State of Michigan
Department of Environment, Great Lakes, and Energy
HAZARDOUS WASTE MANAGEMENT FACILITY OPERATING LICENSE

NAME OF LICENSEE: Republic Industrial and Energy Solutions, LLC

NAME OF FACILITY OWNER: Republic Industrial and Energy Solutions, LLC

NAME OF FACILITY OPERATOR: Republic Industrial and Energy Solutions, LLC

NAME OF TITLEHOLDER OF LAND: Republic Industrial and Energy Solutions, LLC

FACILITY NAME: Republic Industrial and Energy Solutions, LLC

FACILITY LOCATION: 28470 Citrin Drive, Romulus, Michigan 48174

EPA IDENTIFICATION (ID) NUMBER: MIR 000 016 055 EFFECTIVE DATE: September 19, 2023

REAPPLICATION DATE: March 19, 2033 EXPIRATION DATE: September 19, 2033

AUTHORIZED ACTIVITIES

Pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), being §§324.11101 to 324.11153 of the Michigan Compiled Laws, and the hazardous waste management administrative rules (hereafter called the "rules") promulgated thereunder, being Rule (R) 299.9101 *et. seq.* of the Michigan Administrative Code, by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), an operating license (hereafter called the "license") is issued to Republic Industrial and Energy Solutions, LLC (hereafter called the "licensee") to operate a hazardous waste management facility (hereafter called the "facility") located at latitude 42°14' 37" and longitude 83°19' 2". The licensee is authorized to conduct the following hazardous waste management activities:

☒ STORAGE	☒ TREATMENT	☐ DISPOSAL	☐ POSTCLOSURE
☒ Container	☐ Container	☐ Landfill	☐ Tank
☒ Tank	☒ Tank	☐ Land Application	☐ Surface Impoundment
☐ Waste Pile	☐ Surface Impoundment	☐ Surface Impoundment	☐ Landfill
☐ Surface Impoundment	☐ Incinerator		☐ Waste Pile
☐ Drip Pad	☐ Other:		

APPLICABLE REGULATIONS AND LICENSE APPROVAL

The conditions of this license were developed in accordance with the applicable provisions of the rules, effective August 3, 2020. The licensee shall comply with all terms and conditions of this license, Part 111, and its rules. This license consists of the 26 pages of conditions attached hereto as well as those in Attachments 1 through 14, and the applicable rules contained in Rules (R) 299.9101 through R 299.11008, as specified in the license. For purposes of compliance with this license, applicable rules are those that are in effect on the date of issuance of this license in accordance with R 299.9521(3)(a).

This license is based on the information in the license application submitted on April 28, 2021, and any subsequent amendments (hereafter referred to as the "application"). Pursuant to R 299.9519(11)(c), the license may be revoked if the licensee fails, in the application or during the license issuance process, to disclose fully all relevant facts or, at any time, misrepresents any relevant facts. As specified in R 299.9519(1), the facility shall be constructed, operated, and maintained in accordance with Part 111 of Act 451, the rules, and this license.

This license is effective on the date of issuance and shall remain in effect for 10 years from the date of issuance, unless revoked pursuant to R 299.9519 or continued in effect as provided by the Michigan Administrative Procedures Act, 1969 PA 306, as amended (Act 306).

Issued this 19th day of September 2023

By: Kimberly M. Tyson

Kimberly M. Tyson, Manager
Hazardous Waste Section
Materials Management Division

HAZARDOUS WASTE MANAGEMENT FACILITY OPERATING LICENSE

REPUBLIC INDUSTRIAL AND ENERGY SOLUTIONS, LLC
MIR 000 016 055

TABLE OF CONTENTS

LIST OF ATTACHMENTS

PART I
STANDARD CONDITIONS

A. TERMINOLOGY AND REFERENCES

Throughout this license, the term "Division" means the Materials Management Division, and any successor organization, within EGLE responsible for administering Part 111 of Act 451 and the rules. Throughout this license, "Director" means the Director of EGLE or the Director's duly authorized designee such as the Division Director. All of the provisions of Title 40 of the Code of Federal Regulations (CFR) referenced in this license are adopted by reference in R 299.11003.

B. EFFECT OF LICENSE

Except as otherwise provided by law, any treatment, storage, or disposal of hazardous waste not specifically authorized in this license is prohibited. Issuance of this license does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of federal, state, or local law or regulations {R 299.9516(8)}; nor does it obviate the necessity of obtaining such permits or approvals from other units of government as may be required by law. Compliance with the terms of this license does not constitute a warranty or representation of any kind by EGLE, nor does EEGLE intend that compliance with this license constitutes a defense to any order issued or any action brought under Act 451 or any other applicable state statute or §106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) {42 U.S.C. 9606(a)}, the Resource Conservation and Recovery Act of 1976, as amended (RCRA), and its rules, or any other applicable federal statute. The licensee, however, does not represent that it will not argue that compliance with the terms of this license may be a defense to such future regulatory actions. Each attachment to this license is a part of, and is incorporated into, this license and is deemed an enforceable part of the license.

C. SEVERABILITY

The provisions of this license are severable, and if any provision of this license, or the application of any provision of this license to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this license shall not be affected thereby.

D. RESPONSIBILITIES

1. The licensee shall comply with Part 111 of Act 451, the rules, and all conditions of this license, except to the extent authorized by EGLE pursuant to the terms of an emergency operating license. Any license noncompliance, except to the extent authorized by EGLE pursuant to the terms of an emergency operating license, constitutes a violation of Part 111 of Act 451 and is grounds for enforcement action, license revocation, license modification, or denial of a license renewal application. {§§11148, 11150, and 11151 of Act 451; R 299.9521(1)(a) and (c) and (3)(a) and (b); and 40 CFR §270.30(a)}

2. If the licensee wishes to continue an activity regulated by this license after the expiration date of this license, the licensee shall submit a complete application for a new license to the Division Director at least 180 days before this license expires, March 19, 2033, unless an extension is granted pursuant to R 299.9510(5). To the extent the licensee makes a timely and sufficient application for renewal of this license, this license and all conditions herein will remain in effect beyond the license expiration date and shall not expire until a decision on the application is finally made by EGLE, and if the application is denied or the terms of the new license are limited, until the last day for applying for judicial review of the new license or a later date fixed by order of the reviewing court consistent with §91(2) of Act 306. {R 299.9521(1)(a) and (c) and (3)(a) and 40 CFR §270.30(b)}

3. The licensee shall comply with the conditions specified in R 299.9521(1)(b)(i) to (iii) and 40 CFR §270.30(c) through (k), (l)(2), (3), (5), (7), and (11), and (m). {§§11123(3), 11146(1) and (2), and 11148(1) of Act 451 and R 299.9501(1), R 299.9516, R 299.9519, R 299.9521(1)(a) and (b) and (3)(a) and (b), R 299.9522, and R 299.9525}

4. The licensee shall give notice to the Division Director as soon as possible prior to any planned physical alterations or additions to the licensed facility. {R 299.9501, R 299.9519(1), and Part 6 of the rules}

E. SUBMITTAL DEADLINES

When the deadline for submittals required under this license falls on a weekend or legal state holiday, the deadline shall be extended to the next regular business day. This extension does not apply to the deadline for financial mechanisms and associated renewals, replacements, and extensions of financial mechanisms required under this license. The licensee may request extension of the deadlines for submittals required under this license. The licensee shall submit such requests at least five business days prior to the existing deadline for review and approval by the Division Director. Written extension requests shall include justification for each extension. {R 299.9519 and R 299.9521(3)(a)}

PART II
GENERAL OPERATING CONDITIONS

A. GENERAL WASTE ANALYSIS

The licensee shall ensure that any waste managed at the facility has been properly characterized pursuant to R 299.9302 and comply with the procedures described in the attached Waste Analysis Plan and Standard Operating Procedures, Attachment 1, of this license. {R 299.9605(1), and 40 CFR §264.13}

B. SECURITY

The licensee shall comply with the barrier, surveillance, and signage requirements of R 299.9605(1) and 40 CFR §264.14.

C. GENERAL INSPECTION REQUIREMENTS

1. The licensee shall inspect the facility in accordance with the Inspection Schedule, Attachment 2, of this license, and comply with the inspection requirements of R 299.9605(1) and 40 CFR §264.15.

2. The licensee shall develop and implement a procedure to ensure compliance with the requirements of R 299.9605(2) regarding transport vehicles and other containers leaving the facility.

D. PERSONNEL TRAINING

The licensee shall comply with the personnel training requirements of R 299.9605 and 40 CFR §264.16. The Personnel Training Program, Attachment 3, of this license, shall, at a minimum, cover all items in R 299.9605 and 40 CFR §264.16.

E. PREPAREDNESS AND PREVENTION

1. The licensee shall comply with the preparedness and prevention requirements of R 299.9606 and 40 CFR Part 264, Subpart C.

2. The licensee shall maintain fire hydrants at the facility in accordance with the requirements of the City of Romulus.

3. The licensee shall maintain a looped water supply to the site in accordance with the requirements of the City of Romulus for water at adequate volume and pressure.

4. The licensee shall take all steps necessary to ensure that an unobstructed alternate emergency access/egress road to the site across the railroad south to Wick Road is maintained.

F. CONTINGENCY PLAN

The licensee shall comply with the contingency plan requirements of R 299.9607 and 40 CFR Part 264, Subpart D. The Contingency Plan, Attachment 4 of this license, and the prescribed emergency procedures shall be immediately implemented by the licensee whenever there is a fire, explosion, or other release of hazardous waste or hazardous waste constituents that threatens or could threaten human health or the environment, or if the licensee has knowledge that a spill has reached surface water or groundwater.

G. DUTY TO MITIGATE

Upon notification from the Division Director or his or her designee that an activity at the facility may present an imminent and substantial endangerment to human health or the environment, the licensee shall immediately comply with an order issued by the Division Director pursuant to §11148(1) of Act 451 to halt such activity and conduct other activities as required by the Division Director to eliminate the said endangerment. The licensee shall not resume the halted activity without the prior written approval from the Division Director. {§11148 of Act 451 and R 299.9521(3)(b)

H. MANIFEST SYSTEM

The licensee shall comply with the manifest requirements of Part 3 of the rules and R 299.9608.

I. RECORD KEEPING AND REPORTING

1. The licensee shall comply with the written operating record and quarterly operating report (EQP 5142 form) requirements of R 299.9609 and 40 CFR §264.73 and Part 264, Appendix I, and R 299.9610(3), respectively. The quarterly operating report shall be submitted on EQP 5142 form provided by the Division Director, or an equivalent form that has been approved by the Division Director.

2. The licensee shall comply with the biennial report requirements of R 299.9610. {R 299.9521(1)(a) and 40 CFR §270.30(l)(9)}

3. The licensee shall submit the results of all environmental monitoring required by this license and any additional environmental sampling or analysis conducted beyond that required by this license to the Division Director within 60 days after any sample collection. The information shall be provided in the form of an Environmental Monitoring Report, using a format approved by the Division Director. The Report shall include, at a minimum, the laboratory report in pdf format and the data in an electronic spreadsheet format. {R 299.9521(1)(a) and R 299.9521(3)(b) and 40 CFR §270.30(l)(4)}

4. The licensee shall provide environmental monitoring information or data that is required pursuant to this license, to an authorized representative of an environmental or emergency response department of the city of Romulus or county of Wayne, who requests such information or data and that has jurisdiction over the facility. Such information or data shall

be made available on the same day the licensee forwards this information to the Division Director. {R 299.9521(3)(b)}

5. The licensee shall immediately report to the Division Director any noncompliance with the license that may endanger human health or the environment by doing both of the following:

   (a) The licensee shall immediately notify the Hazardous Waste Section at 517-284-6546, if the noncompliance occurs Monday through Friday during the period of 8:00 a.m. to 5:00 p.m., except state holidays, or by calling EGLE's Pollution Emergency Alerting System (PEAS) at 1-800-292-4706 during all other times. This notice shall include the following:

      (i) Information concerning the fire, explosion, release, or discharge of any hazardous waste or hazardous waste constituent that could threaten human health or the environment, that has reached surface water or groundwater, or that may endanger public drinking water supplies or the environment; and

      (ii) A description of the occurrence and its cause, including all of the information outlined in R 299.9607(2)(a)-(i).

   (b) The licensee shall also follow up the verbal notice by providing a written report to the Division Director within five days of the time the licensee becomes aware of the circumstances. The written report shall contain all of the information in Condition II.I.5.(a)(i)-(ii) of this license along with a description of the noncompliance and its cause; the periods of noncompliance (including exact dates and times); whether the noncompliance has been corrected and, if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance and when those activities occurred or will occur. The Division Director may waive the 5-day written notice requirement in favor of submittal of a written report within 15 days of the time the licensee becomes aware of the circumstances.

   {R 299.9521(1)(a) and R 299.9607 and 40 CFR §270.30(l)(6)}

6. The licensee shall report all other instances of noncompliance with this license, Part 111 of Act 451, the rules, and any other applicable environmental laws or rules that apply to the licensed facility, at the time monitoring reports required by this license are submitted or within 30 days, whichever is sooner. The reports shall contain the information listed in Condition II.I.5. of this license. {R 299.9521(1)(a) and 40 CFR §270.30(l)(10)}

7. The licensee may make minor modifications to the forms contained in the attachments to this license. The modifications may include changing the format, updating existing references and information, adding necessary information, and changing certification and notification information in accordance with Part 111 of Act 451 and its rules and RCRA and its regulations. The licensee shall submit the modifications to the Division Director prior to implementing the use of the modified form(s). If the Division Director does not reject or require revision of the modified form(s) within 14 days of receipt, the licensee shall implement

use of the modified form(s) and the form(s) shall be incorporated into this license as a replacement for the existing form(s).

J. CLOSURE

1. The licensee shall comply with the closure requirements of R 299.9613. The licensee shall close the facility in accordance with the Closure Plan, Attachment 5, of this license, all other applicable requirements of this license, and all other applicable laws. {R 299.9613 and 40 CFR Part 264, Subpart G, except 40 CFR §§264.112(d)(1), 264.115, and 264.120}

2. All sampling locations, methodologies, and parameters; analytical methodologies; and criteria for determining compliance with the closure requirements are subject to approval from the EGLE.

3. If the closure certification is approved by EGLE and there is not groundwater contamination, all groundwater monitoring wells shall be properly plugged and abandoned in accordance with the requirements outlined in R 299.9612(1)(b).

K. FINANCIAL ASSURANCE FOR CLOSURE

1. On the effective date of this license, the facility closure cost estimate is $1,101,624.00. The licensee shall keep this estimate current as required under R 299.9702 and 40 CFR §264.142.

2. The licensee shall continuously maintain financial assurance for the current closure cost estimate as required under R 299.9703.

L. FINANCIAL ASSURANCE FOR CORRECTIVE ACTION

The licensee shall continuously maintain financial assurance for corrective action as required under R 299.9713, including a minimum of $5,000 financial assurance for the initial description of current conditions in advance of submittal of the corrective action work to comply with Condition VI.C.3 of this license.

M. FINANCIAL RESPONSIBILITY FOR LIABILITY COVERAGE

The licensee shall continuously maintain liability coverage for sudden and accidental occurrences, as required by R 299.9710.

N. WASTE MINIMIZATION

The licensee shall certify, at least annually, that the licensee has a hazardous waste minimization program in place. {R 299.9609(1)(a) and 40 CFR §264.73(b)(9)}

O. LAND DISPOSAL RESTRICTIONS

The licensee shall comply with all of the requirements of 40 CFR Part 268. {R 299.9627 and 40 CFR Part 268}

P. AIR EMISSION STANDARDS

1. The licensee shall comply with the requirements of 40 CFR Part 264, Subpart CC, and Subpart CC Air Emissions from Tanks, Containers, and Surface Impoundments, Attachment 6, of this license.

2. The licensee shall notify the Division Director of any hazardous waste management unit or equipment that becomes subject to the requirements of 40 CFR Part 264, Subparts AA, BB, and/or CC within 30 days of the start of the regulated activity. If any hazardous waste management unit or equipment becomes subject to the requirements of 40 CFR, Part 264, Subparts AA, BB, and/or CC, the licensee shall request modification of this license, as appropriate.

{R 299.9630, R 299.9631, and R 299.9634, and 40 CFR Part 264, Subparts AA, BB, and CC}

Q. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The licensee shall maintain at the facility the following documents and amendments required by this license, until closure/postclosure is completed, certified by an independent registered professional engineer, and the facility is released from financial assurance requirements for closure/postclosure by the Director:

1. Waste Analysis Plan, including Quality Assurance/Quality Control Plan.
2. Inspection Schedules and records.
3. Personnel Training Program documents and records.
4. Contingency Plan.
5. Closure Plan.
6. Cost estimates for facility closure and corrective action and copies of related financial assurance documents.
7. Operating record.
8. Site Security Plan.
9. Facility engineering plans and specifications.
10. Record keeping procedures.
11. Environmental monitoring plans, including Sampling and Analysis Plans and QA/QC Plans.
12. Environmental monitoring data and statistical records.
13. Preventative procedures (Personnel Protection Plan).
14. Hazardous waste minimization program certification.
15. Standard Operating Procedures.

{R 299.9521(3)(a)}

R. ENGINEERING PLANS

1. The licensee shall construct, operate, and maintain the facility in accordance with the Engineering Plans, Attachment 7**,** of this license, and any modifications to those plans shall be made in accordance with this license.

2. As of the effective date of this license, TP-8C, while still shown on some of the drawings in Engineering Plans, Attachment 7, of this license, has been removed from service. The appurtenances associated with TP-8C remain, however. If the licensee wishes to restart the storage and treatment of incompatible wastes in containers, the licensee shall provide written notification to the Division Director certifying the facility's operational capability for managing these wastes in containers. All operations involving containers of incompatible wastes shall be done in compliance with this license.

S. TRUCK TRAFFIC

1. The licensee shall limit over-the-road hazardous waste deliveries to the facility via tanker truck to no more than 26 tanker trucks per day. An increase in the daily limit of tanker trucks requires a major modification to this license in accordance with the provisions of R 299.9519.

2. The licensee shall advise the drivers of all tanker trucks and other vehicles delivering hazardous waste to the facility that they are required to follow the route designated in Truck Route, Attachment 8, of the license. The Division Director may approve an alternate truck route proposed by the licensee, either on a permanent or temporary basis, if the route designated in Truck Route, Attachment 8, of this license, is blocked or otherwise not available.

3. The licensee shall limit the on-site staging and parking of tanker trucks and other vehicles delivering hazardous wastes to the facility to no more than 16.

4. The licensee shall advise drivers of all tanker trucks and other vehicles delivering hazardous wastes to the facility that the trucks and vehicles are prohibited from parking or staging on Citrin Drive.

T. HAZARDOUS WASTE PROCESSING

1. The licensee shall process all hazardous waste to be disposed in the injection wells through the storage and treatment facility. Direct injection of hazardous waste from tankers or containers is prohibited. {§324.11118a}

2. The conveyance of filtrate generated from filter press operations to RT-4 or RT-8 for further processing through the facility shall be conducted via dedicated piping in accordance with Engineering Plans, Attachment 7, of this license.

3. The conveyance of filtrate generated from filter press operations to ST-1 or ST-2 for further processing through the facility storage shall be conducted by dedicated piping or flexible hosing in accordance with Engineering Plans, Attachment 7, of this license.

4. The licensee may decontaminate tanker trucks' interior within the unloading area if the waste generated from this activity is pumped directly to the designated RT in accordance with the Waste Analysis Plan and Standard Operating Procedures, Attachment 1, of this license and no waste generated from this activity is allowed into the containment structures.

5. If the licensee performs rinsing of tanker truck tires in the unloading area, all waste generated from this activity shall be collected within the containment structures and removed from the structures within 24 hours.

U. RINSE WASTEWATER VAULT

The licensee shall not use the rinse wastewater vault for the storage or accumulation of hazardous waste.

V. COMPLIANCE SCHEDULE

1. Within 30 days of issuance of this license, the licensee shall submit to the Division Director a written report on the work related to repairing the trenches in the unloading area, including certification statements from both the licensee and an independent registered professional engineer licensed in the state of Michigan in accordance with 40 CFR 270.11(d), which is adopted by reference in R 299.11003.

2. The licensee shall submit a new facility certification of capability to the Division Director within 30 days of issuance of license. {R 299.9508}

PART III
CONTAINER STORAGE CONDITIONS

A. COVERAGE OF LICENSE

The hazardous waste container storage areas at the facility shown in Drawings C1.01, M2.01, and M3.03 are covered by this license. Any expansion or enlargement beyond the facility boundary shown in Drawings C1.01 and M2.01 or beyond the 11,000-gallon container storage area design capacity or the 92,000-gallon railcar storage design capacity requires a new operating license for the expansion, enlargement, or alteration of an existing facility from the Director. Drawings C1.01, M2.01, and M3.03 are incorporated into this license as Engineering Plans, Attachment 7, of this license. {R 299.9521(1)(b)}

B. WASTE IDENTIFICATION AND QUANTITY

1. The licensee may store no more than a total volume of 11,000 gallons of the hazardous wastes listed in List of Acceptable Hazardous Wastes, Attachment 9**,** of this license in containers in the container storage area at the facility, subject to the terms of this license. The maximum number of containers of hazardous waste that may be stored in the container storage area at the facility is 200 55-gallon containers, or equivalent. {R 299.9521(2)(d)}

2. The licensee may store no more than a total volume of 92,000 gallons of the hazardous wastes listed in List of Acceptable Hazardous Wastes, Attachment 9**,** of this license in railcars in the secondarily contained railcar storage and unloading area at the facility, subject to the terms of this license. {R 299.9521(2)(d)}

3. The wastes managed in the container storage area or the railcar storage and unloading area must be nonignitable, nonreactive, and nonradioactive wastewaters that do not contain regulated polychlorinated biphenyls (PCBs), pesticides, herbicides, medical wastes, explosives, poisons, greater than 30 milligrams per kilogram (mg/kg) reactive cyanides, greater than 200 parts per million (ppm) reactive sulfides, or more than 10 percent volatile organics by weight. For purposes of this license, the term “nonradioactive wastewaters” means wastewaters that are not source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. §2011 *et seq*.

4. Storage of flammable liquids in the container storage area is prohibited.

C. USE AND MANAGEMENT OF CONTAINERS

1. The licensee shall manage all containers in compliance with R 299.9521(3)(b), R 299.9614, and R 299.9627 and 40 CFR §§264.171, 264.172, 264.173, and 268.50(a)(2)(i).

2. The licensee shall only place containers, stacked no greater than two high, into the hazardous waste container storage areas referenced in Condition III.B.1 of this license in accordance with the configuration shown in Drawing M2.01 in Engineering Plans, Attachment 7, of this license or an alternate configuration approved by the Division Director.

{R 299.9521(3)(b)}

3. The licensee shall operate and maintain the containment system in accordance with the requirements of R 299.9614 and 40 CFR §264.175, and the attached plans and specifications in Engineering Plans, Attachment 7, of this license.

4. The licensee shall not store roll-off boxes of sludge at the facility. The roll-off box area is for accumulation of waste generated by licensee only. Roll-off boxes removed from the sludge area must be transported off-site for disposal.

5. Railcars that contain combustible liquids shall be off-loaded within 48 hours of arrival at the facility.

6. The licensee shall not unload wastes from railcars containing acid wastes and railcars containing base wastes, or from railcars containing incompatible wastes, at the same time.

D. PROHIBITION ON STORAGE OF IGNITABLE OR REACTIVE WASTES

1. The licensee is prohibited from storing ignitable or reactive wastes in the hazardous waste container storage areas referenced in Condition III.A. of this license. {R 299.9521(2)(d) and (3)(b)}]

E. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES OR MATERIALS

1. The licensee is prohibited from placing incompatible wastes or incompatible wastes and materials in the same container. {R 299.9521(2)(d) and (3)(b)}

2. The licensee shall prevent the placement of hazardous waste in an unwashed container that previously held an incompatible waste or material. {R 299.9614 and 40 CFR §264.177(b)}

3. The licensee shall document compliance with Conditions III.E.1. and III.E.2. of this license and place this documentation in the operating record. {R 299.9605 and 40 CFR §264.17(c)}

4. The licensee shall separate containers of incompatible wastes as indicated in the procedures contained in Containers, Attachment 10, of this license. {R 299.9614 and 40 CFR §264.177(c)} {R 299.9521(2)(d)}

F. DISPOSITION OF ACCUMULATED LIQUIDS

1. The licensee shall remove all liquids accumulated in the containment system within 24 hours of detection and manage the liquids in accordance with the requirements of Part 111 of Act 451 and the rules, as specified in Containers, Attachment 10, of this license. {R 299.9521(3)(b) and {R 299.9614(1)(a) and 40 CFR §264.175(b)(5)}

2. The licensee shall clean any spilled waste in the secondary containment for the container process area each day that wastes are transferred from containers to the storage tanks.

PART IV
TANK SYSTEM STORAGE AND TREATMENT CONDITIONS

A. COVERAGE OF LICENSE

The hazardous waste tank system storage and treatment areas at the facility shown in Drawings M1.01, M1.02, M2.01, M3.01, M3.02, and M3.03 are covered by this license. Any expansion or enlargement beyond the facility boundary shown in Drawing M2.01 or beyond the 240,670-gallon tank system storage design capacity requires a new operating license for the expansion, enlargement, or alteration of an existing facility from the Director. Drawings M1.01, M1.02, M2.01, M3.01, M3.02, and M3.03 are incorporated into this license as Engineering Plans, Attachment 7, of this license. {R 299.9521(1)(b)}

B. WASTE IDENTIFICATION AND QUANTITY

1. The licensee may store no more than a total volume of 240,670 gallons of the hazardous wastes listed in List of Acceptable Hazardous Wastes, Attachment 9, of this license, in the tank systems identified in the following table, subject to the restrictions in the table and the terms of this license. {R 299.9521(2)(d)}

Tank Number*	Description	Capacity (gallons per tank)	Restrictions
RT-1 to RT-4	Acid receiving tanks	16,950	Acid wastes only
RT-5 to RT-8	Base receiving tanks	16,950	Base wastes only
RT-10	Incompatible receiving tank	7,500	Incompatible wastes only
PST-1	Incompatible primary settling tank	6,770	Incompatible wastes only
PST-2 to PST-4	Acid primary settling tanks	6,770	Acid wastes only
PST-5 to PST-6	Base primary settling tanks	6,770	Base wastes only
ST-1	Acid treatment train sludge tank	20,000	Sludge from acid treatment train only
ST-2	Base treatment train sludge tank	20,000	Sludge from base treatment train only
SST-1	Secondary storage tank	16,950	Treated waste prior to deep well injection
Total Tank Storage Capacity:		**240,670 Gallons**	

*Tank numbers correspond to the numbers on Drawing M2.01, Engineering Plans, Attachment 7, of the license.

2. The wastes must be nonignitable, nonreactive, and nonradioactive wastewaters that do not contain regulated PCBs, pesticides, herbicides, medical wastes, explosives, poisons, greater than 30 mg/kg reactive cyanides, greater than 200 ppm reactive sulfides, or more

than 10 percent volatile organics by weight. For purposes of this license, the term "nonradioactive wastewaters" means wastewaters that are not source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. §2011 *et seq*.

C. WASTE TREATMENT CAPACITY AND METHODS

1. The licensee may treat no more than a total volume of 400,000 gallons per day of the hazardous wastes listed in List of Acceptable Hazardous Wastes, Attachment 9, of this license in the tank systems identified in the following table, subject to the terms of this licensee. {R 299.9521(2)(d) and (3)(a) and (b)}

Unit Number*	Unit Description	Authorized Process	Restrictions
PST-1	Incompatible primary settling tank	Mixing, primary solids settling of incompatible wastes, and stabilization of incompatible waste sludge with slurry chemicals such as lime slurry.	Incompatible wastes only
PST-2 to PST-4	Acid primary settling tanks	Mixing; primary solids settling of acid wastes; pH adjustment with caustics such as NaOH to enhance solids removal; addition of conditioners such as lime, ferrous sulfate, calcium chloride, and diatomaceous earth, to enhance solids removal; and polymer addition to enhance flocculent size.	Acid wastes only
PST-5 to PST-6	Base primary settling tanks	Mixing; primary solids settling of base wastes; pH adjustment with acids such as H_2SO_4 to enhance solids removal; addition of conditioners such as lime, ferrous sulfate, calcium chloride, and diatomaceous earth, to enhance solids removal; and polymer addition to enhance flocculent size.	Base wastes only
BF-1 to BF-4	Bag filters	Filtration	Acid and incompatible treatment train wastes
BF-5 to BF-8	Bag filters	Filtration	Base treatment train wastes
CF-1 to CF-4	Cartridge filters	Filtration	All facility wastes

Unit Number*	Unit Description	Authorized Process	Restrictions
ST-1	Acid treatment train sludge tank	Sludge thickening with sludge conditioners such as diatomaceous earth	Acid waste treatment sludge only
ST-2	Base treatment train sludge tank	Sludge thickening with sludge conditioners such as diatomaceous earth	Base waste treatment sludge only
SST-1	Secondary storage tank	Storage of treated wastes	All facility wastes
FP-1	Filter press	Sludge dewatering	All facility wastes

**Unit numbers correspond to the numbers on Drawing M2.01, Engineering Plans, Attachment 7, of the license.*

2. The wastes must be nonignitable, nonreactive, and nonradioactive wastewaters that do not contain regulated PCBs, pesticides, herbicides, medical wastes, explosives, poisons, greater than 30 mg/kg reactive cyanides, greater than 200 ppm reactive sulfides, or more than 10 percent volatile organics by weight. For purposes of this license, the term “nonradioactive wastewaters” means wastewaters that are not source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. §2011 *et seq*.

3. The licensee shall conduct the treatment of the wastes in accordance with the treatment conditions established in Treatment Process, Attachment 12, of this license.

4. The licensee shall conduct waste treatment in a manner that precludes solids from precipitating out and adversely affecting well performance.

5. The licensee shall treat the waste to satisfy the injection limitations set forth in the Underground Injection Control Permits for the two injection wells.

D. DESIGN, CONTAINMENT, AND ASSESSMENT OF TANK SYSTEMS

The licensee shall operate and maintain all tank systems in accordance with the applicable requirements of R 299.9615 and 40 CFR §§264.191, 264.192, 264.193, and 264.194, and in accordance with the attached plans and specifications in Engineering Plans, Attachment 7, of this license.

E. MANAGEMENT OF TANK SYSTEMS

1. The licensee shall label and manage the tank systems in accordance with the requirements of R 299.9615 and R 299.9627; 40 CFR §§264.194, 264.196, and 268.50(a)(2)(ii); National Fire Protection Association (NFPA) Standard No. 704; and the spill and overfill prevention procedures specified in Tank Systems, Attachment 11, of this license. {R 299.9615}

2. The licensee shall conduct the treatment of hazardous wastes in accordance with the methods and procedures specified in Treatment Process, Attachment 12, of this license. {R 299.9633}

F. PROHIBITION ON STORING OR TREATING IGNITABLE OR REACTIVE WASTES OR MATERIALS

The licensee is prohibited from storing or treating ignitable or reactive wastes or materials in tank systems at the facility. {R 299.9521(2)(d) and (3)(b)}

G. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES OR MATERIALS

The licensee shall not place incompatible wastes or incompatible wastes and materials, in the same tank system or place hazardous waste in a tank system that has not been decontaminated and that previously held an incompatible waste or material. {R 299.9609 and R 299.9615 and 40 CFR §§264.17(c), 264.73(b)(3), and 264.199}

H. DISPOSITION OF ACCUMULATED LIQUIDS

The licensee shall remove spilled or leaked waste and accumulated precipitation from the tank system within 24 hours of detection and manage it in accordance with the requirements of Part 111 of Act 451 and the rules, and the procedures in Tank Systems, Attachment 11, of this license. {R 299.9521(3)(b), R 299.9615, and 40 CFR §264.193(c)(4)}

I. COMPLIANCE WITH AIR EMISSION AND WASTE MANAGEMENT REQUIRED FOR STORAGE AND TREATMENT IN TANK SYSTEMS

The licensee shall operate the facility in a manner that will prevent air emissions in violation of Part 55, Air Pollution Control, of Act 451. {R 299.9602(1)(b)}

PART V
ENVIRONMENTAL MONITORING CONDITIONS

A. GROUNDWATER MONITORING PROGRAM

1. The licensee shall conduct a detection monitoring program for primary and secondary parameters. Under this program, the licensee shall operate and maintain a groundwater monitoring system in accordance with the Groundwater Monitoring Program Sampling and Analysis Plan (SAP), Environmental Monitoring Programs, Attachment 13, of this license. {R 299.9611(2)(a) and (b), R 299.9612, and R 299.9629 and 40 CFR Part 264, Subpart F, excluding 40 CFR §§264.94(a)(2) and (3), 264.94(b) and (c), 264.100, and 264.101}

2. Water removed from each monitoring well shall be managed in accordance with the Environmental Monitoring Programs, Attachment 13, of this license. {R 299.9521(3)(b)}

3. The licensee shall submit an annual groundwater report to the Division Director no later than March 1st of each year for the previous calendar year's activities. At a minimum, the report shall include the following information:

   (a) A narrative summary of the previous calendar year's sampling events, including sampling event dates, the identification of any significant problems with respect to SAP procedures, and copies of field log sheets.

   (b) A determination of the groundwater flow rate and direction in the monitored zone, including the preparation of a groundwater level contour map and a table of water depth measurements and elevations from this data.

   (c) A summary of groundwater quality data results, including a narrative summary of results and trends, data graphs, and data tables.

   (d) A presentation of the statistical analysis of the data and the identification of any statistically significant increases (and/or pH decreases) pursuant to Condition V.A.5 of this license.

   (e) An analysis and discussion of laboratory and field related QA/QC information. This shall include results of equipment, field, and trip blanks, and discussion and evaluation of the adequacy of the data with respect to SAP specifications and requirements.

   {R 299.9521(3)(b) and R 299.9612(1) and 40 CFR §264.97(j)}

4. The licensee shall establish background groundwater quality values at monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5A for the parameters specified in Table B5.A.3 of Environmental Monitoring Programs, Attachment 13, of this license. In the event that groundwater quality at the upgradient wells shows a significant change, a petition may be submitted to the Division Director to reestablish background quality. Background values may be reestablished only upon written approval of the Division Director. {R 299.9612(1)(c), (d), and (e) and 40 CFR §264.97(a) and (g)}

5. Within 60 days of each sampling of each monitoring well, the licensee shall determine if a statistically significant increase (or change in pH) has occurred compared to background levels for each primary and secondary parameter listed in Table B5.A.3 of Environmental Monitoring Programs, Attachment 13, of this license. For the non-naturally occurring primary parameters, any occurrence above the laboratory detection limit(s) for the parameter(s) shall be considered statistically significant. {R 299.9612(1)(c) and (e) and 40 CFR §264.97(h) and (i)}

6. If a statistically significant increase (or change in pH) is detected for any primary **or** secondary parameter, the licensee shall notify the Division, Hazardous Waste Section, , by telephone at 517 284-6546, within one working day and arrange a resampling as soon as possible to confirm if a statistically significant increase (or change in pH) exists. Resampling must include not less than four replicate samples at the affected well(s) for the parameter(s) in question. For the non-naturally occurring parameters, a statistically significant increase shall be confirmed if at least two of the four resample results are detected above the laboratory detection limit(s) for the parameter(s), or if at least one of the resample results is detected at five times the laboratory detection limit. {R 299.9612 and 40 CFR §264.97(g)}

7. If the licensee determines pursuant to Conditions V.A.5. and V.A.6. of this license that a statistically significant increase (or change in pH) has occurred for primary parameters, the licensee shall address the increase (or change in pH) in accordance with R 299.9612 and 40 CFR §264.98(f) and (g) and:

   (a) Notify within one working day the Division Director, or if unavailable, EGLE's PEAS at 1-800-292-4706.

   (b) Immediately take steps to determine the cause of the contamination and eliminate the source of discharge.

   (c) As soon as possible, sample the groundwater in all monitoring wells and determine whether constituents listed in Appendix IX of 40 CFR Part 264 are present. The Division Director may allow sampling for a site-specific subset of the constituents listed in Appendix IX. {40 CFR §264.97(g)(2) and (3)}

   (d) Within 180 days after the determination, submit to the Division Director detailed description of corrective actions that shall achieve compliance with applicable laws and rules, including a schedule of implementation. Corrective action shall also meet the requirements of R 299.9629 and include a plan for a groundwater monitoring program that shall demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on a compliance monitoring program developed to meet the requirements of 40 CFR §264.99.

   (e) Prior to a license modification requiring a compliance monitoring and corrective action program, the licensee shall provide the Division Director, or his or her designee, with weekly telephone updates and written reports every two weeks regarding the progress to date in determining the cause of contamination and eliminating the discharge. The written

report shall include the results of all samples from environmental monitoring conducted by the licensee. {R 299.9521(3)(b)}

(f) The licensee may demonstrate that a source other than the licensed facility, or an error in sampling, analysis, or evaluation solely caused the increase. {40 CFR §264.97(g)(6)}

8. If the licensee determines pursuant to Conditions V.A.5. and V.A.6. of this license that a statistically significant increase (or change in pH) has occurred for any secondary parameter, the licensee shall address the increase (or change in pH) in accordance with R 299.9612 and:

   (a) If confirmed, the licensee shall immediately take steps to determine the cause of contamination and eliminate the source of the discharge. A report that explains the chronology of events, investigative methods, all laboratory analyses, calculations, field activities, and findings, related to this determination shall be submitted within 60 days of a statistically significant determination under Condition V.A.5. of this license.

   (b) The licensee may demonstrate that a source other than the licensed facility, or an error in sampling, analysis, or evaluation solely caused the increase. A report that contains the information in Condition V.A.8.(a) of this license shall be submitted within 60 days of a statistically significant determination under Condition V.A.5. of this license.

9. In the event that the Division Director determines from the findings of Conditions V.A.5. and V.A.6. of this license that a statistically significant increase (or change in pH) in hazardous constituents has occurred in the groundwater and the Director finds, in accordance with §11148 of Act 451, that the increase (or change in pH) may present an imminent and substantial hazard to the health of persons or to the natural resources, or is endangering or causing damage to public health or the environment, the licensee shall immediately comply with an order issued by the Director pursuant to §11148(1) of Act 451 to cease waste receipt, storage, and treatment at the affected units and conduct other activities as required by the Director to eliminate the said endangerment. {R 299.9612(1)(g)}

10. In the event that volatile organic compounds are observed in a trip or a method blank and in a field sample at levels above either the reporting or upper tolerance limit and in excess of 10 times the concentration observed in trip or method blanks, the licensee shall conduct verification sampling.

B. AMBIENT AIR MONITORING PROGRAM

The licensee shall conduct ambient air monitoring in accordance with the program specified in Environmental Monitoring Programs, Attachment 13, of this license. {R 299.9611(2)(c)}

C. SOIL MONITORING PROGRAM

1. The licensee shall conduct an annual soil monitoring program as described in Environmental Monitoring Programs, Attachment 13, of this license. {R 299.9611(2)(d)}

2. The licensee shall, within 60 days of each soil sampling, report in writing to the Division Director the data and results of the statistical evaluation according to Environmental Monitoring Programs, Attachment 13, of this license.

3. If statistically significant increases of monitored parameters are found, the licensee shall determine the extent of contamination and excavate those soils within 90 days. The contaminated soil shall be properly characterized and managed in accordance with Part 3 of the rules, and cleanup to background levels shall be verified by soil sampling.

4. The licensee shall take immediate steps to eliminate the source of the contamination and prevent further releases.

5. The licensee may demonstrate that a source other than the licensed facility, or an error in sampling, analysis, or evaluation solely caused the increase.

D. SURFACE WATER MONITORING PROGRAM

1. The licensee shall comply with the National Pollutant Discharge Elimination System permit for the discharge of storm water.

2. The licensee shall comply with the EGLE-approved Storm Water Run-Off Vault Management standard operating procedure. For the purposes of this condition, the approved procedure shall mean the Storm Water Run-Off Vault Management standard operating procedure dated March 29, 2011, and subsequent EGLE-approved revisions thereto.

