiving Tanks
[R 299.9615 and 40 CFR §264.197]

This section describes the procedures for closure of the Receiving Tanks at the Facility.

At closure of the Receiving Tank systems, Republic will remove or decontaminate all waste residues, contaminated containment system components, contaminated soils (if any), and structures and equipment contaminated with waste, and manage them as hazardous waste, unless 40 CFR 264.3(d) applies. If Republic demonstrates that not all contaminated soils can be practicably removed or decontaminated, then the tank systems will be managed in accordance with the closure and postclosure care requirements that apply to landfills.

Closure of the Receiving Tanks will be accomplished in the following steps after the removal of inventory:

1. For each tank the liquid waste level and thickness of settled solids will be measured from openings in the top of the tank. Once those measurements are made, liquid waste in the tank will be processed through the treatment and disposal system if it can be injected into the deep wells, or, the waste will be pumped into a tanker or vacuum truck for treatment or disposal at a licensed treatment, storage & disposal facility ("TSDF"). Solids will then be pumped or vacuumed into trucks for appropriate offsite management as well.
2. Prior to disposing of any of the liquid waste or solids, laboratory analysis as required by the TSDF will be performed to characterize the material to determine if it can be legally accepted by the candidate offsite hazardous waste management facility. The types of testing required for characterization will depend on the specific Facility's requirements. This characterization process will be used for all wastes to be shipped off site.
3. Hazardous waste materials will only be allowed to be transported off site when a written approval is received from a licensed and/or permitted hazardous waste management facility. Prior to leaving the Facility the waste will be manifested indicating the generator's name, address and disposal facility. Republic will sign the manifest as the generator and will provide the manifest to the transporter.
4. Hazardous waste materials will not be removed from the tanks or other equipment until a hazardous waste management facility approval has been obtained. Once waste material has been removed and placed in a transport vehicle, it will be removed from the Facility.
5. Prior to removing all of the liquid waste from a tank, the piping will be purged back into its appropriate tank, and the piping leading to and from the tank will be cleaned by triple rinsing with water through these pipes back into the tank. The rinse water will be collected in the tank for management as discussed in steps 1-4 above.
6. Once the liquid wastes are removed from the tanks, preparations will be made to remove solids from the bottoms of the tanks and to clean the interiors of the tanks. These preparations will consist of venting vapors from the tanks through the air quality adsorption system by displacing vapors using nitrogen. Once vapors are believed to be fully displaced, the nitrogen will be released by opening the tank cover and testing the air in the tank using an LEL ("lower explosive limit") meter and a gas detection meter.
7. Triple rinse cleaning procedures will be conducted by standard procedures provided in Appendix A11.A, followed by visual inspection to verify the tanks are clean.
8. Sumps, pumps, and piping will all be disassembled as required and triple rinsed in a secondary containment area and removed from the Facility to a scrap yard or recycling facility location. The secondary containment floors and walls will be triple rinsed, rinsates collected in the containment area, and the rinsates will either be processed through the onsite treatment and disposal system or then will be containerized and transported to an appropriate waste management facility as in steps 1-4 above.
9. Each tank will then be removed and sold or scrapped, or left in place for future use.
10. If the integrity of the secondary containment system appears compromised, after cleaning of the tanks, concrete from the floor and soil from six inches beneath the floor shall be sampled and analyzed pursuant to a plan approved by EGLE. Any remediation required will be detailed in a Remedial Action Plan to be submitted to EGLE within sixty calendar days of verifying the presence of soil contamination. If the soils are found to not be impacted, the borings will be grouted with a bentonite grout.

11. Records of the sale or scrapping of tanks, if any, and manifests will be collected and reported in the Closure Certification Report(s).
12. Once all surfaces are triple-rinsed, each of these areas will be examined visually. Any structure components which cannot be cleaned by triple rinsing shall be removed and managed as hazardous waste off site. The containment areas will then be left as is until a determination has been made as to how the property will be used.

A11.A.5(b)(ii) Closure of Primary Settling Tanks
[R 299.9615 and 40 CFR §264.197]

This section describes the procedures for closure of the primary settling tanks at the Facility. At closure of the tank systems, Republic will remove or decontaminate all waste residues, contaminated containment system components, contaminated soils (if any), and structures and equipment contaminated with waste, and manage them as hazardous waste, unless 40 CFR §264.3(d) applies. If Republic demonstrates that not all contaminated soils can be practicably removed or decontaminated, then the tank systems will be managed in accordance with the closure and postclosure care requirements that apply to landfills.

Closure of the Primary Settling Tanks will be accomplished in the exact same twelve steps as provided in A11.A.5(b) (i) after the removal of inventory.

A11.A.5(b)(iii) Closure of Sludge Tanks

Sludge remaining in these tanks and associated pumps will be processed though the filter press. The tanks will be cleaned and triple rinsed in accordance with the procedures described above regarding Receiving and Primary Settling Tanks. All cleaned areas shall be inspected visually to confirm they are clean. Any material remaining shall be removed and managed off-site. Rinse waters will be processed through the disposal system, if operable, or transported offsite for appropriate management. The tanks will be scrapped, sold, or left in place for a future use. The pumps associated with these thanks will be drained, cleaned, scrapped, sold, or left in place for a future use. Additionally, the Filter Press and Filtration Systems comprise a portion of the sludge handling system so their closure is provided here.

Once the filter press is no longer needed for closure operations, it will be emptied, cleaned, and sold or left in place for a future use. Any remaining sludge in the roll off boxes will be left in place until they can be transported for proper hazardous waste management. On-site generated waste will not be stored for more than 90 days. Roll off boxes ("ROB") shall be lined and covered. Filters will be removed from the filter components, placed in plastic bags, and managed with the sludge in the roll off boxes. The filter components will be drained and triple rinsed along with the removal of piping systems. All cleaned surfaces will be visually inspected to confirm that they are clean. Any material remaining shall be removed and managed off-site. These filter components will be sold or left on site for a future use.

A11.A.5(b)(iv) Closure of Secondary Storage Tank

This section describes the closure of the Secondary Storage Tank at the Facility.

At closure of the Secondary Storage Tank, Republic will remove or decontaminate all waste residues, contaminated containment system components, contaminated soils (if any), and structures and equipment contaminated with waste, and manage them as hazardous waste, unless 40 CFR 264.3(d) applies. If Republic demonstrates that not all contaminated soils can be practicably removed or decontaminated, then the Secondary Storage Tank will be managed in accordance with the closure and postclosure care requirements that apply to landfills.

Closure of the Secondary Storage Tank will be accomplished in the exact same twelve steps as provided in A11.A.5(b)(i) after the removal of inventory.

A11.A.5(c) Closure of Surface Impoundments
[R 299.9616 and 40 CFR §264.228(a)(1) and (2)]

There is no waste containing surface impoundment at the Facility.

A11.A.5(d) Closure of Waste Piles
[R 299.9617 and 40 CFR §264.258]

There is no waste pile at the Facility.

A11.A.5(e) Closure of Landfills
[R 299.9619 and 40 CFR §264.310(a)]

There is no landfill at the Facility.

A11.A.5(f) Closure of Incinerators
[R 299.9620 and 40 CFR §264.351]

There is no incinerator unit at the Facility.

A11.A.5(g) Closure of Miscellaneous Units
[R 299.9623 and 40 CFR §§264.601 through 264. 603]

This section describes the procedures for closure of the Railcar Storage area and the Loading and Sampling Bay The general closure requirement and specific closure procedures are discussed below.

A. <u>General Closure Requirement</u>

At closure the Republic Facility will ensure protection of human health and the environment by preventing releases of hazardous waste constituents into the groundwater or subsurface environment; onto soils; into surface waters or wetlands; and into the air.

A11.A.5(g)(i) Closure of Railcar Storage Area

This section describes the procedures for closure of the Railcar Storage/Unloading Area ("Railcar Storage Area") at the Facility.

At closure of the Railcar Storage Area, Republic will remove or decontaminate all waste residues, contaminated containment system components, contaminated soils (if any), and structures and equipment contaminated with waste, and manage them as hazardous waste, unless 40 CFR 264.3(d) applies. If Republic demonstrates that not all contaminated soils can be practicably removed or decontaminated, then the containment systems will be managed in accordance with the closure and postclosure care requirements that apply to landfills.

Closure of the Railcar Storage Area will be accomplished in the same twelve steps as provided in A11.A.5(b)(i)), with the provision that the words "containment system" replace "tank" in those twelve steps.

A11.A.5(g)(ii) Unloading and Sampling Bay

At closure of the Unloading and Sampling Bay, Republic will remove or decontaminate all waste residues, contaminated containment system components, contaminated soils (if any), and structures and equipment contaminated with waste, and manage them as hazardous waste, unless 40 CFR 264.3(d) applies. If Republic demonstrates that not all contaminated soils can be practicably removed or decontaminated, then the containment systems will be managed in accordance with the closure and postclosure care requirements that apply to landfills.

Closure will be accomplished in the same twelve steps as provided in A11.A.5(a), with the provision that the words "containment system" replace "tank" in those twelve steps.

A11.A.5(h) Closure of Boilers and Industrial Furnaces (BIF)

[R 299.9808 and 40 CFR §266.102(e)(11)]

There is no boiler or industrial furnace at the Facility.

A11.A.6 Certification of Closure

[R 299.9613]

Within 60 days of completion of closure, Republic Industrial and Energy Solutions, LLC will submit to the Director, by registered mail, a certification that the hazardous waste management units or Facility, as applicable, has been closed in accordance with the specifications in the approved Closure Plan ("CP"). The certification will be signed by Republic Industrial and Energy Solutions, LLC and by an independent registered professional engineer. Documentation supporting the licensed engineer's certification will be furnished to the Director in accordance with R 299.9613(3), including:

1. The results of all sampling and analyses;
2. The sampling and analysis procedures ;
3. A map showing the location where all samples were obtained;
4. Any statistical evaluations of sampling data;

5. A summary of waste types and quantities removed from the Facility and the destination of these wastes; and
6. If any soil has been excavated, the final depth and elevation of the excavation(s) and a description of the fill material(s) used; and

The Facility will maintain financial assurance for Closure until the Director releases the Republic Facility from the financial assurance requirements for Closure under R 299.9703.

The Facility's and independent registered professional engineer's Closure Certification will include the following statement;

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Republic will also provide a notice to the EGLE (see expected Notice Letter in Appendix A11.D).

A11.A.7 Postclosure Notices Filed

[R 299.9504(1)(c) and R 299.9508(1)(b) and 40 CFR §270.14(b)(14)]

The applicant must provide documentation that the postclosure notices required under 40 CFR §264.119 have been filed for hazardous waste disposal units that have been closed at the Facility. Republic will file any such notices, as appropriate, however, no such Post-closure notices are expected.

A11.B POSTCLOSURE PLAN

[R 299.9613 and 40 CFR §264.118]

A11.B.1 Applicability

(Check as appropriate)

☒ **Not applicable**: Hazardous waste will not be left behind at closure. A survey plat, postclosure care, postclosure certifications, and other notices are not required.

☐ **Applicable**:

- ☐ Contingent plan
- ☐ Landfill unit

Appendix A11.A Tank Cleaning Removal Procedures

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Tank Cleaning Removal Procedures

1. Purpose:

The purpose is to establish a standard operating procedure for cleaning tanks.

The following procedure for the cleaning of storage and treatment tanks was extracted from published guidelines.

2. Equipment and Materials

A. Tank Cleaning
The contractor(s) shall conduct the removal(s) in accordance with Fire Department regulations, requirements, and guidance (i.e., NFPA 30, Appendix C 2034 and 593 H Chapter 19) and have on-site equipment necessary to perform the following tasks for each tank.

- Drain and flush the piping contents into tank
- Access and remove liquids and sludge from tank using pumps, vacuum trucks or vacuum tankers
- Clean inside of tank using triple rinse high pressure water after degassing
- Disconnect, plug, and cap lines leading from tank
- Remove vapors from tank
- Visually inspect to verify tank is clean
- Plug and remove tank from Facility; and
- Decontaminate removal equipment including collection of wash water for proper (hazardous) waste management

3. Procedure for cleaning each tank.

A. The cleaning of each tank will be accomplished by following the procedure below.

1. Drain and flush the pipings' contents into the tank.

2. Remove all liquid from the tank which can be pumped out of the tank. It may be necessary to use a hand pump to remove the bottom few inches of material.

3. Remove the fill (drop) tube. Disconnect the fill, gauge, material, and vent lines. Cap or plug open ends of lines which are not to be used further.

4. Temporarily plug all tank openings.

5. Remove flammable vapors, if any. The tank will be conditioned by one of the methods described below or as required by local code (s) to ensure that no vapors remain.

6. If water is available and there is a suitable means for the proper management of wash water, the tank will be filled with water to expel vapors. While the tank is being filled with water, vapors may flow out of the tank into the surrounding area. Hence, all normal safety precautions will be observed regarding liquids and vapors including elimination of potential ignition sources for the area.

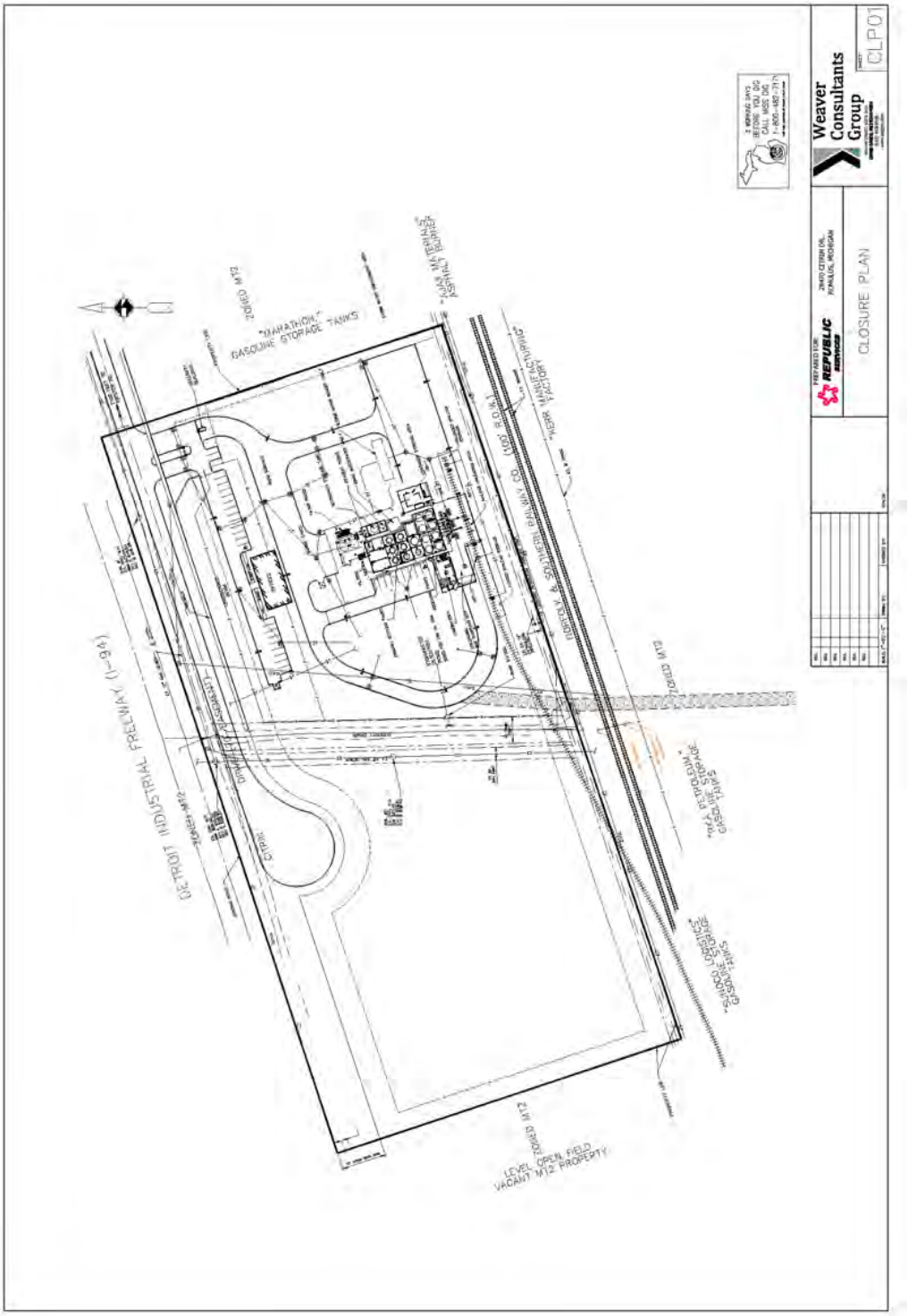
7. If the method described above in 3.A.6 is not practicable, the vapors in the tank will be made inert by adding solid carbon dioxide (dry ice) in the amount of 1.5 pounds per 100 gallons of tank capacity. The dry ice will be crushed and distributed evenly over the greatest possible area to secure rapid evaporation. Skin contact with dry ice will be avoided due to burn potential. As the dry ice vaporizes, vapors may flow out of the tank into the surrounding area. Hence, all normal safety precautions regarding flammable vapors will be observed including elimination of potential ignition sources from the area. Degassing will continue until the dry ice vaporizes.

8. An alternate method is to ventilate the tank with air or by other suitable means. The flow of air through an opening near one end of the tank and the discharge of the vapor-air mixture out of an opening near the opposite end will remove the vapor. The vapor concentration in the tank will be checked with a combustible gas meter to determine when the tank is vapor-free. While the tank is being ventilated, vapors may flow into the surrounding atmosphere. Hence all normal safety precautions regarding flammable vapors will be observed including elimination of potential ignition sources from the area.

9. After the tank has been freed of vapors and before the tank is moved from the Facility, the tank will be triple rinsed, all holes will be plugged or capped, and the tank will be inspected visually to verify it is clean. Screw plugs will be used to plug any corrosion leak holes. One plug will have a 1/8 inch vent hole to prevent the tank from being subjected to an excessive pressure differential (positive or negative) caused by extreme temperature changes.

10. If the Republic Facility is not then sold intact and the tanks are not sold, then each tank will then be recycled or disposed of in accordance with applicable laws.

Appendix A11.B Closure Plan Functional Elements Drawing



Appendix A11.C Closure Confirmation Soil Sampling and Analysis Procedures

Closure Confirmation Soil Sampling and Analysis Procedures

Closure confirmation soil sampling will be performed in each hazardous waste management area after decontamination at each of the hazardous waste management units areas specified in Table A11.A.2. For the purposes of this Closure Plan, it has been estimated that 156 samples will be taken (see Attachment A12 (Closure and Post-closure Care Cost Estimate) of this Application).

Sampling of soils beneath Facility components will take place following the decommissioning and decontamination of surface facilities. The objective of the closure soil sampling is to assess whether the secondary containment structures or other structures have potentially released hazardous waste constituents to soil.

Sampling collection and analysis procedures will be the same as those used for these activities performed during operations, except that soil sampling for volatiles will be collected using the "methanol preservation" method (SW-846 method 5035) followed by analysis by SW-846 8260, or the most recent update of SW-846 available prior to closure. All samples taken will be discrete samples.

Closure confirmation sample locations will be surveyed and marked on engineering drawings. Typically, each sample will be designated by a two-letter prefix, a three-digit number unique to each sampling location, and the depth of the mid-point of the sample interval in feet. Closure confirmation samples for the storm water detention pond will be collected of the native soils following the final sediment removal from the pond. A sampling grid will be established across the pond in accordance with EGLE guidance. Each sample will be uniquely designated as SDP-000, where SDP identifies a Storm Water Detention Pond sample and the last three numbers identify a specific sample.

Each soil sample from areas without building structures consists of approximately 0.5 kg of soil collected within the shallowest 6 inches of soil. The soil is collected with a steel trowel and placed into a disposable (one-use) aluminum pan. Large fragments of organic matter, such as leaf litter, roots, twigs, and gravel larger than 0.25 inches will be removed. The soil is placed into the sample containers until all of the containers are full. The bottom of the sample container is gently tapped to consolidate the soil, and additional soil is placed into the container to completely fill the container. The top and threads of the sample containers are wiped clean with dry, disposable (single-use) towels, and the cap is placed on the container. Consistent with EGLE approved methodologies the soil samples to be analyzed for volatile organic compounds, and at least 2 ounces of soil will be collected into a separate container for determination of the sample dry weight.

The soil samples collected under pavement, structures, or for closure monitoring will be obtained from beneath the pavement and concrete using 2.25-inch-inside-diameter hollow-stemmed augers (HSA) and split-barrel samplers. The pavement will first be cored and the base course removed to expose the surface of the soil. The first sample will be collected from the surface of the soil beneath the roadway base course to a depth of 2 feet. When additional samples are required, the HSA will be advanced to the bottom of the previous sample interval and the next sample will be collected.

Equipment that comes into contact with the actual soil sample will be decontaminated prior to each use. The equipment will then be dried with a disposable (single-use) paper towel. Drilling equipment will be steam-cleaned prior to the start or each closure boring.

All wastewaters generated during decontamination will be managed in a manner that prevents runoff, and shall be managed in accordance with applicable laws.

Field blanks (prepared by the laboratory using reagent-grade organic-free, de-ionized water) will accompany the closure samples at a rate of one blank per sampling event (minimum of one blank per day of sampling). These blanks are intended to assess the possible contamination of soil samples by the sampling equipment and/or sampling. The containers are opened in the field during the sample collection period and are then returned to the laboratory for analysis of the same constituents as the soil sample. A field blank will only be analyzed if the environmental sample with which it is associated has a quantifiable concentration of a monitoring constituent over a background concentration.

One replicate sample is collected for each ten samples during a sampling event by doubling the sampling volume at one, randomly selected, sampling location. All replicates are blind samples; that is, the laboratory does not know which environmental samples have been replicated. The replicates are used to assess the reproducibility of sampling and analysis techniques.

Documentation of sample collection is completed at the time of sampling. All sampling collection and handling will be performed by qualified personnel experienced in such work.

All samples and blanks are transferred to chilled coolers immediately following sample collection. The samples are then transferred to the on-site laboratory and placed into a refrigerator. Samples collected during the day are delivered or shipped by an overnight delivery service to the analytical laboratory at the end of each day of sampling. A bound field notebook is maintained for documentation of soil sampling. All entries to the notebook are made in ink. The notebook begins with a title page that identifies the Facility and a subject line that indicates that the notebook records soil sampling activity. The title page is followed by a table of contents that lists all sampling events by sample collection date. Chain of Custody records will be maintained for all samples and blanks collected as a result of the Closure Plan.

The record for each sampling event begins with the determination of sampling location.

The collection of each sample is then documented as follows:

a) Date and time of sample collection
b) Type and volume of sample containers filled
c) Chain-of-custody number for the sample
d) Description of soil sample (according to the Unified Soil Classification System [ASTM Method D2488, latest edition])

The final entry for the sampling event notes the disposition of the sample as follows:

a) Date and time of delivery to the on-site laboratory
b) Date and time of sample delivery to analytical laboratory

All pages of the notebook are signed and dated by the person(s) who made entries on that page.

A chain-of-custody record will accompany each sample to the laboratory. When the samples are surrendered at the laboratory, each chain-of-custody record is signed by the person transporting the samples and by a representative of the receiving laboratory. If an overnight delivery service is used to ship samples from the field to the laboratory, the person shipping the samples will show the samples being relinquished to the delivery service but signatures of delivery service personnel will not be required. The delivery service bill of lading will become part of the chain-of-custody record to document this step in the sample handling process. The laboratory makes a copy of each sheet for Republic and keeps the originals. Two copies are made upon return to the Facility: one for the operating log notebook and one for the Republic Administration office files. Upon completion of a full round of sampling, the field monitoring data and chain-of-custody records will be filed in the Republic Administrative offices.

Soil sampling will be performed beneath concrete floor slabs and other foundations, as required, to verify these soils have not been contaminated by plant operations. If contamination is found and remediation can be completed, verification of soil remediation will be performed per sampling requirements established in the MDNR (1994) Guidance Document.

Closure confirmation sampling will begin with sampling from beneath the vaults and sumps. These areas have the greatest potential to be exposed to a variety of waste materials that pass through a given containment area, since the exposure durations are likely to be the longest, and for soluble waste constituents, since the hydraulic heads that drive wastewater through the containment would be greatest.

The sampling points provided will be located based on the placement of vaults and sumps. Specific sampling points will be selected on the basis of field observations at the time of decommissioning. The sampling will focus on any significant cracks, holes, or other penetrations at the base of the walls and on the floor of the sumps. The closure samples will be collected from beneath or immediately adjacent to suspected penetrations of the containment. If no penetrations are apparent, the samples will be collected from beneath the center of vaults or sumps.

Soil samples will be analyzed for hazardous constituents previously managed at the Facility. Confirmation of a release of waste constituents in excess of the applicable cleanup criteria in effect at the time of closure will initiate a second phase of closure monitoring. This second-phase sampling will focus on the area immediately surrounding the implicated vault or sump. The second-phase sampling plan will be designed to delineate the extent and nature of the release(s) identified in the initial monitoring. The second-phase sampling plan(s) will be based on confirmed releases; therefore, they will be prepared for EGLE review following the initial closure monitoring described in this plan.

Appendix A11.D Notice Letter (Expected)

Date

Michigan Department of Environment, Great Lakes, and Energy
Environmental Resource Management Division
P.O. Box 30241
Lansing, Mi 48909
Attention: Director

Subject: Notice of Final Closure Certification for Hazardous Waste Management Units
Republic Industrial and Energy Solutions, LLC
Romulus, Michigan

Dear Director:

Republic Industrial and Energy Solutions, LLC (Republic) is providing Notice of final Closure of the following Hazardous Waste Management Units at the Republic Facility, located at 28470 Citrin Drive, Romulus, MI 48174.

The closure certification reports and certification statements are enclosed.

This notice is being provided to meet the requirements of R299.9613.

Sincerely,

Division Manager

Enclosures

FORM EQP 5111 ATTACHMENT A12
CLOSURE AND POSTCLOSURE CARE COST ESTIMATES

This license application attachment generally describes the hazardous waste management facility for the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility located at 28470 Citrin Drive, Romulus, MI 48174.

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) *Instructions for Completing Form EQP 5111, Operating License Applications Form for Hazardous Waste Treatment Storage and Disposal Facilities*. See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9702 and Title 40 of the Code of Federal Regulations (CFR), Part 264, Subpart H, establishes requirements for providing financial assurance for closure and, if necessary, postclosure care. Specifically, R 299.9702(1) requires the preparation of associated cost estimates. This license application attachment addresses the requirement for preparing a closure cost estimate and, if necessary, a postclosure care cost estimate. The cost estimates provided in this attachment are based on the closure and postclosure care activities detailed in Attachment A11. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This attachment is organized as follows:

A12.A CLOSURE COST ESTIMATE
A12.A.1 Closure Cost Estimate Breakdown
Table A12.A.1 Facility Closure Cost Estimate Breakdown by Unit
Table A12.A.2 Container Storage Areas Closure Cost Estimate
Table A12.A.3 Tank Systems Closure Cost Estimate

Appendix A12.A CLOSURE PLAN DRAWING CLP01
A12.B POSTCLOSURE COST ESTIMATE

Appendix A12.B Closure Cost Estimate

A12.A CLOSURE COST ESTIMATE
[R 299.9702(1) and 40 CFR §264.142]

The closure cost estimate covers the corresponding closure activities in the approved closure plan. These activities may include, but are not limited to, removal of waste inventory, decontamination, sampling and analysis, and closure certification. Unless otherwise specified in Section A11.A.3 of Attachment A11, the date of closure of the hazardous waste management units has not been determined. As such, it is not possible to predict, with any high degree of certainty, actual Facility conditions or regulatory requirements at time of closure. Therefore, this closure cost estimate is

based on closure of the unit within the next six months and includes a contingency estimate to account for media sampling and analysis, and removal based on current conditions.

The estimate assumes closure procedures are completed by a third party at the time Facility closure would be most expensive (e.g., with a maximum inventory). The cost estimate for disposal assumes wastes will be treated and contaminated equipment disposed rather than recovered or salvaged. The total closure cost for the closure of the Republic Facility is estimated at $1,029,386. The closure cost estimate breakdown by unit is provided in Section A12.A.1. Unit-specific work sheets are provided in Tables A12.A.1 through A12.A.3.

Additional cost estimate assumptions are listed below.

a. All hazardous waste will be transported off site to a permitted facility in accordance with all applicable state and federal regulations.

b. Costs are based on current year costs. All labor rates reflect commercial rates and include fringe benefits, payroll burden, and taxes.

This closure cost estimate will be maintained at the Facility. It will be revised whenever a change in the closure plan affects the cost of closure. It will be adjusted annually as required by pertinent regulations or when the types and quantity of wastes received at the Facility change.

A12.A.1 Closure Cost Estimate Breakdown

The Closure Plan (Attachment A11) provides the Schedule Elements necessary to perform Closure, and, each of the areas of the Facility identified in those Schedule Elements is identified on Dwg. No. CLP.01 (attached as Appendix A12.A).

The closure cost estimate for the Facility was prepared by Civil and Environmental Consultants (CEC). A copy of the estimate is attached as Appendix A12.B and includes both "work elements" and "schedule elements" (for comparison to the Closure Plan, Attachment A11) tables. The CEC estimate is summarized in the following tables.

**Table A12.A.1 Facility Closure Cost Estimate Breakdown by Unit*
Site ID No. MIR 000 016 055**

1.	Container Storage Areas	$ 215,094
2.	Tank Systems	$ 791,154
3.	On-Site Laboratory	$ 5,360
4.	Facility Roadways	$ 17,776

Total Facility Closure and Postclosure Care Estimate (add lines 1 through 11)		$ 1,029,386

* Tables not included at this time for Land Treatment Units, Drip Pads, and Hazardous Waste Munitions and Explosives Storage Units

Table A12.A.2 Container Storage Areas Closure Cost Estimate

Republic Industrial and Energy Solutions, LLC

Activity If certain activities are not expected to be performed, enter "NA" as the Estimated Cost.		**Estimated Cost**
1.	Demolition and Removal of Containment	NA
2.	Removal of Soil	NA
3.	Backfill	NA
4.	Decontamination	$ 53,6040
5.	Sampling and Analysis (see Tank closure table)	NA
6.	Monitoring Well Installation	NA
8.	Treatment and Disposal of Waste Inventory and Other Cleanup Wastes (includes transportation)	$ 161,490
9.	**Subtotal of Closure Costs** (Add lines 1 through 8)	$ 215,094
10.	Engineering Expenses (included in above)	NA
11.	Certification of Closure (see Tank closure table)	NA
12.	**Subtotal** (Add Lines 9, 10, and 11])	$ 215,094
13.	Contingency Allowance	NA
14.	Landfill Closure	NA
Total Closure Cost (Add Lines 12, 13, and 14)		$ 215,094

Table A12.A.3 Tank Systems Closure Cost Estimate

Republic Industrial and Energy Solutions, LLC

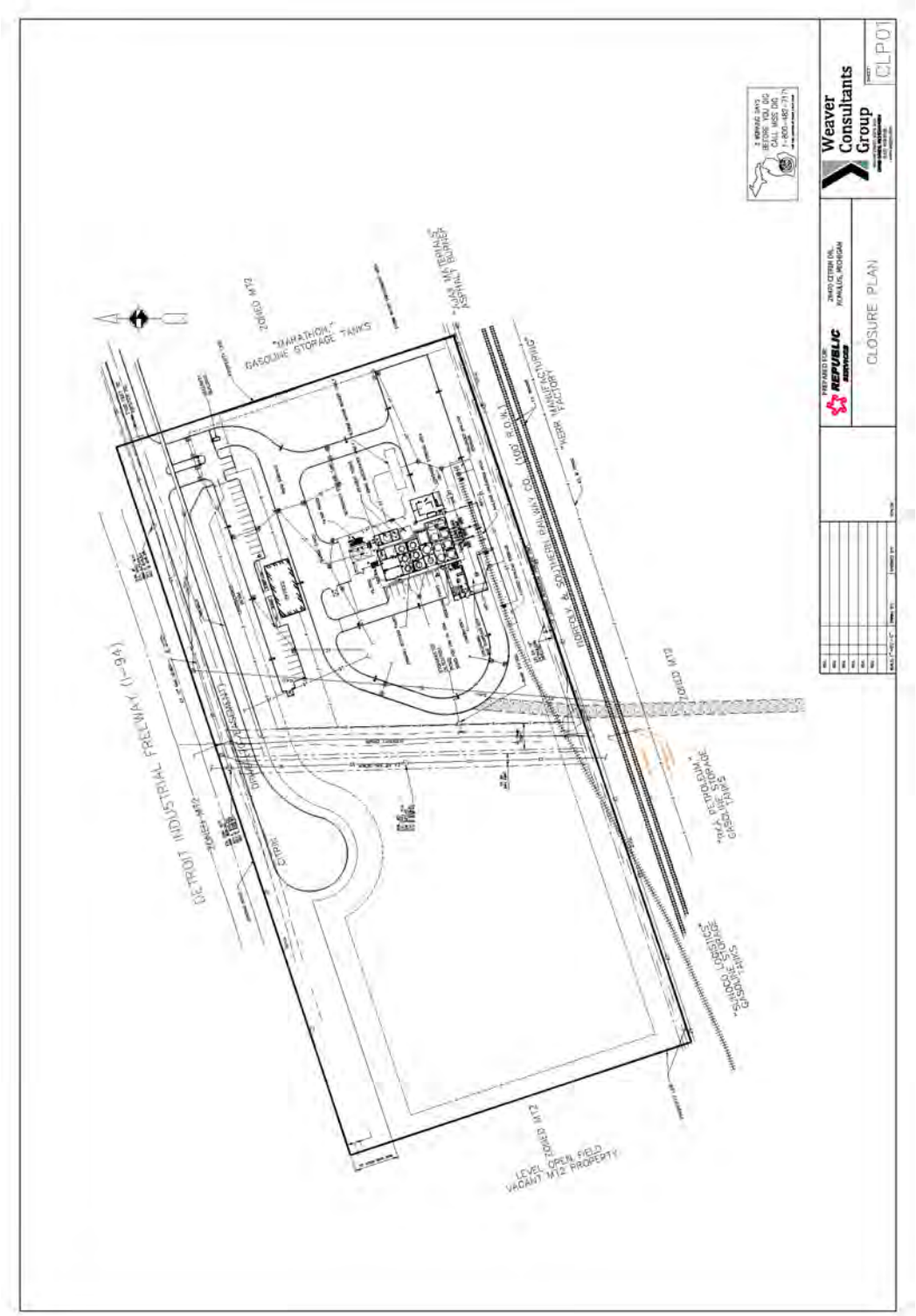
	Activity If certain activities are not expected to be performed, enter "NA" as the Estimated Cost.	**Estimated Cost**
1.	Removal of Waste Inventory (includes transportation and disposal)	$ 299,955
2.	Tank System Purging (ignitable wastes *only*)	NA
3.	Flushing of Tank and Piping	$ 63,013
4.	Excavation, Disassembly, and Loading (includes removal)	NA
5.	Demolition and Removal of Containment System	$ 84,793
6.	Removal of Soil	NA
7.	Backfill	NA
8.	Decontamination	$ 195,434
9.	Sampling and Analysis	$ 99,332
10.	Monitoring Well Installation	NA
11.	Transportation (included in other categories)	NA
12.	Treatment and Disposal of Cleanup Wastes (includes transportation plus $20,000 contingency)	$ 32,218
13.	**Subtotal of Closure Costs** (Add Lines 1 through 12)	$ 774,745
14.	Engineering Expenses (included in above)	NA
15.	Certification of Closure	$ 16,409
16.	$ 759,358	$ 791,154
17.	NA	NA
18.	NA	NA
	Total Cost of Closure (Add lines 16, 17, and 18)	$ 791,154

A12.B POSTCLOSURE COST ESTIMATE

[R 299.9702(1) and 40 CFR §264.144]

The Facility will be clean-closed. Accordingly, there will be no postclosure care necessary after closure.

APPENDIX A12.A CLOSURE PLAN DRAWING CLP01



APPENDIX A12.B CLOSURE COST ESTIMATE

Weaver Consultants Group

August 11, 2019

Jason Rubin
Environmental Geo-Technologies, LLC
28470 Citrin Drive
Romulus, MI 48174

Re: Cost Estimate
Current Closure and Corrective Action Plan

Dear Mr. Rubin :

Weaver Consultants Group, LLC (WCG) is pleased to provide this cost estimate for the Closure and Corrective Action Plan for Environmental Geo-Technologies, LLC (EGT).

The base cost estimate was developed by Advanced Resource Recovery, LLC in 2018 dollars. These costs seem to be reasonable. An inflation factor from 2018 to 2019 was based on the factors published by Michigan EGLE.

If you have any questions regarding this project, please contact us as 614-389-4132 or via electronic mail at pbeal@wcgrp.com.

Sincerely,

Weaver Consultants Group

Philip Beal
Project Director

Attachment: Cost Estimate

6185 Shamrock Court, Suite B • Dublin, OH 43016 • 614.389.4132 • wcgrp.com • Offices Nationwide

CLOSURE & CORRECTIVE COST ESTIMATE
Environmental Geo-Technologies Facility - Romulus, MI

	ITEM	Est. Cost (2018 $$)
1	Removal of stored waste water in tanks Total storage capacity=267,900 gal. 267,900@ $1.00/gal, transportation/disposal	$267,230.25
2	Removal filter press solids 20 tons at $210/ton	$4,200.00
3	Removal & disposal of 200 waste water drums at $257.25/drum	$51,450.00
4a	Clean tanks wells - 25 tanks Assume 16 days at $3,780	$60,480.00
4b	Sludge residue assumes 5% of working volume: 267,900 gal at 5% = 13,396 gal 13,395 gal at $1.52 gal transportation/disposal	$21,030.15
4c	Rinse water assumes 10% of 267,900 gal at $1.00/gal	$26,723.55
4d	Clean & decontaminate filters, presses, piping 5 days at $4500/day including transportation & disposal	$22,995.00
4e	Analysis for disposal approval	$5,250.00
5a	Laboratory Closure Lab packs: (2) 55 gal drums @ $1,260/drum	$2,520.00
5b	Laboratory Closure Rinse Laboratory	$2,625.00
6a	Roadways: Sweep & Vacuum	$2,625.00
6b	Roadways: Clean Sewers	$7,875.00
6c	Roadways: Dispose of Waste Water	$6,562.50
7	General Site Closure Sampling & Analysis Assume 156 samples at $577.50 each	$90,090.00
8	Demolition and removal of tanks, treatment equipment Including grouting of 8000 gal rainwater accumulation Tank (no demolition of structure)	$78,750.00
9	Closure certification by P.E.	$15,750.00
10	Allowance for removal of additional wastewater 20,000 gal at $1.00/gal transportation/disposal	$20,000.00
11	Removal stored waste water in rail tanker car. Total storage capacity=92,000 gal. 92,000@ $1.00/gal transportation/disposal	$92,000.00
12	Container & Rail Car storage and decontamination including transportation & disposal of waste from cleaning.	$23,310.00
13	Tanks secondary containment areas decon, trans and disposal	$186,549.30
	SUBTOTAL (2018 $$)	**$988,015.75**
	Michigan EGLE 2019 Inflation Factor	423
	Michigan EGLE 2018 Inflation Factor	406
	APPLIED INFLATION FACTOR	1.041871921
	TOTAL (2019 $$)	**$1,029,385.87**

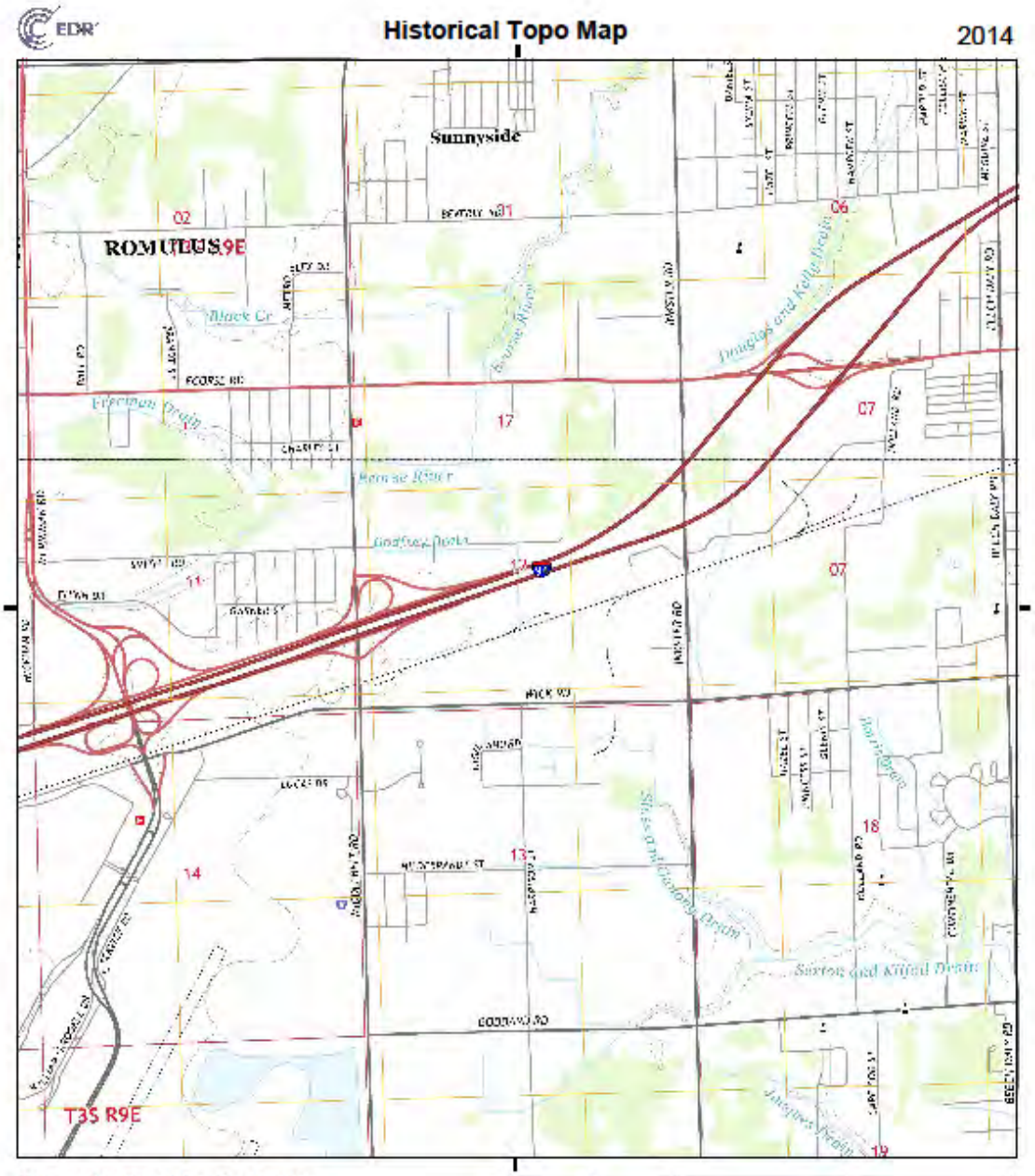
Note: 2018 Cost developed by Advanced Resource Recovery, LLLC

FORM EQP 5111 ATTACHMENT A13
TOPOGRAPHIC MAPS

This license application attachment generally provides information on the topography of the Republic Industrial and Energy Solutions, LLC("Republic" or "Facility") Facility located at 28470 Citrin Drive, Romulus, Michigan, and the surrounding area.

Environmental Data Resources, Inc., was retained to produce a Historical Topographic Map Report for the Facility. The topographic maps from that report are reproduced in Appendix A13.A hereto. The Republic Industrial and Energy Solutions, LLC ("Republic") onsite topographic features are shown on Dwg. No. C2.02 and the road and drainage plan information, including topographic information, are shown on Dwg. Nos. C2.08 - C2.10, respectively which are on file with the Michigan Department of Environment, Great Lakes, and Energy and are also available from the Applicant upon request.

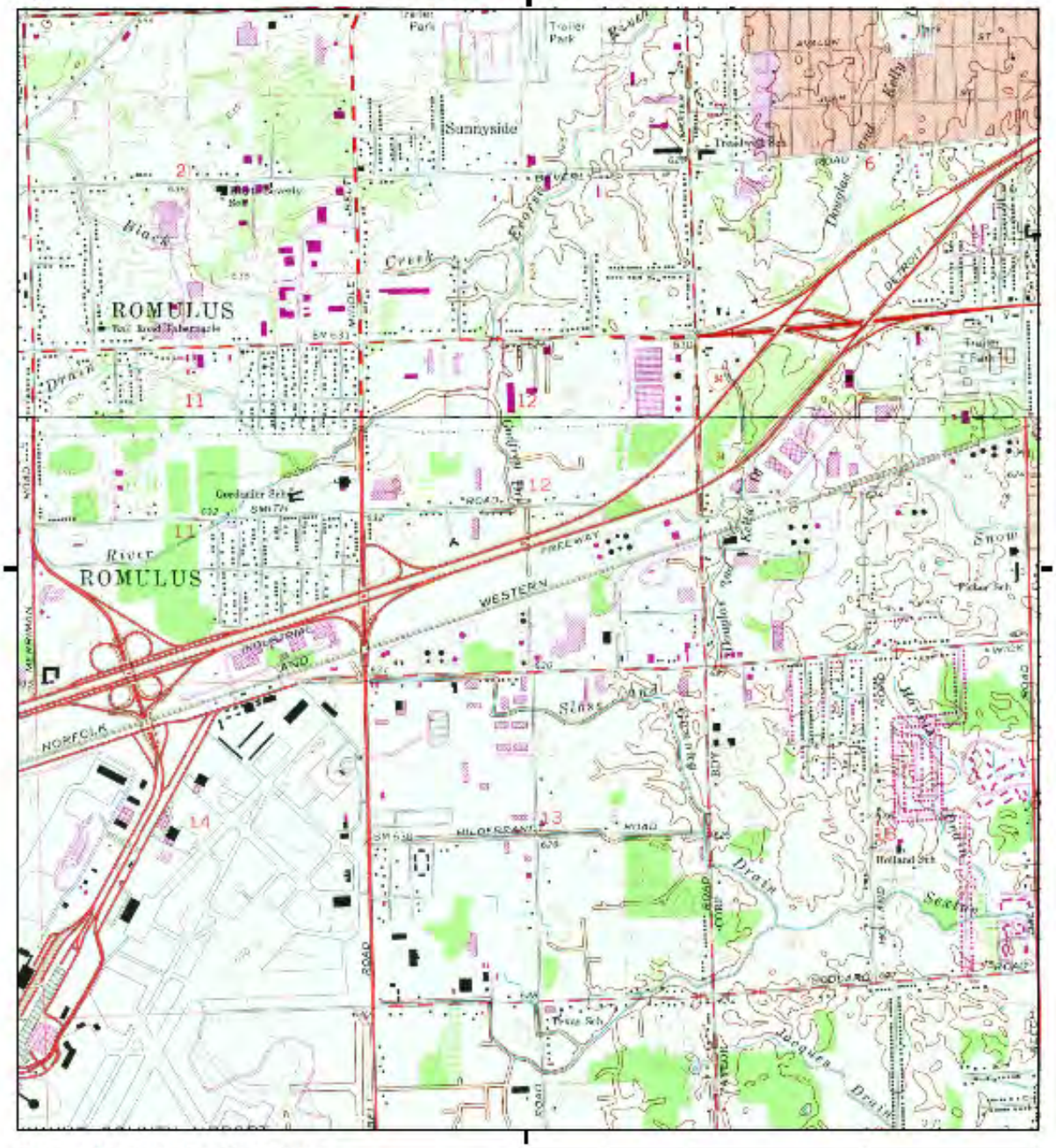
APPENDIX A13.A EDR HISTORICAL TOPOGRAPHIC MAP REPORT



EDR

Historical Topo Map

1980, 1983



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

TP, Flat Rock NE, 1980, 7.5-minute
N, Inkster, 1983, 7.5-minute

SITE NAME: 11217956 - Romulus, MI
ADDRESS: 28470 Citrin Drive
Romulus, MI 48174
CLIENT: GHD

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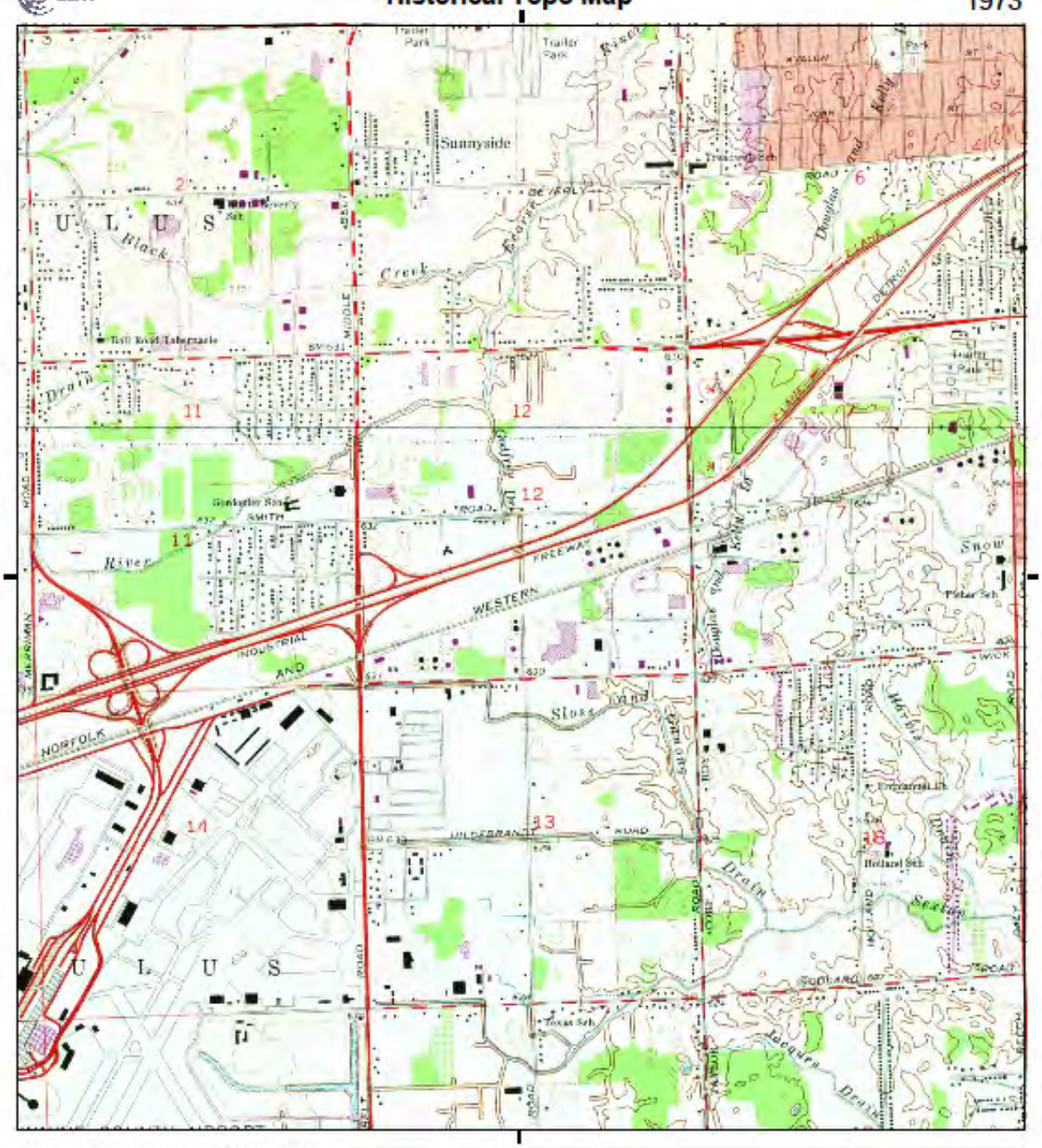
EDR

Historical Topo Map

1973



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Flat Rock NE, 1973, 7.5-minute
N, Inkster, 1973, 7.5-minute

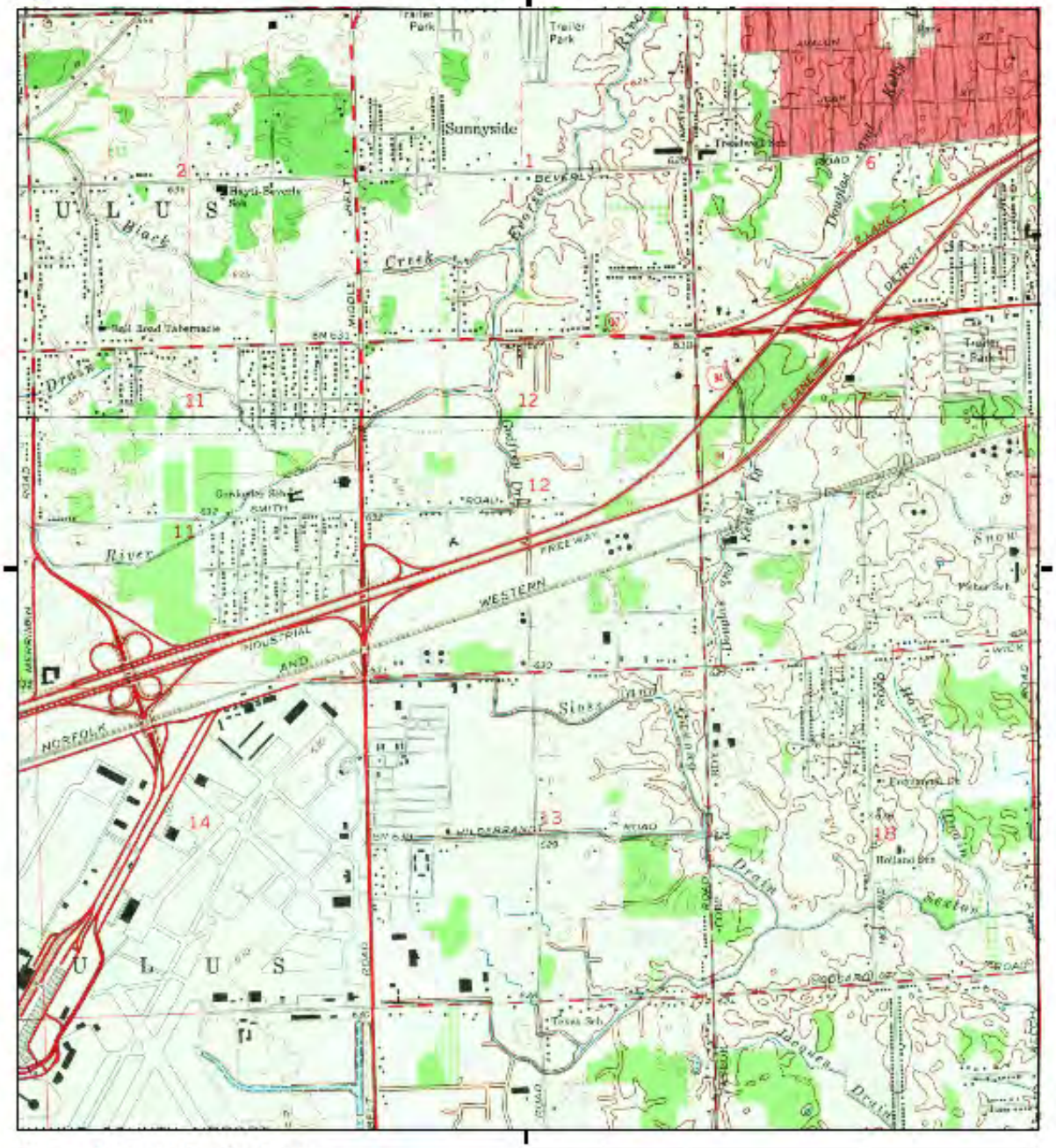
SITE NAME: 11217956 - Romulus, MI
ADDRESS: 28470 Citrin Drive
Romulus, MI 48174
CLIENT: GHD

6362555 - 1 page 9

EDR

Historical Topo Map

1967, 1968



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

TP, Flat Rock NE, 1967, 7.5-minute
N, Inkster, 1968, 7.5-minute

SITE NAME: 11217956 - Romulus, MI
ADDRESS: 28470 Citrin Drive
Romulus, MI 48174
CLIENT: GHD

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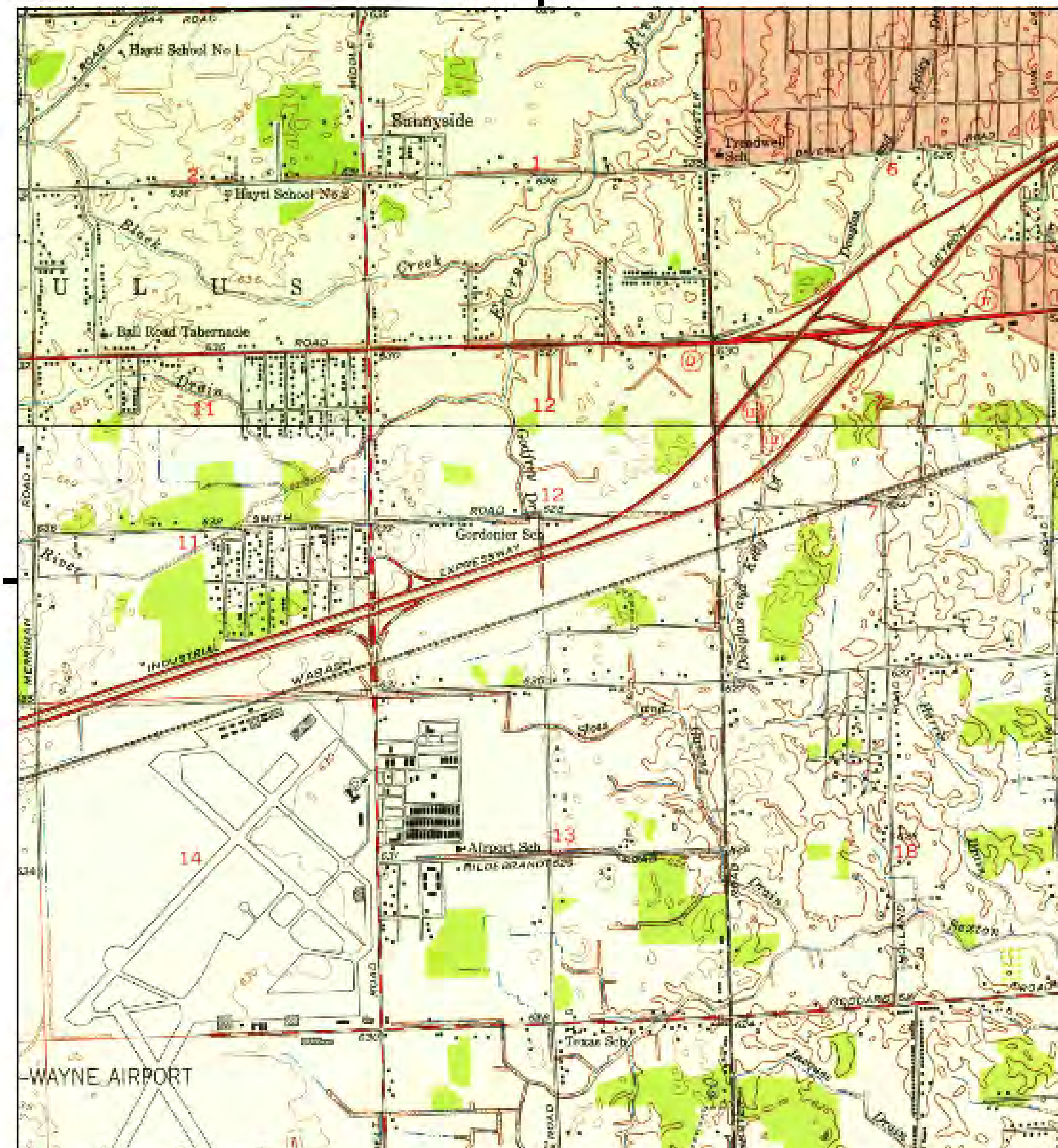
EDR

Historical Topo Map

1952



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE W E SW S SE

TP, Detroit Wayne Airport, 1952, 7.5-minute
N, Inkster, 1952, 7.5-minute
TP, FLAT ROCK NE, 1952, 7.5-minute

SITE NAME: 11217956 - Romulus, MI
ADDRESS: 28470 Citrin Drive
Romulus, MI 48174
CLIENT: GHD

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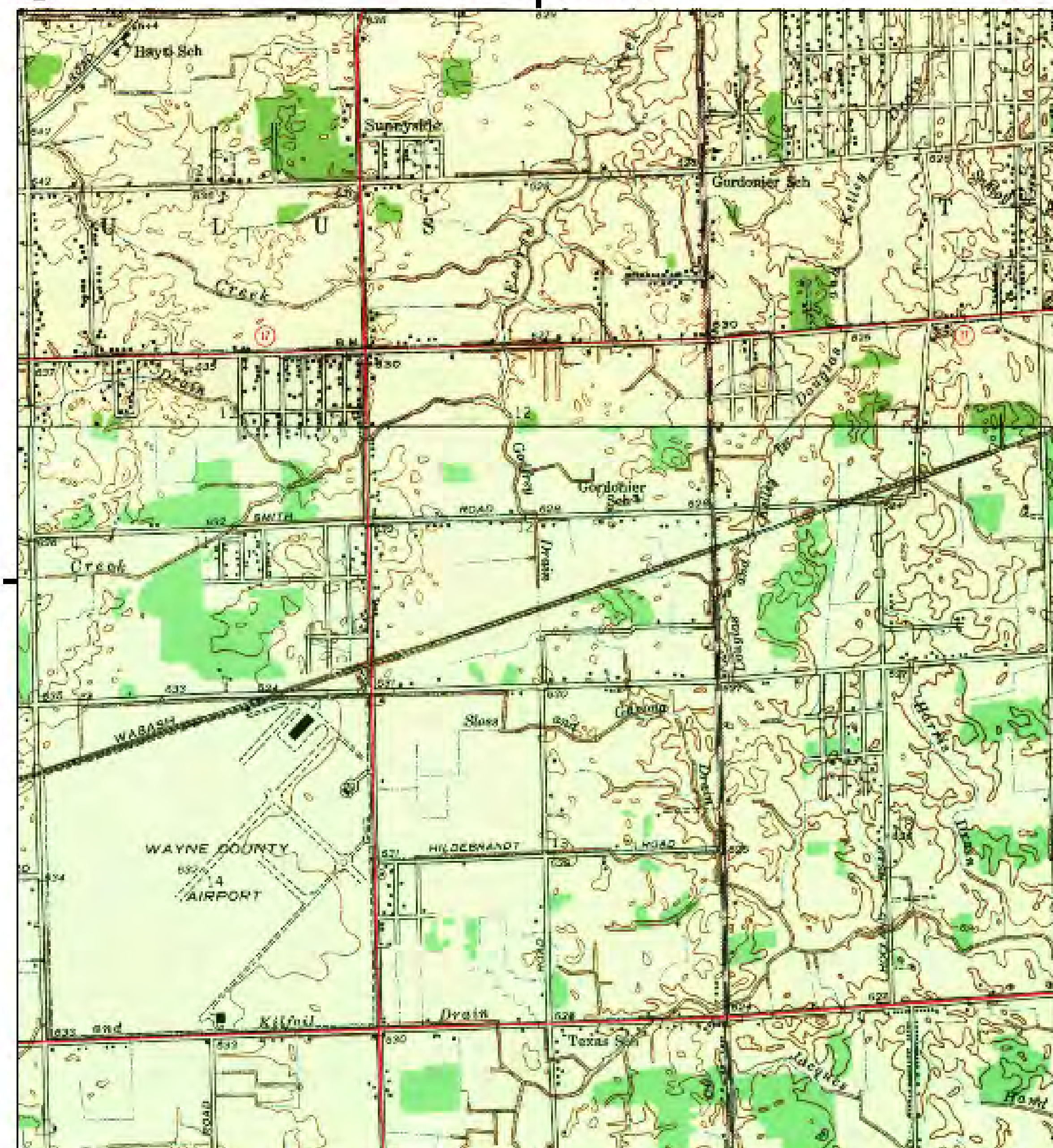
EDR

Historical Topo Map

1942



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Wayne Co Airport, 1942, 7.5-minute
N, Inkster, 1942, 7.5-minute

SITE NAME: 11217956 - Romulus, MI
ADDRESS: 28470 Citrin Drive
Romulus, MI 48174
CLIENT: GHD

6362555 - 1 page 12

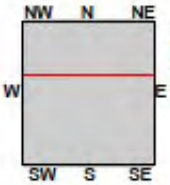
EDR

Historical Topo Map

1905, 1906

This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



TP, Romulus, 1906, 15-minute
N, Wayne, 1905, 15-minute
N, Plymouth, 1905, 15-minute

SITE NAME: 11217956 - Romulus, MI
ADDRESS: 28470 Citrin Drive
Romulus, MI 48174
CLIENT: GHD

6362555 - 1 page 14

FORM EQP 5111 ATTACHMENT A14
LIABILITY MECHANISM

This license application attachment demonstrates how Republic Industrial and Energy Solutions, LLC will comply with the liability requirements of Mich. Admin. Code R. 299.9710(1) at the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility located at 28470 Citrin Drive, Romulus, Michigan.

