



**REGION 5**

CHICAGO, IL 60604

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**U.S. ENVIRONMENTAL PROTECTION AGENCY  
UNDERGROUND INJECTION CONTROL PERMIT  
CLASS I COMMERCIAL NON-HAZARDOUS**

**Permit Number:** **MI-139-1I-C009**

**Well Name:** **IW-1**

Pursuant to the provisions of the Safe Drinking Water Act, as amended 42 U.S.C. §§300f et seq., (commonly known as the SDWA) and implementing regulations promulgated by the U.S. Environmental Protection Agency (EPA) at Parts 124, 144, 146, and 147 of Title 40 of the Code of Federal Regulations (40 CFR),

**Ottawa County Landfill, Inc. of Coopersville, Michigan**

is hereby authorized to operate a commercial Class I non-hazardous injection well located in Ottawa County, Michigan, T8N, R14W, Section 34, NE Quarter Section, for injection into the Trenton Formation, Black River Formation, Prairie du Chien Group, Trempealeau Formation, Franconia Formation, Galesville Formation, Eau Claire Formation, and Mount Simon Sandstone at depths between 4490 feet and 7440 feet, upon the express condition that the permittee meet the restrictions set forth herein.

All references to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit becomes effective. The following attachments are incorporated into this permit: A, B, C, D, E, F, G, H and I.

This permit shall become effective on \_\_\_\_\_, and shall remain in full force and effect during the life of the permit, unless this permit is revoked, terminated, modified or reissued pursuant to 40 C.F.R. §§144.39, 144.40 or 144.41. This permit and authorization to inject shall expire at midnight on \_\_\_\_\_, unless terminated prior to the expiration date.

Signed and Dated: \_\_\_\_\_

**DRAFT**

\_\_\_\_\_  
Tera L. Fong  
Director, Water Division

**PART I**  
**GENERAL PERMIT COMPLIANCE**

**A. EFFECT OF PERMIT**

The permittee is allowed to engage in underground injection in accordance with the conditions of this permit. Notwithstanding any other provisions of this permit, the permittee authorized by this permit shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of injection, annulus or formation fluids into underground sources of drinking water (USDWs). The objective of this permit is to prevent the introduction of contaminants into USDWs if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 C.F.R. Part 141 or may otherwise adversely affect the health of persons. Any underground injection activity not specifically authorized in this permit is prohibited. For purposes of enforcement, compliance with this permit during its term constitutes compliance, with Part C of the Safe Drinking Water Act (SDWA). Such compliance does not constitute a defense to any action brought under Section 1431 of the SDWA, or any other common or statutory law other than Part C of the SDWA. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this permit shall be construed to relieve the permittee of any duties under applicable regulations.

**B. PERMIT ACTIONS**

1. **Modification, Revocation, Reissuance and Termination** - The Director of the Water Division of the United States Environmental Protection Agency (EPA), hereinafter, the Director, may, for cause or upon request from the permittee, modify, revoke and reissue, or terminate this permit in accordance with 40 C.F.R. §§ 144.39 and 144.40. Also, the permit is subject to minor modifications as specified in 40 C.F.R. § 144.41. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes, or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition.
2. **Transfer of Permits** - This permit is not transferable to any person except in accordance with 40 C.F.R. §144.38.

**C. SEVERABILITY**

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



**D. CONFIDENTIALITY**

In accordance with 40 C.F.R. Part 2 and Section 144.5, any information submitted to the USEPA pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, the EPA may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures in 40 C.F.R. Part 2 (Public Information). Claims of confidentiality for the following information will be denied:

1. The name and address of the permittee; and
2. Information which deals with the existence, absence or level of contaminants in drinking water.

**E. DUTIES AND REQUIREMENTS**

1. **Duty to Comply** - The permittee shall comply with all applicable Underground Injection Control (UIC) Program regulations and conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued in accordance with 40 C.F.R. §144.34. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application.
2. **Penalties for Violations of Permit Conditions** - Any person who violates a permit requirement may be subject to civil penalties, fines and other enforcement action under the SDWA. Any person who willfully violates permit conditions may be subject to criminal prosecution.
3. **Continuation of Expiring Permits**
  - (a) **Duty to Reapply** - If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must submit a complete application for a new permit at least 180 calendar days before this permit expires.
  - (b) **Permit Extensions** - The conditions of an expired permit may continue in force in accordance with 5 U.S.C. § 558(c) and 40 C.F.R. § 144.37.
  - (c) **Effect** - Permits continued under 5 U.S.C. § 558(c) and 40 C.F.R. § 144.37 remain fully effective and enforceable.
  - (d) **Enforcement** - When the permittee is not in compliance with conditions of the expiring or expired permit, the Director may choose to do any or all of the following:
    - (1) Initiate enforcement action based upon the permit which has been continued;
    - (2) Issue a notice of intent to deny the new permit in which case, the owner or operator would then be required to cease the activities authorized by the

continued permit or be subject to enforcement action for operation without a permit;

- (3) Issue a new permit under 40 C.F.R. Part 124 with appropriate conditions; or
  - (4) Take other actions authorized by the UIC regulations.
- (e) **State Continuation** - An EPA-issued permit does not continue in force beyond its expiration date under Federal law if at that time a State has primary enforcement responsibility under the SDWA. A State authorized to administer the UIC program may continue either EPA or State-issued permits until the effective date of the new permits, if State law allows. Otherwise, the facility or activity is operating without a permit from the time of expiration of the old permit to the effective date of the State-issued new permit. Furthermore, if the State does not continue the EPA permit upon obtaining primary enforcement responsibility, the permittee must obtain a new State permit or be authorized to inject by State rule. Failure to do so while continuing to operate the well constitutes unauthorized injection and is a violation subject to enforcement action.
- 4. **Need to Halt or Reduce Activity Not a Defense** - It shall not be a defense for the permittee in an enforcement action to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
  - 5. **Duty to Mitigate** - The permittee shall take all timely and reasonable steps necessary to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.
  - 6. **Proper Operation and Maintenance** - The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.
  - 7. **Duty to Provide Information** - The permittee shall furnish to the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.
  - 8. **Inspection and Entry** - The permittee shall allow the Director or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:

- (a) Enter, at reasonable times, upon the permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this permit;
- (b) Have access to and copy, at reasonable times, any records that are kept under the conditions of this permit;
- (c) Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- (d) Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any facilities, equipment or operations regulated or required under this permit.

9. **Records**

- (a) The permittee shall retain records and all monitoring information, including all calibration and maintenance records and all original chart recordings for continuous monitoring instrumentation and copies of all reports required by this permit for a period of at least three years from the date of the sample, measurement or report, unless these materials are submitted to the Director as part of reporting requirements under this permit.
- (b) The permittee shall maintain records of all data required to complete the permit application form for this permit and any supplemental information submitted under 40 C.F.R. §§144.27, 144.28, and 144.31 for a period of at least three years from the date the application was signed.
- (c) The permittee shall retain records concerning the nature and composition of all injected fluids until three years after the completion of plugging and abandonment of this injection well.
- (d) The retention period specified in Part I(E)(9)(a) through (c) of this permit may be extended by request of the Director at any time. The permittee shall continue to retain records after the retention period specified in Part I(E)(9)(a) through (c) of this permit or any requested extension thereof expires unless the permittee delivers the records to the Director or obtains written approval from the Director to discard the records.
- (e) Records of monitoring information shall include:
  - (1) The date, exact place, and time of sampling or measurements;
  - (2) The name(s) of individual(s) who performed the sampling or measurements;
  - (3) A precise description of both sampling methodology and the handling of samples;

- (4) The date(s) analyses were performed;
  - (5) The name(s) of individual(s) who performed the analyses;
  - (6) The analytical techniques or methods used; and
  - (7) The results of such analyses.
10. **Monitoring** - Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The permittee shall use the methods described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (SW-846) at <https://www.epa.gov/hw-sw846>, or equivalent methods approved by the Director, to take representative samples. Monitoring results shall be reported at the intervals contained in Part II(D)(1) through (4) and Part III(A) of this permit.
- (i) Monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in Table I of 40 C.F.R. §136.3 or in certain circumstances by other methods that have been approved by the Director.
  - (ii) Sampling and analysis shall comply with the specifications of the Waste Analysis Plan required in Part II(C)(3) of this permit.
11. **Signatory Requirements** - All reports or other information required to be submitted by this permit or requested by the Director shall be signed and certified in accordance with 40 C.F.R. §144.32.
12. **Reporting Requirements**
- (a) **Planned Changes** - The permittee shall give written notice to the Director, as soon as possible, of any planned physical alterations or additions to the permitted facility.
  - (b) **Anticipated Noncompliance** - The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
  - (c) **Compliance Schedules** - Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted by the permittee no later than 30 calendar days following each schedule date.