{R 299.9521(3)(a) and (b) and R 299.9611(5)}

PART VI
CORRECTIVE ACTION CONDITIONS

A. CORRECTIVE ACTION AT THE FACILITY

1. The licensee shall implement corrective action for all releases of a contaminant from any waste management unit (WMU) at the facility, regardless of when the contaminant may have been placed in or released from the WMU. For the purposes of this license, the term "corrective action" means an action determined by the Division Director to be necessary to protect the public health, safety, welfare, or the environment, and includes, but is not limited to, investigation, evaluation, cleanup, removal, remediation, monitoring, containment, isolation, treatment, storage, management, the temporary relocation of people, and the provision of alternative water supplies, or any corrective action allowed under Title II of the federal Solid Waste Disposal Act, PL 89-272, as amended, or regulations promulgated pursuant to that act. For the purposes of this license, the environmental protection standards adopted in R 299.9629 shall be used to satisfy the corrective action obligations under this license. {§§11102 and 11115a of Act 451 and R 299.9629}

2. To the extent that a release of a hazardous substance, as defined in §20101(x) of Act 451, that is not also a contaminant, as defined in §11102(2) of Act 451, is discovered while performing corrective action under this license, the licensee shall take concurrent actions as necessary to address the Part 201, Environmental Remediation, of Act 451 remedial obligations for that release. {R 299.9521(3)(b)}

B. CORRECTIVE ACTION BEYOND THE FACILITY BOUNDARY

The licensee shall implement corrective action beyond the facility in accordance with §11115a of Act 451 and R 299.9629(2).

C. IDENTIFICATION OF WASTE MANAGEMENT UNITS

The WMUs at the facility are identified below and shown on the figure in Drawings C0.01 and M2.01, Engineering Plans, Attachment 7, of this license.

1. The following WMUs do not require further corrective action at this time as they are currently operating pursuant to the act and its rules with no evidence of a release of any contaminants. Corrective action may be required when any of the units undergo final closure.

WMU	Description	Wastes Managed
RT-1 to RT-4	Acid receiving tanks	Acid wastes only
RT-5 to RT-8	Base receiving tanks	Base wastes only
RT-9	Nonhazardous leachate tank	Nonhazardous leachate only
RT-10	Incompatible receiving tank	Incompatible wastes only
PST-1	Incompatible primary settling tank	Incompatible wastes only
PST-2 to PST-4	Acid primary settling tanks	Acid wastes only
PST-5 to PST-6	Base primary settling tanks	Base wastes only

WMU	Description	Wastes Managed
ST-1	Acid treatment train sludge tank	Acid treatment train sludge only
ST-2	Base treatment train sludge tank	Base treatment train sludge only
SST-1	Secondary storage tank	Treated waste before deep well injection
BF-1 to BF-4	Bag filters	Acid and incompatible treatment train wastes
BF-5 to BF-8	Bag filters	Base treatment train wastes
CF-1 to CF-4	Cartridge filters	All facility wastes
FP-1	Filter press for sludge dewatering	All sludge from treatment process
SD-1	Sludge dryer previously used for sludge dewatering	None. Remains in place but no longer in service.
Roll-off box	Container for accumulation of filter cake destined for off-site disposal	Filter cake from filter press operations
Rinse wastewater vault	Indoor concrete vault in facility repurposed for housing water for injection well maintenance	Non-hazardous wastewaters generated at facility. Not authorized for hazardous waste.
Storm water runoff vault	113,000-gallon concrete outdoor vault used to collect storm water from east side of facility	Storm water and any materials released on east side of facility.
Storm water detention pond	Pond on west side of facility designed to collect storm water from the west side of facility	Storm water and any materials released on west side of facility
Container storage area	Used for container storage and pumping of drums to RTs	All facility wastes
Railcar storage area	Indoor area used for railcar storage	All facility wastes
Unloading/ sampling bay	Area inside of facility where samples are obtained, and railcars and tankers are unloaded	All facility wastes
Laboratory	On-site laboratory used for various testing to evaluate wastes and treatment operations	All facility wastes
Well houses	Individual sheds over each of the two well heads	All facility wastes
Pump house	Indoor area housing pumps used to transfer wastes from the facility to the injection wells	All facility wastes

WMU	Description	Wastes Managed
LST-1 and LST-2	Nonhazardous leachate waste storage	Nonhazardous leachate wastes

{§§11102 and 11115a of Act 451 and R 299.9521(3)(b) and R 299.9629}

2. Within 30 days of discovery of a new WMU or a release of a contaminant from a new WMU, the licensee shall provide written notification to the Division Director. The written notification shall include all of the following information:

   (a) The location of the unit on the facility topographic map.

   (b) The designation of the type of unit.

   (c) The general dimensions and structural description, including any available drawings of the unit.

   (d) The date the unit was operated.

   (e) Specification of all waste(s) that have been managed in the unit.

   (f) All available information pertaining to any release of a contaminant from the unit.

3. Based on a review of all of the information provided in Condition VI.C.2 of this license, the Division Director may require corrective action for the newly identified WMU. The licensee shall submit a written Investigation Work Plan to the Division Director within 60 days of written notification by the Division Director that corrective action for the unit is required.

{§§11102 and 11115a of Act 451 and R 299.9504(1), R 299.9508(1)(b), and R 299.9629 and 40 CFR §270.14(d)}

D. CORRECTIVE ACTION INVESTIGATION

The licensee shall conduct a Corrective Action Investigation to determine if a release of a contaminant(s) from any of the WMU identified in Condition VI.C of this license has occurred and, if a release(s) has occurred, evaluate the nature and extent of the release(s). The licensee shall submit a written Corrective Action Investigation Work Plan, Corrective Action Investigation Final Report documenting compliance with the approved Work Plan and supporting further corrective action at the facility, and Corrective Action Investigation progress reports to the Division Director for review and approval in accordance with Condition VI.K of this license. The Division Director will approve, modify and approve, or provide a Notice of Deficiency (NOD) for the Work Plan and Final Report. Upon approval, the Work Plan and Final Report become enforceable conditions of this license. {§§11102 and 11115a of Act 451 and R 299.9629}

E. INTERIM MEASURES

The licensee shall conduct interim measures (IM) at the facility, if determined necessary by the licensee or the Division Director, to cleanup or remove a released contaminant or to take other actions, prior to the implementation of corrective measures, as may be necessary to prevent, minimize, or mitigate injury to the public health, safety, or welfare, or to the environment. The licensee shall submit a written IM Work Plan, an IM Final Report documenting compliance with the approved Work Plan and supporting further corrective action at the facility, and IM progress reports to the Division Director for review and approval in accordance with Condition VI.K of this license. The Division Director will approve, modify and approve, or provide an NOD for the Work Plan and Final Report. Upon approval, the Work Plan and Final Report become enforceable conditions of this license. {§§11102 and 11115a of Act 451 and R 299.9629}

F. DETERMINATION OF NO FURTHER ACTION

1. The licensee shall continue corrective action measures to the extent necessary to ensure that the applicable environmental protection standards adopted in Part 111 of Act 451, are met, if the limits are not less stringent than allowed pursuant to the provisions of RCRA.

2. Based on the results of the Corrective Action Investigation and other relevant information, the licensee shall submit a written request for a license minor modification to the Division Director if the licensee wishes to terminate corrective action for a specific WMU identified in Condition VI.C. of this license. The licensee must demonstrate that there have been no releases of a contaminant(s) from the WMU and that the WMU does not pose a threat to public health, safety, welfare, or the environment.

3. Based on the results of the Corrective Action Investigation and other relevant information, the licensee shall submit a written request for a license major modification to the Division Director if the licensee wishes to terminate facility-wide corrective action. The licensee must conclusively demonstrate that there have been no releases of a contaminant(s) from any of the WMU at the facility and that none of the WMUs pose a threat to public health, safety, welfare, or the environment.

4. If, based upon a review of the licensee's request for a license modification pursuant to Condition VI.F.2. or VI.F.3. of this license, the results of the completed Corrective Action Investigation, and other relevant information, the Division Director determines that the releases or suspected releases of a contaminant(s) do not exist and that the WMU(s) do not pose a threat to public health, safety, welfare, or the environment, the Division Director will approve the requested modification, subject to Conditions VI.F.5. and VI.F.6., below.

5. A determination of no further action shall not preclude the Division Director from requiring continued or periodic monitoring of air, soil, groundwater, or surface water, if necessary to protect public health, safety, welfare, or the environment, when facility-specific circumstances indicate that potential or actual releases of a contaminant(s) may occur.

6. A determination of no further action shall not preclude the Division Director from requiring further corrective action at a later date, if new information or subsequent analysis indicates that a release or potential release of a contaminant(s) from a WMU at the facility may pose a threat to public health, safety, welfare, or the environment. The Division Director will initiate the necessary license modifications if further corrective action is required at a later date.

{§§11102 and 11115a of Act 451 and R 299.9629(2)}

G. CORRECTIVE MEASURES STUDY

If the Division Director determines, based on the results of the Corrective Action Investigation and other relevant information, that remedial activities are necessary, the Division Director may notify the licensee in writing that a Corrective Measures Study (CMS) is required. If notified by the Division Director, the licensee shall conduct a CMS to develop and evaluate the corrective measures alternative(s) necessary to address the release(s) of a contaminant(s) or hazardous substances and the WMU(s) that are identified in the approved Corrective Action Investigation Final Report as requiring final remedial activities. The licensee shall submit a written CMS Work Plan, a CMS Final Report documenting compliance with the approved Work Plan and supporting further corrective action at the facility, and CMS progress reports to the Division Director for review and approval in accordance with Condition VI.K. of this license. The Division Director will approve, modify and approve, or provide an NOD for the Work Plan and Final Report. Upon approval, the Work Plan and Final Report become enforceable conditions of this license. {§§11102 and 11115a of Act 451 and R 299.9629}

H. CORRECTIVE MEASURES IMPLEMENTATION PLAN

1. The licensee shall conduct final corrective measures based on the CMS Final Report approved by the Division Director. The licensee shall submit a written Corrective Measures Implementation (CMI) Work Plan to the Division Director for review and approval. The licensee shall also submit a written CMI Final Report documenting the compliance with the approved CMI Work Plan and providing justification that the corrective actions may cease, and CMI progress reports to the Division Director for review and approval in accordance with Condition VI.K. of this license. The Division Director will approve, modify and approve, or provide an NOD for the Work Plan and Final Report. Upon approval, the Work Plan and Final Report become enforceable conditions of this license.

2. The Division will provide notice of its draft decision on the CMI Work Plan to persons on the facility mailing list and provide an opportunity for a public hearing.

3. The licensee shall implement the approved CMI Work Plan within 60 days of receipt of the Division Director's written approval of the Work Plan.

{§§11102 and 11115a of Act 451 and R 299.9629}

I. CORRECTIVE ACTION MANAGEMENT UNITS

If applicable, the licensee shall comply with the requirements of R 299.9635 in order to designate an area at the facility as a corrective action management unit for implementation of corrective measures. {R 299.9521(3)(a)}

J. TEMPORARY UNITS

If applicable, the licensee shall comply with the requirements of R 299.9636 in order to designate tank or container storage units used for the treatment or storage of remediation wastes as temporary units for implementation of corrective measures. {R 299.9521(3)(a)}

K. SUMMARY OF CORRECTIVE ACTION SUBMITTALS

The licensee shall submit the required documents in accordance with Conditions VI.D, VI.E, VI.G, and VI.H. of this license and the schedule below.

Document	Submittal Deadline
Written notification of a new release of a contaminant from an existing WMU, a new WMU, or a release of a contaminant from a new WMU	Within 30 days of discovery
Corrective Action Investigation (Investigation) Work Plan (Plan) for a newly-identified release of a contaminant from an existing WMU, a new WMU, or a release of a contaminant from a new WMU	Within 60 days of receipt of notification Investigation is required
Revised Plan for WMUs and contaminant releases	Within 60 days of Plan NOD receipt
Investigation progress reports	Within 90 days of Investigation initiation and every 90 days thereafter, unless otherwise approved
Investigation Final Report (Report) for WMUs and contaminant releases	Within 60 days of Investigation completion
Revised Report for WMUs and contaminant releases	Within 60 days of Report NOD receipt
IM Work Plan (IM Plan) for WMUs and contaminant releases	Within 60 days of receipt of notification IM Plan is required
Revised IM Plan for WMUs and contaminant releases	Within 60 days of IM Plan NOD receipt
IM progress reports	Within 90 days of IM initiation and every 90 days thereafter, unless otherwise approved
IM Final Report (IM Report) for WMUs and contaminant releases	Within 60 days of IM completion

Document	Submittal Deadline
Revised IM Report for WMUs and contaminant releases	Within 60 days of IM Report NOD receipt
CMS Work Plan (CMS Plan) for WMUs and contaminant releases	Within 60 days of receipt of notification CMS is required
Revised CMS Plan for WMUs and contaminant releases	Within 60 days of CMS Plan NOD receipt
CMS progress reports	Within 90 days of CMS initiation and every 90 days thereafter, unless otherwise approved
CMS Final Report (CMS Report) for WMUs and contaminant releases	Within 60 days of CMS completion
Revised CMS Report for WMUs and contaminant releases	Within 60 days of CMS Report NOD receipt
CMI Work Plan for WMUs and contaminant releases	Within 60 days of CMS Report approval
Revised CMI Work Plan (CMI Plan) for WMUs and contaminant releases	Within 60 days of CMI Plan NOD receipt
CMI progress reports	Within 90 days of CMI implementation and every 90 days thereafter, unless otherwise approved
CMI Final Report (CMI Report) for remediated WMUs and contaminant releases	Within 60 days of completion of remedial actions meeting cleanup criteria
Revised CMI Report for WMUs and contaminant releases	Within 60 days of CMI Report NOD receipt

L. CORRECTIVE ACTION DOCUMENTS RETENTION

The licensee shall maintain all corrective action documents required by this license at the facility. The documents shall be maintained for the operating life of the facility or until the facility is released from financial assurance requirements for corrective action by the Division Director, whichever is longer. The licensee shall offer such documents to the Division Director prior to discarding those documents. {§§11102 and 11115a of Act 451 and R 299.9521(3)(b) and R 299.9629}

Attachment 1

Waste Analysis Plan and Standard Operating Procedures

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

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 Deep Well Profile ("DWP"), 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 EGLE. The analytical results, together with the information contained in the DWP 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 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)]

Republic is responsible for annual review of a waste profile approval before its expiration. Republic personnel will contact the generator of the waste stream to determine if the waste stream is consistent with the current approval on file. If process or constituents have changed, new analyses will be requested from the generator.

Once the profile has been updated, if needed, the generator will sign off on an Annual Recertification Form that Republic will file with the operating log.

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 DWP 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 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 DWP. The waste shipment is classified as being in "non-conformance" if its composition is significantly different from the information shown on the DWP, 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 manifest discrepancy or non-conformance of the waste shipment:

- For bulk wastes, variations greater than 10% by 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

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

Waste shipments found to have a 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 at detection levels are present in the waste stream.

Table A3.A.1 Waste Analysis Procedures

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 and R 299.9217, R 299.9219, R 299.9220, R 299.9222, R 299.9224, and R 299.9225	All shipments and containers	Compliance with permits
☐ Free Liquids					
☒ Ignitability	Ignitable material not accepted at Facility.	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	Compliance with permits			All shipments and containers	Detection on every load
☒ Other: PCB	Compliance with permits	8082A	SW-846	Oily waste only	Generator certification required, PCB not typical in acid and caustic waste streams.

Screening Parameter (*Check as appropriate)*	Rationale for Parameter	Test Method	Reference	Frequency	Rationale for Frequency
					Regulated PCBs are not accepted at Facility.
☒ Other: pH	Compliance with permits & maintain operations	9041A and/or 9040C and/or 9045D	SW-846	All shipments and containers	Compliance with permits
☒ 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) ASTM 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

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	Bomb Sampler (akin to ASTM D-4057 for petroleum sampling) or Sampling Port	Bomb Sampler or Sampling Port and Collection Vessel (e.g., glass beaker or HDPE jar with lid)	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 DWP. 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 DWP 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 ensure 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

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 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., DWPs, 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 DWP 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 DWP 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

☒ Laboratory packs are accepted at the facility.

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

A3.C.8 Quality Assurance/Quality Control Plan

Republic 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

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

Page 2 | Sept 2020

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

Page 2 | Sept 2020

Appendix A3.A.2 Fingerprint Form

REPUBLIC INDUSTRIAL AND ENERGY SOLUTIONS, LLC.

RECEIVING & APPROVAL FORM

RECEIVING INFORMATION	
Date	
Receiving ID#	
Manifest# Line:	
Land Ban Cert included	Yes No
EGT Approval #	
Generator	
Client	
Transporter	
Time in	
Time out	
Received by	
Sampled by	

LAB INFORMATION	
COMPATIBILE? (RT#)	Yes No
PCBs (ppm)(Oily Waste Only)?	
TOC (ppm)(CC Waste Only)?	
FLASH POINT (°F)	
PH (S.U.)	
CYANIDES? (mg/L)	
SULFIDES? (ppm)	
SPECIFIC GRAVITY	
PHYSICAL DESCRIPTION	
Stream Consistency	Yes No
Oil in Sample	Yes No
% Solids	
TURBIDITY	Yes No
COLOR (visual)	
TSS (%)	
RADIATION SCREEN (as needed)	
Lab Signature	

Comments ____

STANDARD OPERATING PROCEDURE

Title: Compatibilities Determinations

Procedure Number: LAB01; Rev. 3 (09/01/2022); Implementation Date: 09/01/2022

1.0 Scope

The scope of this procedure ("SOP") applies to the: (a) off-loading of as-received wastes, (b) processing of wastes throughout the hazardous waste management ("HWM") facility, and (c) injection of wastes into both onsite deepwells {at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility")}.

2.0 Objective

The objective of this procedure is to define the substantive procedures that apply to the three categories of Compatibility Determinations: (1) the off-loading, (2) processing, and (3) injection of the various wastes into the subsurface strata.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e., death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

The procedure and methodology for the: (1) offloading, (2) processing, and (3) injection of waste(s) is described below in the Compatibility Determinations conducted at those three locations:

1. **At off-loading:** Compatibility Testing is a 50/50 "off-loaded material" into "chosen receiving tank volume or residuals".

2. **During any stage of Processing:** Compatibility Testing is a 50/50 "in-process material" into the "next location residual" mixture and observation. At a minimum, the 50/50 compatibility test waste-stream-to-waste-stream is used. In addition to this 50/50 test, the waste may be exposed to concentrations of base reagents, acid reagents, or other reagents and waste streams to determine strong reactions and or formations that may occur and can impede treatment or transfer of the waste stream.

3. **At injection**: a 50/50 compatibility of waste to be injected, is mixed with a sample of the previous injectate. Unlike other areas of the facility where the Laboratory approves or oversees compatibility testing, it is the responsibility of the Deepwell Operator to make decisions based on observations from compatibility testing. These decisions are based on a deepwell operator's knowledge of the injection wells.

Observation of the Compatibility Determination mixture typically requires approximately 15 minutes. This can be longer, depending on the observation and/or reaction of the sample. The presence of strong reactions (e.g., heat, splattering, fizzing, smoking, fuming etc.) are the first criteria screened, followed secondarily by formations (e.g., precipitation, organic droplets, foam, floating layers, stratification, etc.). If all compatibility tests are successful, Laboratory personnel approve the appropriate transfer. Then, this information is communicated to either the Treatment Operator or Deepwell Operator, as appropriate. If any compatibility test is unsuccessful, or raises questions/concerns, Laboratory personnel relay the compatibility results to the Treatment Operator,

Deepwell Operator, and General Manager as appropriate to resolve the situation via treatment, isolation, or removal.

Document Revision History:

Revision: 3 **Date of Last Revision:** 09/01/2022 **Last Approval Date:** 09/01/2022

Document Author: James Hawkins

Reason for Change:

Revision:	Sec/Para Changed:	Change Made:	Date:
0	N/A	Initial Issue of Document	11/14/12
1	Various	Typos; Update	01/14/15
2	Various	Typos; Update	06/10/22
3	Various	Typos; Update/TNOD II [MMD – 8/9/22 Notification]	09/01/22

Electronic Notification List: JFrost@republicservices.com

Approvals: First Approver's Signature: _____ **Date:**

First Approver's Printed Name: _____

Second Approver's Signature: _____ **Date:**

Second Approver's Printed Name: _____

STANDARD OPERATING PROCEDURE

Title: PCBs DETERMINATION

Procedure Number: LAB02; Rev. 3 (09/01/2022); Implementation Date: 09/01/2022

1.0 Scope

The scope of this procedure ("SOP") applies to the measurement of PCBs (e.g., polychlorinated biphenyls) in "Oily Waste Only" as Aroclors for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this method is to define the substantive procedure that applies to the determination of polychlorinated biphenyls, as Aroclors, by Gas Chromatography (GC) using a capillary column and an electron capture detector (ECD).

Aroclors are multi-component mixtures of congeners typically identified by chromatographic peak pattern matching. The same is true of Aroclors that have been subjected to environmental degradation ("weathering") or degradation by treatment technologies. Such weathered multi-component mixtures may have significant differences in peak patterns as compared to those of Aroclor laboratory standards. The guidelines outlined in Method 8082A (see document 1) shall be used for the quantitation Aroclor(s) in a sample.

Since it is not anticipated that any of the oily waste streams will contain Aroclors, a standard containing a mixture of Aroclor 1016 and Aroclor 1260 (see Figure 1.), which includes many of the peaks represented in the other five Aroclor mixtures, will be used for this procedure. Decachlorobiphenyl (e.g. DCBP - used as both a surrogate and an internal standard), dissolved in acetone, will be added to each sample and each standard prior to extraction.

Multi-point initial calibration standards consisting of a mixture of Aroclors 1016 and 1260, will demonstrate linearity of the GCs ECD (e.g. Electron Capture Detector) response. This calibration mixture will also be used as a standard to demonstrate that a sample does not contain Aroclors.

The viability of this method to measure the concentration Aroclors has been accepted by the USEPA Method 8082A-Polychlorinated Biphenyls (PCBs) by Gas Chromatography, referenced in document 1.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its plain English meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

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Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

The procedure and methodology for the offloading of as received wastes. The following summarizes this determination of Aroclors for "Oily Wastes Only" for a candidate waste stream:

This determination will not detail the exact step-by-step procedure for the analysis of Aroclors in Oily Wastestreams, however, the guidelines detailed in EPA Method 8082A (see document 1), Hewlett-Packard 5890 Series II GC Instrument manuals (see document 2), ChemStation Chromatography Software/Software Manual (see document 3), and the analytical chemist's experience and professional judgment will all be integrated in this determination.

The accuracy and precision obtainable with this method depend on the sample matrix, sample preparation technique, optional clean-up techniques and the calibration procedures used.

The analysis of Aroclors is a step-by-step process consisting of: Aroclor Standards Preparation, Extraction Procedure, Chromatographic Parameters, GC Column Specifics, Method Performance, GC Instrument Calibration, Data Acquisition/Interpretation, and Quality Control steps.

Aroclor Standards Preparation Procedure
Using serial dilutions, the stock standard solutions will be diluted from commercially prepared mixtures containing 1000 µg/mL Aroclor 1016/1260 [in Hexane], and 200 µg/mL Decachlorobiphenyl (DCBP) [in acetone] using Hexane as the solvent (see Table 1. below).

Table 1. Aroclor Calibration Standards - AR-3 will be used as the Continuing Calibration Check (CCC) Standard.

Aroclor 1016/1260 Standards	Aroclor [µg/mL]	DCBP Surrogate [µg/mL]
AR-1	1.0	1.0
AR-2	2.0	1.0
AR-3	3.0	1.0
AR-4	4.0	1.0
AR-5	5.0	1.0

Extraction Procedure

1. Gently, invert the sample bottle six times to ensure the oil/water mixture is thoroughly mixed but not so well mixed as to form an emulsion.

2. Once the oil layer has separated, using a serological pipette, transfer 10 grams of the oily layer into each of two 25 mL vials. Weigh and record the respective weights. Label one vial Sample and the second Matrix Spike (MS).

3. To each vial, add 10 mL of hexane.

4. Using a 500 µL Gas-Tight syringe, transfer 300 µL of the 100 µg/mL (0.1 ug/µL, e.g., 30 µg) Aroclor 1016 / Aroclor 1260 (mix) spike solution to the vial labeled MS. Thus, making the MS Aroclor concentration 3.0 µg/ml.

5. To a third 25 mL vial, add and 10 mL of hexane and spike it with 300 µL of the 100 µg/mL 1016 / Aroclor 1260 (mix). Label this LCS (Lab Control Standard)

6. Next, gently vortex all three vials for 60 seconds. Then, allow the organic and aqueous layers to separate.

7. Add 1.0 mL of concentrated sulfuric acid to each vial & carefully vortex for 1 minute.

8. Allow the layers to separate as necessary.

9. Transfer 1 mL from each respective extract (e.g. Sample/MS/LCS) to labeled 2 mL autosampler vials, being careful not to transfer any acid.

10. Add 1.0 mL of hexane to a 2.0 mL Vial. Label this Blank.

11. **DCBP Spike Procedure**: First, vortex the 200 µg/mL DCBP stock spike solution. Next, using a Gas-Tight syringe, transfer 5 µL of 200 µg/mL DCBP (e.g. 1.0 µg total DCPB) to each of the four vials (e.g. sample, MS, LCS, & hexane blank) making the DCBP concentration 1 µg/ml.

12. Immediately, cap each vial with a crimp top.

Chromatographic Parameters (see Table 2. Below)

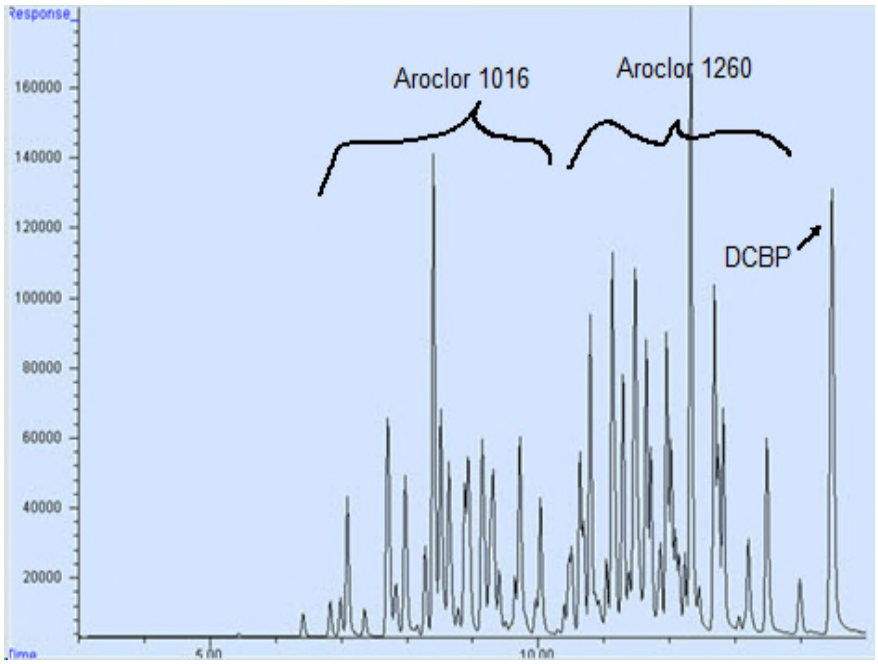
Table 2. GC Conditions subject to fine tuning (as required).

GC: HP 5890 Series II Autosampler: HP 7673	Columns A/B: BPX5 0.5µm 15 m x 0.53 mm ID
Initial temperature	150 °C
Hold time	1 minute
Rate 1	15 °C / minute
Final Temp 1	280 °C
Total Run time	18.0 minutes
Injection port temp	250 °C
Detector temp	310 °C
Carrier gas velocity	50 cm/ min.
Column Carrier Gas	UHP Helium
Anode purge velocity (fixed /non-adjustable)	4 mL/min
Detector Makeup Gas	5% Methane/95% Argon
Split/Splitless	50:1 ratio
Total flow velocity	0.8 cm/sec.
Flows measured at	150 °C
Injection Volume	1.0 µL
Detectors (A & B)	ECD (Ni^{63})

GC Column Specifics

Primary & Secondary Capillary Columns
BPX5 (e.g. 5 % Phenyl Polysilphenylene-siloxane) - Low bleed column range with a maximum temperature up to 370°C designed for routine analyses.

Figure 1. An example of an Aroclor 1016 and Aroclor 1260 Chromatogram.



Method performance

Initial Method Detection Limit (MDL) determination
The MDL is then defined as the "t value" (derived from the number of degrees of freedom in the readings) multiplied by the standard deviation of the set. Note: The "t value" for seven replicates is 3.143.

11. First, spike 7 x 10mL DI water samples with 300µL of the 100 µg/mL Aroclor 1016/1260 (mix) stock spike standard.

12. Then, extract these QA samples per steps 1 and 2.

13. Finally, analyze the QA samples per the procedure detailed in this determination.

14. Next, calculate the MDL.

GC Instrument Calibration
Initial calibration and verification:

15. First, perform a five point calibration curve using AR-1 to AR-5, with an injection volume of 1.0 µL.

16. Next, calculate the response factors, mean, standard deviation, and the % Relative Standard Deviation (RSD) for each of the two Aroclors. Note: The % RSD should be <15% for each Aroclor.

    An initial calibration should be run whenever there is a significant change in the system or quality control readings indicate it is needed.

Continuing calibration

17. First, inject 1 µL of the continuing calibration standard at the beginning of each day's sequence which will require Aroclor analysis.

18. Then, after completion of the run, determine the area for each Aroclor and calculate the %RSD of the standard area/concentration versus the average calibration factor of the initial calibration.

    The % RSD for the daily calibration must be <15%. If the continuing calibration standard has a % RSD greater than 15%, the system should be checked for maintenance. If no problem is found and the % RSD is still >15%, an initial calibration must be run and the system re-calibrated. Once the continuing calibration standard has been verified, analysis of samples can begin.

Data Acquisition/Interpretation

The quantitation of PCBs as Aroclors is accomplished by the combination of:

- Comparing the samples' chromatogram to that of the most similar Aroclor standard,
- ChemStation™ Chromatography software, and
- The analytical chemist's judgment and experience.

A determination will be made as to which Aroclor(s) is most similar to that of the standard mix and/or chromatographic pattern. The total peak height sum from prominent congeners will be calculated through integration. The Aroclor 1016/1260 calibration standard will be used for quantitation Aroclor(s).

As noted in Section 2.0 of this SOP, "This calibration mixture will be used to demonstrate that a sample does not contain Aroclors".

Quality Control (QC)

QC Limits
Accuracy control limits for matrix spikes, surrogate spikes and LCS samples are developed using the percent Recovery (%R) data generated from each analytical batch. The %R data for each analyte will be tabulated on a regular basis. The mean value and standard deviation (σ) are calculated as follows:

Upper Control Limit (UCL) = mean %R + 2σ
Lower Control Limit (LCL) = mean %R - 2σ

QC requirements

A Method Blank (MB), Laboratory Control Standard (LCS), and a Matrix Spike (MS) will be prepared for each day of Aroclor analysis.

Corrective Actions

When it has been determined that data lies outside of acceptance limits, a step-wise procedure will be followed to investigate and rectify the issue. Corrective actions will be noted in the respective laboratory log book, for example indicating the issue, the corrective actions taken/required, the date and the initials of the chemist as detailed below:

19. First, review all calculations and data entries for potential discrepancies.

20. Then, examine chromatograms for incorrect Peak Integrations and/or Baselines issues.

21. Next, review extraction and surrogate spiking procedure for potential sample interferences and/or homogeneity issues.

22. If the GC was the source of the issue, the condition must be rectified and noted in the laboratory log book prior to further calibrations or analyses.

23. Should reagents or standards be suspected of contamination, fresh reagents or standards will be, respectively, utilized or prepared.

24. Extract cleanups can eliminate or lessen the effects of interferences (e.g. from pesticides, phthalates, sulfur) causing elevated baselines.

25. Contaminated or dirty GC components can lead to false positives or elevated baselines. Septa and injection port liners should be changed as required.

26. Finally, using professional judgment, review other potential issues that will require corrective action.

27. Having identified the issue, corrective action will be taken prior to commencing analysis.

6.0 Related Documents

1. "Method 8082 A: Polychlorinated Biphenyls (PCBs) by Gas chromatography", USEPA Revision 1, February 2007.
2. "HP 5890 Series II Site Prep and Installation Manual", Hewlett Packard, Part Number 05890-90280, June 1989.
3. "EnviroQuant ChemStation Software", Hewlett-Packard.

Document Revision History:

Revision: 1 **Date of Last Revision:** 09/01/2022 **Last Approval Date:** 09/01/2022

Document Author: James D. Hawkins

Reason for Change:

Revision:	Sec/Para Changed:	Change Made:	Date:
0	N/A	Initial Issue of Document	11/02/12
1	Various	Update; Typos	12/23/14
2	Various	Update; Typos	06/10/22
3	Various	Typos; Update/TNOD II [MMD – 8/9/22 Notification]	09/01/22

Electronic Notification List: JFrost@republicservices.com

Approvals: First Approver's Signature: _____**Date:**_____

First Approver's Printed Name:_____

Second Approver's Signature: _____**Date:**_____

Second Approver's Printed Name: _____

STANDARD OPERATING PROCEDURE

Title: TOC DETERMINATION

Procedure Number: LAB03; Rev. 3 (09/01/2022); Implementation Date: 09/01/2022

1.0 Scope

The scope of this procedure ("SOP") applies to the measurement of TOC (e.g., Non-purgeable Total Organic Carbon) from CC (e.g., Subpart CC of 40 CFR 264/265) Waste Only, for a candidate waste stream for Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this determination is to define the substantive procedure that applies to the measurement of TOC using a Teledyne Tekmar Torch Combustion Total Organic Carbonaceous (e.g. TOC) analyzer (or equivalent), Non-Dispersive Infrared (e.g. NDIR) gas analysis method.

The TOC instrument uses High Temperature Combustion (HTC), oxidation of carbonaceous material to carbon dioxide followed by the NDIR detection of the CO_2 product.

> *"The oxidation products are swept into the NDIR detector, which is CO_2 selective. The exit valve from the NDIR is closed to allow the detector to become pressurized. Once the gasses in the detector have reached equilibrium, the concentration of CO_2 is analyzed. This pressurization of the sample gas stream in the NDIR measures the entirety of the oxidation products of the sample in one reading. The output signal is proportional to the concentration of CO_2, created from the oxidation of the sample, in the carrier gas. The PC workstation uses software to control the sequence of operations, process the detector signal, and report the final concentration of the sample based on linearized, multi-point calibration data (see Document 1)."*

The viability of this detection of TOC in wastewaters has been adapted in Standard Methods for the Examination of Water and Wastewater Method 5310 B. Combustion-Infrared Method E. and by the USEPA SW-846 Method 9060A Total Organic Carbon and, respectively, per Documents 2 and 3.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its plain English meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

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Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his/her designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading of as-received wastes.

The following summarizes this TOC evaluation:

Total Organic Carbon (TOC) Standard Preparation Procedure
To prepare a 1000 mg/L TOC standard:

1. Weigh 2.125g of potassium hydrogen phthalate (previously dried at 105°C [221°F] for 1 hour). [e.g., ppm TOC = (mg KHP – tare wt. filter paper) x 0.4705]

2. Transfer KHP to a 1 liter volumetric flask to which previously had been partially filled with organic free water.

3. Mix until completely dissolved and then make to mark with organic free water.

4. Transfer to a bottle and cap securely. This solution is retained as the standard **TOC Stock Solution**. Prepare a fresh TOC stock solution every 60 days or sooner if reproducibility of analysis is poor or if the concentration of the standard fluctuates.

5. Aliquots of the standard 1000 ppm stock solution are automatically diluted by the TOC instrument's programming software during a calibration run at concentrations of 50, 100, 250, and 500 ppm.

Pre-Analysis Procedure
Prior to powering-up the TOC unit, carefully inspect the instrument. Below details the manufacturer's recommended typical maintenance and operational parameters/requirements (see document 1).

11. Fill the Auto Sampler Rinse Solution Bottle with organic free water. This should be changed weekly.
12. Ensure the Reagent Bottle is filled with a 20% H_3PO_4 solution (18 ml of 85% H_3PO_4 added to 94 ml H_2O).
13. Inspect the Halogen Scrubber for discoloration of the copper, tin & quartz wool packing (see Fig. 1). Poor analytical precision is an indication that the Halogen Scrubber packing may require replacement. Poor precision may also be an indicator requiring platinum catalyst replacement. The Catalyst lifespan typically varies between 6 to 12 months, depending on the sample load.

Fig. 1 – Halogen Scrubber

Fig. 2 – Sample Carousel

14. Ensure the Zero Air secondary regulator pressure is set to 50 psi.
15. Ensure the TOC stock solutions are full and placed in the A/B/C/D carousel locations (see Fig. 2).

SAMPLE ANALYSIS

Analytical Considerations: Use the standard curve generated during a calibration run for measurement of the sample's TOC. Follow the manufacturer's guidelines for programming the sample schedule.

16. Use a new 40ml VOA vial for each sample.
17. Place the calibration standards and the samples in the carousel (see Fig. 2).
18. <Click><START> in the instrument's software to commence analysis.

6.0 Related Documents

1. "Torch User Manual", Teledyne Tekmar – a Teledyne Technologies Company, 4763 Socialville Foster Road, Mason, Ohio 45040, www.teledynetekmar.com, p/n 15 0300 074 Rev. D, August 2010.
2. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" also known as SW-846 Method 9060A: TOTAL ORGANIC CARBON, Revision 1, November 2004.
3. "Standard Methods for the Examination of Water and Wastewater", Method 5310 B. – Combustion-Infrared Method, 19th Edition, 1995.

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STANDARD OPERATING PROCEDURE

Title: FLASH POINT DETERMINATION

Procedure Number: LAB04; Rev. 3 (09/01/2022); Implementation Date: 09/01/2022

1.0 Scope

The scope of this procedure ("SOP") applies to the Flash Point Determination for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this procedure is to determine the substantive method that applies to the Flash Point determination of a waste using a Pensky-Martens Semi-Automatic Closed Cup Flash Point Tester to principally determine if the waste has a flash point less than or greater than or equal to 140^{o}F. The viability of this method to measure the Flash Point of aqueous wastes and those multiphase wastes has been accepted by the USEPA SW-846 Method 1010A and ASTM International Method D 93-02a "Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester", respectively, documents 1 and 2.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its plain English meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline
A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed. The procedure and methodology for the offloading of as-received wastes.

The following summarizes this flash point determination:

1. Check the Flash Point (F.P.) tester on a regular basis using p-Xylene as the Quality Control liquid. When the tester is operating properly, a F.P. of 81 +/- 2^{o}F will be obtained.

Flash Point Determination Procedure

Note: Thoroughly clean and dry all parts of the cup and its accessories before starting the test ensuring all cleaning solvents have been removed.

2. First, fill the cup with the sample.

3. Place the apparatus shutter assembly on the cup unit (see Figures 1 and 2).

4. Ignite the Pilot and the Ignition Source (adjust the flames to approximately ¼ inch).

5. Insert the thermometer and bring the material to be tested and the unit to a temperature of 100+/- 10°F.

6. Supply the heat at such a rate that the temperature as indicated by the thermometer increases 4 to 6°F per minute.

Figure 1. Shutter assembly **Figure 2. Pensky-Martens Closed Cup Tester**

7. Turn the stirrer to the 100 rpm setting.

8. Apply the test flame when the temperature is 140°F. If the sample flashes at 140°F repeat the test and start at a lower temperature until determining the flash point.

   Note: Do not confuse the true flash point with the bluish halo that sometimes surrounds the test flame at applications preceding the one that causes the actual flash.

9. Record as the observed flash point the temperature that is read on the thermometer at the time that the test flame application causes a distinct flash in the interior of the cup. If the sample does not flash, record the flash point as >140°F.

6.0 Related Documents

1. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", specifically, SW-846 "Method 1010A TEST METHODS FOR FLASH POINT BY PENSKY-MARTENS CLOSED CUP TESTER", Revision 1, November 2004.
2. "Method D 93-02a Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester", ASTM International.

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STANDARD OPERATING PROCEDURE

Title: pH DETERMINATION

Procedure Number: LAB05; Rev. 2 (06/10/2022); Implementation Date: 06/10/2022

1.0 Scope

The scope of this procedure ("SOP") applies to the measurement of pH electrometrically or via pH Paper (or pH Strips) for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this procedure is to define the substantive procedure that applies to the measurement of pH electrometrically using a temperature compensated pH probe and a three point calibration curve or by using pH Paper. NIST traceable pH standards 4.00, 7.00, and 10.00 are used to calibrate the pH meter test.

Method 9041A, using pH Paper, may also be used to measure pH as an alternate to Method 9040C. pH paper is not "considered" to be as accurate a form of pH measurement as pH meters. Method 9041A is not applicable to wastes that contain components that may mask or alter the pH paper color change. The "approximate" pH of the waste is determined with wide-range pH paper. A more accurate pH determination can be made using "narrow-range" pH paper whose accuracy has been determined (1) using a series of buffers, or, (2) by comparison with a calibrated pH meter.