Republic demonstrates financial responsibility for bodily injury and property damage to third parties caused by sudden and accidental occurrences arising from the operations of the Facility by maintaining insurance for the Facility. A copy of the insurance certificate evidencing coverage is attached as Appendix A14.A of this Attachment A14.

APPENDIX A14.A EXISTING POLLUTION LEGAL LIABILITY INSURANCE

ACORD

CERTIFICATE OF LIABILITY INSURANCE

Page 1 of 2

DATE (MM/DD/YYYY) 06/22/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
CANNON COCHRAN MANAGEMENT SERVICES, INC.
17015 N. SCOTTSDALE RD
SCOTTSDALE, AZ 85255

CONTACT NAME:
PHONE (A/C No.Ext): FAX (A/C No.Ext):
E-MAIL ADDRESS: certificateteam@ccmsi.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: ACE American Insurance Co.	22667
INSURER B: Indemnity Insurance Company of NA	43575
INSURER C: ACE Fire Underwriters	20702
INSURER D: Illinois Union Insurance Company	27960
INSURER E:	
INSURER F:	

INSURED
REPUBLIC SERVICES, INC.
18500 N. ALLIED WAY
PHOENIX, AZ 85054

COVERAGES CERTIFICATE NUMBER: 1573399 REVISION NUMBER: 2

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY			HDO G71450892	06/30/2020	06/30/2021	EACH OCCURRENCE	$ 5,000,000
	CLAIMS-MADE X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 5,000,000
							MED EXP (Any one person)	
							PERSONAL & ADV INJURY	$ 5,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 5,000,000
	POLICY PROJECT LOC						PRODUCTS -COMP/OP AGG	$ 5,000,000
	OTHER:							
A	AUTOMOBILE LIABILITY			ISA H25305425	06/30/2020	06/30/2021	COMBINED SINGLE LIMIT (Ea accident)	$ 5,000,000
	X ANY AUTO						BODILY INJURY(Per person)	
	X OWNED AUTOS ONLY X SCHEDULED AUTOS						BODILY INJURY (Per accident)	
	X HIRED AUTOS ONLY X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	
	UMBRELLA LIAB OCCUR						EACH OCCURRENCE	
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	
	DED RETENTION $							
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N	N/A		WLR C67458424 AOS	06/30/2020	06/30/2021	X PER STATUTE OTHER	
A	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N			WLR C67458382-CA/MA/OR	06/30/2020	06/30/2021	E.L. EACH ACCIDENT	$ 3,000,000
C	(Mandatory in NH)			SCF C67458461 - WI	06/30/2020	06/30/2021	E.L. DISEASE -EA EMPLOYEE	$ 3,000,000
A	If yes, describe under			WCU C67458503 - OH XS	06/30/2020	06/30/2021	E.L. DISEASE -POLICY LIMIT	$ 3,000,000
D	DESCRIPTION OF OPERATIONS below			TNS C66948560 - TX NSXS	06/30/2020	06/30/2021		

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

EVIDENCE OF COVERAGE - FOR USE FOR REPUBLIC SERVICES, INC. AND ALL ITS SUBSIDIARIES

CERTIFICATE HOLDER

EVIDENCE OF COVERAGE

United States

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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ACORD 25 (2016/03) The ACORD name and logo are registered marks of ACORD

EVIDENCE OF COVERAGE

AGENCY CUSTOMER ID: _____
LOC #: _____

ACORD®

ADDITIONAL REMARKS SCHEDULE

Page 2 of 2

AGENCY	NAMED INSURED REPUBLIC SERVICES, INC. 18500 N. ALLIED WAY PHOENIX, AZ 85054
POLICY NUMBER See First Page	
CARRIER See First Page — NAIC CODE	EFFECTIVE DATE:

ADDITIONAL REMARKS — CERTIFICATE NUMBER: 1573399

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM.

FORM NUMBER: 25 FORM TITLE: CERTIFICATE OF LIABILITY INSURANCE

The following provisions apply when required by written contract. As used below, the term certificate holder also includes any person or organization that the insured has become obligated to include as a result of an executed contract or agreement.

GENERAL LIABILITY:
Certificate holder is Additional Insured including on-going and completed operations when required by written contract.
Coverage is primary and non-contributory when required by written contract.
Waiver of Subrogation in favor of the certificate holder is included when required by written contract.

AUTO LIABILITY:
Certificate holder is Additional Insured when required by written contract.
Coverage is primary and non-contributory when required by written contract.
Waiver of Subrogation in favor of the certificate holder is included when required by written contract.

WORKERS COMPENSATION AND EMPLOYERS LIABILITY:
Waiver of Subrogation in favor of the certificate holder is included when required by written contract where allowed by state law.

Stop gap coverage for ND, WA and WY is covered under policy no. WLR C67458424 and stop gap coverage for OH is covered under policy no. WCU C67458503, as noted on page 1 of this certificate.

TEXAS EXCESS INDEMNITY AND EMPLOYERS LIABILITY:
Insured is a registered non-subscriber to the Texas Workers Compensation Act. Insured has filed an approved Indemnity Plan with the Texas Department of Insurance which offers an alternative in benefits to employees rather than the traditional Workers Compensation Insurance in Texas. The excess policy (#TNS C66948560) shown on this certificate provides excess Indemnity and Employers Liability coverage for the approved Indemnity Plan.

Contractual Liability is included in the General Liability and Automobile Liability coverage forms. The General Liability and Automobile Liability policies do not contain endorsements excluding Contractual Liability.

Separation of Insured (Cross Liability) coverage is provided to the Additional Insured, when required by written contract, per the Conditions of the Commercial General Liability Coverage form and the Automobile Liability Coverage form.

EVIDENCE OF COVERAGE

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FORM EQP 5111 ATTACHMENT A15
FINANCIAL ASSURANCE

This license application attachment demonstrates how Republic Industrial and Energy Solutions, LLC will comply with the requirements of Mich. Admin. Code R. 299.9710(1) regarding financial assurance for closure and post-closure care at the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility located at 28470 Citrin Drive, Romulus, Michigan.

Republic maintains a bond demonstrating financial assurance for closure and post-closure care. A copy of the bond is attached as Appendix A15.A of this Attachment A15.

In addition, although Republic is not currently required to maintain financial assurance for corrective action at the Facility, Republic has agreed to voluntarily provide to the Michigan Department of Environment, Great Lakes, and Energy financial assurance mechanism that complies with Part 7 of the administrative rules promulgated under Part 111 of the Natural Resources and Environmental Protection Act in the amount of $5000 to be applied toward the financial assurance requirements imposed under R. 299.9713 in the event that, at some future date, the Facility is required to perform corrective action in accordance with the provisions of R 299.9629.

USI

FedEx Priority Overnight

MEMORANDUM

Susan Lynn Johnson
Butzel Long
Stoneridge West Bldg.
41000 Woodward Avenue
Bloomfield Hills, MI 48304
248-258-1307

9/9/2019

Principal	Surety	Bond #	Bond Amount	Description
Republic Industrial and Energy Solutions, LLC	Evergreen	880307	$1,123,116.74	Hazardous Waste Management Surety Bond – Detroit Industrial Well

Ms. Johnson:

Please find enclosed Bond for Conformance number 880307 as noted above on behalf of Republic Industrial and Energy Solutions, LLC.

Should you have any questions or need anything further regarding these items, please give me a call @ 360-787-9816

Have a great day!

Tim Buhite
Account Executive
Surety Services

Direct: (360) 787-9816
Fax: (610) 537-2350
E-mail: timothy.s.buhite@usi.com

cc: M. Nordquist

This message is intended only for the use of the individual or entity to which it is addressed and may contain information that is deemed privileged, confidential and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication or the information contained herein is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone and return the original message to us at the above address via the U.S. Postal Service. Thank you.

WBN

Property & Casualty · Employee Benefits · Personal Risk · Retirement Consulting

The USI ONE Advantage®

"In accordance under adopted reference 40 CFR 270.11(d), the Principal, desires to purchase the referenced facility. This bond is only valid upon completion of ownership transfer."

EGLE

Michigan Department of Environment, Great Lakes, and Energy
Materials Management Division

HAZARDOUS WASTE MANAGEMENT SURETY BOND

The Surety Bond authorized under R 299.9705 must be worded as follows, except that instructions or options in brackets are to be replaced with the relevant information and the brackets deleted

PERFORMANCE BOND

Bond Number: 880307

Total Penal Sum of Bond: $ 1,123,116.74

Effective Date: 09/23/2019

The EPA identification number: MIR 000 016 055
Detroit Industrial Well, 28470 Citrin Drive, Romulus, MI 48174
Closure $1,118,116.74
Corrective action $5,000.00

Republic Industrial and Energy Solutions, LLC , a Delaware, *"corporation"*, 28470 Citrin Drive, Romulus, MI 48174, as Principal, and Evergreen National Indemnity Company , 6140 Parkland Blvd, Ste 321, Mayfield Heights Ohio, 44124, an insurer authorized to transact the business of surety and fidelity insurance in the state of Michigan and an acceptable surety on federal bonds as listed in Circular 570 of the United States Department of Treasury, as Surety, are firmly bound unto the Director of the Department of Environment, Great Lakes, and Energy ("Director"), on behalf of the state of Michigan, his successor or successors in office, or his authorized representative, in the above total penal sum, lawful money of the United States of America, for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally.

WHEREAS, the Principal is required under Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), to have an operating license to own or operate each hazardous waste management facility identified above; and

WHEREAS, the Principal is required to provide financial assurance for the closure, postclosure, or corrective action of each facility identified above as a condition of the administrative rules promulgated pursuant to Part 111 and as a condition of licensure;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall faithfully perform closure, whenever required to do so, of each facility for which this bond guarantees closure, in accordance with the closure plan and other requirements of an operating license as such plan and operating license may be amended, pursuant to all applicable laws, statutes, rules and regulations, as such laws, statutes, rules and regulations may be amended;

And, if the Principal shall faithfully perform postclosure of each facility for which this bond guarantees postclosure, in accordance with the postclosure plan and other requirements of an operating license, as such plan and operating license may be amended, pursuant to all applicable laws, statutes, rules and regulations, as such laws, statutes, rules and regulations may be amended;

And, if the Principal shall faithfully perform corrective action at each facility for which this bond guarantees corrective action, in accordance with the corrective action program and other requirements of an operating license or order, as such program and operating license or order may be amended, pursuant to all applicable laws, statutes, rules and regulations, as such laws, statutes, rules and regulations may be amended;

Or, if the Principal shall provide alternate financial assurance as specified in the administrative rules promulgated pursuant to Part 111, and obtain the Director's written approval of such assurance within 90 days

after the date notice of cancellation is received by both the Principal and the Director from the Surety, then this obligation shall be null and void, otherwise it is to remain in full force and effect.

The Surety shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above.

In the event that the Director, in accordance with the administrative rules promulgated pursuant to Part 111, issues a written Notice of Violation or other order to the Principal indicating that the Principal has failed to properly execute its closure responsibilities for a facility for which this bond guarantees performance of closure, the Surety shall either perform closure in accordance with the closure plan and other operating license requirements, or make payment of the closure amount guaranteed by this bond for closure of the facility to the Director.

In the event that the Director, in accordance with the administrative rules promulgated pursuant to Part 111, issues a written Notice of Violation or other order to the Principal indicating that the Principal has failed to properly execute its postclosure responsibilities for a facility for which this bond guarantees performance of postclosure, the Surety shall either perform postclosure in accordance with the postclosure plan and other operating license requirements, or make payment of the postclosure amount guaranteed by this bond for postclosure of the facility to the Director.

In the event that the Director, in accordance with the administrative rules promulgated pursuant to Part 111, issues a written Notice of Violation or other order to the Principal indicating that the Principal has failed to properly execute its corrective action responsibilities for a facility for which this bond guarantees performance of corrective action, the Surety shall either perform corrective action in accordance with the corrective action plan and other operating license or order requirements, or make payment of the corrective action amount guaranteed by this bond for corrective action of the facility to the Director.

The Surety hereby waives notification of amendments to closure, postclosure care, and corrective action plans, licenses, orders, applicable laws, statutes, rules and regulations and agrees that no such amendment shall in any way alleviate its obligation on this bond, except for adjustments in the closure, postclosure, and corrective plans that cause increases or decreases in the penal sum contained herein.

When the current closure, postclosure, or corrective action cost estimate(s) increase to an amount more than the penal sum, the Principal, within 60 days after the increase, shall either cause the penal sum to be increased to an amount at least equal to the current closure, postclosure, and corrective action cost estimate(s), and submit evidence of such increase to the Director, or obtain other financial assurance as specified in the administrative rules promulgated pursuant to Part 111. When the current closure, postclosure, or corrective action cost estimate(s) decrease(s), the penal sum may be reduced to the amount of the current closure, postclosure, or corrective action cost estimate(s) following written approval by the Director.

The liability of the Surety shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety hereunder exceed the amount of said penal sum.

The Surety may cancel the bond by sending notice of cancellation by certified mail to the Principal and to the Director, provided, however, that cancellation shall not occur during the one hundred twenty (120) days beginning on the date of receipt of the notice of cancellation by the Principal and the Director, as evidenced by the return receipts.

Provided further, that this Performance Bond may be drawn upon and the Surety agrees to honor this bond should the Principal fail to provide the Director with an extension of this bond, or an acceptable replacement bond, or an alternative form of financial assurance as specified in the administrative rules promulgated pursuant to Part 111, and acceptable to the Director, not less than sixty (60) days prior to the expiration or cancellation hereof.

The Principal may terminate this bond by sending written notice to the Surety, provided, however, that no such notice shall become effective until the Surety receives written authorization for termination of the bond from the Director, or his authorized representative.

This bond shall be and continue in force for a period beginning with the effective date of the bond and terminating when canceled by the Surety in accordance with the cancellation provisions above, or when the Surety receives written authorization for termination of the bond from the Director. Upon determination of the Director or his authorized representative that any of the foregoing conditions have not been complied with, he shall have recourse to the rights created under this bond.

In witness whereof, the Principal and the Surety have executed this Performance Bond and have affixed their seals and have attached the justification or power of attorney as of the day and date first above written.

The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety and that the wording of this surety bond is identical to the wording provided by the Director on the date this bond was executed.

Sealed with our seals, dated the 23rd day of September, 2019.

PRINCIPAL

Republic Industrial and Energy Solutions, LLC

Debbie Lindstrom
Attorney-in-Fact
[Corporate Seal]

SURETY

Evergreen National Indemnity Company
State of Incorporation: Ohio
Liability Limit: $ 3,443,000.00

Timothy S. Buhrle
Attorney-in-Fact
[Corporate Seal]

Bond Premium: $ 8,985.00

MAIL TO:

HAZARDOUS WASTE SECTION
MATERIALS MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
PO BOX 30241
LANSING MI 48909-7741

FOR OVERNIGHT MAIL:

HAZARDOUS WASTE SECTION
MATERIALS MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
CONSTITUTION HALL, 4TH FLOOR SOUTH
525 WEST ALLEGAN STREET
LANSING MI 48933

FORM EQP 5111 ATTACHMENT B1
STATUS OF COMPLIANCE WITH OTHER FEDERAL LAWS

This license application attachment provides information on the compliance status of the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility located at 28470 Citrin Drive, Romulus, Michigan.

The former owner/operator of the Facility, Environmental Disposal Systems, Inc. ("EDS"), resolved all of the past alleged violations of federal law associated with the Facility in a September 14, 2007 Consent Decree and Final Order with the United States Environmental Protection Agency, *In the Matter of Environmental Disposal Systems, Inc.*, Docket No. SDWA-05-2007-0003. There is no current violation of any federal law with respect to the Facility.

FORM EQP 5111 ATTACHMENT B2
CORRECTIVE ACTION INFORMATION

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for, Hazardous Waste Treatment Storage and Disposal Facilities.*

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451) R 299.9504(1)(c), R 299.9508(1)(b), R 299.9525, R 299.9629, R 299.9635, and R 299.9636; §324.11115a and 324.11115b of Act 451; and Title 40 of the Code of Federal Regulations (CFR) §270.14(d) and Part 264, Subpart F, establish requirements for submitting corrective action information and implementing a corrective action program for hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application attachment addresses requirements for corrective action information for the hazardous waste management units (WMU) at the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility in Romulus, Michigan. This attachment includes Facility background information, current conditions, and release assessment requirements. This attachment supplies information to support the corrective action program specified in R 299.9629. In this attachment, applicants must include appropriate justification for the proposed elimination of any WMU from the corrective action program under Part 111 of Act 451.

Republic will ensure that all samples collected for waste characterization and environmental monitoring during corrective action are collected, transported, analyzed, stored, and disposed by trained and qualified individuals in accordance with the Republic QA/QC Plan. The Republic QA/QC Plan includes at least the written procedures outlined in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, Third Edition, Chapter 1 (November 1986), and its Updates.

(Check as appropriate)

Applicant for Operating License for Existing Facility:

☒ R 299.9629 Corrective Action

☐ Elimination from corrective action requirements proposed for one or more units

Applicant for Operating License for New, Altered, Enlarged, or Expanded Operating License:

☐ R 299.9629 Corrective Action

☐ Elimination from corrective action requirements proposed for one or more units

This attachment is organized as follows:

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- B2.A.2 Environmental Setting
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  - B2.A.2(c) Hydrogeology
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  - B2.A.2(e) Surface Water
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  - B2.A.2(g) Critical Habitats and Endangered Species
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- B2.C.1 Human Exposure and Threats
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B2.G ESTABLISHED OR PROPOSED CLEANUP CRITERIA

B2.H ESTABLISHED OR PROPOSED COMPLIANCE POINTS AND PERIODS
B2.I OFF-SITE ACCESS
B2.J PUBLIC INVOLVEMENT PLAN
B2.K HEALTH AND SAFETY PLAN
B2.L NOTICE REQUIREMENTS
B2.M JUSTIFICATION FOR PROPOSED ELIMINATION OF ANY WASTE MANAGEMENT UNIT FROM THE CORRECTIVE ACTION PROGRAM OR INTENT TO PROCEED WITH CORRECTIVE ACTIONS

B2.A FACILITY BACKGROUND

B2.A.1 History and Description of Ownership and Operation

The Facility consists of aboveground hazardous waste treatment and storage units formerly owned and operated by Environmental Disposal Systems, Inc. ("EDS").

As of December 27, 2005, EDS had received all of the regulatory permits and licenses necessary to operate the Facility, specifically including: (i) Underground Injection Control ("UIC") permits issued by the United States Environmental Protection Agency pursuant to the Safe Drinking Water Act; (ii) Michigan Department of Environmental Quality ("MDEQ", now the Michigan Department of Environment, Great Lakes, and Energy "EGLE") Hazardous Waste Management Facility Construction Permit, issued by MDEQ pursuant to Part 111 (Hazardous Waste) of the Natural Resources and Environmental Protection Act ("NREPA"); and (iii) MDEQ Hazardous Waste Management Facility Operating License, issued by MDEQ pursuant to Part 111 of NREPA.

EDS began commercial operation of the Facility in December 2005. Between December 2005 and October 2006, EDS safely processed and disposed of approximately 2.4 million gallons of hazardous waste at the Facility. In November 2006, MDEQ notified EDS that it had failed to comply with certain conditions in the EDS Part 111 Hazardous Waste License and directed EDS to stop operations.

Also in November 2006, EDS assigned its interest in the Facility to RDD Investment Corp. ("RDD"), a corporation formed by EDS's major creditor. The Facility had not been operated between November 2006 and November 2013. All hazardous waste had been removed from the Facility during that time. EGT agreed to purchase the Facility from RDD upon EGLE's issuance of a Part 111 operating license. Republic Industrial and Energy Solutions, LLC (Republic) subsequently purchase the facility on October 10, 2019""

B2.A.2 Environmental Setting

The environmental setting of the Facility is generally described in Attachment B4 (Environmental Assessment) to this Application. In addition, the initial owner/operator of the Facility, EDS, previously prepared an extensive Environmental Assessment of the Facility (the "EDS EA"), which was included in the applications for the Hazardous Waste Management Facility Construction Permit (issued by EGLE, then the Michigan Department of Environment of Environmental Quality, "MDEQ," in 2001) and the Hazardous Waste Management Facility Operating License (issued by EGLE in 2005). The EDS EA was also included in EGT's application for the Hazardous Waste Management Facility Operating License. The EDS EA remains valid and accurate with respect to the Facility and is incorporated into Attachment B4 by reference.

B2.A.2(a) Climate

For climate information, refer to Section B4.A.2.A (Climate) of Attachment B4 to this Application, and refer to Section 4.22 (Climate), at pages 31-35, of the EDS EA.

B2.A.2(b) Topography

For information on the topography surrounding the Facility, refer to Appendix A13.A to Attachment A13 to this Application, which contains the Historical Topographic Map Report for the Facility by Environmental Data Resources, Inc. In addition, onsite topographic features are shown on Dwg. Nos. C2.02, and C2.08 - C2.10. These Engineering Drawings are incorporated on file at the Facility and with EGLE.

B2.A.2(c) Hydrogeology

GZA GeoEnvironmental, Inc., on behalf of the initial owner/operator of the Facility, prepared an extensive Hydrogeological Report for the Facility dated September 10, 1996. This report was included in the applications for the Hazardous Waste Management Facility Construction Permit (issued by EGLE in 2001) and the Hazardous Waste Management Facility Operating License (issued by EGLE in 2005) and the subsequent EGT application for the Hazardous Waste Management Facility Operating License. The Hydrogeological Report remains valid and accurate with respect to the Facility and is incorporated in Attachment B3 to this Application. The Hydrogeological Report is on file with the MDNRE and is also available from the Applicant upon request. For further information on hydrology, see Sections 4.13.5, 4.25, and 4.45 of the EDS EA.

B2.A.2(d) Soil

The United States Department of Agriculture ("USDA") identifies the following soil types in the vicinity of the Facility: (i) Pella silt loam; (ii) Kibbie fine sand; and (iii) Selfridge loamy sand. For additional information on soil, refer to Section B4.A.2.D (Soils) of Attachment B4 to this Application, and Sections 4.21.3 and 4.41.2, at pages 26-30 and pages 93-94, respectively, of the EDS EA.

B2.A.2(e) Surface Water

For information on surface water features near the Facility, refer to Section 4.25.2 at page 57 of the EDS EA.

B2.A.2(f) Surrounding Land Uses

The Facility is located within a "MT-2" zoning district. The Romulus Zoning Ordinance describes this district as follows: "In the MT-2 District, the intent is to permit certain uses and industries which are of a heavy manufacturing character. Further, the intent is to permit, with certain conditions, larger-scale trucking operations involving interstate and intrastate motor carriers whose activities are mostly suitably placed in strategic locations close to complementary uses and other potentially high volume truck traffic areas and in locates which are efficiently coordinated with the city's planned street and thoroughfare system. It is also the intent to permit, with certain conditions, areas for the transfer, treatment, storage, disposal or recycling of trash, refuse and other liquid or solid waste."

For additional information on surrounding land uses, refer to Section B4.A.2.F of Attachment B4 to this Application and Sections 4.29, 4.13.8, and 4.48.2 of the EDS EA.

B2.A.2(g) Critical Habitats and Endangered Species

There are no critical habitats or endangered species in the area of the Facility. For additional information on critical habitats and endangered species, refer to Section 4.23.3 of the EDS EA.

B2.A.3 Characterization of Potential or Actual Sources of Contamination

[R 299.9504(c) and 40 CFR §270.14(d)]

This section describes actual or potential sources of contamination at the Republic Facility that are subject to the corrective action requirements of Part 111 of Act 451. These sources include WMUs that are discernible units at which contaminants have been placed at any time, or at which contaminants have been released, or at which there is a threat of release regardless of the intended use of such unit. These sources also include areas of concern that are those units which do not meet the definition of WMU, but which may have released contaminants to the environment on a non-routine basis, or which may present an unacceptable risk to public health, safety, welfare, or the environment.

B2.A.3(a) Treatment and Storage Building

B2.A.3(a)(1) Unit Characteristics

Storage Tanks and Filters

The Facility contains the following aboveground hazardous waste storage tanks: (1) ten Receiving Tanks (RT 1-8 and LST-1,2); (2) six Primary Settling Tanks (PST 1-6); (3) two Sludge Storage Tanks (ST 1-2); and (4) one Secondary Storage Tank (SST).
All tanks at the Facility are fully enclosed inside the Treatment Building and placed on reinforced concrete floors within reinforced concrete vault walls. The concrete floors and walls are coated with an impermeable corrosion resistant polymer. The receiving tanks (RT 1-8), the primary settling tanks (PST 2-6), sludge storage tanks (ST–1, 2), the secondary storage tanks (SST-1), and (SST-2) used in this treatment process are made of fiberglass material suitable for handling hazardous wastes to be accepted by Republic. The tanks are coated with premium grade Vinyl Ester and isophthalic polymer resin to prevent corrosion caused from the contact with hazardous wastes. The Receiving Tank (RT-10) and the Primary Settling Tank (PST-1) are designated for incompatible wastes and are made of steel. The interior of the steel tanks are lined with a chemically resistant, high performance polymeric coating to prevent corrosion. All tanks are constructed using a built-on skirt for squirt containment, placed on recessed floors serving as secondary containment in the event of a tank or pipe failure. Acids, caustics, incompatibles and brine each have separate secondary containment areas. Each secondary containment area is sized to store more than 10% of the volume of all tanks within that containment area. The filters are located within their applicable coated, reinforced concrete vault as well. The rinse wastewater vault is also a coated, reinforced concrete vault. Topographic maps in the vicinity of the Facility are presented in Attachment A13.

Container Storage Areas

Containers may be stored at the Facility in the Container Storage Area and the Railcar Storage Area, as described in Attachment C1 (Containers) to this Application. Both storage areas are constructed with reinforced concrete floors within concrete secondary containment. The concrete floors are coated with an impermeable corrosion resistant polymer. The secondary containments are sized to contain the greater of 10% of the total volume of containerized waste stored in the area or the volume of the largest container stored in the area. Topographic maps in the vicinity of the Facility are presented in Attachment A13

Filter Press Area

The Filter Press Area contains the Roll-Off Box ("ROB") dedicated to the receipt of the solids removed from the Sludge Tanks (ST-1,2) and dewatered by the Filter Press. The reinforced concrete floor upon which the ROB resides is coated with an impermeable corrosion resistant polymer. The area maintains secondary containment although not required because the coated, reinforced concrete is sloped down to the ROB inside the Facility.

B2.A.3(a)(2) Waste Characteristics and Management

Storage Tanks and Filters

The tanks are capable of treating and storing any waste stream received by the Facility. For a description of permitted waste streams, refer to Section A2.A (Waste Description) of Attachment A2 to this Application.

Container Storage Areas

The Container Storage Area and Railcar Storage Area are capable of storing any waste stream received by the Facility. For a description of permitted waste streams, refer to Section A2.A.2 (Waste Description) of Attachment A2 to this Application.

Filter Press Area

The ROB contains only solid waste. The solids will carry the applicable waste codes ("numbers") provided in Section A2.A. (Waste Description) of Attachment A2 to this Application.

B2.A.3(a)(3) History of Releases or Potential to Release

Storage Tanks and Filters

There has been no release or threat of release from the tank units. The potential for an RQ-reportable release is remote since all activities occur indoors and inside coated, reinforced concrete vaults or containments.

Container Storage Areas

There has been no release or threat of release from the Container Storage Area or the Railcar Storage Area. The potential for a release from the Container Storage Area is remote because all

activities occur indoors and inside on coated, reinforced concrete floors and containments. The potential for a release from the Railcar Storage Area is also remote because it is constructed on a coated concrete pad equipped with secondary containment that is designed to capture and collect any spills.

Filter Press Area

There has been no release or threat of release from the Filter Press Area. The potential for a release from the Filter Press Area is remote because all activities occur indoors and inside on coated, reinforced concrete floors and containments.

B2.A.3(b) Storm Water Runoff Vault

B2.A.3(b)(1) Unit Characteristics

The Storm Water Runoff Vault ("SWRV") is designed to collect storm water runoff from the east side of the Facility including the container unloading area and the Railcar Storage/Unloading Area. It is nominally 113,000 gallons in size which is sufficient to collect a 24-hour, 100 year rainfall event (61,000 gallons from a 5" rainfall) from the paved surface area (19,609 sq.ft.) plus the entire contents of a 30,000 gallon railcar.

B2.A.3(b)(2) Waste Characteristics and Management

The SWRV is designed for the collection of storm water from the paved areas from the east side of the Treatment and Storage Building. The collected storm water is managed as precipitation and surface run off.

B2.A.3(b)(3) History of Releases or Potential to Release

There has been no release or threat of release from the SWRV. The potential for a release from the SWRV is remote since it consists of precipitation run off water and is constructed of coated, reinforced concrete.

B2.A.3(c) Pump House and Well Houses

B2.A.3(c)(1) Unit Characteristics

Two well houses and a pump house are located on the east side of the Treatment and Storage Building, and house the pumps, wells and ancillary equipment associated with the underground injection control ("UIC") activities conducted at the Facility pursuant to the Federal Safe Drinking Water Act.

B2.A.3(c)(2) Waste Characteristics and Management

The UIC-related pumps, wells and ancillary equipment housed within the well houses and the pump house are capable of managing any waste stream received by the Facility. For a description of permitted waste streams, refer to Section A2.A.2 (Waste Description) of Attachment A2 to this Application.

B2.A.3(c)(3) History of Releases or Potential to Release

There have been no releases of hazardous waste or hazardous waste constituents from the pump house or well houses. On October 23, 2006 and October 26, 2006, a former owner (EDS) and operator of the Facility released a small volume of material from an aboveground wellhead valve and flange associated with the UIC wells. The MDNRE (now "EGLE") issued a "no further action" letter concerning this matter on May 8, 2007.

B2.B FACILITY'S ASSESSMENT OF KNOWN NATURE AND EXTENT OF CONTAMINATION

The Facility was built upon a "greenfield" site. There is no known contamination at the Facility.

B2.C FACILITY'S EXPOSURE ASSESSMENT

As indicated above, there is no known contamination at the Facility. Accordingly, there is no threat of exposure to human or environmental receptors.

B2.D INTERIM MEASURES

As indicated above, there is no known contamination at the Facility. Accordingly, there is no need to conduct interim response activities at the Facility.

B2.E ENVIRONMENTAL INDICATORS

There is no known contamination at the Facility. Accordingly, the Facility is not conducting corrective action at this time. In addition, the Facility is not undergoing closure. Therefore, there are no applicable environmental indicators with respect to the Facility.

B2.F FACILITY'S ASSESSMENT OF KNOWN OR PROPOSED CONSTITUENTS OF CONCERN
[R 299.9629(3)(a)(i) and (3)(b)(i)]

There is no known contamination at the Facility. Accordingly, there are no constituents of concern with respect to the Facility.

B2.G ESTABLISHED OR PROPOSED CLEANUP CRITERIA
[R 299.9629(3)(a)(ii) and (iii) and R 299.9629(3)(b)(ii) and (iii)]

There is no known contamination at the Facility. Accordingly, there is no applicable cleanup criteria with respect to the Facility.

B2.H ESTABLISHED OR PROPOSED COMPLIANCE POINTS AND PERIODS
[R 299.9629(3)(a)(iv) and (v) and R 299.9629(3)(b)(iv) and (v)]

There is no known contamination at the Facility. Accordingly, there is no compliance point or compliance period with respect to the Facility.

B2.I OFF-SITE ACCESS

There is no known contamination at the Facility. Accordingly, there is no need to obtain access to off-site properties.

B2.J PUBLIC INVOLVEMENT PLAN

There is no known contamination at the Facility. Accordingly, a public involvement plan is not necessary.

B2.K HEALTH AND SAFETY PLAN

There is no known contamination at the Facility. Accordingly, a health and safety plan is not necessary.

B2.L NOTICE REQUIREMENTS
[R 299.9525]

There is no known contamination at the Facility. Accordingly, there is no applicable notice requirement.

B2.M JUSTIFICATION FOR PROPOSED ELIMINATION OF ANY WASTE MANAGEMENT UNIT FROM THE CORRECTIVE ACTION PROGRAM OR INTENT TO PROCEED WITH CORRECTIVE ACTIONS

Republic does not seek to eliminate any waste management unit from the corrective action program.

FORM EQP 5111 ATTACHMENT B3
HYDROGEOLOGIC REPORT

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment Storage and Disposal Facilities.*

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9506, R 299.9508, and R 299.9612 and Title 40 of the Code of Federal Regulations (CFR) §§264.94, 264.95, 264.97, 264.98, 270.13(10)(l), and 270.14(b)(19) establish requirements for hydrogeologic reports for hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application attachment addresses requirements for a hydrogeologic report for the hazardous waste management units and the hazardous waste management facility for the Republic Industrial and Energy Solutions, LLC Facility in Romulus, Michigan. This attachment includes hydrogeologic report requirements, waiver demonstrations, and alternative information requests for construction permit and operating license applications. This hydrogeologic report supplies information to support the groundwater monitoring program, or groundwater monitoring waiver request, proposed and included in Attachment B5, Environmental Monitoring Programs.

(Check as appropriate)

Applicant for Operating License for Existing Facility:

☒ R 299.9506 hydrogeologic report

☐ A waiver for the hydrogeologic report is requested for one or more units

☐ Alternative information is proposed for information required in the hydrogeologic report for one or more units

☐ A waiver is requested for groundwater monitoring requirements for one or more units, and is included in Attachment B5

Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility:

☐ R 299.9506 hydrogeologic report

☐ A waiver is requested for groundwater monitoring requirements for one or more units, and is included in Attachment B5

GZA GeoEnvironmental, Inc., on behalf of the former owner/operator of the Facility, previously prepared an extensive Hydrogeological Report, dated September 10, 1996, for the Facility (the "GZA Report"). The GZA Report was included in the applications for the Hazardous Waste Management Facility Construction Permit (issued by EGLE, then the Michigan Department of Environmental Quality, "MDEQ," in 2001) and the Hazardous Waste Management Facility Operating License (issued by MDEQ in 2005) for the Facility. The GZA Report remains valid and accurate with respect to the Facility and is incorporated herein by reference. The GZA Report is on file with EGLE, located at the Romulus Public Library, and is also available from the Applicant upon request

FORM EQP 5111 ATTACHMENT B4
ENVIRONMENTAL ASSESSMENT

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451) §324.11118(3) and R 299.9504(1)(e) and R 299.9504(1)(b) establish requirements for conducting environmental assessments at hazardous waste management facilities. Before receiving an operating license, owners and operators of hazardous waste treatment, storage, or disposal facilities must evaluate the (proposed) facility's impact on air, water, or other natural resources of the state. The evaluation must also include a failure mode assessment. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template addresses requirements for an environmental assessment for hazardous waste management units at the Republic facility.

📖 Guidance for this template can be found in the DEQ's document titled "Contents of the Environmental Assessment."

This template is organized as follows:

INTRODUCTION
B4.A CURRENT CONDITIONS
- B4.A.1 Facility Description
- B4.A.2 Description of Existing Environmental Conditions
  - B4.A.2(a) Climate
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  - B4.A.2(c) Geology
  - B4.A.2(d) Soils
  - B4.A.2(e) Hydrology
  - B4.A.2(f) Land Use and Zoning
  - B4.A.2(g) Historical or Archaeological Resources
  - B4.A.2(h) Social Environment
    - B4.A.2(h)(i) Demographics
    - B4.A.2(h)(ii) Infrastructure
  - B4.A.2(i) Transportation
  - B4.A.2(j) Air Quality
  - B4.A.2(k) Noise
  - B4.A.2(l) Appearance and Aesthetics
  - B4.A.2(m) Terrestrial Ecosystem
    - B4.A.2(m)(i) Flora
    - B4.A.2(m)(ii) Fauna
    - B4.A.2(m)(iii) Rare or Endangered Species

B4.A.2(m)(iv) Critical Habitat
B4.A.2(n) Aquatic Ecosystem
B4.A.2(n)(i) Flora
B4.A.2(n)(ii) Fauna
B4.A.2(n)(iii) Rare or Endangered Species
B4.A.2(n)(iv) Critical Habitat
Table B4.A.1 Climate Data
Table B4.A.2 National Ambient Air Quality Standards
Appendix B4.A Soil Map
B4.B ENVIRONMENTAL IMPACTS OF (PROPOSED) FACILITY
Appendix B4.B Romulus Demographic Census Information
B4.C EXPOSURE INFORMATION REPORT FOR LANDFILLS AND SURFACE IMPOUNDMENTS
Appendix B4.C Noise Level Information
B4.D EVALUATION OF ALTERNATIVE HAZARDOUS WASTE MANAGEMENT TECHNIQUES

Introduction

This Environmental Assessment describes current conditions, environmental impacts, and applicable exposure information for the subject Facility. The goals of the environmental assessment are to describe and discuss: (i) the probable impact of the Facility on natural resources, human life, and the environmental elements that affect these values; (ii) probable unavoidable adverse effects of the Facility; (iii) alternatives for accomplishing the same objective; and (iv) possible modifications that would minimize adverse effects.

The former owner/operator of the Facility, Environmental Disposal Systems, Inc. (EDS), has previously prepared an extensive Environmental Assessment of the Facility (the "EDS EA"), which was included in the applications for the Hazardous Waste Management Facility Construction Permit (issued by MDNRE, then the Michigan Department of Environmental Quality, "EGLE," in 2001) and the Hazardous Waste Management Facility Operating License (issued by EGLE in 2005). The EDS EA remains valid and accurate with respect to the Facility and is incorporated herein by reference. Where appropriate, specific sections of the EDS EA are cross-referenced below. The EDS EA is on file with the MDNRE and is also available from the Applicant upon request.

B4.A CURRENT CONDITIONS

B4.A.1 Facility Description

The Facility is a commercial hazardous waste disposal Facility located at 28470 Citrin Drive, Romulus, Wayne County, Michigan. The Facility consists of two multisource commercial hazardous waste disposal wells and associated aboveground hazardous waste treatment and storage units. The Facility is designed to safely treat and dispose of acidic, alkaline and other wastes from commercial, institutional, governmental and industrial generators, providing needed capacity for the long-term management of hazardous wastes in the State of Michigan. The Facility may accept hazardous waste having one or more of the following waste codes:

D Codes		F Codes	K Codes				P Codes			
D002	D039	F001	K001	K038	K102	K157	P001	P041	P084	P185
D004	D040	F002	K002	K039	K103	K158	P002	P042	P085	P188
D005	D041	F003	K003	K040	K104	K159	P003	P043	P087	P189
D006	D042	F004	K004	K041	K105	K161	P004	P044	P088	P190
D007	D043	F005	K005	K042	K106	K169	P005	P045	P089	P191
D008		F006	K006	K043	K107	K170	P006	P046	P092	P192
D009		F007	K007	K044	K108	K171	P007	P047	P093	P194
D010		F008	K008	K045	K109	K172	P008	P048	P094	P196
D011		F009	K009	K046	K110	K174	P009	P049	P095	P197
D012		F010	K010	K047	K111	K175	P010	P050	P096	P198
D013		F011	K011	K048	K112	K176	P011	P051	P097	P199
D014		F012	K013	K049	K113	K177	P012	P054	P098	P201
D015		F019	K014	K050	K114	K178	P013	P056	P099	P202
D016		F024	K015	K051	K115		P014	P057	P101	P203
D017		F025	K016	K052	K116		P015	P058	P102	P204
D018		F032	K017	K060	K117		P016	P059	P103	P205
D019		F034	K018	K061	K118		P017	P060	P104	
D020		F035	K019	K062	K123		P018	P062	P105	
D021		F037	K020	K069	K124		P020	P063	P106	
D022		F038	K021	K071	K125		P021	P064	P108	
D023		F039	K022	K073	K126		P022	P065	P109	
D024			K023	K083	K131		P023	P066	P110	
D025			K024	K084	K132		P024	P067	P111	
D026			K025	K085	K136		P026	P068	P112	
D027			K026	K086	K140		P027	P069	P113	
D028			K027	K087	K141		P028	P070	P114	
D029			K028	K088	K142		P029	P071	P115	
D030			K029	K093	K143		P030	P072	P116	
D031			K030	K094	K144		P031	P073	P118	
D032			K031	K095	K145		P033	P074	P119	
D033			K032	K096	K147		P034	P075	P120	
D034			K033	K097	K148		P036	P076	P121	
D035			K034	K098	K149		P037	P077	P122	
D036			K035	K099	K150		P038	P078	P123	
D037			K036	K100	K151		P039	P081	P127	
D038			K037	K101	K156		P040	P082	P128	

U Codes						
U001	U039	U079	U118	U156	U194	U243
U002	U041	U080	U119	U157	U196	U244
U003	U042	U081	U120	U158	U197	U246
U004	U043	U082	U121	U159	U200	U247
U005	U044	U083	U122	U160	U201	U248
U006	U045	U084	U123	U161	U202	U249
U007	U046	U085	U124	U162	U203	U271
U008	U047	U086	U125	U163	U204	U278
U009	U048	U087	U126	U164	U205	U279
U010	U049	U088	U127	U165	U206	U280
U011	U050	U089	U128	U166	U207	U328
U012	U051	U090	U129	U167	U208	U353
U014	U052	U091	U130	U168	U209	U359
U015	U053	U092	U131	U169	U210	U364
U016	U055	U093	U132	U170	U211	U365
U017	U056	U094	U133	U171	U213	U367
U018	U057	U095	U134	U172	U214	U372
U019	U058	U096	U135	U173	U215	U373
U020	U059	U097	U136	U174	U216	U387
U021	U060	U098	U137	U176	U217	U389
U022	U061	U099	U138	U177	U218	U394
U023	U062	U101	U140	U178	U219	U395
U024	U063	U102	U141	U179	U220	U396
U025	U064	U103	U142	U180	U221	U409
U026	U066	U105	U143	U181	U222	U410
U027	U067	U106	U144	U182	U223	U411
U028	U068	U107	U145	U183	U225	
U029	U069	U108	U146	U184	U226	
U030	U070	U109	U147	U185	U227	
U031	U071	U110	U148	U186	U228	
U032	U072	U111	U149	U187	U234	
U033	U073	U112	U150	U188	U235	
U034	U074	U113	U151	U189	U236	
U035	U075	U114	U152	U190	U237	
U036	U076	U115	U153	U191	U238	
U037	U077	U116	U154	U192	U239	
U038	U078	U117	U155	U193	U240	

The site is approximately 15 acres in size. Of these 15 acres, approximately 5.9 acres are associated with the hazardous waste management Facility that includes storage, treatment and injection well disposal of hazardous wastes. The remaining 9.1-acre area, which generally serves as a buffer area, is located west of the active Facility. The site is completely abutted and surrounded by heavy industrial properties (Romulus Zoning District - General Industrial (MT2)). Adjacent land uses consist of Interstate 1-94 to the north, Marathon's (formerly "Total") gasoline storage facility to the east, Norfolk and Southern Railroad to the south, and vacant industrial property to the west.

The Facility includes the following hazardous waste management units:

- Treatment and Storage Building, consisting of a single story building containing:
  - One sampling bay for tanker trucks
  - Two tanker unloading bays
  - One railcar unloading bay
  - Waste treatment and storage tanks (267,900 gallons total capacity)
  - Solids removal filters and filter press system
  - Container storage and handling area (11,000 gallons capacity)
- Two deep injection wells contained within structural enclosures. Piping from the Treatment and Storage building to the wells is a double-walled design.

For additional information regarding the Facility description, please refer to Form EQP 5111 Attachment A1, General Facility Description, attached to this Application.

B4.A.2 Description of Existing Environmental Conditions

A description of existing environmental conditions at the Facility and any surrounding areas that may be affected by the Facility is included in this section. Detailed information that is provided in other attachments is not repeated here; however, references to appropriate attachments or relevant documents are provided.

B4.A.2(a) Climate

The Republic Facility is located in the southwestern part of Wayne County. The Facility is situated in the relatively flat terrain of southeastern Michigan at an elevation approximately 628 feet above msl. The Great Lakes, which surround the State give the region a quasi-marine climate. The following table provides average climatology data collected at the Detroit-Metro Airport from 2000 through 2020:

Table B4.A.1 Climate Data
Site ID No. MIR 000 016 055

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °F	32.7	35.0	46.4	59.4	70.6	80.0	84.2	82.2	75.2	62.2	49.4	37.1	59.4
(°C)	0.4	1.7	8.0	15.2	21.4	26.7	29.0	27.9	24.0	16.8	9.7	2.8	15.2
Average low °F	19.5	20.5	29.0	39.2	50.5	60.3	64.7	63.6	56.2	44.4	34.2	25.1	42.2
(°C)	-6.9	-6.4	-1.7	4.0	10.3	15.7	18.2	17.6	13.4	6.9	1.2	-3.8	5.7
Precip. inches	2.09	2.15	2.50	3.15	4.06	3.26	3.56	3.48	3.36	2.67	2.71	2.47	2.95
(mm)	53.1	54.6	63.5	80.0	103.1	82.8	90.4	88.4	85.3	67.8	68.8	62.7	74.9
Snowfall inches	13.3	14.3	5.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	2.0	10.4	4.0
(cm)	33.8	36.3	14.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	5.1	26.4	10.2

Source: U.S. Dept of Commerce, National Oceanic & Atmospheric Administration, National Environmental Satellite, Data, and Information Service, *Climatography of the United States* No. 20 2000-2020, Station: Detroit Metro Ap, MI.

For a detailed description of the climate associated with the Facility, refer to section 4.22, Climate, at pages 31-35 of the EDS EA.

B4.A.2(b) Topography

The altitude of the land surface in the area of the Facility ranges from approximately 625 feet above mean sea level ("msl") to approximately 629 feet above msl.
For a topographic map of the area, please refer to Form EQP 5111 Attachment A13, Topographic Maps, attached to this Application. For further discussion of topography, refer to Sections 4.21.1 and 4.41.1, at pages 25 and 93, respectively, of the EDS EA.

B4.A.2(c) Geology

For a detailed discussion of the geology associated with the Facility, please see Sections 4.21.2 and 4.41.3, at pages 25-26 and pages 93-94, respectively, of the EDS EA.

B4.A.2(d) Soils

The United States Department of Agriculture ("USDA") identifies the following soil types in the vicinity of the Facility: (i) Pella silt loam; (ii) Kibbie fine sand; and (iii) Selfridge loamy sand. A USDA soil map is attached to this as Appendix B4.A. For a detailed discussion of the soils associated with the Facility, refer to Sections 4.21.3 and 4.41.2, at pages 26-30 and pages 93-94, respectively, of the EDS EA.

B4.A.2(e) Hydrology

GZA GeoEnvironmental, Inc., on behalf of the former owner/operator of the Facility, prepared an extensive Hydrogeological Report for the Facility. This report, dated September 10, 1996, was included in the applications for the Hazardous Waste Management Facility Construction Permit (issued by MDEQ in 2001) and the Hazardous Waste Management Facility Operating License (issued by MDEQ in 2005). The Hydrogeological Report remains valid and accurate with respect to the Facility and is incorporated in Attachment B3 to this Application. The Hydrogeological Report is on file with the MDNRE and is also available from the Applicant upon request.

In addition to the Hydrogeological Report, for further information on the Facility's hydrology, refer to sections 4.13.5, 4.25, and 4.45 of the EDS EA.

B4.A.2(f) Land Use and Zoning

The Facility is located within a "MT-2" zoning district. The Romulus Zoning Ordinance describes this district as follows: "In the MT-2 District, the intent is to permit certain uses and industries which are of a heavy manufacturing character. Further, the intent is to permit, with certain conditions, larger-scale trucking operations involving interstate and intrastate motor carriers whose activities are mostly suitably placed in strategic locations close to complementary uses and other potentially high volume truck traffic areas and in locates which are efficiently coordinated with the city's planned street and thoroughfare system. It is also the intent to permit, with certain conditions, areas for the transfer, treatment, storage, disposal or recycling of trash, refuse and other liquid or solid waste." 'Tthe Facility is surrounded by similar heavy industrial uses.

For further information on zoning and land use, refer to Sections 4.29, 4.13.8, and 4.48.2 of the EDS EA.

B4.A.2(g) Historical or Archaeological Resources

No historical or archaeological resource has been, or will be, impacted by the Facility. For further discussion on this topic, refer to Section 4.210 and 4.49, at pages 68-69 and 108, respectively, of the EDS EA.

B4.A.2(h) Social Environment

The social environment, in terms of demographics and infrastructure of the area, is discussed in the following two subsections.

B4.A.2(h)(i) Demographics

United States Census Bureau data for the City of Romulus from the Census 2010 Summary File 1 and the 2019 American Community Survey are provided in Appendix B4.B. The City of Romulus has a population of approximately 23,500 with a median age of 36. The median household income is approximately $50,500 and the median home value is $93,300. For additional analysis of the demographics surrounding the Facility, refer to Sections 4.13.10 and 4.211 of the EDS EA.

The Facility is surrounded by heavy industrial land uses. There is no single family home located within a half-mile radius around the Facility. The closest single family home is located approximately three quarters of a mile from the Facility, in the City of Taylor.

B4.A.2(h)(ii) Infrastructure

The Facility is provided with potable water and sewer service by the Romulus Water Department and the Detroit Water and Sewerage District; however, the Facility only discharges sanitary wastewaters to the sewer system. No waste-derived wastewaters are discharged to the sewer system. Electrical and gas utilities are proved by DTE Energy (Michcon). The Facility is located on Citrin Drive, which is a paved road. The Facility is located within a zoning district that has been coordinated with Romulus' planned street and thoroughfare system to accommodate high-volume traffic.

B4.A.2(i) Transportation

The Facility is located on Citrin Drive, which is a paved road. The Facility is located within a zoning district that has been coordinated with Romulus' planned street and thoroughfare system to accommodate high-volume traffic. For additional information on transportation, refer to Sections 4.13.11, 4.212, and 4.411 of the EDS EA.

B4.A.2(j) Air Quality

Under Section 109 of the Clean Air Act, the United States Environmental Protection Agency establishes primary and secondary National Ambient Air Quality Standards ("NAAQS") for each pollutant for which air quality criteria have been issued. NAAQS have been established for carbon

monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. The table below lists the primary and secondary NAAQS, averaging time, and concentration level for each of these pollutants.

Pollutant [links to historical tables of NAAQS reviews]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3 month average	0.15 µg/m3 (1)	Not to be exceeded
Nitrogen Dioxide (NO2)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O3)		primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	PM2.5	primary	1 year	12.0 µg/m3	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m3	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m3	98th percentile, averaged over 3 years
	PM10	primary and secondary	24 hours	150 µg/m3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO2)		primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year
Sulfur Dioxide (SO2)		primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year
Source: https://www.epa.gov/criteria-air-pollutants/naaqs-table					

The EGLE reports in the Michigan 2009 Air Quality Report that carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, and PM10 levels are consistently below the established NAAQS throughout Michigan. EGLE further reports that there was one day in June 2009 and one day in August 2009 where ozone exceeded the 0.075 parts per million NAAQS in Southeast Michigan. In addition, EGLE reports that on August 18, 2008, EPA proposed the 7-county Southeast Michigan area as nonattainment for PM2.5 based on 2005-2007 data.
Major air pollution sources in the vicinity of the Facility include the Detroit Metro Airport and the Marathon Gasoline Storage facility located immediately east of the Facility.

The Facility is subject to a New Source Review Permit to Install issued by the MDNRE pursuant to Part 55 (Air Quality) of the Natural Resources and Environmental Protection Act. In addition, the Facility is constructed with an activated carbon adsorption system to control emissions. As stated in the EDS EA, the Facility is an insignificant source of regulated air contaminants and will not have any detrimental impact on the existing air quality in the area.