(d) **Twenty-four Hour Reporting**

- (1) The permittee shall report to the Director any permit noncompliance which may endanger health or the environment. See, e.g. Part I(G)(5) of this permit. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. Such reports shall include, but not be limited to the following information:
    - (i) Any monitoring or other information which indicates that any contaminant may cause an endangerment to an USDW; and
    - (ii) Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDW; and
    - (iii) Any failure to maintain mechanical integrity.
  - (2) A written submission shall also be provided within five working days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate and prevent recurrence of the noncompliance.
- (e) **Other Noncompliance** - The permittee shall report all other instances of noncompliance not otherwise reported at the time monitoring reports are submitted. The reports shall contain the information listed in Part I(E)(12)(d)(2) of this permit.
- (f) **Other Information** - When the permittee becomes aware of failure to submit any relevant facts in the permit application or that incorrect information was submitted in a permit application or in any report to the Director, the permittee shall submit such facts or corrected information within 10 calendar days.
- (g) **Report on Permit Review** - Within 30 calendar days of receipt of this permit, the permittee shall certify to the Director that he or she has read and is personally familiar with all terms and conditions of this permit.

**F. PLUGGING AND ABANDONMENT**

1. **Notice of Plugging and Abandonment** - The permittee shall notify the Director at least 60 calendar days before conversion or abandonment of the well. At the discretion of the Director, a shorter notice period may be allowed.
2. **Plugging and Abandonment** - The permittee must receive the approval of the Director before plugging the well and shall plug and abandon the well consistent with 40 C.F.R. §144.52(a)(6) and 146.10, as provided for in the Plugging and Abandonment Plan contained in Part III(B) of this permit. Within 60 calendar days after plugging a well, or at the time of the next quarterly report (whichever is shorter), the permittee shall submit a Plugging and Abandonment report to the Director. The report shall be certified as accurate by the permittee and by the person who performed the plugging operation (if other than the permittee), and shall consist of either:
  - (a) A statement that the well was plugged in accordance with the Plugging and Abandonment Plan previously approved by the Director; or
  - (b) If the actual plugging differed from the approved plan, a statement defining the actual plugging and explaining why the Director should approve such deviation. If the Director determines that a deviation from a previously approved plan may endanger underground sources of drinking water, the permittee shall re-plug the well as required by the Director.
3. **Temporary Abandonment** - If the permittee ceases injection into the well for 24 consecutive months, the well is considered to be in temporary abandoned status, and the permittee shall plug and abandon the well in accordance with the approved plan and 40 C.F.R. §144.52 (a)(6), or make another demonstration of non-endangerment (e.g., a standard annulus pressure test). During any periods of temporary abandonment or disuse, the well will be tested to ensure that it maintains mechanical integrity. Demonstrations of non-endangerment/testing will be due every two years from the last successful test (unless the permit requires more frequent demonstrations of mechanical integrity). If the well loses mechanical integrity prior to the next test due date, then the well must either be plugged or repaired and retested within 30 days of losing mechanical integrity. The permittee shall continue to comply with the conditions of this permit, including all monitoring and reporting requirements according to the frequencies outlined in the permit unless an exception to such requirements is granted, in writing, by the Director.
4. **Revision of Plugging and Abandonment Plan** - If the permittee finds it necessary to change a Plugging and Abandonment Plan, a revised plan shall be submitted to the Director for approval at the time of the next monthly report.
5. **Standards for Well Closure** - Prior to plugging and abandoning the well:
  - (a) The permittee shall observe and record the reservoir pressure decay for a time specified by the Director and shall report this information to the Director.

- (b) The permittee shall conduct appropriate mechanical integrity testing to ensure the integrity of that portion of the long string casing and cement that will be left in the ground after closure. Testing methods must include:
  - (1) Pressure tests with liquid;
  - (2) Noise, temperature, or oxygen activation logs; and
  - (3) Any other test required by the Director.
- (c) Prior to well closure, the well shall be flushed with a buffer fluid.

#### G. MECHANICAL INTEGRITY

1. **Standards** - The injection well must have and maintain mechanical integrity consistent with 40 C.F.R. § 146.8(a)(1) and (2). Mechanical integrity demonstrations must be witnessed by an authorized representative of the Director. Mechanical integrity testing may also be conducted without an EPA authorized representative when it is not possible to resolve EPA scheduling conflicts. In order to ensure that unwitnessed test will be properly conducted, the permittee will be required to submit test procedures to EPA for review and wait for written approval prior to testing.
2. **Periodic Mechanical Integrity Testing** - The permittee shall conduct the mechanical integrity testing as follows:
  - (a) Long string casing, injection tubing and annular seal shall be tested by means of an approved pressure test in accordance with 40 C.F.R. §146.8(b)(2). This test shall be performed at least once every twelfth month beginning with the date of the last approved demonstration and whenever there has been a well workover in which tubing is removed from the well, the packer is reset, or when loss of mechanical integrity becomes suspected during operation;
  - (b) An approved temperature, noise, oxygen activation, or other approved log shall be run upon completion of this well and at least once every sixty (60) months from the date of the last approved demonstration to test for movement of fluid along the bore hole. The Director may require such tests whenever the well is worked over. The permittee must submit logging procedures to the Director for approval before running logs for the purpose of meeting this requirement;
  - (c) The permittee may request the Director to use any other test approved by the Director in accordance with the procedures in 146.8(d).
3. **Prior Notice and Reporting** - The permittee shall notify the Director of his or her intent to demonstrate mechanical integrity for periodically scheduled test events at least 30 calendar days prior to such demonstration. At the discretion of the Director a shorter time period may be allowed. Reports of mechanical integrity demonstrations which include logs must include an

interpretation of results by a knowledgeable log analyst. The permittee shall report the results of a mechanical integrity demonstration within 45 calendar days or with the next quarterly report after completion thereof.

4. **Gauges** - The permittee shall calibrate all gauges used in mechanical integrity demonstrations to an accuracy of not less than one-half (0.5) percent of full scale, prior to each required test of mechanical integrity. A copy of the calibration certificate shall be submitted to the Director or his or her representative at the time of demonstration and every time the gauge is calibrated. The gauge shall be marked in no greater than five psi increments. The Densitometer shall be calibrated using an air check or liquid check every 12 months in accordance with manufacturers' recommendation.
5. **Loss of Mechanical Integrity** - If the permittee or the Director finds that the well fails to demonstrate mechanical integrity during a test, or fails to maintain mechanical integrity during operation, or that a loss of mechanical integrity as defined by 40 C.F.R. §146.8(a)(1) and (2) is suspected during operation, the permittee shall halt the operation immediately and follow the reporting requirements as directed in Part I(E)(12) of this permit. The permittee shall not resume operation until mechanical integrity is demonstrated and the Director gives approval to recommence injection.
6. **Mechanical Integrity Testing on Request from Director** - The permittee shall demonstrate mechanical integrity at any time upon written notice from the Director.

#### H. FINANCIAL RESPONSIBILITY

1. **Financial Responsibility** - The permittee shall maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner consistent with 40 C.F.R. §144.52 (a)(7). The approved financial assurance mechanism is found in the administrative record for this permit.
  - (a) The permittee must maintain a written cost estimate, in current dollars, for the Plugging and Abandonment Plan as specified in 40 C.F.R. §146.10. The plugging and abandonment cost estimate at any point in the life of the facility operation must equal the maximum cost of plugging and abandonment at that time.
  - (b) The permittee must revise the plugging and abandonment cost estimate whenever a change in the Plugging and Abandonment Plan increases the cost of plugging and abandonment. For required annual updates of the cost estimate, an inflation factor will be applied to the previous estimate or an independent estimate may be used to establish the current Plugging and Abandonment cost.
  - (c) If the revised plugging and abandonment estimate exceeds the current amount of the financial assurance mechanism, the permittee shall submit a revised mechanism to cover the increased cost within 30 calendar days after the revision specified in Part I(H)(1)(b) of this permit.



2. **Insolvency** - The permittee must notify the Director within 10 calendar days of any of the following events:
  - (a) The bankruptcy of the trustee or issuing institution of the financial mechanism; or
  - (b) Suspension or revocation of the authority of the trustee institution to act as trustee; or
  - (c) The institution issuing the financial mechanism losing its authority to issue such an instrument.
3. **Notification** - The permittee must notify the Director by certified mail of the commencement of voluntary or involuntary proceedings under Title 11 (Bankruptcy), U.S. Code naming the owner or operator as debtor, within 10 calendar days after the commencement of the proceeding. A guarantor of a corporate guarantee must make such a notification if he or she is named as debtor, as required under the terms of the guarantee.
4. **Establishing Other Coverage** - The owner or operator must establish other financial assurance or liability coverage acceptable to the Director, within 60 calendar days of the occurrence of the events in Part I(H)(2) or (H)(3) of this permit.