The viability of this method to measure the pH of aqueous wastes and those multiphase wastes where the aqueous phase constitutes at least 20% of the total volume of the waste has been accepted from "Standard Methods for the Examination of Water and Wastewater", Method 4500-H B. Electrometric Method and by the USEPA SW-846 Methods 9040C & 9041A, per documents 1, 2, & 3.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The following summarizes this Electrometric pH determination:

1. Following the manufacturer's procedure, calibrate the pH meter using pH 4.00, 7.00, and 10.00 pH reference solutions every day in which pH analysis shall be performed.

2. Place a Teflon magnetic spin bar in a 250 ml beaker. Then, add the sample to the beaker.

3. Rinse the pH probe with deionized water, gently shake off excess water, and place the pH probe into the sample.

4. Record the pH of the sample.

Alternate Procedure using pH Paper

Immerse a pH strip in the waste sample for 30 seconds. Compare the color change of the strip with closest matching colors on the packet of pH-Indicator strips. Record the pH of the sample.

Figures 1 and 2 below depict the color change of pH strips with respect of 4.0, 7.0 and 10.0 buffers.

Figure 1. Color change of the pH strips for, respectively, pH buffers 4.0, 7.0 & 10.0 (left to right) [note: low range chart 0 to 7].

Figure 2. Color change of the pH strips for, respectively, pH buffers 4.0, 7.0 & 10.0 (left to right) [note: high range chart 7 to 14].

6.0 Related Documents

1. "Standard Methods for the Examination of water and Wastewater", pH VALUE: Method 4500-H B. Electrometric Method, 19th Edition, 1995.
2. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", specifically known as SW-846 Method 9040C, Revision 3, November 2004.
3. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" specifically known as SW-846 Method 9041A, Revision 1, July 1992.

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STANDARD OPERATING PROCEDURE

Title: CYANIDES DETERMINATION

Procedure Number: LAB06; Rev. 6 (09/01/22); Implementation Date: 09/01/22

1.0 Scope

The scope of this procedure ("SOP") applies to the measurement of non-complexed cyanide ions potentiometrically or via the Industrial Test Systems, Inc. (ITS) (or equivalent) "Cyanide Reagent Strip™" for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this procedure is to define the substantive procedure that applies to the measurement of non-complexed "free" cyanide ions utilizing ITS "Cyanide Reagent Strip(s)" (Cat. No. 484001/ 484002) or equivalent based upon the reaction of cyanogen chloride with Isonicotinic and Dimethylbarbituric acids forming a blue color on the test strip. This colorimetric reaction yields a semi-quantitative determination of free cyanide ions per document 1.

As an alternate method, a cyanide Ion-selective electrode (ISE) such as the Thermo Scientific (Cat. No. 9606BNWP) ISE or equivalent in the presence of an Ionic Strength Adjuster (ISA) Thermo Scientific (Cat. No. 951011) can be used for measuring free cyanide. The ISA adjusts the pH of the electrode operating range to above pH 10 and also provides a constant ionic strength background for both samples and standards per document 2.

The viability of this detection of cyanide in wastewaters has been specified by the USEPA SW-846 Methods 9213 & 9014 and from the Thermo Scientific Thermo Scientific "User Guide – Cyanide Ion Selective Electrode" for oil and gas field waters Test Document, respectively, per Documents 3, 4 and 5.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its plain English meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his/her designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading of as-received wastes. The following summarizes this cyanide evaluation:

ITS "Cyanide Reagent Strip™"
ITS Test strips for the semi-quantitative determination of CN^- turn blue in the presence of CN^- ions.

1. Add 2 ml (c.a. ½ full test tube) of sample to a 10 x 75 mm test tube.

2. Put Test Strip #1 into the test tube & agitate for 30 seconds.
3. Next, put Test Strip #2 into the test tube & agitate for 30 seconds.

4. Remove the test strip, shake off any excess liquid and compare the reaction zone within 10 seconds to the manufacturers' color chart. A blue color and its intensity indicate the presence and semi-quantitative concentration of cyanide.

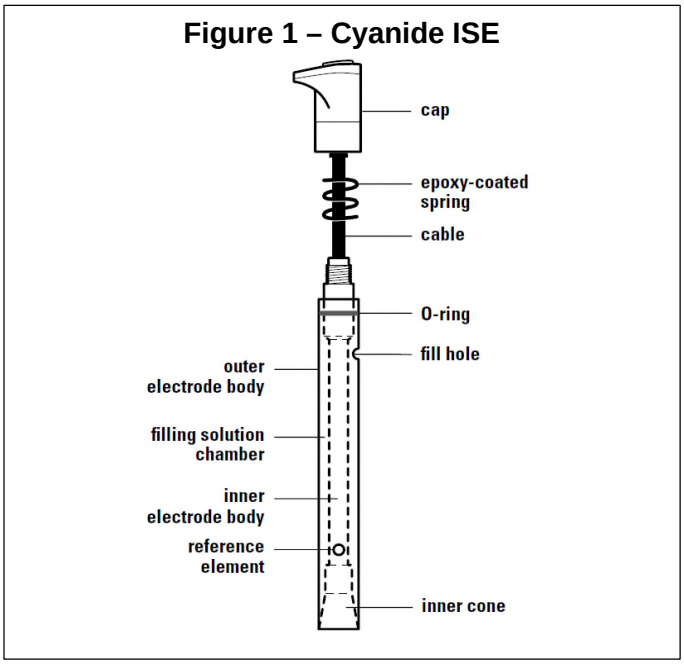
Alternate Procedure using an ISE

Procedure for filling the Ion-selective Electrode (ISE)
To prepare the Cyanide ISE, add a small amount of the reference electrode filling solution (Cat. No. 900062) to the electrodes reference chamber) as detailed below.

1. Invert the electrode to moisten the top O-ring and then return the electrode to the upright position. Hold the electrode body with one hand and push down on the electrode cap to allow a few drops of filling solution to drain out of the electrode.

2. Release the electrode cap. If the sleeve does not return to its original position, check if the O-ring is moist and repeat steps 4 and 5 until the sleeve returns to the original position. Add filling solution to the electrode up to the filling hole (see Figures 1 & 2 below).

Figure 1 – Cyanide ISE



Reference solution filling hole

Figure 2 – Cyanide ISE

Note: Add filling solution daily prior to using the electrode. The filling solution level should be at least one inch above the level of sample in the beaker to ensure a proper flow rate. The fill hole should always be open when taking measurements.

For storage between measurements and up to one week, store the electrode in a 4 M potassium chloride solution. Do not add ISA to the storage solution. The filling solution inside the electrode should not be allowed to evaporate, as crystallization will result. For storage longer than one week, drain the electrode, flush the chamber with distilled water and store the electrode dry with the protective shipping cap covering the sensing element.

Procedure for Preparing the Cyanide Calibration Standard & the Working Standards

Either use a 1000 mg/L CN^- Standard (e.g. 1 mg/ml) or prepare a stock solution as below:

To prepare a 10^{-2} M cyanide Stock standard (e.g. 260 mg/L CN^-) add 0.490 grams of dry, reagent grade NaCN or 0.651 grams of dry, reagent-grade KCN to a 1 liter volumetric flask.

7. Add 10 mL of ISA (e.g. Thermo Orion Cat. No. 951011) and 500 mL of distilled water to the volumetric flask and then, gently swirl the solution to dissolve the solid.

8. Make to 1 L and mix well.

9. Prepare 100 ml each of 26.0, 2.60, & 0.260 mg/L Cyanide standards via serial dilutions using the Stock 260 mg/L Cyanide standard. Note: If using a 1 mg/ml (e.g. 1000 µg/ml) Cyanide solution, pipette respectively 1 and 10 ml of the Cyanide solution, 1 ml of ISA into 100 ml volumetric flasks and make to volume.

Note: 1 ml of 1000 µg/ml CN^- Std. to 100 ml equals 10 ppm & respectively
10 ml of 1000 µg/ml CN- Std. to 100 ml equals 100 ppm CN^-

PROCEDURE FOR MEASURING THE ELECTRODE OPERATION (e.g. slope)

Steps 6 through 11 of this procedure detail the procedure for measuring the electrode slope.

Slope is defined as the change in millivolts observed with every tenfold change in concentration. Obtaining the slope value provides the best means for checking electrode operation.

*Note: Always rinse the electrode with distilled water between measurements and **shake the electrode** to remove the water and prevent sample carryover. **Do not wipe or rub the electrode** sensing element. After immersing the electrode in a solution, check the electrode sensing surface for air bubbles and remove air bubbles by re-immersing the electrode in the solution and gently tapping it. The fill hole cover must be open during measurements to ensure a uniform flow of filling solution.*

6. Place Teflon magnetic spin bars into each into two 150 mL beakers.

7. Connect the electrode to the meter and set to the mV mode.

8. Add 100 mL of the solution prepared in Step 5, into two 150 mL beakers. Stir the solution thoroughly.

9. Rinse the electrode with distilled water and place the electrode into the 1.0 mg/l solution. Stir the solution thoroughly. When a stable reading is displayed, record the electrode potential in millivolts.

10. Next, rinse the electrode with distilled water and place the electrode into the beaker containing the 10 mg/l solution. Stir the solution thoroughly. When a stable reading is displayed, record the electrode potential in millivolts.

11. There should be a -54 to -60 mV difference between the two millivolt readings when the solution temperature is between 20 to 25 °C. {Note: a more negative mv reading is indicative of a higher Cyanide concentration}

Always measure from the least concentrated to the most concentrated Cyanide solution.

SAMPLE ANALYSIS AND CALCULATIONS

Samples and standards should be above pH 10 so cyanide is present as CN^- rather than as HCN. Use of the ISA ensures proper sample and standard pH. In all analytical procedures, ISA must be added to all samples and standards prior to taking measurements.

17. Add 90 mL of distilled water, 10 ml of sample and 1 mL of ISA into a 150 mL beaker. Stir the solution for 10 seconds using a magnetic spin bar and a magnetic stirring unit. When a stable reading is displayed, record the electrode potential in millivolts.

18. Rinse the Cyanide ISE with distilled water, and place the electrode into the solution.

***Note**: Always rinse the electrode with distilled water between measurements and shake the electrode to remove the water and prevent sample carryover. DO NOT WIPE OR RUB THE ELECTRODE sensing element.*

After immersing the electrode in a solution, check the electrode sensing surface for air bubbles and remove air bubbles by reimmersing the electrode in the solution and gently tapping it. The fill hole cover must be open during measurements to ensure a uniform flow of filling solution.

19. The calculations for the Cyanide concentration at a 95% Confidence Limit utilize Nernst Equation (below) via an Excel spreadsheet per Related Document 5.

Calculations using the Nernst Equation:

Slope = $S = (E_1 - E_2)/(\text{Log}_{10}\ C_1 - \text{Log}_{10}\ C_2)$
E_1 = Potential of low standard (mV)
E_2 = Potential of high standard (mV)
E_x = Potential of Sample (mV)
$\Delta E = E_x - E_1$
$[C_1]$= Low std. concentration
$[C_2]$= High std. concentration

Calculated Cyanide Concentration = $[C_x]$

$$[C_x] = C_1 \times 10^{\Delta E/S}$$

6.0 Related Documents

1. Cyanide Reagent Strip™, Industrial Test Solutions, Inc., Rock Hill, SC, Cat. No. 484001/ 484002.
2. User Guide Cyanide Ion Selective Electrode, Thermo Scientific, Doc. 258506-001, Rev. A. 12-08.
3. Method 9213 - Potentiometric Determination of Cyanide in Aqueous Samples and Distillates with Ion-Selective Electrode, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" also known as SW-846, Revision 0, December 1996.
4. Method 9014 – Titrimetric and Manual Spectrophotometric Determinative Methods for Cyanide, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" also known as SW-846, Revision 0, December 1996.
5. "Cyanide Calculations - Excel spreadsheet", Internal document using the Nernst Equation", September 11, 2012.

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STANDARD OPERATING PROCEDURE

Title: SULFIDES DETERMINATION

Procedure Number: LAB07; Rev. 3 (09/01/22); Implementation Date: 09/01/22

1.0 Scope

The scope of this procedure ("SOP") applies to the measurement of the Sulfide ions potentiometrically or via "Industrial Test Systems, Inc. (ITS) Hydrogen Sulfide (e.g., Test Strips)" (or equivalent) for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this procedure is to define the substantive procedure that applies to the measurement of free, non-complexed sulfide ions for the measurement of sulfide via a semi-quantitative colorimetric analysis. This measurement utilizes a lead acetate reaction to form a brown color on the Test Strips (Cat. No. 481197-1) or equivalent per document 1.

As an alternate test method, a sulfide Ion-selective electrode (ISE) (such as the Thermo Scientific Cat. No. 9616BNWP ISE or equivalent) in the presence of a sulfide anti-oxidant buffer SAOB(a), with ascorbic and salicylic acids {e.g. SAOB(b)} added as oxygen scavengers, can be used for measuring sulfides. Sulfide samples must be buffered above pH 12 with SAOB(a) so HS^- and H_2S compounds can be converted to S^{-2} per document 2

The viability of this detection of sulfide in wastewaters has been specified by USEPA SW-846 Method 9215 and from the Thermo Scientific Thermo Scientific "User Guide – Silver/Sulfide Ion Selective Electrode", and the Hydrogen Sulfide Test Strips respectively per Documents 2, 3 and 1.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his/her designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading of as-received wastes

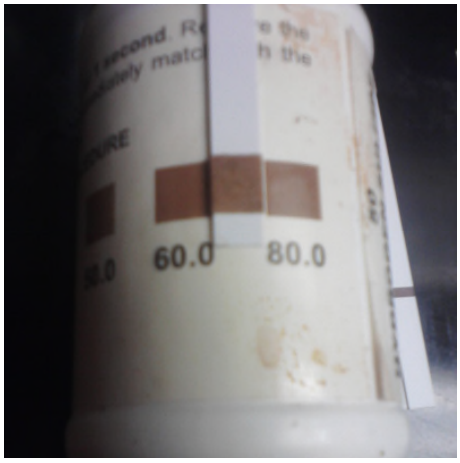
The following summarizes this sulfide evaluation:

Procedure Using Hydrogen Sulfide Test Strips

1. Dip one test strip into the candidate water sample for 1 second.
2. Remove strip and shake once, briskly, to remove excess water.
3. Immediately match with the closest color on the Hydrogen Sulfide Color Chart to determine the level of hydrogen sulfide concentration.
4. Complete the color matching activity within 30 seconds of starting this procedure (see Figures 1 and 2 below).

Figure 1. Four test strips dosed with, respectively, 5, 20, 60 & 600 mg/L Sulfide solution.

Figure 2. Test strip dosed w/ 60 mg/L Sulfide solution. Note: Color chart on test container.



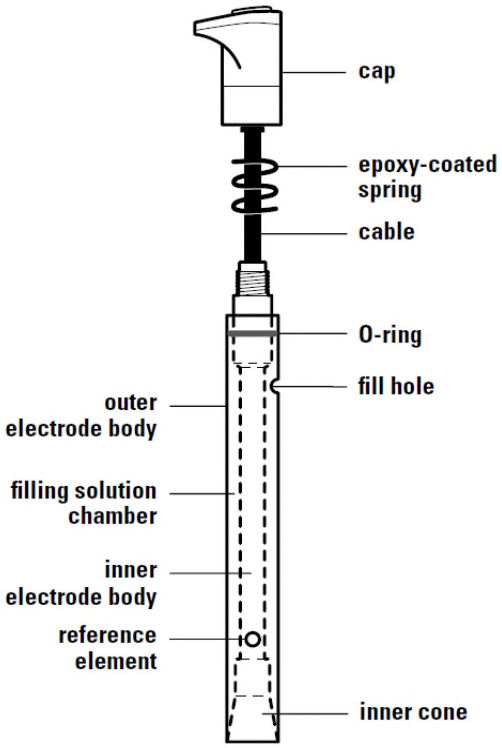
Alternate Procedure using an ISE

Procedure for filling the Ion-selective Electrode (ISE)

To prepare the Sulfide ISE, add a small amount of the reference electrode filling solution (Cat. No. 900062) to the electrodes reference chamber) as detailed in steps 1 and 2.

1. Invert the electrode to moisten the top O-ring and then return the electrode to the upright position. Hold the electrode body with one hand and push down on the electrode cap to allow a few drops of filling solution to drain out of the electrode.
2. Release the electrode cap. If the sleeve does not return to its original position, check if the O-ring is moist and repeat steps 1 and 2 until the sleeve returns to the original position. Add filling solution to the electrode up to the filling hole (see Figures 3 & 4 below).

Figure 3 – Sulfide ISE



Reference solution filling hole

Figure 4 – Sulfide ISE

Note: Add filling solution each day prior to using the electrode. The filling solution level should be at least one inch above the level of sample in the beaker to ensure a proper flow rate. The fill hole should always be open when taking measurements

Procedure for Preparing the Sulfide Calibration Check Standard & the Working Standards

3. Add 1.0 ml of 3% Sodium Sulfide nonahydrate ($Na_2S•9H_2O$) (RICCA Chem. CO #7570-16) Stock Solution to a 100 ml volumetric flask. This is approximately 40 ppm S^{-2}.

Note: Sodium Sulfide solutions are easily oxidized hence a working calibration solution must be made-up & checked daily.

Sulfide Calculations

F.W. $Na_2S•9H2O$ equals 240.18 grams & M.W. S = 32.065
hence 32.065/240.18 = 13.35 % S

Therefore
3% Sol. = c.a. 30,000 µg/ml of the salt = c.a. 4005 µg/ml S^{-2}
1.0 ml 3% Stock Sol./100 ml = 40.05 µg/ml S^{-2}
10.0 ml 3% Stock Sol./100 ml = 400.5 µg/ml S^{-2}

4. The exact concentration will be verified titrimetricaly in step 8.

5. Add 50 mL of SAOB(a) and 2.0 grams of SAOB(b) reagent to a 100ml volumetric flask, then add 1.0 mL of the 3% stock solution and make to volume. Stopper and gently mix. This is approximately 40 ppm S^{-2}. Label as "Daily Sulfide Working Standard".

Procedure for Determining the Concentration of the "Daily Working Standard"

6. Add 50 mL of SAOB(a) and 2.0 grams of SAOB(b) reagent to a 250 ml beaker. Mix until the SAOB(b) is dissolved.

7. Then, add 25 ml of the "Daily Sulfide Working Standard" to this solution.

8. Titrate this solution with a 0.01 M Lead perchlorate standard solution (Thermo Scientific Cat. No. 948206) utilizing the Sulfide ISE as the endpoint indicator. This should require approximate 3.0 ml of the Lead perchlorate solution. The end point will be very sharp changing from approximately -830 mv to -765 mv.

Sulfide "Daily Working Standard" Calculations

$$\mathbf{C_s\ (ppm) = 32{,}060 \times C_t \times (V_t/V_s)}$$
$$\mathbf{= 32060 \times 0.01 \times (V_t/25)}$$
$$\mathbf{= 12.82 \times V_t}$$

Where:

$\mathbf{C_s}$ = concentration, in ppm of daily working sulfide std.
$\mathbf{C_t}$ = titrant concentration (e.g., 0.01 M $Pb(ClO_4)_2$)
Molecular wt. Sulfur = 32.06
$\mathbf{V_t}$ = volume of titrant at endpoint
$\mathbf{V_s}$ = volume of daily working sulfide standard (25 ml)
1M S^{-2} = 32,060 ppm S^{-2}

Conversion Table:
Moles/L (M) to ppm (mg/L) → multiply by 3.206×10^4
ppm (mg/L) to M (moles/L) → multiply by 3.12×10^{-5}

PROCEDURE FOR MEASURING THE ELECTRODE OPERATION (e.g. SLOPE)

Steps 9 through 15 of this procedure detail the procedure for measuring the electrode slope.

Slope is defined as the change in millivolts observed with every tenfold change in concentration. Obtaining the slope value provides the best means for checking electrode operation.

*Note: Always rinse the electrode with distilled water between measurements and **shake the electrode** to remove the water and prevent sample carryover. **Do not wipe or rub the electrode** sensing element. After immersing the electrode in a solution, check the electrode sensing surface for air bubbles and remove air bubbles by re-immersing the electrode in the solution and gently tapping it. The fill hole cover must be open during measurements to ensure a uniform flow of filling solution.*

9. Place Teflon magnetic spin bars into each into two 150 mL beakers.

10. Connect the electrode to the meter and set to the mV mode.

11. Add 2 g of SAOB(b), 50 mL of SAOB(a) reagent, and 50 mL of distilled water and into a 250 mL beaker. Stir the solution thoroughly. Use the "Daily Working Sulfide Standard" in the following steps.

12. Rinse the electrode with distilled water, shake the ISE to remove excess water, and place the electrode into the solution prepared in the previous step.

13. Pipet 1 mL of the Daily Working Sulfide Standard (e.g. **C_s (ppm),** the exact concentration of the sulfide was determined in step 8) into the beaker and stir the solution thoroughly. When a stable reading is displayed, record the electrode potential in millivolts.

14. Next, pipet 10 mL of the same standard into the second beaker and stir the solution thoroughly. When a stable reading is displayed, record the electrode potential in millivolts.

15. There should be a 25 to 30 mV difference between the two millivolt readings when the solution temperature is between 20 to 25 °C when using the Daily prepared Sulfide standards.

Always measure from the least concentrated to the most concentrated sulfide solution.

SAMPLE ANALYSIS AND CALCULATIONS

Sulfide sample concentrations from 0.1 to 1000 mg/L may be measured using this procedure. Samples shall be analyzed immediately after collection.

19. Add 40 mL of distilled deaerated water, 2 g of SAOB(b), and 50 mL of SAOB(a) to a 250 ml beaker. Mix until the SAOB(b) is dissolved. Then add 10 ml of sample.

20. Stir the solution for 10 seconds using a magnetic spin bar and a magnetic stirring unit. Insert the Sulfide ISE and when a stable reading is displayed, record the electrode potential in millivolts.

21. The calculations for the Sulfide concentration at a 95% Confidence Limit utilize Nernst Equation (below) via an Excel spreadsheet per Related Document 6.

Calculations using the Nernst Equation:

Slope = $S = (E_1 - E_2)/(\text{Log}_{10} C_1 - \text{Log}_{10} C_2)$
E_1 = Potential of low standard (mV)
E_2 = Potential of high standard (mV)
E_x = Potential of Sample (mV)
$\Delta E = E_x - E_1$
$[C_1]$= Low std. concentration
$[C_2]$= High std. concentration
DF = Dilution Factor (ex. w/ 10 ml sample →diluted to 100 ml DF = 10

Calculated Sulfide Concentration = [Cs]

$$[C_s] = C_1 \times 10^{\Delta E/S} \times DF$$

6.0 Related Documents

1. "Hydrogen Sulfide", www.sensafe.com/481197-1.php , Industrial Test Systems, Inc., Rock Hill, SC.
2. User Guide Silver/Sulfide Ion Selective Electrode, Thermo Scientific, Doc. 254821-001 Rev. A.
3. Method 9215 - Potentiometric Determination of Sulfide in Aqueous Samples with Ion-Selective Electrode, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" also known as SW-846, Revision 0, December 1996.
4. "Sulfide Calculations - Excel spreadsheet", Internal document using the Nernst Equation", September 11, 2012.

Document Revision History:
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Document Author: James D. Hawkins

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3	Various	Typos; Update/TNOD II [MMD – 8/9/22 Notification]	09/01/22

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STANDARD OPERATING PROCEDURE

Title: SPECIFIC GRAVITY DETERMINATION

Procedure Number: LAB08; Rev. 3 (09/01/22); Implementation Date: 09/01/22

1.0 Scope

The scope of this procedure ("SOP") applies to the Specific Gravity (S.G.) Determination from industrial wastewater for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this procedure is to determine the substantive method that applies to the Specific Gravity determination of the waste using manufactured, calibrated hydrometers. The viability of this method to measure the Specific Gravity of aqueous wastes and those multiphase wastes has been accepted by ASTM International, "D5057-10 Standard Test Method for Screening Apparent Specific Gravity and Bulk Density of Waste, 2010" per documents 3.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading. The following summarizes this specific gravity determination:

1. Using a hydrometer calibrated for light liquids (e.g., S.G. Range between 0.700 through 2.000), check the Specific Gravity of tap water monthly (see Figure 1.). A hydrometer reading of 0.99 indicates that the device is correctly calibrated. Inspect the hydrometer for cracks or chips that might affect the accuracy of the device. If the device is damaged, replace the hydrometer.

Figure 1. Close-up of a hydrometer scale

Specific Gravity Procedure

2. Pour the sample into a 250 ml graduate cylinder, then carefully place the hydrometer into the sample ensuring the hydrometer is floating (e.g., not touching the bottom or side of the graduate cylinder).

3. Read the sample's S.G. from the bottom of the meniscus on the corresponding hydrometer Specific Gravity scale. Then, measure the temperature of the sample.

4. Record both the Specific Gravity and the respective temperature of the sample.

6.0 Related Documents

1. "D5057-10 Standard Test Method for Screening Apparent Specific Gravity and Bulk Density of Waste, 2010", ASTM International.

Document Revision History:

Revision: 1 **Date of Last Revision: 09/01/22** **Last Approval Date: 09/01/22**

Document Author: James D. Hawkins

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STANDARD OPERATING PROCEDURE

Title: PHYSICAL DESCRIPTION DETERMINATION

Procedure Number: LAB09; Rev. 3 (09/01/22); Implementation Date: 09/01/22

1.0 Scope

The scope of this procedure ("SOP") applies to the Physical Description Determination for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this determination is to define the substantive procedure(s) that applies to determining the general physical appearance of the sample using terms that describe its visible characteristics. These terms may state the presence of color, turbidity, suspended solids, sediment, and similar particulate material detectable by the unaided eye using numeric values (e.g. as for total and suspended solids).

Using standard colors (see Table 1.) and other observations with respect to the consistency of the Waste Stream, these characteristics shall be recorded on an appropriate form. Obvious consistency observations such as distinct waste stream color changes during the off-loading process will be documented.

The viability of this method to describe the Physical Appearance of aqueous wastes and those multiphase wastes has been specified by "Standard Methods for the Examination of Water and Wastewater", Appearance - Method 2110 Laboratory and Field Methods, respectively per documents 1 and 2.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading of as-received wastes follows. The following summarizes this Physical Description Determination:

1. Following the guidelines in Table 1, record the color and stream consistency of the sample. Note: If the waste stream has a distinct color change such as from black to red, this observation will be noted.

Table 1. Standard Color, Clarity and Stream Consistency.

Color	Clarity	Stream Consistency
Amber	Clear	Uniform
Black	Cloudy	Non-Uniform
Blue	Opaque	
Brown		
Colorless		
Cream		
Gray		
Green		
Multiple		
Orange		
Pink		
Purple		
Red		
Silver		
Tan		
White		
Yellow		

Related Documents

1. "Standard Methods for the Examination of Water and Wastewater", Visual Comparison Method (e.g. Color): Method 2120 B. Laboratory and Field Methods, 19th Edition, 1995 (Application Note: Method 2120 B. is not applicable to most highly colored wastewaters).
2. "Standard Methods for the Examination of Water and Wastewater", Appearance: Method 2110. Laboratory and Field Methods, 19th Edition, 1995.

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STANDARD OPERATING PROCEDURE

Title: STREAM CONSISTENCY DETERMINATION

Procedure Number: LAB10; Rev. 3 (09/01/22); Implementation Date: 09/01/22

1.0 Scope

The scope of this procedure ("SOP") applies to the Stream Consistency Description for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this determination is to define the substantive procedure that applies to determining the stream consistency of the sample using terms that describe its visible characteristics. These terms may state the presence of color, turbidity, suspended solids, sediment, and similar particulate material detectable by the unaided eye.

Obvious consistency observations such as distinct waste stream color changes during the off-loading process will be documented. If the waste stream is consistent (uniform) this will be indicated in the in this procedure as "yes" and any inconsistency (non-uniformity) will be indicated as a "no".

The viability of this method to describe the Stream Consistency of aqueous wastes and those multiphase wastes has been specified by "Standard Methods for the Examination of Water and Wastewater", Appearance - Method 2110 Laboratory and Field Methods, respectively per documents 1 and 2.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

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Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred.

Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading of wastes follows. The following summarizes this Stream Consistency Determination:

1. Record the stream consistency of the sample. Note: If the waste stream has a distinct color change such as from black to red, this observation will be noted.

Related Documents

1. "Standard Methods for the Examination of Water and Wastewater", Visual Comparison Method (e.g. Color): Method 2120 B. Laboratory and Field Methods, 19th Edition, 1995 (Application Note: Method 2120 B. is not applicable to most highly colored wastewaters).
2. "Standard Methods for the Examination of Water and Wastewater", Appearance: Method 2110. Laboratory and Field Methods, 19th Edition, 1995.

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STANDARD OPERATING PROCEDURE

Title: Oily Material Transfer (e.g., Oil in sample)

Procedure Number: Lab11; Rev. 3 (09/01/22); Implmnt. Date: 09/01/22)

1.0 Scope

The scope of this procedure ("SOP") applies to the transfer of oily wastes (aka "Oily Wastewater(s)", "Oily Material", "Incompatibles", or "Non-compatibles") from a transport vehicle to a Receiving Tank ("RT"), and, from a RT to a Primary Settling Tank ("PST") at {at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility")}.

2.0 Objective

The objective of this procedure is to define the substantive procedure that applies to the identification and actual processing of various oily wastes from RT-10 into PST-1 at the RIES commercial hazardous waste management ("HWM") Facility.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any designees of the Treatment Operator.

Manager, Environmental, Health and Safety: Responsible for providing specific environmental & other guidance to the General Manager, Deepwell Operator, Treatment Operator &/or designees to preclude an environmental incident (i.e., death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and those activities specified in the facility's Waste Analysis Plan ("WAP").

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline
A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the identification and in-plant processing of an Oily Waste is as follows:

1. The Treatment Operator acquires a representative sample of the as-received candidate waste stream and takes it to the Laboratory.
2. The aforementioned sample is allowed to sit quiescent for six (6) minutes in the Laboratory.
3. A Laboratory person observes the quiescent sample after the six minutes without having moved it during the six-minute period.
4. If there is an observable {i.e., at least one (1%) percent} layer atop the quiescent sample, the waste shipment is now classified as a waste with oil in it.
5. If there is no observable layer atop the quiescent sample, then the material is not an oily waste.
6. The Treatment Operator dedicates the oily waste to RT-10 and any waste in that RT-10 is deemed an oily waste.

6.0 Related Documents

1. RIES Waste Analysis Plan (current revision).

Document Revision History:

Revision: 3 **Date of Last Revision:** 09/01/22 **Last Approval Date:** 09/01/22

Document Author: James Hawkins

Reason for Change: Consistency of Titles, and with other SOPs

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0	N/A	Initial Issue of Document	03/18/10
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STANDARD OPERATING PROCEDURE

Title: TEMPERATURE DETERMINATION

Procedure Number: LAB12; Rev. 3 (09/01/22); Implementation Date: 09/01/22

1.0 Scope

The scope of this procedure ("SOP") applies to the Temperature Determination for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this determination is to define the substantive procedure that apples to the Temperature of the Waste Stream. Temperature measurements will be made with any good grade of mercury-filled, alcohol-filled, dial type thermometer, or thermistor.

The viability of this method to measure the temperature of aqueous wastes and those multiphase wastes has been specified from "Standard Methods for the Examination of Water and Wastewater", Temperature - Method 2550 B. Temperature: Laboratory and Field Methods and by the USEPA SW-846 Method 170.1, respectively per documents 1and 2.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading of wastes follows. The following summarizes the Temperature Determination:

1. Read the thermometer and then record the sample Temperature.

6.0 Related Documents

1. "Standard Methods for the Examination of Water and Wastewater", Temperature: Method 2550 B. Laboratory and Field Methods, 19th Edition, 1995.
2. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" also known as SW-846 Method 170.1, Approved for NPDES, Issued 1974.

Document Revision History:

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Document Author: James D. Hawkins

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STANDARD OPERATING PROCEDURE

Title: CONDUCTIVITY DETERMINATION

Procedure Number: LAB13; Rev. 3 (09/01/22); Implementation Date: 09/01/22

1.0 Scope

The scope of this procedure ("SOP") applies to the measurement of Conductivity for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this procedure is to define the substantive procedure that applies to the measurement of Conductivity using a self-contained conductivity/resistivity meter (Wheatstone bridge-type or equivalent) utilizing a temperature correcting routine compensated to 25ºC. Conductivity is measured in Siemens (e.g. S) and 1 μmho = 1 μS. It should be noted that conductivity (μS/cm) and resistivity (ohm-cm) and are the reciprocal of each other (e.g. Conductance = 1/Resistance → 1 μS/cm = 1,000,000 ohm-cm). The measurement of the conductivity of wastes are excerpted from "Standard Methods for the Examination of Water and Wastewater", Method 2510 B. The Method is also specified by the USEPA per SW-846 Method 9050A per documents 1 and 2.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline
A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading of waste. The following summarizes this Conductivity determination:

Procedure for Calibration and Standardization

1. The instrument probe shall be rinsed with deionized or distilled water having a conductivity of less than 1 µS/cm.

2. Calibrate the meter on a regular basis or at least monthly. To do this, use a 111.8 mS/cm conductivity calibration solution. The specific conductance of the standard shall be 111.8 mS/cm at 77^{o}F.

3. If the calibration reading exceeds 15% of the standard calibration solution range, adjust the conductivity meter until the reading matches the respective value vs. ambient temperature per the manufacturer's correction table. The table is usually located on the side of the calibration solution container.

4. Add the sample to a 250 ml beaker and measure the conductivity of the sample.

5. Record the conductivity analysis in mS/cm.

Related Documents

1. "Standard Methods for the Examination of water and Wastewater", Method 2510 B. Laboratory Method, 19th Edition, 1995.
2. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", specifically, SW-846 Method 9050A, Revision 1, December 1996.

Document Revision History:

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Document Author: James D. Hawkins

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STANDARD OPERATING PROCEDURE

Title: PERCENT SOLIDS DETERMINATION

Procedure Number: LAB14; Rev. 3 (09/01/22); Implementation Date: 09/01/22

1.0 Scope

The scope of this procedure ("SOP") applies to the measurement of TDS (e.g., Total Dissolved Solids [% Solids]) for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this procedure is to define the substantive procedure that applies to the measurement of TDS via gravimetric analysis. The procedure entails weighing approximately one ml of a well-mixed sample to an accuracy of +/- 0.001 gram, gently heating the sample using a heat source, subsequently volatizing the aqueous portion of the sample to remove mechanically occluded water. The dish containing the residue is then weighed. The %TDS is calculated as the difference between the initial weight of the sample and the residue.

Total dissolved solids are a measure of the dissolved matter in an aqueous sample that remains after all the water has been evaporated.

The viability of this method to describe the TDS of aqueous wastes and those multiphase wastes has been specified by "Standard Methods for the Examination of Water and Wastewater", 23rd edition Method 2540 C Laboratory and Field Methods, respectively per documents 1 and 2.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred.

Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading of as-received wastes. The following summarizes this TDS determination:

Procedure for TDS Determination

1. Weigh an empty, dry, and clean suitable dish (Aluminum Pan / Stainless Steel Crucible / Porcelain Crucible) to +/- 0.001 grams. Record the weight of the dish.

2. Add approximately one ml of sample using a transfer pipette to the dish. Again, record of the total weight of the dish & sample.
3. Evaporate the sample on a hot plate or suitable heat source to visible dryness.
4. Remove the sample from the heat source and let cool.
5. Record the weight of Dish containing residue.
6. Calculate the weight change between the initial weight of the sample and the final residue.
7. Record this weight as %TDS.

Calculate the concentration of total dissolved solids as % TDS %TDS = Residue Wt. x 100 / Sample Wt. Report as " % Total Dissolved Solids (TDS)"

6.0 Related Documents

1. "Standard Methods for the Examination of water and Wastewater", Method 2540 C. Laboratory Method, 23rd Edition.
2. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" also known as SW-846 Method 9050A, Revision 1, December 1996.

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STANDARD OPERATING PROCEDURE

Title: TURBIDITY DETERMINATION

Procedure Number: LAB15; Rev. 3 (09/01/22); Implementation Date: 09/01/22

1.0 Scope

The scope of this procedure ("SOP") applies to the measurement of Turbidity as a visual observation or via Nephelometrically for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

Turbidity is an expression of the optical property that causes light to be scattered and absorbed rather than transmitted with no change in direction or flux level through the sample. The objective of this procedure is to define the substantive procedure that applies to the measurement of Turbidity:

The waste stream's Turbidity will be determined visually. If the sample is clear (e.g., "water white"), Turbidity will be recorded as "No" (e.g., not turbid). If the sample is not clear or cloudy, Turbidity will be recorded as "Yes", (e.g. turbid).

As an alternate method, the waste stream Turbidity can be determined nephelometrically, using a Single-beam, grating-based, single detector spectrophotometer with a tungsten-halogen lamp (e.g. GENESYS® 10 Vis) or equivalent. Orion AQUAfast II Turbidity Standards (Cat. Orion AC201S) 1, 10, 100, and 1000 NTUs (e.g. Nephelometric turbidity units) measured at 600 nm will be used for this determination.

The viability of this method to measure the Turbidity of aqueous wastes and those multiphase wastes has been specified by the USEPA Method 180.1 and from Standard Methods for the Examination of Water and Wastewater, "Method 2130 B. Nephelometric Method" respectively documents 1 and 2.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the EGT General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading of as-received wastes follows. The following summarizes this Turbidity determination:

Turbidity Determination

The waste stream Turbidity will be determined visually. If the sample is clear (e.g., "water white"), Turbidity will be recorded as "No" (e.g., not turbid). If the sample is not clear or cloudy, Turbidity will be recorded as "Yes", (e.g. turbid).

Alternate Turbidity Determination

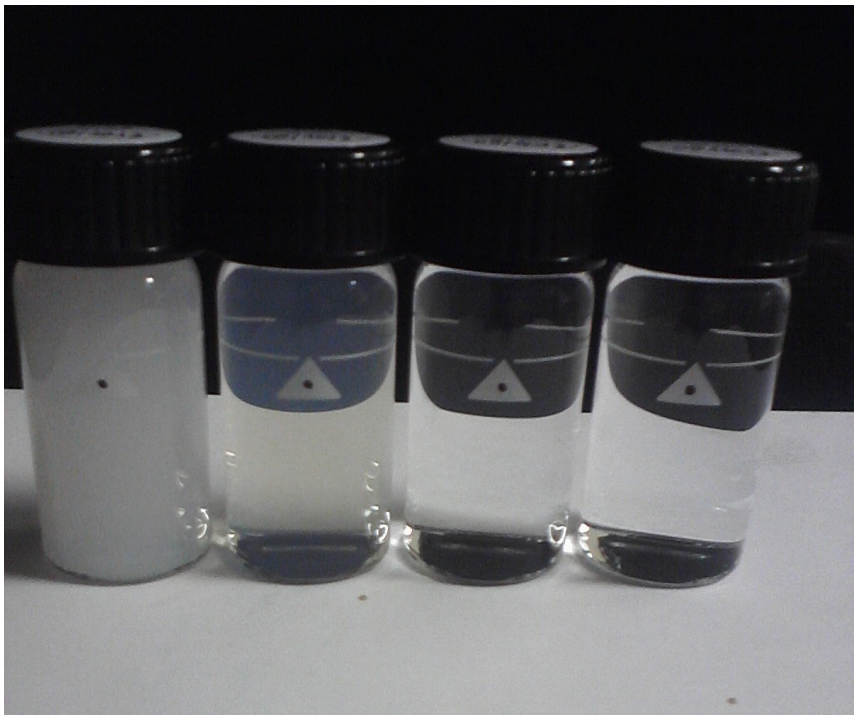
The following summarizes the Nephelometric Turbidity determination:

1. Power up the spectrometer, let the unit warm up for 5 minutes then, set the wavelength of the instrument to 600 nm.

2. Zero the instrument using bubble free water.

3. Then, insert respectively, each of the four Turbidity standards (e.g. 1 / 10 / 100 / 1000 NTUs) and record their absorbances (see Figure 1). This shall be performed every day which Turbidity determinations are made.

Figure 1. Turbidity Standards: Respectively 1000 / 100 / 10 and 1 NTUs (left to right).



4. Mix the sample to thoroughly disperse the solids. Wait until air bubbles disappear then pour the sample into the turbidity tube.