For additional information on air quality, please see Sections 4.13.12, 4.22, 4.26, and 4.42 of the EDS EA.

B4.A.2(k) Noise

Significant noise sources in the area of the Facility include the Detroit Metro Airport and I-94 traffic. The Detroit Metropolitan Wayne County Airport Part 150 Noise Compatibility Study Update ("Noise

Study Update"), conducted by the Wayne County Airport Authority, reports that in 2004 the "Day Night Noise Level" ("DNL") in the area of the Facility is 65 dBA (refer to Appendix B4.C). The Noise Study Update defines the DNL as follows:

> The DNL describes noise experienced during an entire (24-hour) day. DNL calculations account for the SEL of aircraft, the number of aircraft operations, and include a penalty for nighttime operations. In the DNL scale, noise occurring between the hours of 10 p.m. to 7 a.m. is penalized by 10 dB. This penalty was selected to account for the higher sensitivity to noise in the nighttime and the expected further decrease in background noise levels that typically occur at night. DNL is required by the FAA for the measurement of aircraft noise and in evaluating noise during a Part 150 Study. In addition, it is used by other federal agencies including the Environmental Protection Agency (EPA), the Department of Defense (DOD), and the Department of Housing and Urban Development (HUD).

The DNL reported in the Noise Study Update is consistent with the noise level study reported in the EDS EA. For additional information on noise issues, please see Sections 4.136 and 4.27 of the EDS EA.

B4.A.2(l) Appearance and Aesthetics

For information on appearance and aesthetics, refer to Sections 4.13.7 and 4.28 of the EDS EA.

B4.A.2(m) Terrestrial Ecosystem

For information on the terrestrial ecosystem in area of the Facility, refer to Sections 4.23 and 4.43 of the EDS EA.

The characteristics of the terrestrial ecosystem, in terms of flora, fauna, rare or endangered species, and critical habitat are described in the following subsections.

B4.A.2(m)(i) Flora

For information on the flora in area of the Facility, refer to Section 4.23.1 of the EDS EA.

B4.A.2(m)(ii) Fauna

For information on the fauna in area of the Facility, refer to Section 4.23.2 of the EDS EA.

B4.A.2(m)(iii) Rare or Endangered Species

There are no rare or endangered species in the area of the Facility. For additional information on endangered species, refer to Section 4.23.3 of the EDS EA.

B4.A.2(m)(iv) Critical Habitat

There are no critical habitats in the area of the Facility. For additional information on critical habitats, refer to Section 4.23.3 of the EDS EA.

B4.A.2(n) Aquatic Ecosystem

For information on the aquatic ecosystem in area of the Facility, refer to Sections 4.24 and 4.44 of the EDS EA.

The characteristics of the aquatic ecosystem, in terms of flora, fauna, rare or endangered species, and critical habitat are described in the following subsections.

B4.A.2(n)(i) Flora

For information on the flora in area of the Facility, refer to Section 4.24.1 of the EDS EA.

B4.A.2(n)(ii) Fauna

For information on the fauna in area of the Facility, refer to Section 4.24.2 of the EDS EA.

B4.A.2(n)(iii) Rare or Endangered Species

There are no rare or endangered species in the area of the Facility. For additional information on endangered species, refer to Section 4.24.3 of the EDS EA.

B4.A.2(n)(iv) Critical Habitat

There are no critical habitats in the area of the Facility. For additional information on critical habitats, refer to Section 4.24.3 of the EDS EA.

B4.B ENVIRONMENTAL IMPACTS OF THE FACILITY

For an analysis of the environmental impacts of the Facility, refer to Sections 4.40, 4.50, 4.60, and 4.70 of the EDS EA.

B4.C EXPOSURE INFORMATION REPORT FOR LANDFILLS AND SURFACE IMPOUNDMENTS

The Facility does not involve landfill units or surface impoundments. Therefore, this section is not applicable.

B4.D EVALUATION OF ALTERNATE HAZARDOUS WASTE MANAGEMENT TECHNOLOGIES

For an evaluation of alternate hazardous waste management technologies, refer to Section 4.32 of the EDS EA.

Appendix B4.A Soil Map

Appendix B4.B Romulus Demographic Census Information

United States Census Bureau, 2019 American Community Survey (Jan 2015-Dec 2019)

Selected Economic Characteristics	Estimate	Percent
HOUSEHOLDS BY TYPE		
Total households	8513	
Married-couple family	3408	40
With own children of the householder under 18 years	1177	13.8
Cohabiting couple household	538	6.3
With own children of the householder under 18 years	268	3.1
Male householder, no spouse/partner present	1667	19.6
With own children of the householder under 18 years	45	0.5
Householder living alone	1115	13.1
65 years and over	290	3.4
Female householder, no spouse/partner present	2900	34.1
With own children of the householder under 18 years	936	11
Householder living alone	1270	14.9
65 years and over	622	7.3
Households with one or more people under 18 years	3009	35.3
Households with one or more people 65 years and over	2196	25.8
Average household size	2.74	(X)
Average family size	3.36	(X)
RELATIONSHIP		
Population in households	23319	
Householder	8513	36.5
Spouse	3402	14.6
Unmarried partner	541	2.3
Child	7690	33
Other relatives	2426	10.4
Other nonrelatives	747	3.2
MARITAL STATUS		
Males 15 years and over	8667	
Never married	3775	43.6
Now married, except separated	3559	41.1
Separated	124	1.4
Widowed	310	3.6

Divorced	899	10.4
Females 15 years and over	9733	9733
Never married	3572	36.7
Now married, except separated	3570	36.7
Separated	397	4.1
Widowed	810	8.3
Divorced	1384	14.2
FERTILITY		
Number of women 15 to 50 years old who had a birth in the past 12 months	400	400
Unmarried women (widowed, divorced, and never married)	218	54.5
Per 1,000 unmarried women	56	(X)
Per 1,000 women 15 to 50 years old	67	(X)
Per 1,000 women 15 to 19 years old	40	(X)
Per 1,000 women 20 to 34 years old	138	(X)
Per 1,000 women 35 to 50 years old	15	(X)
GRANDPARENTS		
Number of grandparents living with own grandchildren under 18 years	763	
Grandparents responsible for grandchildren	360	47.2
Years responsible for grandchildren — Less than 1 year	91	11.9
1 or 2 years	97	12.7
3 or 4 years	0	0
5 or more years	172	22.5
Number of grandparents responsible for own grandchildren under 18 years	360	360
Who are female	285	79.2
Who are married	256	71.1
SCHOOL ENROLLMENT		
Population 3 years and over enrolled in school	6062	
Nursery school, preschool	348	5.7
Kindergarten	246	4.1
Elementary school (grades 1-8)	2655	43.8
High school (grades 9-12)	1443	23.8
College or graduate school	1370	22.6
EDUCATIONAL ATTAINMENT		
Population 25 years and over	15062	
Less than 9th grade	459	3
9th to 12th grade, no diploma	1342	8.9
High school graduate (includes equivalency)	5420	36

Some college, no degree	4224	28
Associate's degree	1020	6.8
Bachelor's degree	1833	12.2
Graduate or professional degree	764	5.1
High school graduate or higher	13261	88
Bachelor's degree or higher	2597	17.2
VETERAN STATUS		
Civilian population 18 years and over	17309	
Civilian veterans	1217	7
DISABILITY STATUS OF THE CIVILIAN NONINSTITUTIONALIZED POPULATION		
Total Civilian Noninstitutionalized Population	23475	
With a disability	2814	12
Under 18 years	6201	
With a disability	185	3
18 to 64 years	14365	
With a disability	1712	11.9
65 years and over	2909	
With a disability	917	31.5
RESIDENCE 1 YEAR AGO		
Population 1 year and over	22954	
Same house	19827	86.4
Different house in the U.S.	3111	13.6
Same county	2666	11.6
Different county	445	1.9
Same state	215	0.9
Different state	230	1
Abroad	16	0.1
PLACE OF BIRTH		
Total population	23527	
Native	22776	96.8
Born in United States	22692	96.5
Different state	3116	13.2
State of residence	19576	83.2
Born in Puerto Rico, U.S. Island areas, or born abroad to American parent(s)	84	0.4
Foreign born	751	3.2
U.S. CITIZENSHIP STATUS		
Foreign-born population	751	
Naturalized U.S. citizen	466	62.1

Not a U.S. citizen	285	37.9
YEAR OF ENTRY		
Population born outside the United States	835	
Native	84	84
Entered 2010 or later	0	0
Entered before 2010	84	100
Foreign born	751	751
Entered 2010 or later	118	15.7
Entered before 2010	633	84.3
WORLD REGION OF BIRTH OF FOREIGN BORN		
Foreign-born population, excluding population born at sea	751	
Europe	160	21.3
Asia	305	40.6
Africa	87	11.6
Oceania	0	0
Latin America	157	20.9
Northern America	42	5.6
LANGUAGE SPOKEN AT HOME		
Population 5 years and over	21624	
English only	20503	94.8
Language other than English	1121	5.2
Speak English less than very well""	345	1.6
Spanish	318	1.5
Speak English less than very well""	118	0.5
Other Indo-European languages	428	2
Speak English less than very well""	74	0.3
Asian and Pacific Islander languages	197	0.9
Speak English less than very well""	136	0.6
Other languages	178	0.8
Speak English less than very well""	17	0.1
ANCESTRY		
Total population	23527	
American	3389	14.4
Arab	167	0.7
Czech	15	0.1
Danish	5	0
Dutch	299	1.3
English	1003	4.3
French (except Basque)	601	2.6
French Canadian	534	2.3

German	2412	10.3
Greek	170	0.7
Hungarian	255	1.1
Irish	1694	7.2
Italian	655	2.8
Lithuanian	4	0
Norwegian	30	0.1
Polish	2118	9
Portuguese	10	0
Russian	121	0.5
Scotch-Irish	98	0.4
Scottish	179	0.8
Slovak	53	0.2
Subsaharan African	1079	4.6
Swedish	47	0.2
Swiss	9	0
Ukrainian	17	0.1
Welsh	155	0.7
West Indian (excluding Hispanic origin groups)	60	0.3
COMPUTERS AND INTERNET USE		
Total households	8513	
With a computer	7723	90.7
With a broadband Internet subscription	6508	76.4
EMPLOYMENT STATUS		
Population 16 years and over	17924	
In labor force	11336	63.2
Civilian labor force	11331	63.2
Employed	10130	56.5
Unemployed	1201	6.7
Armed Forces	5	0
Not in labor force	6588	36.8
Civilian labor force	11331	
Unemployment Rate	(X)	10.6
Females 16 years and over	9513	
In labor force	5631	59.2
Civilian labor force	5631	59.2
Employed	5073	53.3
Own children of the householder under 6 years	2043	
All parents in family in labor force	1110	54.3

Own children of the householder 6 to 17 years	3573	
All parents in family in labor force	2491	69.7
COMMUTING TO WORK		
Workers 16 years and over	9934	
Car, truck, or van -- drove alone	8438	84.9
Car, truck, or van -- carpooled	776	7.8
Public transportation (excluding taxicab)	37	0.4
Walked	37	0.4
Other means	279	2.8
Worked from home	367	3.7
Mean travel time to work (minutes)	24.8	(X)
OCCUPATION		
Civilian employed population 16 years and over	10130	
Management, business, science, and arts occupations	2505	24.7
Service occupations	1971	19.5
Sales and office occupations	1892	18.7
Natural resources, construction, and maintenance occupations	1011	10
Production, transportation, and material moving occupations	2751	27.2
INDUSTRY		
Civilian employed population 16 years and over	10130	
Agriculture, forestry, fishing and hunting, and mining	37	0.4
Construction	499	4.9
Manufacturing	2110	20.8
Wholesale trade	148	1.5
Retail trade	899	8.9
Transportation and warehousing, and utilities	1015	10
Information	91	0.9
Finance and insurance, and real estate and rental and leasing	594	5.9
Professional, scientific, and management, and administrative and waste management services	868	8.6
Educational services, and health care and social assistance	2191	21.6
Arts, entertainment, and recreation, and accommodation and food services	894	8.8
Other services, except public administration	504	5
Public administration	280	2.8
CLASS OF WORKER		
Civilian employed population 16 years and over	10130	
Private wage and salary workers	9039	89.2
Government workers	789	7.8
Self-employed in own not incorporated business workers	267	2.6

Unpaid family workers	35	0.3
INCOME AND BENEFITS (IN 2019 INFLATION-ADJUSTED DOLLARS)		
Total households	8513	
Less than $10,000	801	9.4
$10,000 to $14,999	379	4.5
$15,000 to $24,999	1045	12.3
$25,000 to $34,999	686	8.1
$35,000 to $49,999	1218	14.3
$50,000 to $74,999	1690	19.9
$75,000 to $99,999	1087	12.8
$100,000 to $149,999	1239	14.6
$150,000 to $199,999	222	2.6
$200,000 or more	146	1.7
Median household income (dollars)	51504	(X)
Mean household income (dollars)	62491	(X)
With earnings	6467	76
Mean earnings (dollars)	66412	(X)
With Social Security	2701	31.7
Mean Social Security income (dollars)	18102	(X)
With retirement income	1722	20.2
Mean retirement income (dollars)	20343	(X)
With Supplemental Security Income	547	6.4
Mean Supplemental Security Income (dollars)	10031	(X)
With cash public assistance income	307	3.6
Mean cash public assistance income (dollars)	2444	(X)
With Food Stamp/SNAP benefits in the past 12 months	1608	18.9
Families	5720	5720
Less than $10,000	383	6.7
$10,000 to $14,999	118	2.1
$15,000 to $24,999	583	10.2
$25,000 to $34,999	379	6.6
$35,000 to $49,999	836	14.6
$50,000 to $74,999	1229	21.5
$75,000 to $99,999	893	15.6
$100,000 to $149,999	993	17.4
$150,000 to $199,999	183	3.2
$200,000 or more	123	2.2
Median family income (dollars)	63142	(X)
Mean family income (dollars)	69458	(X)

Per capita income (dollars)	23679	(X)
Nonfamily households	2793	
Median nonfamily income (dollars)	30964	(X)
Mean nonfamily income (dollars)	45390	(X)
Median earnings for workers (dollars)	31619	(X)
Median earnings for male full-time, year-round workers (dollars)	50664	(X)
Median earnings for female full-time, year-round workers (dollars)	38062	(X)
HEALTH INSURANCE COVERAGE		
Civilian noninstitutionalized population	23475	
With health insurance coverage	21802	92.9
With private health insurance	15052	64.1
With public coverage	9309	39.7
No health insurance coverage	1673	7.1
Civilian noninstitutionalized population under 19 years	6647	6647
No health insurance coverage	299	4.5
Civilian noninstitutionalized population 19 to 64 years	13919	
In labor force:	10568	
Employed:	9418	
With health insurance coverage	8671	92.1
With private health insurance	7811	82.9
With public coverage	1171	12.4
No health insurance coverage	747	7.9
Unemployed:	1150	
With health insurance coverage	880	76.5
With private health insurance	336	29.2
With public coverage	566	49.2
No health insurance coverage	270	23.5
Not in labor force:	3351	
With health insurance coverage	3030	90.4
With private health insurance	1358	40.5
With public coverage	1893	56.5
No health insurance coverage	321	9.6
PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL		
All families	(X)	14.5
With related children of the householder under 18 years	(X)	23
With related children of the householder under 5 years only	(X)	17.6
Married couple families	(X)	4.8
With related children of the householder under 18 years	(X)	2.8

With related children of the householder under 5 years only	(X)	0
Families with female householder, no spouse present	(X)	29.8
With related children of the householder under 18 years	(X)	36.6
With related children of the householder under 5 years only	(X)	20.8
All people	(X)	17.2
Under 18 years	(X)	25.3
Related children of the householder under 18 years	(X)	25.4
Related children of the householder under 5 years	(X)	20.7
Related children of the householder 5 to 17 years	(X)	27.5
18 years and over	(X)	14.3
18 to 64 years	(X)	15.4
65 years and over	(X)	9.3
People in families	(X)	15
Unrelated individuals 15 years and over	(X)	27.4
HOUSING OCCUPANCY		
Total housing units	9180	
Occupied housing units	8513	92.7
Vacant housing units	667	7.3
Homeowner vacancy rate	0.5	(X)
Rental vacancy rate	8.2	(X)
UNITS IN STRUCTURE		
Total housing units	9180	
1-unit, detached	6342	69.1
1-unit, attached	472	5.1
2 units	78	0.8
3 or 4 units	185	2
5 to 9 units	415	4.5
10 to 19 units	442	4.8
20 or more units	389	4.2
Mobile home	857	9.3
Boat, RV, van, etc.	0	0
YEAR STRUCTURE BUILT		
Total housing units	9180	
Built 2014 or later	222	2.4
Built 2010 to 2013	55	0.6

Built 2000 to 2009	1167	12.7
Built 1990 to 1999	831	9.1
Built 1980 to 1989	669	7.3
Built 1970 to 1979	1953	21.3
Built 1960 to 1969	1595	17.4
Built 1950 to 1959	1437	15.7
Built 1940 to 1949	705	7.7
Built 1939 or earlier	546	5.9
ROOMS		
Total housing units	9180	
1 room	77	0.8
2 rooms	18	0.2
3 rooms	598	6.5
4 rooms	1166	12.7
5 rooms	2399	26.1
6 rooms	2389	26
7 rooms	1391	15.2
8 rooms	548	6
9 rooms or more	594	6.5
Median rooms	5.6	(X)
BEDROOMS		
Total housing units	9180	
No bedroom	77	0.8
1 bedroom	705	7.7
2 bedrooms	1634	17.8
3 bedrooms	5199	56.6
4 bedrooms	1372	14.9
5 or more bedrooms	193	2.1
HOUSING TENURE		
Occupied housing units	8513	
Owner-occupied	5482	64.4
Renter-occupied	3031	35.6
Average household size of owner-occupied unit	2.61	(X)
Average household size of renter-occupied unit	2.97	(X)
YEAR HOUSEHOLDER MOVED INTO UNIT		
Occupied housing units	8513	
Moved in 2017 or later	836	9.8
Moved in 2015 to 2016	956	11.2
Moved in 2010 to 2014	2478	29.1

Moved in 2000 to 2009	1907	22.4
Moved in 1990 to 1999	1025	12
Moved in 1989 and earlier	1311	15.4
VEHICLES AVAILABLE		
Occupied housing units	8513	
No vehicles available	659	7.7
1 vehicle available	3138	36.9
2 vehicles available	3186	37.4
3 or more vehicles available	1530	18
HOUSE HEATING FUEL		
Occupied housing units	8513	
Utility gas	7597	89.2
Bottled, tank, or LP gas	65	0.8
Electricity	706	8.3
Fuel oil, kerosene, etc.	22	0.3
Coal or coke	0	0
Wood	92	1.1
Solar energy	0	0
Other fuel	31	0.4
No fuel used	0	0
SELECTED CHARACTERISTICS		
Occupied housing units	8513	
Lacking complete plumbing facilities	41	0.5
Lacking complete kitchen facilities	9	0.1
No telephone service available	122	1.4
OCCUPANTS PER ROOM		
Occupied housing units	8513	
1.00 or less	8351	98.1
1.01 to 1.50	134	1.6
1.51 or more	28	0.3
VALUE		
Owner-occupied units	5482	
$100,000 to $149,999	1260	23
$150,000 to $199,999	739	13.5
Less than $50,000	1178	21.5
$50,000 to $99,999	1638	29.9
$200,000 to $299,999	519	9.5
$300,000 to $499,999	87	1.6
$500,000 to $999,999	61	1.1

$1,000,000 or more	0	0
Median (dollars)	97300	(X)
MORTGAGE STATUS		
Owner-occupied units	5482	
Housing units with a mortgage	3312	60.4
Housing units without a mortgage	2170	39.6
SELECTED MONTHLY OWNER COSTS (SMOC)		
Housing units with a mortgage	3312	
Median (dollars)	1165	(X)
Less than $500	39	1.2
$500 to $999	1162	35.1
$1,000 to $1,499	1304	39.4
$1,500 to $1,999	609	18.4
$2,000 to $2,499	177	5.3
$2,500 to $2,999	21	0.6
$3,000 or more	0	0
Housing units without a mortgage	2170	
Median (dollars)	458	(X)
Less than $250	200	9.2
$250 to $399	692	31.9
$400 to $599	655	30.2
$600 to $799	446	20.6
$800 to $999	140	6.5
$1,000 or more	37	1.7
SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME (SMOCAPI)		
Housing units with a mortgage (excluding units where SMOCAPI cannot be computed)	3312	
Less than 20.0 percent	1791	54.1
20.0 to 24.9 percent	481	14.5
25.0 to 29.9 percent	256	7.7
30.0 to 34.9 percent	191	5.8
35.0 percent or more	593	17.9
Not computed	0	(X)
Housing unit without a mortgage (excluding units where SMOCAPI cannot be computed)	2099	
20.0 to 24.9 percent	174	8.3
25.0 to 29.9 percent	70	3.3
30.0 to 34.9 percent	80	3.8
35.0 percent or more	297	14.1

Not computed	71	(X)
Less than 10.0 percent	703	33.5
10.0 to 14.9 percent	486	23.2
15.0 to 19.9 percent	289	13.8
GROSS RENT		
Occupied units paying rent	2925	
Median (dollars)	933	(X)
Less than $500	353	12.1
$500 to $999	1334	45.6
$1,000 to $1,499	1027	35.1
$1,500 to $1,999	157	5.4
$2,000 to $2,499	46	1.6
$2,500 to $2,999	8	0.3
$3,000 or more	0	0
No rent paid	106	(X)
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI)		
Occupied units paying rent (excluding units where GRAPI cannot be computed)	2781	
20.0 to 24.9 percent	173	6.2
25.0 to 29.9 percent	551	19.8
30.0 to 34.9 percent	156	5.6
35.0 percent or more	1148	41.3
Not computed	250	(X)
15.0 to 19.9 percent	297	10.7
Less than 15.0 percent	456	16.4
SEX AND AGE		
Total population	23527	
Under 18 years	6213	26.4
18 years and over	17314	
Male	8014	46.3
Female	9300	53.7
Sex ratio (males per 100 females)	86.2	(X)
Male	11257	47.8
Female	12270	52.2
Sex ratio (males per 100 females)	91.7	(X)
Under 5 years	1903	8.1
5 to 9 years	1665	7.1
10 to 14 years	1559	6.6
15 to 19 years	1822	7.7
20 to 24 years	1516	6.4

25 to 34 years	3152	13.4
35 to 44 years	3034	12.9
45 to 54 years	3210	13.6
55 to 59 years	1447	6.2
60 to 64 years	1275	5.4
65 to 74 years	1955	8.3
75 to 84 years	836	3.6
85 years and over	153	0.7
Median age (years)	35.5	(X)
16 years and over	17924	76.2
21 years and over	16407	69.7
62 years and over	3664	15.6
65 years and over	2944	12.5
Male	1225	41.6
Female	1719	58.4
Sex ratio (males per 100 females)	71.3	(X)
RACE		
Total population	23527	
One race	22776	96.8
White	12662	53.8
Black or African American	9570	40.7
American Indian and Alaska Native	13	0.1
Cherokee tribal grouping	0	0
Chippewa tribal grouping	0	0
Navajo tribal grouping	0	0
Sioux tribal grouping	0	0
Asian	346	1.5
Asian Indian	71	0.3
Chinese	16	0.1
Filipino	124	0.5
Japanese	11	0
Korean	0	0
Vietnamese	98	0.4
Other Asian	26	0.1
Native Hawaiian and Other Pacific Islander	0	0
Native Hawaiian	0	0
Guamanian or Chamorro	0	0
Samoan	0	0
Other Pacific Islander	0	0
Some other race	185	0.8

Two or more races	751	3.2
White and Black or African American	320	1.4
White and American Indian and Alaska Native	281	1.2
White and Asian	51	0.2
Black or African American and American Indian and Alaska Native	42	0.2
Race alone or in combination with one or more other races		
Total population	23527	
White	13342	56.7
Black or African American	9967	42.4
American Indian and Alaska Native	360	1.5
Asian	426	1.8
Native Hawaiian and Other Pacific Islander	0	0
Some other race	206	0.9
HISPANIC OR LATINO AND RACE		
Total population	23527	
Hispanic or Latino (of any race)	563	2.4
Mexican	466	2
Puerto Rican	54	0.2
Cuban	3	0
Other Hispanic or Latino	40	0.2
Not Hispanic or Latino	22964	97.6
White alone	12231	52
Black or African American alone	9570	40.7
American Indian and Alaska Native alone	13	0.1
Asian alone	346	1.5
Native Hawaiian and Other Pacific Islander alone	0	0
Some other race alone	58	0.2
Two or more races	746	3.2
Two races including Some other race	0	0
Two races excluding Some other race, and Three or more races	746	3.2
Total housing units	9180	(X)
CITIZEN, VOTING AGE POPULATION		
Citizen, 18 and over population	17036	
Male	7933	46.6
Female	9103	53.4

Selected Economic Characteristics	Estimate	Margin of Error (+/-)	Percent	Margin of Error (+/-)
HOUSEHOLDS BY TYPE				
Total households	8513	400	-	(X)
Married-couple family	3408	296	40	2.9
With own children of the householder under 18 years	1177	197	13.8	2.4
Cohabiting couple household	538	173	6.3	2
With own children of the householder under 18 years	268	129	3.1	1.5
Male householder, no spouse/partner present	1667	255	19.6	2.7
With own children of the householder under 18 years	45	37	0.5	0.4
Householder living alone	1115	203	13.1	2.1
65 years and over	290	88	3.4	1
Female householder, no spouse/partner present	2900	291	34.1	3.1
With own children of the householder under 18 years	936	249	11	2.9
Householder living alone	1270	220	14.9	2.3
65 years and over	622	154	7.3	1.7
Households with one or more people under 18 years	3009	220	35.3	3.3
Households with one or more people 65 years and over	2196	229	25.8	2.3
Average household size	2.74	0.13	(X)	(X)
Average family size	3.36	0.17	(X)	(X)
RELATIONSHIP				
Population in households	23319	60	-	(X)
Householder	8513	400	36.5	1.7
Spouse	3402	302	14.6	1.3
Unmarried partner	541	176	2.3	0.8
Child	7690	533	33	2.3
Other relatives	2426	620	10.4	2.7
Other nonrelatives	747	259	3.2	1.1
MARITAL STATUS				
Males 15 years and over	8667	461	-	(X)
Never married	3775	395	43.6	3.6
Now married, except separated	3559	298	41.1	3.1
Separated	124	83	1.4	1
Widowed	310	96	3.6	1.1
Divorced	899	205	10.4	2.3

Females 15 years and over	9733	451	9733	(X)
Never married	3572	360	36.7	2.9
Now married, except separated	3570	288	36.7	3.1
Separated	397	177	4.1	1.8
Widowed	810	166	8.3	1.7
Divorced	1384	251	14.2	2.3
FERTILITY				
Number of women 15 to 50 years old who had a birth in the past 12 months	400	170	-	(X)
Unmarried women (widowed, divorced, and never married)	218	116	54.5	17.1
Per 1,000 unmarried women	56	31	(X)	(X)
Per 1,000 women 15 to 50 years old	67	29	(X)	(X)
Per 1,000 women 15 to 19 years old	40	46	(X)	(X)
Per 1,000 women 20 to 34 years old	138	70	(X)	(X)
Per 1,000 women 35 to 50 years old	15	13	(X)	(X)
GRANDPARENTS				
Number of grandparents living with own grandchildren under 18 years	763	196	-	(X)
Grandparents responsible for grandchildren	360	143	47.2	14.2
Years responsible for grandchildren Less than 1 year	91	95	11.9	11.5
1 or 2 years	97	67	12.7	9.2
3 or 4 years	0	19	0	3.2
5 or more years	172	104	22.5	12.4
Number of grandparents responsible for own grandchildren under 18 years	360	143	-	(X)
Who are female	285	116	79.2	14.5
Who are married	256	133	71.1	18.9
SCHOOL ENROLLMENT				
Population 3 years and over enrolled in school	6062	489	-	(X)
Nursery school, preschool	348	158	5.7	2.5
Kindergarten	246	93	4.1	1.5
Elementary school (grades 1-8)	2655	321	43.8	4.6
High school (grades 9-12)	1443	308	23.8	4.7
College or graduate school	1370	284	22.6	4.2
EDUCATIONAL ATTAINMENT				
Population 25 years and over	15062	588	-	(X)
Less than 9th grade	459	173	3	1.1
9th to 12th grade, no diploma	1342	285	8.9	1.9

High school graduate (includes equivalency)	5420	469	36	3
Some college, no degree	4224	542	28	3.4
Associate's degree	1020	208	6.8	1.3
Bachelor's degree	1833	335	12.2	2
Graduate or professional degree	764	186	5.1	1.2
High school graduate or higher	13261	652	88	2.3
Bachelor's degree or higher	2597	402	17.2	2.4
VETERAN STATUS				
Civilian population 18 years and over	17309	526	-	(X)
Civilian veterans	1217	203	7	1.2
DISABILITY STATUS OF THE CIVILIAN NONINSTITUTIONALIZED POPULATION				
Total Civilian Noninstitutionalized Population	23475	37	-	(X)
With a disability	2814	309	12	1.3
Under 18 years	6201	530	-	(X)
With a disability	185	79	3	1.3
18 to 64 years	14365	423	-	(X)
With a disability	1712	248	11.9	1.7
65 years and over	2909	304	-	(X)
With a disability	917	163	31.5	5.5
RESIDENCE 1 YEAR AGO				
Population 1 year and over	22954	255	-	(X)
Same house	19827	745	86.4	3
Different house in the U.S.	3111	684	13.6	3
Same county	2666	662	11.6	2.9
Different county	445	145	1.9	0.6
Same state	215	93	0.9	0.4
Different state	230	96	1	0.4
Abroad	16	18	0.1	0.1
PLACE OF BIRTH				
Total population	23527	30	-	(X)
Native	22776	208	96.8	0.9
Born in United States	22692	226	96.5	1
Different state	3116	420	13.2	1.8
State of residence	19576	422	83.2	1.8
Born in Puerto Rico, U.S. Island areas, or born abroad to American parent(s)	84	64	0.4	0.3
Foreign born	751	207	3.2	0.9
U.S. CITIZENSHIP STATUS				
Foreign-born population	751	207	751	(X)

Naturalized U.S. citizen	466	158	62.1	12.6
Not a U.S. citizen	285	123	37.9	12.6
YEAR OF ENTRY				
Population born outside the United States	835	226	-	(X)
Native	84	64	84	(X)
Entered 2010 or later	0	19	0	25.3
Entered before 2010	84	64	100	25.3
Foreign born	751	207	-	(X)
Entered 2010 or later	118	61	15.7	7.4
Entered before 2010	633	188	84.3	7.4
WORLD REGION OF BIRTH OF FOREIGN BORN				
Foreign-born population, excluding population born at sea	751	207	-	(X)
Europe	160	89	21.3	10.1
Asia	305	155	40.6	15.9
Africa	87	81	11.6	10.7
Oceania	0	19	0	3.3
Latin America	157	111	20.9	13.9
Northern America	42	34	5.6	4.5
LANGUAGE SPOKEN AT HOME				
Population 5 years and over	21624	451	-	(X)
English only	20503	611	94.8	1.6
Language other than English	1121	348	5.2	1.6
Speak English less than very well""	345	159	1.6	0.7
Spanish	318	173	1.5	0.8
Speak English less than very well""	118	88	0.5	0.4
Other Indo-European languages	428	268	2	1.2
Speak English less than very well""	74	77	0.3	0.4
Asian and Pacific Islander languages	197	136	0.9	0.6
Speak English less than very well""	136	138	0.6	0.6
Other languages	178	124	0.8	0.6
Speak English less than very well""	17	21	0.1	0.1
ANCESTRY				
Total population	23527	30	-	(X)
American	3389	790	14.4	3.4
Arab	167	161	0.7	0.7
Czech	15	16	0.1	0.1
Danish	5	8	0	0.1
Dutch	299	140	1.3	0.6
English	1003	245	4.3	1
French (except Basque)	601	333	2.6	1.4

French Canadian	534	261	2.3	1.1
German	2412	472	10.3	2
Greek	170	173	0.7	0.7
Hungarian	255	112	1.1	0.5
Irish	1694	392	7.2	1.7
Italian	655	228	2.8	1
Lithuanian	4	6	0	0.1
Norwegian	30	23	0.1	0.1
Polish	2118	569	9	2.4
Portuguese	10	17	0	0.1
Russian	121	87	0.5	0.4
Scotch-Irish	98	87	0.4	0.4
Scottish	179	81	0.8	0.3
Slovak	53	55	0.2	0.2
Subsaharan African	1079	609	4.6	2.6
Swedish	47	36	0.2	0.2
Swiss	9	15	0	0.1
Ukrainian	17	16	0.1	0.1
Welsh	155	99	0.7	0.4
West Indian (excluding Hispanic origin groups)	60	75	0.3	0.3
COMPUTERS AND INTERNET USE				
Total households	8513	400	-	(X)
With a computer	7723	394	90.7	1.9
With a broadband Internet subscription	6508	401	76.4	3.1
EMPLOYMENT STATUS				
Population 16 years and over	17924	550	-	(X)
In labor force	11336	545	63.2	2.5
Civilian labor force	11331	544	63.2	2.5
Employed	10130	718	56.5	3
Unemployed	1201	367	6.7	2.2
Armed Forces	5	9	0	0.1
Not in labor force	6588	506	36.8	2.5
Civilian labor force	11331	544	-	(X)
Unemployment Rate	(X)	(X)	10.6	3.4
Females 16 years and over	9513	462	-	(X)
In labor force	5631	478	59.2	3.8
Civilian labor force	5631	478	59.2	3.8
Employed	5073	481	53.3	4.1
Own children of the householder under 6 years	2043	492	2043	(X)

All parents in family in labor force	1110	328	54.3	14.9
Own children of the householder 6 to 17 years	3573	447	3573	(X)
All parents in family in labor force	2491	450	69.7	8.5
COMMUTING TO WORK				
Workers 16 years and over	9934	705	-	(X)
Car, truck, or van -- drove alone	8438	582	84.9	2.9
Car, truck, or van -- carpooled	776	216	7.8	2
Public transportation (excluding taxicab)	37	25	0.4	0.3
Walked	37	31	0.4	0.3
Other means	279	159	2.8	1.5
Worked from home	367	199	3.7	1.9
Mean travel time to work (minutes)	24.8	1.3	(X)	(X)
OCCUPATION				
Civilian employed population 16 years and over	10130	718	-	(X)
Management, business, science, and arts occupations	2505	357	24.7	3.1
Service occupations	1971	291	19.5	2.8
Sales and office occupations	1892	363	18.7	3
Natural resources, construction, and maintenance occupations	1011	193	10	2
Production, transportation, and material moving occupations	2751	365	27.2	2.9
INDUSTRY				
Civilian employed population 16 years and over	10130	718	-	(X)
Agriculture, forestry, fishing and hunting, and mining	37	28	0.4	0.3
Construction	499	161	4.9	1.6
Manufacturing	2110	300	20.8	2.8
Wholesale trade	148	78	1.5	0.8
Retail trade	899	195	8.9	1.7
Transportation and warehousing, and utilities	1015	241	10	2.2
Information	91	52	0.9	0.5
Finance and insurance, and real estate and rental and leasing	594	174	5.9	1.6
Professional, scientific, and management, and administrative and waste management services	868	208	8.6	2
Educational services, and health care and social assistance	2191	364	21.6	3.4
Arts, entertainment, and recreation, and accommodation and food services	894	247	8.8	2.4
Other services, except public administration	504	173	5	1.7
Public administration	280	120	2.8	1.1
CLASS OF WORKER				

Civilian employed population 16 years and over	10130	718	-	(X)
Private wage and salary workers	9039	680	89.2	1.8
Government workers	789	165	7.8	1.5
Self-employed in own not incorporated business workers	267	102	2.6	1
Unpaid family workers	35	25	0.3	0.3
INCOME AND BENEFITS (IN 2019 INFLATION-ADJUSTED DOLLARS)				
Total households	8513	400	-	(X)
Less than $10,000	801	173	9.4	2
$10,000 to $14,999	379	127	4.5	1.5
$15,000 to $24,999	1045	230	12.3	2.6
$25,000 to $34,999	686	140	8.1	1.6
$35,000 to $49,999	1218	227	14.3	2.5
$50,000 to $74,999	1690	252	19.9	2.9
$75,000 to $99,999	1087	212	12.8	2.3
$100,000 to $149,999	1239	221	14.6	2.6
$150,000 to $199,999	222	79	2.6	0.9
$200,000 or more	146	74	1.7	0.9
Median household income (dollars)	51504	3502	(X)	(X)
Mean household income (dollars)	62491	3091	(X)	(X)
With earnings	6467	350	76	2.5
Mean earnings (dollars)	66412	3901	(X)	(X)
With Social Security	2701	303	31.7	3.2
Mean Social Security income (dollars)	18102	1196	(X)	(X)
With retirement income	1722	227	20.2	2.3
Mean retirement income (dollars)	20343	2873	(X)	(X)
With Supplemental Security Income	547	137	6.4	1.6
Mean Supplemental Security Income (dollars)	10031	1341	(X)	(X)
With cash public assistance income	307	140	3.6	1.6
Mean cash public assistance income (dollars)	2444	638	(X)	(X)
With Food Stamp/SNAP benefits in the past 12 months	1608	246	18.9	3.1
Families	5720	274	-	(X)
Less than $10,000	383	128	6.7	2.3
$10,000 to $14,999	118	57	2.1	1
$15,000 to $24,999	583	192	10.2	3.2
$25,000 to $34,999	379	114	6.6	2
$35,000 to $49,999	836	197	14.6	3.2
$50,000 to $74,999	1229	205	21.5	3.5

$75,000 to $99,999	893	189	15.6	3.1
$100,000 to $149,999	993	204	17.4	3.6
$150,000 to $199,999	183	76	3.2	1.3
$200,000 or more	123	73	2.2	1.2
Median family income (dollars)	63142	3972	(X)	(X)
Mean family income (dollars)	69458	3988	(X)	(X)
Per capita income (dollars)	23679	1528	(X)	(X)
Nonfamily households	2793	312	-	(X)
Median nonfamily income (dollars)	30964	5324	(X)	(X)
Mean nonfamily income (dollars)	45390	7490	(X)	(X)
Median earnings for workers (dollars)	31619	1197	(X)	(X)
Median earnings for male full-time, year-round workers (dollars)	50664	3652	(X)	(X)
Median earnings for female full-time, year-round workers (dollars)	38062	2309	(X)	(X)
HEALTH INSURANCE COVERAGE				
Civilian noninstitutionalized population	23475	37	-	(X)
With health insurance coverage	21802	323	92.9	1.4
With private health insurance	15052	979	64.1	4.2
With public coverage	9309	878	39.7	3.7
No health insurance coverage	1673	322	7.1	1.4
Civilian noninstitutionalized population under 19 years	6647	526	6647	(X)
No health insurance coverage	299	146	4.5	2.2
Civilian noninstitutionalized population 19 to 64 years	13919	420	-	(X)
In labor force:	10568	479	-	(X)
Employed:	9418	625	-	(X)
With health insurance coverage	8671	595	92.1	2
With private health insurance	7811	588	82.9	3
With public coverage	1171	269	12.4	2.8
No health insurance coverage	747	200	7.9	2
Unemployed:	1150	366	-	(X)
With health insurance coverage	880	253	76.5	12.6
With private health insurance	336	140	29.2	9
With public coverage	566	159	49.2	11.2
No health insurance coverage	270	193	23.5	12.6
Not in labor force:	3351	349	-	(X)
With health insurance coverage	3030	316	90.4	3.4
With private health insurance	1358	234	40.5	6.3
With public coverage	1893	324	56.5	7.2
No health insurance coverage	321	122	9.6	3.4

PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL				
All families	(X)	(X)	14.5	3.6
With related children of the householder under 18 years	(X)	(X)	23	5.6
With related children of the householder under 5 years only	(X)	(X)	17.6	16.6
Married couple families	(X)	(X)	4.8	2.7
With related children of the householder under 18 years	(X)	(X)	2.8	2
With related children of the householder under 5 years only	(X)	(X)	0	8.3
Families with female householder, no spouse present	(X)	(X)	29.8	7.4
With related children of the householder under 18 years	(X)	(X)	36.6	9.6
With related children of the householder under 5 years only	(X)	(X)	20.8	18.9
All people	(X)	(X)	17.2	3.3
Under 18 years	(X)	(X)	25.3	6.5
Related children of the householder under 18 years	(X)	(X)	25.4	6.5
Related children of the householder under 5 years	(X)	(X)	20.7	8.2
Related children of the householder 5 to 17 years	(X)	(X)	27.5	7.5
18 years and over	(X)	(X)	14.3	2.7
18 to 64 years	(X)	(X)	15.4	3.2
65 years and over	(X)	(X)	9.3	3.6
People in families	(X)	(X)	15	3.7
Unrelated individuals 15 years and over	(X)	(X)	27.4	5.2
HOUSING OCCUPANCY				
Total housing units	9180	433	-	(X)
Occupied housing units	8513	400	92.7	1.9
Vacant housing units	667	189	7.3	1.9
Homeowner vacancy rate	0.5	0.7	(X)	(X)
Rental vacancy rate	8.2	3.3	(X)	(X)
UNITS IN STRUCTURE				
Total housing units	9180	433	-	(X)
1-unit, detached	6342	353	69.1	2.5
1-unit, attached	472	120	5.1	1.3
2 units	78	50	0.8	0.5
3 or 4 units	185	122	2	1.4

5 to 9 units	415	126	4.5	1.3
10 to 19 units	442	155	4.8	1.7
20 or more units	389	114	4.2	1.2
Mobile home	857	146	9.3	1.5
Boat, RV, van, etc.	0	19	0	0.3
YEAR STRUCTURE BUILT				
Total housing units	9180	433	-	(X)
Built 2014 or later	222	90	2.4	1
Built 2010 to 2013	55	46	0.6	0.5
Built 2000 to 2009	1167	203	12.7	2
Built 1990 to 1999	831	147	9.1	1.6
Built 1980 to 1989	669	174	7.3	1.8
Built 1970 to 1979	1953	244	21.3	2.8
Built 1960 to 1969	1595	233	17.4	2.4
Built 1950 to 1959	1437	268	15.7	2.7
Built 1940 to 1949	705	192	7.7	2.1
Built 1939 or earlier	546	142	5.9	1.6
ROOMS				
Total housing units	9180	433	-	(X)
1 room	77	71	0.8	0.8
2 rooms	18	19	0.2	0.2
3 rooms	598	150	6.5	1.5
4 rooms	1166	193	12.7	1.9
5 rooms	2399	310	26.1	3.3
6 rooms	2389	295	26	3
7 rooms	1391	227	15.2	2.4
8 rooms	548	134	6	1.5
9 rooms or more	594	126	6.5	1.3
Median rooms	5.6	0.2	(X)	(X)
BEDROOMS				
Total housing units	9180	433	-	(X)
No bedroom	77	71	0.8	0.8
1 bedroom	705	163	7.7	1.7
2 bedrooms	1634	231	17.8	2.3
3 bedrooms	5199	360	56.6	3.4
4 bedrooms	1372	238	14.9	2.5
5 or more bedrooms	193	85	2.1	0.9
HOUSING TENURE				
Occupied housing units	8513	400	-	(X)

Owner-occupied	5482	407	64.4	3.4
Renter-occupied	3031	304	35.6	3.4
Average household size of owner-occupied unit	2.61	0.11	(X)	(X)
Average household size of renter-occupied unit	2.97	0.26	(X)	(X)
YEAR HOUSEHOLDER MOVED INTO UNIT				
Occupied housing units	8513	400	-	(X)
Moved in 2017 or later	836	213	9.8	2.5
Moved in 2015 to 2016	956	181	11.2	2
Moved in 2010 to 2014	2478	268	29.1	3.3
Moved in 2000 to 2009	1907	299	22.4	3.1
Moved in 1990 to 1999	1025	192	12	2
Moved in 1989 and earlier	1311	149	15.4	1.8
VEHICLES AVAILABLE				
Occupied housing units	8513	400	-	(X)
No vehicles available	659	202	7.7	2.3
1 vehicle available	3138	304	36.9	2.9
2 vehicles available	3186	317	37.4	3.4
3 or more vehicles available	1530	214	18	2.5
HOUSE HEATING FUEL				
Occupied housing units	8513	400	-	(X)
Utility gas	7597	414	89.2	2
Bottled, tank, or LP gas	65	34	0.8	0.4
Electricity	706	171	8.3	1.9
Fuel oil, kerosene, etc.	22	26	0.3	0.3
Coal or coke	0	19	0	0.3
Wood	92	97	1.1	1.2
Solar energy	0	19	0	0.3
Other fuel	31	38	0.4	0.4
No fuel used	0	19	0	0.3
SELECTED CHARACTERISTICS				
Occupied housing units	8513	400	-	(X)
Lacking complete plumbing facilities	41	49	0.5	0.6
Lacking complete kitchen facilities	9	11	0.1	0.1
No telephone service available	122	53	1.4	0.6
OCCUPANTS PER ROOM				
Occupied housing units	8513	400	-	(X)
1.00 or less	8351	461	98.1	1.2
1.01 to 1.50	134	87	1.6	1.1
1.51 or more	28	33	0.3	0.4

VALUE				
Owner-occupied units	5482	407	-	(X)
$100,000 to $149,999	1260	235	23	4
$150,000 to $199,999	739	160	13.5	2.9
Less than $50,000	1178	200	21.5	3.3
$50,000 to $99,999	1638	237	29.9	3.5
$200,000 to $299,999	519	143	9.5	2.3
$300,000 to $499,999	87	48	1.6	0.9
$500,000 to $999,999	61	43	1.1	0.8
$1,000,000 or more	0	19	0	0.5
Median (dollars)	97300	8875	(X)	(X)
MORTGAGE STATUS				
Owner-occupied units	5482	407	-	(X)
Housing units with a mortgage	3312	318	60.4	3.7
Housing units without a mortgage	2170	262	39.6	3.7
SELECTED MONTHLY OWNER COSTS (SMOC)				
Housing units with a mortgage	3312	318	-	(X)
Median (dollars)	1165	61	(X)	(X)
Less than $500	39	45	1.2	1.3
$500 to $999	1162	207	35.1	5.4
$1,000 to $1,499	1304	207	39.4	5.6
$1,500 to $1,999	609	189	18.4	5.1
$2,000 to $2,499	177	80	5.3	2.4
$2,500 to $2,999	21	17	0.6	0.5
$3,000 or more	0	19	0	0.8
Housing units without a mortgage	2170	262	-	(X)
Median (dollars)	458	40	(X)	(X)
Less than $250	200	83	9.2	3.7
$250 to $399	692	150	31.9	5.3
$400 to $599	655	137	30.2	5
$600 to $799	446	128	20.6	5.3
$800 to $999	140	65	6.5	3.1
$1,000 or more	37	30	1.7	1.4
SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME (SMOCAPI)				
Housing units with a mortgage (excluding units where SMOCAPI cannot be computed)	3312	318	-	(X)
Less than 20.0 percent	1791	246	54.1	4.9
20.0 to 24.9 percent	481	135	14.5	3.9
25.0 to 29.9 percent	256	104	7.7	3

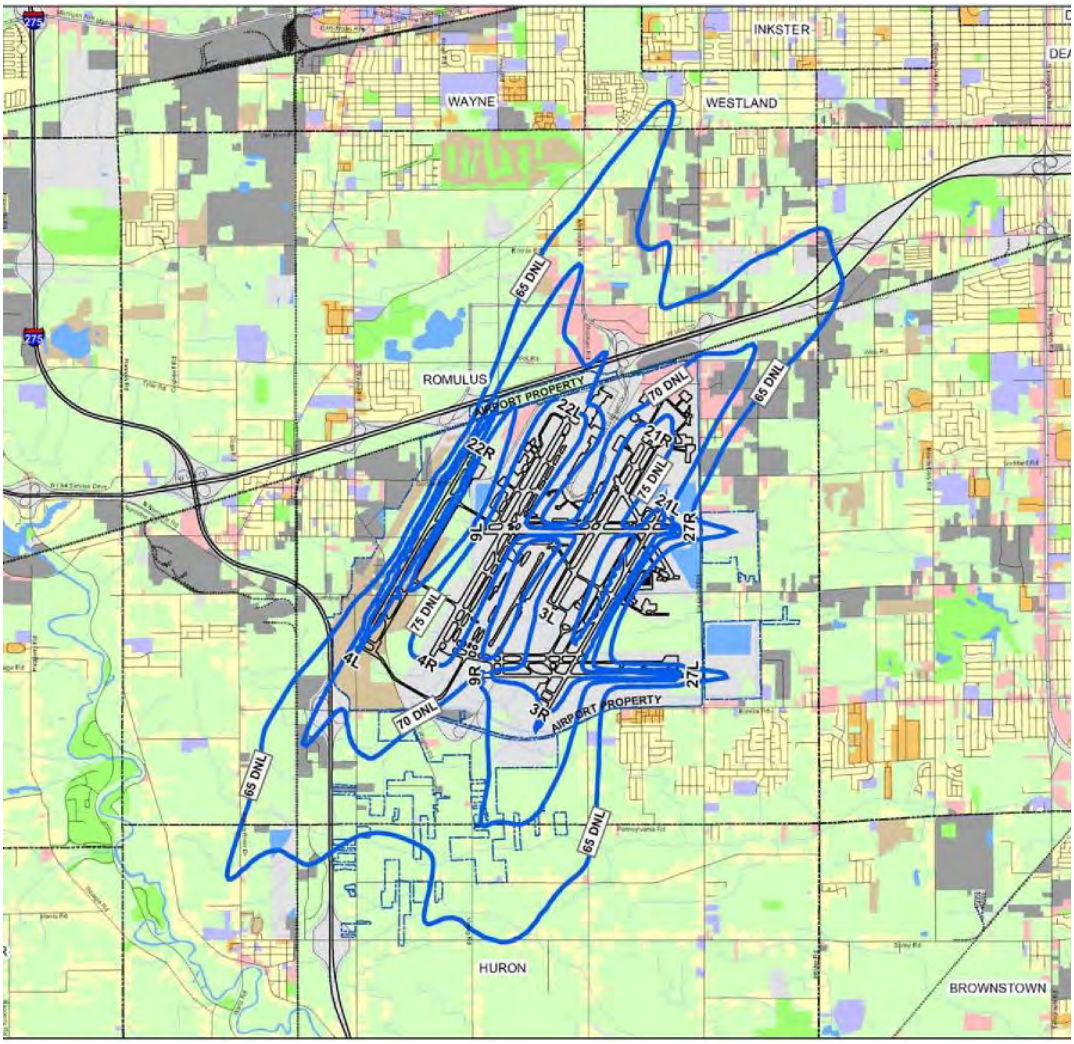
30.0 to 34.9 percent	191	79	5.8	2.4
35.0 percent or more	593	152	17.9	4.4
Not computed	0	19	(X)	(X)
Housing unit without a mortgage (excluding units where SMOCAPI cannot be computed)	2099	260	-	(X)
20.0 to 24.9 percent	174	99	8.3	4.4
25.0 to 29.9 percent	70	38	3.3	1.8
30.0 to 34.9 percent	80	54	3.8	2.5
35.0 percent or more	297	114	14.1	5.3
Not computed	71	60	(X)	(X)
Less than 10.0 percent	703	147	33.5	5.7
10.0 to 14.9 percent	486	125	23.2	4.8
15.0 to 19.9 percent	289	83	13.8	3.9
GROSS RENT				
Occupied units paying rent	2925	307	-	(X)
Median (dollars)	933	53	(X)	(X)
Less than $500	353	122	12.1	3.9
$500 to $999	1334	201	45.6	6.3
$1,000 to $1,499	1027	253	35.1	7
$1,500 to $1,999	157	104	5.4	3.5
$2,000 to $2,499	46	45	1.6	1.5
$2,500 to $2,999	8	13	0.3	0.5
$3,000 or more	0	19	0	0.8
No rent paid	106	60	(X)	(X)
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI)				
Occupied units paying rent (excluding units where GRAPI cannot be computed)	2781	322	-	(X)
20.0 to 24.9 percent	173	75	6.2	2.7
25.0 to 29.9 percent	551	181	19.8	6.2
30.0 to 34.9 percent	156	80	5.6	2.8
35.0 percent or more	1148	241	41.3	6.2
Not computed	250	109	(X)	(X)
15.0 to 19.9 percent	297	127	10.7	4.4
Less than 15.0 percent	456	160	16.4	5.8
SEX AND AGE				
Total population	23527	30	-	(X)
Under 18 years	6213	530	26.4	2.3
18 years and over	17314	528	-	(X)
Male	8014	464	46.3	2.1

Female	9300	421	53.7	2.1
Sex ratio (males per 100 females)	86.2	7.1	(X)	(X)
Male	11257	432	47.8	1.8
Female	12270	430	52.2	1.8
Sex ratio (males per 100 females)	91.7	6.7	(X)	(X)
Under 5 years	1903	454	8.1	1.9
5 to 9 years	1665	279	7.1	1.2
10 to 14 years	1559	267	6.6	1.1
15 to 19 years	1822	325	7.7	1.4
20 to 24 years	1516	288	6.4	1.2
25 to 34 years	3152	451	13.4	1.9
35 to 44 years	3034	300	12.9	1.3
45 to 54 years	3210	306	13.6	1.3
55 to 59 years	1447	291	6.2	1.2
60 to 64 years	1275	203	5.4	0.9
65 to 74 years	1955	285	8.3	1.2
75 to 84 years	836	143	3.6	0.6
85 years and over	153	69	0.7	0.3
Median age (years)	35.5	2.5	(X)	(X)
16 years and over	17924	550	76.2	2.3
21 years and over	16407	528	69.7	2.3
62 years and over	3664	371	15.6	1.6
65 years and over	2944	305	12.5	(X)
Male	1225	151	41.6	3.6
Female	1719	223	58.4	3.6
Sex ratio (males per 100 females)	71.3	10.7	(X)	(X)
RACE				
Total population	23527	30	-	(X)
One race	22776	256	96.8	1.1
White	12662	705	53.8	3
Black or African American	9570	767	40.7	3.3
American Indian and Alaska Native	13	17	0.1	0.1
Cherokee tribal grouping	0	19	0	0.1
Chippewa tribal grouping	0	19	0	0.1
Navajo tribal grouping	0	19	0	0.1
Sioux tribal grouping	0	19	0	0.1
Asian	346	161	1.5	0.7
Asian Indian	71	81	0.3	0.3
Chinese	16	25	0.1	0.1
Filipino	124	86	0.5	0.4

Japanese	11	16	0	0.1
Korean	0	19	0	0.1
Vietnamese	98	109	0.4	0.5
Other Asian	26	23	0.1	0.1
Native Hawaiian and Other Pacific Islander	0	19	0	0.1
Native Hawaiian	0	19	0	0.1
Guamanian or Chamorro	0	19	0	0.1
Samoan	0	19	0	0.1
Other Pacific Islander	0	19	0	0.1
Some other race	185	171	0.8	0.7
Two or more races	751	256	3.2	1.1
White and Black or African American	320	170	1.4	0.7
White and American Indian and Alaska Native	281	183	1.2	0.8
White and Asian	51	58	0.2	0.2
Black or African American and American Indian and Alaska Native	42	64	0.2	0.3
Race alone or in combination with one or more other races				
Total population	23527	30	-	(X)
White	13342	764	56.7	3.2
Black or African American	9967	736	42.4	3.1
American Indian and Alaska Native	360	194	1.5	0.8
Asian	426	203	1.8	0.9
Native Hawaiian and Other Pacific Islander	0	19	0	0.1
Some other race	206	175	0.9	0.7
HISPANIC OR LATINO AND RACE				
Total population	23527	30	-	(X)
Hispanic or Latino (of any race)	563	249	2.4	1.1
Mexican	466	221	2	0.9
Puerto Rican	54	60	0.2	0.3
Cuban	3	5	0	0.1
Other Hispanic or Latino	40	61	0.2	0.3
Not Hispanic or Latino	22964	254	97.6	1.1
White alone	12231	703	52	3
Black or African American alone	9570	767	40.7	3.3
American Indian and Alaska Native alone	13	17	0.1	0.1
Asian alone	346	161	1.5	0.7
Native Hawaiian and Other Pacific Islander alone	0	19	0	0.1
Some other race alone	58	58	0.2	0.2

Two or more races	746	256	3.2	1.1
Two races including Some other race	0	19	0	0.1
Two races excluding Some other race, and Three or more races	746	256	3.2	1.1
Total housing units	9180	433	(X)	(X)
CITIZEN, VOTING AGE POPULATION				
Citizen, 18 and over population	17036	543	-	(X)
Male	7933	468	46.6	2.1
Female	9103	432	53.4	2.1

Appendix B4.C Noise Level Information



2004 Day Night Noise Levels
Source: Wayne County Airport Authority
http://metroairport.com/programs/part150/maps.asp

FORM EQP 5111 ATTACHMENT B5
ENVIRONMENTAL MONITORING PROGRAMS

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE)*Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See the instructions for Form EQP 5111 for details on how to use this attachment. All references to Title 40 of the Code of Federal Regulations (40 CFR) citations specified herein are adopted by reference in R 299.11003.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9611 establishes requirements for the environmental monitoring programs for hazardous waste management facilities. Owners and operators of hazardous waste treatment, storage, or disposal facilities must develop an environmental monitoring program capable of detecting a release of hazardous waste or hazardous waste constituents from the facility to groundwater, air, or soil.

This license application template addresses requirements for an environmental monitoring program for hazardous waste management units and the hazardous waste management facility for the Republic facility. The template includes either a monitoring program description or a demonstration for a waiver from the monitoring requirements in accordance with R 299.9611(3)(a) and (b) and R 299.9611(4) as indicated below:

Groundwater Monitoring Program *(Check as appropriate)*

☒ R 299.9612 compliance monitoring program and sampling and analysis plan for one or more units
☐ Waiver for one or more units

If appropriate, both boxes may be checked if different monitoring programs and waivers apply to the units at the facility.