#### I. CORRECTIVE ACTION

1. **Compliance** - The permittee shall comply with the plan for contingency corrective action which is found in Part III (D) of this permit and with 40 C.F.R. §§144.55 and 146.7.
2. **Corrective Action Plan** - The permittee shall file a Corrective Action Plan for approval by the Director within 30 days of a written determination by the Director that improperly plugged, completed, or abandoned wells, or wells for which plugging or completion information is unavailable, are present in the area of review and penetrate the confining zone of the permitted well, as defined in the administrative record for this permit.
3. **Prohibition of Movement of Fluids into USDWs** - Should upward migration of fluids through the confining zone of this permitted well be discovered within the two mile area of review, and should this migration of fluids cause the introduction of any contaminant into a USDW pursuant to 40 C.F.R. §144.12, the permittee shall immediately cease injection into this well until the situation has been corrected and reauthorization to inject has been given by the Director.

**PART II**  
**WELL SPECIFIC CONDITIONS FOR UIC PERMITS**

**A. CONSTRUCTION**

1. **Siting** - The injection well shall inject only into the formation and depths listed on the cover page of this permit. At no time shall injection occur into a formation which is or is above the lowermost formation containing, within one-quarter mile of the well bore, an underground source of drinking water.
2. **Casing and Cementing** - Notwithstanding any other provisions of this permit, the permittee shall case and cement the well in such a manner so as to prevent the movement of fluids into or between USDWs for the expected life of the well. The casing and cement used in the construction of this well are shown in Part III(E) of this permit and in the administrative record for this permit. Any change shall be submitted for approval by the Director before installation.
3. **Tubing and Packer Specifications** - The permittee shall inject only through tubing with a packer set within the long string casing at a point within or below the confining zone. The tubing and packer used in the well are represented in engineering drawings contained in Part III(E) of this permit. Any change shall be submitted for approval by the Director before installation.
4. **Wellhead Specification** - The permittee shall install and maintain a female coupling and valve on the wellhead, to be used for independent injection pressure readings. Further, the permittee shall install a sampling port for waste sampling consistent with the permittee's waste sampling procedures, if applicable.
5. **Site Security** – In order to prevent any illegal dumping into the injection well, the operator must construct a fence with a padlocked gate around the facility to preclude access of unauthorized personnel.

**B. OPERATIONS**

1. **Injection Pressure Limitation** - Except during stimulation, the permittee shall not cause or permit the injection pressure at the wellhead to exceed the maximum limitation which is specified in Part III(A) of this permit. In no case shall injection pressure initiate fractures or propagate existing fractures in the confining zone or cause the movement of injection or formation fluids into a USDW.
2. **Additional Injection Limitation** - No waste streams other than those identified in Part III(F) of this permit shall be injected. The permittee shall submit a certified statement attesting to compliance with this requirement at the time of the annual report.
3. **Annulus Fluid and Pressure** - The permittee shall fill the annulus between the tubing and the long string casing with a fluid approved by the Director and identified in the administrative record of this permit. Any change in the annulus fluid, except during workovers or times of annulus maintenance, shall be submitted by the permittee for the approval of the Director

before replacement. Except during workovers, the permittee shall maintain a positive pressure on the annulus as specified in Part III(A) of this permit.

4. **Annulus/Tubing Pressure Differential** - Except during workovers or times of annulus maintenance, the permittee shall maintain, over the entire length of the tubing, a pressure differential between the tubing and annulus as specified in Part III(A) of this permit.
5. **Automatic Warning and Automatic Shut-off System** - The permittee shall continuously operate and maintain an automatic warning and shut-off system to stop injection within 15 minutes of any of the following situations:
  - (a) Pressure changes in the annulus or annulus/tubing differential signifying or identifying possible deficiencies in mechanical integrity; or
  - (b) Injection pressure, annulus pressure, or annulus/tubing differential pressure reaches the pressure limits as specified in Part III(A) of this permit.

The permittee must test the automatic warning and automatic shut-off system at least once every twelfth month. This test must involve subjecting the system to simulated failure conditions and must be witnessed by the Director or his or her representative, unless alternative arrangements are approved by the Director. Unless a trained operator is present on site property who is able to perceive shut-down alarms and is able to respond to the well controls or the wellhead within 15 minutes of a compliance alarm condition at all times when the well is operating, the special permit conditions related to the remote monitoring of the well in Part X(H) of this permit shall apply.

6. **Precautions to Prevent Well Blowouts** - In order to prevent the migration of fluids into underground sources of drinking water, the permittee shall maintain on the well at all times, a pressure which will prevent the return of the injection fluid to the surface. If there is gas formation in the injection zone near the well bore, such gas must be prevented from entering the casing or tubing. The well bore must be filled with a high specific gravity fluid during workovers to maintain a positive (downward) gradient and/or a plug shall be installed which can resist the pressure differential. If the potential for blowout exists, a blowout preventer must be kept in proper operational status during workovers. In cases where the injected wastes have the potential to react with the injection formation to generate gases, the permittee shall follow the procedures below to assure that a backflow or blowout does not occur:
  - 1) Limit the temperature and/or pH of the injected waste prior to a workover; and
  - 2) Develop procedures necessary to assure that pressure imbalances do not occur.

### C. MONITORING

1. **Sampling Point** - The injection fluid samples shall be taken at the sampling location as specified in Part III(A) of this permit.
2. **Continuous Monitoring Devices** - The permittee shall maintain continuous monitoring devices and use them to monitor injection pressure, flow rate, and the pressure on the annulus between the tubing and the long string of casing. If the well is equipped with a fluid level indicator, the permittee shall monitor the fluid level daily. The monitoring results shall be submitted to the Director as specified in Part II(D) of this permit. The permittee shall maintain for EPA's inspection at the facility an appropriately scaled, continuous record of these monitoring results as well as original copies of any digitally recorded information pertaining to these operations.
3. **Waste Analysis Plan** - The permittee shall comply with the written Waste Analysis Plan which describes the procedures used to monitor the nature of injected fluids and the procedures which will be carried out to comply with Part I(E)(10) of permit. A copy of the approved plan shall also be kept at the facility.
4. **Prior Notice** - The permittee shall notify the Director of his or her intent to perform any tests required by this permit at least 30 calendar days prior to such activities. The permittee shall either follow the prescribed test procedures found in Attachment I of this permit or submit written procedures for approval at least 30 calendar days prior to the testing. If the submitted procedures are not appropriate for approval, EPA will require the permittee to submit new proposed test procedures for approval, or add appropriate conditions to the submitted procedures. At the discretion of the Director, a shorter time period may be allowed.
5. **Reporting** - All reports of well tests which include logs must include an interpretation of results by a knowledgeable log analyst. Reports on ambient reservoir pressure monitoring must include an interpretation of the results by a knowledgeable pressure transient test analyst. The reports should explain all anomalies in the data and variations in the procedures. The permittee shall report the results of any tests required by this permit within 45 calendar days after the tests are completed.
6. **Ambient Monitoring** - The permittee shall monitor the pressure buildup in the injection zone at least once every twelfth month from the last approved demonstration, including at a minimum, a shut-down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve. From this observation, the permittee shall submit a report including at least a calculation of pressure build-up in the injection zone, injection zone transmissivity, and wellbore skin factor. If the permittee chooses, the ambient monitoring may be performed on only one of the two wells at the facility during each twelfth month monitor event. In this case, the permittee shall alternate the twelve month testing between the two wells on site, unless an exception is granted by the Director.

7. **Temperature Monitoring** – The permittee shall monitor injectate temperature at least once daily on each day during which injection occurs. If injection occurs during more than one eight-hour period in a day, temperature must be recorded at least once every six hours. The monitoring results shall be submitted to the Director as specified in Part II(D)(1)(g) of this permit.

#### D. REPORTING REQUIREMENTS

The permittee shall submit all required reports to the Director at:

**United States Environmental Protection Agency  
ATTN: Underground Injection Control  
77 West Jackson Boulevard (WP-16J)  
Chicago, Illinois 60604-3590**

1. **Monthly Reports** - The permittee shall submit monthly reports of the following information no later than the end of the month following the reporting period:
  - (a) Waste analysis results per the approved waste analysis plan. Laboratory reports must be submitted with the first monthly monitoring report following their receipt by the operator;
  - (b) A tabulation of maximum injection pressure, a daily measurement of annulus tank fluid level, and minimum differential between simultaneous measurements of injection pressure and annulus pressure for each day of the month;
  - (c) Appropriately scaled graphs showing injection pressure and flow rate and annulus tank fluid level. One graph must include, at a minimum, daily maximum injection pressure and daily average flow rate, on a single, monthly chart;
  - (d) A statement of the total volumes of the fluid injected to date, in the current calendar year, and the current month;
  - (e) A tabulation of the dates, amounts and types of liquid added to or removed from the annulus system during the month, and the cumulative additions and cumulative subtractions for the current month and each of the past 12 months;
  - (f) Any noncompliance with conditions of this permit, including but not limited to:
    - (1) Any event that exceeds operating parameters for annulus pressure or injection pressure or annulus/tubing differential as specified in the permit; or
    - (2) Any event which triggers an alarm or shutdown device required in Part II(B)(5) of this permit.