5. Read the turbidity directly from the instrument then, record the turbidity per Table 1.

   Note: For Turbidities exceeding 40 units, dilute the sample with one or more volumes of turbidity-free water until the turbidity falls below 40 units. The turbidity of the original sample is then computed from the turbidity of the diluted sample and the dilution factor. Record the results per Table 1.

Table 1. Report results as follows:

NTU	Record to Nearest
0.0 – 1.0	0.05
1.1-39	0.1
40-100	5
101-400	10
401-1000	50
> 1000	100

5. The calculations for the Turbidity determination concentration utilize Linear Regression via an Excel spreadsheet per Related Document 5.

6.0 Related Documents

1. "Method 180.1: Determination of Turbidity by Nephelometry", specifically, USEPA Revision 2.0, August 1993.
2. "Standard Methods for the Examination of Water and Wastewater", "Method 2130 B. Nephelometric Method", 19th Edition, 1995.
3. "Turbidity Calculations - Excel spreadsheet", Internal document using Linear Regression", September 19, 2012.

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STANDARD OPERATING PROCEDURE

Title: COLOR DETERMINATION

Procedure Number: LAB16; Rev. 3 (09/01/22); Implementation Date: 09/01/22

1.0 Scope

The scope of this procedure ("SOP") applies to the Color Description Determination for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this determination is to define the substantive procedure(s) that applies to determining the general physical appearance of the sample using terms that describe its visible characteristics. These terms may state the presence of color, turbidity, suspended solids, sediment, and similar particulate material detectable by the unaided eye using numeric values (e.g. as for total and suspended solids).

Using standard colors (see Table 1.) and other observations with respect to the consistency of the Waste Stream, these characteristics shall be recorded on an appropriate form. Obvious consistency observations such as distinct waste stream color changes during the off-loading process will be documented.

The viability of this method to describe the Physical Appearance of aqueous wastes and those multiphase wastes has been specified by "Standard Methods for the Examination of Water and Wastewater", Appearance - Method 2110 Laboratory and Field Methods, respectively per documents 1 and 2.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading of as-received wastes. The following summarizes this Color Description Determination:

1. Following the guidelines in Table 1, record the color and stream consistency of the sample. Note: If the waste stream has a distinct color change such as from black to red, this observation will be noted.

Table 1. Standard Color, Clarity and Stream Consistency.

Color	Clarity	Stream Consistency
Amber	Clear	Uniform
Black	Cloudy	Non-Uniform
Blue	Opaque	
Brown		
Colorless		
Cream		
Gray		
Green		
Multiple		
Orange		
Pink		
Purple		
Red		
Silver		
Tan		
White		
Yellow		

Related Documents

1. "Standard Methods for the Examination of Water and Wastewater", Visual Comparison Method (e.g. Color): Method 2120 B. Laboratory and Field Methods, 19th Edition, 1995 (Application Note: Method 2120 B. is not applicable to most highly colored wastewaters).
2. "Standard Methods for the Examination of Water and Wastewater", Appearance: Method 2110. Laboratory and Field Methods, 19th Edition, 1995.

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STANDARD OPERATING PROCEDURE

Title: PERCENT TOTAL SUSPENDED SOLIDS DETERMINATION

Procedure Number: LAB17; Rev. 3 (09/01/22); Implementation Date: 09/01/22

1.0 Scope

The scope of this procedure ("SOP") applies to the determination of Percent Total Suspended Solids (e.g., % TSS) for a candidate waste stream off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

Solids refer to matter suspended, floating, settled or dissolved in water or wastewater. "Total Solids" is the term applied to the material residue left in the test vessel after evaporation of a sample and its subsequent drying in an oven at a defined temperature. Total solids includes, total % floating solids plus total % settled solids plus "total suspended solids," the portion of total solids retained by a filter, and "total dissolved solids," the portion that passes through the filter. "Settleable or settled solids", is the term applied to the material settling out of suspension within a defined period.

The objective of this procedure is to define a substantive procedure that applies to the rapid determination of Percent Total Suspended Solids using a Fisher Scientific Model 225 (or equivalent) Benchtop Centrifuge operating at approximately 2500 RPM for one minute. The sample shall be visually compared to a series of eleven (e.g. 10.0%, 8.5%, 6.0%, 4.0%, 2.0%, 1.5%, 1.0%, 0.50%, 0.40%, 0.20%, and 0.10%) w/v EGT Laboratory-Prepared Percent TSS Standards.

The viability of this method to measure the %TSS of aqueous wastes is adapted from Standard Methods for the Examination of Water and Wastewater, "Method 2540 F. Settleable Solids" per document 1.

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and, those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the EGT General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading of as-received wastes. The following summarizes this these Percent Total Suspended Solids Determinations:

Percent Total Suspended Solids Determination

1. Mix sample thoroughly by gently inverting the sample jar six times and then, quickly pour 50 ml of the sample into a poly centrifuge tube (VWR Cat. No. 21008-940 or equivalent).
2. Place each tube in opposite tube holders in the centrifuge. Then, set the centrifuge speed to 50% (e.g. approximately 2500 RPM) and centrifuge the tubes for 1 minute.
3. Remove the tube from the centrifuge and visually compare the level of solids to the reference standards (see Figures 1 and 2 below).

4. Record the observations.

Figure 1. 4.0% – 0.10% Total Suspended Solids

Figure 2. 10% - 0.50% Total Suspended Solids

6.0 Related Documents

1. "Standard Methods for the Examination of Water and Wastewater", "Method 2540 F. Settleable Solids", 19th Edition, 1995.

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STANDARD OPERATING PROCEDURE

Title: RADIATION DETERMINATION

Procedure Number: LAB18; Rev. 3 (09/01/22); Implementation Date: 09/01/22

1.0 Scope

The scope of this procedure ("SOP") applies to the Radiation Determination Screening for a candidate waste stream for off-loading of as-received wastes at Republic Industrial & Energy Solutions, LLC, Romulus, MI ("RIES" or "Facility").

2.0 Objective

The objective of this procedure is to define the substantive procedure that applies to the screening for Radiation using a hand-held portable survey meter. A radioactive material is defined as: "any material having a specific activity greater than 70 Becquerel (e.g., Bq) per gram." One (1) Becquerel is defined as one (1) disintegration per second. One (1) µ Sievert/hr (e.g., (µSv/hr) is equivalent (by definition) to 76.9 Bq.

Using a tube filled with an inert gas, a survey meter works by counting electrical pulses. This occurs when ionizing radiation interacts with the gas, causing it to become conductive. This creates a cascade effect where all the gas becomes briefly ionized, and is "collected" to the sides of the tube, creating one "pulse" after which the gas returns to its normal state until the next particle or photon of radiation hits it.

Using a Monitor 200, S.E. International, Inc., Survey Meter (or equivalent) {which will be calibrated annually by the instrument manufacturer to NIST Standards relative to Cesium 137}, that instantly indicates the presence of Alpha, Beta, Gamma and X-Ray radiation from a digital display, a red count light, and a beeper that sounds with each count detected. The calibrated meter is typically accurate to ±15 percent of reading relative to Cs137. The minimum operating range for this meter is 1µR/hr (which exceeds the EGLE requirement of 5µR/hr).

3.0 Definitions

Except where a term is expressly defined in this SOP, definitions used throughout this SOP are principally those specified in the hazardous waste management laws & regulations of the U.S. Environmental Protection Agency ("EPA") &/or the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). Where a definition is not found in either of those referenced sources, the definition has its common meaning. As a point of clarification, the Systeme International (SI) unit for radioactivity is the Becquerel (Bq), and is defined as one nuclear transformation per second.

4.0 Responsibilities

General Manager: Responsible for allocating sufficient human resources, specialized skills, technology, and financial resources to support the commercial HWM facility's successful operation.

Deepwell Operator: Responsible for successfully operating both onsite deepwells and associated equipment once successful treatment of each waste stream for pH and solids content has occurred. Also communicates and interfaces with Treatment Operator &/or General Manager to assure that PST ("Primary Settling Tank") supernatant liquid is acceptable for entry into the SST ("Secondary Storage Tank"), and, for deepwell injection.

Treatment Operator: Responsible for successfully operating the aboveground commercial HWM facility especially for assuring, in communication with Deepwell Operator, that treated supernatant liquid waste(s) in a PST are acceptable for entry into the SST (& subsequent deepwell injection). The term "Treatment Operator" includes any Operator Assistant(s).

Operator Assistant: Responsible for executing the directives of the Treatment Operator.

Supervisor of Environmental Compliance, Health and Safety, and Quality Control: Responsible for providing specific environmental & other guidance to General Manager, Deepwell Operator, Treatment Operator & Operator Assistant(s) to preclude an environmental incident (i.e. death, dismemberment, Class I violation &/or community evacuation) while successful operation of the commercial HWM facility occurs. Also responsible for reporting the environmental performance of the Facility to the General Manager, while maintaining this and all other SOPs of the Facility.

Laboratory Manager: Responsible for the day-to-day activities of the Laboratory in support of the successful daily operations of the aboveground commercial HWM facility including all Storage, Treatment and Disposal activities, and those activities specified in the facility's Waste Analysis Plan ("WAP").

Laboratory Assistant: Responsible for conducting the analyses specified in the facility's WAP under the direction of the Laboratory Supervisor.

All Other Employees: Responsible for following the directives of the RIES General Manager and his designees.

5.0 Methodology

Sampling/Analytical Criteria Timeline

A representative sample will be taken from bulk tanker loads immediately upon tanker arrival in the Offloading area of the facility by operations personnel. Fingerprint analysis will be conducted after the sample is brought into the Laboratory. Fingerprint analysis typically commences in less than 5 minutes after the Laboratory receives the sample. It should be noted that bulk tanker loads will not be offloaded to the Facility until Fingerprint analysis is completed and approved.

In the unlikely event that a fingerprint sample is not analyzed within a 24-hour period the existing sample will be disposed of and the waste load will be resampled so that representative fingerprint analyses can be performed.

The procedure and methodology for the offloading of as-received wastes. The following summarizes this Radiation Screening Determination:

Pre-Survey Functional Procedure
Functional tests will be performed daily prior to using the Survey Meter. These functional tests include: general instrument condition, battery condition, and background radiation check (see Attachment A – Weekly Laboratory QA Summary Form).

Note: All radiation detection instruments have a background response, even in the absence of a sample or radiation source.

1. First inspect the instrument for evidence of physical damage.

2. Then, press the button on the front of the unit to check for proper battery charge and the presence of background radiation (see Figure 1.). A correctly functioning unit will respond by LED meter readings, a red light on the unit will pulse, and the unit will beep.

3. As part of the weekly background radiation check, this information will be recorded on Attachment A – Weekly Laboratory QA Summary Form (reference: Radiation Determination). The background check will be the cumulative (average) radiation counts over a 60 second time period.

Scanning Procedure
Follow these steps to check for the presence of radioactivity in a sample:
Note: Ensure the detector active area faces the sample

4. As soon as a sample is taken, with the lid removed from the sample container, pass and hold the Survey Meter close to the top of the jar to obtain the cumulative (average) radiation counts over a 60 second time period.

    a. If there are no meter counts greater than double the background radiation count (per Step 4), record that the Radiation Screen sample scans Negative (or Neg.) for radiation on the Fingerprint Form Radiation Screen section. Then, the sample can be handled without regard to its radiological components and no additional action is required.

    b. If there are meter counts double the background radiation count (per Step 4), record the Radiation Screen sample scans as Positive (or Pos.) for radiation Then, sequester the load, notify the department of elevated radiation levels detected, proceed with laboratory analysis to determine radionuclide identification and concentration. Once analysis is complete, share the results with the department for additional guidance on disposal requirements or recommendations.

Figure 1. – Model 200 Hand-held "Survey Meter".

6.0 Related Documents

1. "Quick Start Guide – Radiation Alert™ Monitor 200", S.E. International, P.O. Box 39, 436 Farm Rd., Summertown, TN 38483 USA. www.seintl.com .

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Attachment 2

Inspection Requirements

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, and 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

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 (in a deep well) 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 (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, process alarms, and emergency egress 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.

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 A5-1

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, including trench and vault structures	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 labelling:	
	Tanker Off-loading Containment 1 – 6	
	RT (1 – 8,10) Labelled? 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) Labelled? Y/N	
	ST (1 and 2) Labelled? Y/N	
	SST Labelled? Y/N	
	Acid/Base Product Tanks Labelled? 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**
	Gatehouse, 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 labelled?	
	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 labelled?	
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, Gatehouse, 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?	
	Emergency coordinator phone numbers and addresses up-to-date?	
	All other emergency phone numbers up to date?	
Emergency Access Easement	Are gates 4 and 5 locked and secured? Are the pad locks “open” functional?	
	Is gate 6 locked and secured? Is the pad lock “open” functional?	
	Is the entire access free of obstacles like tractors, trailers, cars, equipment so that travel can occur across the entire easement?	

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**
	Is the easement pavement stripping and marking clear and legible?	
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 present?	
	Are there signs of damage or non-functionality?	
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 1lb container citric acid powder 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 labelled?	( )	_____	( )
Are Reagent tanks properly labelled?	( )	_____	( )
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.

	RT-1	RT-2	RT-3	RT-4	RT-5	RT-6	RT-7	RT-8	RT-10	PST-1	PST-2	PST-3

Tank I.D.

	PST-4	PST-5	PST-6	SST	ST-1	ST-2							

Observation of Non-acceptability: _____
_____
_____
_____

Remedial Action and Completion date: _____
_____
_____

Attachment 3

Personnel Training

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 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

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
Deepwell Operator*	• Supervise and/or perform all deepwell operations	High school diploma 40-Hour HAZWOPER Training (29 CFR 1910.120). Applicable Republic Training 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		
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. • Supervises the collection of 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

TABLE A10.B.1 JOB TITLES/DESCRIPTIONS		
Title	**Duties**	**Minimum Skills/Education**
Environmental Compliance Specialist	• Oversees handling of hazardous waste as defined by federal, state, and local regulations. • Waste stream approvals and coordinating waste receiving. • Prepare outgoing wastes for off-site shipment, including completion of accompanying manifest paperwork. • Ensures continued compliance with environmental monitoring plan air, soil, and water. • Oversees environmental reporting and compliance task tracking. • Supervise manifesting of waste regarding acceptability of shipments and the logging of required information.	Bachelor's Degree in science, engineering, or related field 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.

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
Plant Staff- None at this time
Laboratory Manager- Jim Hawkins
Training Director- Phil Tannian

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

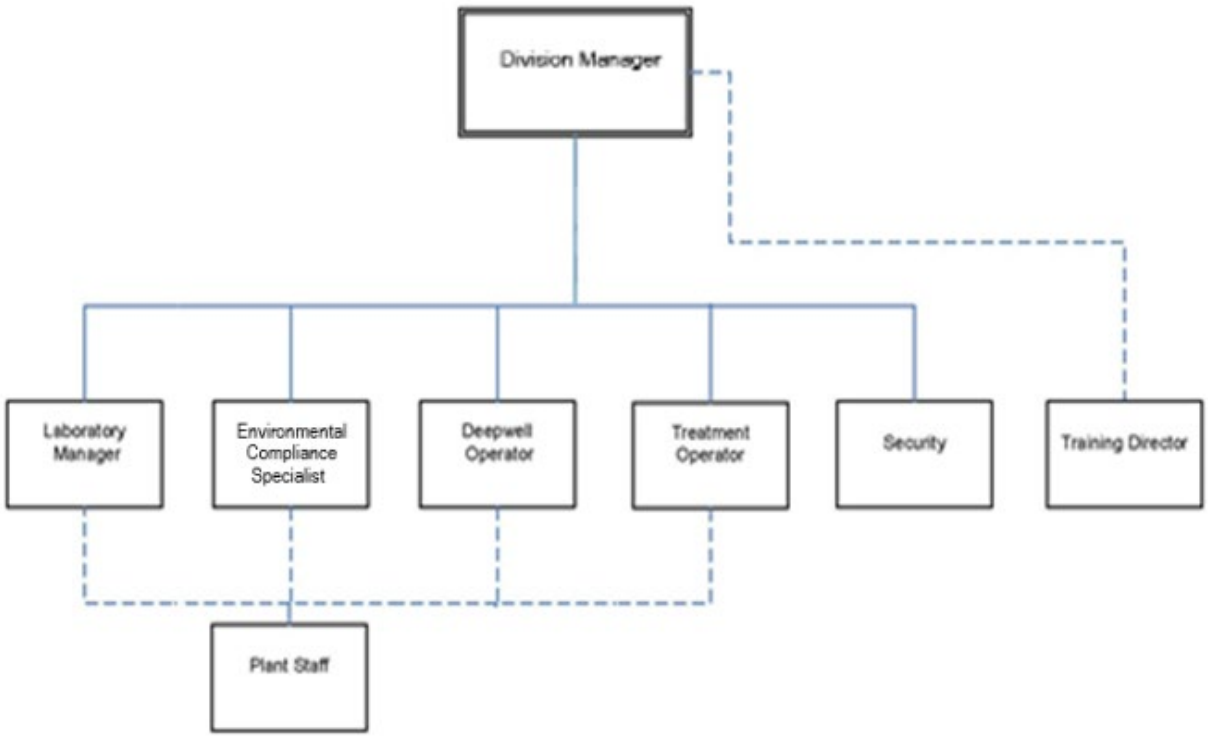
[R 299.9605 and 40 CFR §264.16(e)]

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

Appendix A10-1

Facility Organization Chart

Republic Industrial and Energy Solutions, LLC



Attachment 4

Contingency Plan

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

[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
- EGLE

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 gatehouse. 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	U404 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 10 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 ("EC") 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 EC'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

Priority	Name	Address	Work Phone	Cell Phone
Primary Coordinator	**John Frost**	**11290 Glenn Rd. Grass Lake, MI 49240**	**734-664-3394**	**734 693-2870**
First Alternate Coordinator	**Mike Alderman**	**4979 Hunt St. Wayne, MI 48184**	**313-402-6023**	**734-765-6739**

A7.B.3 Authority to Commit Resources

[R 299.9607 and 40 CFR §264.55]

The ECs 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 EC must be contacted immediately if any situation occurs that may result in potential or actual threats to human health or the environment. The EC must implement the plan whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents that the EC 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, Gatehouse, 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 EC shall make available to the designated Emergency Incident Commander from that agency a two-way radio.

When personnel are in personal 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 that is 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 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 included 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 EC 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 EC 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 EC 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 EC 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 EC's assessment of the conditions, the EC will determine the following:

- Whether to implement the Contingency Plan

- Whether Facility personnel can control the incident. If not, the EC will notify the appropriate local, state and federal agencies for assistance.

- Whether a Facility evacuation is necessary. If so, the EC 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 EC will communicate the necessary information to the Romulus Fire Department.

The EC 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]

The EC 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 EC's assessment indicates that evacuation of Facility areas may be advisable, the EC will implement the evacuation plan for the Facility, located in Appendix A7.2. If the EC'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 EC. 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 85-gallon overpacks containing dry soda ash and citric acid for use in decontamination and absorbent material for controlling and cleaning up spills. 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. Citric acid is included in the spill kits for use in neutralization of basic materials spills. In the event of a spill, the following procedures will be instituted.

For spills from pipes, pumps or valves, the EC 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 EC 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 EC 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 EC 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 EC 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 EC directs all cleanup operations, determines the level of personnel protective equipment (PPE) needed, and decides on the appropriate cleanup materials.

On-site firefighting 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 Beaumont 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 EC 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

Local:	City of Romulus Fire Department	**Phone:** 911 or 734.941.8585
	City of Romulus Police Department	**Phone:** 911 or 313.941.8400
	Beaumont 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
Supporting Environmental Services:		
Marine Pollution Control		**Phone:** 313.849.2333
Valicor		**Phone:** 313.724.8600

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 EC 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 EC 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 EC 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 EC 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 EC 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 Facility will submit a written incident report to ELGE at the following address:

Director
Materials Management Division
Department of 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 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 ECs 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.

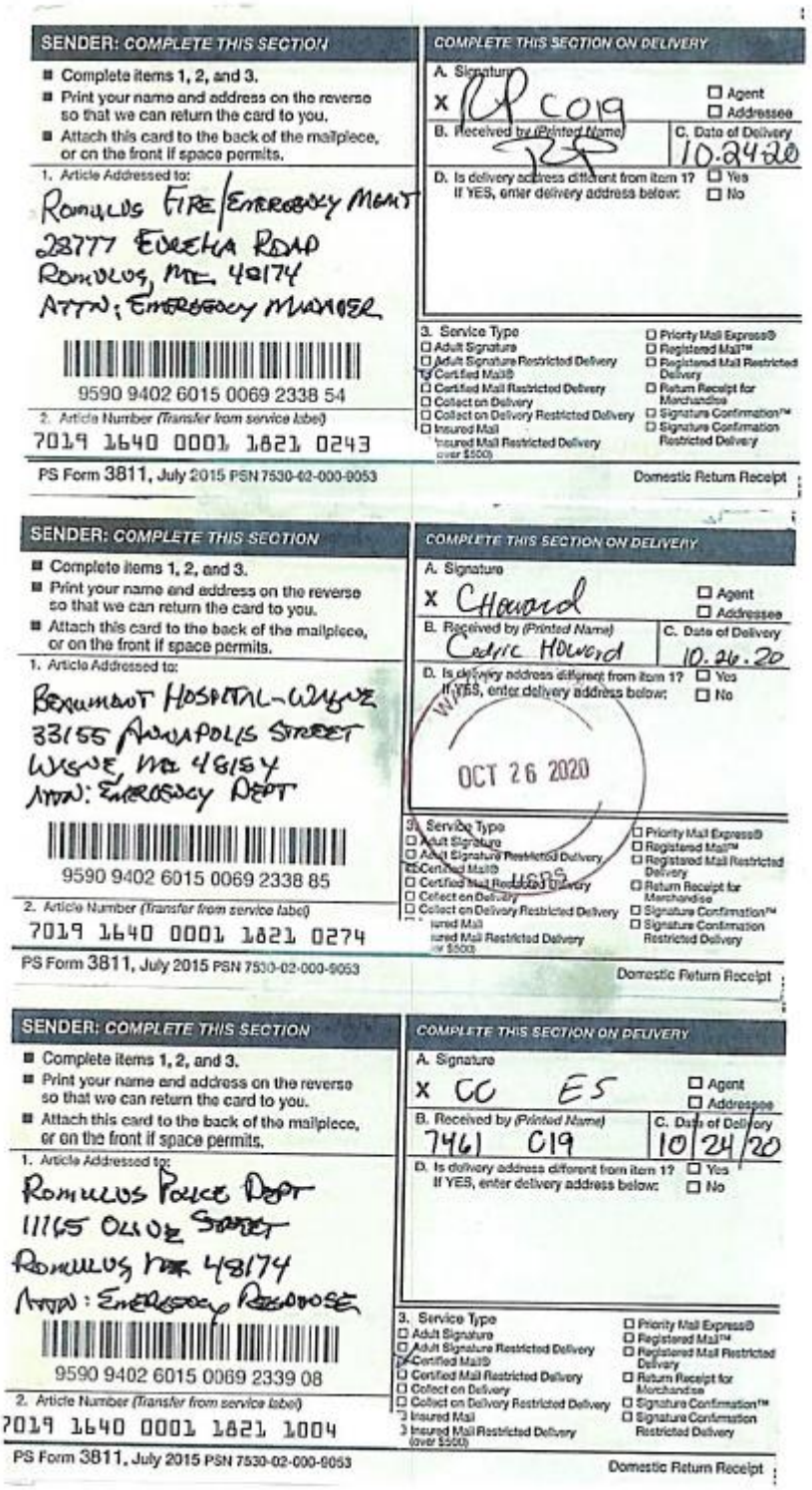
In addition to the above conditions, to ensure that the Plan is always updated, the primary or alternate EC must review the plan on a regular basis, at least annually, and amend the Plan if necessary. Amendments will be submitted to EGLE and all copy holders of the Plan.

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

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

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] C019 ☐ 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)

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.
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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

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

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

WAYNE MI
OCT 26 2020
USPS

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)

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

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

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X CC 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)

SENDER: COMPLETE THIS SECTION

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- 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 PLYMOUTH STREET
INKSTER, MI 48141
ATTN: EMERGENCY 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

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- 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:

MPE 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

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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 the Facility are shown on the attached drawings (SAF3 and C0.01, respectively).

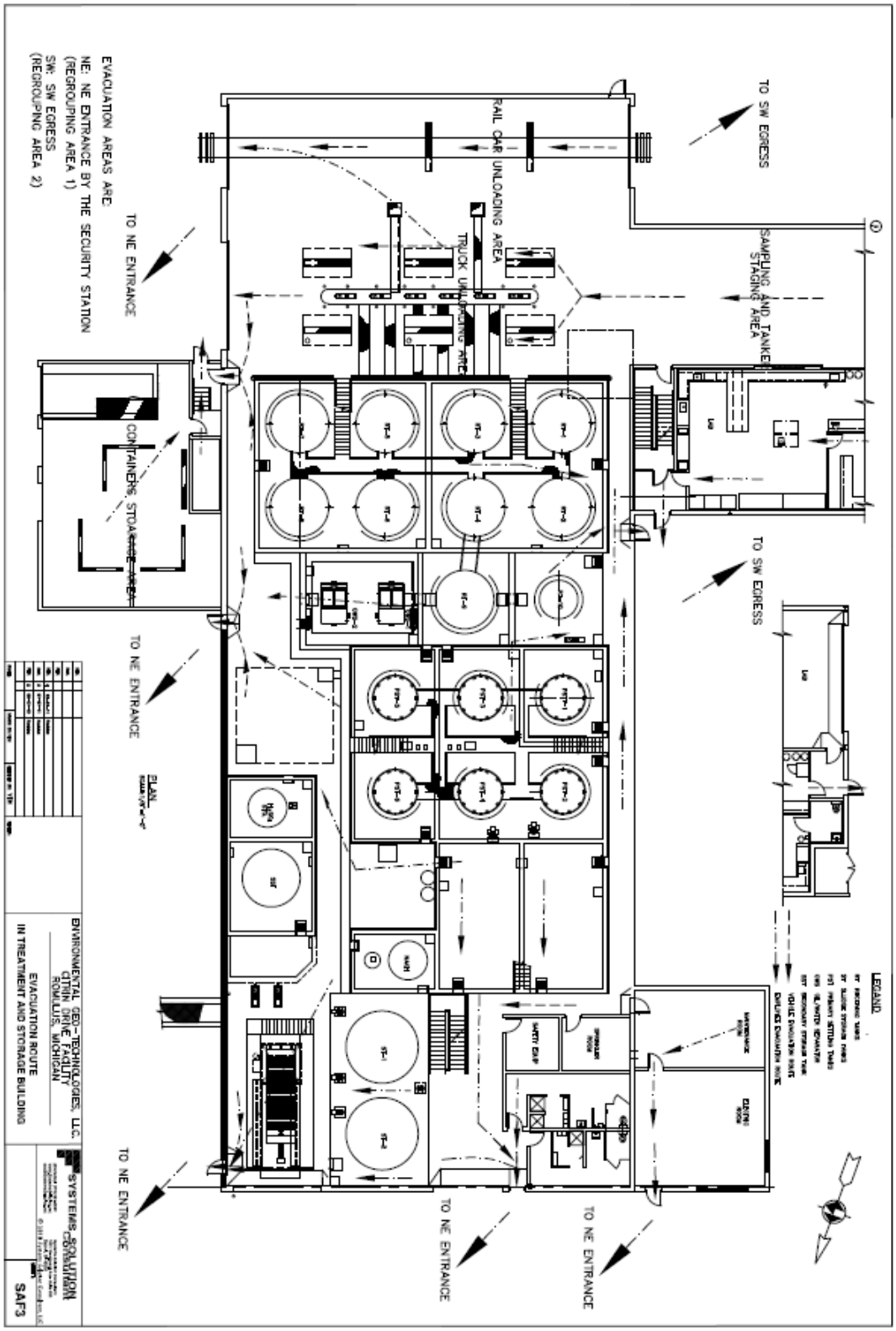
Evacuation Procedures

The following actions will be taken when the Emergency Coordinator ("EC") orders a Facility evacuation:

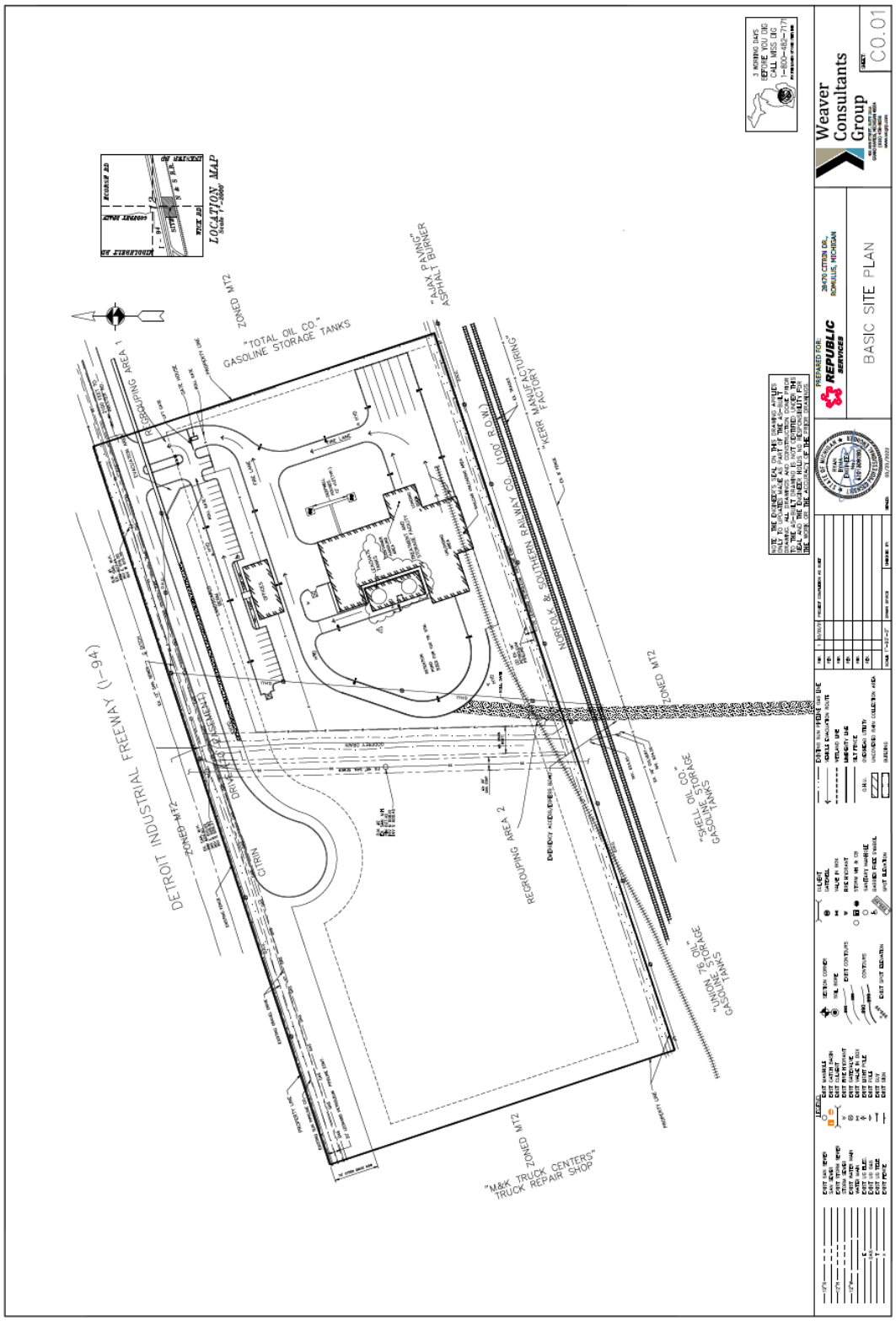
1. The EC will activate emergency services by calling 911 and/or the Romulus Police Department at 313.941.8400 for assistance, reporting any casualties and arranging for any emergency response.
2. The EC will determine if the gate on Citrin Drive will be used depending upon wind direction and the locations of the incident and personnel. The EC will utilize the windsock located at the Administrative Office to ascertain wind direction and velocity.
3. The EC 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 EC.
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 EC, 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 EC:
    - Regrouping Area 1 – Gate #2 Main Gate entrance location by the gatehouse.
    - 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 EC 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 EC 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 EC 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 EC 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.

Evacuation Routes Drawing Number SAF3



Basic Site Plan Drawing Number C0.01



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 • 1x1 pound citric acid • 95-gallon over pack • polyethylene shovel • min. of 3 50-lb bags Labsorb absorbent • Sorbent booms • Sorbent pads	Waste Cleanup	7	Throughout Plant

Equipment	Capability	Quantity	Equipment Location
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
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, Gatehouse, 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

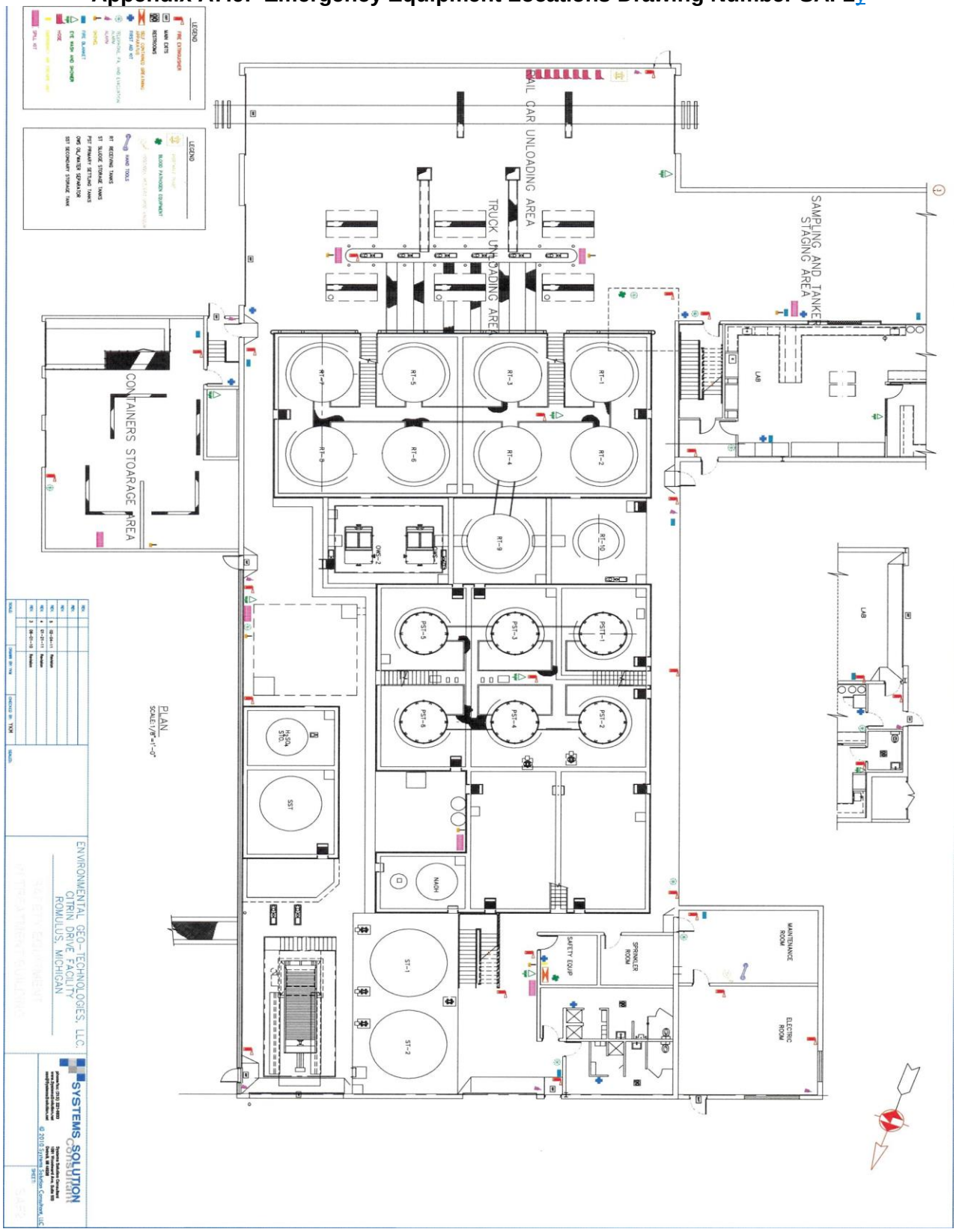
The Facility also maintains an alarm system that is activated automatically through the use of smoke and heat sensor units or manually by wall-mounted pull down switches located at various points throughout the building. In addition, the Facility is provided with an overhead sprinkler system.

A windsock is located on top of the Administrative Office Building. The windsock 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

Appendix A7.6: Emergency Equipment Locations Drawing Number SAF2y



Attachment 5

Closure and Postclosure Care Plan

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 (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 299.9613 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 ("Republic" or "Facility"). 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."

Republic will ensure that all samples collected for waste characterization and environmental monitoring during closure and postclosure care activities are collected, transported, analyzed, stored, and disposed by trained and qualified individuals in accordance with the QA/QC Plan. The QA/QC Plan should, at a minimum, include 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.

This attachment is organized as follows:

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 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				
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
Secondary Storage Tank	16,950	All*	2050	180
Sludge Tanks	40,000	All*	2050	180
Container Storage Area	11,000	All*	2050	180
Railcar Storage Area	92,000	All	2050	180
Sum	356,986			
* = 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, U404, 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

	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**		
	• Decontamination (i.e., Decon), as needed	10	12
	• 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 management approvals	15	25
	• Removal of containers	25	30
	• Decon	30	32
	• Decon verification sampling	32	34
	• Decon verification analysis	34	50
	• Certification of Closure	50	60
5.	**Closure of Receiving Tanks**		
	• Inventory, sampling, testing, waste management approval	1	20
	• Waste removal	20	35
	• Sludge removal	22	35
	• Tank cleaning	22	40
	• Tank cleaning verification sampling	40	44

TABLE A11.A.2 CLOSURE ACTIVITY TIMING			
	Schedule Element	**Day Starting Schedule Element**	**Day Ending Schedule Element**
	• 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 management 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
	• Sampling of containment areas	65	66
	• Lab analysis – containment areas	66	76
	• Certificate of Closure	76	90
7.	**Secondary Storage Tank, Rinse Wastewater Vault, Sludge Tanks, Filters, Filter Press**		
	• Inventory, sample, test, obtain waste management 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 equipment/adsorption system	62	72
	• Cleaning containment areas	65	75

TABLE A11.A.2 CLOSURE ACTIVITY TIMING

	Schedule Element	Day Starting Schedule Element	Day Ending Schedule Element
	• 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
9.	**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
10.	**Unloading and Sampling Bay Closure**		
	• Clean general area	100	105
	• Sample surface areas	105	110
	• Analyze samples	110	120
	• Certification of Closure	120	180
11.	**General Plant Area including roads, sewers, and catch basins**		
	• Sampling	100	105
	• Sample analyses	105	115
	• Certification of Closure	115	120
12.	**Stormwater Detention Pond Closure**		
	• Sampling	100	105

TABLE A11.A.2 CLOSURE ACTIVITY TIMING			
	Schedule Element	**Day Starting Schedule Element**	**Day Ending Schedule Element**
	• Sample analyses	105	115
	• Certification of Closure	115	180
13.	**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 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)]

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

The sections below describe the closure procedures for two specific container storage areas, the Railcar Storage area and the Loading and Sampling Bay. The general closure requirement and specific closure procedures are discussed below.

At closure, the 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(a)(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(a)(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(b)(i), with the provision that the words "containment system" replace "tank" in those twelve steps.

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 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 box will be left in place until they can be transported for proper hazardous waste management. On-site generated waste will not be accumulated 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.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 and corresponding laboratory analysis methodologies;
2. The sampling and analysis procedures including laboratory QA/QC information;
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, including manifests and any other shipping documentation; 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 Republic 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

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.