Ambient Air Monitoring Program (Check as appropriate)

☒ Monitoring program and sampling and analysis plan

☐ Waiver

Annual Soil Monitoring Program (Check as appropriate)

☒ Monitoring program and sampling and analysis plan

☐ Waiver

This attachment is organized as follows:

B5.A GROUNDWATER MONITORING PROGRAM
B5.A.1 Unit-Specific Groundwater Monitoring Program
Table B5.A.1 Groundwater Monitoring Program
B5.A.2 Groundwater Monitoring Program Waiver

B5.A.3 General Groundwater Monitoring Requirements
B5.A.3(a) Sampling and Analysis Plan
B5.A.3(b) Description of Wells
B5.A.3(c) Procedure for Establishing Background Quality
B5.A.3(d) Statistical Procudrues
Table B5.A.3 Sampling and Analysis Plan, GWM
B5.A.4 Detection Monitoring Program
B5.A.4(a) Indicator Parameters, Waste Constituents, and Reaction Products
B5.A.4(b) Groundwater Monitoring System
B5.A.4(c) Background Concentration Values for Proposed Parameters
B5.A.4(d) Proposed Sampling and Analysis Procedures
B5.A.5 Compliance Monitoring Program

Appendix B5.A Sampling Locations
B5.B AMBIENT AIR MONITORING PROGRAM
B5.B.1 Sampling and Analysis Plan
Table B5.B.1 Sampling and Analysis Plan, AAM
B5.C ANNUAL SOIL MONITORING PROGRAM
B5.C.1 Sampling and Analysis Plan
Table B5.C.1 Sampling and Analysis Plan, SM

B5.A GROUNDWATER MONITORING PROGRAM

[R 299.9611(2)(b) and (3), R 299.9612, and R 299.9629 and 40 CFR, Part 264, Subpart F, except 40 CFR §§264.94(a)(2) and (3), (b), and (c), 264.100, and 264.101]

This section describes the Facility's unit-specific groundwater monitoring program as outlined in Table B5.A.1. The basis for determining the groundwater monitoring program for each unit described below is provided in the Attachment B3, Hydrogeological Report, attached separately to this application, which was prepared in accordance with R 299.9506.

B5.A.1 Unit-Specific Groundwater Monitoring Program

Table B5.A.1 Groundwater Monitoring Program Site ID No. MIR 000 016 055

Unit	Name of Unit Subject to Monitoring[1]	Conditional Non-LDF Waiver[2]	No Migration Waiver[3]	Detection Monitoring[4]	Compliance Monitoring[5]	Corrective Action Monitoring[6]
1	Entire Facility	N/A	N/A	Yes	N/A	N/A

Republic conducts a detection groundwater monitoring program that monitors the entire Facility as a single unit. Under this program, Republic operates and maintains a groundwater monitoring system consisting of five monitoring wells labeled MW1, MW2, MW3, MW4, and MW5A as shown on Figure 5.00-1 (Sampling Location and Schedule) (Drawing No. 95440-2) attached hereto as Appendix B5.A. The parameters and frequency of the sampling and analysis portion of the GWM Program are provided in Table B5.A.3 below.

B5.A.2 Groundwater Monitoring Program Waiver
[R 299.9611(3)]

Republic is not seeking a waiver of the groundwater monitoring requirements. Nonetheless, it should be noted that all treatment, storage, and waste handling activities at the Facility principally take place inside a structure that provides protection from precipitation and runoff, and the Facility is in compliance with the provisions of R 299.9604 concerning run-on control systems, runoff management, and systems to prevent waste from escaping into the environment. Any precipitation falling onto the outdoor portions of the Railcar Storage Area will be collected by the secondary containment area and directed to the Storm Water Runoff Vault. Further, the Facility has prepared a "No Migration Petition" for the two injection wells and, after extensive review, received its "Exemption-Class I Hazardous Waste Injection" approval from the United States Environmental Protection Agency ("EPA") on March 25, 2004. The Notice of Issuance of Exemption from Land Disposal Restrictions is published at 69 Fed. Reg. 15,328.

B5.A.3 General Groundwater Monitoring Requirements
[R 299.9612 and 40 CFR §§264.97 and 264.91(b)]

The Republic Facility will comply with the requirements for a groundwater monitoring program by implementing the program described in this section. This program was developed to satisfy the requirements of R 299.9612 and R 299.9629 and 40 CFR §§264.98 and 264.99, except 40 CFR §§264.94(a)(2) and (3) and 264.94(b) and (c). The basis for determining the groundwater monitoring program for each unit is provided in Attachment B3, Hydrogeologic Report, of this application that was prepared in accordance with R 299.9506.

The Facility samples and analyzes the groundwater collected from the monitoring wells in conformance with applicable EGLE stipulated procedures including scheduling, parameters, and

analytical procedures as specified in Table B5.A.3 below. An annual groundwater report is prepared and submitted to the EGLE as well.

B5.A.3(a) Sampling and Analysis Plan
[R 299.9611(2)(a)]

A sampling and analysis plan for groundwater monitoring at the Republic Facility is described below. The sampling and analysis plan was prepared in accordance with the requirements specified in R 299.9611(2)(a). All sampling and analysis performed pursuant to this application will be consistent with the contract laboratory's QA/QC Plan. All samples for the purpose of environmental monitoring will be collected, transported, stored, and disposed by trained and qualified individuals in accordance with the contract laboratory's QA/QC Plan.

B5.A.3(b) Description of Wells
[R 299.9612 and 40 CFR §264.97(a), (b), and (c)]

Republic GWM Program utilizes five (5) GWM wells. All five wells were installed as per the then-EGLE's requirements, and have been in use since 2005. The description of each of these wells was provided to the agency in the GZA GeoEnvironmental, Inc., Hydrogeological Report, Section 3.00, Figures, dated September 10, 1996. MW-5 was decommissioned on January 27, 2009 per the ASTM Standard D5299-99(2005) Standard Guide for Decommissioning of Groundwater Monitoring Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities, as recommended by the EGLE. MW-5A was installed to replace MW-5, (January 26, 27 and 28, 2009).

B5.A.3(c) Procedure for Establishing Background Quality
[R 299.9612 and 40 CFR §264.97(a)(1) and (g)]

The Facility began to monitor groundwater quality in conformance with R 299.9612 (1)(d) and (e), 40 CFR 264.97(a) and (g), and, its Operating License ("OL") as follows; sampling & analysis ("testing") for primary parameters (metals, volatile organics) and secondary parameters (pH, specific conductance, TOX) were collected in 2006 and 2007 and have been collected quarterly beginning in 2008. In 2008, once the non-operational Facility had acquired over a year's worth of groundwater monitoring data, the Facility submitted an initial Background Groundwater Quality Report in conformance with the aforementioned requirements and the then-MDEQ requirements and requests. However, before the then-MDEQ review could be completed, in early 2009, EPA revised its Background Groundwater Quality Guidance (see March 2009 EPA document entitled, "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance" EPA 530-R-09-007), and as a result, the then-MDEQ did likewise. As a result, and in conformance with EGLE's request, the Facility has continued to (a) quarterly sample and analyze the groundwater, and, (b) provide an annual report to EGLE. Once the Operating License was acquired by EGT, the Facility prepared a Background Groundwater Quality Report in conformance with both the aforementioned regulations, EPA & MDEQ requirements and requests as of that time, and the then Operating License Groundwater Monitoring Program (expected to be identical to the existing Operating License).

B5.A.3(d) Statistical Procedures
[R 299.9612 and 40 CFR §§264.97(h) and 264.97(i)(1), (5), and (6)]

The statistical procedures to be used for evaluating groundwater monitoring data are consistent with those used during the previous monitoring events which are consistent with EGLE and U.S. EPA statistical guidance.

B5.A.4 Detection Monitoring Program
[R 299.9612 and 40 CFR §§264.91(a)(4) and 264.98]

The basis for determining the detection monitoring program for each unit is provided in Attachment B3, Hydrogeologic Report, of this application that was prepared in accordance with R 299.9506.

B5.A.4(a) Indicator Parameters, Waste Constituents, and Reaction Products
[R 299.9506(3)(a) and (f), R 299.9506(4)(a), and R 299.9612 and 40 CFR §264.98(a)]

The frequency, parameters and other details of the Sampling and Analysis plan for the Republic GWM Program are provided above in Table B5.A.3.

Table B5.A.3 Sampling and Analysis Plan, GWM
Site ID No. MIR 000 016 055

Type Of Sample	Points Of Samples	Frequency	Field Monitoring Parameters	Lab Test Parameters	
				Analyte	Method
Groundwater Sampling	Monitoring wells in Figure 5.00-1, MW1-MW5A	Quarterly	pH, Conductivity, ORP, Dissolved Oxygen, Turbidity, Depth to water, and Temperature	Arsenic	7060A
				Barium	6010
				Cadmium	7131A
				Chromium (Total)	6010
				Copper	6010
				Lead	7421A
				Mercury	7470A
				Selenium	7740
				Silver	6010
				Zinc	6010
				Volatile Organic Compounds	8260
				Total Organic Halides	9020

B5.A.4(b) Groundwater Monitoring System

[R 299.9612 and 40 CFR §§264.97(a)(2), (b), and (c) and 264.98(b)]

The Facility's GWM System was described in B5.A, and B5.A.3 above.

B5.A.4(c) Background Concentration Values for Proposed Parameters

[R 299.9612 and 40 CFR §§264.98(c) and 264.97(g)(1) and (2)]

The Facility's background concentration values for the primary and secondary parameters will be determined in accordance with EGLE requirements, as described in B5.A.3.C above.

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B5.A.4(d) Proposed Sampling and Analysis Procedures

[R 299.9506(3)(e) and R 299.9612 and 40 CFR §§264.97(d), (e), and (f) and 264.98(d), (e), and (f)]

Static water level measuring devices, pumps and/or sampling equipment is compatible with the parameters sampled. Static water level measuring devices are thoroughly cleaned and rinsed before each use in each monitoring well. Sampling procedures assure that cross contamination does not occur.

The static water elevation is determined using a water level tape or equivalent method prior to purging water from the wells for sampling. Measurements are made from the top of the casing with the elevation of all casings in the monitoring well system surveyed and referenced to a permanent marker. Elevations are referenced using United States Geological Survey Horizontal datum, North American Datum (NAD) 1983, as provided in a figure by Norwak and Fraus Engineers, entitled Monitoring Well Survey, dated July 25, 2008.

To ensure representative samples, water is purged from the monitoring well utilizing low-flow techniques (i.e., flow rate less than 0.5 Liters/minute). Low-flow sampling technique recommends monitoring of water level and water quality indicator parameters. Specifically, groundwater level should be monitoring and flow adjusted to allow for minimal drawdown (i.e.; 0.3 feet). Stabilization of the monitoring well is achieved after all groundwater quality indicator parameters have stabilized for three successive readings. Three successive readings should be within ± 0.1 for pH, ± 3% for conductivity, ± 10 mv for redox potential, and ± 10 for turbidity and dissolved oxygen, before obtaining a sample for analysis. Where wells are pumped dry during purging, recovery rates are determined and samples taken as soon as sufficient recovery occurs.
Water removed from each monitoring well is appropriately managed and the monitoring wells have protective barriers, clearly labeled, securely capped, and locked when not in use.
Prior to undertaking any monitoring well replacement or repair, the Facility will obtain the written approval of the EGLE. The location, design, and depth of the monitoring well will remain unchanged.
Collected samples are analyzed according to the schedule, parameters and procedures specified in Table B5.A.3 above.

B5.A.5 Compliance Monitoring Program

Compliance groundwater monitoring is not required at the Facility.

B5.B AMBIENT AIR MONITORING PROGRAM
[R 299.9611(2)(c) and (4)]

B5.B.1 Sampling and Analysis Plan
[R 299.9611(2)(a)]

A sampling and analysis plan for ambient air monitoring for the Republic Facility is included in the 'Republic's QA/QC Plan. The sampling and analysis plan was prepared in accordance with the requirements specified in R 299.9611(2)(a). All sampling and analysis performed pursuant to this application will be consistent with the contract laboratory's QA/QC Plan. All samples for the purpose of environmental monitoring will be collected, transported, stored, and disposed by trained and qualified individuals in accordance with the contract laboratory's QA/QC Plan.

The Republic Facility will conduct ambient air monitoring to detect violations of the provisions of Part 55 of Act 451.

The Facility is currently subject to Permit to Install ("PTI") No. 539-97F.

The ambient air quality will be monitored at four (4) stations around the perimeter of the Facility per 40 CFR Part 58, Appendix E. The ambient air monitoring program will be used to characterize the air quality associated with the operations at Republic. All four sites are monitored for Volatile Organic Compounds ("VOC"s) using an evacuated SUMMA type canister sampler. Site Northeast (26-163-9003) is a collocated site that has a pair of sampling devices. The total of five (5) AAM locations are identified with Site IDs as follows: Northeast (S26-163-9002), Northeast Duplicate (26-163-9003), Southeast (26-163-9004), Southwest (26-163-9005), and, Northwest (26-163-9006). For the Northeast location, both sets of collocated monitoring data will be analyzed and reported for the evaluation of precision. The sampling will be conducted in accordance to the methods specified by the U.S. Environmental Protection Agency ("EPA") in Title 40 of the Code of Federal Regulations ("CFR") 50, 53, 58 and the Toxic Organic Compendium Method, TO-15, for Volatile Organic Compounds. The sampling will be conducted on the prescribed sample days as determined by the EGLE to conform to the parameters and frequencies specified in the Facility's PTI. Data from the ambient air stations shall be reported to the EGLE within 60 days of the sampling event in a manner acceptable to EGEL. Data reported shall include laboratory quality control data such as method blanks, control samples, and spikes.

The frequency, parameters and other details of the Sampling and Analysis plan for the Republic AAM Program are provided above in Table B5.B.1. Specific procedures are those in the contract laboratory's QA/QC procedures.

Table B5.B.1 Sampling and Analysis Plan, AAM
Site ID No. MIR 000 016 055

Type of Sampling	Points of Sampling	Frequency	Field Test Parameters	Monitoring Parameters	
				Analyte	Action Level
Ambient Air Sampling	4 Stations, see Figure 5.00-1	As specified by EGLE (see note below)	None	Trichloroethene	10% by weight
				Hexachloro-1,3-butadiene	10% by weight

Table B5.B.1 Sampling and Analysis Plan, AAM
Site ID No. MIR 000 016 055

Type of Sampling	Points of Sampling	Frequency	Field Test Parameters	Monitoring Parameters	
				Analyte	Action Level
				1,2-Dichloroethane	10% by weight
				Hexachlorobenzene	10% by weight
				Carbon Tetrachloride	10% by weight
				Chloroform	10% by weight
				2,4-Dinitrotoluene	10% by weight

B5.C ANNUAL SOIL MONITORING PROGRAM
[R 299.9611(2)(d) and (4)]

B5.C.1 Sampling and Analysis Plan
[R 299.9611(2)(a)]

A sampling and analysis plan for annual soil monitoring for the EGT Facility is included in the contract laboratory's QA/QC Plan. The sampling and analysis plan was prepared in accordance with the requirements specified in R 299.9611(2)(a). All sampling and analysis performed pursuant to this application will be consistent with the contract laboratory's QA/QC Plan. All samples for the purpose of environmental monitoring will be collected, transported, stored, and disposed by trained and qualified individuals in accordance with the contract laboratory's QA/QC Plan.

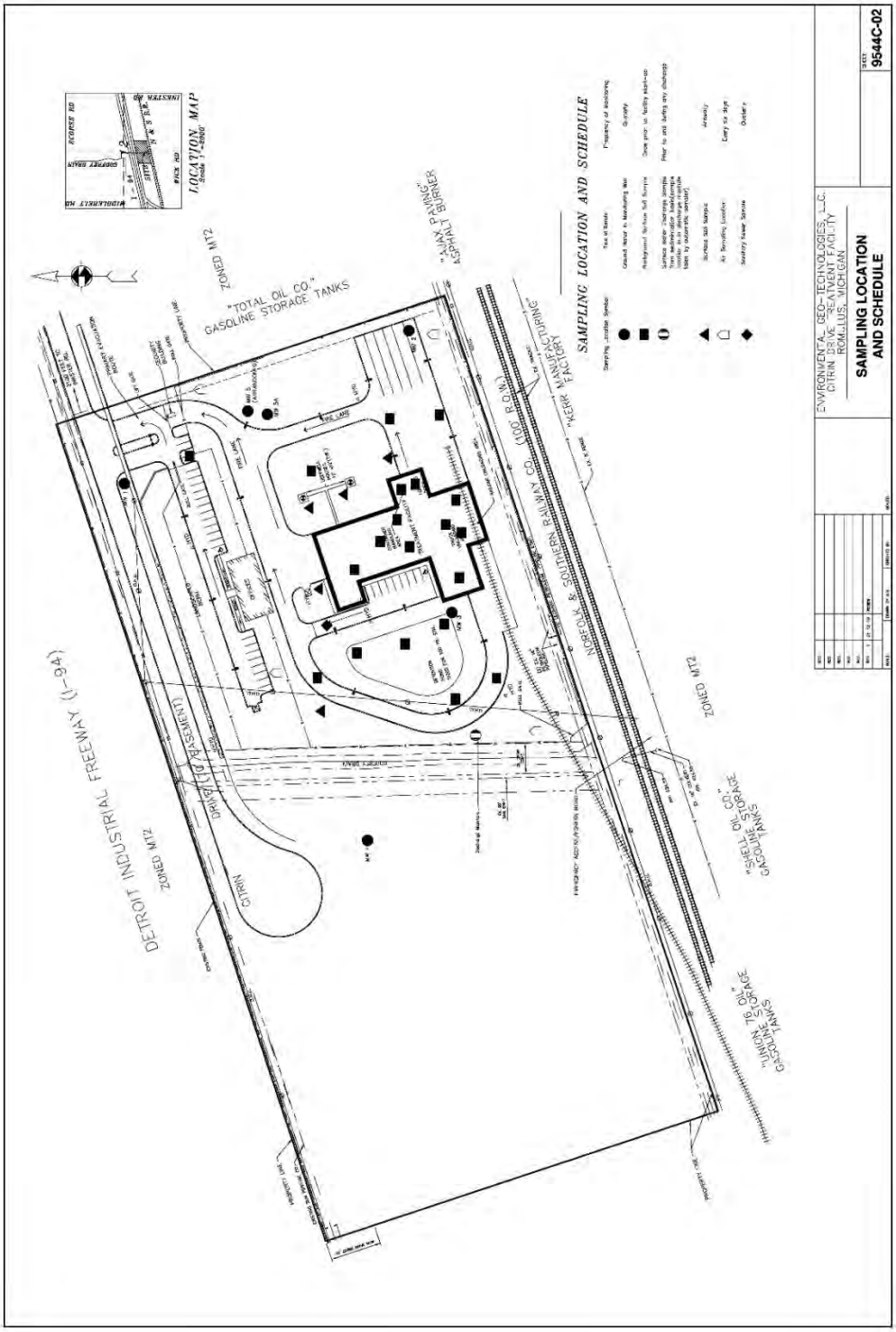
The Republic Facility will conduct a soil monitoring program in areas subject to spills, such as loading and unloading areas, to detect hazardous wastes or hazardous waste constituents.

A surface soil monitoring program was undertaken at random locations in the active portion of the Facility and all locations were sampled prior to the construction of the Facility to develop a baseline database. A permanent marker was established at these locations at the time of the background sampling to establish permanent sampling locations as shown in Appendix B5.A. These areas were not built over. Surface soil sampling is conducted annually.
The frequency, parameters and other details of the Sampling and Analysis plan for the Republic SM Program are provided above in Table B5.C.1. Specific procedures are those in the contract laboratory's QA/QC procedures.

Table B5.C.1 Sampling and Analysis Plan, SM
Site ID No. MIR 000 016 055

Type Of Sample	Points Of Samples	Frequency	Field Test Parameters	Lab Test Parameters	
				Analyte	Method
Surface Soil Sampling	Locations shown in Figure 5.00-1	Annually	Photo-ionization detector	Acenaphthene	8270
				Benzo(a)pyrene	8270
				Chrysene	8270
				2,4 Dimethylphenol	8270
				Flourene	8270
				Naphthalene	8270
				2-Nitropropane	8270
				Phenanthrene	8270
				Pyrene	8270
				Inorganic Constituent (Method 6010 unless noted otherwise)	
				Arsenic	7060A
				Barium	
				Cadmium	7131A
				Chromium (Total)	
				Copper	
				Lead	7421A
				Mercury	7470A
				Nickel	
				Selenium	7740
				Silver	
				Zinc	
				Cyanides (Total)	9010A

APPENDIX B5.A SAMPLING LOCATIONS



FORM EQP 5111 ATTACHMENT B6
ENGINEERING PLANS

This license application attachment provides information on the Engineering Plans associated with the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility located at 28470 Citrin Drive, Romulus, Michigan.

This attachment is organized as follows:

Introduction

Appendix B6.A Existing Facility Engineering Drawings and Revision Dates

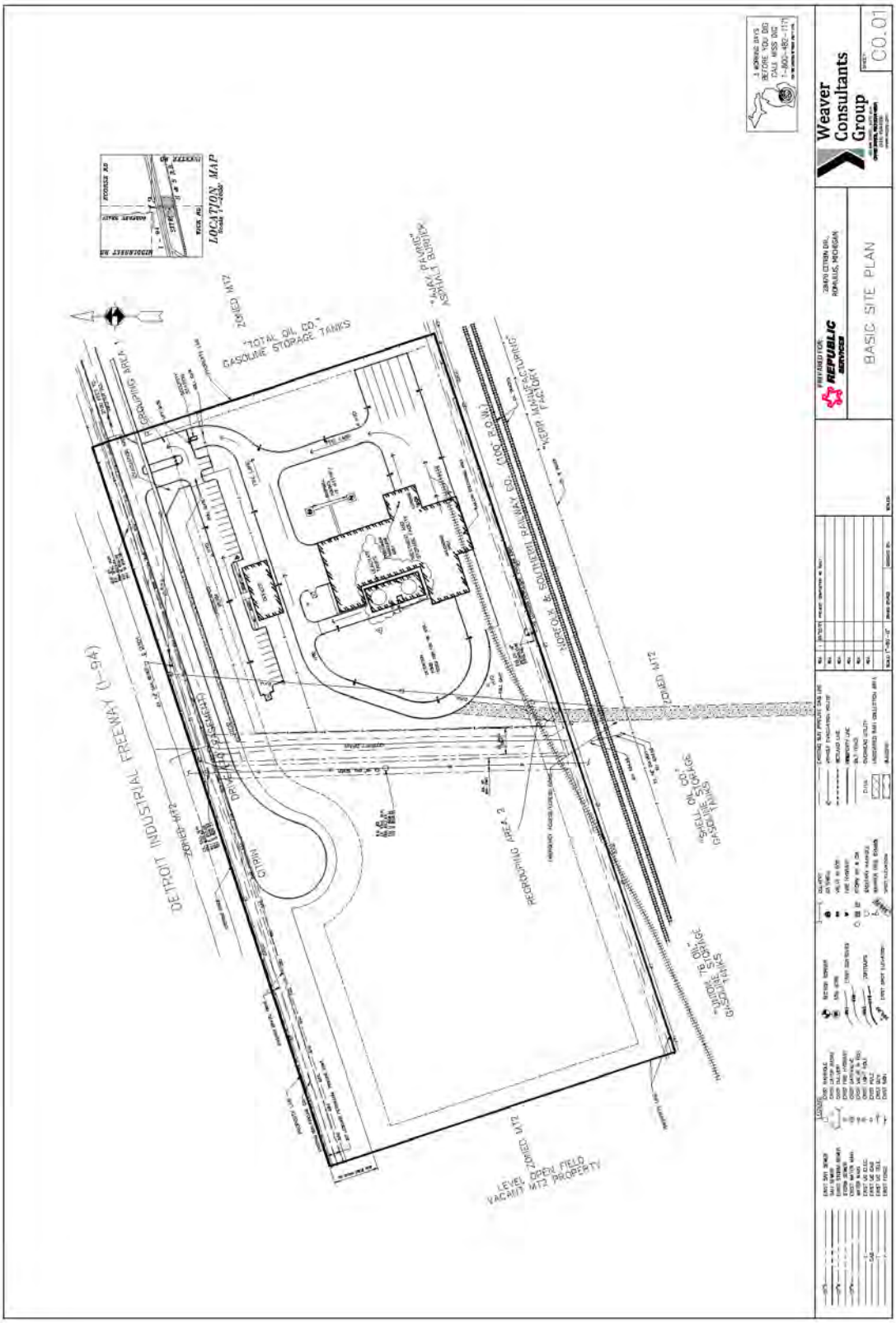
Introduction

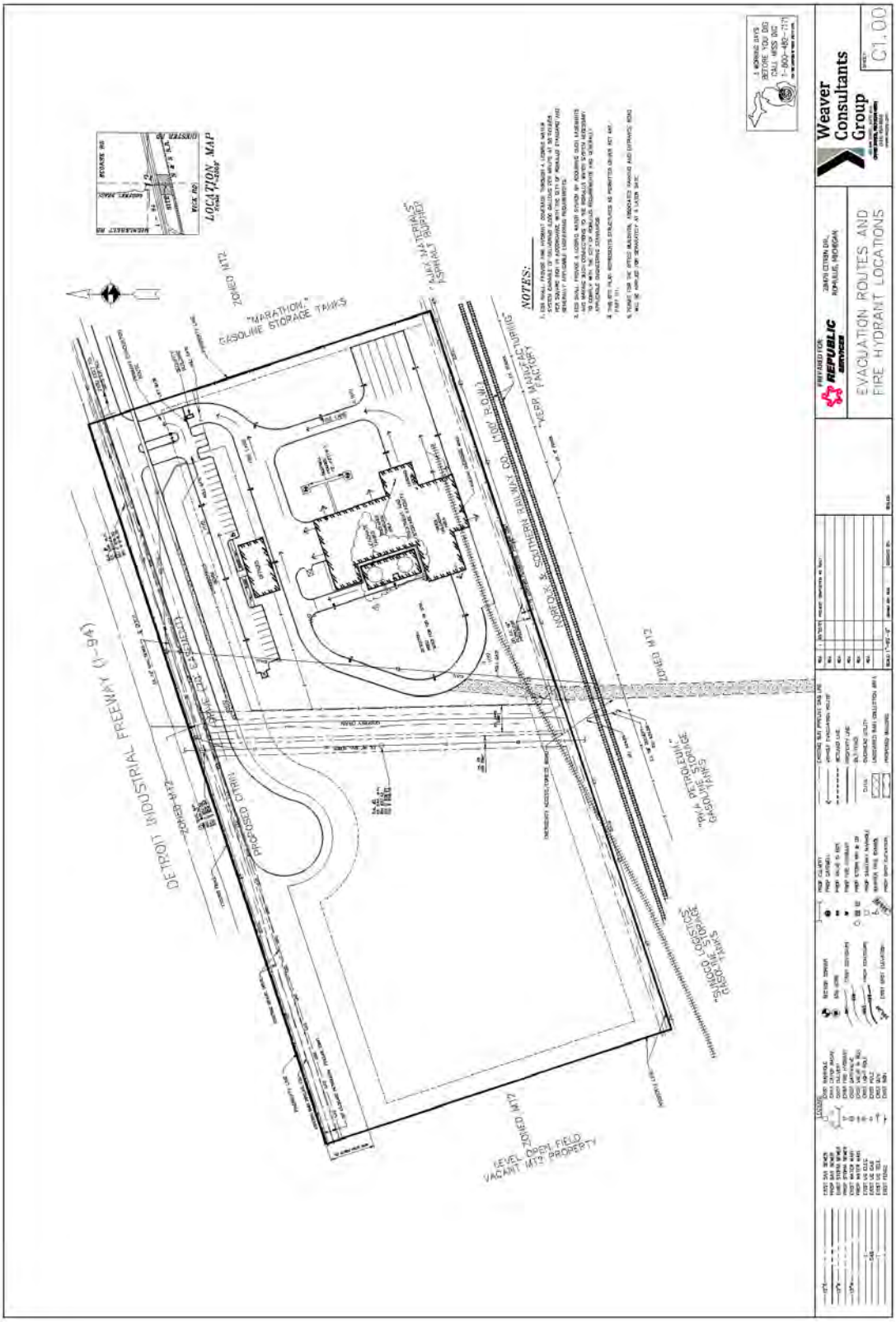
The former owner/operator of the Facility had previously submitted to the Michigan Department of Environmental Quality ("MDEQ"), now Michigan Department of Environment, Great Lakes, and Energy ("EGLE"), as-built engineering plans for the Facility that were certified by an independent professional engineer. These engineering plans were incorporated into the Hazardous Waste Management Facility Operating License for the Facility issued by MDNRE in 2011. A new set of engineering drawings certified by a independent professional engineer have been supplied again for the 2021 application. A list of these engineering plans, including their current revision dates, is attached as Appendix B6.A. Various drawings remain unchanged from the previous application and at the time of submitting this application, those drawings were in the process of being updated to include the Republic title block.Those drawings will be provided once the title blocks have been updated. In addition, drawings C2.03 and M4.02 are currently being updated and will be provided once complete. The engineering plans remain valid and accurate with respect to the Facility and are incorporated herein by reference. The engineering plans are on file with EGLE and are also available from the Applicant upon request

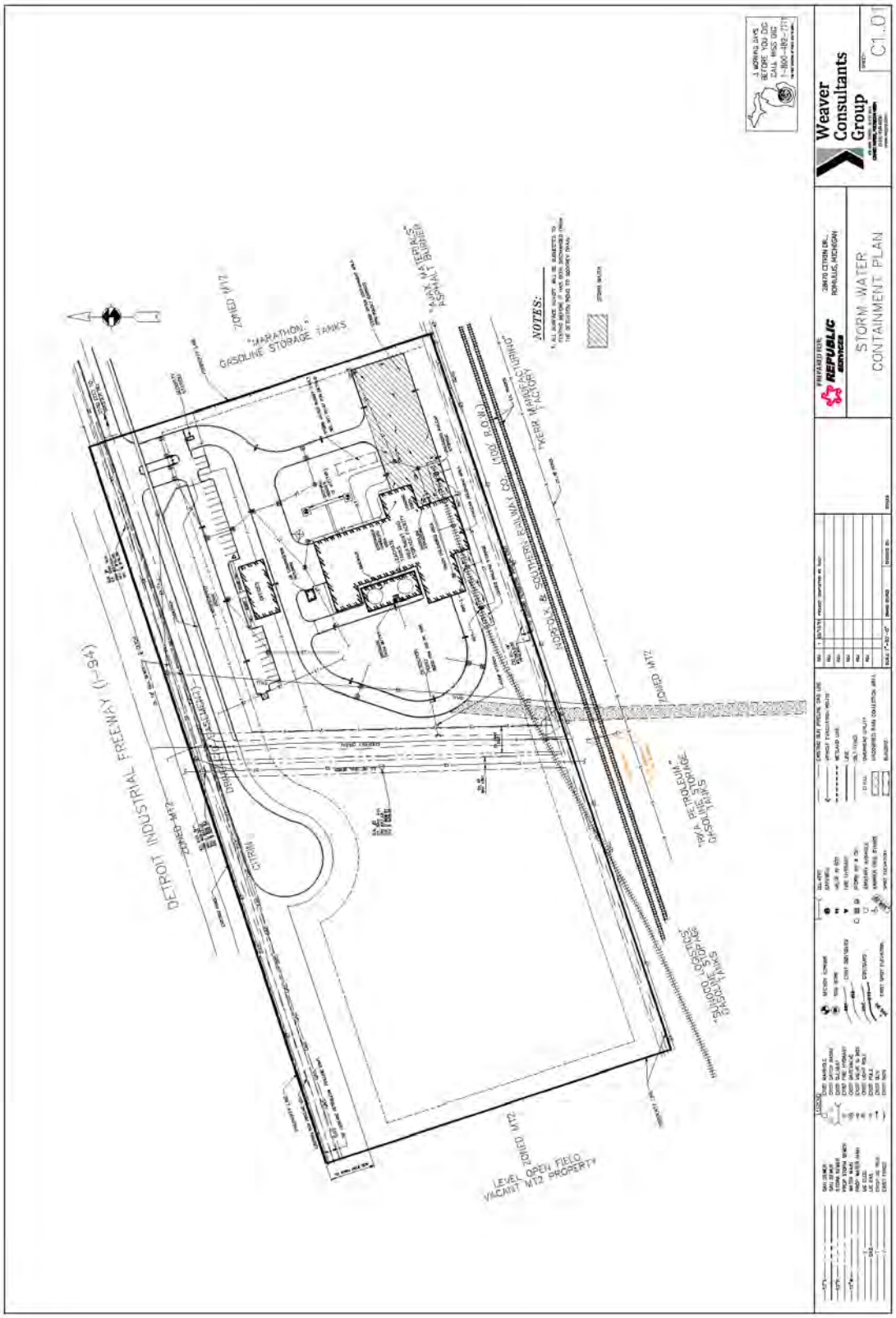
APPENDIX B6.A EXISTING FACILITY ENGINEERING DRAWINGS AND REVISION DATES

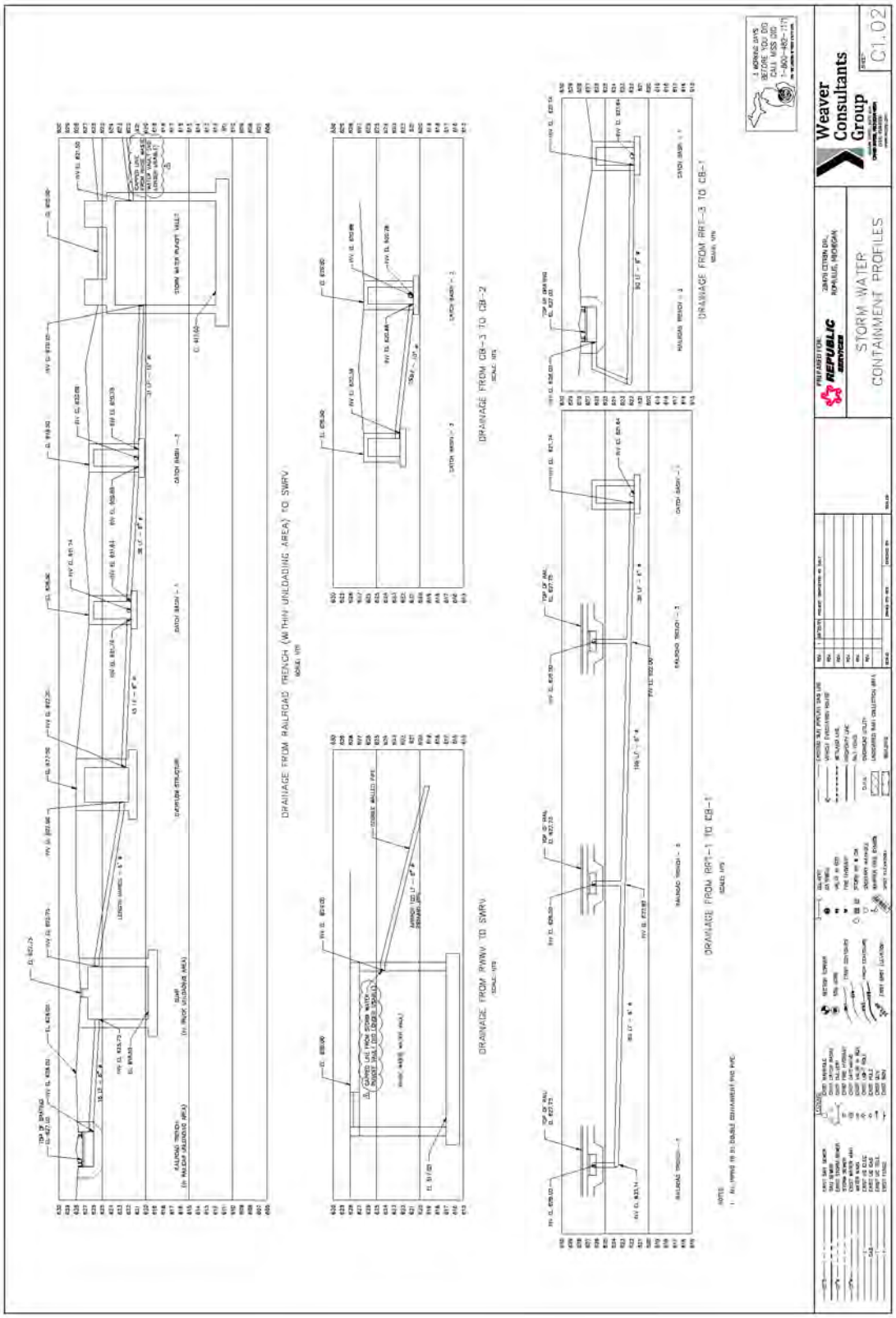
DWG NO.	DRAWING TITLE	REVISION DATE
C0.01	Basic Site Plan	3/22/2021
C1.00	Evacuation Routes And Fire Locations	3/22/2021
C1.01	Storm Water Containment Plan	2/10/2021
C1.02	Storm Water Containment Profiles	3/22/2021
C2.01	Site Plan	3/29/2005
C2.07	Off Site Water Main	3/29/2005
A0.01	Code Review/Abbreviations	8/12/2002
A1.01	First Floor Plan	5/18/2017
A1.02	Mezzanine Plan	2/15/2005
A2.01	Building Elevations	3/25/2021
A2.02	Building Elevations	3/26/2021
M0.01	Mechanical Details & Legend	1/23/2003
M0.02	Equipment Schedule And Notes	3/24/2021
M0.03	Pump Schedule And Notes	3/24/2021
M1.01	Process Flow Diagram Part A	11/19/2020
M1.02	Process Flow Diagram Part B	3/31/2021
M2.01	Process Plan Main Level	2/10/2021
M2.01A	Piping To Unload Railroad Cars	2/16/2004
M2.02	Process Plan Mezzanine & Upper Level	3/22/2021
M2.03	Wellhouse Layouts & Annulus Monitoring	3/24/2021
M3.01	Building Process Sections	5/18/2017
M3.02	Building Process Sections	3/24/2021
M3.03	Building Process Sections	5/18/2017
M4.01	Tank Details Part A	3/22/2021
M4.02	Tank Details Part B	3/22/2021
M5.02	Plumbing Plan Main Level	3/24/2021
M5.03	Plumbing Plan Mezzanine & Upper Level	3/24/2021
M6.01	HVAC Plan Main Level	3/29/2021
M6.02	HVAC Plan Main Level	5/18/2017
M6.03	HVAC Plan Mezzanine & Upper Level	5/18/2017
F1.01	Fire Protection Schedule, Riser Schematic And Notes	3/20/2001
F1.02	Fire Protection Plan Main Level	1/21/2003
E0.01	Electrical Legend, Schedules, And General Notes	10/31/2012
E0.02	Instrumentation Legend	10/31/2012

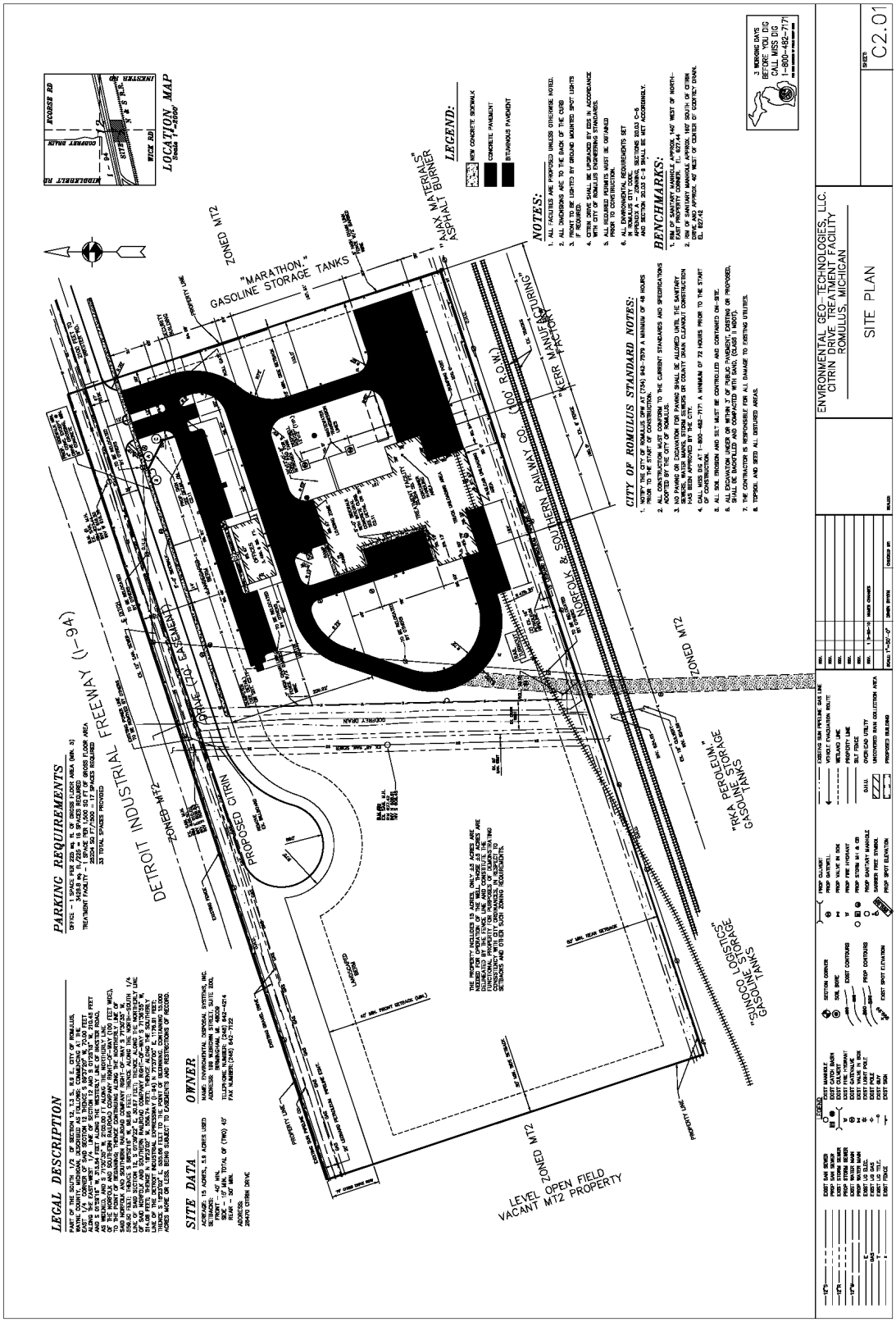
DWG NO.	DRAWING TITLE	REVISION DATE
E1.01 (R)	Electrical One-Line Diagram	3/22/2021
E2.01 (R)	Electrical Site Plan	3/22/2021
E3.01 (R)	Lighting Plan Main Level	1/21/2003
E3.03 (R)	Electrical Power Plan Main Level	2/10/2021
E3.04 (R)	Electrical Power Plan Mezzanine & Upper Level	10/31/2012
E4.01	Electrical Panel Schedules	4/15/2021
E5.01	P&I Diagram Part A	3/24/2021
E5.02	P&I Diagram Part B	3/24/2021
E5.03	P&I Diagram Part C	3/21/2021
E5.04	P&I Diagram Part D	3/24/2021
E6.01	PLC Architecture And Data (SCADA) Block Diagram	5/18/2017

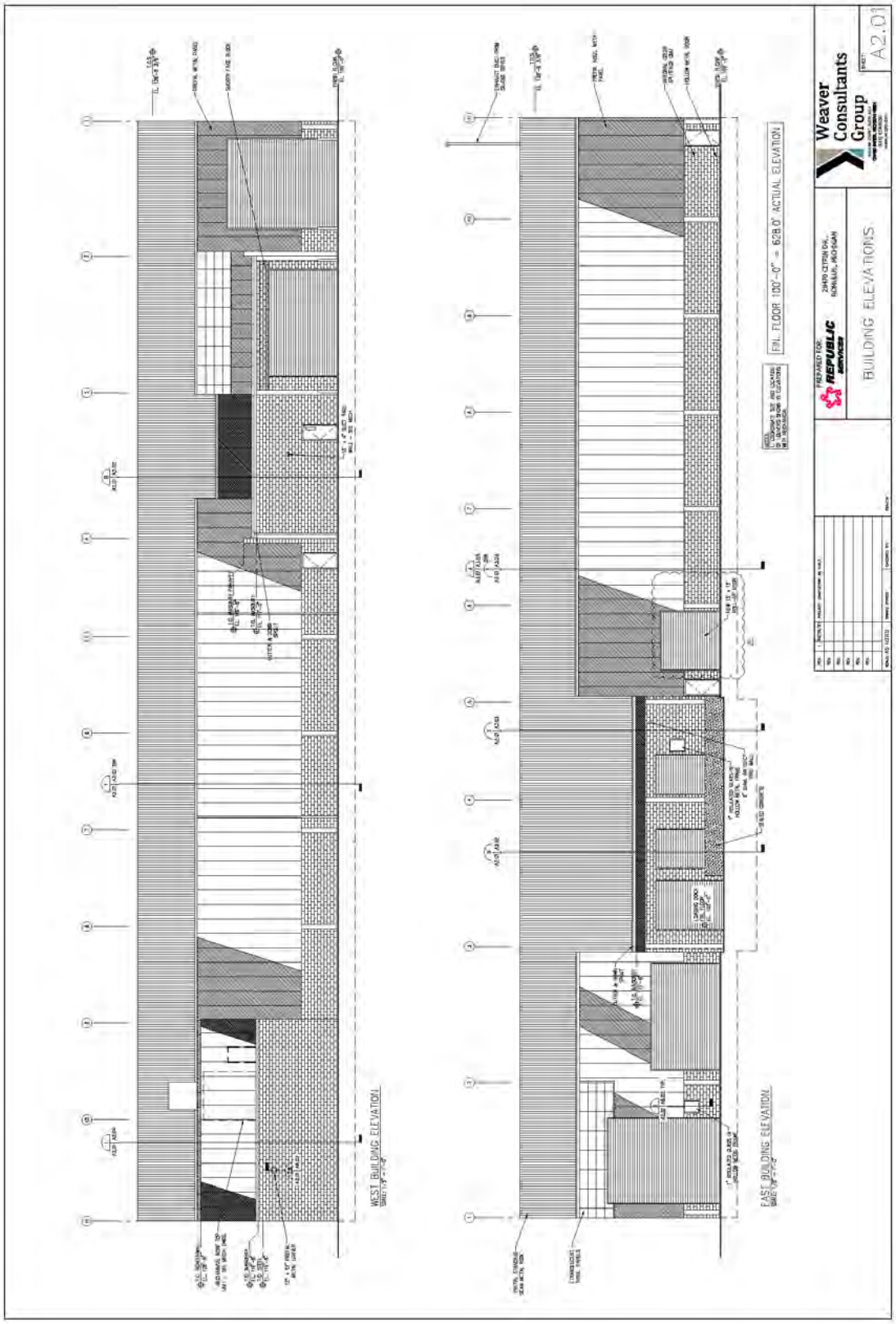

Weaver Consultants Group
BASIC SITE PLAN
C0.01
LOCATION MAP
DETROIT INDUSTRIAL FREEWAY (I-94)
"TOTAL OIL CO." GASOLINE STORAGE TANKS
"AJAX PAVING" ASPHALT BURNER
"NORFOLK & SOUTHERN RAILWAY CO." (100' R.O.W.)
"KERR MANUFACTURING" FACTORY
"SHELL OIL CO." GASOLINE STORAGE TANKS
"UNION 76 OIL" GASOLINE STORAGE TANKS
LEVEL OPEN FIELD VACANT MT2 PROPERTY
ZONED MT2
REGROUPING AREA 2
REGROUPING AREA 1
CITRIN

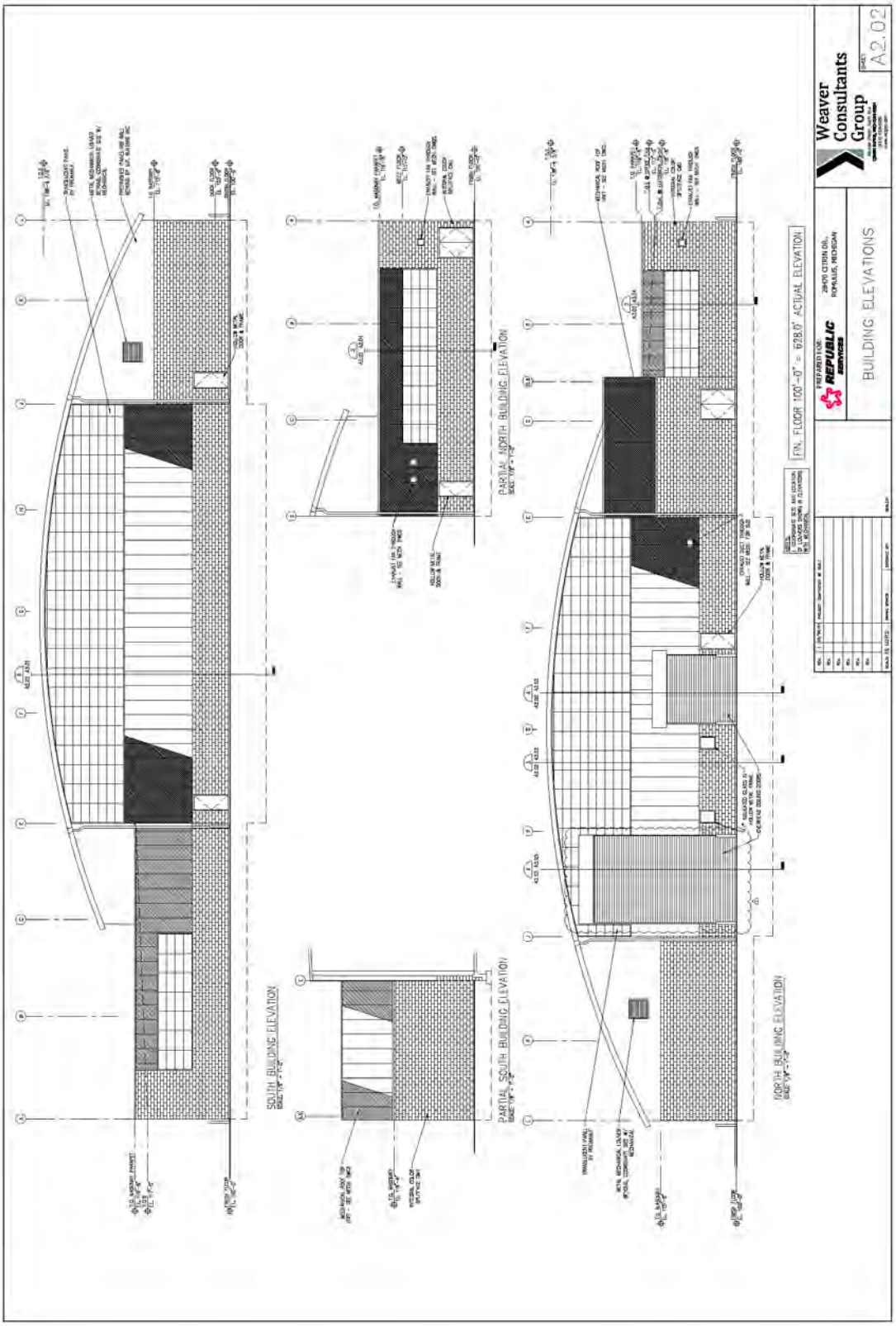

LOCATION MAP
NOTES:
"MARATHON" GASOLINE STORAGE TANKS
"AJAX MATERIALS" ASPHALT BURNER
"KERR MANUFACTURING" FACTORY
NORFOLK & SOUTHERN RAILWAY CO. (100' R.O.W.)
DETROIT INDUSTRIAL FREEWAY (I-94)
PROPOSED CITRIN
"RKA PETROLEUM" GASOLINE STORAGE TANKS
"SUNOCO LOGISTICS" GASOLINE STORAGE TANKS
LEVEL OPEN FIELD VACANT M12 PROPERTY
ZONED M12
Weaver Consultants Group
EVACUATION ROUTES AND FIRE HYDRANT LOCATIONS
C1.00


Weaver Consultants Group
C1.01
STORM WATER CONTAINMENT PLAN
REPUBLIC SERVICES
NOTES:
DETROIT INDUSTRIAL FREEWAY (I-94)
"MARATHON" GASOLINE STORAGE TANKS
"AJAX MATERIALS" ASPHALT BURNER
"KERR MANUFACTURING" FACTORY
NORFOLK & SOUTHERN RAILWAY CO. (100' R.O.W.)
"RKA PETROLEUM" GASOLINE STORAGE TANKS
"SUNOCO LOGISTICS" GASOLINE STORAGE TANKS
LEVEL OPEN FIELD VACANT M12 PROPERTY
ZONED M12
CITRIN


DRAINAGE FROM RAILROAD TRENCH (WITHIN UNLOADING AREA) TO SWRV
DRAINAGE FROM CB-3 TO CB-2
DRAINAGE FROM RRT-3 TO CB-1
DRAINAGE FROM RWWV TO SWRV
DRAINAGE FROM RRT-1 TO CB-1
Weaver Consultants Group
STORM WATER CONTAINMENT PROFILES
C1.02


LEGAL DESCRIPTION
SITE DATA
OWNER
PARKING REQUIREMENTS
LOCATION MAP
NOTES:
LEGEND:
CITY OF ROMULUS STANDARD NOTES:
BENCHMARKS:
ENVIRONMENTAL GEO-TECHNOLOGIES, LLC.
CITRIN DRIVE TRANSFER FACILITY
ROMULUS, MICHIGAN
SITE PLAN
C2.01
DETROIT INDUSTRIAL FREEWAY (I-94)
PROPOSED CITRIN DRIVE
DRIVE FOR EASEMENT
NORFOLK & SOUTHERN RAILWAY CO.
"KERR MANUFACTURING FACTORY"
"MARATHON" GASOLINE STORAGE TANKS
"AJAX MATERIALS" ASPHALT BURNER
"TRKA PETROLEUM" GASOLINE STORAGE TANKS
"SUNOCO LOGISTICS" GASOLINE STORAGE TANKS
LEVEL OPEN FIELD VACANT MT2 PROPERTY
ZONED MT2
3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171


WEST BUILDING ELEVATION
EAST BUILDING ELEVATION
FIN. FLOOR 100'-0" = 628.0' ACTUAL ELEVATION
Weaver Consultants Group
A2.01
BUILDING ELEVATIONS
REPUBLIC SERVICES


SOUTH BUILDING ELEVATION
PARTIAL SOUTH BUILDING ELEVATION
PARTIAL NORTH BUILDING ELEVATION
NORTH BUILDING ELEVATION
FIN. FLOOR 100'-0" = 628.0' ACTUAL ELEVATION
PREPARED FOR:
REPUBLIC SERVICES
23470 CITRIN DR.
ROMULUS, MICHIGAN
BUILDING ELEVATIONS
Weaver Consultants Group
A2.02

EQUIPMENT SCHEDULE (EXISTING)

DESIGNATION	EQUIPMENT	SERVICE	WETTED MATERIALS	PH	MAX TEMP DEG. F	ELECTRICAL	DESIGN BASE	CONTACT	ALTERNATES
	DIATOMACEOUS EARTH TANK					NONE	CHEMTANK® POLY TANK, TCS3PACA WITH TC3264 STAND, 300 GALLONS	CHEMICAL CONTAINMENT, 810-792-3335	ASBRAH, POLYPROCESSING, RALCO INC
	DIATOMACEOUS EARTH TANK		304 SST	7 TO 8		1 HP, 480 V, 3 PH	PROPELLER MIXER MOUNTED ON TANK STAND	CHEMICAL CONTAINMENT, 810-792-3335	ASBRAH, POLYPROCESSING, RALCO INC
	DIATOMACEOUS EARTH SCREW FEEDER		304 SST, UNKNOWN			2 HP, 480V 3 PH	FLOWCON QUOTE 180 (FLASTO-MAT)	MPS 231-975-3444	
PB-1, PB-2	POLYMER BLENDING UNITS			7 TO 8		.25 HP, 110 V 1 PH	POLYBLEND SERIES ASD-1.5	USA BLENDER 888-548-1234	EKOFLL SERIES 5800, 800-350-8517
	DRUM CRUSHER TRUCK VENTILATION SYSTEM STORMWATER SAMPLER							SMC INDUSTRIAL PLYMO VENT CORP VENTED	
	PH PROBES AND ANALYZERS		STAINLESS STEEL, TEFLON				GREAT LAKES MODEL 90 ANALYZER WITH MH-180 PROBE	DAVE RAY & ASSOC. 248-398-0060	
	CONTINUOUS LEVEL SENSORS						RADAR		

EQUIPMENT SCHEDULE (EXISTING)

DESIGNATION	EQUIPMENT	SERVICE	WETTED MATERIALS	PH	MAX TEMP DEG. F	ELECTRICAL	DESIGN BASE	CONTACT	ALTERNATES
NG-1	NITROGEN GENERATOR NITROGEN BLANKETING VALVES	NITROGEN BLANKETING (NONMETALLIC TANK)	HASTELLOY C TEFLON	6 TO 14	180	NONE	FERNER, GCS 1013-4 FISHER 1 INCH 1640 SELF OPERATES BLANKETING REGULATOR, 160 LB FLAT FACED FLANGE	SIMPY HOGGA 800-482-2884	AIR PRODUCTS PROTECTOSEAL
	NITROGEN BLANKETING VALVES	SAND TANKS #1-5,6,7,8 DWS-2 RST-5,6	316 SST, TEFLON	7 TO 14	180	NONE	FISHER 1 INCH 1640 SELF OPERATED BLANKETING REGULATORS, 150 LB FLAT FACED FLANGE		PROTECTOSEAL
	NITROGEN BLANKETING VALVES	RGU TANKS #1-2,3,4 DWS-1 RST-2,3,4	HASTELLOY C TEFLON	7 TO 7	180	NONE	FISHER 1 INCH 1640 SELF OPERATED BLANKETING REGULATORS, 150 LB FLAT FACED FLANGE		PROTECTOSEAL
	NITROGEN BLANKETING VALVES	KIDDIFARMER TANK	HASTELLOY C TEFLON	6 TO 14	180	NONE	ASE MODEL 850 PIPE AWAY DRAIN VALVE, 2 INCH 150 LB INLET, 2 INCH HOD SETPOINT		PROTECTOSEAL
	NITROGEN DEPAD VALVES	SAND TANKS #1-5,6,7,8 RST-5,6	316 SST TEFLON	7 TO 14	180	NONE	ASE MODEL 850 PIPE AWAY DEPAD VALVE, 2 INCH 150 LB INLET, 2 INCH HOD SETPOINT		PROTECTOSEAL
	NITROGEN DEPAD VALVES	RGU TANKS #1-2,3,4 DWS-1 RST-2,3,4	316 SST TEFLON	6 TO 7	180	NONE	ASE MODEL 850 PIPE AWAY DEPAD VALVE, 2 INCH 150 LB INLET, 2 INCH HOD SETPOINT		PROTECTOSEAL
AC-3	NITROGEN GENERATOR COMPRESSOR	NITROGEN BLANKETING				50 HP 480 V, 3 PH	GARDNER DENVER ROTARY SCREW 90 SCFM AT 150 PSIG	KEMP 800-482-8258	PROTECTOSEAL
AC-1	PLANT AIR COMPRESSOR PACKAGE W/ AFTERCOOLER AND REFRIGERANT DRYER	MAIN PLANT AIR SERVICE				75 HP 480 V, 3 PH, AIR DRYER 2.2 HP 480 V, 3 PH	GARDNER DENVER ROTARY SCREW 90 SCFM AT 150 PSIG	KEMP 800-482-8258	PROTECTOSEAL
TN-1	NITROGEN TANK	NITROGEN STORAGE	CARBON STEEL			NONE	15,000 GALLON TANK 330 PSIG WORKING PRESSURE, PRESSURE RELIEF VALVE, WHITE EXTERNAL COATING	GLASSCOR TANK 248-625-6700	OTHER APPROVED
APC-2	AIR SCRUBBER	SLUDGE DRYER OFFGAS				NONE	300 SCFM		SUT
APC-1	AIR POLLUTION CONTROL PACKAGE	SLUDGE DRYER AND TANK VENTING				100 HP SERVICE 480 V, 3 PH	FUSE PSC SCRUBBER SYSTEM	FUSE 800-277-7841	PROVIDED BY OWNER
BL-1	AIR POLLUTION CONTROL BLOWER	TANK VENT AIR		6 TO 13		15 HP 480 V, 3 PH	NEW YORK BLOWER TOP PRESSURE BLOWER, 100 SCFM 40 INCHES W.C.	NEW YORK BLOWER 248-851-6430	OTHER APPROVED
SD-1	SLUDGE DRYER	SLUDGE		6 TO 13		NONE	JW & ASSOC 100 T/HOUR JW-MATE	WIZ WORKERS 248-847-4342	ALTERNATE BID
FP-1	FILTER PRESS	NEUTRALIZED SLUDGE	POLYPROL PVC	6 TO 13	120	110 V, 1 PH	1000 MM 40 CUBIC FEET EXPANDABLE TO 85 CUBIC FEET SIEMAR, 325 PSI FRAME / PATENTED PLATE CONTROLLER	PACIFIC PRESS 248-374-8383	JWL 248-640-4546
FP-1	FILTER POTS	LEACHATE							
FP-2	FILTER POTS	LEACHATE							
M-STI, M-STI	TURBINE MIXERS	NEUTRALIZED SLUDGE	316 SST, TEFLON	6 TO 13	140	10 HP, 480 V, 3 PH	PHILADELPHIA MIXER	JON WOODRIDGE 248-821-0053	CHEMMETS, PROQUIP
FIELD COMPLIANCE DRAWINGS JOINTS	DRP PIPE SYSTEMS	ALL WASTEWATER	TEFLON BELLOWS	6 TO 14	140	NONE	ROSSTRUX 3" BELLOW AND BRACE	DAMASCOTT FLUID PRODUCTS 248-478-6100	
FIELD COMPLIANCE DRAWINGS JOINTS	STAINLESS STEEL PIPE SYSTEMS	TREATED WASTEWATER	316 SST	6 TO 14	140	NONE	SENSOR TECHNICS	DAMASCOTT FLUID PRODUCTS 248-478-6100	

NO.	DATE	REVISION DESCRIPTION

PREPARED FOR: REPUBLIC SERVICES — 28600 CITRIN DR., ROMULUS, MICHIGAN

EQUIPMENT SCHEDULE AND NOTES

Weaver Consultants Group

SHEET M0.02

PRODUCT ACID FEED PUMP SCHEDULE

PUMP ID	SERVICE	DESIGN BASE	MATERIALS	FLOW GPM	HEAD FT (MAX)	NPSH FT	PH	SP.GR.	HP	REMARKS
MMP-1	ACID METERING PUMPS	PROMINENT SIGMA SERIES	SEE CUT SHEET	50 GPH	38	–	–	–	1	
MMP-6	CAUSTIC METERING PUMPS	PROMINENT SIGMA SERIES	SEE CUT SHEET	50 GPH	38	–	–	–	1	

POLYMER FEED PUMP SCHEDULE

NPS-1	–	MAGDEN MH750A	SEE CUT SHEET	18 TO 180 GPH	100 psi	–	–	–	1.5	DUPLEX/VFD
NPS-2	–	MAGDEN MH750A	SEE CUT SHEET	18 TO 180 GPH	100 psi	–	–	–	1.5	DUPLEX/VFD

DRY CHEMICAL FEED PUMP SCHEDULE

NPS-1	–	MAGDEN MT150A	SEE CUT SHEET	0-60 GPH	80 psi	–	–	–	1/3	SIMPLEX/VFD 120V, 1PH
NPS-2	–	MAGDEN MT150A	SEE CUT SHEET	0-60 GPH	80 psi	–	–	–	1/3	SIMPLEX/VFD 120V, 1PH
NPS-3	–	MAGDEN MT150A	SEE CUT SHEET	0-60 GPH	80 psi	–	–	–	1/3	SIMPLEX/VFD 120V, 1PH
NPS-4	–	MAGDEN MT150A	SEE CUT SHEET	0-60 GPH	80 psi	–	–	–	1/3	SIMPLEX/VFD 120V, 1PH
NPS-5	–	MAGDEN MT150A	SEE CUT SHEET	0-60 GPH	80 psi	–	–	–	1/3	SIMPLEX/VFD 120V, 1PH
NPS-6	–	MAGDEN MT150A	SEE CUT SHEET	0-60 GPH	80 psi	–	–	–	1/3	SIMPLEX/VFD 120V, 1PH

PUMP SCHEDULE

TP-1A	ACID WASTES	DURCO RECESSED IMPELLER	316 SST	300	150	–	0 TO 2	.95 TO 1.3	50	VFD
TP-2B	UNTREATED WASTE	DURCO RECESSED IMPELLER	316 SST	300	150	–	4 TO 10	.95 TO 1.4	25	VFD
TP-2A	CAUSTIC WASTES	DURCO RECESSED IMPELLER	316 SST	300	150	–	7 TO 14	.95 TO 1.4	50	VFD
TP-1B	PRODUCTABLES	DURCO RECESSED IMPELLER	316 SST	300	37	–	4 TO 10	.95 TO 1.4	10	VFD
TP-3	FILTRATE PUMP	VERSAMATIC 3" ADD	STAINLESS STEEL	300	30	–	–	–	AIR	PASS 3/4" SPHERE

FEED TANK SCHEDULE

TAG	SERVICE	DESIGN BASE	MATERIALS	CAPACITY GAL
T-1	POLYMER FEED TANK	MAGDEN CUSTOM BUILT	HDPE	500
T-2	POLYMER FEED TANK	MAGDEN CUSTOM BUILT	HDPE	500
T-3	DRY CHEM FEED TANK	MAGDEN CUSTOM BUILT	HDPE	500

NOTES:

1. PROVIDE TANK LEVEL SWITCH.
2. PROVIDE ELECTRICAL CONTROL BOX, INCLUDING WIRING & FLEXIBLE CONDUIT TO EACH MOTOR.
3. PROVIDE PIPE, VALVE AND FITTING FEATURES SPECIFIED BY THE CUSTOMER.
4. PROVIDE STANDARD TEFC MOTORS.
5. PROVIDE CALIBRATION COLUMN TO MEASURE THE PUMP OUTPUT.
6. PROVIDE DUPLEX SYSTEMS WITH TWO PUMPS, ONE FOR SERVICE AND ONE FOR BACKUP.
7. PROVIDE PUMP MATERIALS OF CONSTRUCTION SPECIFIED BY THE CUSTOMER.
8. PROVIDE VFD & TRANSDUCER.