- (g) The monthly average of the measured values of injectate temperature. If temperature measurements are recorded when the well is not injecting, those measurements will not be included in calculating the monthly average. Records of all temperature measurements must be maintained in accordance with Part I(E)(9)(a) of this permit
2. **Quarterly Reports** - The permittee shall report the following at least every Quarter (quarterly reporting periods shall begin on the first day of January, April, July, and October of each year).
- (a) Results of the injection fluid analyses specified in Parts III (A) and (G) of this permit, if applicable. Laboratory reports must be submitted with the first monthly monitoring report following the close of the quarterly reporting period.
  - (b) Part III (A) of this permit specifies the method for determining reporting of sampling and analysis more frequent than quarterly.
3. **Annual Reports** - The permittee shall report the following at least every twelfth month:
- (a) Results of the injection fluid analyses specified in the approved waste analysis plan as recorded in the administrative record for this permit. This report must include statements showing that the requirements of Part I(E)(10), Part I(G)(4), Part II (B)(2), Part II (B)(5), and Part II(D)(1)(e) have been met; and
  - (b) Results of ambient monitoring required by 40 C.F.R. §146.13(d)(1) and Part II(C)(4) of this permit.
4. **Reports on Well Tests and Workovers** - Within 45 calendar days, the permittee shall report to the Director the results of demonstrations of mechanical integrity, any well workover, or results of other tests required by this permit.

**PART III**

These attachments include, but are not limited to, permit conditions and plans concerning operating procedures, monitoring and reporting, as required by 40 C.F.R. Parts 144 and 146. The permittee shall comply with these conditions and adhere to these plans as approved by the Director, as follows:

- A. SUMMARY OF OPERATING, MONITORING AND REPORTING REQUIREMENTS**
- B. PLUGGING AND ABANDONMENT PLAN**
- C. FINANCIAL ASSURANCE MECHANISM**
- D. CONTINGENT CORRECTIVE ACTION**
- E. CONSTRUCTION DETAILS**
- F. SOURCE AND ANALYSIS OF WASTE**
- G. LIST OF APPROVED SOURCES**
- H. SPECIAL CONDITIONS RELATED TO REMOTE MONITORING**
- I. MECHANICAL INTEGRITY TESTING (ATTACHED)**

## PART III(A)

**SUMMARY OF OPERATING, MONITORING, AND REPORTING REQUIREMENTS**

CHARACTERISTICS	LIMITATION	MINIMUM MONITORING FREQUENCY	MINIMUM REPORTING FREQUENCY
Injection Pressure*	1102 psig maximum	continuous	monthly
Annulus Pressure	100 psig minimum	continuous	Monthly
Annulus/Injection Pressure Differential	100 psig above	continuous	monthly
Flow Rate		continuous	monthly
Temperature**		daily**	monthly
Annulus Fluid Level		daily	monthly
Cumulative Volume		continuous	monthly
Annulus Fluid Loss		monthly	monthly
Chemical Composition of Injected Fluids***		monthly	quarterly
Physical Characteristics of Injected Fluids***		monthly	quarterly

-----  
Sampling location: The sampling location for new "sources" shall be at the site of generation. Previously approved sources may also be sampled at the site of generation or from a transport tank prior to unloading on-site. For on-site generated waste, samples will be taken out at a sampling tap after filtration and prior to injection.

\* The limitation on injection pressure will serve to prevent injection-formation fracturing. This limitation was calculated using the following formula:

$$[(\text{Fracture Gradient psi/ft} - (0.433 \text{ psi/ft})(\text{specific gravity})) \times \text{depth}] - 14.7 \text{ psi.}$$

The maximum injection pressure is dependent upon the depth, specific gravity of the injected fluid, and the fracture gradient of the injection zone. The at Trenton Formation at 4490 feet was used as the depth and a specific gravity of 1.05 was used for the injected fluid. The fracture gradient (0.725 psi/ft) was determined by Step rate testing.

\*\* As specified in Part III (G) of this permit.

\*\*\* All required analytical results will be submitted by the end of the month following the sampling period, as specified in Part III(G) of this permit.



**PROPOSED NEW WASTE "SOURCE" INFORMATION**

The information shown in Subparts A through E of this Part must be submitted by the permittee initially for each proposed waste "source", pursuant to Part II(B)(2) of this permit. These requirements do not apply to existing wastes generated by the on-site plant operations at the facility and otherwise documented in this permit and the applicable permit application. The permittee may incorporate the information into a form of its own, provided that all information is included, and that the same form is used for all proposed "sources". The permittee, by submitting appropriate knowledge of waste, shall specify that there are no hazardous wastes as defined at 40 C.F.R. §§ 261.30-33 present in each proposed "source". Appropriate knowledge of waste may consist of any or all of the following three categories: (1) knowledge of the waste generation process, (2) detailed record-keeping, or (3) waste analysis data. The permittee must receive written authorization from the USEPA prior to injecting waste from this "source". Authorization shall consist of a final minor-modified permit, which shall list this "source" as an approved "source" in Part III(G) of this permit.

For proposed additional non-hazardous waste "sources", reporting of quarterly sampling and analysis shall be required, as specified in Part II(D)(2) of this Permit. Certain waste "sources" may require more stringent sampling and analysis. Any more stringent requirements will be specified for each specific "source" in the initial approval letter granting approval of the minor-modification to the permit for that "source". Upon receiving the minor-modified permit, the permittee shall be authorized to inject this waste, subject to the conditions of this permit and the permittee's approved waste analysis plan. The USEPA will make every reasonable effort to expedite the administrative processing of minor permit modifications.

**A. Permittee Information**

- 1) Owner/Operator Name
- 2) Owner/Operator Address (Street, City, State, Zip Code)
- 3) Facility contact name and telephone number
- 4) Well Location (Township, Range, Section, Quarter Section, footage NSL, EWL)
- 5) USEPA UIC Permit Number
- 6) State Permit Number (if applicable)
- 7) Well Name

**B. Proposed Generator ("Source") Information**

- 1) For Non-Hazardous New Waste "Sources" Only
  - a) "Source" Identification number
  - b) Generator Name
  - c) Generator Address (Street, City, State, Zip Code)
  - d) Generator Contact Name and telephone number
  - e) USEPA Identification numbers (if applicable)

**For Oilfield Waste "Sources" Only:**

- f) "Source" Identification Number
- g) Oilfield Name
- h) Location (Township, Range, and Section)
- i) Geologic Formation
- j) The "Source" identification number is a unique number assigned to the waste generator at the site specified above.

**C. Waste Transporter Information**

- 1) Transporter name
- 2) Transporter Address (Street, City, State, Zip Code)
- 3) Transporter Contact Name
- 4) Transporter Contact phone number
- 5) USEPA Identification numbers (if applicable)

**D. Waste "Source" Characterization**

- 1) Sample analysis results, which include:
  - a) Corrosivity
  - b) Reactivity (as applicable to sample matrix)
  - c) Ignitability
  - d) Toxicity
  - e) Conductivity
  - f) Specific Gravity
  - g) Temperature
  - h) All other constituents which are indicated by the generator as constituting a major portion of the waste stream (i.e., greater than 0.01 percent by mass). The test for toxicity shall follow the Toxicity Characteristic Leaching Procedure and should include all appropriate constituents (which are listed at 40 CFR §261.24). The permittee may rely on the generator's waste knowledge consistent with 40 CFR §262.11 and all appropriate knowledge of waste to reduce the number constituents tested.

Any testing conducted to evaluate toxicity shall follow the Toxicity Characteristic Leaching Procedure and should include all appropriate constituents based on each individual "Source" (which are listed at 40 C.F.R. § 261.24). If the permittee decides to rely on the generator's waste knowledge to test for fewer than the complete toxicity parameter list found at 40 CFR §261.24, the permittee must submit an explanatory statement which is consistent with 40 C.F.R. § 262.11 along with the request for approval of the new source to justify why those parameters were not tested for. If the permittee decides not to analyze any new proposed source for corrosivity, reactivity and/or ignitability, then the permittee must submit an explanatory statement consistent with 40 C.F.R. § 262.11 to justify the waiver. Any appropriate analytical results necessary to identify waste constituents which may indicate a listed hazardous waste as defined at 40 C.F.R. §§ 261.31, 261.32, 261.33, or 261.34.

**For Oilfield Waste "Sources" Only:**

- a) "Source" Identification Number
- b) Oilfield Name
- c) Location (Township, Range, and Section)
- d) Geologic Formation
- e) The "Source" identification number is a unique number assigned to the waste generator at the site specified above.

**B. Waste Transporter Information**

- 1) Transporter name
- 2) Transporter Address (Street, City, State, Zip Code)
- 3) Transporter Contact Name
- 4) Transporter Contact phone number
- 5) USEPA Identification numbers (if applicable)

**C. Waste "Source" Characterization**

- 1) Sample analysis results, which include:
  - a) Corrosivity
  - b) Reactivity (as applicable to sample matrix)
  - c) Ignitability
  - d) Toxicity
  - e) Conductivity
  - f) Specific Gravity
  - g) Temperature
  - h) All other constituents which are indicated by the generator as constituting a major portion of the waste stream (i.e., greater than 0.01 percent by mass). The test for toxicity shall follow the Toxicity Characteristic Leaching Procedure and should include all appropriate constituents (which are listed at 40 CFR §261.24). The permittee may rely on the generator's waste knowledge consistent with 40 CFR §262.11 and all appropriate knowledge of waste to reduce the number constituents tested.