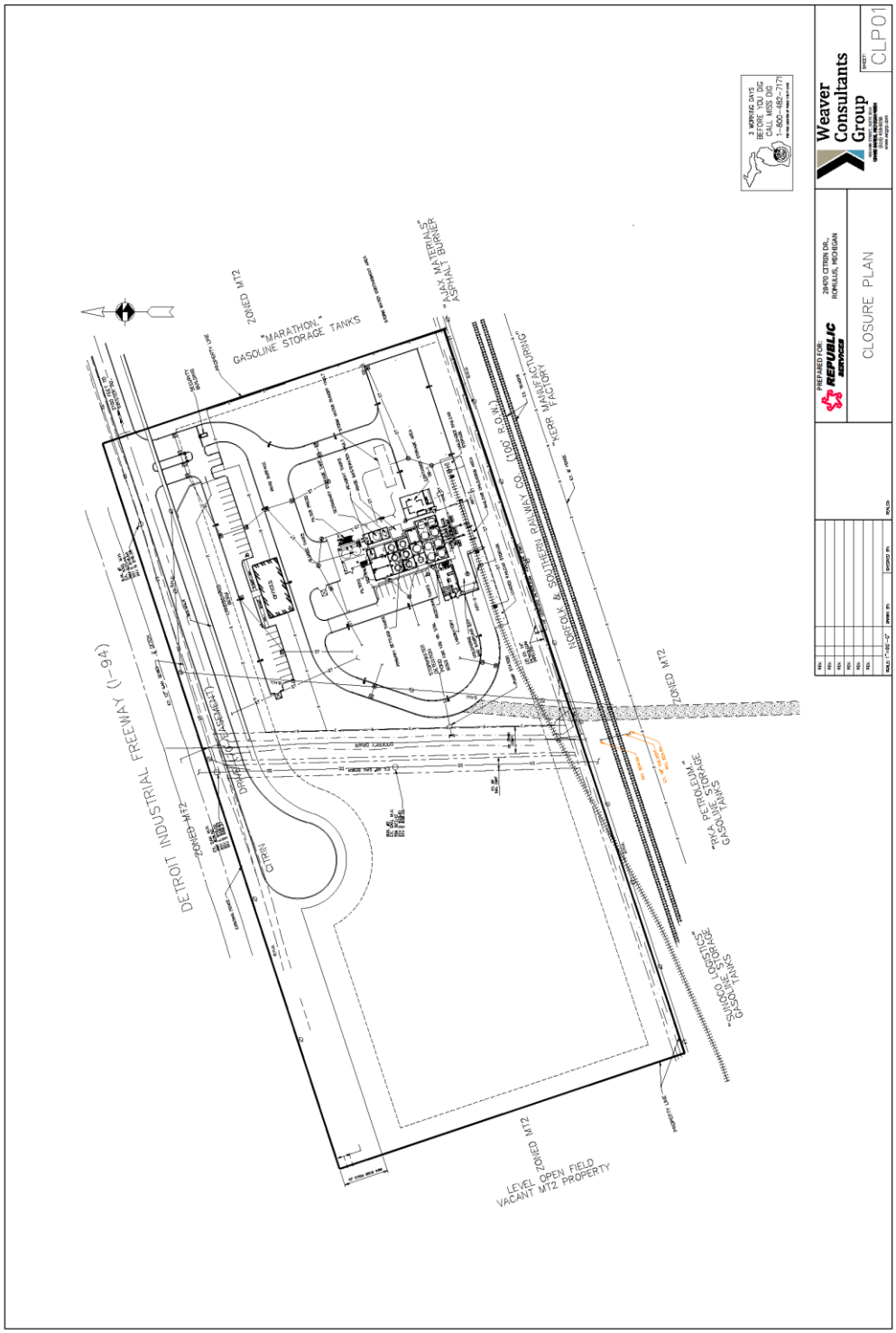
7. If the method described above in 3.A.6 is not practicable, the vapors in the tank will be made inert by adding solid carbon dioxide (dry ice) in the amount of 1.5 pounds per 100 gallons of tank capacity. The dry ice will be crushed and distributed evenly over the greatest possible area to secure rapid 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 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 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 will be analyzed for hazardous constituents previously managed at the Facility, 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 EGLE Sampling Strategies and Statistics Training Materials (2002) 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. At a minimum, the parameters in Table A11.C will be analysed. The respective target detection limits and analytical methods are those cited in the Michigan Department of Environmental Quality Remediation Division Operation Memorandum No.2, Attachment No.1.

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.

Table A11.C Decontamination Sample Analytical Parameters and Methods

Parameters	United States Environmental Protection Agency (USEPA Method)	Soil Background (ug/Kg)
VOC's		
2-Nitropropane	Method SW8260B	NA
SVOC's		
Acenaphthene	Method SW8270B and SW33550C	NA
Benzo(a)pyrene {Q}	Method SW8270B and SW33550C	NA
Chrysene {Q}	Method SW8270B and SW33550C	NA
2,4-Dimethylphenol	Method SW8270B and SW33550C	NA
Fluorene	Method SW8270B and SW33550C	NA
Naphthalene	Method SW8270B and SW33550C	NA
Phenanthrene	Method SW8270B and SW33550C	NA
Pyrene	Method SW8270B and SW33550C	NA
METALS		
Arsenic	Method SW6010B and SW3020A	12,595
Barium (B)	Method SW6010B and SW3020A	133,700
Cadmium (B)	Method SW6010B and SW3020A	1,200
Chromium (VI)	Method SW6010B and SW3020A	29,900
Copper	Method SW6010B and SW3020A	31,700
Lead (Total) (B)	Method SW6010B and SW3020A	30,100
Mercury (B,Z)	Method SW7471A	130
Nickel	Method SW6010B and SW3020A	51,900
Selenium (B)	Method SW6010B and SW3020A	1,600
Silver (B)	Method SW6010B and SW3020A	1,000
Zinc (B)	Method SW6010B and SW3020A	84,000
CYANIDE		
Cyanide, Total	Method SW9020	NA

Appendix A11.D Notice Letter (Expected)

Date

Michigan Department of Environment, Great Lakes, and Energy
Materials Management Division
P.O. Box 30241
Lansing, Mi 48909

Dear Director:

Subject: Notice of Final Closure Certification for Hazardous Waste Management Units, Republic Industrial and Energy Solutions, LLC, Romulus, Michigan; MIR 000 016 055

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 R 299.9613.

Sincerely,

Division Manager

Enclosures

Attachment 6

Subpart CC Air Emissions from Tanks, Containers, and Surface Impoundments

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.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

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 § 264.1083(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 Receiving Tanks (RT) and Primary Settling Tanks (PST) at the Facility: RT-1-8 and 10 and PST-1-6. 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 (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 the PSTs, will have been treated in PSTs 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).

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 a generator is unable to make this determination based solely on process knowledge, Republic shall require the generator to provide information on the VO content determined via direct measurement at the point of origination in accordance with 40 CFR § 264.1083, 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 §264.1083, 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 a 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 how 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 any PST 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 the PSTs.

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 any PST will meet the "95% destruction or removal" criteria by taking at least four (4) samples from the sampling ports on a PST within an hour and analyzing each of the four samples and averaging the results (e.g., [A+B+C+D]/4) both (a) prior to, and (b) after conducting a batch treatment in a PST. 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 a PST. All samples will be collected in accordance with EPA SW846 sampling method and EPA SW8260 analytical method with minimum volatilization. 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 264.1083(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 264.1083(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 an 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 §264.1083, 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 tanks that manage Subpart CC regulated wastes are RT1-8 (16,950 gal), RT-10 (7,500 gal), and PST-1-6 (6,770 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 Subpart CC tanks. Emissions from these tanks are controlled using a Closed-Vent System attached to an 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 RTs and PSTs 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 the PSTs, RTs, 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 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 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-1-8 and 10 and PST-1-6 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. If 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 and in addition, has provided the design analysis in Volume 8, Section 6.30 (Basis of Design), including tab "Ventsorb Carbon Filters" and 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 Attachment B8.

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 in 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 will be replaced with fresh carbon. Breakthrough is defined as any detectable VOC reading of 1.0 ppm or higher. The minimum unit of 1.0 ppm is identified because it is the lowest unit reading possible with the current Photoionization Detector. 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 STs, and SSTs 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 the RTs and PSTs.

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)]

There are no exempt treatment units.

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.

Attachment 7

Engineering Plans

FORM EQP 5111 ATTACHMENT B6
ENGINEERING PLANS

This license application attachment provides information on the Engineering Plans associated with the Republic Industrial an Energy Services (“RIES” or “Facility”) Facility located at 28470 Citrin Drive, Romulus, Michigan.

This attachment is organized as follows:

INTRODUCTION

A complete list of the independent professional engineer-certified, engineering plans for the Facility incorporated into this License, including their current revision dates, is found below. The engineering plans are on file with the EGLE and are also available from the Applicant upon request. Those drawings that are included as License attachments are denoted by an ”*” by their drawing numbers.

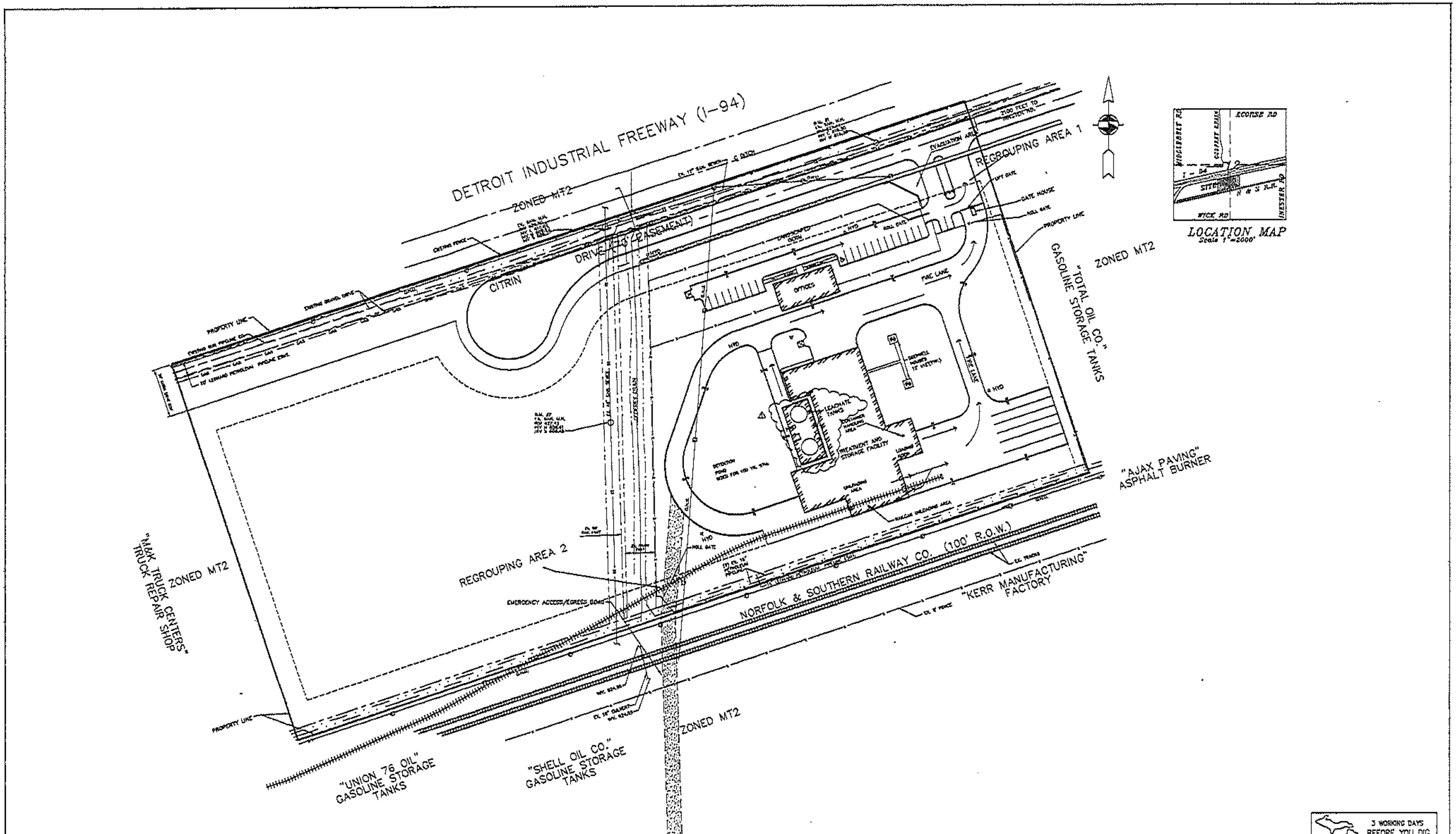
B6.A. FACILITY ENGINEERING DRAWINGS AND REVISION DATES

DRAWING NO.*	DRAWING TITLE	REVISION DATE
C0.01*	Basic Site Plan	6/9/22
C1.00	Evacuation Routes and Fire Locations	6/9/22
C1.01*	Storm Water Containment Plan	6/9/22
C1.02	Storm Water Containment Profiles	6/9/22
C1.03	Truck Route and Turning Templates	2/15/2005
C2.01	Site Plan	6/9/22
C2.02	Grading Plan	1/27/2011
C2.03	Utilities Plan	6/9/22
C2.04	Storm Sewer Profiles	1/23/2003
C2.06	Landscape Plan	2/15/2005
C2.07	Off Site Water Main	3/29/2005
C2.08	Road and Drainage Plan, Citrin Drive STA 0+00 to STA 11+50	1/23/2003
C2.09	Road and Drainage Plan, Citrin Drive STA 24+50 To STA 33+18	1/23/2003
C2.10	Road and Drainage Plan, Citrin Drive STA 24+50 To STA 33+18	1/23/2003
C2.11	Miscellaneous Details – I	1/23/2003
C2.12	Miscellaneous Details – II	1/23/2003
C3.01	Wetland Plan	1/23/2003
C3.02	Wetland Profiles – I	1/23/2003
C3.03	Wetland Profiles – II	1/23/2003
Offsite Gas	Field Loc. Off-Site Ex. Petroleum Lines and Misc. Topo	1/23/2003
AD-2002-5-R3	Tracks to Serve	2/19/2002
L-1	Concrete Layout Plan Phase 1	7/8/2002
L-2	Concrete Layout Plan Phase 2	7/8/2002
L-2A	Phase 2 Concrete Layout Sections and Details	7/8/2002
L-2B	Phase 2 Concrete Anchor Bolt Layout	7/8/2002
L-3	Concrete Layout Plan Phase 3	7/8/2002
L-3A	Anchor Bolt Layout Plan Phase 3	7/8/2002
L-4	Anchor Bolt Layout Plan Phase 4	7/8/2002
L-4A	Anchor Bolt Layout Plan Phase 4	7/8/2002
L-4B	Truck Dock Layout Plan Phase 4	7/8/2002
L-4C	Anchor Bolt Layout Plan Phase 4	7/8/2002
L-4D	Anchor Bolt Layout Plan Phase 4	7/8/2002
A0.01	Code Review/Abbreviations	6/9/22
A1.01	First Floor Plan	6/9/22
A1.02	Mezzanine Plan	6/9/22
A1.03	Enlarged Plans	5/18/2017
A1.05	Roof Plan	8/12/2002
A2.01	Building Elevations	6/9/22
A2.02	Building Elevations	6/9/22
A3.01	Building Sections	8/12/2002
A3.02	Building Sections	2/15/2005

A3.03	Wall Sections	8/12/2002
A3.04	Wall Sections	8/12/2002
A4.01	Details	8/12/2002
A4.02	Details	8/12/2002
A4.03	Details	8/12/2002
A5.01	Stair Detail	8/12/2002
A6.01	Door Schedule and Details	8/12/2002
A6.02	Door Schedule and Details	8/12/2002
A7.01	Finish Plan & Finish Schedule	5/18/2017
A7.02	Interior Elevations	8/12/2002
A7.03	Interior Elevations	8/12/2002
S1.00	General Structural Notes	3/20/2001
S1.01	Foundation Plan	2/15/2005
S1.02	Foundation Plan & Low Roof and Mezzanine Framing Plan	3/20/2001
S1.03	Roof Framing Plan	3/20/2001
S2.01	Sections & Details	3/20/2001
S2.02	Details & Additional Structural Notes	3/20/2001
S3.01	Sections & Details	3/20/2001
S3.02	Joists Schedule & Details	2/18/2001
S4.01	Sections & Details	3/20/2001
S4.02	Sections & Details	3/20/2001
S4.03	Sections & Details	3/20/2001
S4.04	Sections & Details	4/4/2001
M0.01	Mechanical Details & Legend	6/9/22
M0.02	Equipment Schedule and Notes	6/9/22
M0.03	Pump Schedule and Notes	6/9/22
M1.01*	Process Flow Diagram Part A	11/14/22
M1.02*	Process Flow Diagram Part B	6/9/22
M2.01*	Process Plan Main Level	6/9/22
M2.01A	Piping to Unload Railroad Cars	6/9/22
M2.02*	Process Plan Mezzanine & Upper Level	6/9/22
M2.03	Wellhouse Layouts & Annulus Monitoring	6/9/22
M3.01*	Building Process Sections	6/9/22
M3.02*	Building Process Sections	6/9/22
M3.03*	Building Process Sections	11/14/22
M4.01	Tank Details Part A	6/9/22
M4.02	Tank Details Part B	6/9/22
M5.01	Plumbing Legend, Schedules, & General Notes	6/9/22
M5.02*	Plumbing Plan Main Level	6/9/22
M5.03*	Plumbing Plan Mezzanine & Upper Level	6/9/22
M6.01	HVAC Plan Legend, Schedules, and General Notes	6/9/22
M6.02*	HVAC Plan Main Level	6/9/22
M6.03*	HVAC Plan Mezzanine & Upper Level	6/9/22

M6.04	Ventsorb® Air Purification System	1/10/2003
F1.01	Fire Protection Schedule, Riser Schematic and Notes	6/9/22
F1.02	Fire Protection Plan Main Level	6/9/22
E0.01	Electrical Legend, Schedules, And General Notes	6/9/22
E0.02	Instrumentation Legend	6/9/22
E1.01 (R)	Electrical One-Line Diagram	6/9/22
E2.01 (R)	Electrical Site Plan	6/9/22
E3.01 (R)	Lighting Plan Main Level	6/9/22
E3.02 (R)	Lighting Plan Mezzanine & Upper Level	9/20/2002
E3.03 (R)*	Electrical Power Plan Main Level	6/9/22
E3.04 (R)	Electrical Power Plan Mezzanine & Upper Level	6/9/22
E4.01	Electrical Panel Schedules	6/9/22
E4.02	Lighting Details & Luminaire Schedule	3/20/2001
E5.01*	P&I Diagram Part A	6/9/22
E5.02*	P&I Diagram Part B	6/9/22
E5.03*	P&I Diagram Part C	11/18/22
E5.04*	P&I Diagram Part D	6/9/22
E6.01*	PLC Architecture and Data (SCADA) Block Diagram	6/9/22
E7.01	Communication Plan Main Level	1/21/2003
E7.02	Communication Plan Mezzanine & Upper Level	10/31/2012
E-Grounding	Grounding Plan	1/21/2003

* Drawing included in Attachment 1 of License.



NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

LEGEND

EXIST SAN SEWER, SAN SEWER, EXIST STORM SEWER, STORM SEWER, EXIST WATER MAIN, WATER MAIN, EXIST UG ELEC., EXIST UG GAS, EXIST UG TELE., EXIST FENCE

EXIST MANHOLE, EXIST CATCH BASIN, EXIST CULVERT, EXIST FIRE HYDRANT, EXIST GATEVALVE, EXIST VALVE IN BOX, EXIST LIGHT POLE, EXIST POLE, EXIST GUY, EXIST SIGN

SECTION CORNER, SOIL BORE, EXIST CONTOURS, CONTOURS, EXIST SPOT ELEVATION

CULVERT, GATEWELL, VALVE IN BOX, FIRE HYDRANT, STORM MH & CB, SANITARY MANHOLE, BARRIER FREE SYMBOL, SPOT ELEVATION

EXISTING SUN PIPELINE GAS LINE, VEHICLE EVACUATION ROUTE, WETLAND LINE, PROPERTY LINE, SILT FENCE, OVERHEAD UTILITY, UNCOVERED RAIN COLLECTION AREA, BUILDING

STATE OF MICHIGAN — RYAN BYMA — ENGINEER — PROFESSIONAL ENGINEER

08/09/2022

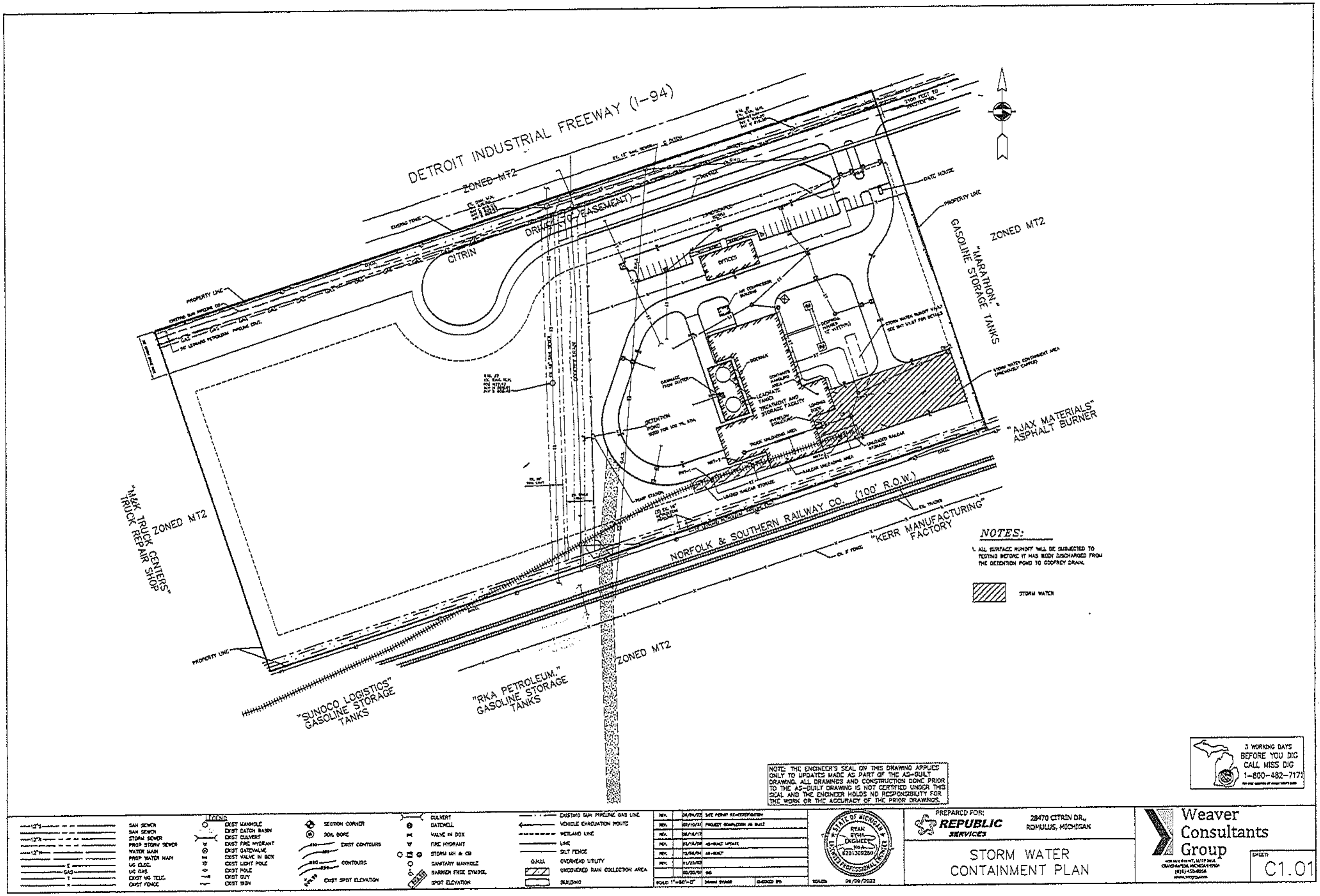
PREPARED FOR: REPUBLIC SERVICES

28470 CITRIN DR., ROMULUS, MICHIGAN

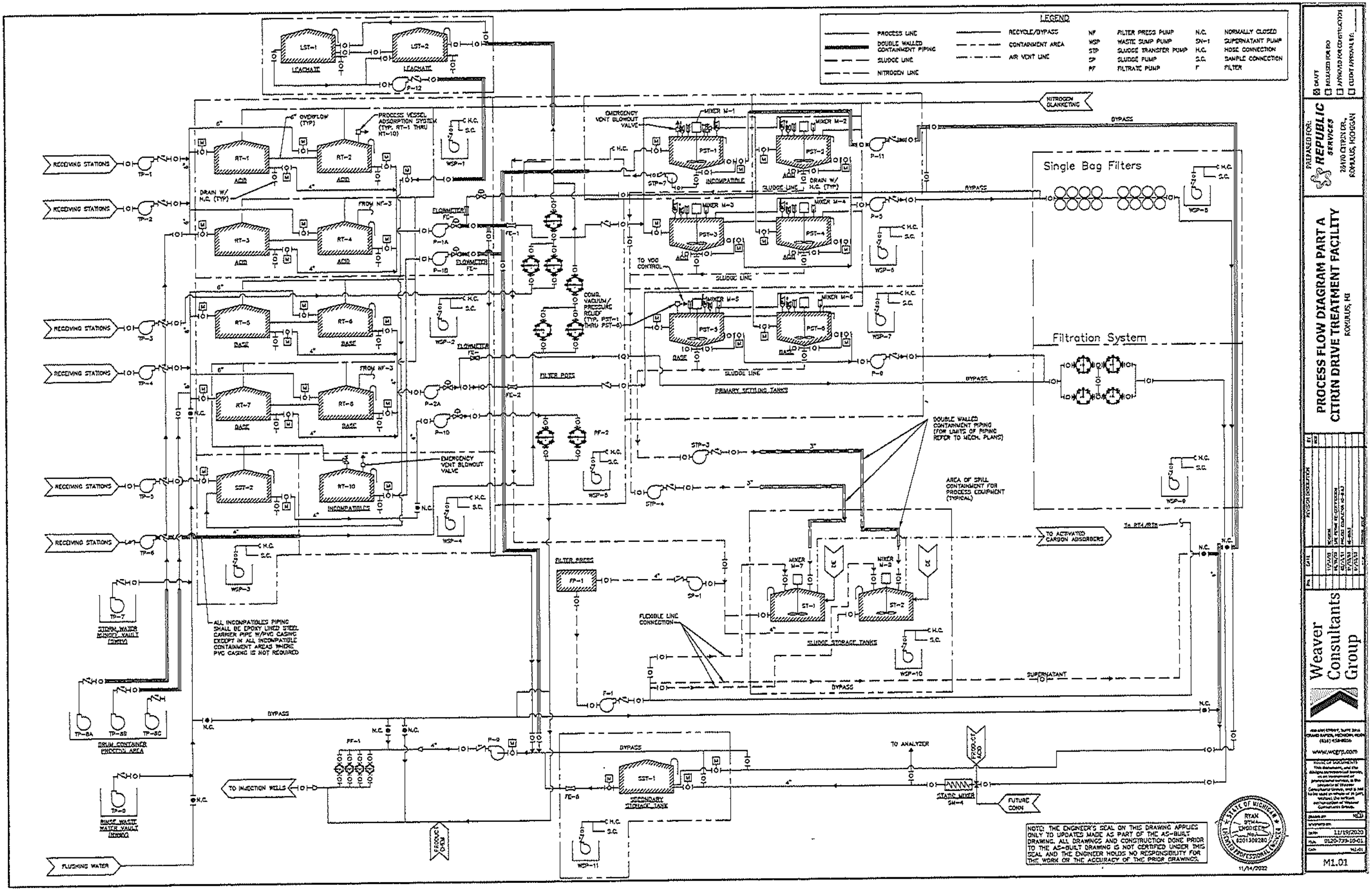
BASIC SITE PLAN

Weaver Consultants Group

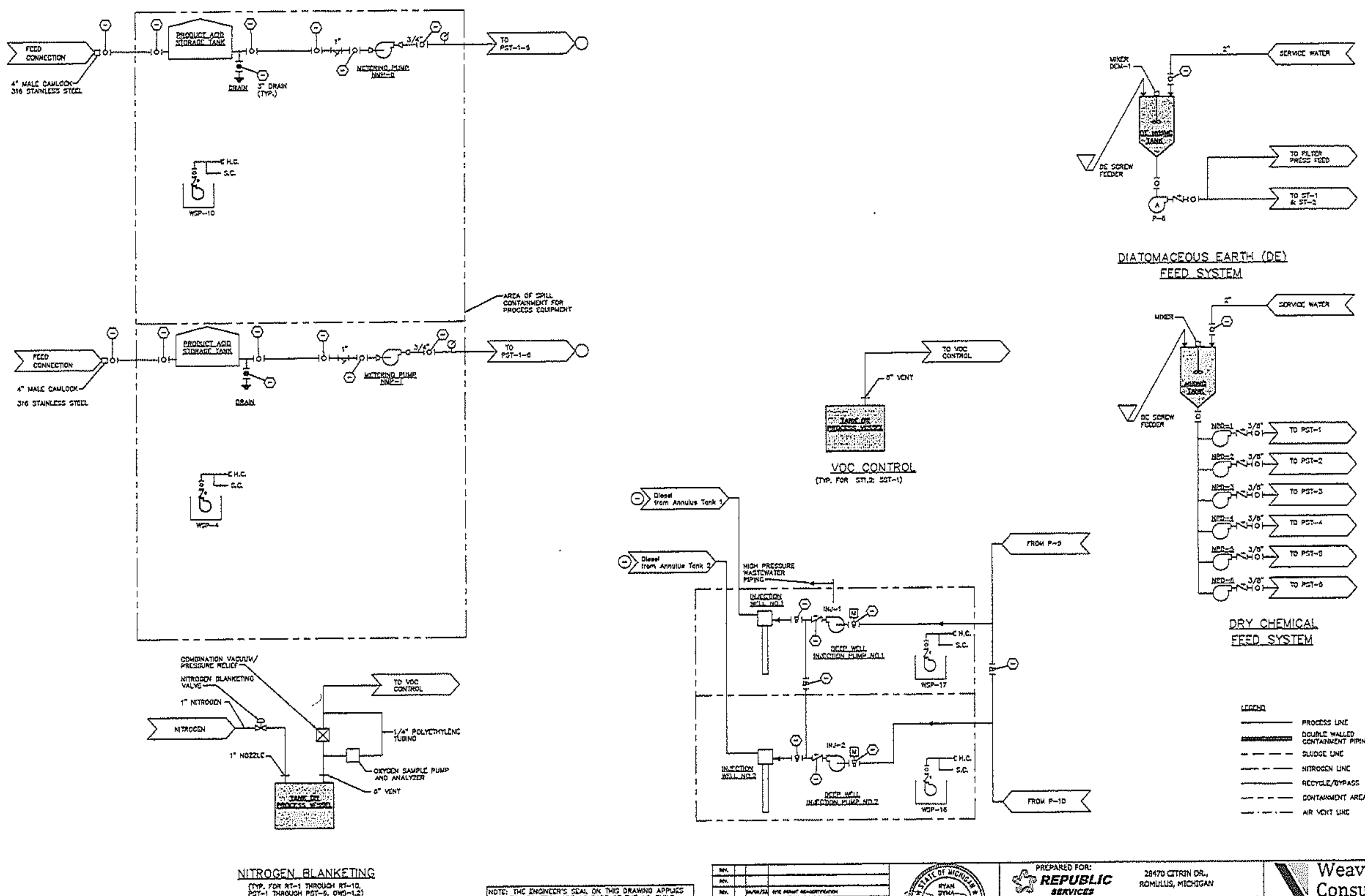
SHEET: C0.01



DETROIT INDUSTRIAL FREEWAY (I-94)
ZONED MT2
CITRIN
DRAIN (EASEMENT)
OFFICES
"MARATHON" GASOLINE STORAGE TANKS
ZONED MT2
"AJAX MATERIALS" ASPHALT BURNER
"KERR MANUFACTURING" FACTORY
NORFOLK & SOUTHERN RAILWAY CO. (100' R.O.W.)
ZONED MT2
"RKA PETROLEUM" GASOLINE STORAGE TANKS
"SUNOCO LOGISTICS" GASOLINE STORAGE TANKS
ZONED MT2
"M&K TRUCK CENTERS" TRUCK REPAIR SHOP
PROPERTY LINE
GATE HOUSE
DETENTION POND
LEACHATE TANKS
TREATMENT AND STORAGE FACILITY
TRUCK UNLOADING AREA
PUMP STATION
NOTES:
1. ALL SURFACE RUNOFF WILL BE SUBJECTED TO TESTING BEFORE IT HAS BEEN DISCHARGED FROM THE DETENTION POND TO GODFREY DRAIN.
STORM WATER
NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.
3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171
PREPARED FOR:
REPUBLIC SERVICES
28470 CITRIN DR., ROMULUS, MICHIGAN
STORM WATER CONTAINMENT PLAN
Weaver Consultants Group
SHEET: C1.01
LEGEND



LEGEND
PROCESS LINE
DOUBLE WALLED CONTAINMENT PIPING
SLUDGE LINE
NITROGEN LINE
RECYCLE/BYPASS
CONTAINMENT AREA
AIR VENT LINE
FP FILTER PRESS PUMP
WSP WASTE SUMP PUMP
STP SLUDGE TRANSFER PUMP
SP SLUDGE PUMP
PF FILTRATE PUMP
N.C. NORMALLY CLOSED
SN-1 SUPERNATANT PUMP
H.C. HOSE CONNECTION
S.C. SAMPLE CONNECTION
F FILTER
RECEIVING STATIONS
NITROGEN BLANKETING
Single Bag Filters
Filtration System
PRIMARY SETTLING TANKS
FILTER PODS
SLUDGE STORAGE TANKS
FILTER PRESS
FLEXIBLE LINE CONNECTION
TO ACTIVATED CARBON ABSORBERS
DOUBLE WALLED CONTAINMENT PIPING (FOR LIMITS OF PIPING REFER TO MECH. PLANS)
AREA OF SPILL CONTAINMENT FOR PROCESS EQUIPMENT (TYPICAL)
ALL INCOMPATIBLES PIPING SHALL BE EPOXY LINED STEEL CARRIER PIPE W/PVC CASING EXCEPT IN ALL INCOMPATIBLE CONTAINMENT AREAS WHERE PVC CASING IS NOT REQUIRED
DRUM CONTAINER PROCESS AREA
TO INJECTION WELLS
SECONDARY STORAGE TANK
TO ANALYZER
STATIC MIXER SM-4
FUTURE CONN
FLUSHING WATER
NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.
11/14/2022
PROCESS FLOW DIAGRAM PART A
CITRIN DRIVE TREATMENT FACILITY
ROMULUS, MI
PREPARED FOR: REPUBLIC SERVICES
28470 CITRIN DR., ROMULUS, MICHIGAN
DRAFT
RELEASED FOR BID
APPROVED FOR CONSTRUCTION
CLIENT APPROVAL BY:
Weaver Consultants Group
www.wcgrp.com
11/19/2020
0120-739-10-01
M1.01