ALL PUMPS ARE 480V, 3PHASE UNLESS OTHERWISE NOTED.

PUMP SCHEDULE (EXISTING)

PUMP ID	SERVICE	DESIGN BASE	MATERIALS	FLOW GPM	HEAD FT	NPSH FT	PH	SP.GR.	HP	REMARKS
TP-1,2	ACID WASTE	DURCO RECESSED IMPELLER	316 SST	700	58		5 TO 7	.95 TO 1.3	30	
TP-3 (EL)	LEACHATE	DURCO RECESSED IMPELLER	316 SST	400 OR 700	86 OR 38		7 TO 14	.95 TO 1.4	50	VFD
TP-4	COMBINED WASTES	DURCO RECESSED IMPELLER	316 SST	400 OR 700	86 OR 38		7 TO 14	.95 TO 1.4	50	VFD
TP-5	UNTREATED WASTE	DURCO RECESSED IMPELLER	316 SST	700	30		4 TO 10	.95 TO 1.4	30	
TP-6 (EL)	LEACHATE	DURCO RECESSED IMPELLER	316 SST	700	30		4 TO 10	.95 TO 1.4	30	
TP-7A,7B	STORMWATER	SUBMERSIBLE W/ GUIDERAILS	DUCTILE IRON	400	63		5 TO 9	.95 TO 1.5	30	
TP-8A,B,C	DRUM PROCESSING	ADD	POLYPROPYLENE/TEFLON	10	30		1 TO 14	.95 TO 1.5	AIR	
TP-9	MIXED WASTES	SUBMERSIBLE	316 STAINLESS/PE FLON OR VITON	150	30		1 TO 14	.95 TO 1.5		
P-2A	CAUSTIC WASTES	DURCO RECESSED IMPELLER	316 SST	200	21		7 TO 14	.95 TO 1.6	5	
P-3A	PRODUCTABLES WASTES	DURCO RECESSED IMPELLER	316 SST	500	60		6 TO 10	.95 TO 1.4	40	VFD
P-3B,C,D	ACID WASTES	DURCO RECESSED IMPELLER	316 SST	500	60		0 TO 7	.95 TO 1.5	40	VFD
P-3E,F	CAUSTIC WASTES	DURCO RECESSED IMPELLER	316 SST	500	60		6 TO 10	.95 TO 1.4	40	VFD
P-9,10	TO INJECTION PUMPS	DURCO RECESSED IMPELLER	316 SST	600	90		6 TO 10	.95 TO 1.4	30	VFD TO RUN EDUCTOR AND FEED WELL PUMPS
P-12	LEACHATE	THOMPSON INC.	316 SST	400	200		4 TO 10	OVER 1.6	75	
STP-1	ACID SLUDGE	VERSAMATIC 3" ADD	316 STAINLESS STEEL/TEFLON	100	30				AIR	PASS 3/4" SPHERE
STP-2	CAUSTIC SLUDGE	VERSAMATIC 3" ADD	316 STAINLESS STEEL/TEFLON	100	30				AIR	PASS 3/4" SPHERE
STP-3	ACID SLUDGE	VERSAMATIC 3" ADD	316 STAINLESS STEEL/TEFLON	100	30				AIR	PASS 3/4" SPHERE
STP-4	CAUSTIC SLUDGE	VERSAMATIC 3" ADD	316 STAINLESS STEEL/TEFLON	100	30				AIR	PASS 3/4" SPHERE
STP-5	NEUTRALIZED SLUDGE	VERSAMATIC 3" ADD	316 STAINLESS STEEL/TEFLON	100	30				AIR	PASS 3/4" SPHERE
STP-6	NEUTRALIZED SLUDGE	VERSAMATIC 3" ADD	316 STAINLESS STEEL/TEFLON	100	30				AIR	PASS 3/4" SPHERE
STP-7	INCOMPATIBLE SLUDGE	VERSAMATIC 3" ADD	316 STAINLESS STEEL/TEFLON	100	30				AIR	PASS 3/4" SPHERE
STP-1,2	FILTER PRESS FEED	VERSAMATIC 3" ADD	316 STAINLESS STEEL/VITON	100	115 PSI				AIR	PASS 3/4" SPHERE
T-1,2	FILTRATE PUMPS	VERSAMATIC 3" ADD	STAINLESS STEEL	300	30				AIR	PASS 3/4" SPHERE
INJ-1,2,3	INJECTION WELL PUMPS	SEDIMENTOR AND CENTRIFUGAL	316 SST/VITON	400	450 PSI		6 TO 10	.95 TO 1.4	200	
WSP 1-10	SUMP PUMPS	EBARA SUBMERSIBLE	DUCTILE IRON	100	30		4 TO 10	.95 TO 1.3	5	PUMP TO HANDLE SPILLS AND MISMIXATIONS
SH-1,2	FILTER PUMPS	3" ADD	316 STAINLESS STEEL/TEFLON	100	30				AIR	PASS 3/4" SPHERE

NO.	DATE	REVISION
	05/19/21	PROJECT COMPLETED IN BULK

PREPARED FOR: REPUBLIC SERVICES — 28600 CITRIN DR., ROMULUS, MICHIGAN

PUMP SCHEDULES AND NOTES

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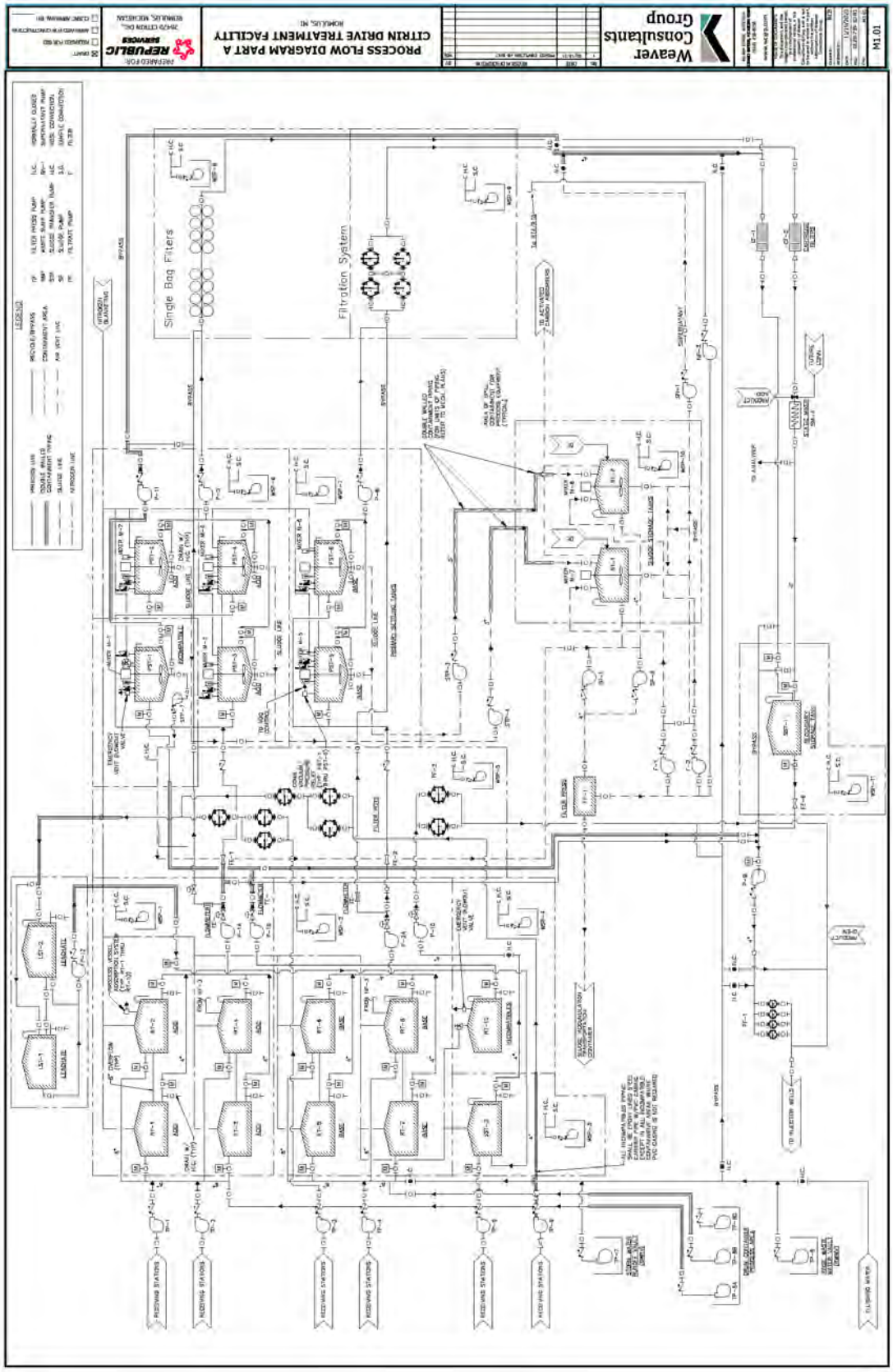
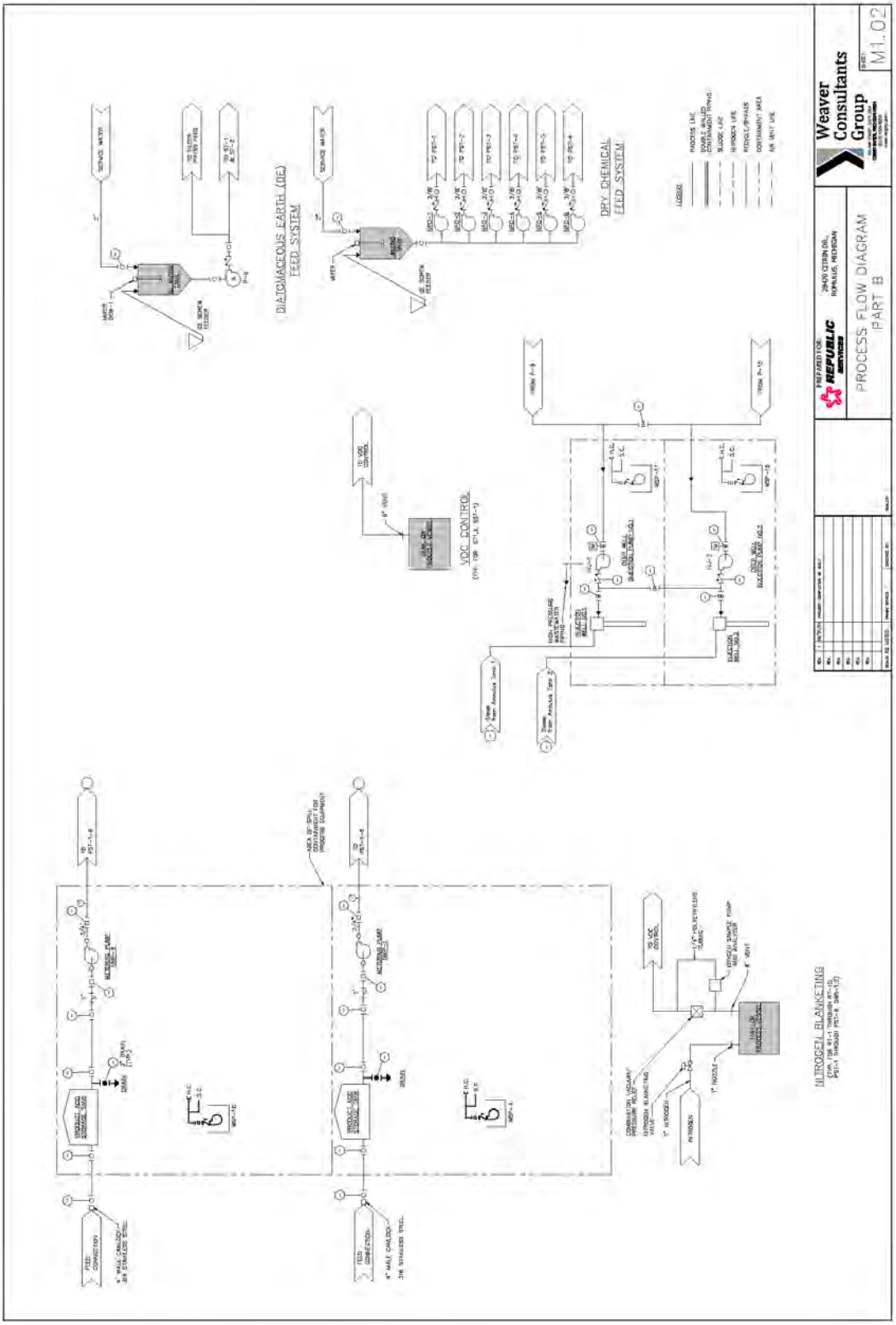
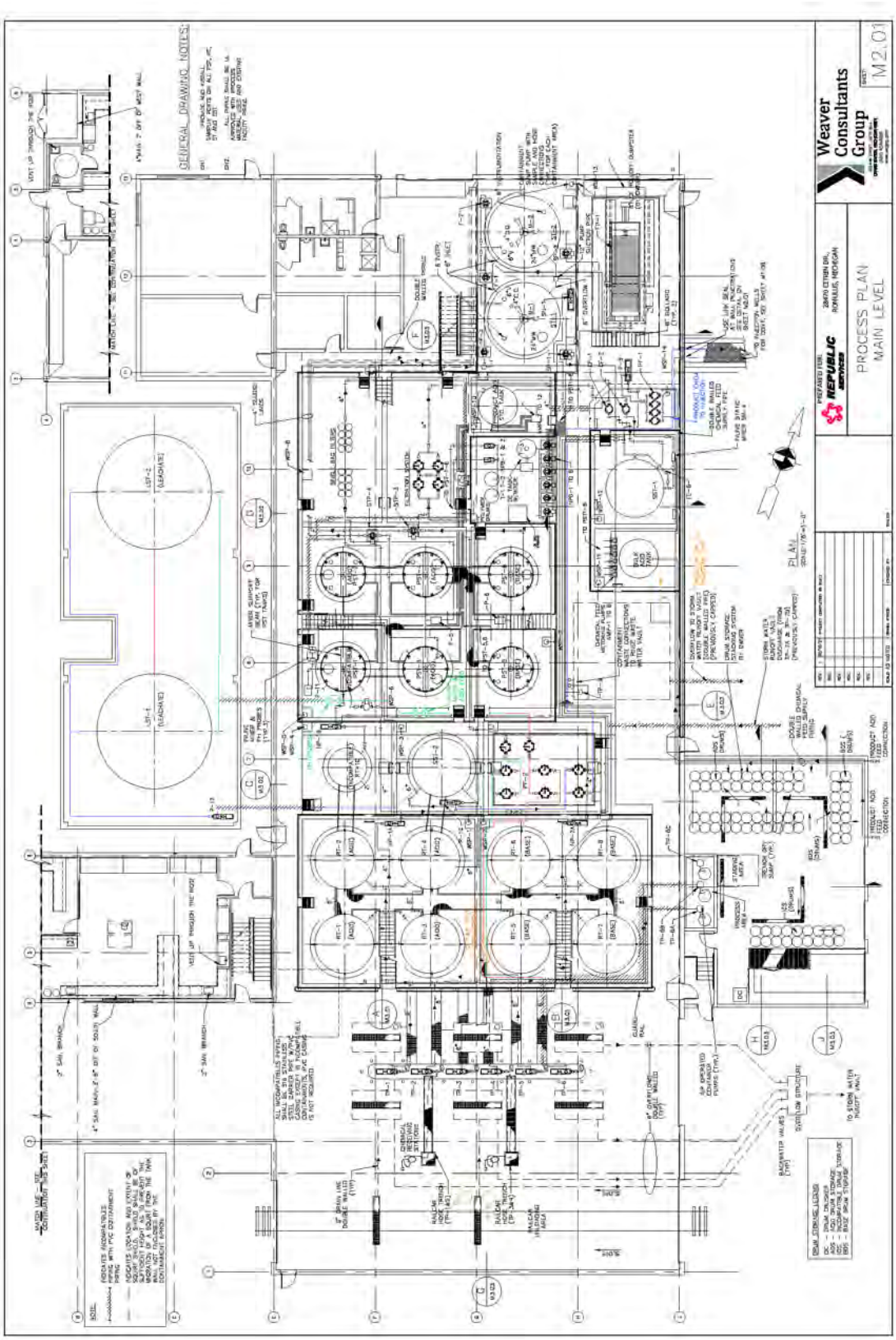
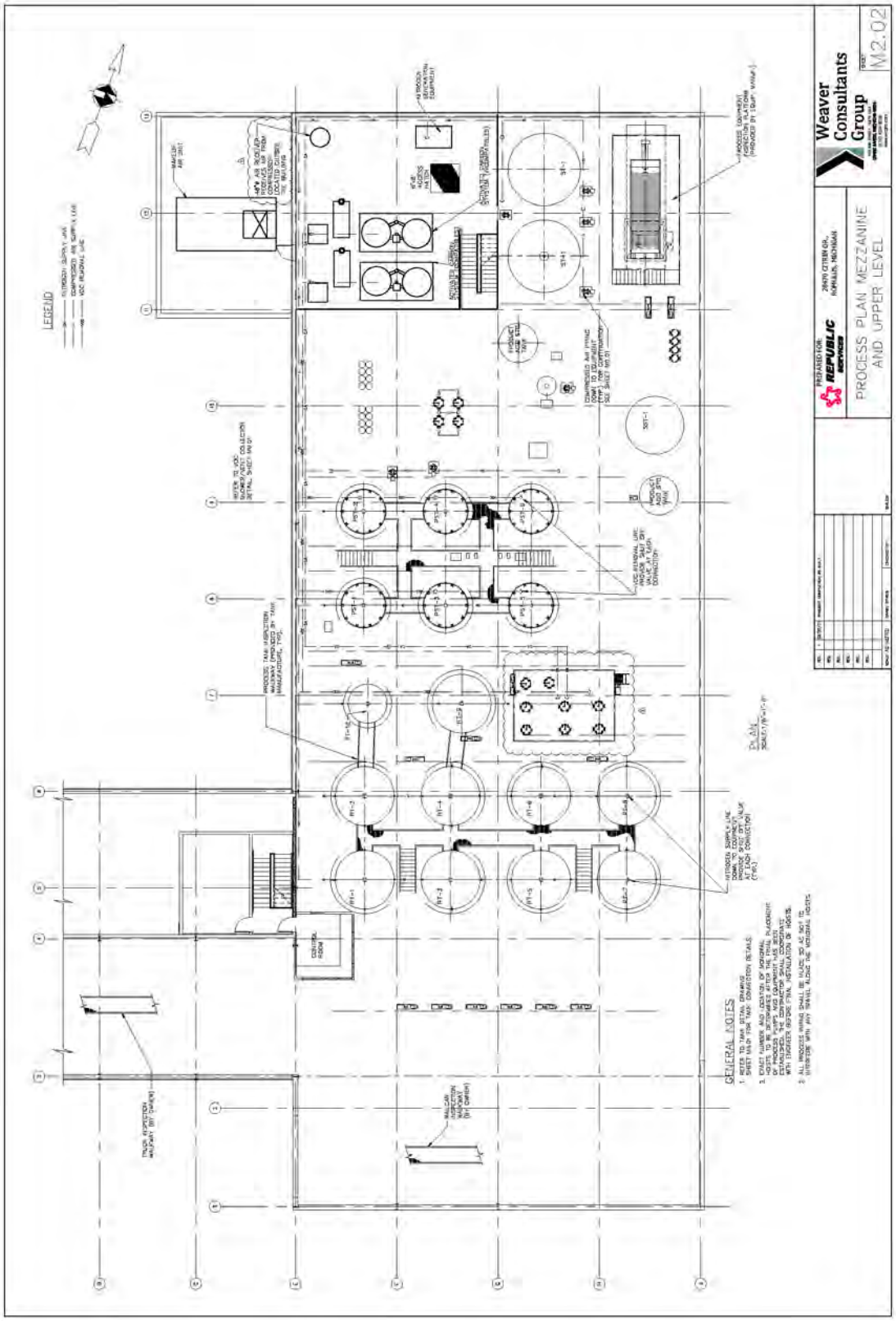
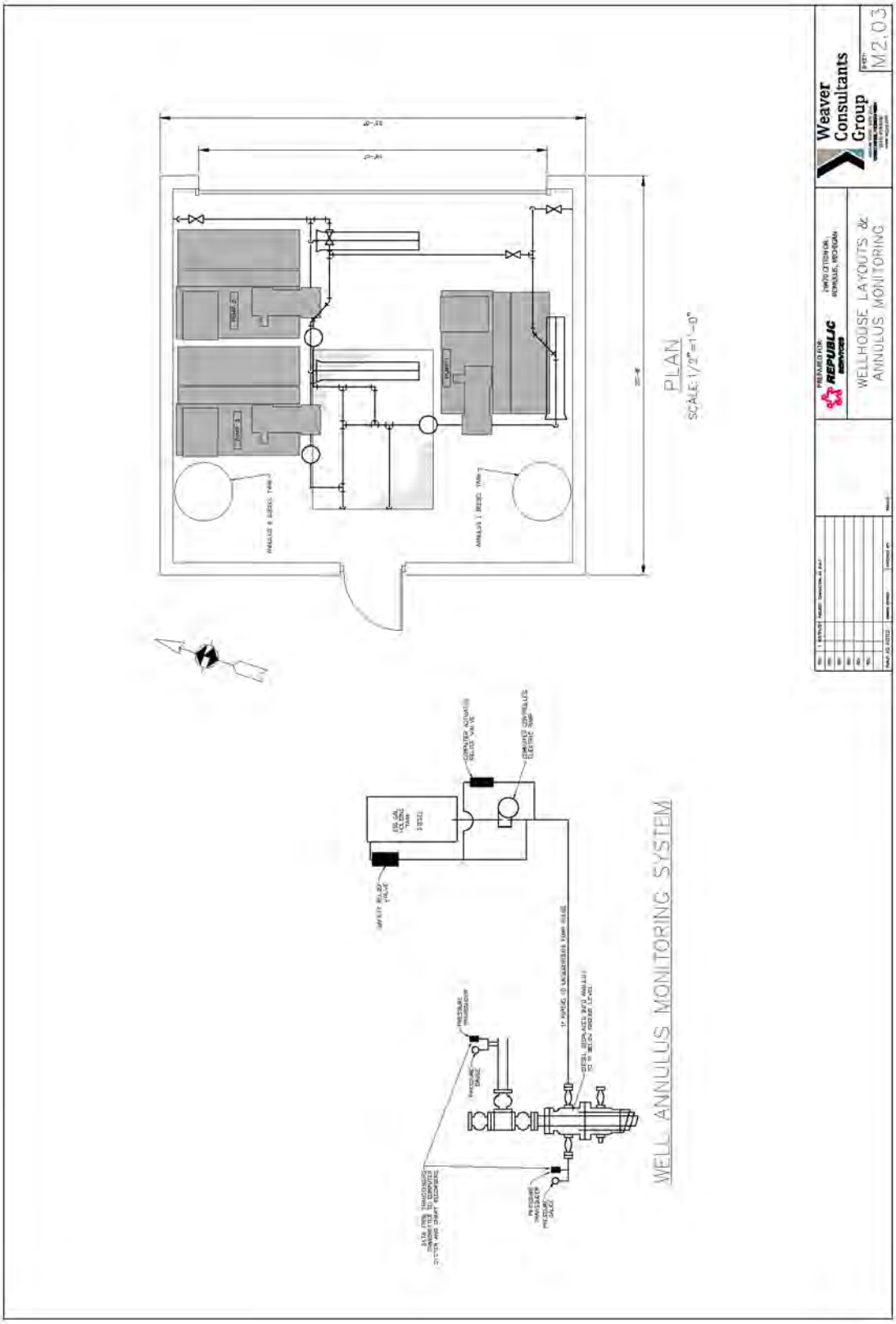
SHEET M0.03

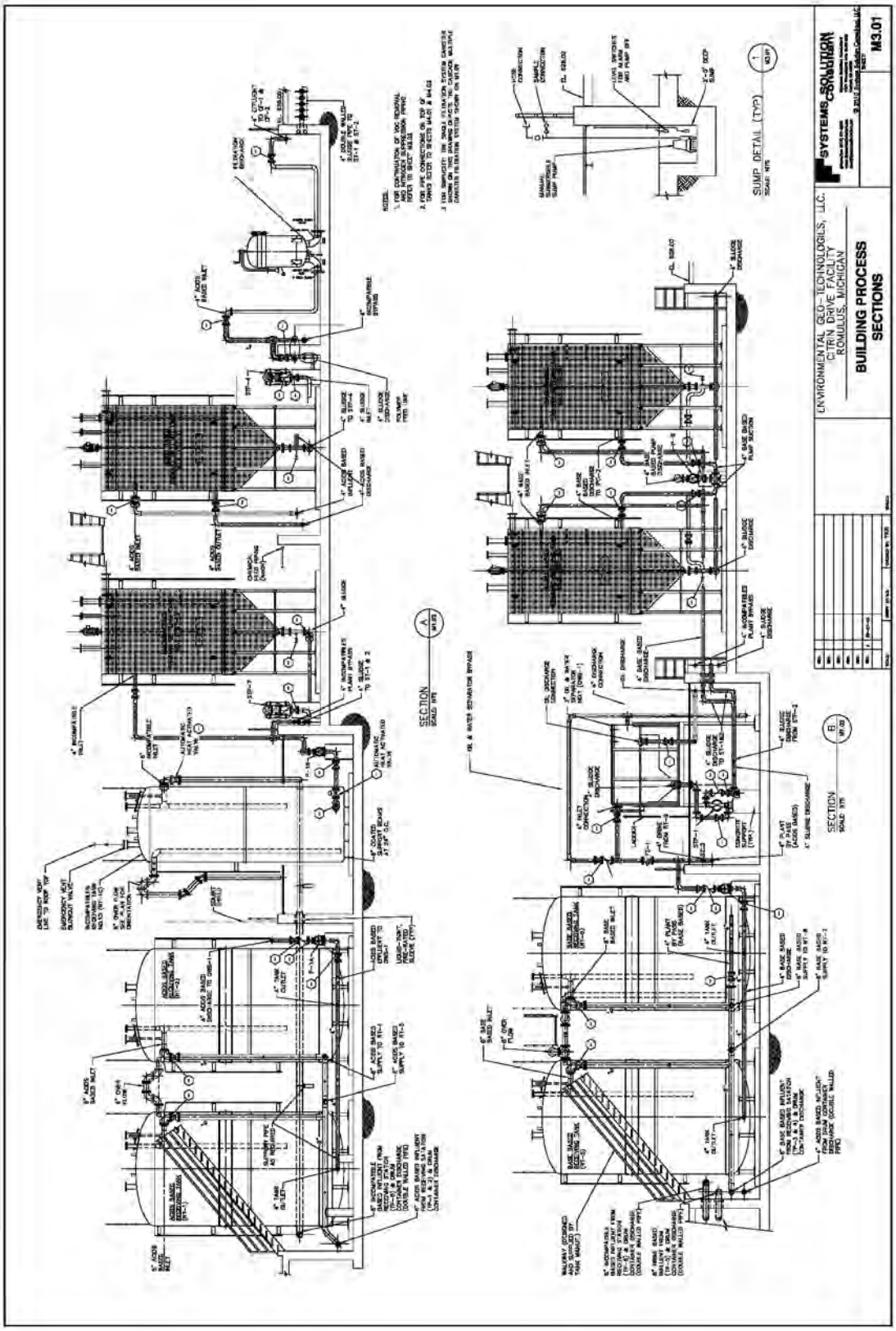

PROCESS FLOW DIAGRAM PART A
CITRIN DRIVE TREATMENT FACILITY
MONROE, MI
Weaver Consultants Group
REPUBLIC SERVICES
Single Bag Filters
Filtration System
M1.01

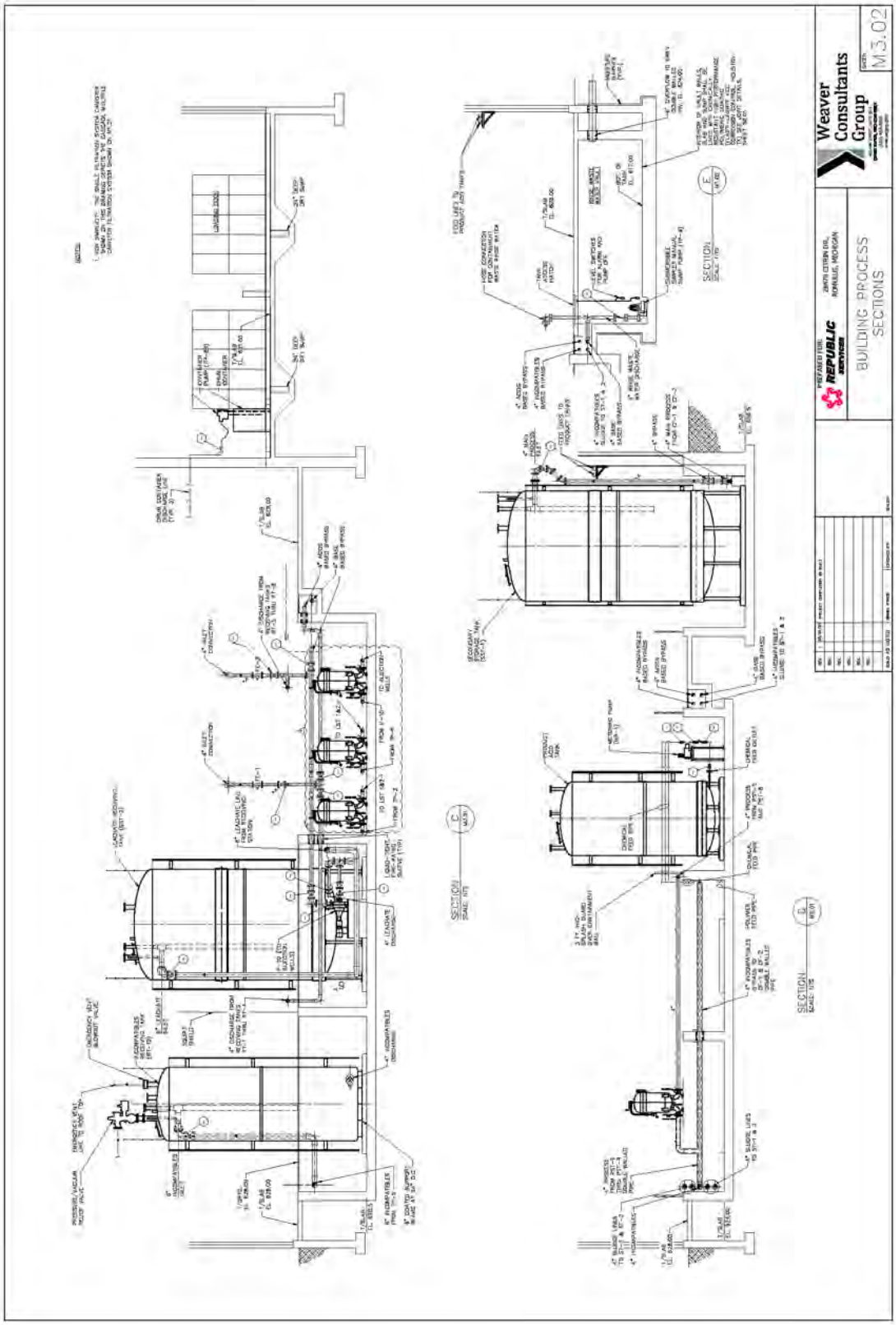

DIATOMACEOUS EARTH (DE) FEED SYSTEM
DRY CHEMICAL FEED SYSTEM
VOC CONTROL
NITROGEN BLANKETING
PROCESS FLOW DIAGRAM
PART B
Weaver Consultants Group
M1.02

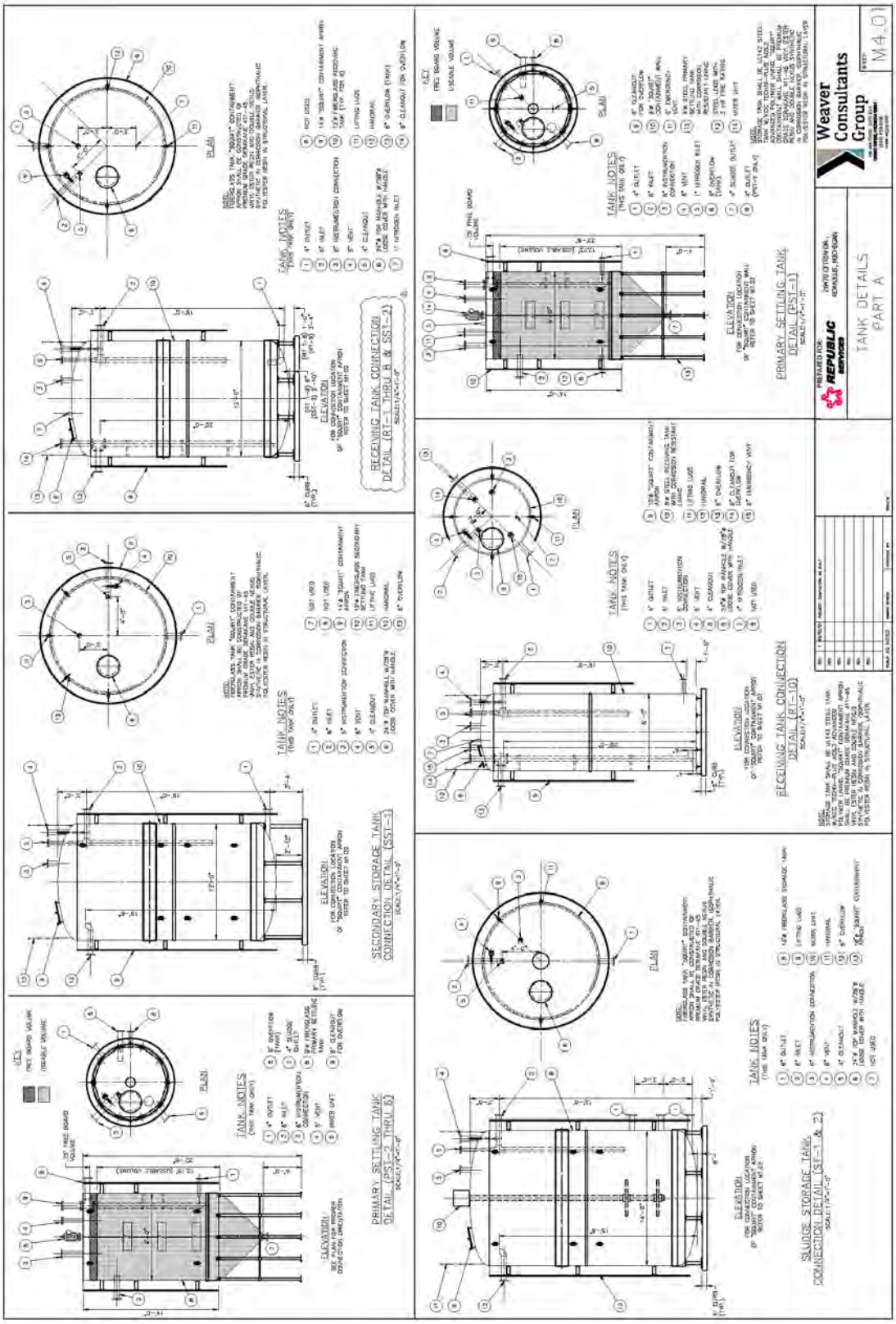

GENERAL DRAWING NOTES:
Weaver Consultants Group
M2.01
REPUBLIC SERVICES
PROCESS PLAN
MAIN LEVEL

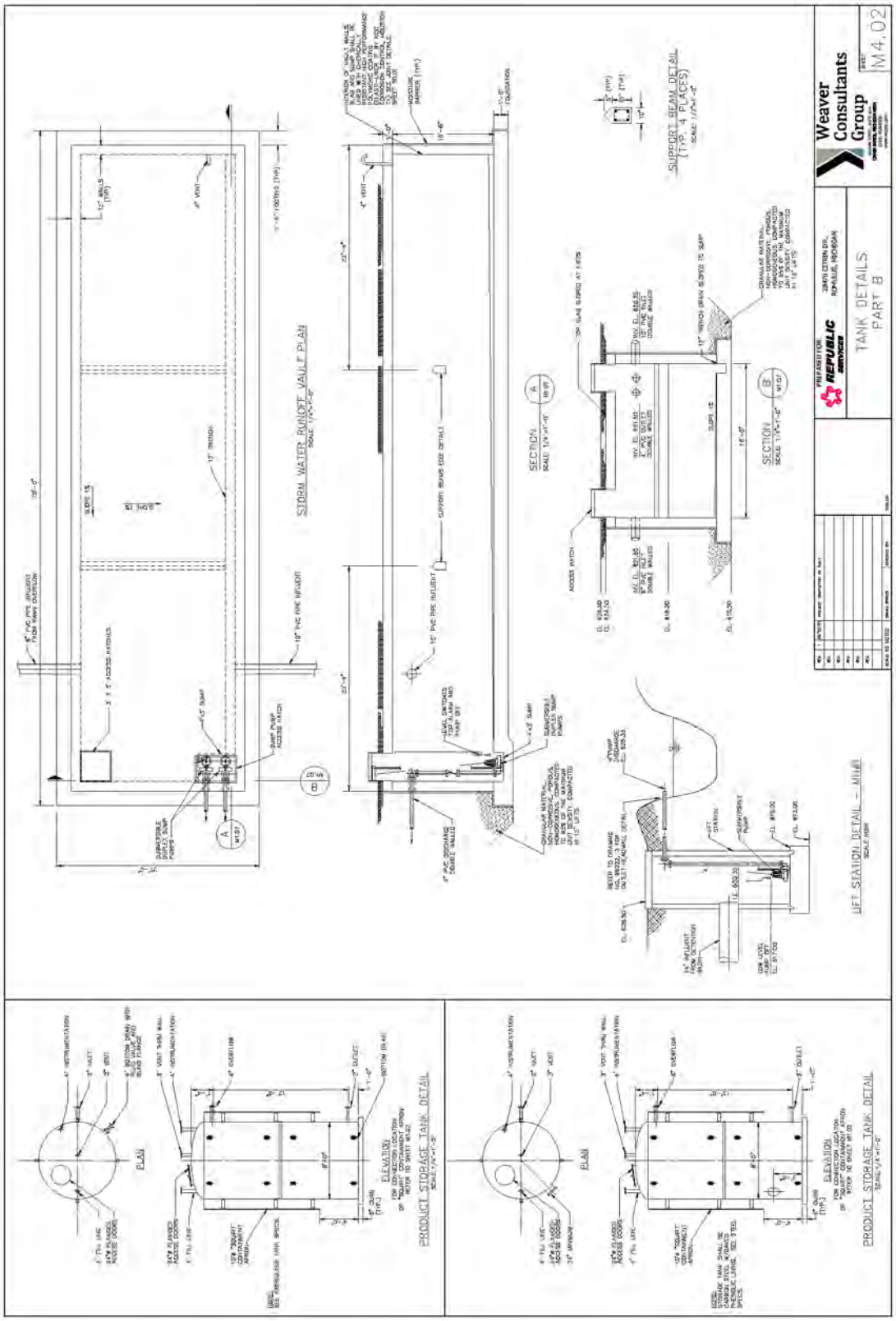

LEGEND
GENERAL NOTES
PROCESS PLAN MEZZANINE AND UPPER LEVEL
REPUBLIC SERVICES
Weaver Consultants Group
M2.02

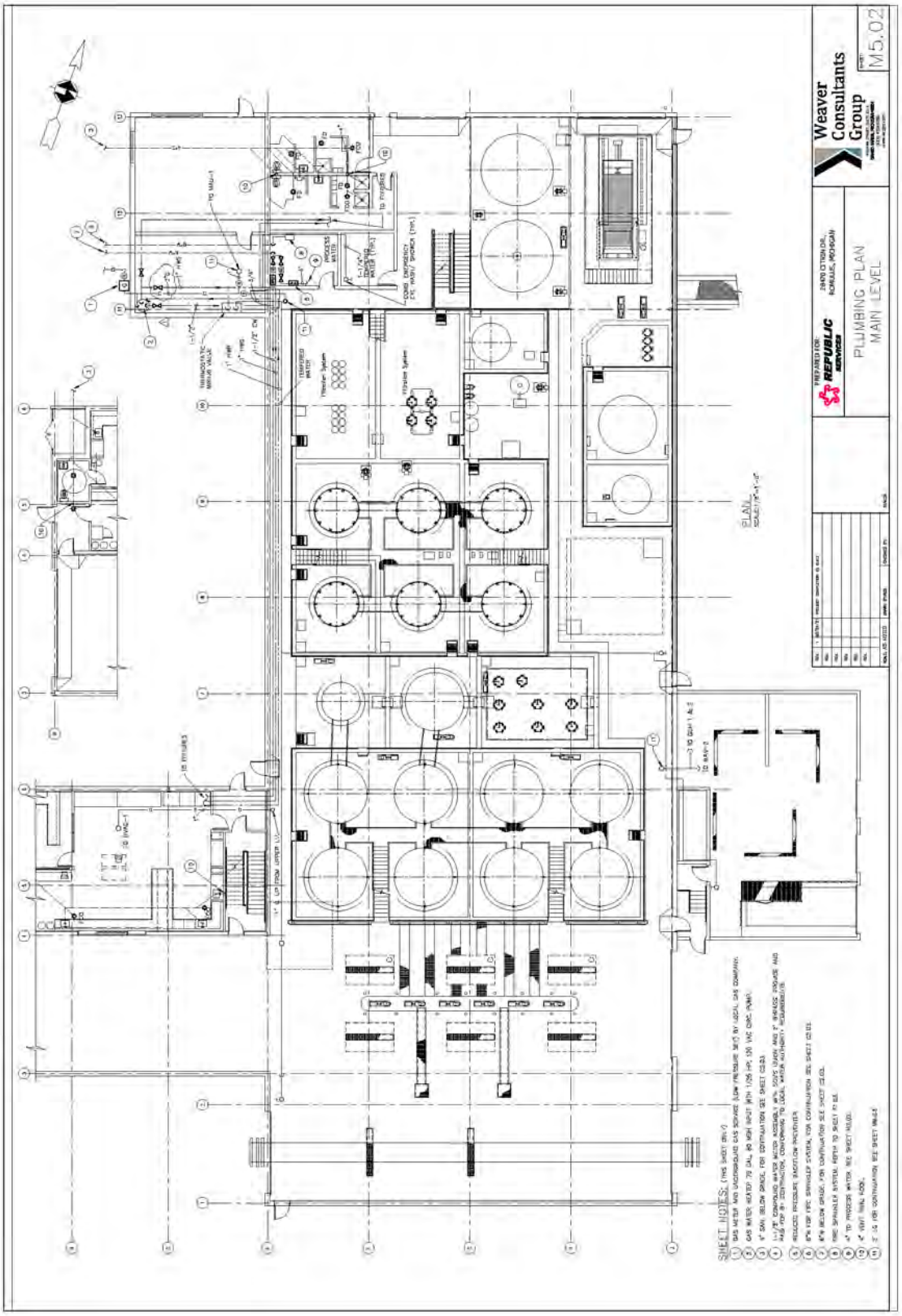

PLAN
SCALE: 1/2"=1'-0"
WELL ANNULUS MONITORING SYSTEM
WELLHOUSE LAYOUTS & ANNULUS MONITORING
Weaver Consultants Group
M2.03

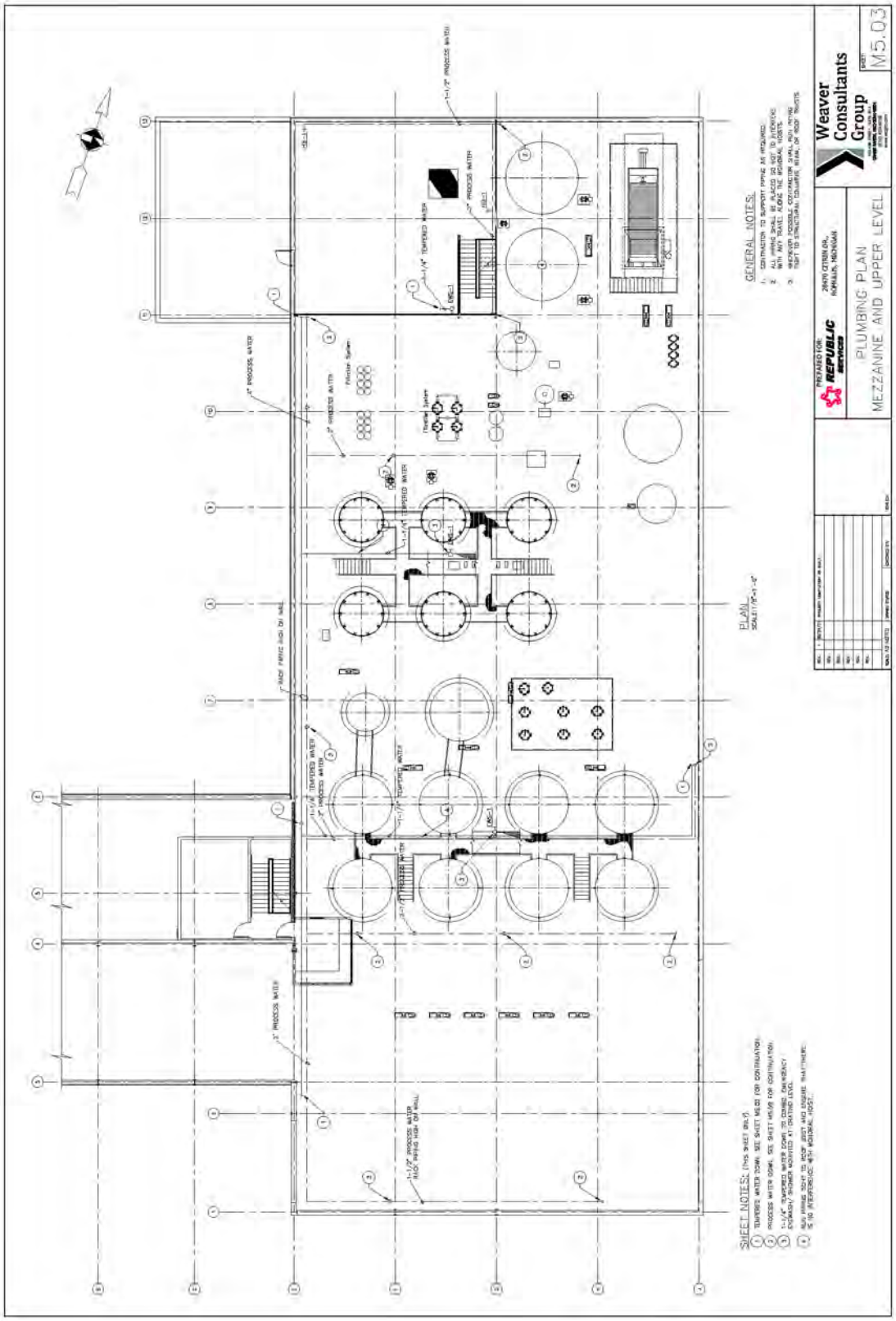

SYSTEMS SOLUTION CONSULTANTS
M3.01
ENVIRONMENTAL GLO-TECHNOLOGIES, LLC.
CITRIN DRIVE FACILITY
ROMULUS, MICHIGAN
BUILDING PROCESS
SECTIONS
SUMP DETAIL (TYP)
SECTION
SECTION


Weaver Consultants Group
M3.02
REPUBLIC SERVICES
BUILDING PROCESS SECTIONS
SECTION
SECTION
SECTION


RECEIVING TANK CONNECTION DETAIL (RT-1 THRU 8 & SST-2)
SECONDARY STORAGE TANK CONNECTION DETAIL (SST-1)
PRIMARY SETTING TANK DETAIL (PST-1 THRU 6)
PRIMARY SETTING TANK DETAIL (PST-1)
RECEIVING TANK CONNECTION DETAIL (RT-10)
SLUDGE STORAGE TANK CONNECTION DETAIL (ST-1 & 2)
TANK NOTES
PLAN
ELEVATION
Weaver Consultants Group
TANK DETAILS PART A
M4.01


STORM WATER RUNOFF VAULT PLAN
SECTION
SECTION
SUPPORT BEAM DETAIL
(TYP. 4 PLACES)
LIFT STATION DETAIL - MIUB
PRODUCT STORAGE TANK DETAIL
PLAN
ELEVATION
PRODUCT STORAGE TANK DETAIL
PLAN
ELEVATION
Weaver Consultants Group
M4.02
TANK DETAILS
PART B


Weaver Consultants Group
M5.02
REPUBLIC SERVICES
PLUMBING PLAN
MAIN LEVEL
PLAN
SHEET NOTES:


PLUMBING PLAN
MEZZANINE AND UPPER LEVEL
Weaver Consultants Group
M5.03
GENERAL NOTES:
PLAN
SCALE: 1/8"=1'-0"
SHEET NOTES:

EXHAUST FAN SCHEDULE

(1) PROVIDE BACKDRAFT DAMPER
(2) PROVIDE STANDARD BIRD SCREEN
(3) PROVIDE EXPLOSION PROOF MOTOR DISCONNECT SWITCH, FACTORY WIRED
(4) PROVIDE FACTORY ROOF CURB
(5) PROVIDE HERESITE COATING ON ENTIRE FAN ASSEMBLY
(6) FACTORY VIBRATION ISOLATION AS REQ'D

SYMBOL	LOCATION	TYPE	C.F.M.	E.S.P.	MAX R.P.M.	DRIVE	H.P.	V.	PH.	WEIGHT (lbs.)	MANUF.	MODEL	SONES	* SYSTEM CONTROL	REMARKS
EF-1&2	TANK CAR AREA	ROOF MTD.	7500	.375"	390	BELT	1.0	120	1	408	GREENHECK	SQ-380-10	10.0 SONES	(1) WALL SWITCH	(1)(2)(3)(4)(5)(7)
EF-3	TANK CAR AREA	ROOF MTD.	3000	.375"	370	BELT	3/4	120	1	408	GREENHECK	SQ-330-7	8.4 SONES	T-STAT	(1)(2)(3)(4)(5)(7)
EF-4	LOADING DOCK	ROOF MTD.	2600	.375"	750	BELT	1/3	120	1	125	GREENHECK	SQ-180-3	7.5 SONES	T-STAT	(1)(2)(3)(7)
EF-5	CHEM STORAGE	CENTRIFUGAL	45,000	1"	696	BELT	25	460	3	3500	GREENHECK	60-AF3W-41	–	–	(3)(7)(8)(7)
EF-6	MENS/WOMENS TOILET	INLINE	600	.5"	1070	BELT	1/4	120	1	75	GREENHECK	SQ-100-4	7.0 SONES	W/DEDICATED FAN SWITCH	(1)(7) PROVIDE FACTORY DISCONNECT
EF-7,8,&9	LAB HOOD	INLINE	1500	.375"	1470	BELT	1/4	120	1	85	GREENHECK	SQ-100-4	10.7 SONES	W/LAB HOOD SWITCH	(1)(3)(6)(7) ADJUSTABLE MOTOR PULLEY, MOTOR COVER
EF-10	TOILET	INLINE	70	.375"	1075	BELT	1/10	120	1	75	GREENHECK	SQ-70-4	7.5 SONES	W/DEDICATED FAN SWITCH	(1)(7) PROVIDE FACTORY DISCONNECT

GAS UNIT HEATER SCHEDULE

(1) PROVIDE FACTORY DISCONNECT
(2) PROVIDE BUILT-IN EXPLOSION PROOF MOTOR & CONTROL STEP DOWN TRANSFORMERS FOR SINGLE SOURCE VOLTAGE CONNECTION
(3) PROVIDE 120 VAC T-STAT
(4) PROVIDE ALL RELATED MOUNTING HARDWARE AND ACCESSORIES AS REQUIRED
(5) PROVIDE CORROSION RESISTANT EPOXY COATING THROUGHOUT
(6) PROVIDE METAL TYPE 'B' FLUE THRU ROOF
(7) TOTALLY ENCLOSED FAN COOLED TEFC MOTOR
(8) SEPARATED COMBUSTION

SYMBOL	LOCATION	TYPE	ELECTRICAL DATA: C.F.M.	THROW	MAX R.P.M.	DRIVE	TEMP RISE	FAN H.P.	HEATING: TYPE	CAP. (INPUT)	EFF.	MANUF.	MODEL	WEIGHT (LBS)	REMARKS
GUH-1&2	–	WALL MTD	747	60'	1355	DIRECT	60	1/16	GAS	45 MBH	80%	REZNOR	SFT-45	85 LBS.	(1)(3)(3)(4)(5)(6)(7)(8)(9)(10)

DIFFUSER & REGISTER SCHEDULE

(1) 4 WAY UNLESS NOTED OTHERWISE
(2) 24"x24" LAY-IN
(3) FACTORY EPOXY COATED
(4) WITH GRID
(5) COLOR WHITE
(6) PROVIDE DUCT TRANSITION AS REQ'D AT FLOW
(7) PROVIDE 03 EQUALIZING GRIDS

SYMBOL	SERVICE	NECK SIZE (mm)	C.F.M.	MANUF. & MODEL NO.	TYPE	REMARKS
A	S.A.	6"x6"	0-120	METALAIRE SERIES 7000	PERFORATED	(1)(3)(4)(5)(6)
B	S.A.	8"x8"	121-220	METALAIRE SERIES 7000	PERFORATED	(1)(3)(4)(5)(6)
C	S.A.	10"x10"	221-245	METALAIRE SERIES 7000	PERFORATED	(1)(2)(4)(5)(6)
D	S.A.	12"x12"	246-400	METALAIRE SERIES 7000	PERFORATED	(1)(3)(4)(5)(6)
E	R.A.	10"x10"	0-240	METALAIRE SERIES 7000R	PERFORATED	(2)(5)(6)
F	R.A.	12"x12"	246-600	METALAIRE SERIES 7000R	PERFORATED	(2)(5)(6)
G	R.A.	15"x15"	601-780	METALAIRE SERIES 7000R	PERFORATED	(2)(5)(6)
H	R.A.	18"x18"	781-1120	METALAIRE SERIES 7000R	PERFORATED	(2)(5)(6)
I	S.A.	24"ø	3000	METALAIRE SERIES 3000-A-1	ROUND	(3)(4)(6)(7)
J	E.A.	24"x24"	3750	METALAIRE SERIES 5014	SLIMLINE MTD	(3)(4)(5)

NOTE: 1. COORDINATE CEILING AND RECESS FRAME TYPE WITH ARCHITECTURAL.
2. ALL SUPPLY DIFFUSERS TO BE 4-WAY VANE.