Any testing conducted to evaluate toxicity shall follow the Toxicity Characteristic Leaching Procedure and should include all appropriate constituents based on each individual "Source" (which are listed at 40 C.F.R. § 261.24). If the permittee decides to rely on the generator's waste knowledge to test for fewer than the complete toxicity parameter list found at 40 CFR §261.24, the permittee must submit an explanatory statement which is consistent with 40 C.F.R. § 262.11 along with the request for approval of the new source to justify why those parameters were not tested for. If the permittee decides not to analyze any new proposed source for corrosivity, reactivity and/or ignitability, then the permittee must submit an explanatory statement consistent with 40 C.F.R. § 262.11 to justify the waiver. Any appropriate analytical results necessary to identify waste constituents which may indicate a listed hazardous waste as defined at 40 C.F.R. §§ 261.31, 261.32, 261.33, or 261.34.

**3) Sampling and Analysis Description**

a) The following information must be specified for each sampling event:

- (1) Sample collector, title, and employer
- (2) Sample collection method and preservation technique
- (3) Sample collection point

b) The following information must be specified for each parameter:

- (1) Analytical method for parameter detection/quantification
- (2) Analytical method accuracy
- (3) Upper and lower analytical method quantification limits

**E. Quality Assurance and Quality Control (QA/QC)**

1) : A description of the following QA/QC Protocol followed

- a) Equipment cleaning blanks (if any)
- b) Trip blanks (if any)
- c) Sample duplicates (if any)
- d) Chain of custody
- e) Equipment calibration
- f) Data reduction and validation

These requirements are specified in the QA/QC portion of the permittee's waste analysis plan.

2) A letter from the permittee which describes the following:

- a) How the waste was determined to be nonhazardous.

**F. Historical background of facility**

Historical background of the facility, including a detailed description of the process involved in generating the waste, how it is collected and stored. Indicate whether the proposed waste "source" is a one-time "source". The description should identify any periodic changes in facility operations which would be expected to alter the composition of the waste stream. The purpose of this information shall be to assure that the monitoring frequency applied to each "source" accounts for changes in the nature of the waste due to changes in facility operations. If a change in operations causes a change in the waste stream, the permittee must require monitoring which is representative of ongoing operations.

Monitoring data supplied by the facility must be representative of the waste being generated for the entire period between sampling event.

**G. Periodic Monitoring of Approved "Sources"****1) Oilfield Brine Wastes**

All approved oilfield brine wastes shall be monitored at a minimum for the following parameters: Sodium, Calcium, Magnesium, Barium, Total Iron, Chloride, Sulfate, Carbonate, Bicarbonate, Sulfide, Total Dissolved Solids, pH, Resistivity (ohm-meters @ 75°F), and Specific Gravity.

**2) Fingerprint Analysis**

All wastes that require fingerprint analysis as specified in Part III (G) of this permit shall, at a minimum, be subject to tests for the following:

pH,  
Flashpoint,  
Total Suspended Solids,  
Conductivity,  
Specific Gravity,  
and any other analyses deemed appropriate for characterizing the injected waste.

OMB No. 2040-0042

Approval Expires 4/30/2022

United States Environmental Protection Agency



# WELL REWORK RECORD, PLUGGING AND ABANDONMENT PLAN, OR PLUGGING AND ABANDONMENT AFFIDAVIT

Name and Address, Phone Number and/or Email of Permittee

Ottawa County Landfill, Inc.  
15550 68th Avenue  
Coopersville, Michigan 49404  
(616) 837-8195

Permit or EPA ID Number

API Number

Full Well Name

Ottawa County Farms Landfill IW-1

State

Michigan

County

Ottawa

Locate well in two directions from nearest lines of quarter section and drilling unit

Latitude 43.0443950000

Surface Location

NE 1/4 of NE 1/4 of Section 34 Township 8N Range 14W

Longitude -85.9493510000

285 ft. from (N/S) Line of quarter section North Section Line

695 ft. from (E/W) Line of quarter section West Section Line

Well Class

Timing of Action (pick one)

Type of Action (pick one)

☒ Class I☒ Notice Prior to Work

Well Rework

Class II

Date Expected to Commence N/A

☒ Plugging and Abandonment

Class III

Report After Work

Conversion to a Non-injection Well

Class V

Date Work Ended

Provide a narrative description of the work planned to be performed, or that was performed. Use additional pages as necessary. See instructions.

OTTAWA COUNTY FARMS LANDFILL IW-1 PLUGGING AND ABANDONMENT PLAN

1. Well is ready for plugging. A minimum of 24 hours prior to commencement of plugging operations.
  2. Prepare well and location for plugging. Move Inland Rig up well servicing rig, pipe racks and tanks.
  3. Install a test gauge on the annulus to pattern a static annulus pressure line. Ensure that the annulus is fluid (water) and that the well has been shut-in for a minimum of 24 hours. Pressure annulus and isolate from the annulus system. Monitor annulus pressure for one hour.
  4. Displace tubing with kill before as needed to control wellhead pressure. Guarantee wellhead and Inland Blow-out preventer. Displace annulus with kill being as needed to control annulus. Fluid compatibility with cement to be used will be verified.
  5. Remove injection tubing and ladder. If gas has not been removed, proceed with plugging operations as needed to remove gas from (sole of) annulus appropriate for future storage pattern and pump cement (fluid) to allow and abandoned to occur.
  6. Make up mechanical isolation off work string and trip in new. Set cement retainer at top of injection interval just above historical packer setting depth. Test cement retainer (1000 PSI) and 500 PSI.
  7. Move in concrete and cementing equipment.
  8. Displace hole bottom water with Class "A" cement slurry. Slurry from retainer and spot 50 additional sacks (50) at top of NW 1/4. Cement volume has been calculated based on 100% blowhole volume.
  9. 8-1/2" hole from 5,400 feet CL to 7,440 feet CL at 0.294 gpm (151 ft - 452 ft).
  10. 7.5" casing from surface to 5,400 feet CL at 1.126 gpm (10 ft - 5440 ft).
  11. 50 additional sacks with yield of 1.18 cu yd/sack = 59.00 cu yd.
- The total volume of the plugs is estimated to be 1,397 ft<sup>3</sup>, which is equivalent to 1,552 cu yd of Class "A" cement with a yield of 1.18 cu yd/sack. If wellhead oil is present, this volume may have to be reduced or changed into the openhole of the injection interval or displaced to surface cement volume based on open hole conditions.
- Check down and have been tagged on top of the wellbore, spot successive, continuous balanced cement plugs in 100% intervals from top of cement retainer to surface to isolate (seal) cement to be API Class "A" with natural gas and methane.
- If new Class "A" cement is pumped it will have the following slurry properties:
- Water ratio - 5.2 gal/lb (wet sack)
  - Slurry weight - 15.8 pounds per gallon
  - Slurry volume - 1.18 cu yd/sack
  - Annulus to 1,397 cu yd, or 3,419 cubic ft, of slurry will be required above righead.
  - Remove CSP and wellhead isolation.
  - Cost of 8" wellhead approximately a test BOP and well cap with permanent marker on casing.
  - Rig down and move out all equipment.
  - Prepare and file US EPA and SDCE Plugging Reports.

The steel plugs will be described with the disposal well identification information and the date of plugging. Federal and State representatives will have been notified to witness the plugging and sign the plug and abandonment form.

## PLUGGING AND ABANDONMENT COST

A cost of estimate for the minimum plugging and abandonment (abandonment) wellhead casing, is included for the well. A summary of the major cost elements is presented below.