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SCALE AS NOTED

STATE OF MICHIGAN · RYAN DYMA · ENGINEER · No. 6201309280 · LICENSED PROFESSIONAL ENGINEER

SEALED: 06/09/2022

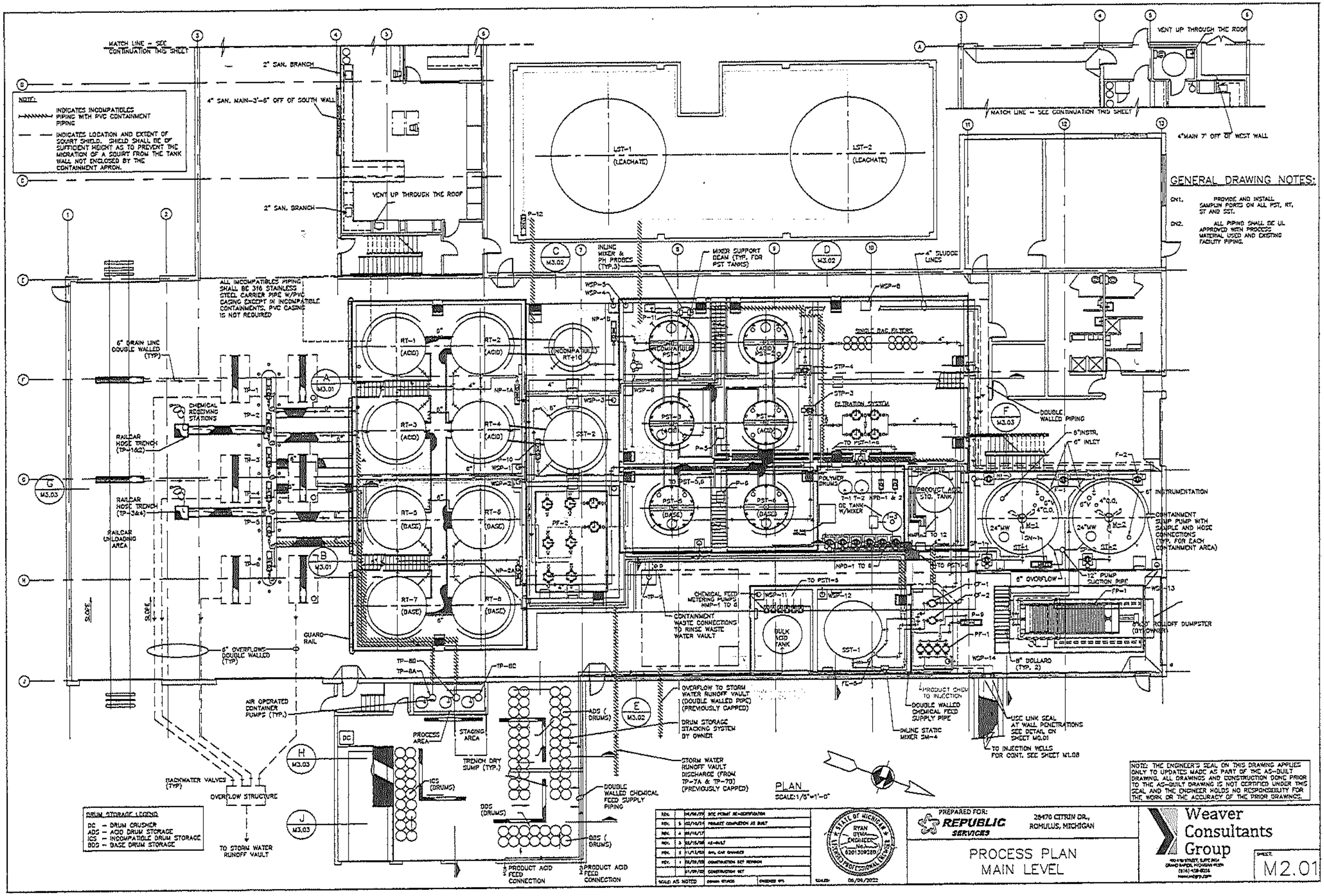
PREPARED FOR: REPUBLIC SERVICES

28470 CITRIN DR., ROMULUS, MICHIGAN

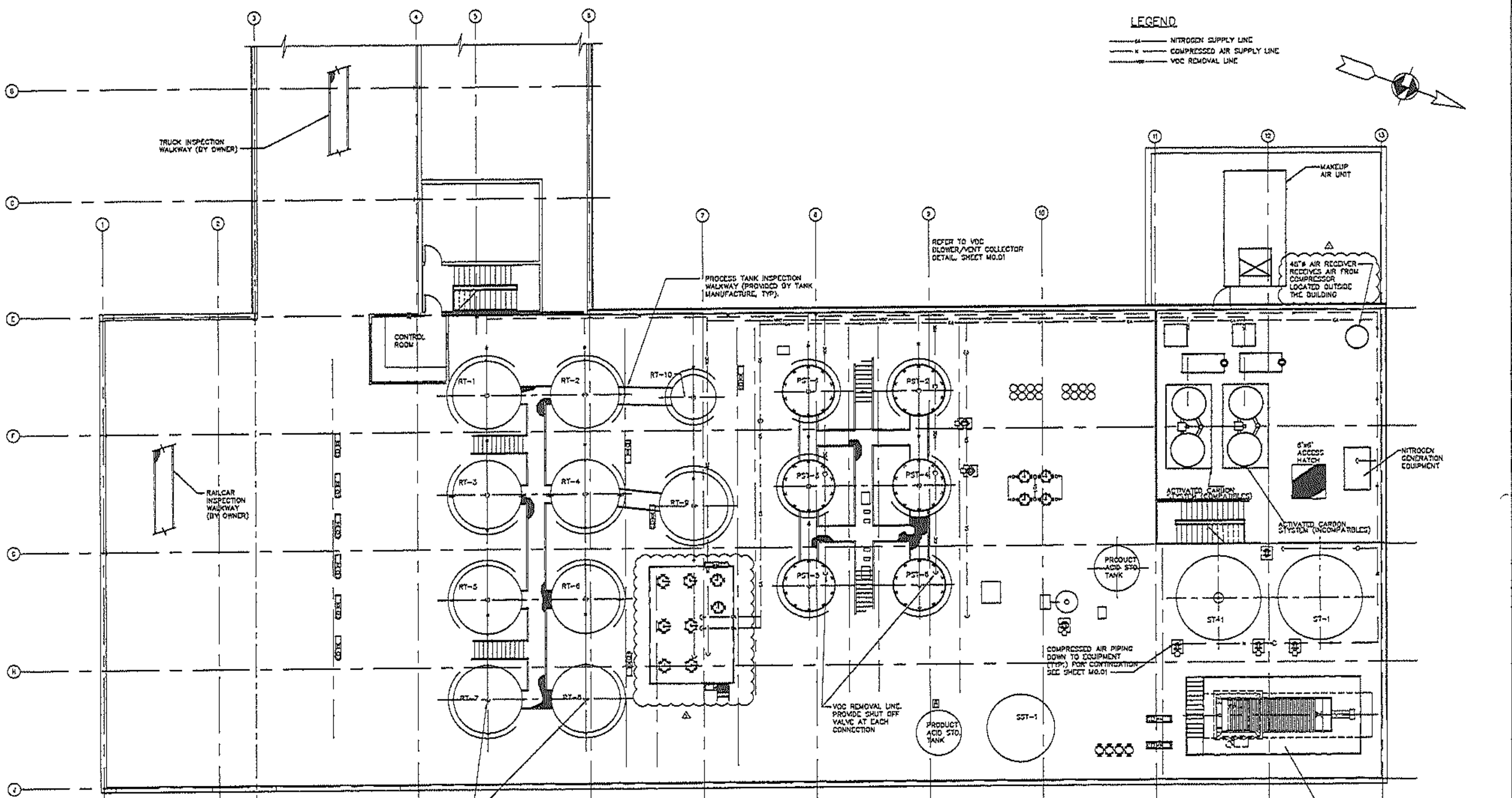
PROCESS FLOW DIAGRAM
PART B

Weaver Consultants Group

SHEET: M1.02



MATCH LINE - SEE CONTINUATION THIS SHEET
2" SAN. BRANCH
4" SAN. MAIN-3'-6" OFF OF SOUTH WALL
VENT UP THROUGH THE ROOF
NOTE:
INDICATES INCOMPATIBLES PIPING WITH PVC CONTAINMENT PIPING
INDICATES LOCATION AND EXTENT OF SQUIRT SHIELD. SHIELD SHALL BE OF SUFFICIENT HEIGHT AS TO PREVENT THE MIGRATION OF A SQUIRT FROM THE TANK WALL NOT ENCLOSED BY THE CONTAINMENT APRON.
LST-1 (LEACHATE)
LST-2 (LEACHATE)
4"MAIN 7' OFF OF WEST WALL
GENERAL DRAWING NOTES:
GN1. PROVIDE AND INSTALL SAMPLING PORTS ON ALL PST, RT, ST AND SST.
GN2. ALL PIPING SHALL BE UL APPROVED WITH PROCESS MATERIAL USED AND EXISTING FACILITY PIPING.
ALL INCOMPATIBLES PIPING SHALL BE 316 STAINLESS STEEL CARRIER PIPE W/PVC CASING EXCEPT IN INCOMPATIBLE CONTAINMENTS, PVC CASING IS NOT REQUIRED
INLINE MIXER & PH PROBES (TYP.3)
MIXER SUPPORT BEAM (TYP. FOR PST TANKS)
4" SLUDGE LINES
SINGLE BAG FILTERS
FILTRATION SYSTEM
DOUBLE WALLED PIPING
6"INSTR.
6" INLET
6" DRAIN LINE DOUBLE WALLED (TYP)
CHEMICAL RECEIVING STATIONS
RAILCAR HOSE TRENCH (TP-1&2)
RAILCAR HOSE TRENCH (TP-3&4)
RAILCAR UNLOADING AREA
SLOPE
RT-1 (ACID)
RT-2 (ACID)
RT-3 (ACID)
RT-4 (ACID)
RT-5 (BASE)
RT-6 (BASE)
RT-7 (BASE)
RT-8 (BASE)
(INCOMPATIBLE) RT-10
SST-2
PF-2
PST-1
PST-2 (ACID)
PST-3 (ACID)
PST-4 (ACID)
PST-5 (BASE)
PST-6 (BASE)
POLYMER DRUMS
T-1 T-2 NPD-1 & 2
DE TANK W/MIXER
PRODUCT ACID STG. TANK
6" INSTRUMENTATION
CONTAINMENT SUMP PUMP WITH SAMPLE AND HOSE CONNECTIONS (TYP. FOR EACH CONTAINMENT AREA)
12" PUMP SUCTION PIPE
6" OVERFLOW
ROLLOFF DUMPSTER (BY OWNER)
8" BOLLARD (TYP. 2)
CHEMICAL FEED METERING PUMPS NMP-1 TO 6
CONTAINMENT WASTE CONNECTIONS TO RINSE WASTE WATER VAULT
BULK ACID TANK
SST-1
GUARD RAIL
6" OVERFLOWS DOUBLE WALLED (TYP)
AIR OPERATED CONTAINER PUMPS (TYP.)
PROCESS AREA
STAGING AREA
TRENCH DRY SUMP (TYP.)
ICS (DRUMS)
BDS (DRUMS)
ADS (DRUMS)
OVERFLOW TO STORM WATER RUNOFF VAULT (DOUBLE WALLED PIPE) (PREVIOUSLY CAPPED)
DRUM STORAGE STACKING SYSTEM BY OWNER
STORM WATER RUNOFF VAULT DISCHARGE (FROM TP-7A & TP-7B) (PREVIOUSLY CAPPED)
DOUBLE WALLED CHEMICAL FEED SUPPLY PIPING
PRODUCT ACID FEED CONNECTION
PRODUCT CHEM TO INJECTION
DOUBLE WALLED CHEMICAL FEED SUPPLY PIPE
INLINE STATIC MIXER SM-4
USE LINK SEAL AT WALL PENETRATIONS SEE DETAIL ON SHEET M0.01
TO INJECTION WELLS FOR CONT. SEE SHEET M1.08
BACKWATER VALVES (TYP)
OVERFLOW STRUCTURE
TO STORM WATER RUNOFF VAULT
DRUM STORAGE LEGEND
DC - DRUM CRUSHER
ADS - ACID DRUM STORAGE
ICS - INCOMPATIBLE DRUM STORAGE
BDS - BASE DRUM STORAGE
PLAN
SCALE: 1/8"=1'-0"
NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.
PREPARED FOR:
REPUBLIC SERVICES
28470 CITRIN DR., ROMULUS, MICHIGAN
PROCESS PLAN
MAIN LEVEL
STATE OF MICHIGAN
RYAN
PROFESSIONAL ENGINEER
6201309280
Weaver Consultants Group
SHEET:
M2.01
SCALE: AS NOTED
06/09/2022



PLAN
SCALE: 1/8"=1'-0"

GENERAL NOTES

1. REFER TO TANK DETAIL DRAWING SHEET M4.01 FOR TANK CONNECTION DETAILS.
2. EXACT NUMBER AND LOCATION OF MONORAIL HOISTS TO BE DETERMINED AFTER THE FINAL PLACEMENT OF PROCESS PUMPS AND EQUIPMENT HAS BEEN ESTABLISHED. THE CONTRACTOR SHALL COORDINATE WITH ENGINEER BEFORE FINAL INSTALLATION OF HOISTS.
3. ALL PROCESS PIPING SHALL BE PLACE SO AS NOT TO INTERFERE WITH ANY TRAVEL ALONG THE MONORAIL HOISTS.

NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

STATE OF MICHIGAN — RYAN BYMA — ENGINEER — LICENSED PROFESSIONAL ENGINEER — 6201300280

PREPARED FOR: REPUBLIC SERVICES
28470 CITRIN DR., ROMULUS, MICHIGAN

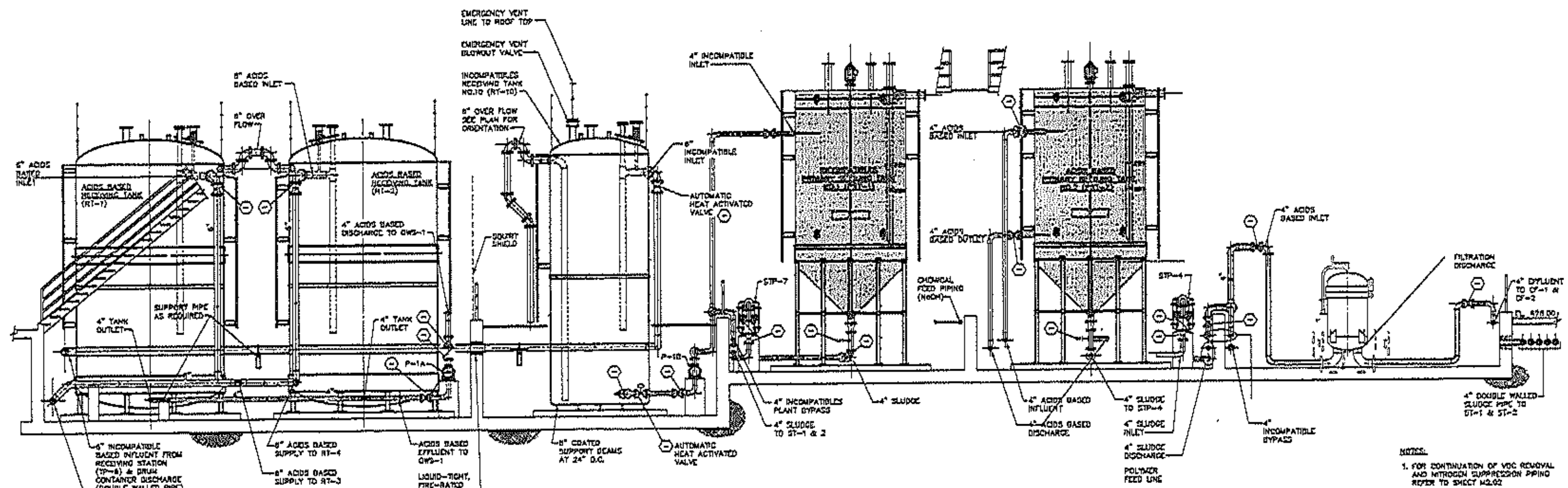
PROCESS PLAN MEZZANINE AND UPPER LEVEL

Weaver Consultants Group

SHEET: M2.02

SCALE: AS NOTED — DATE: 06/09/2022

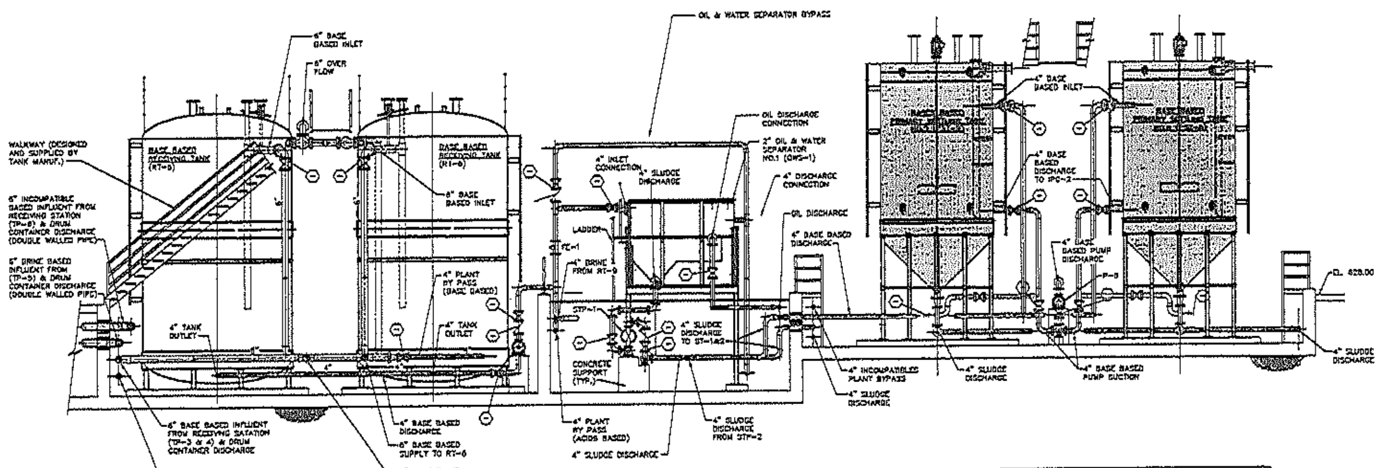
Xref X2-0808-CUT/6001.dwg



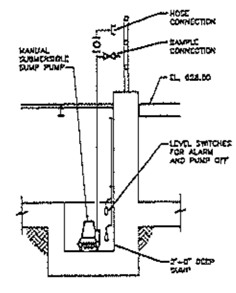
SECTION (A)
SCALE: NTS

NOTES:

1. FOR CONTINUATION OF VOC REMOVAL AND NITROGEN SUPPRESSION PIPING REFER TO SHEET M2.02
2. FOR PIPE CONNECTIONS ON TOP OF TANKS REFER TO SHEETS M4.01 & M4.02
3. ALL PROCESS PIPING SHALL BE PLACED SO AS NOT TO INTERFERE WITH ANY TRAVEL ALONG MONORAIL HOISTS. (REFER TO SHEET M2.02 FOR HOIST LOCATIONS)



SECTION (B)
SCALE: NTS



SUMP DETAIL (TYP) (1)
SCALE: NTS

NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

PREPARED FOR:
REPUBLIC SERVICES
28470 CITRIN DR., ROMULUS, MICHIGAN

BUILDING PROCESS SECTIONS

STATE OF MICHIGAN
RYAN BYMA
ENGINEER
No. 6201309280
LICENSED PROFESSIONAL ENGINEER

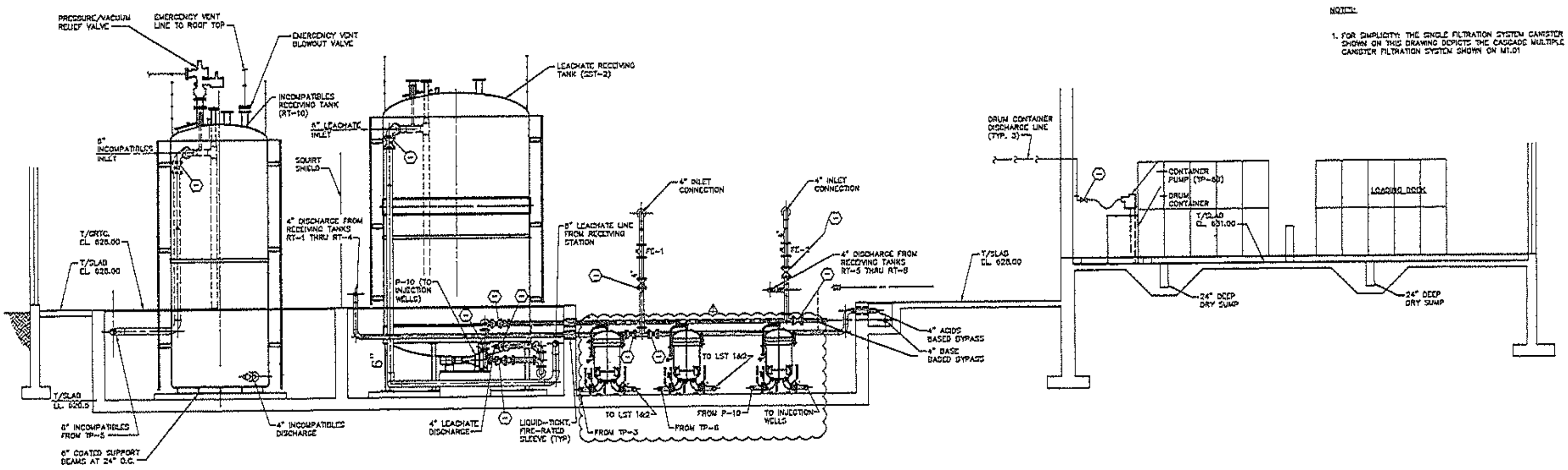
DATE: 06/09/2022

Weaver Consultants Group

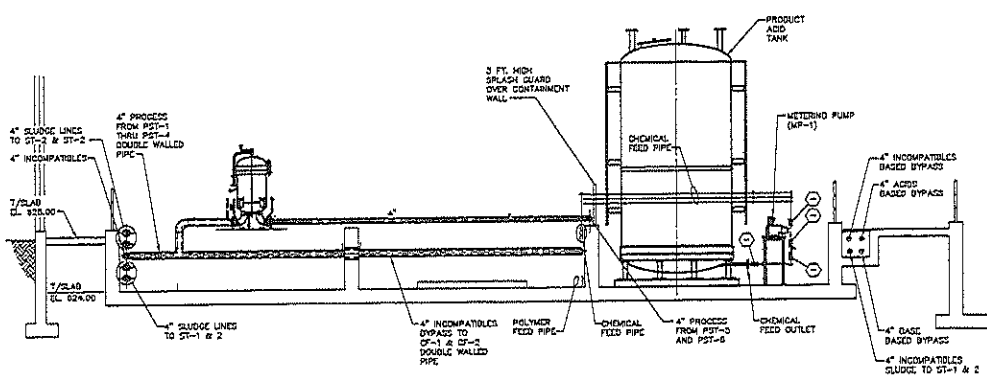
SHEET: M3.01

NOTES:

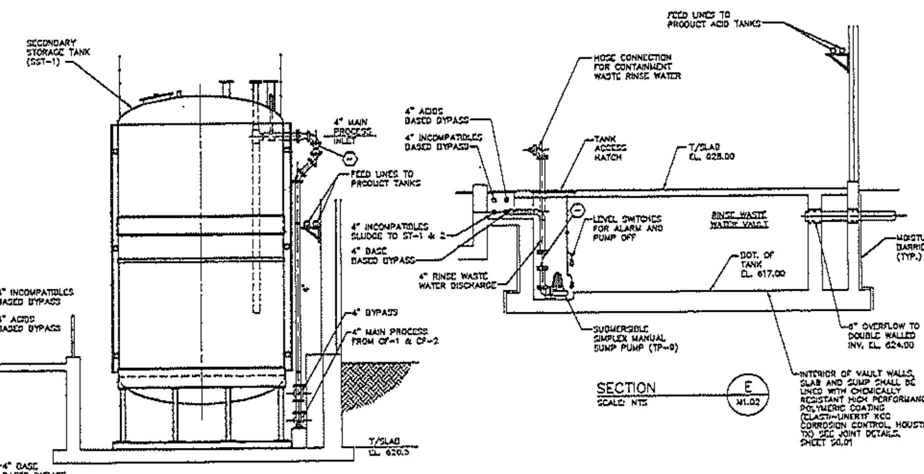
1. FOR SIMPLICITY: THE SINGLE FILTRATION SYSTEM CANISTER SHOWN ON THIS DRAWING DEPICTS THE CASCADE MULTIPLE CANISTER FILTRATION SYSTEM SHOWN ON M1.01



SECTION C
SCALE: NTS M2.01



SECTION D
SCALE: NTS M2.01



SECTION E
SCALE: NTS M1.02

NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

PREPARED FOR: REPUBLIC SERVICES — 28470 CITRIN DR., ROMULUS, MICHIGAN

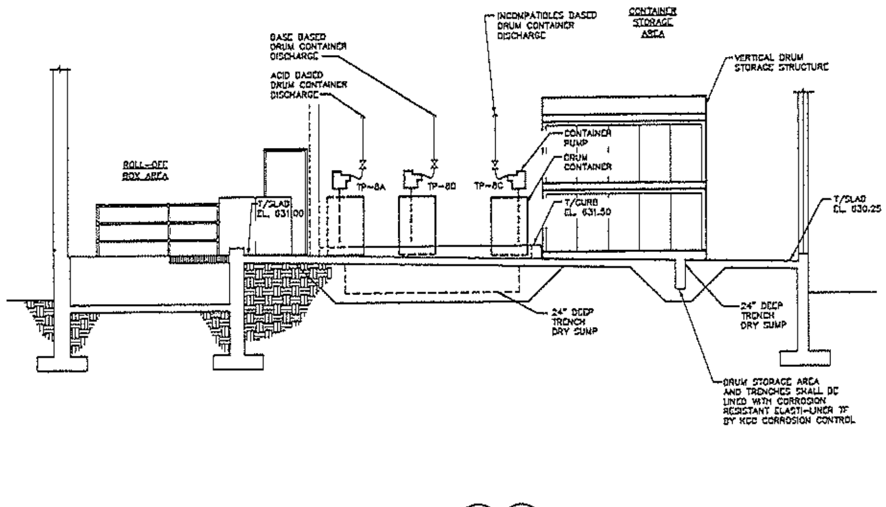
BUILDING PROCESS SECTIONS

Weaver Consultants Group

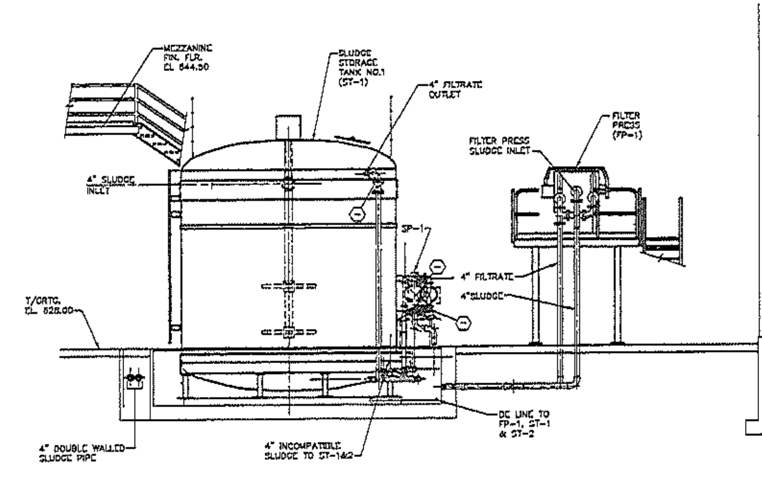
SHEET: M3.02

STATE OF MICHIGAN — RYAN SYMA — ENGINEER — No. 6201309280 — LICENSED PROFESSIONAL ENGINEER

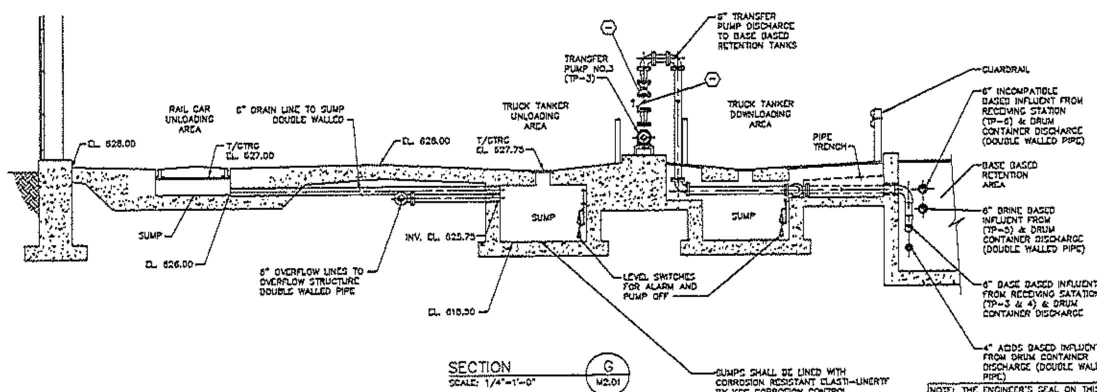
SCALE: AS NOTED — SEALED: 06/09/2022



SECTION (H/M1.02) (J/M1.02) SIMILAR
SCALE: 1/4"=1'-0"



SECTION (F/M2.01)
SCALE: 1/4"=1'-0"



SECTION (G/M2.01)
SCALE: 1/4"=1'-0"

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE LATEST EDITION OF BUILDING CODES, ORDINANCES, AND REGULATIONS: STATE HEALTH AND SAFETY ORDERS, 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. REFER TO PROJECT CONTRACT DOCUMENTS FOR ADDITIONAL SCOPE OR WORK REQUIRED FOR WORK COMPLETION.
6. REFER TO STRUCTURAL DRAWINGS FOR COORDINATION OF MECHANICAL PIPE PENETRATIONS THROUGH CONCRETE.
7. COORDINATE ALL OPENINGS IN THE SLAB AND WALLS WITH GENERAL CONTRACTOR.
8. CONTRACTOR SHALL COORDINATE PROCESS PLANS, SECTIONS, SCHEMATICS AND DETAILS WHEN LAYING OUT PIPING TO ENSURE THAT ALL VALVES, METERS AND RELATED EQUIPMENT ARE INCLUDED IN THEIR PROPER SEQUENCE.
9. MECHANICAL DRAWINGS ARE SCHEMATIC IN NATURE AND ARE INTENDED TO CONVEY DESIGN INTENT ONLY. REQUIRED OFFSETS, FITTINGS AND GENERAL INSTALLATION REQUIREMENTS ARE THE RESPONSIBILITY OF THE CONTRACTOR
10. CONTRACTOR SHALL RECORD ON AS-BUILT DRAWINGS ALL SIZES, MATERIAL, ELEVATIONS AND LOCATIONS OF ALL THE EQUIPMENT AND PIPING THAT DEVIATE FROM THE DESIGN CONTRACT DRAWINGS.

NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

REV.	11/14/22	REVISION
REV.	08/04/20	SITE PERMIT RE-CERTIFICATION
REV.	02/18/00	AS-BUILT
REV.	01/22/03	
REV.	03/30/01	[illegible]
	—	ORIGINAL ISSUE

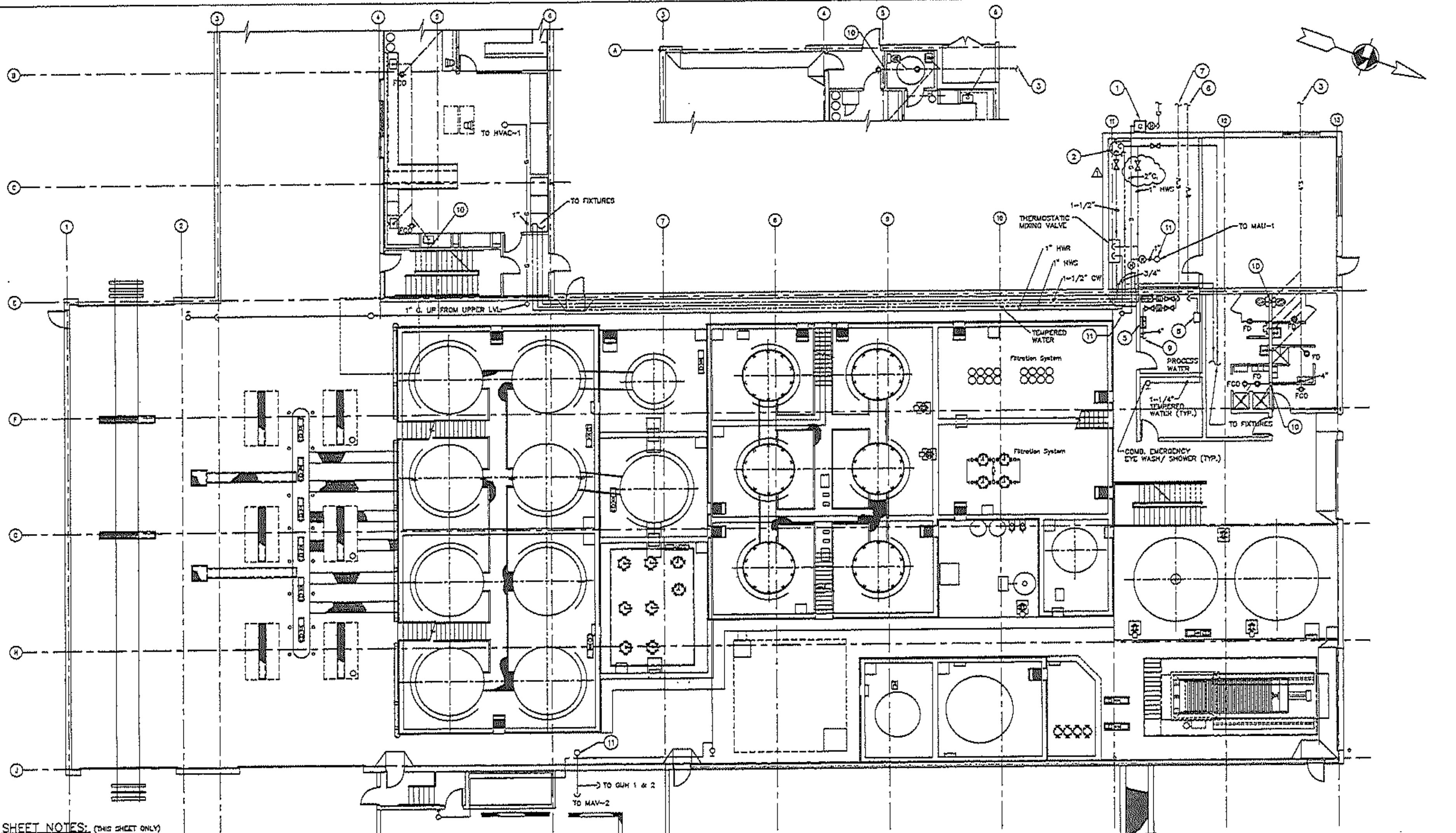
STATE OF MICHIGAN — RYAN BYMA — ENGINEER — No. 6201309250 — LICENSED PROFESSIONAL ENGINEER
SEALED: 11/14/2022

PREPARED FOR: REPUBLIC SERVICES
28470 CITRIN DR., ROMULUS, MICHIGAN

BUILDING PROCESS SECTIONS

Weaver Consultants Group

SHEET M3.03



SHEET NOTES: (THIS SHEET ONLY)

1. GAS METER AND UNDERGROUND GAS SERVICE (LOW PRESSURE SET) BY LOCAL GAS COMPANY.
2. GAS WATER HEATER 75 GAL, 80 MGH INPUT WITH 1/25 HP, 120 VAC CIRC. PUMP.
3. 4" SAN, BELOW GRADE, FOR CONTINUATION SEE SHEET C2.03.
4. 1-1/2" COMPOUND WATER METER ASSEMBLY WITH SOV'S UNION AND 2" BYPASS. PROVIDE AND PAID FOR BY CONTRACTOR, CONFORMING TO LOCAL WATER AUTHORITY REQUIREMENTS.
5. REDUCED PRESSURE BACKFLOW PREVENTER.
6. 8"W FOR FIRE SPRINKLER SYSTEM, FOR CONTINUATION SEE SHEET C2.03.
7. 6"W BELOW GRADE, FOR CONTINUATION SEE SHEET C2.03.
8. FIRE SPRINKLER SYSTEM, REFER TO SHEET F1.03.
9. 4" TO PROCESS WATER, SEE SHEET M2.02.
10. 4" VENT THRU ROOF.
11. 2" LC FOR CONTINUATION SEE SHEET M6.03

PLAN
SCALE: 1/8"=1'-0"

NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

REV.			
REV.		[illegible]	SITE PERMIT RE-CERTIFICATION
REV.		[illegible]	
REV.		[illegible]	AS-BUILT
REV.		[illegible]	
REV.		[illegible]	BID
		—	ORIGINAL ISSUE
SCALE: AS NOTED	DRAWN BY:	CHECKED BY:	

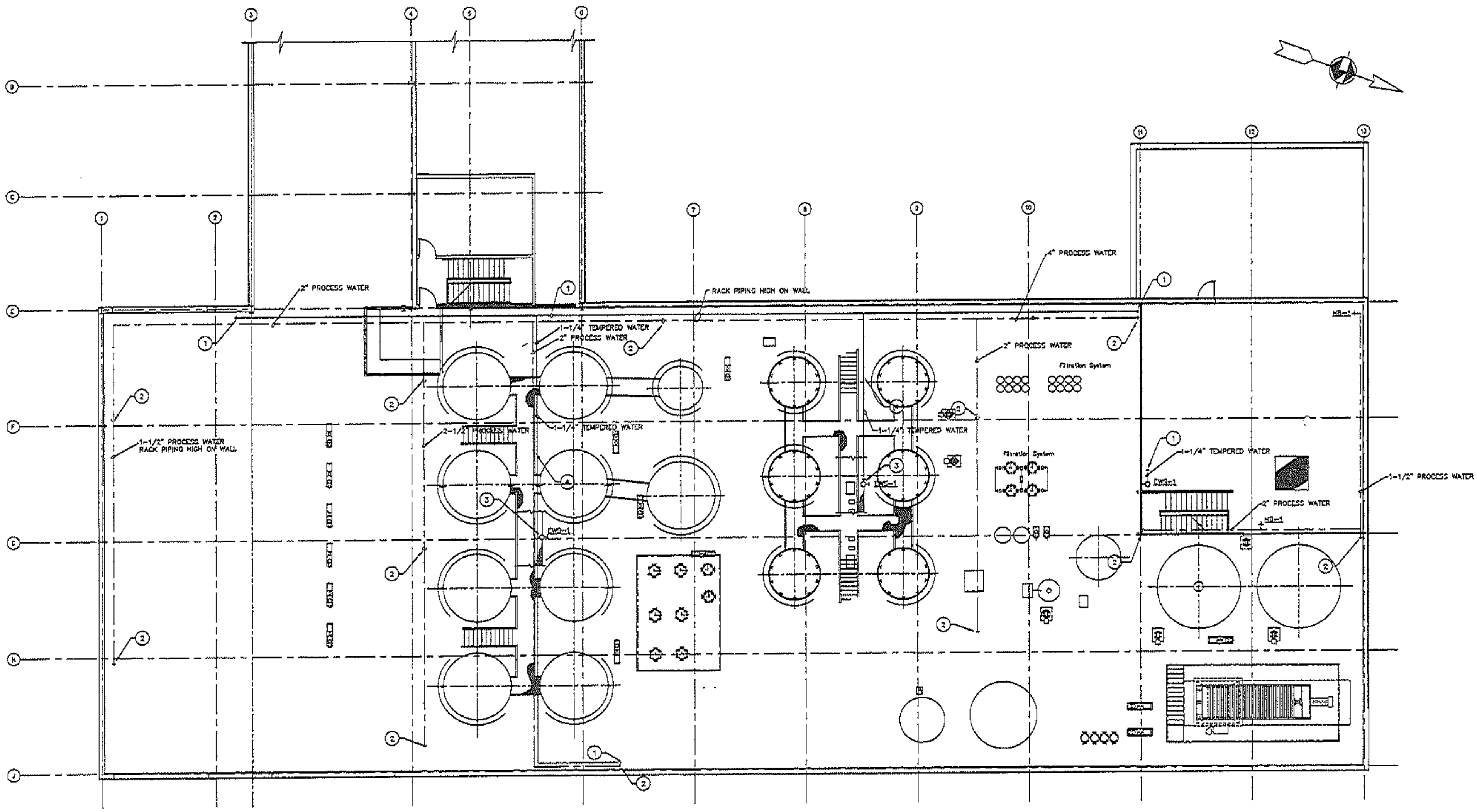
STATE OF MICHIGAN — RYAN [illegible] ENGINEER No. 6201309280 — LICENSED PROFESSIONAL ENGINEER
SEAL DATE: 06/09/2022

PREPARED FOR: REPUBLIC SERVICES
20470 CITRIN DR., ROMULUS, MICHIGAN

PLUMBING PLAN MAIN LEVEL

Weaver Consultants Group

SHEET: M5.02



PLAN
SCALE: 1/8"=1'-0"

SHEET NOTES: (THIS SHEET ONLY)

1. TEMPERED WATER DOWN. SEE SHEET M5.02 FOR CONTINUATION.
2. PROCESS WATER DOWN. SEE SHEET M5.02 FOR CONTINUATION.
3. 1-1/4" TEMPERED WATER DOWN TO COMBO. EMERGENCY EYEWASH/ SHOWER MOUNTED AT GRATING LEVEL.
4. RUN PIPING TIGHT TO ROOF JOIST AND ENSURE THAT THERE IS NO INTERFERENCE WITH MONORAIL HOIST.

NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

GENERAL NOTES:

1. CONTRACTOR TO SUPPORT PIPING AS REQUIRED.
2. ALL PIPING SHALL BE PLACED SO NOT TO INTERFERE WITH ANY TRAVEL ALONG THE MONORAIL HOISTS.
3. WHENEVER POSSIBLE CONTRACTOR SHALL RUN PIPING TIGHT TO STRUCTURAL COLUMNS, BEAM, OR ROOF TRUSTS.