ROOF TOP HVAC PACKAGED UNIT SCHEDULE

(1) PROVIDE EXPANSION COMPENSATOR
(2) PROVIDE ACOUSTIC ROOF CURB (CURB HT. MIN. 18" ABOVE FINISH INSULATED ROOF SURFACE ON ALL SIDES. ROOF CURB SHALL BE MANUFACTURED BY TRANE MODEL CURTCURB.
(3) PROVIDE RUBBER VIBRATION ISOLATORS
(4) POWER EXHAUST WITH PRESSURE SENSOR BY MANUFACTURER.
(5) COORDINATE WITH CONTROLS CONTRACTOR FOR CONTROL COMPONENTS, WIRING ETC.
(6) 2" THROWAWAY 30% PLEATED CARTRIDGE FILTER
(7) PROVIDE MOTOR STARTER, DISCONNECT, UNIT CONTROLLER AND POWER CONVENIENCE OUTLET.

MARK	LOCATION	SERVICE	MANUF.	SUPPLY FAN: CFM SA	CFM OA*	ESP (IN. WC.)	HP	COOLING CAPACITY: EAT DB	EAT WB	LAT DB	LAT WB	SENS. MBH	TOTAL MBH	DX CONDENSING DB/WB	HEATING CAPACITY: EAT DB	LAT DB	MBH INPUT	MBH OUTPUT	ELECTRICAL: VOLTAGE	MCA (AMP)	MAX UNIT WEIGHT (INCLUDE ALL ACCESSORIES)	REMARKS
HVAC-1	ROOF	LAB/OFFICE	TRANE YCD180	6000	3000	1.0"	5	80	67	51.61	56.36	–	150	90/73	37.5°F	84°F	300	300	460/3Ø	50	2000 LBS	(1)(2)(3)(5)(6)(7)

PACKAGED MAKE-UP AIR UNIT SCHEDULE

(1) EPOXY COATING HOUSING & BASE
(2) CLASS 0, DIV. 1, GROUP F ELECTRICAL REQUIREMENTS FOR EXPOSED ELEC. EQUIP.
(3) CONTROL PANEL W/COMMON ALARM OUTPUT
(4) LOCAL DISCONNECT
(5) WITH WEATHER HOOD

SYMBOL	LOCATION	FAN CFM	ESP	ELECTRICAL DATA: FAN HP	VOLTS	PHASE	HEAT DATA: TYPE	FUEL	TEMP IN	TEMP OUT	MBH	FILTRATION DATA: CFM	TYPE	MEDIA	EFF.	SIZE	WEIGHT (LBS)	MFG	MODEL	REMARKS
MAU-1	CEN. ROOM ROOF	75,000	1.0"	50HP/1800 RPM	460	3	DIRECT	NAT. GAS	0°F	60°	–	75,000	SELF CLEANED	MFG. RECOMMENDED	99.5 @ 2 MICRON 80.0 @ 20 MICRON	–	8,745	WEATHER MTE	ARTT 230 HCL	(1)(2)(3)(4)(5)
MAU-2	LOADING DOCK	25,000	1.25"	3HP	460	3	DIRECT	NAT. GAS	0°F	60°	300	25,000	SELF CLEANED	MFG. RECOMMENDED	99.5 @ 2 MICRON 80.0 @ 20 MICRON	96" L x 42" W x 48" H	500	TRANE	CGAA 35	(1)(2)(3)(4)(5)

MECHANICAL LEGEND

SYMBOL	ABBR.	DESCRIPTION	SYMBOL	ABBR.	DESCRIPTION
		DUCT		UP	PIPE ELBOW UP
		UNDS DUCT, DIMENSION DOES NOT INCLUDE LINING		DN	PIPE ELBOW DOWN
	FC	DUCT-FLEXIBLE CONNECTION		MAV	MANUAL AIR VENT
		RECTANGULAR TO ROUND DUCT CONVER.		AFF	ABOVE FINISHED FLOOR
	SAD	SUPPLY AIR DIFFUSER		AHU	AIR HANDLING UNIT
		RETURN AIR DUCT		DB	DRY BULB TEMPERATURE
		EXHAUST AIR DUCT		DDC	DIRECT DIGITAL CONTROL
		RETURN AIR GRILLE W/ ADJUST. BODY		DX	DIRECT EXPANSION
	RAG	RETURN AIR GRILLE		(E)	EXISTING
	ER	EXHAUST AIR REGISTER		EA	EXHAUST AIR
	EG	EXHAUST AIR GRILLE		EAT	ENTERING AIR TEMPERATURE
	DL	DOOR louver		EDB	ENTERING DRY BULB TEMPERATURE
		RECTANGULAR ELBOW DOWN		ESP	EXTERNAL STATIC PRESSURE (IN. WC.)
		RECTANGULAR ELBOW UP		EWB	ENTERING WET BULB TEMPERATURE
		SQUARE ELBOW WITH TURNING VANES		EWT	ENTERING WATER TEMPERATURE
				FPM	FEET PER MINUTE
T	T-STAT	THERMOSTAT		GC	GENERAL CONTRACTOR
		DIRECTION OF AIR FLOW		GLY	GLYCOL
	VD	VOLUME DAMPER (MANUALLY ADJUSTED)		GPM	GALLONS PER MINUTE
	BDD	BACK DRAFT DAMPER		HP	HORSEPOWER
	MOD	MOTOR OPERATED DAMPER		HVAC	HEATING, VENTILATING & AIR CONDITIONING
	FDHR	FIRE DAMPER (HORIZONTAL)		LAT	LEAVING AIR TEMPERATURE
	FDVR	FIRE DAMPER (VERTICAL)		LWT	LEAVING WATER TEMPERATURE
	POC	POINT OF CONNECTION		MBH	THOUSAND BTU'S PER HOUR
	HWS	HOT WATER SUPPLY		MCA	MINIMUM CIRCUIT AMPACITY
	HWR	HOT WATER RETURN		NC	NOISE CRITERIA
	U	UNION		OA	OUTSIDE AIR
	BV	BALL VALVE		RA	RETURN AIR
	PRV	PRESSURE REGULATING VALVE		RPM	REVOLUTIONS PER MINUTE
	CVA	CHECK VALVE (SWING)		SA	SUPPLY AIR
	BAL. V.	BALANCING VALVE		SP	STATIC PRESSURE (IN. WC.)
	CV	CONTROL VALVE (2-WAY)		TSP	TOTAL STATIC PRESSURE (IN. WC.)
	CV	CONTROL VALVE (3-WAY)		TYP	TYPICAL
	RVA	RELIEF VALVE			FLEXIBLE INSULATED DUCT
	PG	PRESSURE GAUGE WITH GAUGE COCK		#	PHASE, PRIMARY

GENERAL NOTES:

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE LATEST EDITION OF BUILDING CODES, ORDINANCES, AND REGULATIONS, STATE HEALTH AND SAFETY CODES, STATE FIRE MARSHAL, LOCAL FIRE DEPARTMENT AND ALL OTHER AUTHORITIES HAVING JURISDICTION.
2. COORDINATE INSTALLATION OF WORK SO AS TO AVOID UNNECESSARY JOB DELAYS OR INTERFERENCES AND ALL OTHER TRADES.
3. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS ON ALL WORK FROM REGULATING AGENCIES WHERE REQUIRED.
4. ALL MOUNTING HEIGHTS OF EQUIPMENT, PIPING AND DUCTWORK ARE SUBJECT TO FIELD VERIFICATION AND ADJUSTMENT AT NO ADDITIONAL COST TO OWNER.
5. HVAC CONDENSATE SHALL BE PROVIDED.
6. MOUNT ALL T-STATS 60" A.F.F.
7. FLEXIBLE DUCT LENGTHS TO BE 5'-0" MAXIMUM.
8. COORDINATE EXACT LOCATION OF CEILING DIFFUSERS WITH ELECTRICAL LIGHTING AND MEGA REFLECTED CEILING PLANS.
9. COORDINATE ALL OPENINGS IN THE ROOF AND WALLS WITH GEN. CONTRACTOR.
10. DUCT TAPE SHALL NOT BE USED WITH FLEX DUCT CONNECTIONS.
11. SEE SPECIFICATION SECTION 15810, SEQUENCE OF OPERATION, FOR MECHANICAL CONTROL AND INTERLOCK INFORMATION.
12. PROVIDE FLEX CONNECTIONS FOR ALL DUCTWORK AT ALL HEAT PUMP AND MAKE UP AIR UNIT CONNECTIONS.
13. ALL FIELD WIRING, 115VAC & HIGHER, SHALL BE AS SPECIFIED IN ELECTRICAL SPECIFICATIONS.
14. ALL OPENINGS FOR DUCTS THROUGH FIRE-RATED ENCLOSURES SHALL BE DAMPERED AND CAULKED AS REQUIRED BY CODE TO MAINTAIN FIRE RATING.
15. ALL NEW HVAC EQUIPMENT SHALL BE UL LISTED.
16. DUCT INSULATION SHALL COMPLY WITH NFPA SMOKE AND FLAME SPREAD RATING OF 25-50.
17. CONTRACTOR TO PROVIDE CONCRETE EQUIPMENT PADS, MINIMUM 4" THICK, 4" CLEARANCES ON ALL SIDES OF EQUIPMENT, 3000 PSI COMPRESSIVE STRENGTH CONCRETE FOR ALL FLOOR MOUNTED HVAC EQUIPMENT.
18. ALL PIPE SHAFTS SHALL BE PROTECTED WITH 1/2 1/2" MINIMUM RADESS PANELS ON THE SHAFTWALL AS SPECIFIED IN THE SPECIFICATIONS.

No.	DATE	REVISION DESCRIPTION
1		
2		
3		
4		
5		
6		

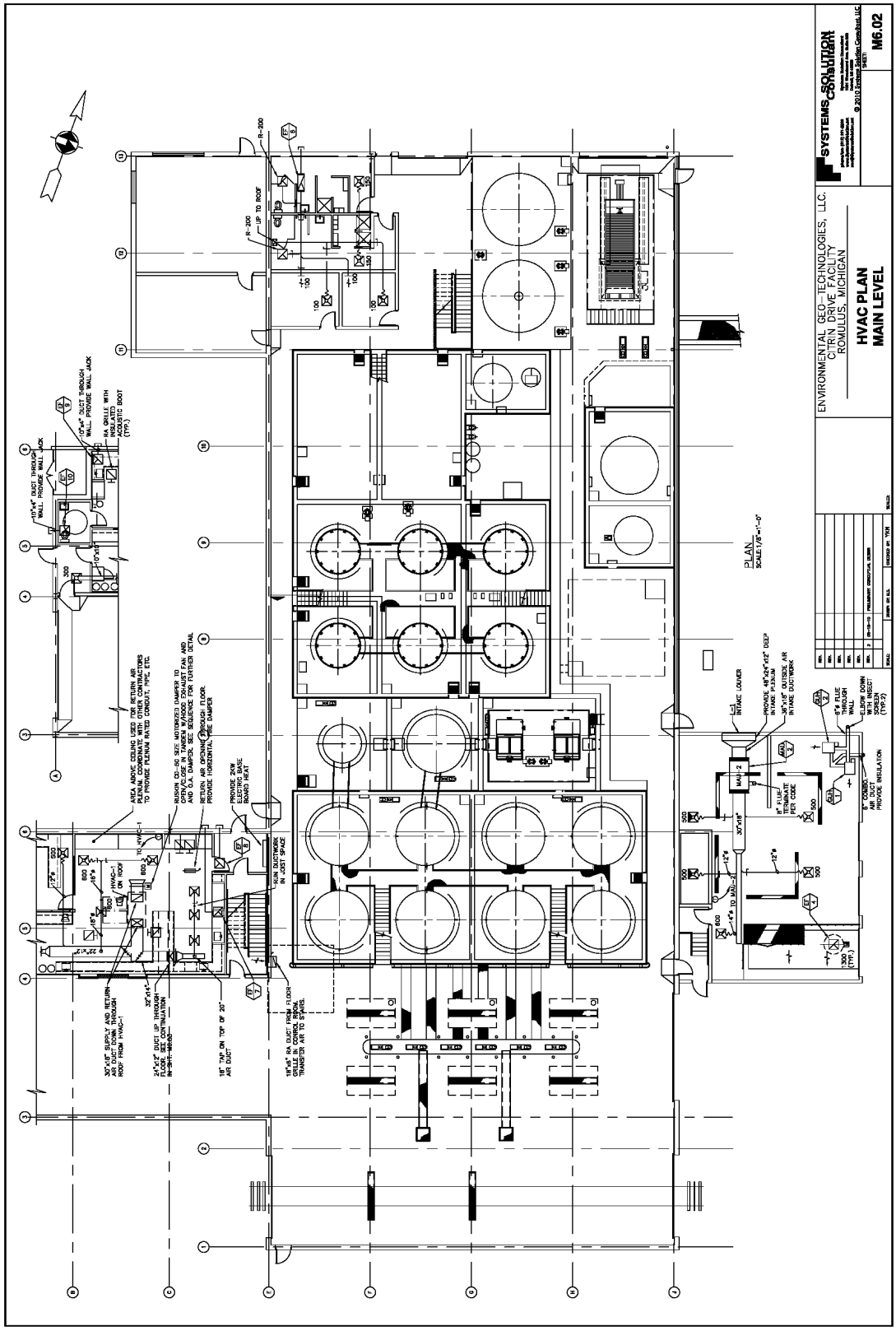
YOUR AS NOTED | DRAWN BY | DATE | SCALE

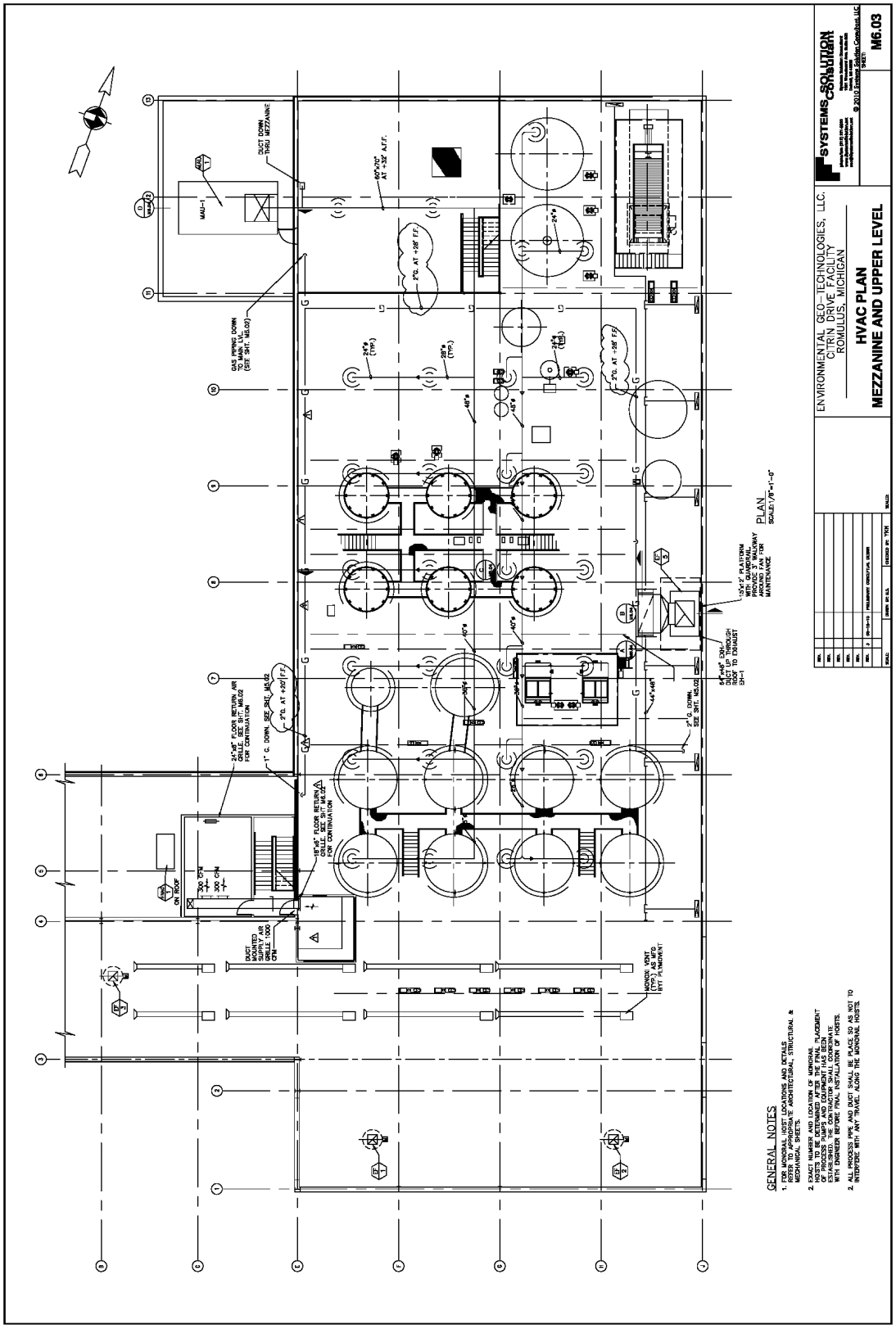
PREPARED FOR:
REPUBLIC SERVICES
28470 CITRIN DR.
ROMULUS, MICHIGAN

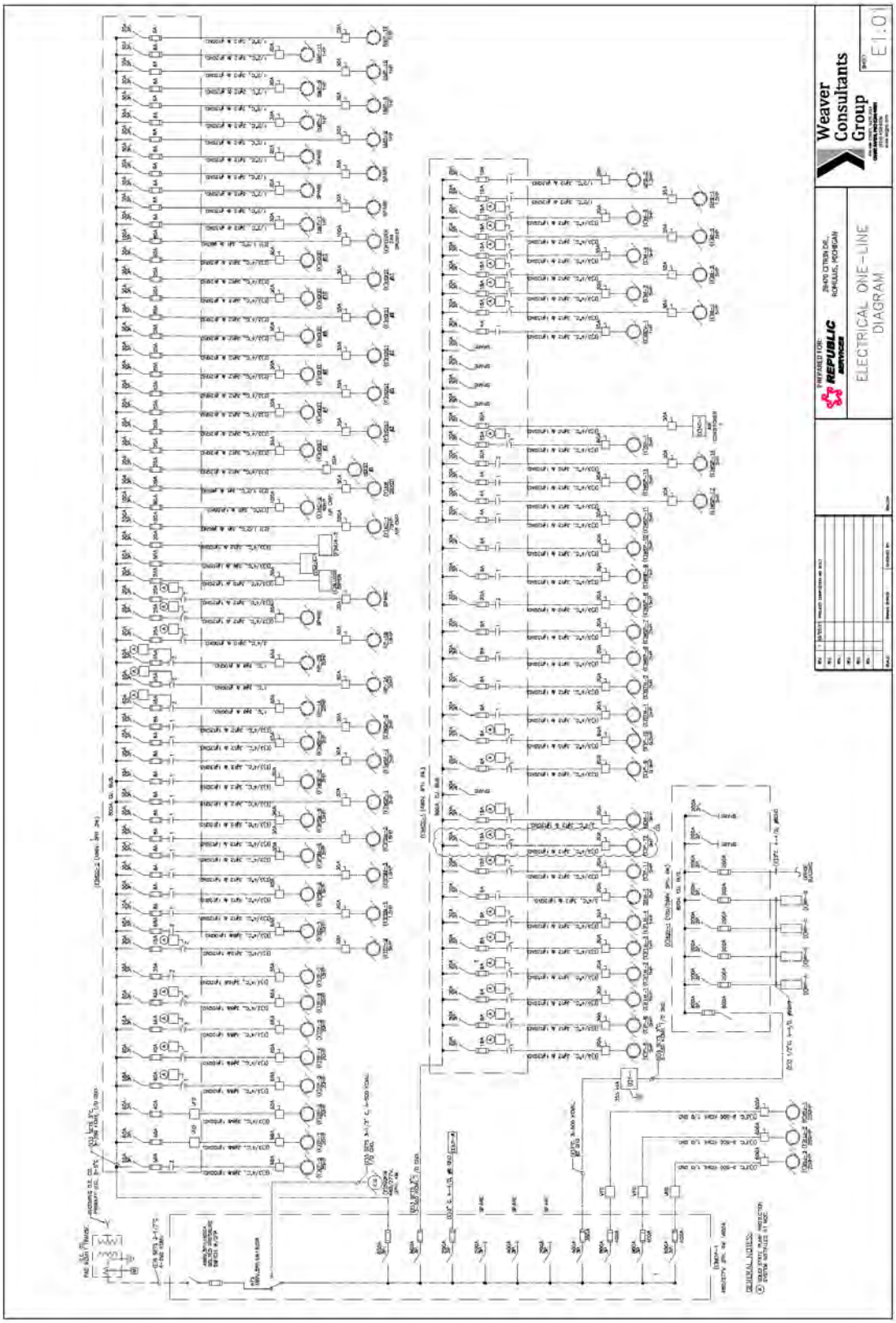
HVAC LEGEND, SCHEDULES, AND GENERAL NOTES

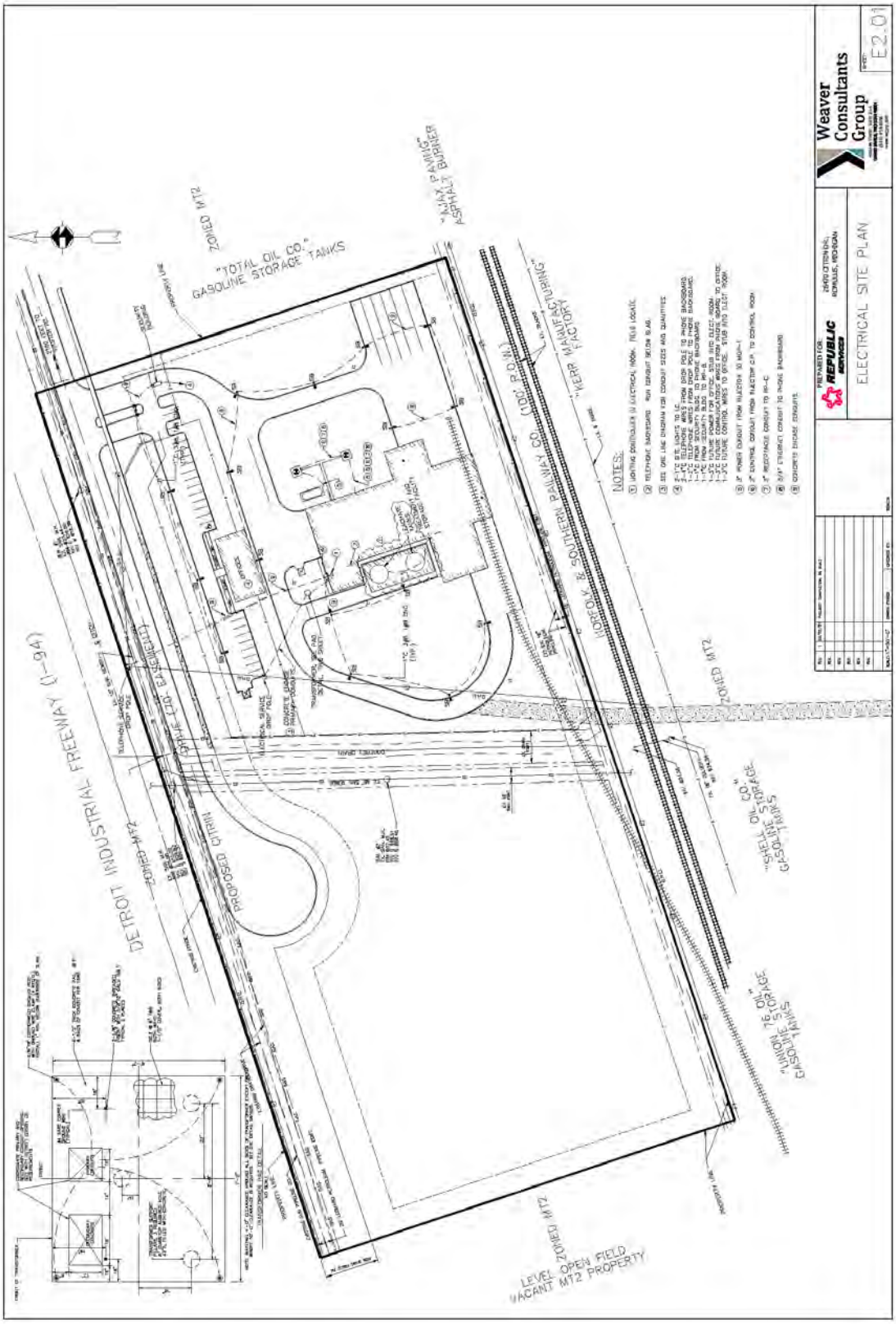
Weaver Consultants Group

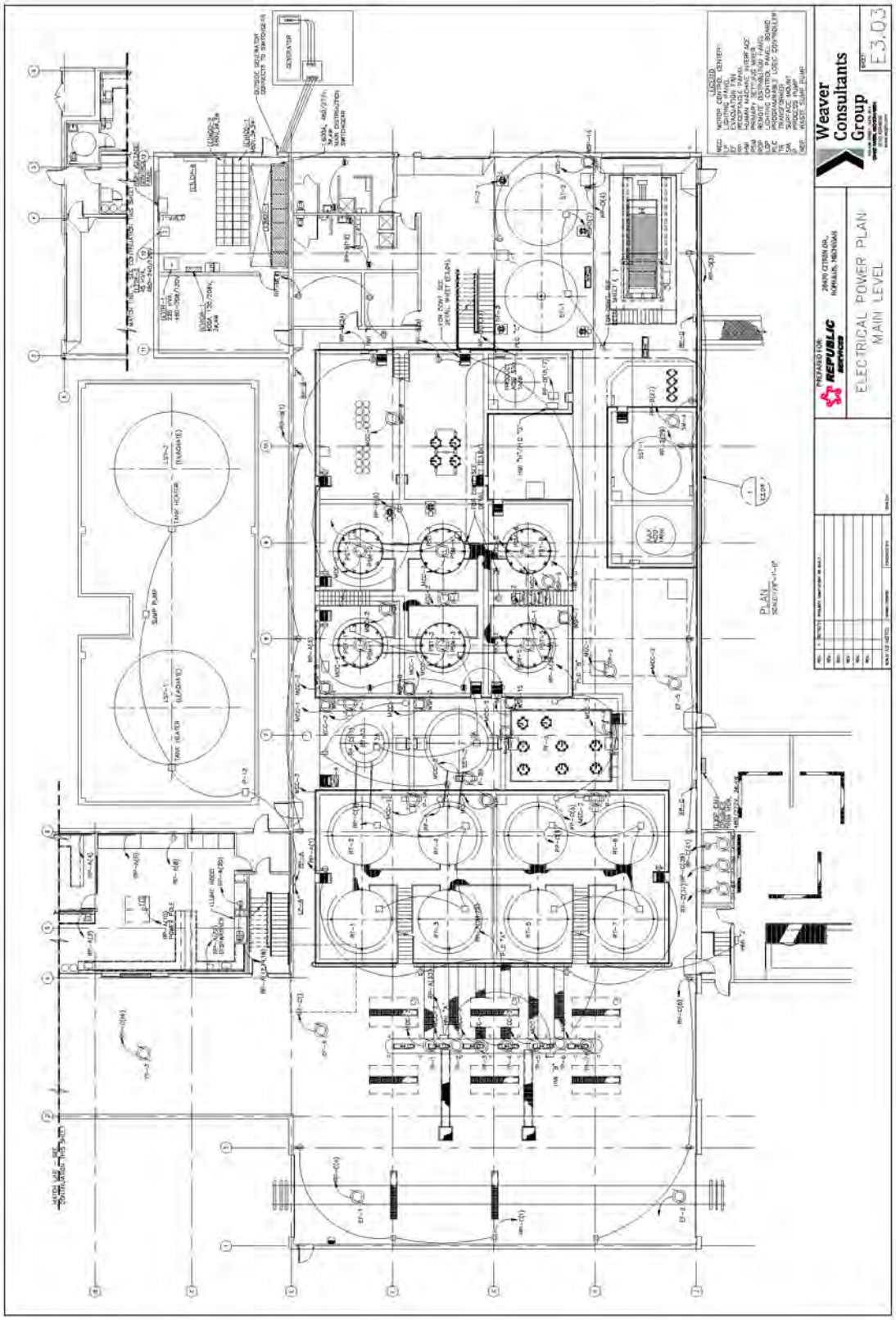
SHEET: M6.01

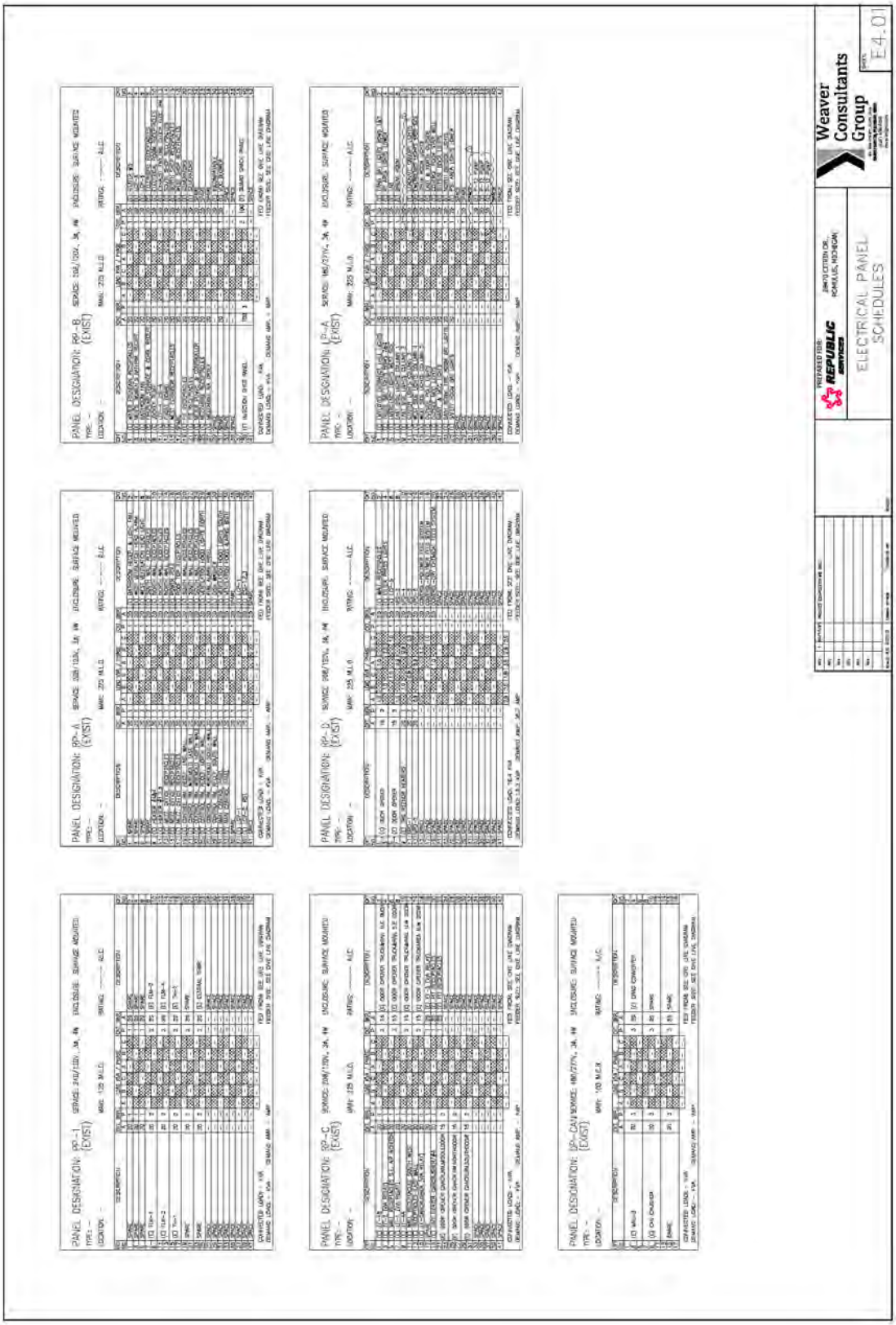

SYSTEMS SOLUTION CONSULTANT
M6.02
ENVIRONMENTAL GEO-TECHNOLOGIES, LLC.
CITRIN DRIVE FACILITY
ROMULUS, MICHIGAN
HVAC PLAN
MAIN LEVEL
PLAN
SCALE: 1/8"=1'-0"
AREA ABOVE CEILING USED FOR RETURN AIR PLENUM. COORDINATE WITH OTHER CONTRACTORS TO PROVIDE PLENUM RATED CONDUIT, PIPE, ETC.
RUSKIN CD-50 SIZE MOTORIZED DAMPER TO OPEN/CLOSE IN TANDEM W/AROOF EXHAUST FAN AND AHU-1. DAMPER SHALL BE SUPPLIED WITH TUTTLE DRAL
RETURN AIR OPENING THROUGH FLOOR. PROVIDE HORIZONTAL FIRE DAMPER
PROVIDE 2CW CURTAIN FIBERGLASS BOARD HEAT
HUM DUCTWORK IN JOIST SPACE
30"x18" SUPPLY AND RETURN AIR DUCT DOWN THROUGH ROOF FROM HVAC-1
24"x12" DUCT UP THROUGH FLOOR. SEE CONTINUATION M-SHT-M602
18" TAP ON TOP OF 20" AIR DUCT
18"x8" RA DUCT FROM FLOOR BELOW. SEE CONTINUATION TRANSFER AIR TO SPARS.
INTAKE LOUVER
PROVIDE 48"x24"x12" DEEP INTAKE PLENUM
36"x18" OUTSIDE AIR INTAKE DUCTWORK
8" FLUE THROUGH WALL
BLOW DOWN PIPE WITH BIRD SCREEN (TYP.)
8" COMBO AIR INTAKE. PROVIDE INSULATION
8" FLUE TERMINATE PER CODE
MAU-2
HVAC-1 ON ROOF
10"x4" DUCT THROUGH WALL PROVIDE WALL JACK
RA GRILLE WITH WALL BOX AND ACOUSTIC BOOT (TYP.)
R-200
UP TO ROOF

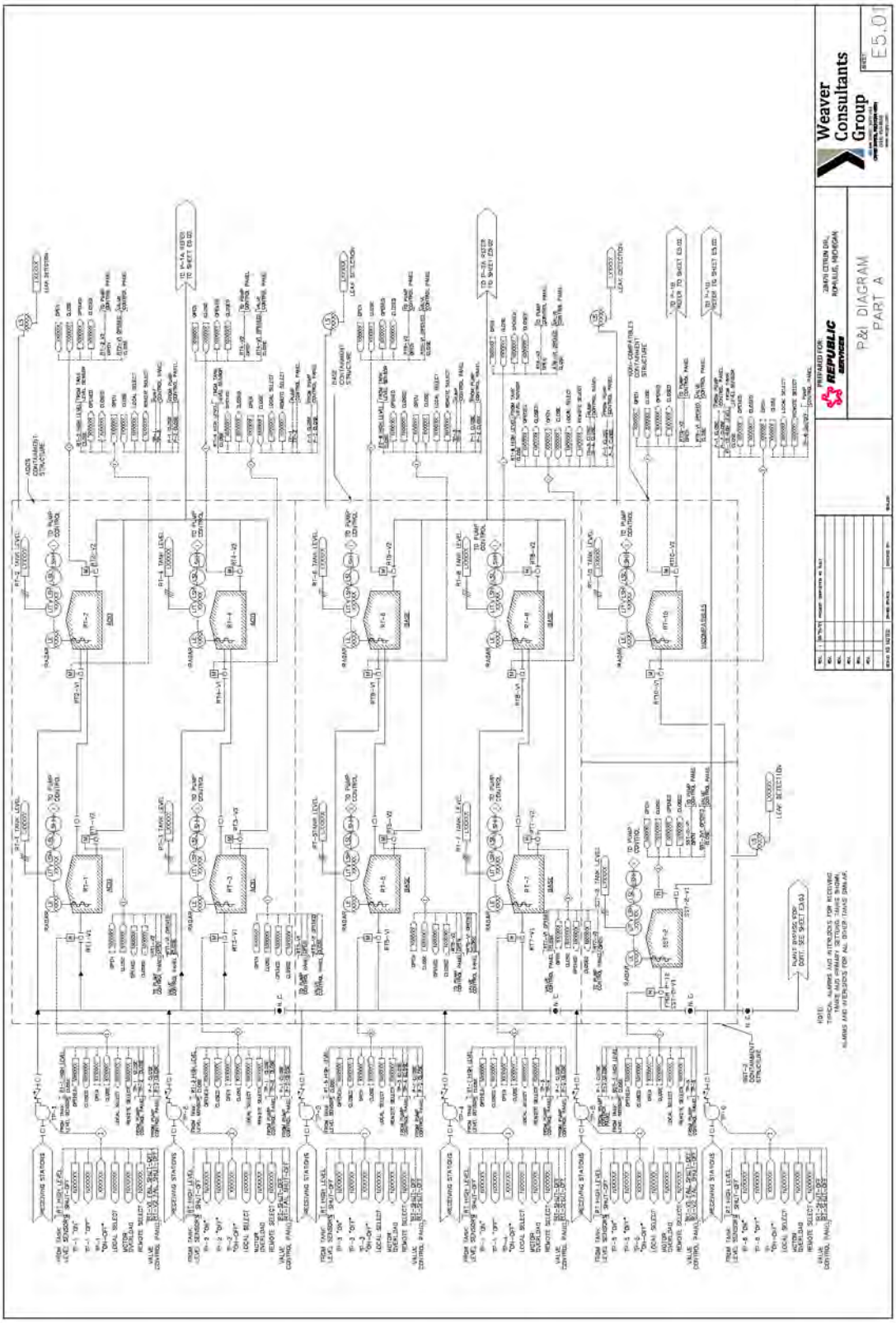

ENVIRONMENTAL GEO-TECHNOLOGIES, LLC.
CITRIN DRIVE FACILITY
ROMULUS, MICHIGAN
HVAC PLAN
MEZZANINE AND UPPER LEVEL
SYSTEMS SOLUTION Consultant
M6.03
PLAN
GENERAL NOTES

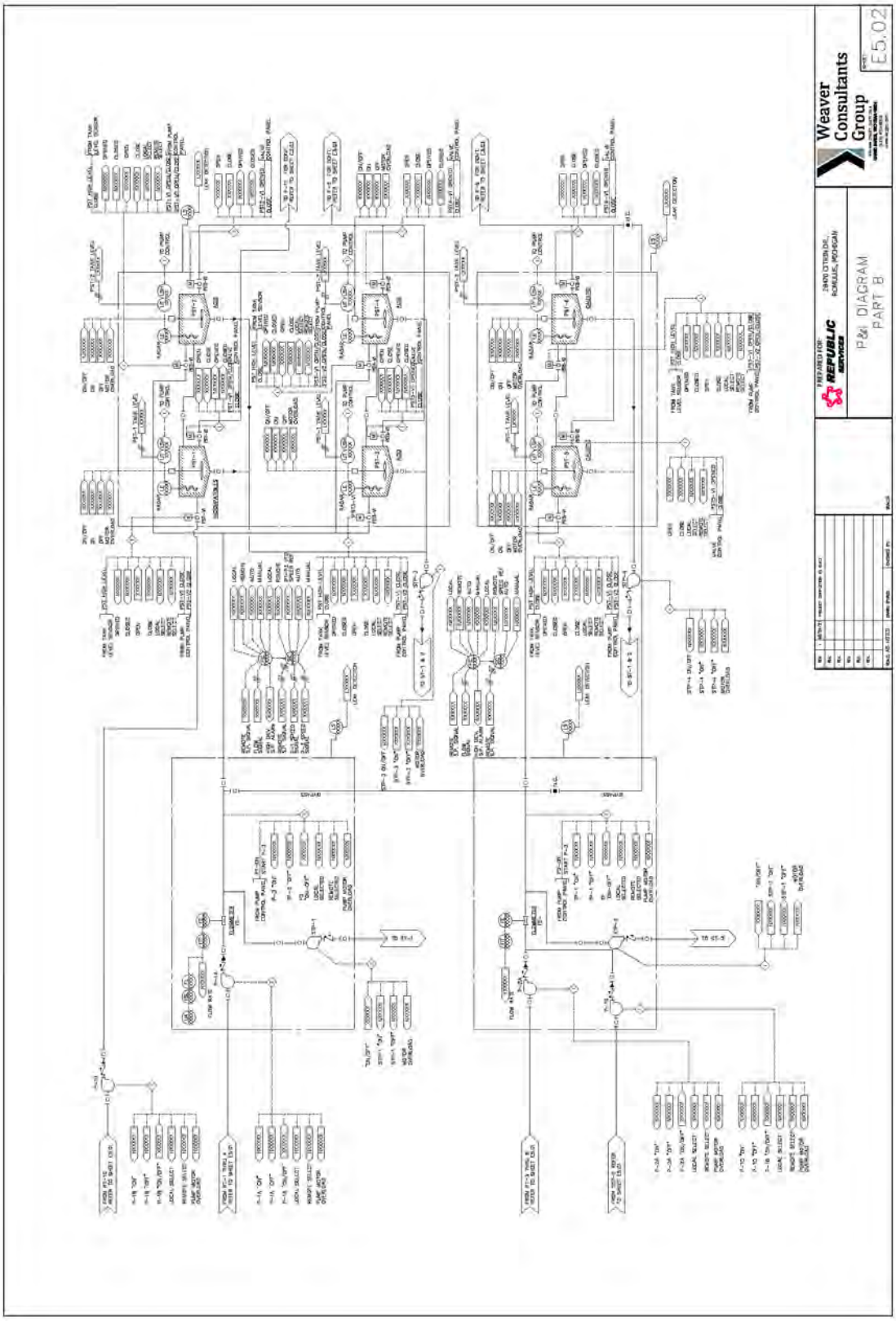

Weaver Consultants Group
E1.01
REPUBLIC SERVICES
ELECTRICAL ONE-LINE DIAGRAM

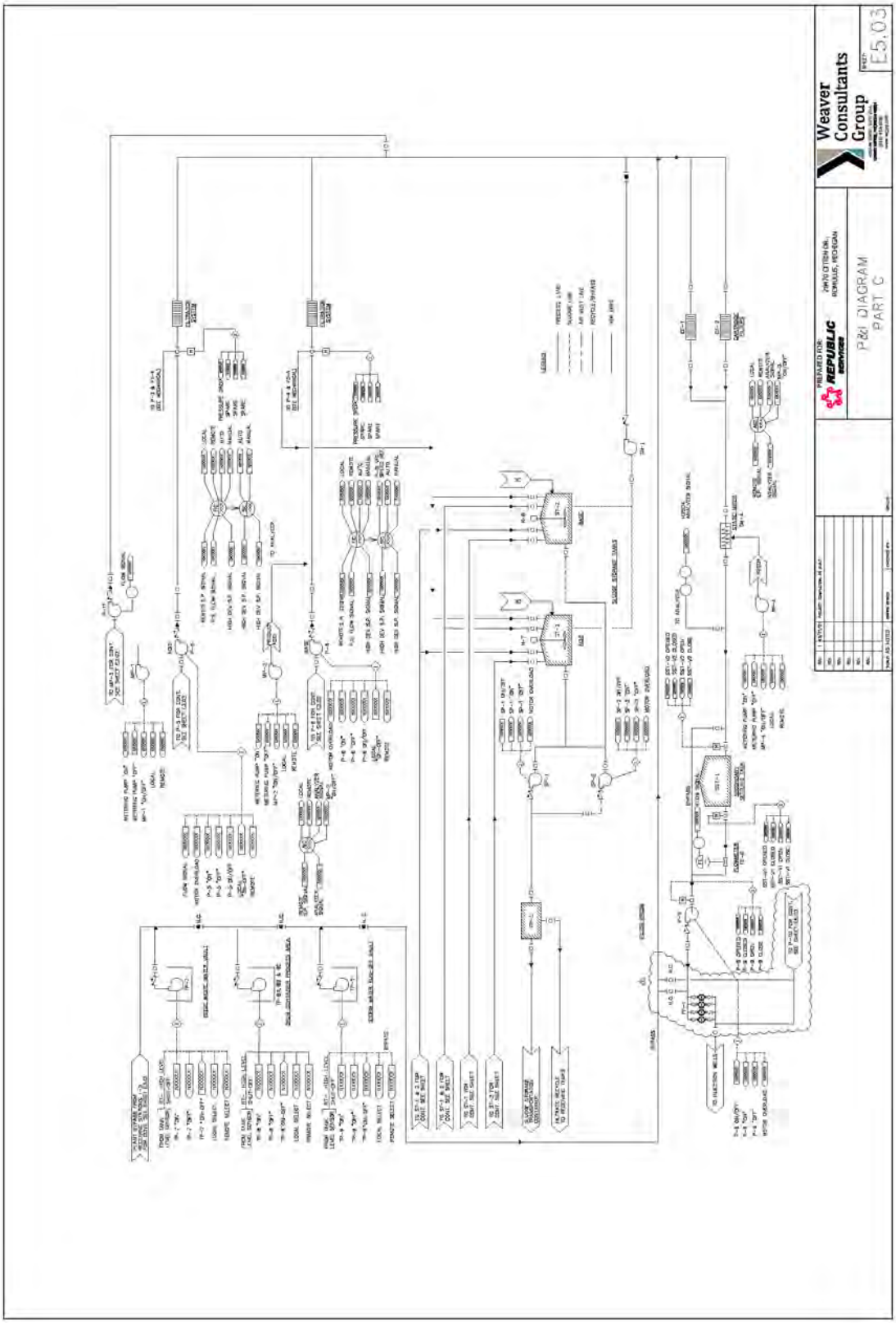

Weaver Consultants Group
E2.01
ELECTRICAL SITE PLAN
REPUBLIC SERVICES
NOTES:
"TOTAL OIL CO." GASOLINE STORAGE TANKS
"AJAX PAVING" ASPHALT BURNER
"KERR MANUFACTURING" FACTORY
NORFOLK & SOUTHERN RAILWAY CO. (100' R.O.W.)
DETROIT INDUSTRIAL FREEWAY (I-94)
PROPOSED CITRIN
"SHELL OIL CO." GASOLINE STORAGE TANKS
"UNION 76 OIL" GASOLINE STORAGE TANKS
LEVEL OPEN FIELD VACANT MT2 PROPERTY
ZONED MT2

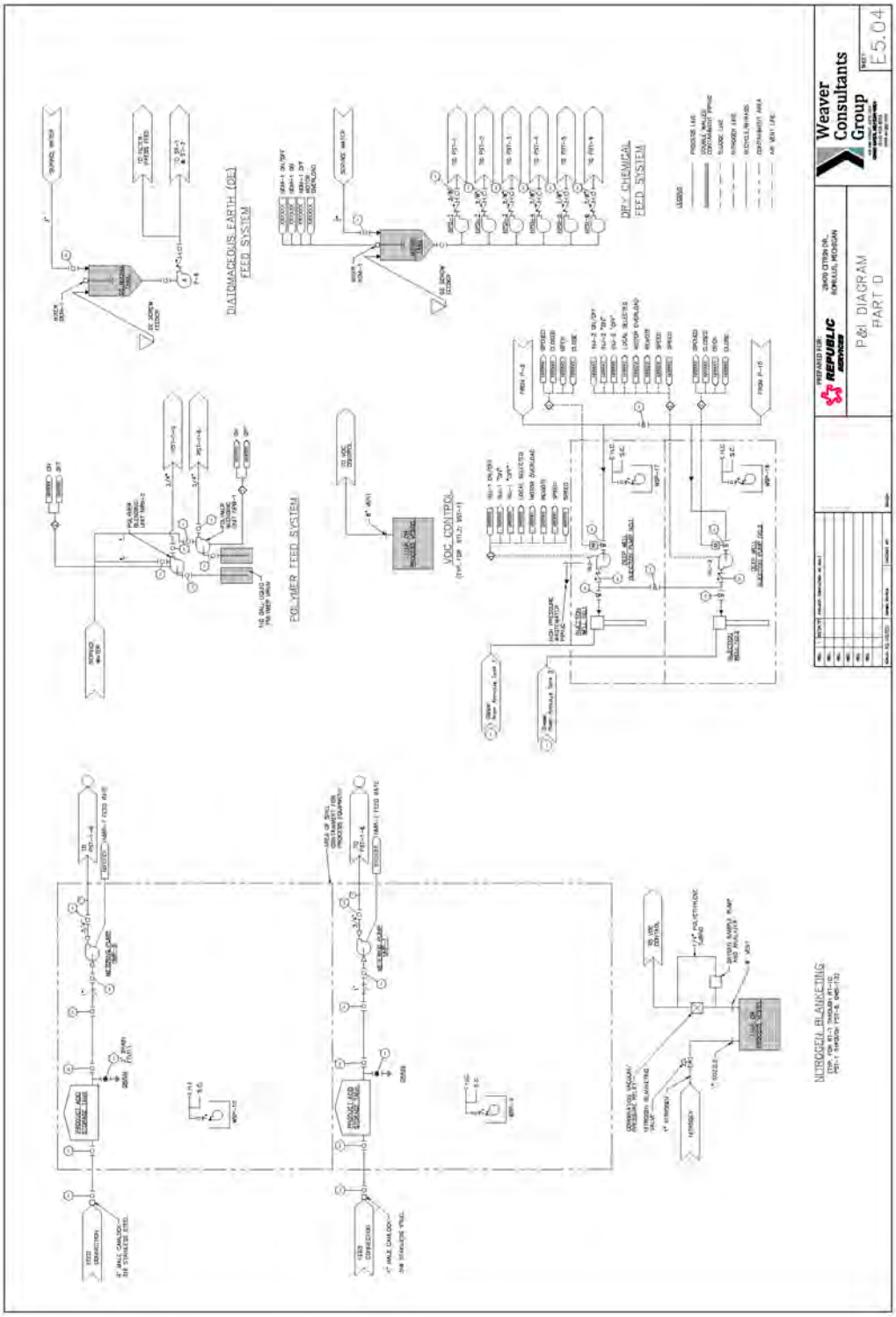

Weaver Consultants Group
E3.03
ELECTRICAL POWER PLAN
MAIN LEVEL
REPUBLIC SERVICES
PLAN

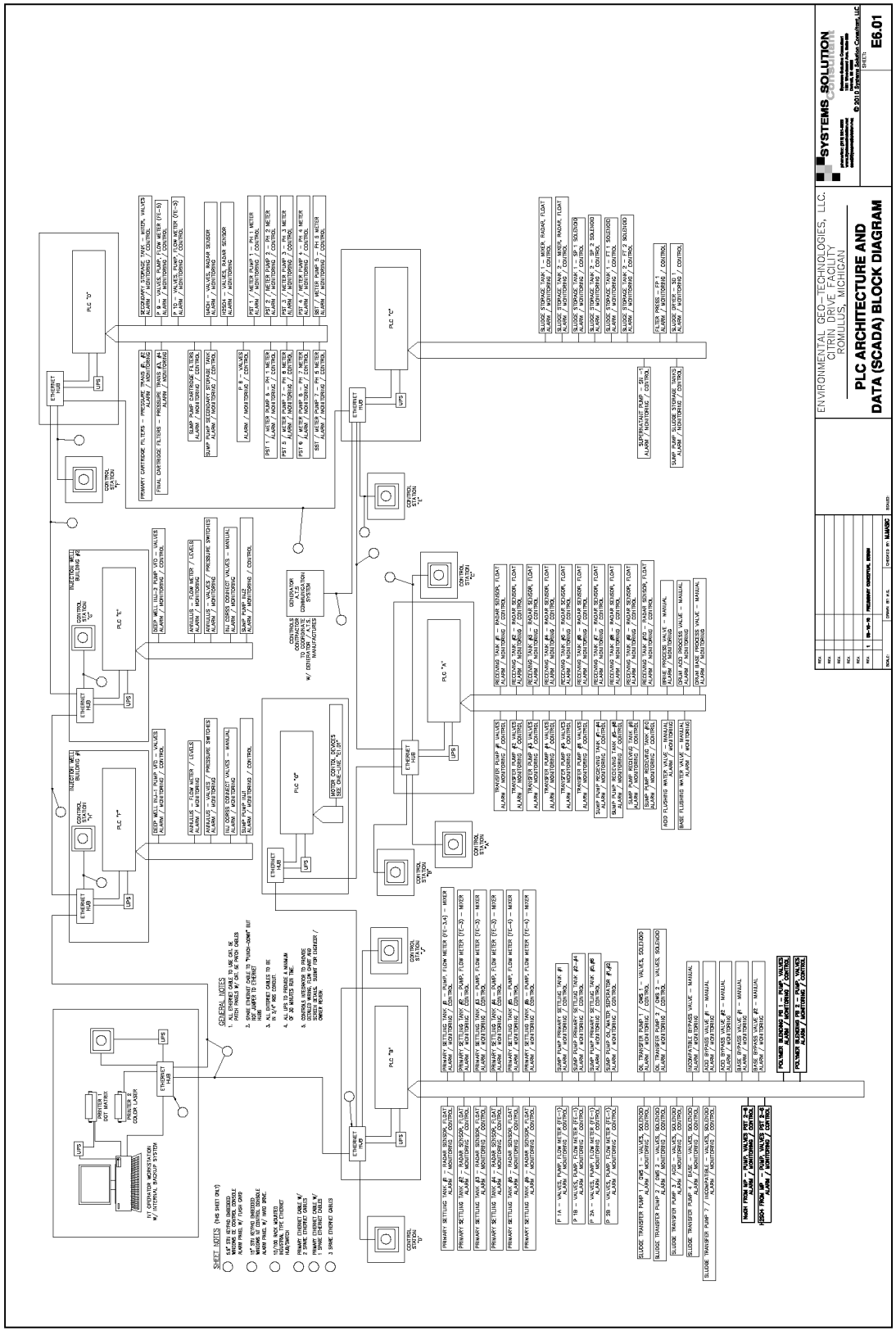

PANEL DESIGNATION: RP-1 (EXIST)
PANEL DESIGNATION: RP-A (EXIST)
PANEL DESIGNATION: RP-B (EXIST)
PANEL DESIGNATION: RP-C (EXIST)
PANEL DESIGNATION: RP-D (EXIST)
PANEL DESIGNATION: LP-A (EXIST)
PANEL DESIGNATION: LP-CAT (EXIST)
ELECTRICAL PANEL SCHEDULES
Weaver Consultants Group
E4.01