IW-1 and IW-2 Plugging Cost (June, 2006)

Workover Rig and Associated Equipment	\$1,650
Water, Location Workoffloading and Clean-up	2,300
Heavy Tools	2,300
Highliner, Miscellaneous Equipment, and Services	10,000
Cementing	88,000
Supervision and Report	15,000
Total	\$129,550

See attached for the IW-1 Plugging and Abandonment Schematic

## Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR § 144.32)

Name and Official Title (Please type or print)

Brent Goodsell  
Area President

Signature

Date Signed

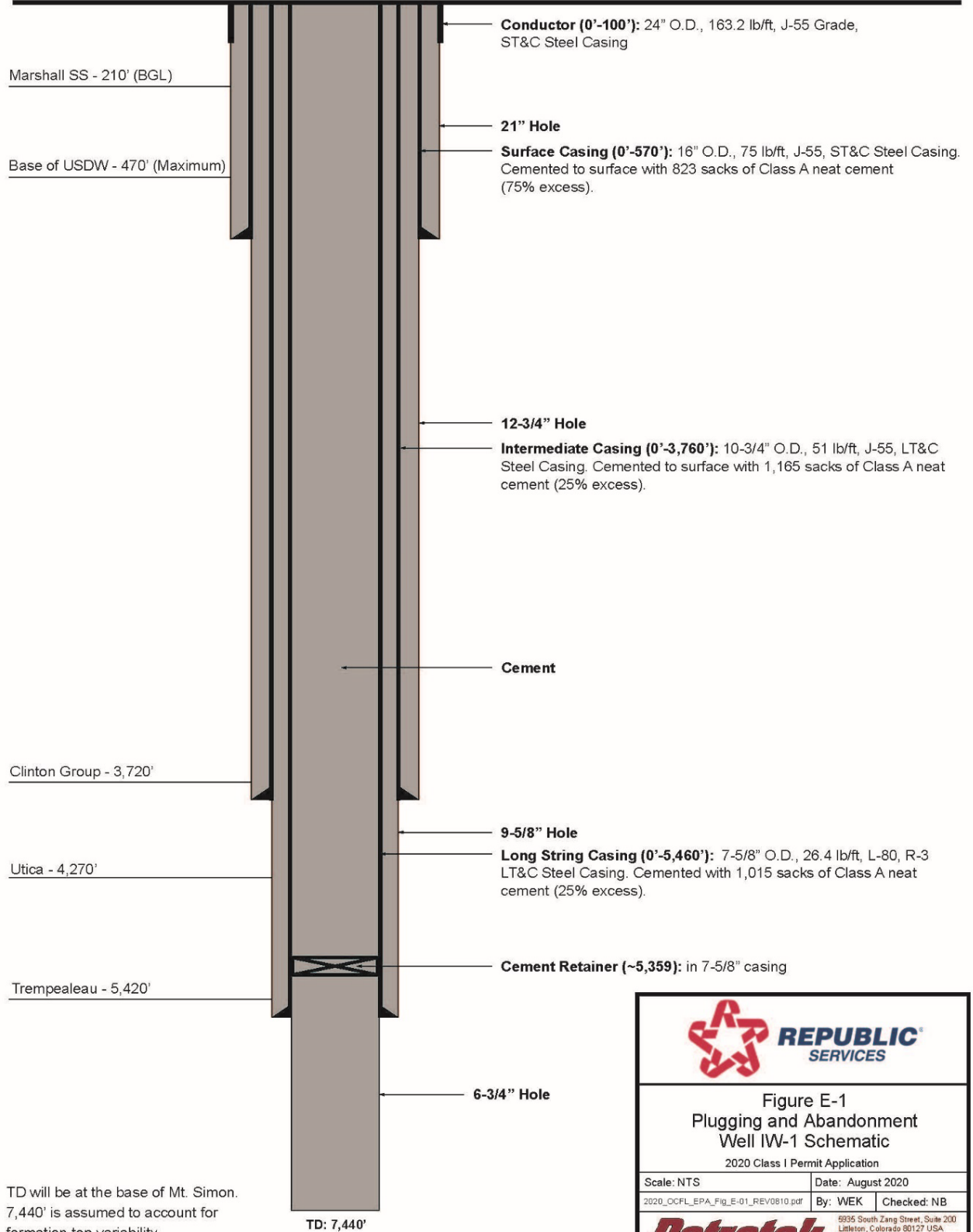
08/20/2020

**ATTACHMENT B**  
**PLUGGING AND ABANDONMENT PLAN**

**MI-139-II-C009**  
**Page B-2 of 2**

Sec. 34, T08N, R14W  
Ottawa County, Michigan  
Proposed Location: Lat. 43.044394, Long. -85.94935

All depths are TVD referenced to ground level.



**Figure E-1**  
**Plugging and Abandonment**  
**Well IW-1 Schematic**

2020 Class I Permit Application

Scale: NTS	Date: August 2020
2020_OCFLEPA_Fig_E-01_REV0810.pdf	By: WEK    Checked: NB

**Petrotek** 5935 South Zang Street, Suite 200  
Littleton, Colorado 80127 USA  
303-290-9414  
www.petrotek.com

**PART III(C)**  
**FINANCIAL ASSURANCE MECHANISM**

Ottawa County Landfill, Inc. has demonstrated adequate financial responsibility to properly plug and abandon their Class I non-hazardous wells. A surety bond in the amount of \$129,500 has been established for this purpose with the Michigan EGLE.



April 2024

Revised October 2020

Original August 2020

Ottawa County Farms Landfill, Inc., Well IW-2

UIC Permit Application

**ATTACHMENT F - FINANCIAL ASSURANCE (40 CFR §§ 144.52)**

*Requirement: Submit evidence of financial resources, such as a surety bond or financial statement, necessary for a third party to close, plug, or abandon the well (and, for wells injecting hazardous waste, to perform post-closure care) in the event an owner or operator is unable to do so. The monetary amount is based on the P&A plan cost estimate provided in Attachment E.*

**RESPONSE**

Ottawa County Landfill, Inc., Inc., has an active Surety Bond in the amount of \$129,500 for each well on file with the EGLE as a demonstration that sufficient financial assurance is available to manage well abandonment. Copies of these documents are provided in this attachment with the request that the USEPA accept this financial assurance instrument simultaneously for satisfying federal financial assurance requirements.

**EGLE** MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY - OIL, GAS, AND MINERALS DIVISION

**BOND FOR CONFORMANCE**

By authority of Part 625, Mineral Wells, Act 451 PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

MINERAL WELL OPERATIONS BOND	
Bond number 880348	Well name and number OCFL - IW-1

Part 625 Bond Amounts		
<u>Individual test well permit</u>	<u>Blanket test well permit</u>	<u>Disposal, storage, or brine well</u>
<input type="checkbox"/> \$5,500.00 for a depth of 0 to 1000'	<input type="checkbox"/> \$5,500.00 for 1 to 24 wells	<input checked="" type="checkbox"/> \$33,000.00 for a single well
<input type="checkbox"/> \$11,000.00 for a depth greater than 1000' to 2000'	<input type="checkbox"/> \$11,000.00 for 25 to 49 wells	<u>Disposal, storage, brine, and individual test well</u>
<input type="checkbox"/> \$22,000.00 for a depth greater than 2000' to 4000'	<input type="checkbox"/> \$16,500.00 for 50 to 75 wells	<input type="checkbox"/> \$440,000.00 for blanket coverage
<input type="checkbox"/> \$33,000.00 for a depth greater than 4000'	<input type="checkbox"/> \$22,000.00 for 76 to 200 wells	

Ottawa County Landfill, Inc. 15550 - 68<sup>th</sup> Ave, Coopersville, MI 49404

(Name and Address of Principal)

In the State of DE as Principal and

Evergreen National Indemnity Company 6140 Parkland Blvd, Ste. 321, Mayfield Heights, OH 44124

(Name and Address of Surety)

a corporation organized and existing under the laws of the State of OH and duly authorized to transact business in the State of Michigan, as Surety, are held and firmly bound unto the State of Michigan in the penal sum of

One hundred twenty-nine thousand five hundred (\$129,500.00) Dollars.

The Principal named is about to commence and prosecute to final completion well(s) authorized by permits issued or to be issued under Part 625, Act 451 PA 1994, as amended.

"Final completion" means either of the following: (1) The time when locating, drilling, deepening, converting, operating, producing, reworking, plugging, and proper site restoration have been performed on a well in a manner approved by the supervisor of mineral wells, including the filing of the mandatory records; (2) The time when a permit has been issued to convert an existing well subject to this part to a purpose allowed under another act or another part of the act.

When the Principal complies with the provisions of Part 625, Act 451 PA 1994, as amended, in the final completion of the well(s), the Surety's obligations can be terminated otherwise this obligation remains in full force and effect. The Surety's liability herein is co-extensive with that of the Principal and the State of Michigan has the same remedies against the Surety as against the Principal.

The Surety, by execution of the bond, accepts the liability covered by prior bond(s) \_\_\_\_\_

(number(s) and company)

and gives notice to the Supervisor of Mineral Wells of the need for terminating the prior bond(s) as listed herein with such termination to be effective as of the time that this bond becomes effective.

Signed, sealed and dated the 5th day of August, 2020.

Ottawa County Landfill, Inc.

(Principal)

By

(Signature)

Evergreen National Indemnity Company

(Surety)

By

(Signature)

Kathleen M. Mitchell, Attorney-in-Fact

(Name and title)

Amber Engel, Attorney-in-Fact

(Name and title)

When the Principal or Surety executes this bond by an agent, power of attorney or other evidence of authority must accompany the bond.