REV.	06/09/22	SITE PERMIT RE-CERTIFICATION
REV.	05/18/17	
REV.	10/15/09	AS-BUILT
REV.	01/25/03	
REV.	04/04/07	ADDENDUM NO.1
REV.	03/20/07	BID
	----	ORIGINAL ISSUE
SCALE: AS NOTED	DRAWN BY	CHECKED BY

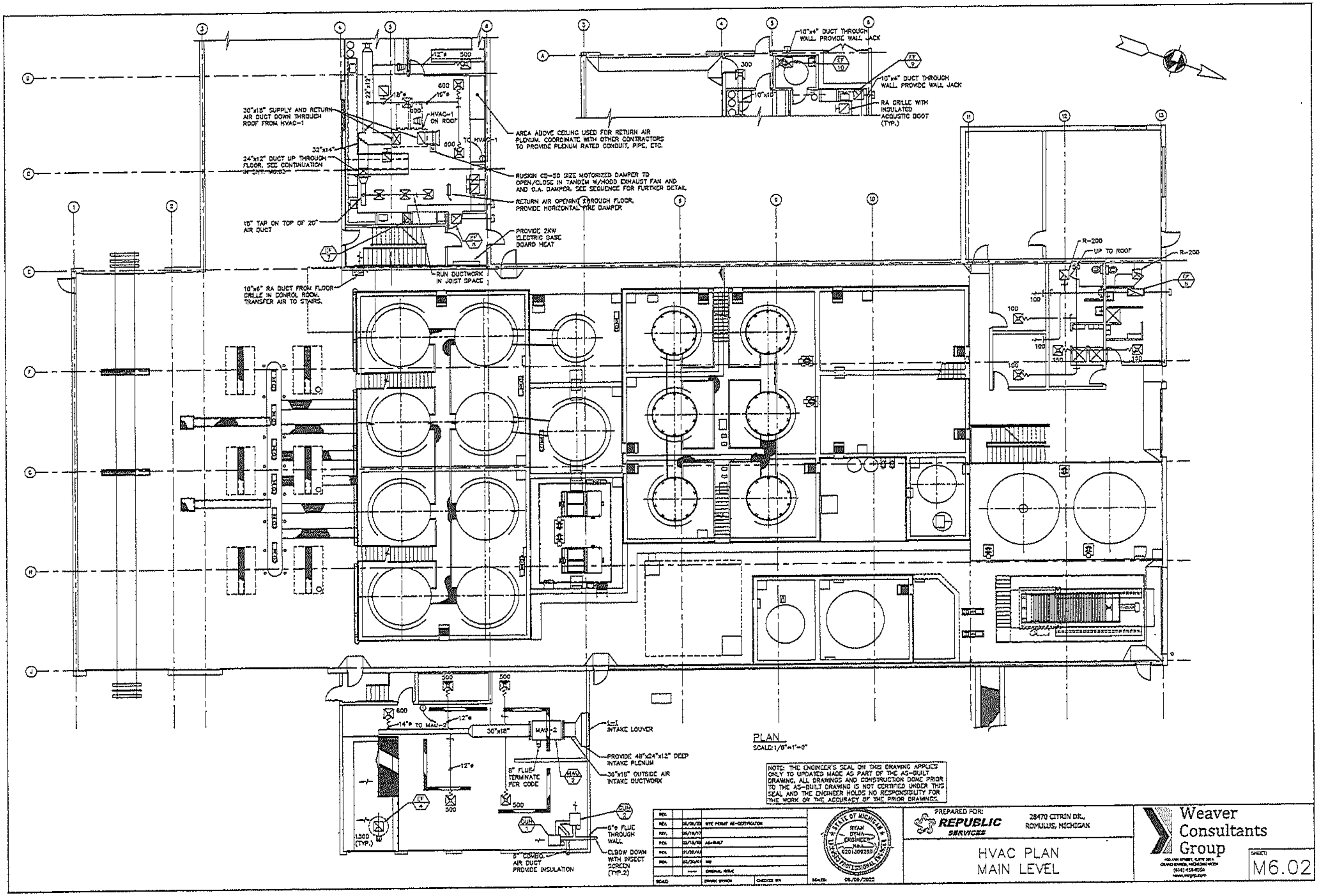
STATE OF MICHIGAN · RYAN SYMA · ENGINEER · No. 6201309280 · LICENSED PROFESSIONAL ENGINEER
SEALED: 06/09/2022

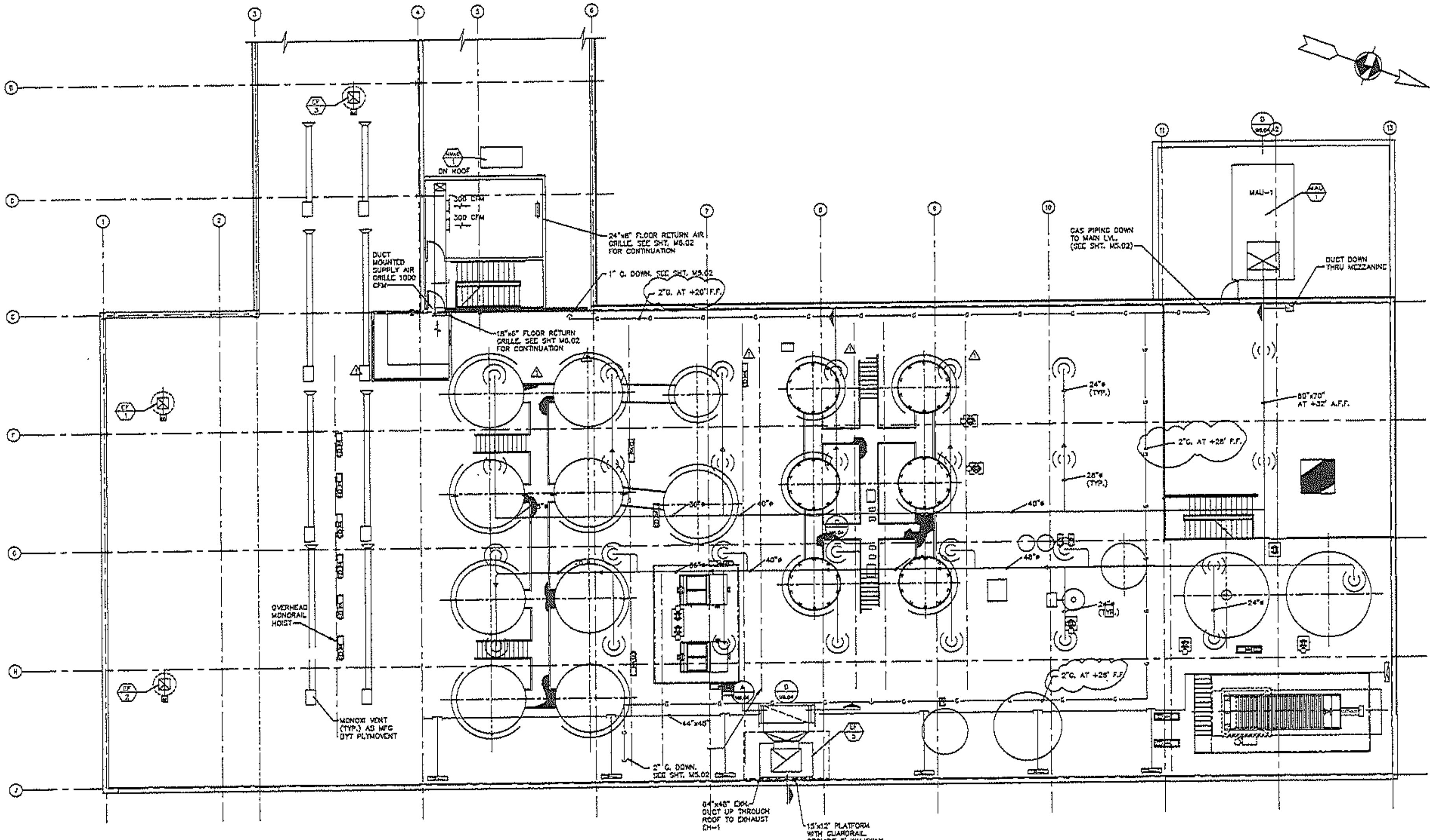
PREPARED FOR: REPUBLIC SERVICES
28470 CITRIN DR., ROMULUS, MICHIGAN

PLUMBING PLAN
MEZZANINE AND UPPER LEVEL

Weaver Consultants Group
(616) 438-8056
www.wcgrp.com

SHEET: M5.03


30"x18" SUPPLY AND RETURN AIR DUCT DOWN THROUGH ROOF FROM HVAC-1
32"x14"
24"x12" DUCT UP THROUGH FLOOR. SEE CONTINUATION IN SHT. M6.03
15" TAP ON TOP OF 20" AIR DUCT
10"x6" RA DUCT FROM FLOOR GRILLE IN CONROL ROOM. TRANSFER AIR TO STAIRS.
RUN DUCTWORK IN JOIST SPACE
HVAC-1 ON ROOF
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/HOOD EXHAUST FAN AND AND O.A. DAMPER. SEE SEQUENCE FOR FURTHER DETAIL
RETURN AIR OPENING THROUGH FLOOR. PROVIDE HORIZONTAL FIRE DAMPER
PROVIDE 2KW ELECTRIC BASE BOARD HEAT
10"x4" DUCT THROUGH WALL. PROVIDE WALL JACK
10"x4" DUCT THROUGH WALL. PROVIDE WALL JACK
RA GRILLE WITH INSULATED ACOUSTIC BOOT (TYP.)
R-200
UP TO ROOF
R-200
14"ø TO MAU-2
30"x18"
MAU-2
L-1 INTAKE LOUVER
PROVIDE 48"x24"x12" DEEP INTAKE PLENUM
30"x18" OUTSIDE AIR INTAKE DUCTWORK
8" FLUE-TERMINATE PER CODE
6"ø FLUE THROUGH WALL
ELBOW DOWN WITH INSECT SCREEN (TYP.2)
5" COMBO. AIR DUCT PROVIDE INSULATION
1300 (TYP.)
PLAN
SCALE: 1/8"=1'-0"
NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATED MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.
PREPARED FOR:
REPUBLIC SERVICES
28470 CITRIN DR.,
ROMULUS, MICHIGAN
HVAC PLAN
MAIN LEVEL
Weaver Consultants Group
SHEET:
M6.02
STATE OF MICHIGAN
RYAN DYMA ENGINEER
PROFESSIONAL
05/09/2022



PLAN
SCALE: 1/8"=1'-0"

NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

GENERAL NOTES

1. FOR MONORAIL HOIST LOCATIONS AND DETAILS REFER TO APPROPRIATE ARCHITECTURAL, STRUCTURAL & MECHANICAL SHEETS.
2. EXACT NUMBER AND LOCATION OF MONORAIL HOISTS TO BE DETERMINED AFTER THE FINAL PLACEMENT OF PROCESS PUMPS AND EQUIPMENT HAS BEEN ESTABLISHED. THE CONTRACTOR SHALL COORDINATE WITH ENGINEER BEFORE FINAL INSTALLATION OF HOISTS.
2. ALL PROCESS PIPE AND DUCT SHALL BE PLACE SO AS NOT TO INTERFERE WITH ANY TRAVEL ALONG THE MONORAIL HOISTS.

REV.		
REV.	04/04/22	SITE PERMIT AS-CERTIFICATION
REV.	05/16/17	
REV.	12/15/09	AS-BUILT
REV.	01/22/03	
REV.	02/20/01	BID
		ORIGINAL ISSUE
SCALE	DRAWN	CHECKED

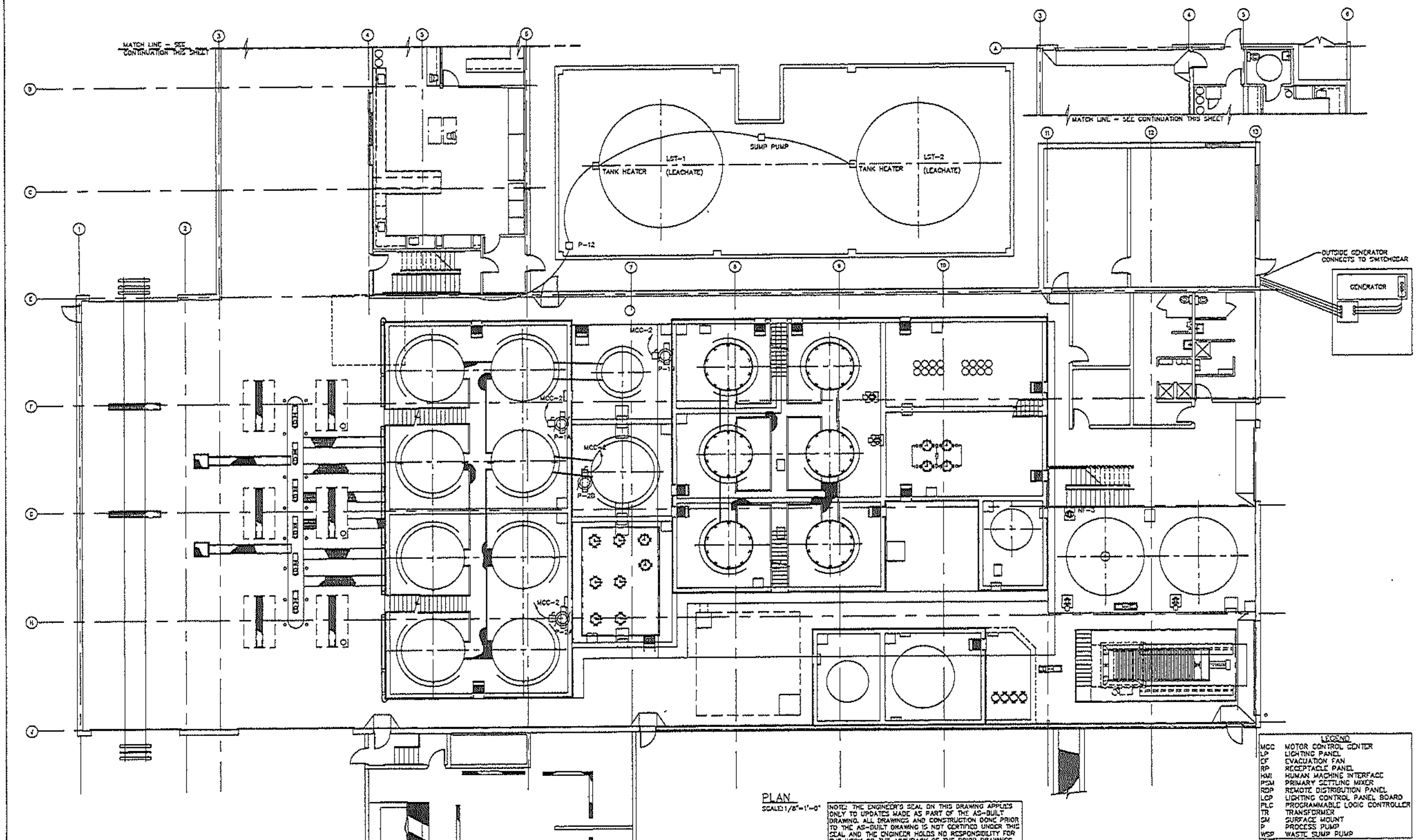
STATE OF MICHIGAN — RYAN DYMA — ENGINEER — No. 6201309280 — LICENSED PROFESSIONAL ENGINEER
06/09/2022

PREPARED FOR:
REPUBLIC SERVICES
28470 CITRIN DR., ROMULUS, MICHIGAN

HVAC PLAN
MEZZANINE AND UPPER LEVEL

Weaver Consultants Group

SHEET: M6.03



LEGEND

MCC	MOTOR CONTROL CENTER
LP	LIGHTING PANEL
EF	EVACUATION FAN
RP	RECEPTACLE PANEL
HMI	HUMAN MACHINE INTERFACE
PSM	PRIMARY SETTLING MIXER
RDP	REMOTE DISTRIBUTION PANEL
LCP	LIGHTING CONTROL PANEL BOARD
PLC	PROGRAMMABLE LOGIC CONTROLLER
TR	TRANSFORMER
SM	SURFACE MOUNT
P	PROCESS PUMP
WSP	WASTE SUMP PUMP

PLAN
SCALE: 1/8"=1'-0"

NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

SCALE: AS NOTED

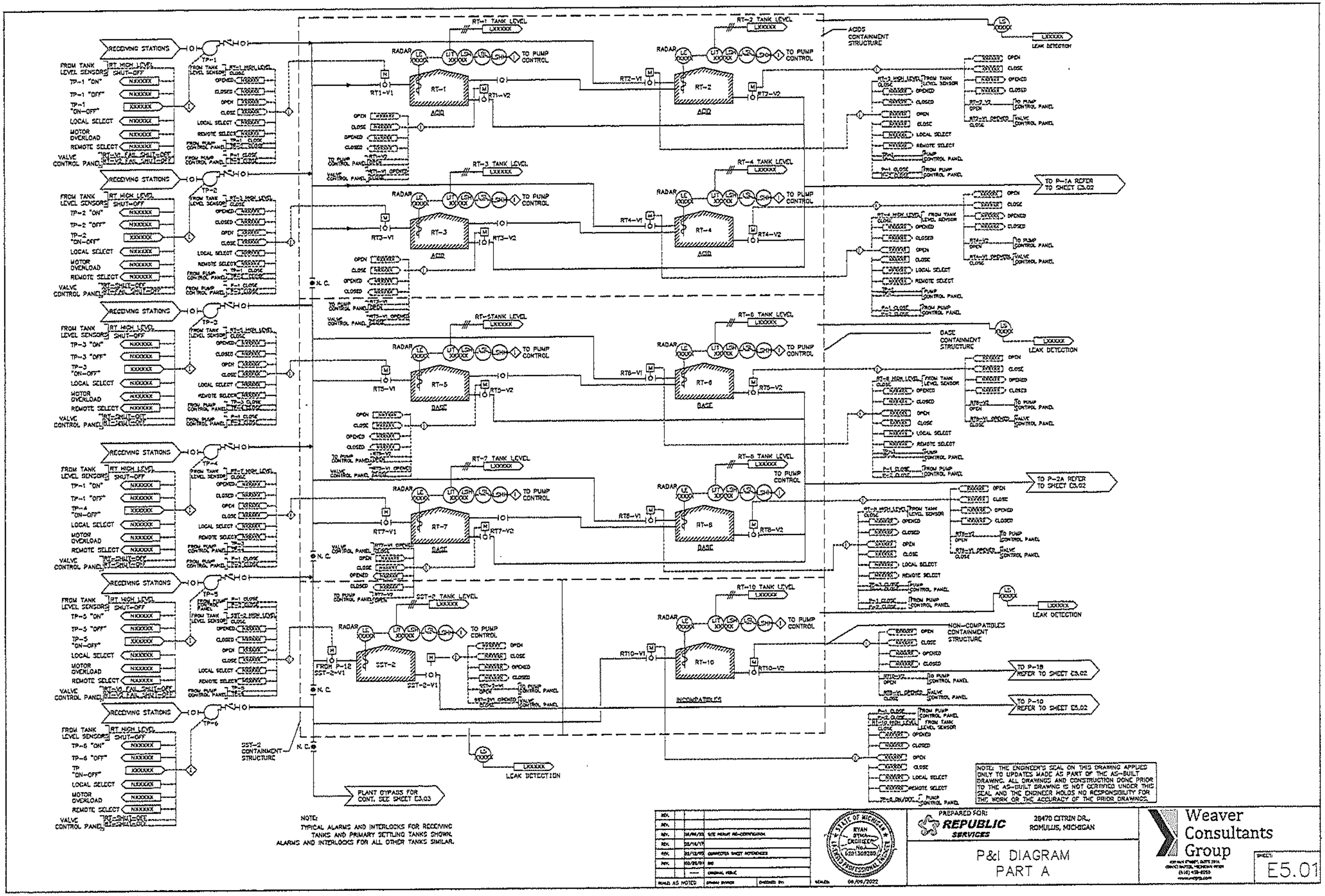
STATE OF MICHIGAN – RYAN ENGINEER – No. 6201309280 – LICENSED PROFESSIONAL ENGINEER
06/09/2022

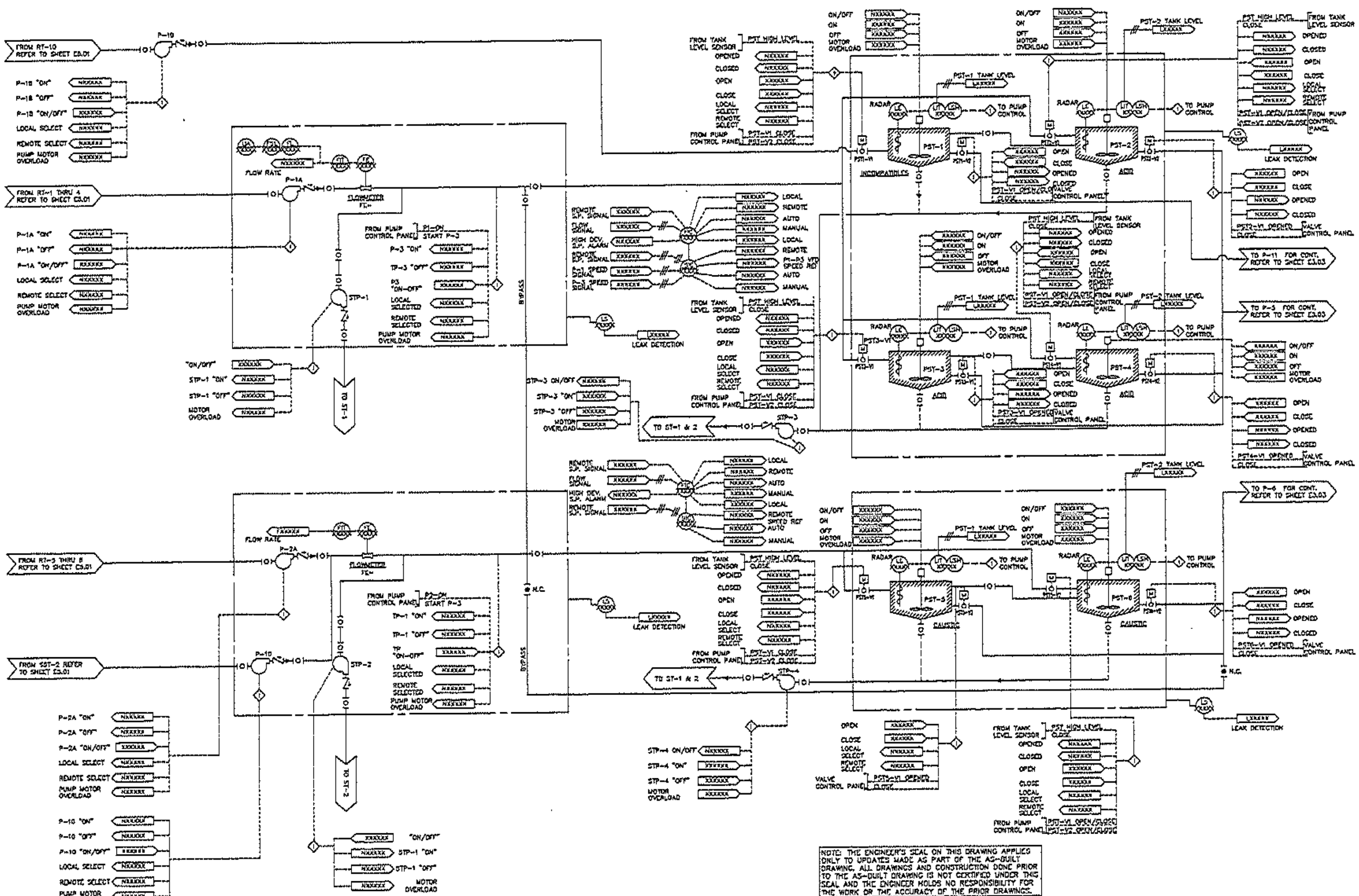
PREPARED FOR: REPUBLIC SERVICES
28470 CITRIN DR., ROMULUS, MICHIGAN

ELECTRICAL POWER PLAN
MAIN LEVEL

Weaver Consultants Group

SHEET: E3.03


RECEIVING STATIONS
RT-1 TANK LEVEL
RT-2 TANK LEVEL
RT-3 TANK LEVEL
RT-4 TANK LEVEL
RT-6 TANK LEVEL
RT-7 TANK LEVEL
RT-8 TANK LEVEL
RT-10 TANK LEVEL
SST-2 TANK LEVEL
TO PUMP CONTROL
RADAR
RT-1
RT-2
RT-3
RT-4
RT-5
RT-6
RT-7
RT-8
RT-10
SST-2
ACID
BASE
INCOMPATIBLES
ACIDS CONTAINMENT STRUCTURE
BASE CONTAINMENT STRUCTURE
NON-COMPATIBLES CONTAINMENT STRUCTURE
SST-2 CONTAINMENT STRUCTURE
LEAK DETECTION
TO P-1A REFER TO SHEET E5.02
TO P-2A REFER TO SHEET E5.02
TO P-1B REFER TO SHEET E5.02
TO P-1C REFER TO SHEET E5.02
PLANT BYPASS FOR CONT. SEE SHEET E5.03
FROM P-12
N. C.
FROM TANK LEVEL SENSORS
TP-1 "ON"
TP-1 "OFF"
TP-1 "ON-OFF"
LOCAL SELECT
MOTOR OVERLOAD
REMOTE SELECT
VALVE CONTROL PANEL
NOTE:
TYPICAL ALARMS AND INTERLOCKS FOR RECEIVING TANKS AND PRIMARY SETTLING TANKS SHOWN. ALARMS AND INTERLOCKS FOR ALL OTHER TANKS SIMILAR.
NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.
PREPARED FOR:
REPUBLIC SERVICES
28470 CITRIN DR., ROMULUS, MICHIGAN
P&I DIAGRAM
PART A
Weaver Consultants Group
SHEET:
E5.01
SCALE: AS NOTED
06/09/2022



NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

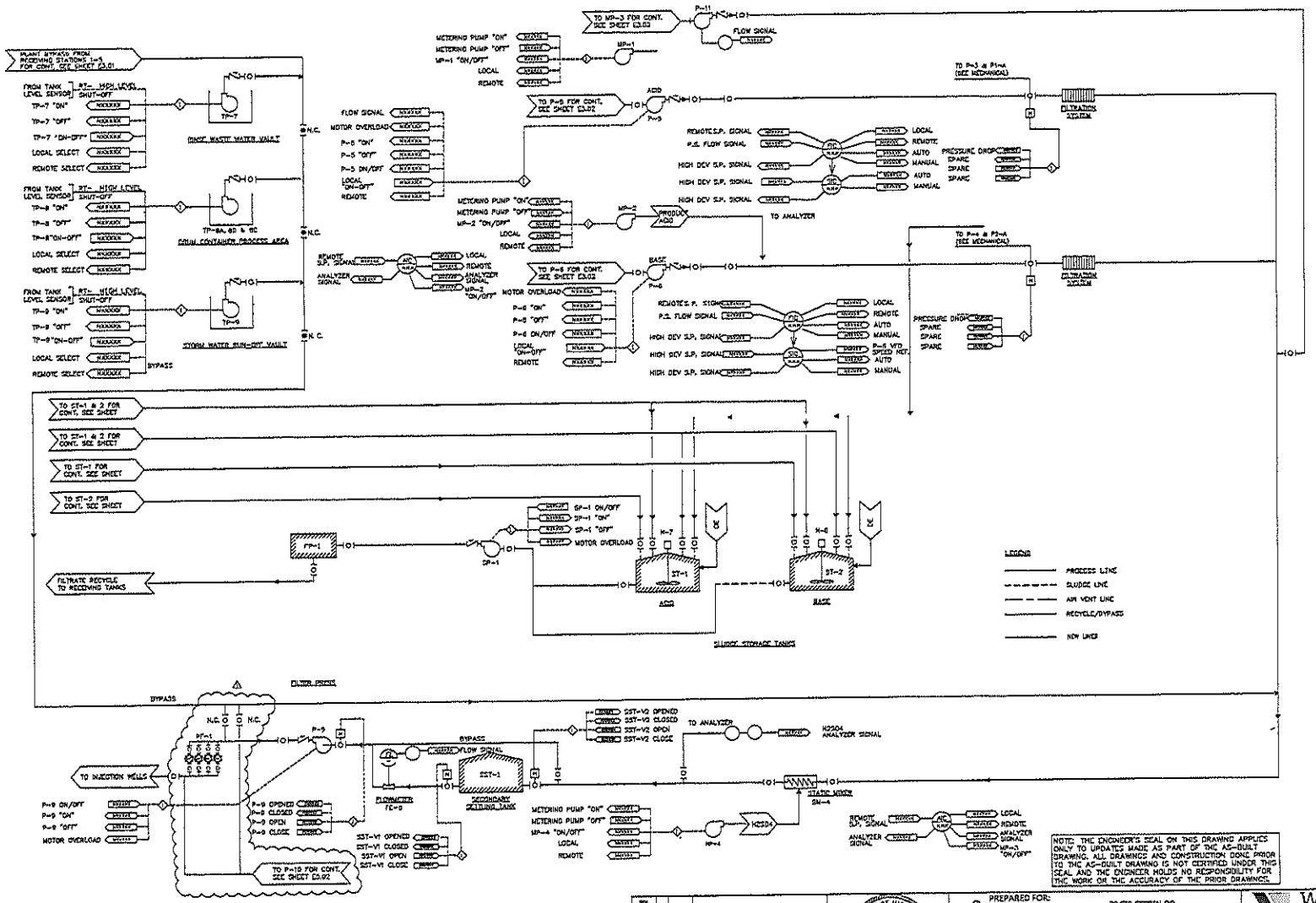
PREPARED FOR:
REPUBLIC SERVICES
28470 CITRIN DR., ROMULUS, MICHIGAN

P&I DIAGRAM
PART B

Weaver Consultants Group

SHEET: E5.02

06/09/2022



NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

NO.	DATE	REVISION
NO.	11/19/20	REVISION
NO.	04/09/21	SITE PLAN RE-ARRANGEMENT
NO.	01/28/22	PERMIT SUBMISSION AS BUILT
NO.	05/16/22	CORRECTED SHEET REFERENCES
NO.	08/05/22	AS
—	—	ORIGINAL ISSUE

SCALE AS NOTED | DRAWN BY/MDR | CHECKED BY

STATE OF MICHIGAN — RYAN BYRA — ENGINEER — No. 6201305260 — LICENSED PROFESSIONAL ENGINEER

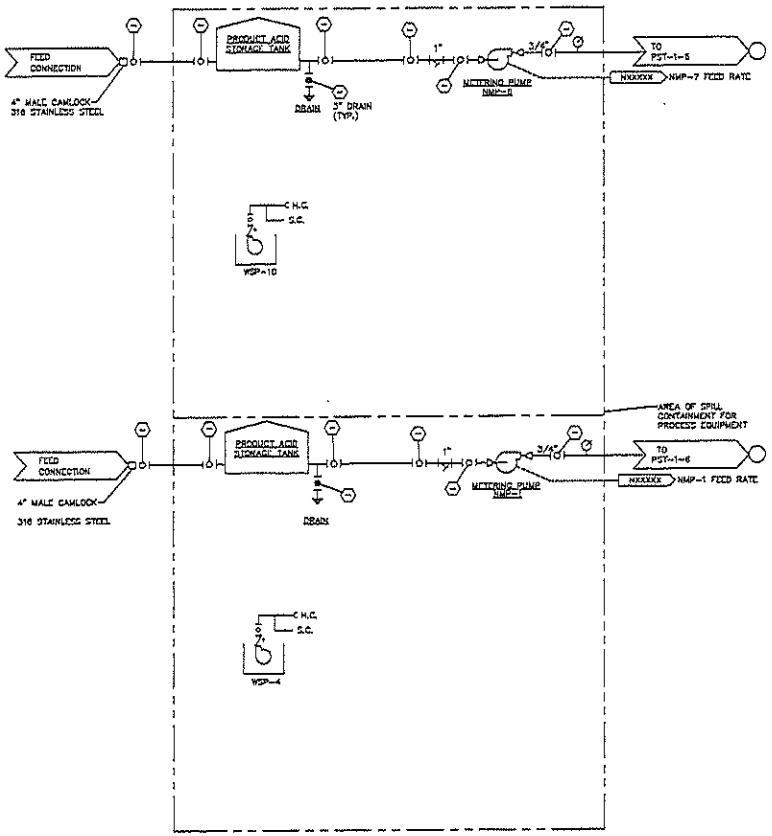
SEALED 11/18/2022

PREPARED FOR: REPUBLIC SERVICES — 28470 CITRIN DR., ROMULUS, MICHIGAN

P&I DIAGRAM PART C

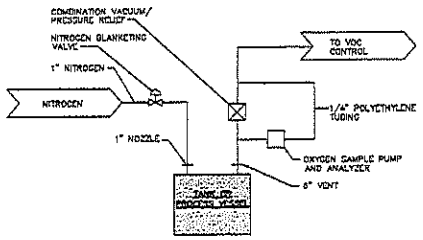
Weaver Consultants Group

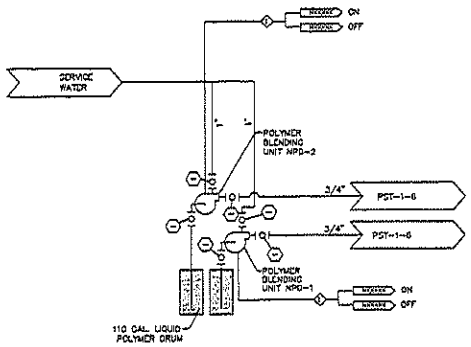
SHEET E5.03



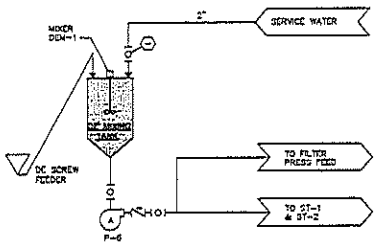
NITROGEN BLANKETING

(TYP. FOR RT-1 THROUGH RT-10, PST-1 THROUGH PST-6, DWS-1,2)

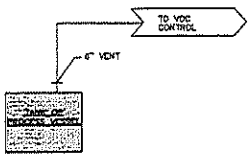




POLYMER FEED SYSTEM

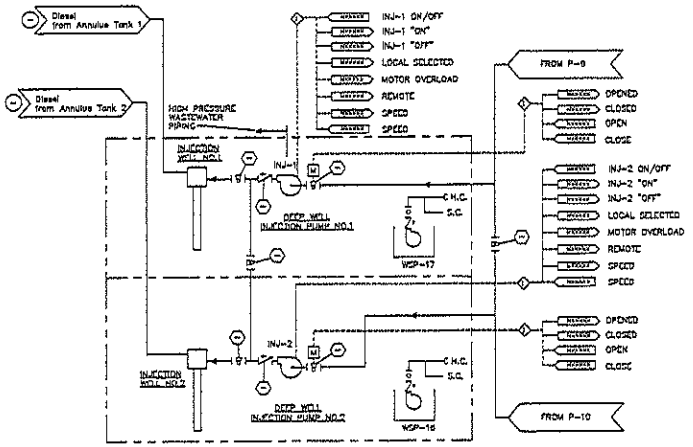


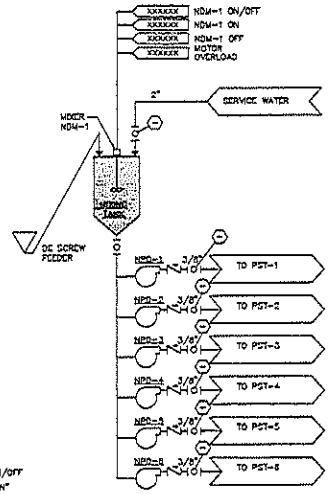
DIATOMACEOUS EARTH (DE) FEED SYSTEM



VOC CONTROL

(TYP. FOR ST1,2; SST-1)





DRY CHEMICAL FEED SYSTEM

LEGEND

- PROCESS LINE
- DOUBLE WALLED CONTAINMENT PIPING
- SLUDGE LINE
- NITROGEN LINE
- RECYCLE/BYPASS
- CONTAINMENT AREA
- AIR VENT LINE

NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

NO.		
NO.		
NO.		
NO.		
NO.	06/09/22	SITE POINT RE-CERTIFICATION
NO.	11/01/21	
NO.	04/14/21	PROJECT COMPLETION AS BUILT

ISSUED AS NOTED | DRAWN BY/DATE | CHECKED BY | SEALED 06/09/2022

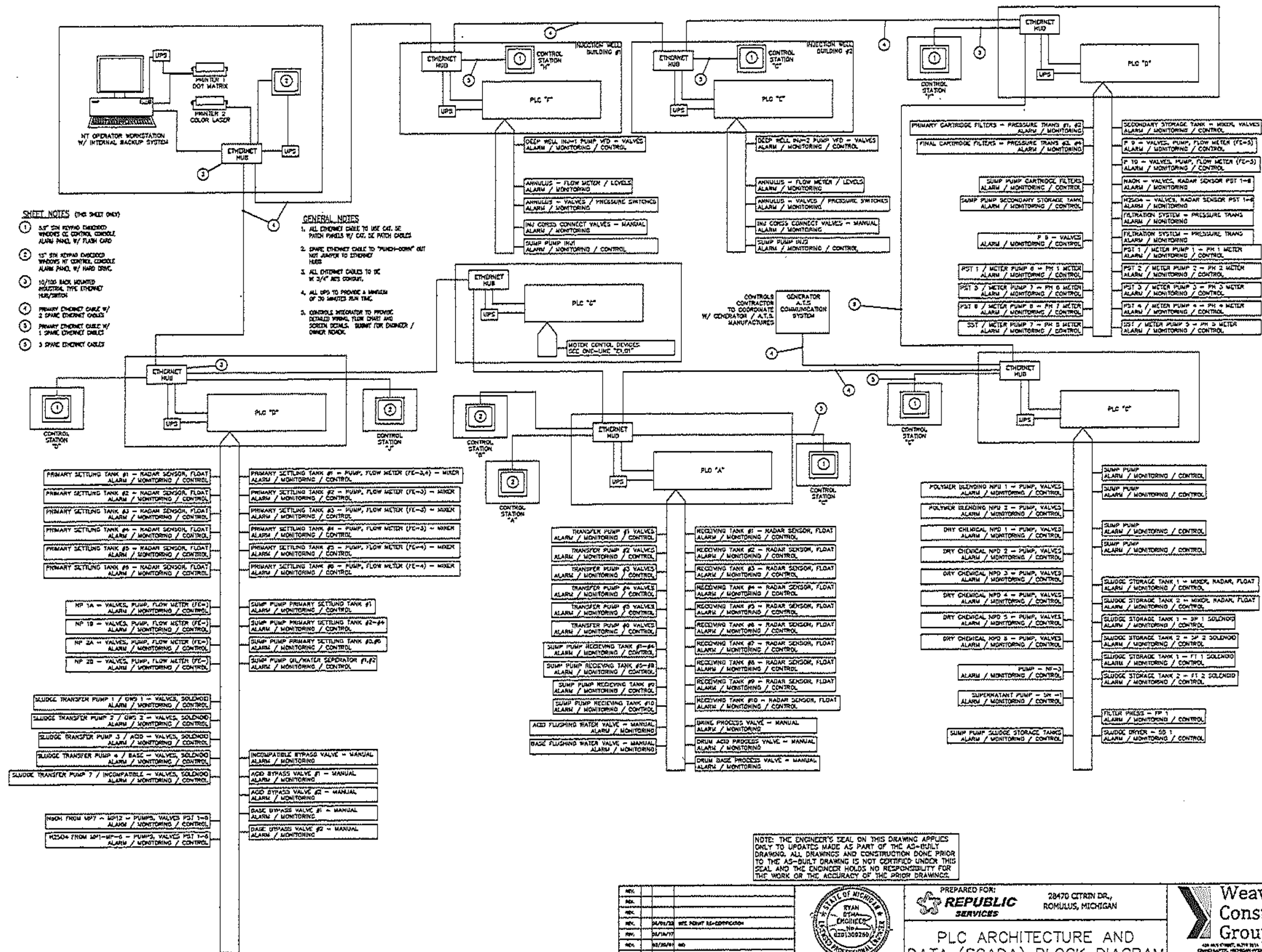
STATE OF MICHIGAN — RYAN RYAN — ENGINEER — No. 6201309289 — REGISTERED PROFESSIONAL ENGINEER

PREPARED FOR: REPUBLIC SERVICES — 28470 CITRIN DR., ROMULUS, MICHIGAN

P&I DIAGRAM PART D

Weaver Consultants Group

SHEET: E5.04



SHEET NOTES (THIS SHEET ONLY)

1. 5.5" STN KEYPAD EMBEDDED WINDOWS CE CONTROL CONSOLE ALARM PANEL W/ FLASH CARD
2. 15" STN KEYPAD EMBEDDED WINDOWS NT CONTROL CONSOLE ALARM PANEL W/ HARD DRIVE
3. 10/100 RACK MOUNTED INDUSTRIAL TYPE ETHERNET HUB/SWITCH
4. PRIMARY ETHERNET CABLE W/ 2 SPARE ETHERNET CABLES
5. PRIMARY ETHERNET CABLE W/ 1 SPARE ETHERNET CABLES
6. 3 SPARE ETHERNET CABLES

GENERAL NOTES

1. ALL ETHERNET CABLE TO USE CAT. 5E PATCH PANELS W/ CAT. 5E PATCH CABLES
2. SPARE ETHERNET CABLE TO "PUNCH-DOWN" OUT NOT JUMPER TO ETHERNET HUBS
3. ALL ETHERNET CABLES TO BE IN 3/4" RGS CONDUIT.
4. ALL UPS TO PROVIDE A MINIMUM OF 30 MINUTES RUN TIME.
5. CONTROLS INTEGRATOR TO PROVIDE DETAILED WIRING, FLOW CHART AND SCREEN DETAILS. SUBMIT FOR ENGINEER / OWNER REVIEW.

NOTE: THE ENGINEER'S SEAL ON THIS DRAWING APPLIES ONLY TO UPDATES MADE AS PART OF THE AS-BUILT DRAWING. ALL DRAWINGS AND CONSTRUCTION DONE PRIOR TO THE AS-BUILT DRAWING IS NOT CERTIFIED UNDER THIS SEAL AND THE ENGINEER HOLDS NO RESPONSIBILITY FOR THE WORK OR THE ACCURACY OF THE PRIOR DRAWINGS.