Weaver Consultants Group
E5.01
P&I DIAGRAM
PART A
REPUBLIC SERVICES


Weaver Consultants Group
E5.02
REPUBLIC SERVICES
P&I DIAGRAM
PART B


Weaver Consultants Group
E5.03
REPUBLIC SERVICES
P&I DIAGRAM
PART C


DIATOMACEOUS EARTH (DE) FEED SYSTEM
DRY CHEMICAL FEED SYSTEM
POLYMER FEED SYSTEM
VOC CONTROL
NITROGEN BLANKETING
Weaver Consultants Group
REPUBLIC SERVICES
P&I DIAGRAM
PART D
E5.04


ENVIRONMENTAL GEO-TECHNOLOGIES, LLC.
CITRIN DRIVE FACILITY
ROMULUS, MICHIGAN
PLC ARCHITECTURE AND
DATA (SCADA) BLOCK DIAGRAM
SYSTEMS SOLUTION
E6.01
SHEET NOTES
GENERAL NOTES
PLC "A"
PLC "B"
PLC "C"
PLC "D"
PLC "E"
PLC "F"
PLC "G"
ETHERNET HUB
UPS
CONTROL STATION "A"
CONTROL STATION "B"
CONTROL STATION "C"
CONTROL STATION "D"
CONTROL STATION "E"
CONTROL STATION "F"
CONTROL STATION "G"
PRINTER 1 DOT MATRIX
PRINTER 2 COMPUTER LASER
CONTROLS OPERATOR INTERFACE STATION (OIS) W/ INTERNET/WEB ACCESS
PRIMARY CARTRIDGE FILTERS - PRESSURE TRANS #1-#4 ALARM / MONITORING
FINAL CARTRIDGE FILTERS - PRESSURE TRANS #5-#8 ALARM / MONITORING
SUMP PUMP CARTRIDGE FILTERS ALARM / MONITORING / CONTROL
SUMP PUMP FLOW METER ALARM / MONITORING / CONTROL
ALARM / MONITORING / CONTROL
P.R. - VALVES
PST 1 / METER PUMP 1 - PH 1 METER ALARM / MONITORING / CONTROL
PST 2 / METER PUMP 2 - PH 2 METER ALARM / MONITORING / CONTROL
PST 3 / METER PUMP 3 - PH 3 METER ALARM / MONITORING / CONTROL
PST 4 / METER PUMP 4 - PH 4 METER ALARM / MONITORING / CONTROL
SST / METER PUMP 5 - PH 5 METER ALARM / MONITORING / CONTROL
SLUDGE STORAGE TANK 1 - MIXER, RADAR, FLOAT ALARM / MONITORING / CONTROL
SLUDGE STORAGE TANK 2 - MIXER, RADAR, FLOAT ALARM / MONITORING / CONTROL
SLUDGE STORAGE TANK 3 - SP 1, SOLENOID ALARM / MONITORING / CONTROL
SLUDGE STORAGE TANK 4 - SP 2, SOLENOID ALARM / MONITORING / CONTROL
SLUDGE STORAGE TANK 5 - FT 1, SOLENOID ALARM / MONITORING / CONTROL
SLUDGE STORAGE TANK 6 - FT 2, SOLENOID ALARM / MONITORING / CONTROL
FILTER PRESS - FP 1 ALARM / MONITORING
SLUDGE DRYER - SD 1 ALARM / MONITORING / CONTROL
SUPERNATANT PUMP - SU 1 ALARM / MONITORING / CONTROL
SUMP PUMP SLUDGE STORAGE TANKS ALARM / MONITORING / CONTROL
CONTROLS OPERATOR INTERFACE COMMUNICATION SYSTEM W/ CENTRAL SERVER MANUFACTURERS
MOTOR CONTROL DEVICES SEE ONE-LINE "E1.01"
SUMP WELL TILL-2 PUMP VFD - VALVES ALARM / MONITORING / CONTROL
ANNULUS - FLOW METER / LEVELS ALARM / MONITORING
TILL CORES CONTACT VALVES - MANUAL ALARM / MONITORING
SUMP PUMP FLUX ALARM / MONITORING / CONTROL
SUMP WELL TILL-1 PUMP VFD - VALVES ALARM / MONITORING / CONTROL
ANNULUS - FLOW METER / LEVELS ALARM / MONITORING
TILL CORES CONTACT VALVES - MANUAL ALARM / MONITORING
SUMP PUMP FLUX ALARM / MONITORING / CONTROL
RECEIVING TANK #1 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
RECEIVING TANK #2 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
RECEIVING TANK #3 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
RECEIVING TANK #4 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
RECEIVING TANK #5 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
RECEIVING TANK #6 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
RECEIVING TANK #7 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
RECEIVING TANK #8 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
RECEIVING TANK #9 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
RECEIVING TANK #10 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
TRANSFER PUMP #1 VALVES ALARM / MONITORING / CONTROL
TRANSFER PUMP #2 VALVES ALARM / MONITORING / CONTROL
TRANSFER PUMP #3 VALVES ALARM / MONITORING / CONTROL
TRANSFER PUMP #4 VALVES ALARM / MONITORING / CONTROL
TRANSFER PUMP #5 VALVES ALARM / MONITORING / CONTROL
TRANSFER PUMP #6 VALVES ALARM / MONITORING / CONTROL
TRANSFER PUMP #7 VALVES ALARM / MONITORING / CONTROL
TRANSFER PUMP #8 VALVES ALARM / MONITORING / CONTROL
SUMP PUMP RECEIVING TANK #9-#8 ALARM / MONITORING / CONTROL
SUMP PUMP RECEIVING TANK #10-#9 ALARM / MONITORING / CONTROL
SUMP PUMP RECEIVING TANK #7-#6 ALARM / MONITORING / CONTROL
SUMP PUMP RECEIVING TANK #10-#7 ALARM / MONITORING / CONTROL
ADD FLOCCULANT WATER VALVE - MANUAL ALARM / MONITORING
BASE FLOCCULANT WATER VALVE - MANUAL ALARM / MONITORING
BREAK PRESSURE VALVE - MANUAL ALARM / MONITORING
DRAIN ACID PROCESS VALVE - MANUAL ALARM / MONITORING
DRAIN BASE PROCESS VALVE - MANUAL ALARM / MONITORING
PRIMARY SETTLING TANK #1 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
PRIMARY SETTLING TANK #2 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
PRIMARY SETTLING TANK #3 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
PRIMARY SETTLING TANK #4 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
PRIMARY SETTLING TANK #5 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
PRIMARY SETTLING TANK #6 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
PRIMARY SETTLING TANK #7 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
PRIMARY SETTLING TANK #8 - RADAR SENSOR, FLOAT ALARM / MONITORING / CONTROL
P 1A - VALVES, PUMP, FLOW METER (FT-1) ALARM / MONITORING / CONTROL
P 1B - VALVES, PUMP, FLOW METER (FT-1) ALARM / MONITORING / CONTROL
P 2A - VALVES, PUMP, FLOW METER (FT-2) ALARM / MONITORING / CONTROL
P 2B - VALVES, PUMP, FLOW METER (FT-2) ALARM / MONITORING / CONTROL
SLUDGE TRANSFER PUMP 1 / CMS 1 - VALVES, SOLENOID ALARM / MONITORING / CONTROL
SLUDGE TRANSFER PUMP 2 / CMS 2 - VALVES, SOLENOID ALARM / MONITORING / CONTROL
SLUDGE TRANSFER PUMP 3 / ACID - VALVES, SOLENOID ALARM / MONITORING / CONTROL
SLUDGE TRANSFER PUMP 4 / BASE - VALVES, SOLENOID ALARM / MONITORING / CONTROL
SLUDGE TRANSFER PUMP 7 / HYDROMATRIX - VALVES, SOLENOID ALARM / MONITORING / CONTROL
HIGH FINAL UP - PUMP, VALVES, DST 2-4 ALARM / MONITORING / CONTROL
HIGH FINAL UP - PUMP, VALVES, DST 2-4 ALARM / MONITORING / CONTROL
POLYMER BLENDING PS 1 - PUMP, VALVES ALARM / MONITORING / CONTROL
POLYMER BLENDING PS 2 - PUMP, VALVES ALARM / MONITORING / CONTROL
ACID BYPASS VALVE #1 - MANUAL ALARM / MONITORING
ACID BYPASS VALVE #2 - MANUAL ALARM / MONITORING
BASE BYPASS VALVE #1 - MANUAL ALARM / MONITORING
BASE BYPASS VALVE #2 - MANUAL ALARM / MONITORING

FORM EQP 5111 ATTACHMENT C1
USE AND MANAGEMENT OF CONTAINERS

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities*. See Form EQP 5111 for details on how to use this attachment.

R 299.9614 of the administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); R 29.4101 to R 29.4505 promulgated pursuant to the provisions of the Michigan Fire Protection Act, PA 207, as amended (Act 207); and Title 40 of the Code of Federal Regulations (CFR) §§270.14(d), 270.15, and Part 264, Subpart I, establish requirements for the use and management of containers. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application attachment addresses requirements for the use and management of containers at the Republic Facility in Romulus, Michigan. This attachment addresses the condition of containers, compatibility of waste with containers, management of containers, inspections, containment, special requirements for ignitable or reactive waste, special requirements for incompatible wastes, and closure.

(Check as appropriate)

Applicant for Operating License for Existing Facility:

☒ R 299.9614 use and management of containers

Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility:

☐ R 299.9614 use and management of containers

☞ *More than one box may be checked, if the facility has an existing container storage area and will construct a new container storage area.*

This attachment is organized as follows:

INTRODUCTION
C1.A DESCRIPTION OF CONTAINERS
C1.B CONDITION OF CONTAINERS
C1.C COMPATIBILITY OF WASTE WITH CONTAINERS
C1.D MANAGEMENT OF CONTAINERS
C1.E INSPECTIONS

C1.F CONTAINMENT
C1.F.1 Secondary Containment System Design and Operation for Containers with Free Liquids
C1.F.1(a) Requirement for Base or Liner
C1.F.1(b) Containment System Drainage
C1.F.1(c) Containment System Capacity
C1.F.1(d) Control of Run-on
C1.F.1(e) Removal of Liquids from Containment System
C1.F.2 Secondary Containment System Design and Operation for Containers with No Free Liquids
C1.F.2(a) Containment System Drainage
C1.F.2(b) Container Management
Table C1.F Container Storage Area Secondary Containment Calculations
C1.G SPECIAL REQUIREMENTS OF IGNITABLE OR REACTIVE WASTE
C1.H SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES
C1.I CLOSURE
Appendix C1.A Container Construction Compatibility Chart
Appendix C1.B Process Plan Main Level Drawing Number M2.01

INTRODUCTION

The container standards are performance standards for containers and container storage areas. Completion of this attachment demonstrates how Republic meets these standards.

Please note that Attachment C11, Subpart CC, Air Emissions from Tanks, Containers, and Surface Impoundments, addresses air emissions for containers. Also please note that Attachment A11, Closure and Post-Closure Care Plan, addresses closure requirements for containers.

C1.A DESCRIPTION OF CONTAINERS

[R 299.9614 and 40 CFR §264.171]

The Facility's container storage, handling and processing area (the "Container Storage Area", depicted in Dwg No. A1.01, First Floor Plan, which is incorporated by reference in this Application in Appendix B6.A) has a total available container storage volume of 11,000 gallons. These 11,000 gallons represent the drum-equivalent volume of 200 55-gallon drums. The Container Storage Area has been designed to handle and store containers up to 500 gallons in size ("totes"); however, nearly all containers are expected to be 55 gallon drums or smaller pails. The Facility also can store up to 92,000 gallons in railcars in the Railcar Storage Area and Railcar Unloading Area locations depicted on Dwg. C1.03. These two areas are referred to collectively in this Attachment as the "Railcar Storage/Unloading Area," except where the context indicates otherwise.

The Facility will typically accept containers holding hazardous and non-hazardous liquid waste streams, including leachate, acids, caustics, and other wastewaters, that may have one or more of the following waste codes:

D Codes		F Codes	K Codes				P Codes			
D002	D039	F001	K001	K038	K102	K157	P001	P041	P084	P185
D004	D040	F002	K002	K039	K103	K158	P002	P042	P085	P188
D005	D041	F003	K003	K040	K104	K159	P003	P043	P087	P189
D006	D042	F004	K004	K041	K105	K161	P004	P044	P088	P190
D007	D043	F005	K005	K042	K106	K169	P005	P045	P089	P191
D008		F006	K006	K043	K107	K170	P006	P046	P092	P192
D009		F007	K007	K044	K108	K171	P007	P047	P093	P194
D010		F008	K008	K045	K109	K172	P008	P048	P094	P196
D011		F009	K009	K046	K110	K174	P009	P049	P095	P197
D012		F010	K010	K047	K111	K175	P010	P050	P096	P198
D013		F011	K011	K048	K112	K176	P011	P051	P097	P199
D014		F012	K013	K049	K113	K177	P012	P054	P098	P201
D015		F019	K014	K050	K114	K178	P013	P056	P099	P202
D016		F024	K015	K051	K115		P014	P057	P101	P203
D017		F025	K016	K052	K116		P015	P058	P102	P204
D018		F032	K017	K060	K117		P016	P059	P103	P205
D019		F034	K018	K061	K118		P017	P060	P104	
D020		F035	K019	K062	K123		P018	P062	P105	
D021		F037	K020	K069	K124		P020	P063	P106	
D022		F038	K021	K071	K125		P021	P064	P108	
D023		F039	K022	K073	K126		P022	P065	P109	
D024			K023	K083	K131		P023	P066	P110	
D025			K024	K084	K132		P024	P067	P111	
D026			K025	K085	K136		P026	P068	P112	
D027			K026	K086	K140		P027	P069	P113	
D028			K027	K087	K141		P028	P070	P114	
D029			K028	K088	K142		P029	P071	P115	
D030			K029	K093	K143		P030	P072	P116	
D031			K030	K094	K144		P031	P073	P118	
D032			K031	K095	K145		P033	P074	P119	
D033			K032	K096	K147		P034	P075	P120	
D034			K033	K097	K148		P036	P076	P121	
D035			K034	K098	K149		P037	P077	P122	
D036			K035	K099	K150		P038	P078	P123	
D037			K036	K100	K151		P039	P081	P127	
D038			K037	K101	K156		P040	P082	P128	

U Codes						
U001	U039	U079	U118	U156	U194	U243
U002	U041	U080	U119	U157	U196	U244
U003	U042	U081	U120	U158	U197	U246
U004	U043	U082	U121	U159	U200	U247
U005	U044	U083	U122	U160	U201	U248
U006	U045	U084	U123	U161	U202	U249
U007	U046	U085	U124	U162	U203	U271
U008	U047	U086	U125	U163	U204	U278
U009	U048	U087	U126	U164	U205	U279
U010	U049	U088	U127	U165	U206	U280
U011	U050	U089	U128	U166	U207	U328
U012	U051	U090	U129	U167	U208	U353
U014	U052	U091	U130	U168	U209	U359
U015	U053	U092	U131	U169	U210	U364
U016	U055	U093	U132	U170	U211	U365
U017	U056	U094	U133	U171	U213	U367
U018	U057	U095	U134	U172	U214	U372
U019	U058	U096	U135	U173	U215	U373
U020	U059	U097	U136	U174	U216	U387
U021	U060	U098	U137	U176	U217	U389
U022	U061	U099	U138	U177	U218	U394
U023	U062	U101	U140	U178	U219	U395
U024	U063	U102	U141	U179	U220	U396
U025	U064	U103	U142	U180	U221	U409
U026	U066	U105	U143	U181	U222	U410
U027	U067	U106	U144	U182	U223	U411
U028	U068	U107	U145	U183	U225	
U029	U069	U108	U146	U184	U226	
U030	U070	U109	U147	U185	U227	
U031	U071	U110	U148	U186	U228	
U032	U072	U111	U149	U187	U234	
U033	U073	U112	U150	U188	U235	
U034	U074	U113	U151	U189	U236	
U035	U075	U114	U152	U190	U237	
U036	U076	U115	U153	U191	U238	
U037	U077	U116	U154	U192	U239	
U038	U078	U117	U155	U193	U240	

C1.B CONDITION OF CONTAINERS
[R 299.9614 and 40 CFR §264.171]

All containers, including railcars, are inspected upon arrival at the Facility for evidence of damage or leakage (refer to Form EQP 5111 Attachment A3, Waste Analysis Plan ("WAP")). In addition, the Container Storage Area is inspected weekly (see Form EQP 5111 Attachment A5, Inspection Requirements, and Inspection Form A5-3: Weekly Inspection Log, attached thereto). Any container appearing to be damaged or leaking will be over packed, or the contents of the container will be transferred to another container appropriate for the waste material. Similarly, railcars which appear to be damaged or leaking will have their contents transferred into one or more RTs in the facility, and, any leakage onto the secondary concrete containment will be isolated from the SWRV system with absorbent socks/pads, with the spilled liquid being transferred into an appropriate RT or container, and the socks/pads containerized (in drums) for offsite disposal.

C1.C COMPATIBILITY OF WASTE WITH CONTAINERS
[R 299.9614 and 40 CFR §264.172]

All containers transported to the Facility must comply with United States Department of Transportation (DOT) or UN rated performance oriented packaging standards and will be constructed of HDPE, metal, or other material compatible with the waste. Compatibility determinations will be based on information obtained by the Facility under its WAP. Each container will be marked with a UN designation (e.g., PGI/PGII/PGIII, PGII/PGIII or PGIII, as appropriate) which certifies that the manufacturer meets the DOT performance oriented packaging standards. A chemical compatibility chart is attached hereto as Appendix C1.A as a reference to verify compatibility of the waste with its container. Similarly, all railcars transported to the Facility must also comply with the United Stated DOT or UN standards and will be constructed of material compatible with the waste.

C1.D MANAGEMENT OF CONTAINERS
[R 299.9614 and 40 CFR §264.173]

The Container Storage Area has been designed for the unloading of van-type trucks. Roof extensions over the bay doors prevent precipitation from contacting containers as they are unloaded into the Container Storage Area. The truck unloading area drains by gravity to the Storm Water Runoff Vault ("SWRV") located east of the containment areas, which prevent any accidental spills from entering the environment. The Railcar Storage/Unloading Area also drains by gravity to the SWRV.

All shipments of containers are subjected to the Facility's acceptance procedures set forth in the facility's WAP. If a shipment is accepted under the WAP, containers are transferred from the transport vehicle to pallets located within the Container Storage Area. Drums will be stacked no more than two high. Railcars may be stored in the Railcar Storage Area/Unloading Area.

Containers are handled in a safe manner, consistent with good container management practices in order to minimize the potential for damaging the container during handling. The Facility uses mechanical aids such as fork lifts, drum lifts, drum hand trucks, drum dollies, etc. to handle waste drums.

Drum contents or railcar contents are transferred by pump directly to the Receiving Tanks at the Facility. The container process area containment zone is located in a ventilated area within the Container Storage Area and has its own secondary containment system. Dedicated pumps are used to transfer waste materials to either acid, caustic, or incompatibles Receiving Tanks, as appropriate. Containers and railcars are kept closed except when adding or removing waste from the containers.

Emptied steel containers (but not railcars) may be crushed using a crusher and recycled as scrap metal through a recycling firm. Crushed containers are stored in a roll off box located inside the treatment building near the Container Storage Area.

C1.E INSPECTIONS

[R 299.9614 and 40 CFR §264.174]

The Container Storage Area, the Railcar Storage/Unloading Area, and the SWRV are inspected at least weekly in accordance with the Facility's Inspection Schedule (see Form EQP 5111 Attachment A5 Inspection Requirements). Weekly inspections include checking for leaks, signs of corrosion or other deterioration, adequate aisle space, correct labels/markings and dates, segregation of incompatible wastes and other materials, and the condition of the secondary containment system. Weekly inspections are documented on Form A5-3, which is included in Attachment A5. Additionally, the Railcar Storage/Unloading Area pavement is inspected at least monthly as documented on Form A5-4, which is included in Attachment A5.

C1.F CONTAINMENT

[R 299.9614 and 40 CFR §§264.175 and 270.15]

C1.F.1 Secondary Containment System Design and Operation for Containers with Free Liquids

[R 299.9614 and 40 CFR §§264.175(a) and 270.15(a)]

The Container Storage Area structure is designed with secondary containment curbs and four (4) blind trenches that provide secondary containment for the total volume stored. A plan view of the Container Storage Area, which depicts the location of the blind trenches, is provided in Dwg No. A1.01 (First Floor Plan) and in Dwg. No. M2.01. A typical cross section of containment curbing is shown in Dwg. No. A4.02 (Details, Detail 2). A typical cross section of the floor slope toward the blind trenches is shown in Dwg. No. A3.03 (Wall Sections, Detail 4). These engineering drawings are incorporated by reference in this Application in Attachment B6. The Railcar Storage/Unloading Area is also designed with secondary containment curbs that provide secondary containment (through the SWRV) for the largest possible railcar (30,000 gal) currently in use in the United States.

C1.F.1(a) Requirement for Base or Liner

[R 299.9614 and 40 CFR §§264.175(b)(1) and 270.15(a)(1)]

The Container Storage Area is designed and constructed with a reinforced concrete floor with a surface sealed with a corrosion resistant epoxy sealant. This floor design is capable of supporting all drums, drum storage equipment, and forklifts.

The sealed floor slab is free of cracks and is constructed of materials that are compatible with the types of wastes to be handled.

Similarly, the Railcar Storage/Unloading Area is designed and constructed with a reinforced concrete base capable of supporting four fully-loaded railcars. This containment is free of cracks.

C1.F.1(b) Containment System Drainage
[R 299.9614 and 40 CFR §§264.175(b)(2) and 270.15(a)(2)]

All containers will be stored on pallets above the Container Storage Area floor. Accordingly, the containers will not come into contact with any spilled liquids. Railcars will be stored in the Railcar Storage/Unloading Area on the reinforced concrete pad which has secondary containment.

C1.F.1(c) Containment System Capacity
[R 299.9614 and 40 CFR §§264.175(b)(3) and 270.15(a)(3)]

Secondary containment for the Container Storage Area is provided by: (i) four blind trenches (three trenches are L-shaped amounting to six trench legs and one trench leg is straight) located within the Container Storage Area; (ii) a separate curbed area located within the Container Storage Area utilized for storage and container processing; and (iii) a storage locker used to isolate incompatible waste streams. The volumes of these structures are summarized in the table below and note that each "Trench Leg" in the drawing M2.01 has as its acronym "TL".

Table C1.F Container Storage Area Secondary Containment Calculations Site ID No. MIR 000 016 055

Containment Structure	Inside Width (in.)	Inside Length (in.)	Depth (in.)	Volume (Gal)
Trench Leg 1	13	142	23.5	188.03
Trench Leg 2	13	96	23.5	127.12
Trench Leg 3	12	102	23.5	124.68
Trench Leg 4	12	102	23.5	124.68
Trench Leg 5	13	111	23.5	146.79
Trench Leg 6	12	96	23.5	117.19
Trench Leg 7	13	156	23.5	206.3
Curbed Area	85	175	6	386.34
Incompatibles Locker	74.5	51	4	65.79
Total Secondary Containment Volume:				**1486.92**

The above table demonstrates that the available containment volume (1,486.92 gal) within the Container Storage Area exceeds 10% (1,100.00 gal) of the container storage capacity (11,000 gallons).
Secondary containment for the Railcar Storage/Unloading Area is provided by trenches that

ultimately drain to the Storm Water Runoff Vault, which has an available containment volume of 85,451.52 gallons. This containment volume exceeds the total volume (30,000 gal) of the largest possible railcar currently in commercial use in the United States.

C1.F.1(d) Control of Run-on
[R 299.9614 and 40 CFR §§264.175(b)(4) and 270.15(a)(4)]

The floor of the Container Storage Area is at an elevation of about 631 MSL. The 24-hour, 100-year flood has been determined to be below an elevation of 627 MSL. As a result, no run-on should occur into the Container Storage Area. In addition, the Container Storage Area and the Railcar Unloading Area are completely enclosed by walls, doors and a roof. Accordingly, no precipitation will fall into the Container Storage Area or the Railcar Unloading Area. Any precipitation deposition on the Railcar Storage Area is directed to the SWRV for appropriate management.

C1.F.1(e) Removal of Liquids from Containment System
[R 299.9614 and 40 CFR §§264.175(b)(5) and 270.15(a)(5)]

Waste collected in a containment structure (e.g., a blind trench or the curbed area) will be characterized using knowledge of the waste or laboratory analysis. Small spills may be cleaned up using adsorbent materials. Larger spills will be pumped using a portable pump into spare container(s). The collected waste will be stored within the Container Storage Area and either disposed of off site at a facility authorized to receive such waste, or treated through the Facility's treatment process after compatibility with wastes in the applicable Receiving Tank has been verified.

C1.F.2 Secondary Containment System Design and Operation for Containers with No Free Liquids
[R 299.9614 and 40 CFR §§264.175(c) and 270.15(b)(1)]

The Republic Facility is designed to handle liquid waste streams. Therefore, it is unlikely that a container with no free liquids would be handled at the Facility. In the event that such a container arrives at the Facility, Republic will manage that container in the same manner as all other containers as described in this Attachment C1.

C1.F.2(a) Containment System Drainage
[R 299.9614 and 40 CFR §§264.175(c)(1) and 270.15(b)(2)]

The Container Storage Area is completely enclosed and covered. Accordingly, no precipitation will fall into the Container Storage Area. The Railcar Unloading Area is also completely enclosed and covered. The Railcar Storage Area is outdoors and precipitation management is as specified in C1.F.1.D above.

C1.F.2(b) Container Management
[R 299.9614 and 40 CFR §§264.175(c)(2) and 270.15(b)(2)]

All containers are stored above the Container Storage Area floor on pallets and stacked no more than two (2) high. As depicted on Dwg. No. M2.01, the containers will be situated in the Container Storage Area so that any leaks from the various wastes (i.e., acids, bases, incompatibles) are kept

separate and drain to dedicated trenches. Storage of these containers on pallets facilitates inspection for leaks. Incompatible wastes will be stored in a separate storage locker. Railcar arrival and receipt will be coordinated with the railroad authority, and railcar storage will only occur in the Railcar Storage/Unloading Area.

C1.G SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

[R 299.9614 and 40 CFR §§264.176 and 270.15(b)(2)]

The Facility does not accept ignitable or reactive wastes. The WAP (Attachment A3) requires extensive pre-approval and on-site acceptance testing procedures to ensure that ignitable or reactive wastes are not accepted. Manifests are checked carefully to verify that containers shipped to the Facility contain wastes that have been pre-approved for acceptance at the Facility. The waste screening procedures and onsite testing confirms the wastes are of the type that was pre-approved.

C1.H SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

[R 299.9614 and 40 CFR §§264.177(c) and 270.15(b)(2)]

Containers holding incompatible wastes (e.g., oily wastewaters) are stored in a storage locker located within the Container Storage Area, which isolates these waste streams from other containerized wastes stored at the Facility. Containerized incompatible wastes are pumped into a separate Receiving Tank designated for incompatibles through a pipeline to that tank.

C1.I CLOSURE

[R 299.9614 and 40 CFR §264.178]

A detailed description of the closure of the Container Storage Area and Railcar Storage/Unloading Area is provided in Section A11.A.5 (a) of EQP 5111 Attachment A11, Closure and Post-Closure Care Plan, attached to this Application.

Note: This attachment's closure information is meant to supplement the closure plan that is included in the application as Attachment A11, Closure and Postclosure Care Plans. Information in Attachment A11, Closure and Postclosure Care Plans, may be referenced in this section.

Appendix C1.A Container Construction Compatibility Chart

Entegris

Chemical/Material Compatibility Chart

for container materials of construction

Chemicals	Materials								
	PFA 20°C	FEP 20°C	PTFE 20°C	PVDF 20°C	HDPE 20°C	Kalrez® 4079 20°C	Viton® 20°C	EP, EPDM 20°C	DOW® ENGAGE™ POE
Inorganic Acids									
hydrochloric (conc)	OK	OK	OK	OK	OK	OK	OK	NO	OK (10%)
sulfuric (conc)	OK	OK	OK	OK	NO	OK	OK	NO	NO
hydrofluoric (40%)	OK	OK	OK	OK	OK	OK	OK	NO	NO
aqua regia	OK	OK	OK	NO	-	OK	-	NO	–
chromic (50%)	OK	-	-	OK	OK	OK	OK	NO	NO
nitric (50%)	OK	OK	OK	NO	NO	OK	OK	NO	NO
fuming nitric	OK	-	-	NO	NO	OK	NO	NO	NO
phosphoric	OK	OK	OK	OK	OK	OK	OK	OK	OK
Bases									
sodium hydroxide	OK	OK	OK	NO	OK	OK	NO	OK	OK (50%)
potassium hydroxide	OK	OK	OK	NO	OK	OK	-	OK	OK
ammonium hydroxide	OK	OK	OK	OK	OK	OK	NO	OK	NO
ammonium hydroxide vapor	OK	OK	OK	NO	OK	OK	NO	NO	NO
hydrogen peroxide	OK	OK	OK	OK	OK	OK	OK	OK	NO
Organic Acids									
glacial acetic	OK	OK	OK	NO	OK	OK	-	OK	OK
trichloroacetic	OK	OK	OK	OK	-	NO	-	NO	–
Hydrocarbons									
toluene	OK	OK	OK	OK	NO	OK	-	NO	NO
isooctane	OK	OK	-	OK	NO	OK	OK	NO	NO
Alcohols									
benzyl	OK	NO	-	NO	OK	OK	OK	OK	NO
ethyl	OK	-	-	OK	OK	OK	OK	OK	NO
isopropanol	OK	OK	OK	OK	OK	OK	OK	OK	OK
methyl	OK	OK	OK	OK	OK	OK	NO	OK	OK
Amines									
aniline	OK	NO	-	OK	NO	OK	NO	OK	NO
ethylenediamine	OK	-	-	NO	-	NO	-	OK	–
Ether									
tetrahydrofuran	OK	OK	OK	NO	NO	OK	NO	NO	NO
Ketones / Aldehydes									
acetone	OK	OK	OK	NO	OK	OK	NO	OK	OK
benzaldehyde	OK	OK	-	OK	OK	OK	NO	OK	OK
cyclohexanone	OK	-	-	OK	NO	OK	NO	NO	NO
methyl ethyl ketone	OK	OK	OK	NO	-	OK	NO	OK	NO
Esthers									
dimethylphthalate	OK	-	-	OK	-	OK	OK	NO	–
Chlorinated Solvents									

methylene chloride	OK	OK	OK	NO	NO	OK	NO	NO	NO
perchloroethylene	OK	OK	OK	OK	NO	OK	OK	NO	NO
trichloroethylene	OK	OK	OK	OK	NO	OK	OK	NO	NO
carbon tetrachloride	OK	OK	OK	OK	NO	NO	OK	NO	NO
Freon®									
Freon® TF, 113	OK	OK	OK	OK	OK	NO	NO	NO	NO
Freon® TMC	OK	-	-	NO	-	NO	NO	NO	–
Freon® TMS	OK	OK	-	OK	-	NO	NO	NO	–
Freon® TE	OK	-	-	OK	-	NO	NO	NO	–

OK: Material and chemical are compatible **NO:** Chemical has at least some effect on material –: No data available

Note: All data is taken from information supplied by material manufacturers. Entegris, Inc. is not responsible for the accuracy of this data and disclaims any obligation or liability in connection with its use in buyer's applications. Contact Entegris if questions concerning applications arise.

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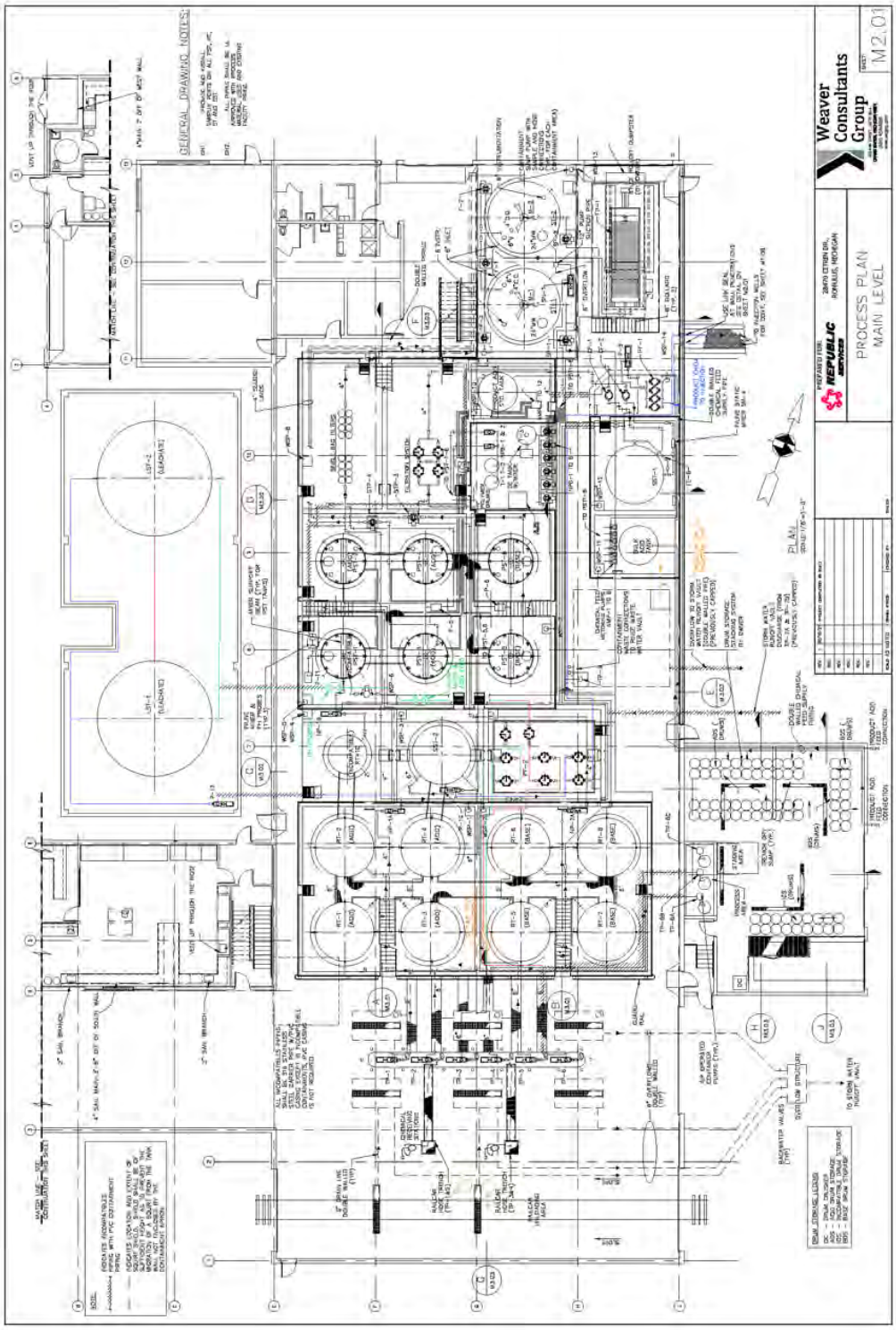
Appendix C1.B Process Plan Main Level Drawing Number M2.01



FORM EQP 5111 ATTACHMENT C2
TANK SYSTEMS

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (DEQ) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities*. See Form EQP 5111 for details on how to use this attachment.

R 299.9615 and R 299.9627 of the administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); R 29.5101 to R 29.5504 promulgated pursuant to the provisions of the Michigan Fire Protection Act, PA 207, as amended (Act 207); and Title 40 of the Code of Federal Regulations (CFR) §§270.14(d), 270.16, 270.24, and 270.27 (Part 264, Subpart J and Part 60, Appendix A) establish requirements for tank systems. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application attachment addresses requirements for tank systems at the Republic facility in Romulus, Michigan. This attachment includes assessments of new and existing tank systems; installation of new tank systems; secondary containment systems and release detection; variances for secondary containment; controls and practices to prevent spills and overfills; inspections; response to leaks or spills and disposition of leaking or unfit-for-use tank systems; closure and postclosure requirements; requirements for storing or treating ignitable, reactive, or incompatible wastes

This attachment is organized as follows:

(Check as appropriate)

☒ Existing Tank System

☐ New Tank System

Note: Attachment C11, Subpart CC, Air Emissions from Tanks, Containers, and Surface Impoundments, addresses air emissions for tanks. Also note that while specific closure requirements for tank systems are addressed in this attachment, you may reference information in Attachment A11, Closure and Postclosure Care Plans.

This attachment is organized as follows:

C2.A ASSESSMENT OF EXISTING TANK SYSTEM
- C2.A.1 Design Standards
- C2.A.2 Dimensions and Capacity of Each Tank
- C2.A.3 Description of Feed Systems, Safety Cutoff, Bypass System, and Pressure Controls
  - C2.A.3(a) Feed Systems
  - C2.A.3(b) Safety Cutoff or Bypass Systems
  - C2.A.3(c) Pressure Controls

C2.A.4 Diagram of Piping, Instrumentation, and Process Flow
C2.A.5 Characteristics of Waste
C2.A.6 Existing Corrosion Protection Measures
C2.A.7 Documented Age of Tank System
C2.A.8 Leak Tests, Inspections, and Other Examinations
C2.A.8(a) Nonenterable Underground Tanks
C2.A.8(b) Other than Nonenterable Underground Tanks and for Ancillary Equipment
C2.A.8(c) Internal Inspections
C2.A.9 Ancillary Equipment Assessment
C2.A.10 Leaking or Unfit-for-Use Tank Systems
C2.A.11 Tank Labels
Table C2.A Tank Dimensions And Capacity
C2.B ASSESSMENT OF NEW TANK SYSTEM

C2.C INSTALLATION OF NEW TANK SYSTEMS
C2.D SECONDARY CONTAINMENT SYSTEMS AND RELEASE DETECTION
C2.D.1 Secondary Containment Implementation Schedule
C2.D.2 Secondary Containment Type and Performance Criteria
C2.D.3 Design Parameters

C2.D.4 External Liner Requirements
C2.D.4(a) Capacity
C2.D.4(b) Storm Water Control
C2.D.4(c) Free from Cracks and Gaps
C2.D.4(d) Coverage Around Tank
C2.D.5 Vault Systems Requirements
C2.D.5(a) Capacity
C2.D.5(b) Storm Water Control
C2.D.5(c) Joint Construction
C2.D.5(d) Coating or Lining for Concrete
C2.D.5(e) Prevention of Vapor Formation and Ignition
C2.D.5(f) Exterior Moisture Barrier
C2.D.6 Double-walled Tank Requirements
C2.D.7 Ancillary Equipment with Secondary Containment
C2.D.7(a) Secondary Containment Type and Performance Criteria
C2.D.7(b) Design Parameters
C2.D.7(c) Exempted Ancillary Equipment and Inspections
C2.D.8 Requirements for Tank Systems That Are Not in Compliance with Secondary Containment
Table C2.D Tank System Containment Volumes
C2.E VARIANCES FOR SECONDARY CONTAINMENT
C2.F CONTROLS AND PRACTICES TO PREVENT SPILLS AND OVERFILLS
C2.G INSPECTIONS

C2.H RESPONSE TO LEAKS OR SPILLS AND DISPOSITION OF LEAKING OR UNFIT-FOR-USE TANK SYSTEMS
C2.H.1 Response Actions for Leaks and Spills

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C2.A ASSESSMENT OF EXISTING TANK SYSTEM

[R 299.9615(1) and 40 CFR, Part 264, Subpart J]

This Facility is fully enclosed, with all tanks located inside a building on reinforced concrete floors within reinforced concrete vaults. The concrete is coated with an impermeable corrosion resistant polymer. The receiving tanks (RTs 1-9), the primary settling tanks (PSTs 2-6), sludge storage tanks (STs–1 and 2) and the secondary storage tank (SST-1) used in the treatment are made of fiberglass material suitable for handling the hazardous wastes to be accepted by Republic. The tanks are coated with premium grade Derakane 411-45 Vinyl Ester and isophthalic polymer resin to prevent corrosion from contact with hazardous wastes. The Receiving Tank (RT-10) and the Primary Settling Tank (PST-1), which are designated for incompatible wastes (including Subpart CC wastes), are made of steel. The interior of the steel tanks are lined with a chemically resistant, high performance polymeric coating to prevent corrosion. All of these tanks are constructed using built-on skirts for squirt protection placed on recessed reinforced concrete floors serving as secondary containment in the event of a tank or pipe failure. Tanks holding acids, caustics, incompatibles and brine have separate secondary containment areas. Two steel tanks, the Oil Water Separator ("OWS") tanks, are dedicated to the treatment by physical separation of oil from an oily-wastewater waste stream. These two units are designated OWS-1 and OWS-2 and have their own separate reinforced concrete vault with identical Elasti-Liner coating for containment. Each secondary containment area is sized to store more than 10% of the volume of all tanks within that containment area as well as more than the single largest tank in each vault.

The tank system and its associated concomitant drawings were previously certified by an independent, qualified, registered professional engineer after design and construction.

C2.A.1 Design Standards

[R 299.9615 \(1) and 40 CFR §264.191(b)(1)]

The design standards for the hazardous waste storage tanks are set forth in the August 1999 report prepared by Ayres, Lewis, Norris & May, Inc. entitled "Environmental Disposal Systems, Inc. Citrin Drive Hazardous Wastewater Treatment, Storage And Disposal Facility Basis Of Design," (the "Basis Of Design") which was attached as Volume 8, Section 6.30, to Environmental Disposal Systems, Inc.'s Construction Permit Application ("CPA").

C2.A.2 Dimensions and Capacity of Each Tank

[R 299.9615(1) and 40 CFR §270.16(b)]

TABLE C2.A TANK DIMENSIONS AND CAPACITY

TANK NO	DESCRIPTION	SHAPE	MATERIAL	DIMENSION (FT)				USABLE VOLUME (gal)	QUANTITY	FLOW (GPM)	DETENTION TIME
				DIA	L	W	H				
RT-1 to 8	RECEIVING	CYLINDRICAL	FIBER-GLASS	12			22	16950 each	8	N/A	VARIES
SST-2	PROCESSING	CYLINDRICAL	FIBER-GLASS	12			24-'4"	13316	1	N/A	VARIES
RT-10	RECEIVING	CYLINDRICAL	STEEL WITH KCC ACS.3 LINER	8			22'-6"	7500	1	N/A	VARIES
OWS-1 and 2	OILY WATER	BOX-LIKE & CONE-BOTTOM	STEEL		8	8	6'-5"	2600 each	2	N/A	VARIES
PST-1	PRIMARY SETTLING	CONED BOTTOM	STEEL WITH KCC ACS.3 LINER	12			24	6770	1	N/A	VARIES
PST-2 to 6	PRIMARY SETTLING	CONED BOTTOM	FIBER-GLASS	12			24	6770 each	5	N/A	VARIES
SST-1	SECONDARY STORAGE	CYLINDRICAL	FIBER-GLASS	12			24'-4"	16950	1	N/A	VARIES
ST-1 and 2	SLUDGE STORAGE	CYLINDRICAL	FIBER-GLASS	14			18	20000 each	2	N/A	VARIES

C2.A.3 Description of Feed Systems, Safety Cutoff, Bypass System, and Pressure Controls

[R 299.9615(1) and 40 CFR §270.16(c)]

Incoming (or "as-received") bulk waste is transported to the Facility by tanker trucks and railroad cars. The waste is transferred to the receiving tanks ("RTs") by manual pumps. The level in each of the receiving tanks is continuously monitored using an radar level sensor and displayed at the main control panel. A high-level alarm is activated when the waste reaches a pre-determined level to alert the operator. If the level continues to rise, a high level interlock shuts down the transfer pumps automatically. All of the tanks have welded (either fiberglass or steel) flanges and joints. Wastes are fed through the treatment systems by computer controlled pumps and closed system piping. Container processing is similar since the commingled wastes are transferred to the same RTs.

C2.A.3(a) Feed Systems

[R 299.9615(1) and 40 CFR §270.16(c)]

The feed systems for the tanks include high-level and low-level sensors that are continuously monitored using an radar level sensor and displayed at the main control panel. A high level alarm is activated when the waste reaches a predetermined level to alert the Operator. If the level continues to rise, a high level interlock shuts down the transfer pumps automatically. Please also see Drawing Nos, M1.01 and M1.02.

C2.A.3(b) Safety Cutoff or Bypass Systems
[R 299.9615(1) and 40 CFR §270.16(c)]

If the level in a tank continues to rise above its high-level set point, a high level interlock automatically shuts down the transfer pump. Please also see Drawing Nos, M1.01, M1.02, M2.01, E5.01, E5.02, and E5.03 included in Attachment B6.

C2.A.3(c) Pressure Controls
[R 299.9615(1) and 40 CFR §270.16(c)]

Each RT and PST tank has a pressure/vacuum release ("PVR") valve mounted on top of the tank to control the pressure within that tank. Please see Drawing Nos, M0.01, M0.03, M1.01, M1.02, M2.01, M2.02, E0.01, E0.02, E1.01, E2.01, E3.03, E3.04, E6.01 included in Attachment B6.

C2.A.4 Diagram of Piping, Instrumentation, and Process Flow
[R 299.9615(1) and 40 CFR §270.16(c)]

Drawings for piping, instrumentation and process flow are included in Attachment B6. Please see the drawing Nos, M0.01, M1.01, M1.02, M2.01, M3.01-M3.03, and M5.01-M5.03.

C2.A.5 Characteristics of Waste
[R 299.9615(1) and 40 CFR §264.191(b)(2)]

The characteristics of the wastes accepted at the Facility are described in Section A2.A2 of Attachment A2 to this Application. The Facility will accept liquid waste streams, including acids, caustics, and other wastewaters including leachates that may have one or more of the waste codes listed in Section A2.A.1 of Attachment A2. A candidate waste stream must be non-ignitable, non-reactive and non-radioactive waste that does not contain regulated PCBs, pesticides, herbicides, medical wastes, explosives, poisons, greater than 30 ppm reactive cyanides, or greater than 200 ppm reactive sulfides. Please also see Attachment A2.A.1.

C2.A.6 Existing Corrosion Protection Measures
[R 299.9615(1) and 40 CFR §264.191(b)(3)]

This section is not applicable because no tank is in contact with soil or groundwater.

C2.A.7 Documented Age of Tank System
[R 299.9615(1) and 40 CFR §264.191(b)(4)]

All tanks are is secondary containments that contain 110% of the largest tank volume. Additionally the tanks are inspected for corrosion, deterioration and wear, and tested annually for thickness at locations designated by this license. The Facility was constructed with new tanks and began operation in December, 2005.

C2.A.8 Leak Tests, Inspections, and Other Examinations
[R 299.9615(1) and 40 CFR §264.191(b)(5)]

Each tank system at the Facility is provided with secondary containment meeting the requirements of 40 C.F.R. § 264.193. Accordingly, the requirements of 40 C.F.R. § 264.191(b)(5) do not apply. Nonetheless, Tank System inspections are completed daily (see Attachment A5 to this Application).

C2.A.8(a) Nonenterable Underground Tanks
[R 299.9615(1) and 40 CFR §264.191(b)(5)(i)]

There are no "non-enterable underground tanks" at the Facility.

C2.A.8(b) Other than Nonenterable Underground Tanks and for Ancillary Equipment
[R 299.9615(1) and 40 CFR §264.191(b)(5)(ii)]

The Facility was built new and the entire Facility was previously certified by an independent, qualified, registered professional engineer after design and construction so this is not applicable.

C2.A.8(c) Internal Inspections
[R 299.9615(1) and 40 CFR §264.191(b)(5)(ii)]

All internal tank inspections will be performed by an outside contractor and will be performed on at least an annual basis (see Attachment A5, Form A5-9).

C2.A.9 Ancillary Equipment Assessment
[{ 299.9615(1) and 40 CFR §264.191(b)(5)(ii)]

All ancillary equipment will be inspected as per Attachment A5 to this Application. Please also see manufacturer's data, Volume 8, Section 6.40 of the CPA.

C2.A.10 Leaking or Unfit-for-Use Tank Systems
[R 299.9615(1) and 40 CFR §264.191(b)(5)(ii)]

No leakage is occurring, and all tanks are fit for their intended use so this is not applicable.

C2.A.11 Tank Labels
[R 299.9615 (5)]

All tanks at the Facility are appropriately labeled for their future intended use.

C2.B ASSESSMENT OF NEW TANK SYSTEM
[R 299.9615(1) and 40 CFR §264.192]

The tank system at the Facility is an existing system. Accordingly, this section is not applicable.

C2.C INSTALLATION OF NEW TANK SYSTEMS
[R 299.9615(1) and 40 CFR §§264.192(b) through (g)]

The tank system at the Facility is an existing system. Accordingly, this section is not applicable.

C2.D SECONDARY CONTAINMENT SYSTEMS AND RELEASE DETECTION
[R 299.9615(1) and 40 CFR §264.193(a)]

The secondary containments for the tank systems were installed new in 2002 as shown on the "L-series" drawings, i.e., L-1, L-2, L-2A, L-2B, L-3, L-3A, L-4, L-4A, L-4B, L-4C and L-4D, of Attachment B6 of this Application. Daily inspections as detailed in Attachment A5 of this Application and the continuance of detection groundwater monitoring provide release detection capability.

C2.D.1 Secondary Containment Implementation Schedule
[R 299.9615(1) and 40 CFR §264.193(a)]

The secondary containments for the tank systems were constructed in 2002.

C2.D.2 Secondary Containment Type and Performance Criteria
[R 299.9615(1) and 40 CFR §264.193(b)]

All secondary containment floors and tank system vaults are reinforced concrete and the curbs are concrete also. Please also see Volume 9, Section 8.00 of the Construction Permit Application and the L-series of drawings. The containment volumes of each vault are provided in the table below.

TABLE C2.D TANK SYSTEM CONTAINMENT VOLUMES
Site ID No. MIR 000 016 055

Tank # & (Gal)	Size (length x width x height in ft)	Contained Gal
RT-1 (16,950)	35.25 x 34.16 x 7.83	70,524
RT-2 (16,950)		
RT-3 (16,950)		
RT-4 (16,950)		
RT-5 (16,950)	35.25 x 34.16 x 7.83	70,524
RT-6 (16,950)		
RT-7 (16,950)		
RT-8 (16,950)		
SST-2 (13,316)	18.0 x 19.0 x 7.83	20,030
RT-10 (7,500)	18.0 x 19.0 x 7.83	20,030
OWS-1 (2,600)	23.33 x 19.0 x 7.83	25,962
OWS-2 (2,600)		
PST-1 (6,770)	16.5 x 19.16 x 4.42	10,452
PST-2 (6,770)	[(16.5 x 20.16) + (34.0 x 19.08)] x 4.42	32,445
PST-3 (6,770)		
PST-4 (6,770)		
PST-5 (6,770)	16.5 x (19.16 +19.08 + 1.0) x 4.42	21,406
PST-6 (6,770)		
ST-1 (20,000)	20.5 x 39.54 x 4.42	26,799

TABLE C2.D TANK SYSTEM CONTAINMENT VOLUMES Site ID No. MIR 000 016 055		
Tank # & (Gal)	**Size (length x width x height in ft)**	**Contained Gal**
ST-2 (20,000)		
SST-1 (16,950)	[19.58 – (1.33 + 1.0)] x 18.5 x 7.83	18,690

C2.D.3 Design Parameters
[R 299.9615(1) and 40 CFR §264.193(c)]

The design parameters for the existing Tank System were provided in the Basis of Design.

C2.D.4 External Liner Requirements
[R 299.9615(1) and 40 CFR §264.193(e)(1)]

The Facility has a tank system in which all of the tanks are contained within reinforced concrete vaults. As a result, this is not applicable per 40 CFR 264.193(d).

C2.D.5 Vault systems Requirements
[R 299.9615(1) and 40 CFR §264.193(e)(2)]

All of the vaults within the tank system at the Facility contain over 100% of the volume of the largest tank within each reinforced concrete vault (see C2.D.2 above).

C2.D.5(a) Capacity
[R 299.9615(1) and 40 CFR §264.193(e)(2)(i)]

Tank capacities are provided above in section C2.D2

C2.D.5(b) Stormwater Control
[R 299.9615(1) and 40 CFR §264.193(e)(2)(ii)]

All tanks are inside a treatment building and staged inside reinforced concrete secondary containments. No contact with stormwater is possible.

C2.D.5(c) Joint Construction
[R 299.9615(1) and 40 CFR §264.193(e)(2)(iii)]

Containments are constructed with chemical-resistant water stops in place at all joints

C2.D.5(d) Coating or Lining for Concrete
[R 299.9615(1) and 40 CFR §264.193(e)(2)(iv)]

The concrete is coated with an impermeable corrosion resistant polymer

C2.D.5(e) Prevention of Vapor Formation and Ignition
[R 299.9615(1) and 40 CFR §264.193(e)(2)(v)]

The tanks are connected to nitrogen suppression and VOC filtration systems.

C2.D.5(f) Exterior Moisture Barrier
[R 299.9615(1) and 40 CFR §264.193(e)(2)(vi)]

Tanks are a closed system not contacting soil or other materials. This section is not applicable.

C2.D.6 Double-walled Tank Requirements
[R 299.9615(1) and 40 CFR §264.193(e)(3)(i)]

The Facility has a tank system in which all of the tanks are contained within reinforced concrete vaults. As a result, this is not applicable per 40 CFR 264.193(d).

C2.D.7 Ancillary Equipment with Secondary Containment
[R 299.9615(1) and 40 CFR §264.193 (f)]

All of the tank system ancillary equipment at the Facility is aboveground with welded connections and secondarily contained. Additionally, the tank system with its ancillary equipment is inspected daily (see Attachment A5, Forms A5-1 & A5-2). Please also see Dwg. Nos. M3.01, M3.02, M3.03, M4.01 and M4.02 of Attachment B6 and Volume 9, Section 8.00 of the CPA.

C2.D.7(a) Secondary Containment Type and Performance Criteria
[R 299.9615(1) and 40 CFR §264.193(f)]

All secondary containment floors and vaults are reinforced concrete and the curbs are concrete too. Please also see the "L-series" of the construction permit and Volume 9, Section 8.00 of the CPA.

C2.D.7(b) Design Parameters
[R 299.9615(1) and 40 CFR §264.193(f)]

The reinforced concrete with its impermeable corrosion resistant polymer is compatible with the anticipated wastes specified in Attachment A2.A.2 of this Application. Compatibility data, strength and foundation integrity were provided in Volume 8, Sections 6.20 and 6.30 of the CPA. Daily inspections (see Attachment A5 of this Application) will identify any leaks, and the vaults are provided with blind sumps to provide for the removal of any potential spillage.

C2.D.7(c) Exempted Ancillary Equipment and Inspections
[R 299.9615(1) and 40 CFR §264.193(f)]

The Facility is not requesting any exemption from the inspection requirements so this is not applicable.

C2.D.8 Requirements for Tank Systems That Are Not in Compliance With Secondary Containment
[R 229.9615(2)]

The Facility is in compliance with all of the requirements for secondary containment, so this section is not applicable.

C2.E VARIANCES FOR SECONDARY CONTAINMENT
[R 299.9615(1) and 40 CFR §264.193(g)]

The Facility is in compliance with all of the requirements for secondary containment, so this is not applicable.

C2.F CONTROLS AND PRACTICES TO PREVENT SPILLS AND OVERFILLS
[R 299.9615(1) and 40 CFR §264.194(b)]

Spill control measures have been described in the Preparedness and Prevention Attachment A6 of this Application. Additional information was provided including the use of the overflow control instruments and systems described in Volume 9, Section 8.30 of the CPA under the tab "Tank Level Control". Spills will be identified by the use of the Daily Inspection Report (Form A5-1) in Attachment A5 of this Application.

C2.G INSPECTIONS
[R 299.9615(1) and 40 CFR §264.195(a)]

All of the inspection related information is provided in Attachment A5 of this Application.

C2.H RESPONSE TO LEAKS OR SPILLS AND DISPOSITION OF LEAKING OR UNFIT-FOR-USE TANK SYSTEMS
[R 299.9615(1) and 40 CFR §264.196]

The Facility will respond to leaks or spills as a result of the Daily Inspection Report (Form A5-1) in Attachment A5 of this Application. If a situation arises requiring implementation of the Contingency Plan (see Attachment A7 of this Application), the procedures in that Attachment will be followed.

C2.H.1 Response Actions for Leaks and Spills
[R 299.9615(1) and 40 CFR §264.196(a)]

Response actions for leaks and spills will follow A7.C, A7.D.1, A7.D.3, A7.D.4, A7.D.5 most importantly, A7.D.5 (a), A7.D.7, and A7.D.8 of Attachment A7 of this Application.

C2.H.1(a) Waste Flow Stoppage
[R 299.9615(1) and 40 CFR §264.196(a)]

Waste flow stoppage will follow A7.D.5 (a) and most importantly, A7.D.6 of Attachment A7 of this Application.

C2.H.1(b) Waste Removal
[R 299.9615(1) and 40 CFR §264.196(b)]

Waste removal will follow A7.D.5 (a) and most importantly, A7.D.7 of Attachment A7 of this Application.

C2.H.1(c) Visible Release Containment
[R 299.9615(1) and 40 CFR §264.196(c)]

Visible release containment will follow A7.C, A7.D.3, A7.D.4, A7.D.5, A7.D.5 (a), and A7.D.8 of Attachment A7 of this Application.

C2.H.1(d) Repair, Replacement, or Closure
[R 299.9615(1) and 40 CFR §264.196(e)]

Repair, replacement or closure will follow A7.D.5 (a), A7.D.6, most importantly, A7.D.8 of Attachment A7 of this Application.

C2.H.1(e) Certification of Major Repairs
[R 299.9615(1) and 40 CFR §264.196(f)]

Certification of major repairs will follow A7.D.8 and A7.E.1-A7.E.2 (b) of Attachment A7 of this Application.