DEQ USE ONLY	
Permit number	Issue date
Type of well	

EQP 7200-03MW (rev. 5/2019)

MAIL TO:  
OIL, GAS, AND MINERALS DIVISION  
MICHIGAN DEPT OF ENVIRONMENT, GREAT  
LAKES, AND ENERGY  
P.O. BOX 30256  
LANSING, MI 48909-7756





POWER OF ATTORNEY

REPUBLIC SERVICES, INC., a Delaware corporation having its principal place of business at 18500 N. Allied Way, Phoenix, Arizona 85054, hereby makes, constitutes and appoints KIBBLE & PRENTICE HOLDING COMPANY dba USI INSURANCE SERVICES NORTHWEST, acting through and by any one of Debbie Lindstrom, Timothy S. Buhite, Kathleen M. Mitchell, Scott C. Alderman, Peggy A. Firth, Amber Engel, Jamie Armfield, Holly E. Ulfers, or Roxana Palacios, its true and lawful attorney to sign and seal any and all surety bonds, bid bonds, performance bonds and payment bonds at or below the monetary threshold of Five Million Dollars (\$5,000,000.00) on behalf of REPUBLIC SERVICES, INC. and its subsidiaries, relating to the provision of solid waste collection, transportation, transfer, recycling, disposal and/or energy services by REPUBLIC SERVICES, INC. and its subsidiaries and affix its corporate seal to and deliver for and on behalf as surety thereon or otherwise, bonds of any of the following classes, to wit:

1. Surety bonds, bid bonds, performance bonds and payment bonds to the United States of America or agency thereof, including those required or permitted under the laws or regulations relating to Customs or Internal Revenue; license and permit bonds or other indemnity bonds under the laws, ordinances or regulations of any state, city, town, village, board, other body organization, public or private; bonds to transportation companies; lost instrument bonds; lease bonds; worker's compensation bonds; miscellaneous surety bonds; and bonds on behalf of notaries public, sheriffs, deputy sheriffs and similar public officials.

2. Surety bonds, bid bonds, performance bonds and payment bonds on behalf of REPUBLIC SERVICES, INC. and its subsidiaries in connection with bids, proposals or contracts.

REPUBLIC SERVICES, INC. hereby agrees to ratify and confirm whatsoever KIBBLE & PRENTICE HOLDING COMPANY dba USI INSURANCE SERVICES NORTHWEST shall lawfully do pursuant to this power of attorney, and until notice or revocation has been given by REPUBLIC SERVICES, INC., the acts of said attorney shall be binding on the undersigned.

IN WITNESS WHEREOF, this Power of Attorney has been signed this 10<sup>th</sup> day of MARCH, 2020 on behalf of REPUBLIC SERVICES, INC. by its Assistant Secretary, Eileen B. Schuler.

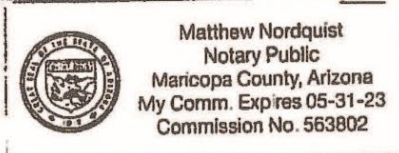
REPUBLIC SERVICES, INC.,  
a Delaware corporation

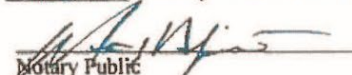
  
Eileen B. Schuler

STATE OF ARIZONA

COUNTY OF MARICOPA

Subscribed and sworn to before me this 10<sup>th</sup> day of MARCH, 2020 by Eileen B. Schuler, Assistant Secretary.



  
Notary Public

CERTIFICATE

I, the undersigned, Eileen B. Schuler, Assistant Secretary of Republic Services, Inc., a Delaware corporation, do hereby certify that the foregoing Power of Attorney is true, correct, remains in full force and effect, and has not been revoked.

IN WITNESS WHEREOF, this Certification has been signed this 5<sup>th</sup> day of August, 2020 on behalf of REPUBLIC SERVICES, INC. by its Assistant Secretary, Eileen B. Schuler.

  
Eileen B. Schuler

**EVERGREEN NATIONAL INDEMNITY COMPANY**

MAYFIELD HEIGHTS, OH

**POWER OF ATTORNEY**

POWER NO. 880348

KNOW ALL MEN BY THESE PRESENTS: That the Evergreen National Indemnity Company, a corporation in the State of Ohio does hereby nominate, constitute and appoint:

Amber Engel

its true and lawful Attorney(s)-In-Fact to make, execute, attest, seal and deliver for and on its behalf, as Surety, and as its act and deed, where required, any and all bonds, undertakings, recognizances and written obligations in the nature thereof, PROVIDED, however, that the obligation of the Company under this Power of Attorney shall not exceed Fifteen Million Dollars and 00/100 (\$15,000,000.00)

This Power of Attorney is granted and is signed by facsimile pursuant to the following Resolution adopted by its Board of Directors on the 23rd day of July, 2004:

"RESOLVED, That any two officers of the Company have the authority to make, execute and deliver a Power of Attorney constituting as Attorney(s)-In-fact such persons, firms, or corporations as may be selected from time to time.

FURTHER RESOLVED, that the signatures of such officers and the Seal of the Company may be affixed to any such Power of Attorney or any certificate relating thereto by facsimile; and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company; and any such powers so executed and certified by facsimile signatures and facsimile seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached."

IN WITNESS WHEREOF, the Evergreen National Indemnity Company has caused its corporate seal to be affixed hereunto, and these presents to be signed by its duly authorized officers this 1st day of June, 2017.

EVERGREEN NATIONAL INDEMNITY COMPANY



By:

*Matthew T. Tucker*

Matthew T. Tucker, President

By:

*David A. Canzone*

David A. Canzone, CFO

Notary Public)  
State of Ohio)

SS:

On this 1st day of June, 2017, before the subscriber, a Notary for the State of Ohio, duly commissioned and qualified, personally came Matthew T. Tucker and David A. Canzone of the Evergreen National Indemnity Company, to me personally known to be the individuals and officers described herein, and who executed the preceding instrument and acknowledged the execution of the same and being by me duly sworn, depose and said that they are the officers of said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and signatures as officers were duly affixed and subscribed to the said instrument by the authority and direction of said Corporation, and that the resolution of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at Cleveland, Ohio, the day and year above written.



PENNY M HAMM  
NOTARY PUBLIC  
STATE OF OHIO  
Comm. Expires  
04-04-2022

*Penny M. Hamm*

Penny M. Hamm, Notary Public  
My Commission Expires April 4, 2022

State of Ohio )

SS:

I, the undersigned, Secretary of the Evergreen National Indemnity Company, a stock corporation of the State of Ohio, DO HEREBY CERTIFY that the foregoing Power of Attorney remains in full force and has not been revoked; and furthermore that the Resolution of the Board of Directors, set forth herein above, is now in force.

Signed and sealed in Mayfield Hts, Ohio this 5th day of August, 2020



*Wan C. Collier*

Wan C. Collier, Secretary



**EGLE** MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY - OIL, GAS, AND MINERALS DIVISION**BOND FOR CONFORMANCE**

By authority of Part 625, Mineral Wells, Act 451 PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

**MINERAL WELL OPERATIONS BOND**

Bond number	Well name and number
880349	OCFL - IW-2

Part 625 Bond Amounts		
<b>Individual test well permit</b>	<b>Blanket test well permit</b>	<b>Disposal, storage, or brine well</b>
<input type="checkbox"/> \$5,500.00 for a depth of 0 to 1000'	<input type="checkbox"/> \$5,500.00 for 1 to 24 wells	<input checked="" type="checkbox"/> \$33,000.00 for a single well
<input type="checkbox"/> \$11,000.00 for a depth greater than 1000' to 2000'	<input type="checkbox"/> \$11,000.00 for 25 to 49 wells	<b>Disposal, storage, brine, and individual test well</b>
<input type="checkbox"/> \$22,000.00 for a depth greater than 2000' to 4000'	<input type="checkbox"/> \$16,500.00 for 50 to 75 wells	<input type="checkbox"/> \$440,000.00 for blanket coverage
<input type="checkbox"/> \$33,000.00 for a depth greater than 4000'	<input type="checkbox"/> \$22,000.00 for 76 to 200 wells	

Ottawa County Landfill, Inc. 15550 - 68th Ave, Coopersville, MI 49404

(Name and Address of Principal)

in the State of DE as Principal and

Evergreen National Indemnity Company 6140 Parkland Blvd, Ste. 321, Mayfield Heights, OH 44124

(Name and Address of Surety)

a corporation organized and existing under the laws of the State of OH and duly authorized to transact business in the State of Michigan, as Surety, are held and firmly bound unto the State of Michigan in the penal sum of

One hundred and twenty-nine thousand, five hundred (\$129,500.00) Dollars.

The Principal named is about to commence and prosecute to final completion well(s) authorized by permits issued or to be issued under Part 625, Act 451 PA 1994, as amended.

"Final completion" means either of the following: (1) The time when locating, drilling, deepening, converting, operating, producing, reworking, plugging, and proper site restoration have been performed on a well in a manner approved by the supervisor of mineral wells, including the filing of the mandatory records; (2) The time when a permit has been issued to convert an existing well subject to this part to a purpose allowed under another act or another part of the act.

When the Principal complies with the provisions of Part 625, Act 451 PA 1994, as amended, in the final completion of the well(s), the Surety's obligations can be terminated otherwise this obligation remains in full force and effect. The Surety's liability herein is co-extensive with that of the Principal and the State of Michigan has the same remedies against the Surety as against the Principal.