STATE OF MICHIGAN — RYAN DYMA — ENGINEER — No. 6201309260 — LICENSED PROFESSIONAL ENGINEER

SEALED: 06/09/2022

PREPARED FOR: REPUBLIC SERVICES

28470 CITRIN DR., ROMULUS, MICHIGAN

PLC ARCHITECTURE AND DATA (SCADA) BLOCK DIAGRAM

Weaver Consultants Group

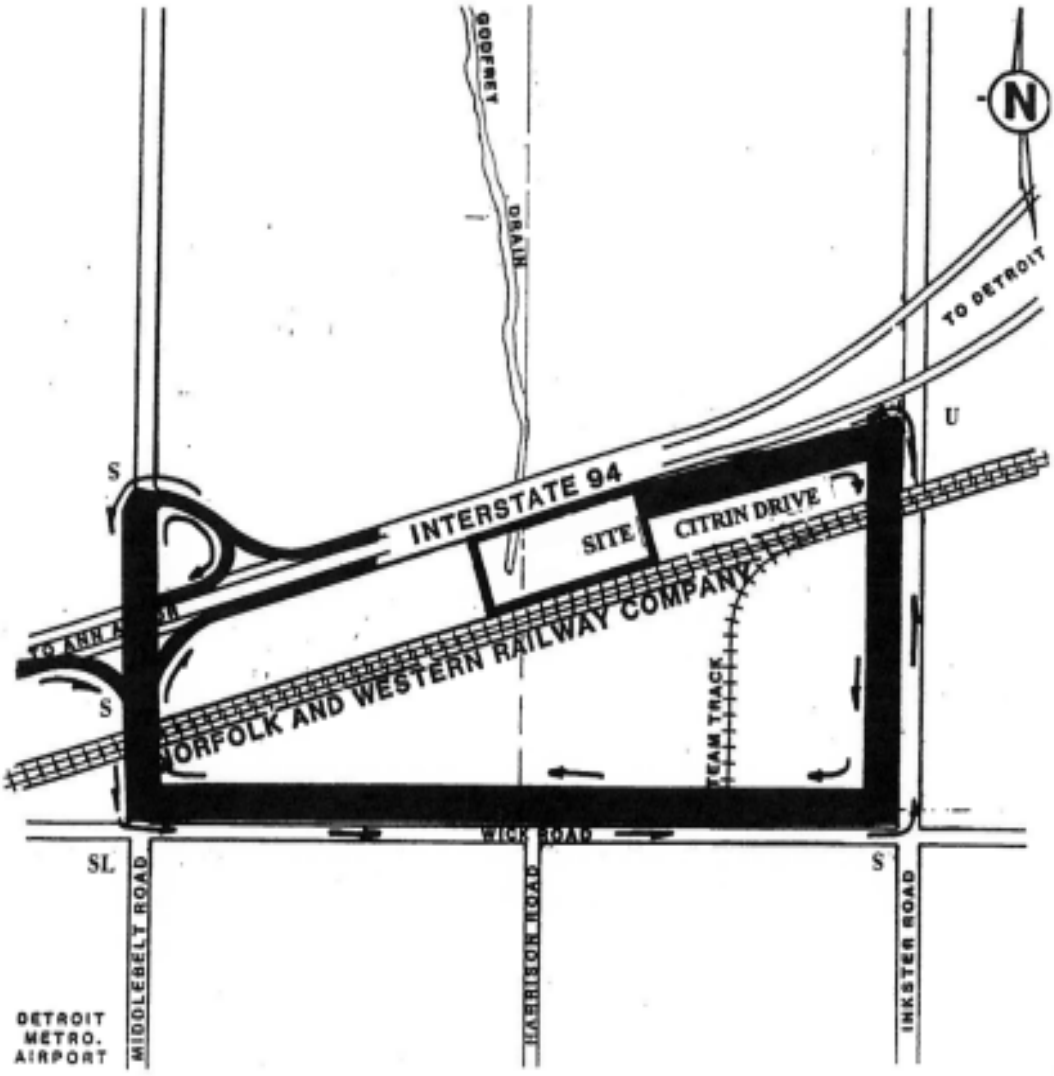
SHEET: E6.01

Attachment 8

Truck Route

APPENDIX A8.A TRAFFIC ROUTES

Figure A9-1



Attachment 9

List of Acceptable Hazardous Wastes

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	U404
U026	U066	U105	U143	U181	U222	U409
U027	U067	U106	U144	U182	U223	U410
U028	U068	U107	U145	U183	U225	U411
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	

Attachment 10

Containers

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

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 and Containers 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. 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, bases, 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	U404
U026	U066	U105	U143	U181	U222	U409
U027	U067	U106	U144	U182	U223	U410
U028	U068	U107	U145	U183	U225	U411
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., X, Y, or Z, 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, base, 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. To comply with regulations containers will be labeled with “Hazardous Waste”, generator name and address, proper DOT shipping name, EPA ID number, and EPA waste codes, and a copy of the manifest remaining with the containers until they are processed. If the waste is non-hazardous, a container will be labeled with generator name, generator address, and contents of container. 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 and (ii) a separate curbed area located within the Container Storage Area utilized for storage and container processing. 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

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
Total Secondary Containment Volume:				**1421.13**

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. 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 are segregated from other wastes within the Container Storage Area. Containerized wastes that are incompatible are only pumped into Receiving Tanks that contain wastes compatible to the waste being off-loaded. Table C.1F shows there are several staging areas to allow for the segregation of incompatible wastes.

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 Fluid Handling Online Selection Tool Page 1 of 2

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									

http://www.entegrisfluidhandling.com/Default.asp?G=1019&ln=en&PrinterFriendly=True 5/26/2010

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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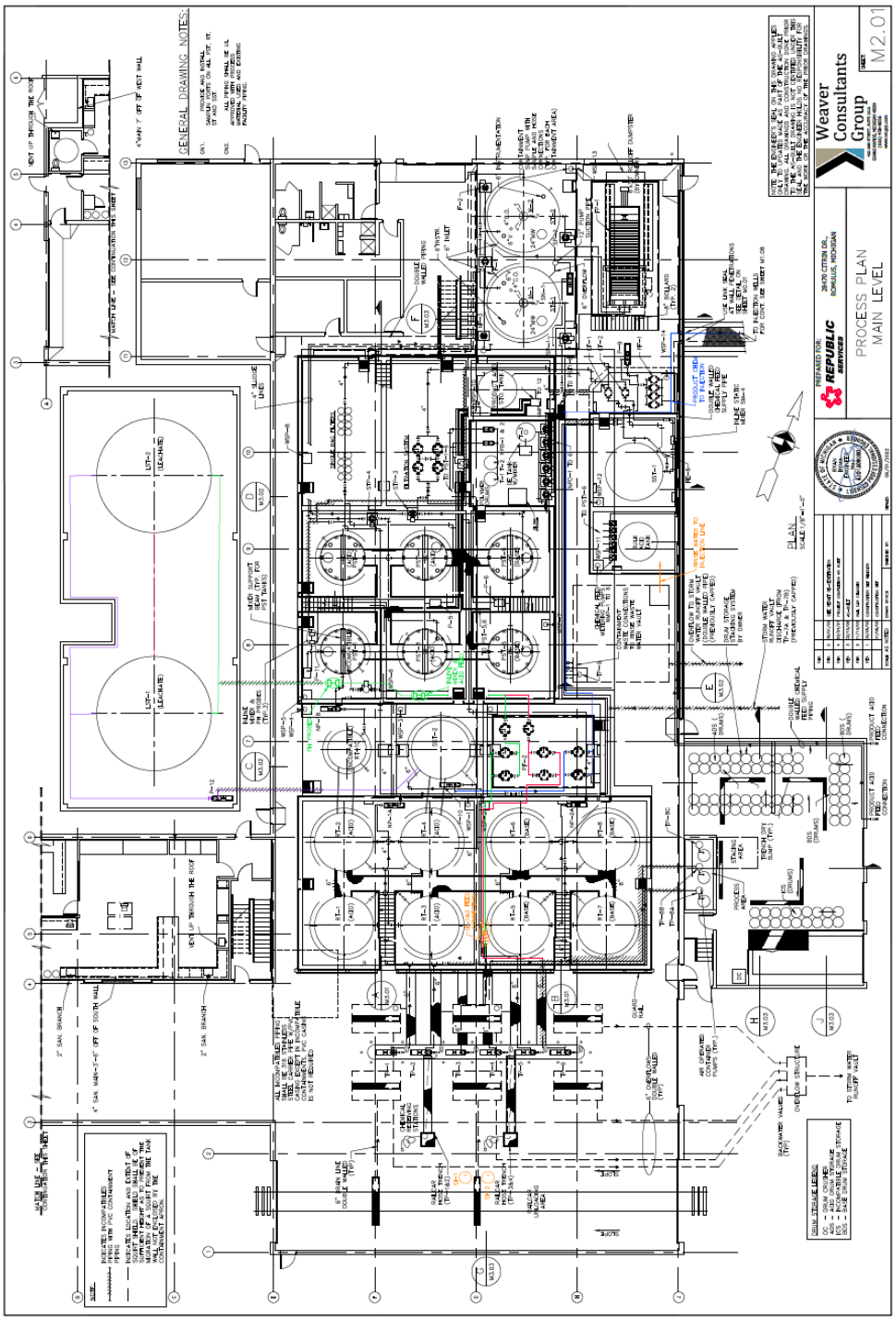
Appendix C1.B Process Plan Main Level Drawing Number M2.01



Attachment 11

Tank Systems

FORM EQP 5111 ATTACHMENT C2
TANK SYSTEMS

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.

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

[R 299.9615(1) and 40 CFR, Part 264, Subpart J]

This Facility is fully enclosed, with all hazardous waste treatment 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 1-8), 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, bases, incompatibles and brine have separate secondary containment areas. Each secondary containment area is sized to contain more than 110% of the volume of the largest tank within that containment.

The tank system and its associated containment drawings were previously certified by an independent, qualified, registered professional engineer after design and construction.

The Facility also contains a non-hazardous leachate treatment system that consists of leachate storage tanks (LST-1 and LST-2) and a SST-2 tank. These tanks are not utilized for hazardous waste**.**

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	TANK TYPE
				DIA	L	W	H					
RT-1 to 8	RECEIVING	CYLINDRICAL	FIBERGLASS	12			22	16,950 each	8	N/A	VARIES	RT 1-4 Acid RT-5-6 Base
RT-10	RECEIVING	CYLINDRICAL	STEEL WITH KCC ACS.3 LINER	8			22'-6"	7,500	1	N/A	VARIES	Incompatible
PST-1	PRIMARY SETTLING	CONED BOTTOM	STEEL WITH KCC ACS.3 LINER	12			24	6,770	1	N/A	VARIES	Incompatible
PST-2 to 6	PRIMARY SETTLING	CONED BOTTOM	FIBERGLASS	12			24	6,770 each	5	N/A	VARIES	PST-2-4 Acid PST 5,6 Base
SST-1	SECONDARY STORAGE	CYLINDRICAL	FIBERGLASS	12			24'-4"	16,950	1	N/A	VARIES	All wastes
ST-1 and 2	SLUDGE STORAGE	CYLINDRICAL	FIBERGLASS	14			18	20,000 each	2	N/A	VARIES	ST-1 Acid ST-2 Base

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 a 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, M1.02, and M1.06 .

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, bases, 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

Tank No (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)		
RT-10 (7,500)	18.0 x 19.0 x 7.83	20,030
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
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)]

Each of the reinforced concrete valuts associated within the tank system at the Facility can accommodate over 100% of the volume of the largest container to be offloaded (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 upon discovery. If a spill or leack is discovered as part of the daily inspectedion, it will be recorded in 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. 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." 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. 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. 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. Also see Volume 9, Section 8.00, tab "Emergency Rupture Disk" in the CPA.

Attachment 12

Treatment Process

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

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.

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 ("TP") 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; and TP-3 and TP-6 handle nonhazardous leachate as noted below.

The delivery process entails discharging the contents of the arriving tankers, railcars or containers into one of the nine receiving tanks (RT-1 through 8, and RT-10). Tanks RT-1 through 4 store acids, RT-5 through 8 store bases, 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); and TP-3 and TP-6 pump to leachate tanks LST-1 and LST-2. The leachate treatment system is nonhazardous and operates separate from the hazardous waste system.

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. 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 RECEIVING TANK TO PRIMARY SETTLING TANK 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 secondary storage tank ("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.2 OPERATIONAL PROCEDURE FOR TRANSFER FROM RECEIVING TANKS

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 programmable logistic control ("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 SST. 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 PRIMARY SETTLING TANKS 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 H_2SO_4.
- 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 PRIMARY SETTLING TANK TO SECONDARY STORAGE TANK 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") BF-1 through BF-8 and the cartridge filters ("CF") CF-1 and CF-2) for filtration. After treatment of the waste through the BFs, 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") CFs, 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 PSTs is pumped into a Sludge Tank ("ST"), ST-1 or ST-2). DE is added as needed to the ST to help in thickening the sludge. Activation of the pump for either unit automatically activates the DE 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 accumulated 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.

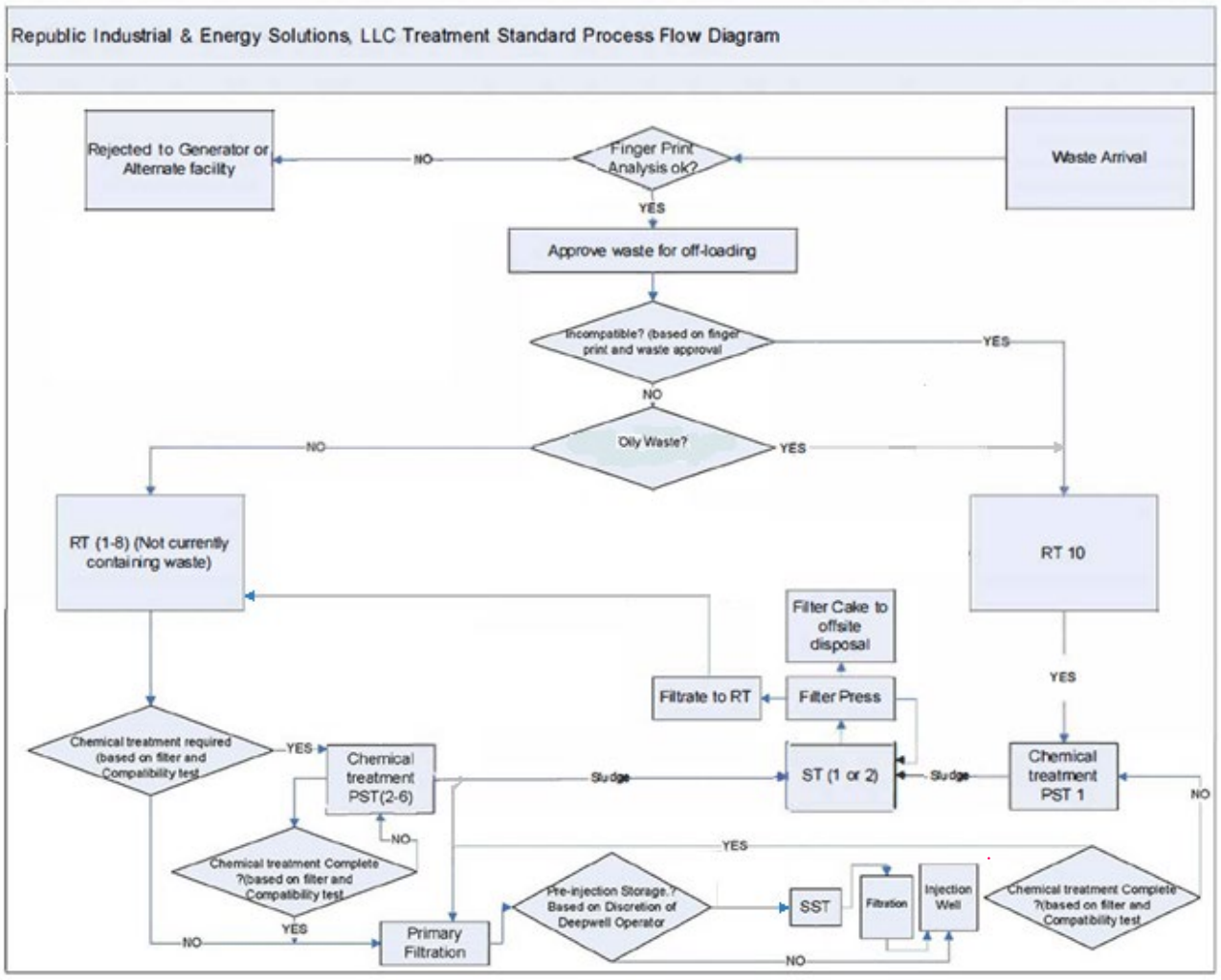
C4.G OPERATIONAL PROCEDURES FOR LEACHATE PROCESSING

A nonhazardous leachate treatment system was installed on site. This system is independent and isolated from all hazardous waste processing.

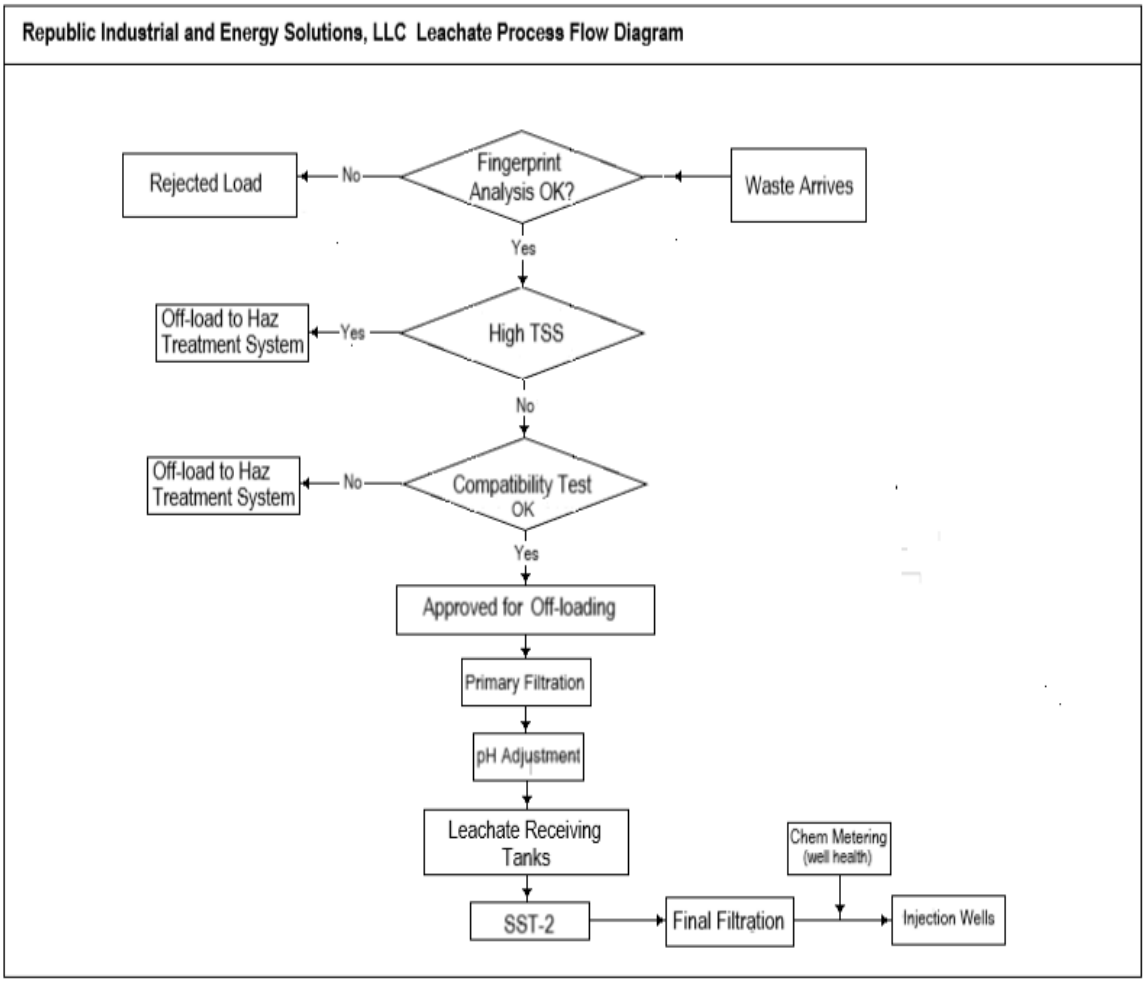
The Treatment Operator determines if the Leachate Storage Tanks ("LST") can receive a waste load based upon the results of the compatibility test and pH reading. Every leachate load received will have compatibility and pH recorded. Every sixth load will have a full fingerprint performed identical to 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 total suspended solids ("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 LSTs 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 LSTs. 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



Attachment 13

Environmental Monitoring Programs

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 ("Republic" or "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

[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

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 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 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's 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-EGLE requirements and requests. However, before the then-EGLE 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-EGLE 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 & EGLE requirements and requests as of that time, and the then Operating License Groundwater Monitoring Program (expected to be identical to the existing 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 primary objective for naturally occurring metals is to generate an Upper Bound Value for each metal detected in the background data set, which if exceeded in the future, will trigger resampling and testing to assess whether the constituent concentration represents potential anthropogenic contamination associated with the licensee operations or some other source(s). Non-parametric statistical methods were used to evaluate the concentrations of metals present in groundwater prior to the initiation of hazardous waste management activities by the licensee. The maximum value in a non-parametric data set (sometimes referred to as the nth order statistic) is commonly used to establish the Upper Tolerance Limit (UTL), which is the statistical upper bound value for a constituent in a given data set.

A review of the data set used to generate the background values for the metals indicates that maximum detected values for Chromium and Selenium were in the December 2007 sampling event. The analytical laboratory report was reviewed and that laboratory data verified. The laboratory reported values for the metals appear to be greater for this sampling event compared to the other 16 sampling events. Based on this observation, the Michigan Department of Michigan Department of Environment, Great Lakes, and Energy (EGLE) requested that the December 2007 Chromium and Selenium data be excluded from the data set and the non-parametric nth order statistic be established using the remainder of the data. This approach eliminates the four greatest values for Selenium and the five (5) greatest values for Chromium observed in the data set. The new UTLs using this modified data set are 2.7 parts per billion (ppb) for Chromium and 64 ppb for Selenium.

A revised methodology for determination of Volatile Organic Constituent ("VOC") background values, based on discussions with the EGLE, is presented herein. All VOC background values will be based on the EGLE Published List of Target Detection Limits Designated Analytical Methods with the exception of Bromodichloromethane, Carbon Disulfide, and Chloroform. These three constituents will be based on UTLs derived using non-parametric statistics which are as follows: 1.8 ppb for Bromodichloromethane, 40.0 ppb Carbon Disulfide, and 6.6 ppb for Chloroform.

Additionally, should a constituent be detected in a monitoring well sample and the laboratory method blank or trip blank for that sampling event, the constituent detection will be reported but treated as "anomalous" [i.e., an anomalous sample result(s) will not be treated as an exceedance(s) of established background value(s) or RL(s)]; and therefore, will not require verification resampling and analysis.

If a constituent is detected at a concentration that exceeds the respective UTL as established in the Background Groundwater Quality Report or the RL for constituents that were not statistically evaluated in the background data set (i.e., the VOCs), EGLE will be notified by telephone within one business day of receipt of the analytical laboratory report for the subject test result, followed by a formal written notice, which can be an email, within seven (7) business days of the initial notification.

The following procedure will be employed to differentiate "background" concentrations of constituents in the groundwater from those resulting from a future release of a hazardous waste constituent:

1. Should a constituent be detected at a concentration that exceeds the respective UTL as established in the Background Groundwater Quality Report or the RL for constituents that were not statistically evaluated in the background data set, replicate sampling and testing will be conducted to verify whether the noted detection is reproducible.

2. Replicate sampling will consist of the collection of four (4) samples and the outcome of the results will be determined as follows. A "confirmed" constituent exceedance will be based on the replicate sample results being greater than the respective UTL or RL in two of the four replicate samples collected (i.e., total of three (3) exceedances, original test result plus two replicates will establish confirmation of the original sample). An "anomalous" will be based on the replicate sample results being less than or equal to the established UTL or RL in three replicate samples.

3. Four (4) replicate samples will be collected within ten (10) business days of the written notification. Should the results indicate that three (3) or more replicate samples are equal to or less than the respective UTL or RL, then the original analytical result(s) will be considered "anomalous." Should two (2) of the four (4) samples results have a constituent(s) concentration(s) greater than the respective UTL or RL, then the original analytical result(s) will be considered "confirmed."

Should the resample result(s) indicate that the original sample result(s) are "confirmed" in accordance with the above-noted procedure, the EGLE will be notified of this confirmation in writing within one (1) business day. Within 180 calendar days of this written notification of confirmation to the EGLE, a Corrective Action Plan will be developed to address the noted excursion(s) including identification of the cause(s) of the noted constituent concentration(s).

However, should the Facility determine that a statistically significant change in a parameter(s) or an increase in a constituent concentration(s) has occurred in groundwater resulting from a source(s) other than its operations or from an error in sampling, analysis, or evaluation (i.e., a "demonstration"); the licensee will do the following:

1. Notify the EGLE – Material Management Division (MMD) Director in writing within seven (7) business days of determining that a "demonstration" as noted above will be made to the EGLE – MMD;

2. Within ninety (90) calendar days of determining that a "demonstration" will be made to the EGLE– MMD, submit a report to the EGLE – MMD Director demonstrating that a source(s) other than the licensee solely caused the subject change(s) or increase(s), or that such change(s) or increase(s) was caused by an error in sampling, analysis or evaluation;

3. Within ninety (90) calendar days of the "demonstration" submit to the EGLE – MMD Director an application for a minor license modification to make appropriate changes to the groundwater monitoring program, if any; and

4. Continue to monitor groundwater quality as specified in the License.

Conversely, should the resample result(s) indicate that the original sample result(s) are "anomalous" in accordance with the above-noted procedure, no additional investigation will be undertaken, and the EGLE will be notified of an "anomalous" result(s) in writing within ten (10) business days.

Table B5.A.3 Sampling and Analysis Plan, GWM

Parameters	EPA Method	Reporting Limits (RL) ug/L
VOCs		
Acetone {I}	Method SW8260B	20
Acrylonitrile {I}	Method SW8260B	5.0
Benzene {I}	Method SW8260B	1.0
Bromobenzene {I}	Method SW8260B	1.0
Bromodichloromethane	Method SW8260B	1.8 UTL[5]

Bromoform	Method SW8260B	1.0
Bromomethane	Method SW8260B	5.0
2-Butanone (MEK) {I}	Method SW8260B	5.0
n-Butylbenzene	Method SW8260B	1.0
sec-Butylbenzene	Method SW8260B	1.0
tert-Butylbenzene {I}	Method SW8260B	1.0
Carbon disulfide {I,R}	Method SW8260B	1.0
Carbon tetrachloride	Method SW8260B	1.0
Chlorobenzene {I}	Method SW8260B	1.0
Chloroethane	Method SW8260B	5.0
2-Chloroethyl vinyl ether	Method SW8260B	NA
Chloroform	Method SW8260B	1.0
Chloromethane {I}	Method SW8260B	5.0
o-Chlorotoluene {I}	Method SW8260B	NA
Dibromochloromethane	Method SW8260B	1.0
Dibromochloropropane	Method SW8260B	5.0
1,2-Dibromoethane (Ethylene)	Method SW8260B	1.0
Dibromomethane	Method SW8260B	1.0
1,2-Dichlorobenzene	Method SW8260B	1.0
1,3-Dichlorobenzene	Method SW8260B	1.0
1,4-Dichlorobenzene	Method SW8260B	1.0
Dichlorodifluoromethane	Method SW8260B	5.0
1,1-Dichloroethane	Method SW8260B	1.0
1,2-Dichloroethane {I}	Method SW8260B	1.0
1,1-Dichloroethylene {I}	Method SW8260B	1.0
cis-1,2-Dichloroethylene	Method SW8260B	1.0
trans-1,2-Dichloroethylene	Method SW8260B	1.0
1,2-Dichloropropane {I}	Method SW8260B	1.0
1,3-Dichloropropene	Method SW8260B	1.0
Diethyl ether	Method SW8260B	5.0
Ethylbenzene {I}	Method SW8260B	1.0
Hexachlorobutadiene (C-46)	Method SW8260B	0.05
Hexachloroethane	Method SW8260B	5.0
2-Hexanone	Method SW8260B	5.0
Isopropyl benzene	Method SW8260B	1.0
4-Methyl-2-pentanone (MIBK)	Method SW8260B	5.0
Methyl-tert-butyl ether (MTBE)	Method SW8260B	1.0
Methylene chloride	Method SW8260B	5.0
2-Methylnaphthalene	Method SW8260B	5.0
Naphthalene	Method SW8260B	5.0
n-Propylbenzene {I}	Method SW8260B	1.0

Styrene	Method SW8260B	1.0
1,1,1,2-Tetrachloroethane	Method SW8260B	1.0
1,1,2,2-Tetrachloroethane	Method SW8260B	1.0
Tetrachloroethylene	Method SW8260B	1.0
Tetrahydrofuran	Method SW8260B	5.0
Toluene {I}	Method SW8260B	1.0
1,2,4-Trichlorobenzene	Method SW8260B	5.0
1,1,1-Trichloroethane	Method SW8260B	1.0
1,1,2-Trichloroethane	Method SW8260B	1.0
Trichloroethylene	Method SW8260B	1.0
Trichlorofluoromethane	Method SW8260B	1.0
1,2,3-Trichloropropane	Method SW8260B	1.0
1,2,4-Trimethylbenzene {I}	Method SW8260B	1.0
1,3,5-Trimethylbenzene {I}	Method SW8260B	1.0
Vinyl chloride	Method SW8260B	1.0
Xylenes {I}	Method SW8260B	m&p-Xylene – 2.0 o-Xylene – 1.0
METALS		
Arsenic	Methods SW6020B	1.0
Barium {B}	Methods SW6020B	5.0
Cadmium {B}	Methods SW6020B	0.2
Chromium (VI)	Methods SW6020B	1.0
Copper {B}	Methods SW6020B	1.0
Lead	Methods SW6020B	1.0
Mercury (Total) {B,Z}	Method SW7470A	0.2
Selenium {B}	Methods SW6020B	1.0
Silver {B}	Methods SW6020B	0.2
Zinc {B}	Methods SW6020B	5.0
TOTAL ORGANIC HALIDES		
Total Organic Halides	Method SW9020	NA

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.

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.

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 monitored 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. Collected samples will follow the preservation and holding time requirements specified by the analytical methods listed in Table B5.A.3.

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 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 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.

Ambient air sampling will be completed daily when 100 lbs of VOCs are received. 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 and/or TO-13A, for Volatile Organic Compounds. Collected samples will follow the preservation and holding time requirements specified in EPA analytical method TO-15 and/or TO-13A. 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 chain of custody or the data submission for samples will include the starting and ending SUMMA canister vacuum readings.

The frequency, parameters and other details of the Sampling and Analysis plan for the Republic AAM Program are provided in Table B5.B.1.

Table B5.B.1 Sampling and Analysis Plan, AAM

Type of Sampling	Points of Sampling	Frequency	Field Test Parameters	Monitoring Parameters	
				Analyte	Minimum Detection (ppbv)
Evacuated SUMMA Canister 8-hr draw	4 Stations, see Figure 5.00-1	Daily when 100 lbs of VOCs are received	None	Trichloroethene	0.3
				Hexachloro-1,3-butadiene	10.0
				1,2-Dichloroethane	0.3
				Hexachlorobenzene	0.5
				Carbon Tetrachloride	0.3
				Chloroform	0.3
				2,4-Dinitrotoluene	10.0

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 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 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. Collected samples will follow the preservation and holding time requirements specified by the analytical methods listed 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

Type of Sample	Points of Samples	Frequency	Field Test Parameters	RL ug/Kg	Lab Test Parameters	
					Analyte	Method
Surface Soil Sampling	Locations shown in	Annually	None	17	Acenaphthene	8270
				17	Benzo(a)pyrene	8270

Table B5.C.1 Sampling and Analysis Plan, SM						
Type of Sample	**Points of Samples**	**Frequency**	**Field Test Parameters**	**RL ug/Kg**	**Lab Test Parameters**	
					Analyte	**Method**
	Figure 5.00-1			17	Chrysene	8270
				170	2,4 Dimethylphenol	8270
				17	Flourene	8270
				17	Naphthalene	8270
				640	2-Nitropropane	8260
				17	Phenanthrene	8270
				17	Pyrene	8270
					Inorganic Constituent (Method 6010 unless noted otherwise)	
				910	Arsenic	7060A
				1800	Barium	
				180	Cadmium	7131A
				370	Chromium (Total)	
				2300	Copper	
				8400	Lead	7421A
				110	Mercury	7470A
				3700	Nickel	
				910	Selenium	7740
				180	Silver	
				4600	Zinc	
				620	Cyanides (Total)	9010A

B5.C.2 Statistical Procedures
[R 299.9611(2)(d)]

The annual soil sample constituents detected at concentrations greater than their respective established background values or RLs for those constituents that do not have site-specific background values will be preliminarily considered statistically distinct from the baseline population and the licensee will do the following:

1. The EGLE – MMD permit engineer for the facility will be contacted by telephone within one (1) business day of receipt of the analytical laboratory report for the subject test result(s).

2. Within thirty (30) calendar days of the receipt of the analytical laboratory report for the subject test result(s), the subject station where the sample(s) was collected will be resampled and tested for the detected parameter(s).

Should the resample test result(s) indicate that the parameter concentration(s) is in excess of the respective established background values or RL, the original analytical result will be considered "confirmed," then the licensee will notify within one (1)working day the EGLE – MMD permit

engineer for the facility, the EGLE — MMD Southeast Michigan District Supervisor, or the EGLE — MMD Director, or in the event of their unavailability, the EGLE PEAS at 800-292-4706 will be contacted by telephone.

Follow-up notification to the EGLE — MMD Director will be provided in writing within seven (7) business days of the telephone call. The notification shall indicate what parameter(s) or constituent(s) has shown a statistically significant change and the location where the change occurred.

Within ninety (90) calendar days of the written notification of the confirmation of the resample result to the EGLE — MMD, the nature and extent of the contaminated soils will be determined, and the contaminated soils remediated so that statistically equivalent "baseline" conditions and/or constituent concentrations are restored to the subject impacted area.

However, should the licensee determine that a statistically significant change in a parameter(s) or an increase in a constituent concentration(s) has occurred in soil resulting from a source(s) other than its operations or from an error in sampling, analysis, or evaluation (i.e., a "demonstration"); the Facility will do the following:

1. Notify EGLE — MMD Director in writing within seven (7) business days of determining that a "demonstration" as noted above will be made.

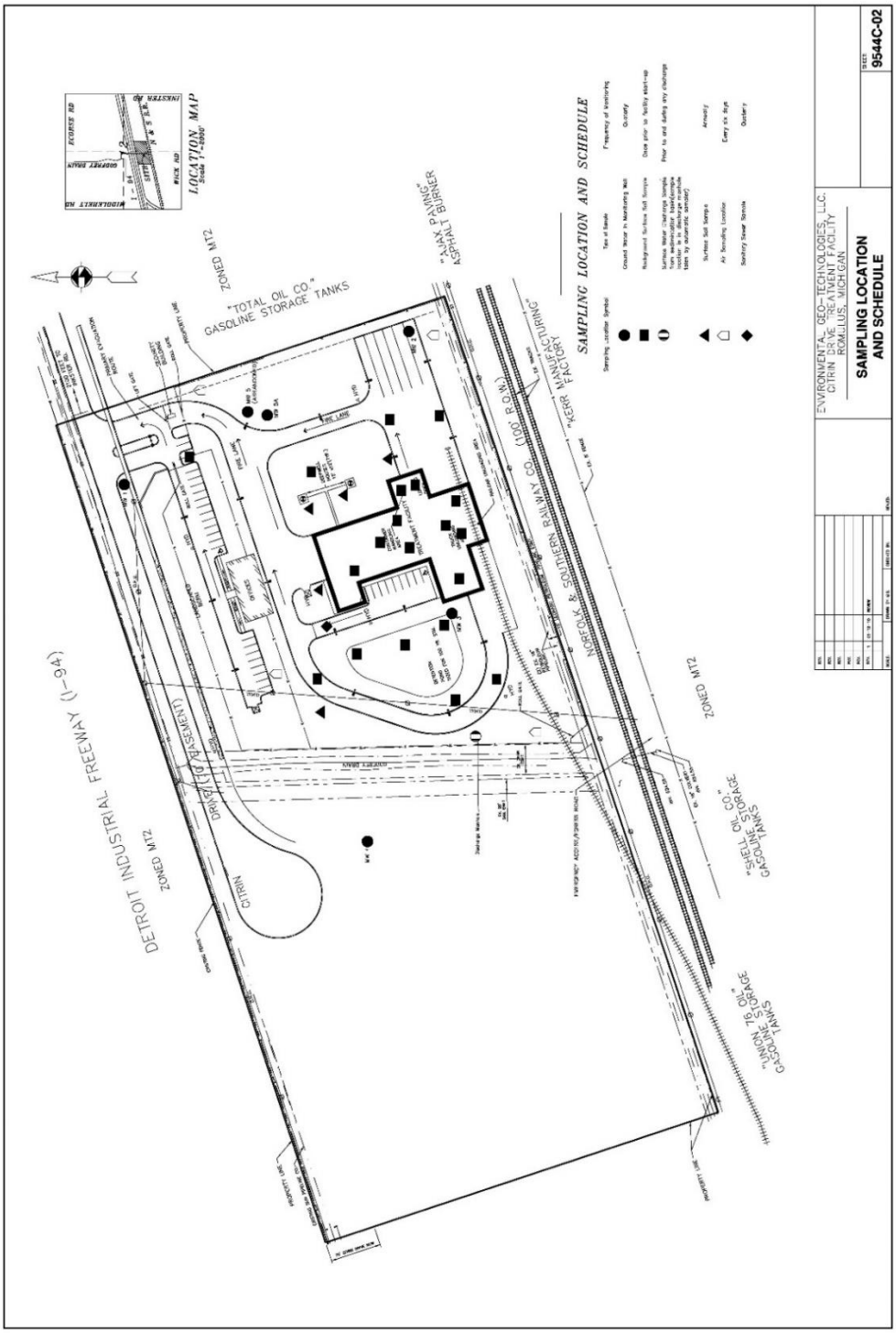
2. Within ninety (90) calendar days of determining that a "demonstration" will be made to the EGLE — MMD, submit a report to the EGLE — MMD Director demonstrating that a source(s) other than the Faciliy solely caused the subject change(s) or increase(s), or that such change(s) or increase(s) was caused by an error in sampling, analysis or evaluation.

3. Within ninety (90) calendar days of the "demonstration" submit to the EGLE — MMD Director an application for a minor license modification to make appropriate changes to the soil monitoring program, if any; and,

4. Continue to monitor soil quality as specified in the License.

Conversely, should the resampled test result(s) indicate that the constituent concentration is less than the respective RL, the original sample test result will be classified as "anomalous," and no additional evaluation will be undertaken. The EGLE — MMD will be notified of this confirmation of a "non-verifiable" test result in writing seven (7) business days following receipt of the analytical report for the resample test result. Sample result will be based on the replicate sample results being less than or equal to the established UTL or RL in three (3) replicate samples.

APPENDIX B5 SAMPLING LOCATIONS



Attachment 14

Corrective Action

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:

B2.A FACILITY BACKGROUND
- B2.A.1 History and Description of Ownership and Operation
- B2.A.2 Environmental Setting
  - B2.A.2(a) Climate
  - B2.A.2(b) Topography
  - B2.A.2(c) Hydrogeology
  - B2.A.2(d) Soil
  - B2.A.2(e) Surface Water
  - B2.A.2(f) Surrounding Land Uses
  - B2.A.2(g) Critical Habitats and Endangered Species
- B2.A.3 Characterization of Potential or Actual Sources of Contamination
  - B2.A.3(a) Treatment and Storage Building
    - B2.A.2(a)(1) Unit Characteristics
    - B2.A.2(a)(2) Waste Characteristics and Management
    - B2.A.2(a)(3) History of Releases or Potential to Release
  - B2.A.3(b) Storm Water Runoff Vault
    - B2.A.3(b)(1) Unit Characteristics
    - B2.A.3(b)(2) Waste Characteristics and Management
    - B2.A.3(b)(3) History of Releases or Potential to Release
  - B2.A.3(c) Pump House and Well HOUSES
    - B2.A.3(c)(1) Unit Characteristics
    - B2.A.3(c)(2) Waste Characteristics and Management
    - B2.A.3(c)(3) History of Releases or Potential to Release

B2.B FACILITY'S ASSESSMENT OF KNOWN NATURE AND EXTENT OF CONTAMINATION

B2.C FACILITY'S EXPOSURE ASSESSMENT
- B2.C.1 Human Exposure and Threats
  - B2.C.1(a) Exposure Pathway
  - B2.C.1(b) Actual or Potential Receptors
  - B2.C.1(c) Evidence of Exposure
- B2.C.2 Environmental Exposure and Threats
  - B2.C.2(a) Exposure Pathway
  - B2.C.2(b) Actual or Potential Receptors
  - B2.C.2(c) Evidence of Exposure

B2.D INTERIM MEASURES
- B2.D.1 [Name of Interim Measure]
  - B2.D.1(a) Objective of the Measure
  - B2.D.1(b) Design and Construction
  - B2.D.1(c) Operation, Monitoring, and Maintenance
  - B2.D.1(d) Evaluation of Measure Effectiveness
  - B2.D.1(e) Proposed or Required Schedules for Continued Operation or Future Changes in the Measure

B2.E ENVIRONMENTAL INDICATORS
- Appendix B2.E.1 Environmental Indicator Checklists

B2.F FACILITY'S ASSESSMENT OF KNOWN OR PROPOSED CONSTITUENTS OF CONCERN

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 EGLE 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) nine Receiving Tanks (RT 1-8, RT-10); (2) six Primary Settling Tanks (PST 1-6); (3) two Sludge Storage Tanks (ST 1-2); and (4) one Secondary Storage Tank (SST). The facility also has a leachate treatment system that consists of Leachate Storage Tanks (LST-1 and LST-2), and a SST-2 tank that are not utilized for hazardous waste.

All tanks at the Facility are fully enclosed inside the Treatment Building, with the exception of LST-1 and LST-2. All tanks are 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), and the secondary storage tank (SST-1) 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, bases, and incompatibles each have separate secondary containment areas. Each secondary containment area is sized to store more than 110% of the volume of the largest tank 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 110% of the total volume of the largest container received in the containment 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. Historically, CA725 and CA750 environmental indicator reports were completed and submitted to US EPA for 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.