C2.H.2 Required Notifications and Reports
[R 299.9615(1) and 40 CFR §264.194(d)]

Required notifications and reports will follow A7.E and A7.F of Attachment A7 of this Application.

C2.I CLOSURE AND POST CLOSURE REQUIREMENTS
[R 299.9615(1) and 40 CFR §270.14(b)]

Please see Attachment A11 of this Application. Category A-where decontamination is practical and secondary containment is provided is the appropriate category for the Facility.

C2.I.1 Category A
[R 299.9615(1) and 40 CFR §264.197]

The Facility meets all of the requirements for Closure (see Attachment A11 of this Application).

C2.I.1(a) Closure Plan
[40 CFR §264.112, except 264.112(d)(1)]

The Closure Plan has been submitted as Attachment A11 of this Application.

C2.I.1(b) Closure Activities
[40 CFR §264.111 through 114 and R 299.9613(3)]

Closure activities will follow A11.A.3, A11.A.4 and A11.A.5 including Appendices of Attachment A11 of this Application.

C2.I.1(c) Cost Estimate for Closure
[R 299.9702 and 40 CFR §264.142]

The cost estimate for Closure has been submitted as Attachment A12 of this Application.

C2.I.1(d) Financial Assurance for Closure
[R 299.9703 and 40 CFR §264.143]

The financial assurance for Closure has been submitted as Attachment A15 of this Application.

C2.J SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES
[R 299.9615(1) and 40 CFR §270.16(j)]

No ignitable or reactive wastes will be accepted by Republic. A nitrogen blanketing system is provided for the receiving tanks and primary settling tanks, to prevent potential explosions or fire ignitions. Incompatible wastes (i.e. oily wastewaters and Subpart CC wastes) will be stored in tanks RT-10 and PST-1, and, will be treated in separate batch treatment processes in PST-1.
RT-10 and PST-1 satisfy NFPA 30 for "Minimum Tank Spacing for Flammable and Combustible Liquid Codes." Please also see Volume 9, Section 8.00 "Minimum Tank Spacing" in the CPA.
RT-10 and PST-1 are equipped with an external emergency heat activated valve which automatically closes in the event of a fire. Please also see Section 8.00, tab "Heat Activated Valve." of the CPA.
RT-10 and PST-1 are equipped with a combination pressure vacuum relief valve to relieve excessive internal pressure. Please also see Volume 9, Section 8.00, tab "Combination Pressure Relief Vacuum Valve" in the CPA.
RT-10 and PST-1 are also equipped with an emergency rupture disk to burst in the event of over pressurization. Please also see Volume 9, Section 8.00, tab "Emergency Rupture Disk" in the CPA.

FORM EQP 5111 ATTACHMENT C4
TREATMENT PROCESS DESCRIPTION

This license application attachment provides information on the treatment processes conducted at the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility located at 28470 Citrin Drive, Romulus, Michigan.

This attachment is organized as follows:

Introduction
C4.A Bulk/Container Transfer to Receiving Tanks
C4.A.1 General
C4.A.2 Operational Procedure for Transfer to the Receiving Tanks
C4.B RT to PST Transfer
C4.B.1 General
C4.B.2 Oil/Water Separators (OWS)
C4.B.3 Operational Procedure for Transfer from RT
C4.C. Treatment in Primary Settling Tanks
C4.C.1 General
C4.C.2 Potential PST Treatment Steps
C4.D PST to SST Transfer
C4.D.1 General
C4.D.2 Filtration
C4.E Discharge to the Injection Wells
C4.F Sludge Management
Appendix C4.1 Standard Process Decision Flow Diagram
Appendix C4.2 LeachateProcess Decision Flow Diagram

Introduction

Treatment at the Facility is accomplished in a batch process, and entails removal of dissolved metals and suspended solids from the waste by adjusting the pH and adding polymers and other treatment chemicals before the treated effluent is discharged underground via deepwell injection. The maximum treatment volume is 400,000 gallons per day.

The treatment processes described in this Attachment incorporate certain improvements to the existing design of the Facility that Republic has proposed in Attachment B6 to this Application. These improvements include: (1) adding the ability to bypass the existing Oil/Water Separator Tanks during the movement of waste from a Receiving Tank to a Primary Settling Tank; (2) eliminating the existing inefficient in-line pH adjustment system, flow-through flocculation tanks and inclined plane clarifier tanks; (3) adding the ability the treat waste contained in the PSTs (i.e., adjust pH and add treatment chemicals) as those tanks were originally designed to operate; and (4) adding new filtration units to the process. None of these improvements will expand or enlarge the Facility's design capacity, or alter the method of treatment or disposal beyond that previously approved by EGLE. A Standard Process Decision Diagram is presented in Appendix C4.1 that presents the general process flow through the Facility. For further information on these improvements, see Attachment B6 to this Application.

C4.A BULK/CONTAINER TRANSFER TO RECEIVING TANKS

C4.A.1 GENERAL

Waste is not transferred to a Receiving Tank ("RT") until it has been accepted in accordance with the Facility's Waste Analysis Plan ("WAP") and deemed compatible with the contents of the RT.

Bulk trucks and railroad tankers arriving at the plant are directed to appropriate unloading bays for delivery. The unloading area is equipped with total of six (6) non-metallic centrifugal pumps to transfer waste from transport vehicles to the RTs. These pumps are dedicated to handle specific waste types. Pumps TP-1 and TP-2 handle acids, TP-4 and TP-5 handle bases; TP-3 handles brine (sometimes called "saltwater") solution, and TP-6 handles incompatible (sometimes called "non-compatible" or "oily wastewaters") wastes.

The delivery process entails discharging the contents of the arriving tankers, railcars or containers into one of the ten receiving tanks (RT-1 through 10). Tanks RT-1 through 4 store acids, RT-5 through 8 store bases, RT-9 stores brine, and, RT-10 stores incompatible waste. These tanks are located within reinforced-concrete containment areas. The transfer pumps designated above are connected to pump directly to the respective designated tanks, i.e. TP-1 and TP-2 pump to any acid tank (RT-1 through 4); TP-4 and TP-5 to any base tank (RT 5 through 8); TP-3 to the brine tank (RT-9), and TP-6 to the incompatibles tank (RT-10).

Containerized waste is stored in the Container Storage Area prior to transfer to a RT. The Containers Storage Area is provided with secondary containment. The containers are moved into the tertiary containment curbed area for pumping their contents into one of the available RTs, depending on its characteristics and compatibility. The curbed area is designed to store a volume equal to more than four times that of one full container. Three transfer pumps (acid, base and incompatibles/brine) are provided in this zone to pump from the containers to the RTs. A waste with visible separable oil (i.e. an "oily waste") will have the oil separated in one of the Oil Water Separator ("OWS") tanks, however, if the waste contains oil (per the Waste Profile) but the as-received material does not have a visible separable oil layer, the waste will by-pass the OWS and be directed to PST-10 for treatment. The entire process flow diagram is provided as Drawing No. M1.01 and is described below.

C4.A.2 OPERATIONAL PROCEDURE FOR TRANSFER TO THE RECEIVING TANKS

The Treatment Operator determines which RT will receive a particular waste load based upon the results of the fingerprint analysis and a compatibility test performed by the laboratory. The inlets to the RTs (discharge end of the transfer pumps) are regulated by motor-operated, fail shut-off, influent valves, designed to close during power failure. The valves are interlocked with related transfer pumps and level sensors for the respective tanks. The pumps pump to the tank until the delivery source is empty, at which point the operator shuts the pump off. Shutting the pump off signals the influent valve to close.

Level sensors are provided for each tank to indicate a high liquid level which is set at one foot below the overflow level. A High Level indicator automatically shuts off the pump and closes the influent valve for the tank.

C4.B RT TO PST TRANSFER

C4.B.1 GENERAL

The treatment process is run in batches. A batch is initiated in a Primary Settling Tank ("PST"). Prior to starting a new batch, the Treatment Operator selects a RT from which to transfer waste. The Treatment Operator then selects a PST to receive the waste. Typically, the selected PST shall have been emptied to the extent practicable of the batch previously contained in that PST. In the event the PST has not been emptied, the transfer will be approved based on the results of a compatibility test performed by the laboratory. If the RT does not contain oily waste, the waste will be transferred directly to the selected PST. Also, if RT-10 (i.e., the incompatible waste receiving tank) contains waste regulated under 40 CFR Part 264, Subpart CC, any necessary oil/water separation will be performed in PST-1 (i.e., the dedicated incompatibles waste processing tank).

The Treatment Operator may, based on knowledge of the waste or visual inspection of the waste, determine that waste within a RT may be a candidate for bypass of PST treatment and may be transferred from a RT directly to the SST/Filtration. In such circumstances, the procedures in Section C4.D of this Treatment Process Description (i.e., filter test and compatibility) will be followed and the associated RT will be managed as a PST for purposes of implementing that Section.

C4.B.3 OPERATIONAL PROCEDURE FOR TRANSFER FROM RT

The transfer process is initiated when the Treatment Operator selects a RT for transfer and opens the effluent valve on the selected RT. Also on the selected PST the influent valve will be opened. Opening both an effluent valve and a influent valve designate a flow path and allow the transfer pump to be energized. Then the Treatment Operator will select start on the PLC screen for the associated transfer pump. The valving on all RT and PST tanks need to be selected in a proper flow path or the pump will not energize. Likewise, an additional valve cannot be opened because it is locked by the control programming to ensure that waste travels only in the flow path selected.

C4.C. TREATMENT IN PRIMARY SETTLING TANKS

C4.C.1 GENERAL

The six primary settling tanks are designed identical in size and shape. These cone-bottom tanks allow solids to settle to the bottom, and from there the sludge is pumped to a sludge storage tank. Three tanks (PST-2 through 4) are designated for the acid train, and two PSTs (PST-5 and PST-6) are designated for the base train. PST-1 is designated to receive incompatible waste from RT-10. The inlet and outlet valves of each tank are individually controlled with pneumatic actuated valves.

Depending upon the characteristics of the waste contained in a RT, these process units can be bypassed. The determination to bypass the PST treatment will be made by the Deepwell Operator based on observation or the results of a filter test or a compatibility test performed by the laboratory.

Each batch begins by transferring waste material from a selected RT into a selected PST that has been emptied, to the extent practical , of waste materials from the prior batch. The treatment of each batch will typically follow six steps: (1) mix the tank's contents thoroughly in order to ensure uniformity of the waste within the PST; (2) obtain a sample from the PST and deliver the sample to the laboratory for purposes of performing a bench-scale treatment test; (3) perform a bench-scale

treatment test on the sample in order to determine the most effective treatment option (as described below), which will be converted to full-scale quantities; (4) perform the full-scale treatment of batch based on the results of the bench-scale test; (5) allow solids to settle in the PST's cone bottom and remove solids from the bottom of the PST; (6) obtain a sample from treated batch and deliver the sample to the laboratory to confirm the effectiveness of treatment. If the treatment is not effective based on filter and compatibility tests, one or more of the foregoing steps may be repeated until the treatment is deemed complete.

C4.C.2 POTENTIAL PST TREATMENT STEPS

The following treatment steps may be utilized in order to treat a batch. Depending on the waste material in the batch, some or all of these steps may be applied (and repeated) in any sequence, as determined during the bench-scale test:

- pH Adjustment – The purpose of pH adjustment is to agglomerate solids, such as metals, allowing that material to drop out of solution. pH adjustment may also be used to destroy volatile organic constituents. The adjustment of the pH can be up or down depending on the starting pH of the batch and desired result. Typically, a pH in the higher range (8 – 12) will be used to precipitate metals. Typical reagents for pH adjustment may include NaOH and H2SO4.
- Conditioners – Conditioning agents are used to aid in the agglomeration of solids through ionic bonding. Conditioners may be added at any point in the treatment process, and may be added in stages. Typical conditioner agents may include lime, ferrous sulfate, calcium chloride, and diatomaceous earth (DE).
- Polymers – Polymer agents are also used in the agglomeration of solids through anionic and cationic bonding. Polymer agents are typically added at the end of the treatment process, just prior to ceasing the mixing, in order to maximize the size of the flocculent.

C4.D PST TO SST TRANSFER

C4.D.1 GENERAL

Upon confirmation from the laboratory that a batch within a PST has been effectively treated, the Deepwell Operator will approve the transfer of the treated batch to the SST/Filtration units and ultimately, the deepwell for injection. This approval will be based on the results of a filter test and on the compatibility of the treated batch with the waste material last injected into the selected well.

C4.D.2 FILTRATION

Upon approval of the treated batch by the Deepwell Operator, the supernatant liquid effluent is discharged through the bag filters BF-1 through BF-8 and the cartridge filters (CF-1 and CF-2) for filtration. After treatment of the waste through the bag filters, the effluent from either treatment train shares the same units through the rest of the treatment process.

C4.E DISCHARGE TO THE INJECTION WELLS

The Deepwell Operator approves waste injections into the underground injection control wells. Effluent discharge pumps (P-9 and P-10), located immediately downstream from the SST, are used to pump treated waste to the injection wells. These effluent pumps are manually operated following opening of the SST effluent valve. The operation of this valve is similar to the effluent valves at other

tanks at the plant. Prior to discharge into the injection wells, the effluent is passed through another system of ("polishing") cartridge filters (CF-3 and CF-4) to remove fine particulate matter that could impact the injection well pumps (or substrata). The deactivation of P-9 or P-10 will automatically turn off the valve at the effluent of the SST.

C4.F SLUDGE MANAGEMENT

Sludge generated in the OWSs and PSTs is pumped into a Sludge Tank (ST-1 or ST-2). Diatomaceous earth is added as needed to the ST to help in thickening the sludge. Activation of the pump for either unit automatically activates the Diatomaceous Earth feed unit. The feed rate is pre-determined. Upon a brief thickening period, the Treatment Operator may activate one of the sludge pumps (SP-1 or SP-2) that discharge directly to the Filter Press unit. The sludge dewatering process is controlled using an independent, stand alone control system with necessary interlocks, alarms and safety devices. The dewatered sludge will be stored in roll-off boxes and hauled off site as required. Filtrate from the Filter Press are piped to either ST or a RT for further processing through the Facility.

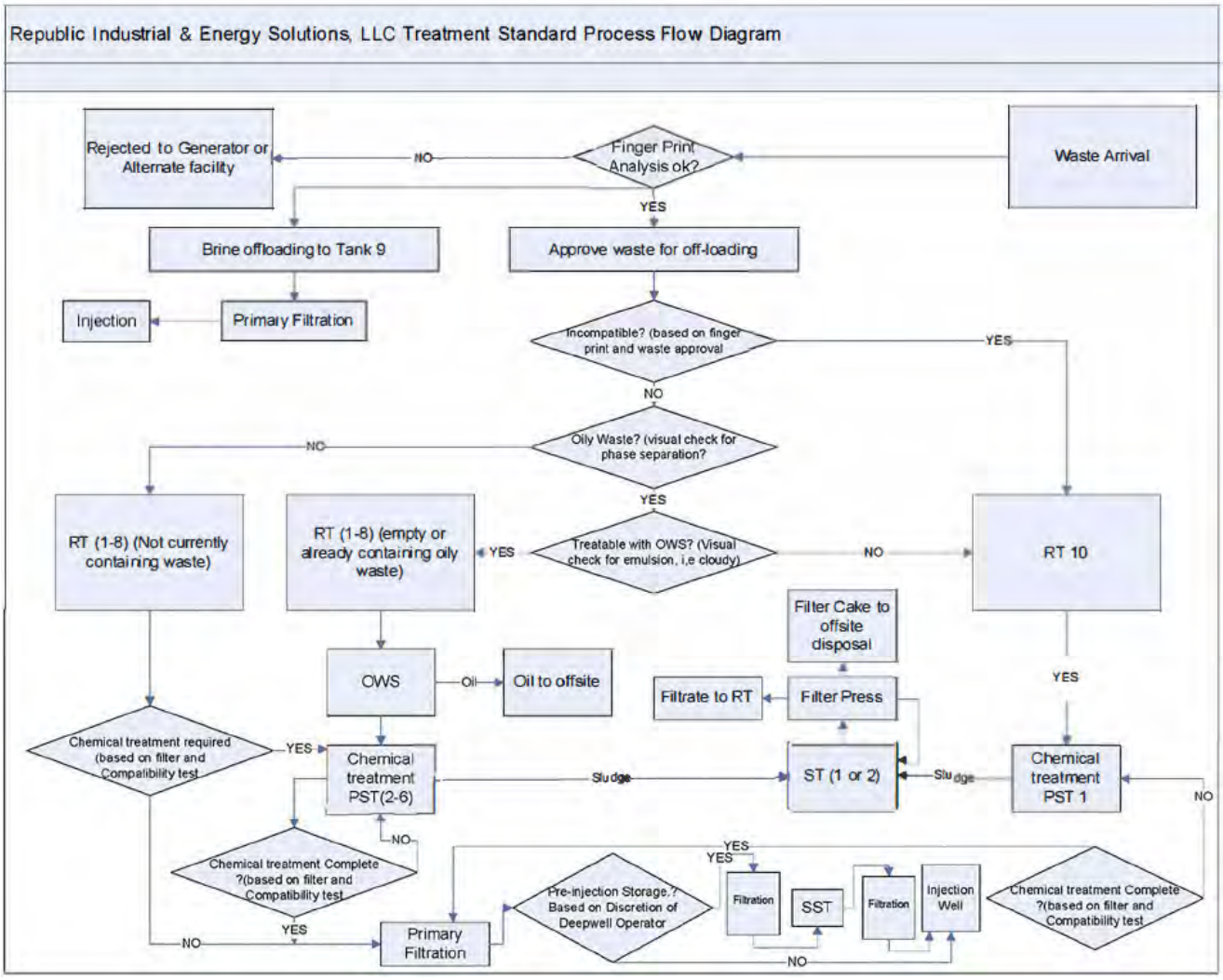
C4.G OPERATIONAL PROCEDURES FOR LEACHATE PROCESSING

A nonhazardous leachate treatment system was installed on site. This system is independent and isolated from all hazardous waste processing.

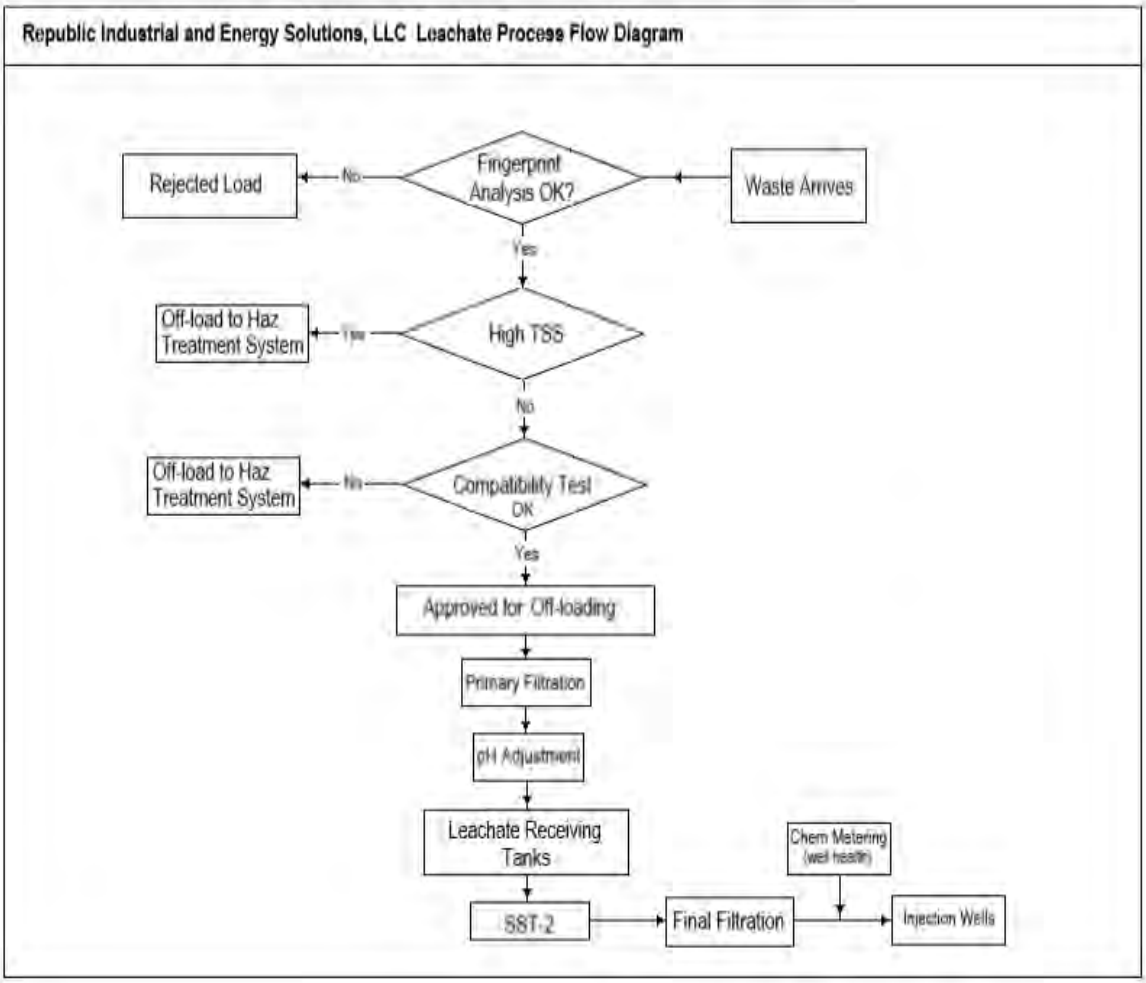
The Treatment Operator determines that the Leachate Storage Tanks (LST) can receive a waste load based upon the results of the compatibility test and pH reading. Every leachate load received will have compatibility and pH recorded. Every sixth load will have a full fingerprint performed identical to the fingerprint used for the hazardous waste processing side of the facility. The fingerprint is used less frequently than the hazardous waste side of the plant since the leachates off-loaded to this system are nonhazardous and leachate as a waste is more consistent load to load. If a leachate load has high TSS or does not pass the results of the compatibility test, that load will be redirected to the hazardous waste side of the facility for processing and treatment.

The LST tanks have level indicators that are set to a high level shut off approximately 2 feet below the tank overflow. When the high level is triggered the system will immediately shut off the transfer pumps. The leachate off-loading system is different from the hazardous waste side of the facility in that off-loading moves through filtration and pH adjustment before entering the LST tanks. A Leachate Process Decision Flow Diagram is presented in Appendix C4.1

APPENDIX C4.1 STANDARD PROCESS DECISION FLOW DIAGRAM



APPENDIX C4.2 LEACHATE PROCESS DECISION FLOW DIAGRAM



FORM EQP 5111 ATTACHMENT C11 - SUBPART AA
AIR EMISSIONS FROM PROCESS VENTS

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE)*Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities*. See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9504, R 299.9508, R 299.9605, and R 299.9630; and Title 40 of the Code of Federal Regulations (CFR), Part 264, Subpart AA, and 40 CFR §270.24 establish requirements for controlling organic air emissions from process vents. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template includes the information required by 40 CFR §270.24 to address air emission control requirements for process vents at hazardous waste management facilities for the /Republic Industrial and Energy Solutions, LLC Facility in Romulus, Michigan..

(Check as Appropriate)

☐ Applicant for Operating License for Existing Facility

☐ Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility

☐ Process Vents Subject to 40 CFR Part 264, Subpart AA (R 299.9630)

☒ No Process Vents Exist That Are Subject to 40 CFR Part 264, Subpart AA (R 299.9630)

The Facility does not have any process vents. Accordingly, 40 C.F.R. Part 264, Subpart AA does not apply.

FORM EQP 5111 ATTACHMENT C11 - SUBPART BB
AIR EMISSIONS FROM EQUIPMENT LEAKS

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities*. See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9504, R 299.9508, R 299.9605, and R 299.9631; and Title 40 of the Code of Federal Regulations (CFR), Part 264, Subpart BB, and 40 CFR §270.25 establish requirements for controlling organic air emissions from equipment leaks. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template addresses air emission control requirements for equipment leaks at the hazardous waste management Facility for the Republic Industrial and Energy Solutions, LLC Facility in Romulus, Michigan.

(Check as Appropriate)

☒ Applicant for Operating License for Existing Facility

☐ Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility

☐ Equipment Subject 40 CFR Part 264, Subpart BB (R 299.9631)

☒ No Equipment Exists That Is Subject to 40 CFR Part 264, Subpart BB (R 299.9631)

☐ Applicant Elects to Document Compliance with the Relevant Provisions of the Regulations at 40 CFR Part 60, Part 61, or Part 63 Rather than 40 CFR Part 264, Subpart BB

The Facility will not accept waste with an organic content of at least 10 percent by weight. Accordingly, 40 C.F.R. Part 264, Subpart BB does not apply to the equipment at the Facility.

FORM EQP 5111 ATTACHMENT C11 - SUBPART CC
AIR EMISSIONS FROM TANKS, CONTAINERS, AND SURFACE IMPOUNDMENTS

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities*. See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9504, R 299.9508, R 299.9605, and R 299.9634; and Title 40 of the Code of Federal Regulations (CFR), Part 264, Subpart CC, and 40 CFR §270.27, establish requirements for controlling organic air emissions from tanks, containers, and surface impoundments. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template addresses air emission control requirements for tanks, containers, and surface impoundments at the hazardous waste management Facility for the Republic Industrial and Energy Solutions, LLC ("Republic" or "Facility") Facility in Romulus, Michigan.

(Check as Appropriate)

☒ Applicant for Operating License for Existing Facility

☐ Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility

☒ Tanks, Containers, or Surface Impoundments Subject to 40 CFR Part 264, Subpart CC (R 299.9634)

☐ No Tanks, Containers, or Surface Impoundments Subject to 40 CFR Part 264, Subpart CC, Exist at the Facility (R 299.9634)

This attachment is organized as follows:

C11.C AIR EMISSIONS FROM TANKS, CONTAINERS, AND SURFACE IMPOUNDMENTS
- C11.C.1 Waste Streams
  - C11.C.1(a) Average Volatile Organic (VO) Concentration Determination Via Direct Measurement at the Point of Waste Origination
    - C11.C.1(a)(1) Identification of Point of Waste Origination
    - C11.C.1(a)(2) Sampling Parameters
    - C11.C.1(a)(3) Analytical Results
    - C11.C.1(a)(4) Calculation of Average VO Concentration
  - C11.C.1(b) Average VO Concentration Determination Via Process Knowledge at the Point of Waste Origination
  - C11.C.1(c) Average VO Concentration Determination Via Direct Measurement at the Point of Waste Treatment
    - C11.C.1(c)(1) Identification of Point of Waste Origination

- C11.C.1(c)(2) Sampling Parameters
- C11.C.1(c)(3) Analytical Results
- C11.C.1(c)(4) Calculation of Average VO Concentration
- C11.C.1(d) Maximum Organic Vapor Pressure Determination of Hazardous Waste in a Tank Using Level 1 Controls Via Direct Measurement
- C11.C.1(e) Maximum Organic Vapor Pressure Determination of Hazardous Waste in a Tank Using Level 1 Controls Via Process Knowledge
- C11.C.1(f) Description of Procedures for Determining No Detectable Organic Emissions

C11.C.2 Tanks Description
- C11.C.2(a) Description of Level 1 Controls
- C11.C.2(b) Description of Level 2 Controls
  - C11.C.2(b)(1) Fixed Roof and Internal Floating Roof
  - C11.C.2(b)(2) External Floating Roof
  - C11.C.2(b)(3) Tank Vented to Closed-Vent System
  - C11.C.2(b)(4) Pressure Tank
  - C11.C.2(b)(5) Tank Located Within an Enclosure Vented to a Combustion Device

C11.C.3 Surface Impoundment Description

C11.C.4 Container Descriptions
- C11.C.4(a) Description of Container Level 1 Controls
  - C11.C.4(a)(1) Michigan Department of Transportation Specifications
  - C11.C.4(a)(2) Cover and Closure Devices
  - C11.C.4(a)(3) Open-Top Containers with Organic Vapor-Suppressing Barrier
  - C11.C.4(a)(4) Inspection Procedures
- C11.C.4(b) Description of Container Level 2 Controls
- C11.C.4(c) Description of Container Level 3 Controls

C11.C.5 Description of Closed-Vent Systems and Control Devices
- C11.C.5(a) Description of Closed-Vent System
- C11.C.5(b) Description of Control Devices
- C11.C.5(c) Inspection Procedures

C11.C.6 Description of Record Keeping Procedures
- C11.C.6(a) Description of Tank Record Keeping Procedures
  - C11.C.6(a)(1) Tank Identification Numbers
  - C11.C.6(a)(2) Inspection Records
  - C11.C.6(a)(3) Documentation for Determination of Maximum Organic Vapor Pressure for Fixed Roof Level 1 Controls
  - C11.C.6(a)(4) Documentation Showing Internal Floating Roof Design
  - C11.C.6(a)(5) Documentation Showing External Floating Roof Design and Seal Inspections
  - C11.C.6(a)(6) Calculations and Records for Demonstrating Compliance with Enclosure Requirements for Level 2 Controls
- C11.C.6(b) Description of Surface Impoundment Record Keeping Procedures

C11.C.6(c) Description of Container Level 3 Control Record Keeping Procedures
Certifications and Records
C11.C.6(d) Closed-Vent System and Control Device Records
C11.C.6(d)(1) Performance Certification
C11.C.6(d)(2) Design Analysis Documentation
C11.C.6(d)(3) Performance Test Plan and Results
C11.C.6(d)(4) Descriptions of Sensors, Modifications, and Locations
C11.C.6(d)(5) Planned Routine Maintenance Schedules
C11.C.6(d)(6) Descriptions of Unplanned Malfunctions
C11.C.6(d)(7) Management of Carbon Removed from a Carbon Absorption System
C11.C.6(e) Records Required for Exempt Units
C11.C.6(e)(1) Waste Determination Results
C11.C.6(e)(2) Identification Numbers of Treatment Units
C11.C.6(f) Description of Covers Designated as Unsafe to Inspect and Monitor
C11.C.6(g) Documentation of Alternative Compliance with 40 CFR Part 60, Subpart VV, or 40 CFR Part 61, Subpart V
C11.C.6(h) Documentation Required for Tanks and Containers Not Using Air Emission Controls
C11.C.6(i) Certifications and Identification of Clean Air Act Requirements
Appendix C11.1 Capability Certification

INSTRUCTIONS

C11.C AIR EMISSIONS FROM TANKS, CONTAINERS, AND SURFACE IMPOUNDMENTS

[R 299.9634 and 40 CFR Part 264, Subpart CC]

☒ Tanks

☒ Containers

☐ Surface Impoundments

C11.C.1 WASTE STREAMS

[R 299.9634 and 40 CFR §264.1082(c)]

Most waste streams that Republic will accept at the Facility will have little or no organic content. Republic will not accept any waste stream at the Facility that contains 10 percent or more volatile organics (see Attachment A2 Section A.2(a) of this Application). In addition, as part of Republic's waste acceptance procedures, Republic will require each generator to provide information on the average volatile organics (VO) concentration at the point of generation, determined using either direct measurement or generator knowledge in accordance with 40 CFR § 265.1084(a)(2). Republic will also ensure that the generator submitting the waste will review and update, as necessary, the determination at least once every 12 months following the date of the initial determination for the hazardous waste streams entering the unit. Upon the arrival of a waste shipment at the Facility,

Republic will review the information contained in the applicable Waste Profile Sheet ("WPS," attached as Appendix A3.A.1 to Attachment A3 of this Application) determine whether the average VO concentration is below 500 ppmw at the point of generation. Any waste stream with an average VO concentration of 500 ppmw or greater ("Subpart CC Waste") will be managed in tanks and containers that comply with 40 CFR Part 264, Subpart CC, in accordance with this Attachment C11.

Republic will manage Subpart CC Waste in only two tanks at the Facility: Receiving Tank 10 ("RT-10") and Primary Settling Tank 1 ("PST-1"). When transferring waste from RT-10 to PST-1, Republic will bypass the oil-water separator tanks and will conduct any necessary oil/water separation directly in PST-1. RT-10 and PST-1, which are commonly known at the Facility as the "incompatibles tanks," are referred to in this Attachment as the "Subpart CC Tanks." Emissions from the Subpart CC Tanks are controlled using a closed-vent system connected to an activated carbon adsorption system ("ACAS") that will reduce the total organic content of the inlet vapor stream vented to the control device by at least 95 percent by weight; in conformance with 40 CFR §§ 264.1084 (d)(3) and (g)(1), and, 264.1087 §§ (c)(1)(i) and (c)(3).

All other tanks at the Facility (RT-1 through RT-9, PST-2 through PST-6, OWS-1 and OWS-2, ST-1 and ST-2, and SST-1) are exempt from regulation under Subpart CC because all waste entering those tanks either (i) will have an average VO concentration at the point of generation of less than 500 ppmv (as determined by the waste approval process), or (ii) with respect to any tank downstream of PST-1, will have been treated in PST-1 with a process (e.g., sulfuric acid or hydrochloric acid digestion) that removes or destroys the organics in accordance with 40 CFR § 264.1082(c)(2). It should be noted that, although these tanks are exempt from Subpart CC, emissions from RT-1 through RT-9 and PST-2 through PST-6 are routed to a separate activated carbon adsorption system which meets the requirements of Subpart CC.

C11.C.1(a) Average VO Concentration Determination Via Direct Measurement at the Point of Waste Origination

[R 299.9634 and 40 CFR §264.1083]

Republic will rely on generator-supplied information to determine whether a waste stream must be managed in the Subpart CC Tanks. Due to the low organic content of waste that Republic will generally manage at the Facility, Republic anticipates that most generators will rely on generator process knowledge for this determination. In the event that a generator is unable to make this determination based solely on process knowledge, Republic may require the generator to provide information on the VO content determined via direct measurement at the point of origination in accordance with 40 CFR § 265.1084, as described below.

C11.C.1(a)(1) Identification of Point of Waste Origination

[R 299.9634 and 40 CFR §§264.1082 and 270.27(a)(7)]

A waste generator that determines average VO concentration via direct measurement is responsible for identifying and recording the point of waste origination for each waste stream based on generator knowledge. The generator must certify that it has obtained samples representative of that waste stream.

C11.C.1(a)(2) Sampling Parameters
[R 299.9634 and 40 CFR §264.1083(a)(2)]

A waste generator that determines average VO concentration via direct measurement must certify to Republic that it utilized waste sampling procedures that minimize the volatilization of organics during sample collection and subsequent handling. The generator must certify that averaging period used for determining the average VO concentration on a mass-weighted basis is less than one year and that at least four samples for averaging and that the entire range of waste compositions and operating conditions is represented by the samples.

C11.C.1(a)(3) Analytical Results
[R 299.9634 and 40 CFR §264.1083(a)(2)]

A waste generator that determines average VO concentration via direct measurement must certify that the average VO concentration was determined using an EGLE-approved laboratory method. EGLE has approved the following methods for VO concentration waste analysis: (a) Method 25D in 40 CFR, Part 60, Appendix A; (b) Method 624 in 40 CFR, Part 136, Appendix A; (c) Method 625 in 40 CFR, Part 136, Appendix A; (d) Method 1624 in 40 CFR, Part 136, Appendix A; (e) Method 1625 in 40 CFR, Part 136, Appendix A; (f) Method 8260 in "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods" (SW-846); (g) Method 8270 in SW-846; (h) Any other EPA standard method that has been validated in accordance with 40 CFR, Part 63, Appendix D; and (i) Any other method that has been validated in accordance with Method 301 in 40 CFR, Part 63, Appendix A.

C11.C.1(a)(4) Calculation of Average VO Concentration
[R 299.9634 and 40 CFR §264.1083(a)]

A waste generator that determines average VO concentration via direct measurement must certify that the calculations for the average VO concentration conforms to the requirements of 40 CFR § 265.1084, including the methods described in that rule for handling sample results that are below method detection limits.

C11.C.1(b) Average VO Concentration Determination Via Process Knowledge at the Point of Waste Origination
[R 299.9634 and 40 CFR §264.1083(a)(2)]

Republic anticipates that the significant majority of generators seeking approval to dispose of waste at the Facility will determine the average VO concentration of the waste stream through application of process knowledge. Examples of acceptable information include, but are not limited to: (1) material balances for the source or process generating each hazardous waste stream; (2) constituent-specific chemical test data from previous testing; (3) previous test data for other locations managing the same types of waste streams; and (4) other knowledge based on manifests, shipping papers, or waste certification notices.

If a generator process knowledge relies on previous test data, the generator must describe the test method, sampling protocol, and the means by which sampling and analytical variability are accounted for in the determination of the average VO concentration.

C11.C.1(c) Average VO Concentration Determination Via Direct Measurement at the Point of Waste Treatment

[R 299.9634 and 40 CFR §264.1083(b)]

Republic will treat any Subpart CC waste placed into PST-1 with a process (e.g., sulfuric acid or hydrochloric acid digestion) that achieves an average VO reduction efficiency of 95 percent or greater and the average VO concentration at the point of waste treatment is 100 ppmw or less. Accordingly, any tank or container receiving this treated waste will be exempt from Subpart CC. Republic will use the methods described in this section to determine this exemption.

C11.C.1(c)(1) Identification of Point of Waste Origination

[R 299.9634 and 40 CFR §264.1083(b)]

The point of waste origination for the treated waste is the effluent from PST-1.

C11.C.1(c)(2) Sampling Parameters

[R 299.9634 and 40 CFR §264.1083(b)]

Republic will verify that the waste stream specific treatment conducted in PST-1 meets the "95% destruction or removal" criteria by taking at least four (4) samples from the sampling ports on PST-1 within an hour and preparing a composite for both (a) prior to, and (b) after conducting a batch treatment in PST-1. This verification procedure will be conducted on at least four (4) waste stream specific treatment batches per calendar year (or less if less than four loads of a specific Subpart CC waste stream are accepted) which will cover their entire range, including the expected (a) least, and, (b) most organic content, of a waste steam specific Subpart CC waste entering PST-1. The weight basis of the treatment batches will be aggregated on a weight (i.e., mass) basis to verify that the treatment is at least 95% effective.

The acquisition of the samples from the sampling ports will minimize volatile organics loss by only having each sample port open when the sample is actually being acquired from it.
The entire verification procedure will follow the applicable portions of 40 CFR 265.1084(b)(2) through (b)(9). All of Republic's sampling and analysis procedures are included in the Facility's QA/QC Plan (aka "QAP") which is maintained on-site as part of the Facility's operating record and sample integrity is maintained per the Chain-of-Custody procedures outlined in the Republic QAP.

The procedure to determine the actual organic mass removal rate ("MR") for a treated hazardous waste shall be determined per 40 CFR 265.1084 (b)(5)(iv) and shall be recorded in the units of kg/hr.

C11.C.1(c)(3) Analytical Results

[R 299.9634 and 40 CFR §264.1083(b)]

Republic will utilize a EGLE-approved laboratory method to determine the average VO concentration of the treated hazardous waste. Current EGLE-approved methods are listed above in Section C11.C.1.A.3.

C11.C.1(c)(4) Calculation of Average VO Concentration
[R 299.9634 and 40 CFR §264.1083(b)]

Republic's calculations of average VO concentrations will conform to the requirements of 40 CFR § 265.1084, including the methods described in that rule for handling sample results that are below method detection limits.

C11.C.1(d) Maximum Organic Vapor Pressure Determination of Hazardous Waste in a Tank Using Level 1 Controls Via Direct Measurement
[R 299.9634 and 40 CFR §264.1083(c)]

Republic does not use Level 1 tank controls. Accordingly, this section is not applicable.

C11.C.1(e) Maximum Organic Vapor Pressure Determination of Hazardous Waste in a Tank Using Level 1 Controls Via Process Knowledge
[R 299.9634 and 40 CFR §264.1083(c)]

Republic does not use Level 1 tank controls. Accordingly, this section is not applicable.

C11.C.1(f) Description of Procedures for Determining No Detectable Organic Compound Emissions
[R 299.9634 and 40 CFR §§264.1083(d) and 270.27(a)(6)]

Republic does not use Level 1 tank controls. Accordingly, this section is not applicable.

C11.C.2 Tanks Description
[R 299.9634 and 40 CFR §270.27(a)(1) and (3)]

The two tanks that manage Subpart CC regulated wastes are RT-10 (7500 gal) and PST-1 (6770 gal). The specifications of these tanks are provided in Section C2.A of Attachment C2 of this Application. The Subpart CC Tanks' details are shown on Drawing No. M4.01 of Attachment B6 to this Application.

C11.C.2(a) Description of Level 1 Controls
[R 299.9634 and 40 CFR §264.1084(c)]

Republic does not use Level 1 tank controls. Accordingly, this section is not applicable.

C11.C.2(b) Description of Level 2 Controls
[R 299.9634 and 40 CFR §264.1084(d)]

Republic has implemented Level 2 Controls for the two Subpart CC Tanks. Emissions from these tanks are controlled using a Closed-Vent System attached to an Activated Carbon Adsorption System ("ACAS").

C11.C.2(b)(1) Fixed Roof and Internal Floating Roof

The Subpart CC tanks are continuous barrier tanks. Accordingly, this section does not apply.

C11.C.2(b)(2) External Floating Roof
[R 299.9634 and 40 CFR §264.1084(f)]

The Subpart CC Tanks are continuous barrier tanks. Accordingly, this section does not apply.

C11.C.2(b)(3) Tank Vented to Closed-vent System
[R 299.9634 and 40 CFR §264.1084(g)]

This Subpart CC Tanks are vented to a closed vent system that directs the emissions from those tanks to the ACAS. This closed vent system is discussed below in Section C11.5.

C11.C.2(b)(4) Pressure Tank
[R 299.9634 and 40 CFR §264.1084(h)]

The Subpart CC Tanks are not pressure tanks. Accordingly, this section does not apply.

C11.C.2(b)(5) Tank Located Within an Enclosure Vented to a Combustion Device
[R 299.9634 and 40 CFR §264.1084(i)]

The Subpart CC Tanks are not vented to a combustion device. Accordingly, this section does not apply.

C11.C.3 Surface Impoundment Description
[R 299.9634 and 40 CFR §264.1085]

There is no waste-containing surface impoundment at the Facility. Accordingly, this section does not apply.

C11.C.4 Container Descriptions
[R 299.9634 and 40 CFR §§264.1086, and 270.27(a)(2)]

Container management at the Facility is described in Attachment C1 to this Application.

C11.C.4(a) Description of Container Level 1 Controls
[R 299.9634 and 40 CFR §264.1086(b) and (c)]

Republic accepts and manages waste contained in containers that meet the applicable U.S. Department of Transportation ("DOT") regulations for packaging hazardous materials for transportation, in conformance with 40 CFR § 264.1086(c)(i).

When hazardous waste is in a container, all covers and closure devices for the container shall be installed and secure, as applicable to the container, and each closure device shall be maintained in the closed position except as follows; (a) for the purpose of removing waste from the container, or (b)

when access inside the container is needed to perform routine activities other than removal of the waste via a submerged fill pipe. Examples of such activities include those times when a worker needs to open a cover or closure device to measure the depth of or to sample the material in the container. Following completion of the activity, the closure device shall be promptly secured in the closed position or the cover shall be reinstalled, as applicable to the container.

As described in Attachments A5 and C1 to this Application, waste containers are inspected upon arrival at the Facility. Waste containers are inspected weekly, at a minimum, for container integrity and for other items shown on Form A5-3 of Attachment A5. As part of that inspection, waste containers are inspected to evaluate their condition, which includes leaking, deterioration, corrosion, bulging or other signs of container failure. In addition to waste container inspections, the secondary containment system and loading area are inspected daily for system integrity as shown on Form A5-1 of Attachment A5. Corrective action will begin immediately upon discovery of a defect in a container, cover or closure device.

C11.C.4(a)(1) Michigan Department of Transportation Specifications
[R 299.9634 and 40 CFR §264.1086(c)(1)]

Hazardous waste containers meet the applicable Michigan Department of Transportation ("MDOT") specifications, which are incorporated by reference in Michigan's Motor Carrier Safety Act. Additionally, waste containers are managed as specified in 40 CFR 264.1086 (f).

C11.C.4(a)(2) Cover and Closure Devices
[R 299.9634 and 40 CFR §264.1086(c)]

Containers used to manage hazardous waste are U.S. DOT approved containers. Each container is equipped with a cover or closure devices that form a continuous barrier over the container openings such that when the cover and closure devices are secured in the closed position, there are no visible holes, gaps, or other open spaces into the interior of the container.

C11.C.4(a)(3) Open-Top Containers with Organic Vapor-Suppressing Barrier
[R 299.9634 and 40 CFR §264.1086(c)]

Because Republic only accepts U.S. DOT approved containers, this section does not apply.

C11.C.4(a)(4) Inspection Procedures
[R 299.9634 and 40 CFR §264.1086(c)(4)]

As described in Attachments A5 and C1 to this Application, waste containers are inspected upon arrival at the Facility. Waste containers are inspected weekly, at a minimum, for container integrity and for the other items shown on Form A5-3 of Attachment A5. As part of that inspection, waste containers are inspected to evaluate their condition, which includes leaking, deterioration, corrosion, bulging or other signs of container failure. In addition to waste container inspections, the secondary containment system and loading area are inspected daily for system integrity as shown on Form A5-1 of Attachment A5. Correction action will begin immediately upon discovery of a defect in a container, cover or closure device.

C11.C.4(b) Description of Container Level 2 Controls
[R 299.9634 and 40 CFR §264.1086(d)]

Because Republic uses Container Level 1 Controls, this section does not apply.

C11.C.4(c) Description of Container Level 3 Controls
[R 299.9634 and 40 CFR §264.1086(e)]

Because Republic uses Container Level 1 Controls, this section does not apply.

C11.C.5 Description of Closed-Vent Systems and Control Devices
[R 299.9634 and 40 CFR §§264.1087 and 270.27(a)(5)]

The Closed-Vent System and Control Devices used at Republic for control of Subpart CC regulated air emissions is a closed-vent system incorporating an ACAS as detailed in Volume 8, Section 6.30, tab entitled "Ventsorb Carbon Filters" of the Construction Permit Application ("CPA") submitted by the initial owner/operator of the Facility. EGLE, then the Michigan Department of Environmental Quality, issued the construction permit for the Facility in February 2001.

C11.C.5(a)(1) Description of Closed-Vent System
[R 299.9634 and 40 CFR §264.1087(b)]

The Closed-Vent System used at Republic for control of Subpart CC regulated air emissions routes the gases, vapors, and fumes emitted from the hazardous waste in RT-10 and PST-1 to the ACAS. The Closed-Vent System is constructed of stainless steel with seamless welds at all joints, except for the semi-permanently sealed connections to PST-1, RT-10, and the carbon canisters, which are bolted flanges with Teflon gaskets. Details of the Closed-Vent System are shown on Drawing No. M6.04,

C11.C.5(a)(2) Description of Control Devices
[R 299.9634 and 40 CFR §264.1087(c)]

The "Control Devices" used at Republic for control of Subpart CC regulated air emissions is an ACAS as detailed in Volume 8, Section 6.30, tab entitled "Ventsorb Carbon Filters" of the CPA.

C11.C.5(a)(3) Inspection Procedures
[R 299.9634 and 40 CFR §264.1087(b)(4) and (c)(7)]

Before placing Subpart CC waste into the Subpart CC Tanks, Republic will visually inspect the tanks' fixed roofs and closure devices for defects that could result in air pollutant emissions, such as visible cracks, holes, or gaps in the roof sections or between the roof and the tank wall; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices. In addition, Republic will conduct initial leak detection monitoring of the closed-vent system components and connections using the procedures specified in 40 C.F.R. § 264.1034(b) to demonstrate that the closed-vent system operates with no detectable emissions, as indicated by an instrument reading of less than 500 ppmv above background. Such leak detection monitoring will be repeated for any closed vent system connection that is repaired or unsealed (e.g., a flange is unbolted).

Annually thereafter, Republic will visually inspect the Subpart CC Tanks and closure devices, and all permanently or semi-permanently sealed (e.g., a welded joint between two sections of hard piping or a bolted and gasketed ducting flange) closed-vent system joints, seams, or other connections for defects that could result in air pollutant emissions.

If Republic detects a defect in a Subpart CC Tank that could result in air pollutant emissions, Republic will make first efforts at repair of the defect no later than 5 calendar days after detection, and will complete the repair as soon as possible but no later than 45 calendar days after detection; provided, however, that Republic may delay repair of a defect beyond 45 calendar days if Republic determines that repair of the defect requires emptying or temporary removal from service of the Subpart CC Tank and no alternative tank capacity is available at the Facility to accept the hazardous waste normally managed in that tank in accordance with 40 CFR § 264.1084(k).

If Republic detects emissions from the closed vent system, as indicated by visual inspection, or by an instrument reading greater than 500 ppmv above background, Republic shall take steps to control those emissions as soon as practicable. A first attempt at repair shall be made no later than 5 calendar days after the emission is detected. The emission shall be controlled no later than 15 calendar days after the emission is detected, unless Republic determines that the repair is technically infeasible without a process unit shutdown, or that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. In such case, Republic shall repair the equipment by the end of the next process unit shutdown. Following the repair to the closed vent system, Republic shall monitor the repaired component or connection using the procedures specified in 40 CFR § 264.1034(b) to demonstrate that it operates with no detectable emissions.

C11.C.6 Description of Record Keeping Procedures
[R 299.9634 and 40 CFR §264.1089(a)]

Record keeping procedures to document compliance with 40 CFR Part 264, Subpart CC will be maintained by Republic in the operating record for a minimum of three years. All tank inspections, including RT-10 and PST-1, are conducted daily as shown on Form A5-1 of Attachment A5 to this Application with any defects noted and corrective action(s) taken recorded.

C11.C.6(a) Description of Tank Record Keeping Procedures
[R 299.9634 and 40 CFR §264.1089(b)]

All tank inspections, including RT-10 and PST-1, are conducted daily as shown on Form A5-1 of Attachment A5 to this Application.

C11.C.6(a)(1) Tank Identification Numbers
[R 299.9634 and 40 CFR §264.1089(b)(1)(i)]

The unique tank numbers for the Subpart CC Tanks are RT-10 and PST-1 as identified above in C11.C.1, and in Drawing No. M1.01 in Attachment B6.

C11.C.6(a)(2) Inspection Records
[R 299.9634 and 40 CFR §264.1089(b)(1)(ii)]

For each inspection required under Subpart CC, Republic will maintain a record of the date that the inspection was conducted and, for each defect detected during the inspection, the location of the defect, a description of the defect, the date of detection, and corrective action taken to repair the defect. In the event that Republic delays repair of the defect in accordance with the requirements Subpart CC, Republic will also record the reason for the delay and the date that completion of repair of the defect is expected.

The information recorded for the Subpart CC tanks is shown on Form A5 of Attachment A5 to this Application. Such records are maintained by Republic in the operating record for a minimum of three years.

C11.C.6(a)(3) Documentation for Determination of Maximum Organic Vapor Pressure for Fixed Roof Level 1 Controls
[R 299.9634 and 40 CFR §264.1089(b)(2)(i)]

The Republic Facility has implemented Level 2 tank controls. Accordingly, this section does not apply.

C11.C.6(a)(4)2 Documentation Showing Internal Floating Roof Design
[R 299.9634 and 40 CFR §264.1089(b)(2)(ii)]

The Facility has no Internal floating roof design tanks. Accordingly, this section does not apply.

C11.C.6(a)(5) Documentation Showing External Floating Roof Design and Seal Inspections
[R 299.9634 and 40 CFR §264.1089(b)(2)(iii)]

The Facility has no external floating roof design tanks. Accordingly, this section does not apply.

C11.C.6(a)(6) Calculations and Records for Demonstrating Compliance with Enclosure Requirements for Level 2 Controls
[R 299.9634 and 40 CFR §264.1089(b)(2)(iv)]

Republic does not use an enclosure for Level 2 tank controls. Accordingly, this section does not apply.

C11.C.6(b) Description of Surface Impoundment Record Keeping Procedures
[R 299.9634 and 40 CFR §264.1089(c)]

The Facility has no waste-containing surface impoundment. Accordingly, this section does not apply.

C11.C.6(c) Description of Container Level 3 Control Record Keeping Procedures
[R 299.9634 and 40 CFR §264.1089(d)]

The Facility has implemented Level 2 tank controls. Accordingly, this section does not apply.

C11.C.6(d) Closed-Vent System and Control Device Records
[R 299.9634 and 40 CFR §264.1089(e)]

Republic has provided a Capability Certification in Attachment B9 and in addition, has provided the design analysis in Volume 8, Section 6.30 (Basis of Design), including tab "Ventsorb Carbon Filters" and at Volume 9, Section 8.00, tab "Ventsorb Carbon Scrubber" both of the CPA, conforming with 40 CFR 264.1035(b)(4)(iii) related to control device manufacturer's (or vendor's) data.

C11.C.6(d)(1) Performance Certification
[R 299.9634 and 40 CFR §264.1089(e)(1)(i)]

A Capability Certification has been provided in Appendix C11.1.

C11.C.6(d)(2) Design Analysis Documentation
[R 299.9634 and 40 CFR §264.1089(e)(1)(i)(ii)]

The Design Analysis Documentation was provided in Volume 8, Section 6.30 (Basis of Design), including tab "Ventsorb Carbon Filters" and at Volume 9, Section 8.00, tab "Ventsorb Carbon Scrubber" both of the CPA, conforming with 40 CFR 264.1035 (b)(4)(iii) related to control device manufacturer's (or vendor's) data.

C11.C.6(d)(3) Performance Test Plan and Results
[R 299.9634 and 40 CFR §264.1089(e)(1)(i)(iii)]

This section does not apply because the information specified in C11.C.6.(d)(2) above was provided.

C11.C.6(d)(4) Descriptions of Sensors, Modifications, and Locations
[R 299.9634 and 40 CFR §264.1089(e)(1)(i)(iv)]

This section does not apply because the information specified in C11.C.6.(d)(2) above was provided.

C11.C.6(d)(5) Planned Routine Maintenance Schedules
[R 299.9634 and 40 CFR §264.1089(e)(1)(i)(v)]

Republic will record, on a semiannual basis, the following information for planned routine maintenance operations that would require the ACAS not to meet the requirements of Subpart CC. Republic will record a description of any planned routine maintenance that is anticipated to be performed for the ACAS during the next 6-month period, including: (a) the type of maintenance necessary; (b) planned frequency of maintenance; and (c) lengths of maintenance periods. In addition, Republic will record a description of the planned routine maintenance that was performed for the ACAS during the previous 6-month period, including the type of maintenance performed and the total number of hours during those 6 months that the ACAS did not meet the requirements of Subpart CC due to planned routine maintenance.

C11.C.6(d)(6) Descriptions of Unplanned Malfunctions
[R 299.9634 and 40 CFR §264.1089(e)(1)(i)(vi)]

Republic will record the following information for any unexpected ACAS malfunctions that would require the ACAS not to meet the requirements of Subpart CC: (a) the occurrence and duration of each malfunction; (b) the duration of each period during a malfunction when gases, vapors, or fumes are vented from a Subpart CC Tank through the closed-vent system to the ACAS while the ACAS is not properly functioning; and (c) Actions taken during periods of malfunction to restore the ACAS to its normal or usual manner of operation.

C11.C.6(d)(7) Management of Carbon Removed from a Carbon Absorption System
[R 299.9634 and 40 CFR §264.1089(e)(1)(i)(vii)]

Carbon will be removed from the ACAS whenever breakthrough occurs and replaced with fresh carbon. In the intervening period, the ACAS will be serviced with the back-up activated carbon container. Records of the management of the removed carbon will be maintained.
Republic will document that all carbon that is a hazardous waste and that is removed from the ACAS, regardless of the average VO concentration of the carbon, is regenerated or reactivated in a thermal treatment unit, incinerated in a hazardous waste incinerator, or is burned in a boiler or industrial furnace in accordance with 40 CFR § 264.1033(n).

C11.C.6(e) Records Required for Exempt Units
[R 299.9634 and 40 CFR §264.1089(f)]

The records maintained for the exempt tanks RT-1 through RT-8 PST-2 through PST-6, OWSs, STs, and SST-1 and SST-2 are available as the WPS for the material entering those tanks. Republic will maintain in the operating record of the Facility the carbon replenishment and/or regeneration records for the ACAS system connected RT-10 and PST-1.

C11.C.6(e)(1) Waste Determination Results
[R 299.9634 and 40 CFR §264.1089(f)(1)]

All Waste Profile Sheets for all candidate, approved and received waste streams are maintained in the Administrative offices until closure of the Facility.

C11.C.6(e)(2) Identification Numbers of Treatment Units
[R 299.9634 and 40 CFR §264.1089(f)(2)]

The identification "number" of the exempt treatment units are PST-2 through PST-6.

C11.C.6(f) Description of Covers Designated as Unsafe to Inspect and Monitor
[R 299.9634 and 40 CFR §264.1089(g)]

Republic has not designated any cover as "unsafe to inspect and monitor."

C11.C.6(g) Documentation of Alternative Compliance with 40 CFR Part 60, Subpart VV, or 40 CFR Part 61, Subpart V
[R 299.9634 and 40 CFR §264.1089(h)]

Republic has demonstrated compliance with 40 Part 264 Subpart CC as described above. Accordingly, this section does not apply.

C11.C.6(h) Documentation Required for Tanks and Containers Not Using Air Emission Controls
[R 299.9634 and 40 CFR §264.1089(i)]

All tanks and containers containing Subpart CC waste at the Facility will be subject to air emission controls specified in Subpart CC. Accordingly, this section does not apply.

C11.C.6(i) Certifications and Identification of Federal Clean Air Act of 1990 Requirements
[R 299.9634 and 40 CFR §264.1089(j)(1) and (2)]

Republic has demonstrated compliance with Subpart CC as described above. Accordingly, this subsection does not apply.

Appendix C11.1 Capability Certification

FORM EQP 5111 ATTACHMENT B8
(ITEM B3 OF "OPERATING LICENSE APPLICATIONS" ONLY COLUMN)
CAPABILITY CERTIFICATION

I hereby certify in accordance with Rule 508(1)(d) of the administrative rules promulgated under Part 111 of the Natural Resources and Environmental Protection Act that, in my professional opinion based upon knowledge and belief, the Environmental Geo-Technologies, LLC Facility located at 28470 Citrin Drive, Romulus, Michigan is capable of treating, storing and disposing of hazardous waste as set forth in this Application.

By: Richard J. Powals
Richard J. Powals, P.E.

Date: October 1, 2010

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