The Surety, by execution of the bond, accepts the liability covered by prior bond(s) \_\_\_\_\_

(number(s) and company)

and gives notice to the Supervisor of Mineral Wells of the need for terminating the prior bond(s) as listed herein with such termination to be effective as of the time that this bond becomes effective.

Signed, sealed and dated the 5th day of August, 2020.

Ottawa County Landfill, Inc.

(Principal)

By [Signature]  
(Signature)

Evergreen National Indemnity Company

(Surety)

By [Signature]  
(Signature)

Kathleen M. Mitchell, Attorney-in-Fact

(Name and title)

When the Principal or Surety executes this bond by an agent, power of attorney or other evidence of authority must accompany the bond.

Amber Engel, Attorney-in-Fact

(Name and title)

DEQ USE ONLY	
Permit number	Issue date
Type of well	

EQP 7200-03MW (rev. 5/2019)

MAIL TO:  
OIL, GAS, AND MINERALS DIVISION  
MICHIGAN DEPT OF ENVIRONMENT, GREAT  
LAKES, AND ENERGY  
P.O. BOX 30256  
LANSING, MI 48909-7756



POWER OF ATTORNEY

REPUBLIC SERVICES, INC., a Delaware corporation having its principal place of business at 18500 N. Allied Way, Phoenix, Arizona 85054, hereby makes, constitutes and appoints KIBBLE & PRENTICE HOLDING COMPANY dba USI INSURANCE SERVICES NORTHWEST, acting through and by any one of Debbie Lindstrom, Timothy S. Buhite, Kathleen M. Mitchell, Scott C. Alderman, Peggy A. Firth, Amber Engel, Jamie Armfield, Holly E. Ulfers, or Roxana Palacios, its true and lawful attorney to sign and seal any and all surety bonds, bid bonds, performance bonds and payment bonds at or below the monetary threshold of Five Million Dollars (\$5,000,000.00) on behalf of REPUBLIC SERVICES, INC. and its subsidiaries, relating to the provision of solid waste collection, transportation, transfer, recycling, disposal and/or energy services by REPUBLIC SERVICES, INC. and its subsidiaries and affix its corporate seal to and deliver for and on behalf as surety thereon or otherwise, bonds of any of the following classes, to wit:

1. Surety bonds, bid bonds, performance bonds and payment bonds to the United States of America or agency thereof, including those required or permitted under the laws or regulations relating to Customs or Internal Revenue; license and permit bonds or other indemnity bonds under the laws, ordinances or regulations of any state, city, town, village, board, other body organization, public or private; bonds to transportation companies; lost instrument bonds; lease bonds; worker's compensation bonds; miscellaneous surety bonds; and bonds on behalf of notaries public, sheriffs, deputy sheriffs and similar public officials.

2. Surety bonds, bid bonds, performance bonds and payment bonds on behalf of REPUBLIC SERVICES, INC. and its subsidiaries in connection with bids, proposals or contracts.

REPUBLIC SERVICES, INC. hereby agrees to ratify and confirm whatsoever KIBBLE & PRENTICE HOLDING COMPANY dba USI INSURANCE SERVICES NORTHWEST shall lawfully do pursuant to this power of attorney, and until notice or revocation has been given by REPUBLIC SERVICES, INC., the acts of said attorney shall be binding on the undersigned.

IN WITNESS WHEREOF, this Power of Attorney has been signed this 10<sup>th</sup> day of MARCH, 2020 on behalf of REPUBLIC SERVICES, INC. by its Assistant Secretary, Eileen B. Schuler.

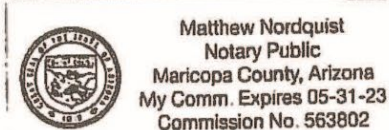
REPUBLIC SERVICES, INC.,  
a Delaware corporation

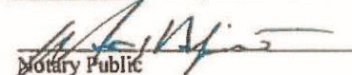
  
Eileen B. Schuler

STATE OF ARIZONA

COUNTY OF MARICOPA

Subscribed and sworn to before me this 10<sup>th</sup> day of MARCH, 2020 by Eileen B. Schuler, Assistant Secretary.



  
Notary Public

CERTIFICATE

I, the undersigned, Eileen B. Schuler, Assistant Secretary of Republic Services, Inc., a Delaware corporation, do hereby certify that the foregoing Power of Attorney is true, correct, remains in full force and effect, and has not been revoked.

IN WITNESS WHEREOF, this Certification has been signed this 5<sup>th</sup> day of August, 2020 on behalf of REPUBLIC SERVICES, INC. by its Assistant Secretary, Eileen B. Schuler.

  
Eileen B. Schuler



**EVERGREEN NATIONAL INDEMNITY COMPANY**

MAYFIELD HEIGHTS, OH

**POWER OF ATTORNEY**

POWER NO. 880349

KNOW ALL MEN BY THESE PRESENTS: That the Evergreen National Indemnity Company, a corporation in the State of Ohio does hereby nominate, constitute and appoint:

Amber Engel

its true and lawful Attorney(s)-In-Fact to make, execute, attest, seal and deliver for and on its behalf, as Surety, and as its act and deed, where required, any and all bonds, undertakings, recognizances and written obligations in the nature thereof, PROVIDED, however, that the obligation of the Company under this Power of Attorney shall not exceed Fifteen Million Dollars and 00/100 (\$15,000,000.00)

This Power of Attorney is granted and is signed by facsimile pursuant to the following Resolution adopted by its Board of Directors on the 23rd day of July, 2004:

"RESOLVED, That any two officers of the Company have the authority to make, execute and deliver a Power of Attorney constituting as Attorney(s)-in-fact such persons, firms, or corporations as may be selected from time to time.

FURTHER RESOLVED, that the signatures of such officers and the Seal of the Company may be affixed to any such Power of Attorney or any certificate relating thereto by facsimile; and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company; and any such powers so executed and certified by facsimile signatures and facsimile seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached."

IN WITNESS WHEREOF, the Evergreen National Indemnity Company has caused its corporate seal to be affixed hereunto, and these presents to be signed by its duly authorized officers this 1st day of June, 2017.

EVERGREEN NATIONAL INDEMNITY COMPANY



By:

Matthew T. Tucker, President

By:

David A. Canzone, CFO

Notary Public)  
State of Ohio)

SS:

On this 1st day of June, 2017, before the subscriber, a Notary for the State of Ohio, duly commissioned and qualified, personally came Matthew T. Tucker and David A. Canzone of the Evergreen National Indemnity Company, to me personally known to be the individuals and officers described herein, and who executed the preceding instrument and acknowledged the execution of the same and being by me duly sworn, deposed and said that they are the officers of said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and signatures as officers were duly affixed and subscribed to the said instrument by the authority and direction of said Corporation, and that the resolution of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at Cleveland, Ohio, the day and year above written.



PENNY M HAMM  
NOTARY PUBLIC  
STATE OF OHIO  
Comm. Expires  
04-04-2022

Penny M. Hamm, Notary Public  
My Commission Expires April 4, 2022

State of Ohio )

SS:

I, the undersigned, Secretary of the Evergreen National Indemnity Company, a stock corporation of the State of Ohio, DO HEREBY CERTIFY that the foregoing Power of Attorney remains in full force and has not been revoked; and furthermore that the Resolution of the Board of Directors, set forth herein above, is now in force.

Signed and sealed in Mayfield Hts, Ohio this 5th day of August, 2020



Wan C. Collier, Secretary

**PART III(D)**  
**CONTINGENCY PLAN FOR CORRECTIVE ACTION**

Technical review of all known artificial penetrations to the top of the injection zone or confining zone within the area of review shows that they are properly plugged and abandoned wells, or active producing wells. There does not exist any possibility for injection activities to have an impact on the USDW through other boreholes. Therefore, a corrective action plan is not required for any artificial penetrations within the Ottawa County Landfill, Inc. area of review. Should upward fluid migration be detected through the well bore of any previously unknown, improperly plugged, completed or abandoned well in the area of review due to injection of permitted fluid, injection will immediately cease and the U.S. EPA will be notified as required in Part I(E)(12)(d) of this permit. A Corrective Action Plan shall then be submitted as required in Part I(1)(2) of this permit.

Should a well failure occur in the Ottawa County Landfill, Inc. injection well, the affected well would be shut-in, appropriate actions required by applicable regulations and permits would be followed regarding regulatory notifications and repairs, and the remaining well would be utilized to manage plant wastes if continued operation would remain protective of the environment. Single well capacity might be supplemented through waste shipment to licensed offsite facilities or plant operations would be curtailed to match disposal capacity. Failure of both wells would result in waste shipment to licensed offsite facilities or curtailment of plant operations.

The corrective action plan that would be proposed by Ottawa County Landfill, Inc. should upward fluid migration through the confining layer be detected in any well bore will include the following:

1. ISK waste disposal wells will be shut-in.
2. The U.S. EPA, Region 5 UIC Branch and the Michigan EGLE will be notified.
3. Following well shut-in, waste will be shipped to alternative permitted facilities for off-site treatment and disposal as necessary.
4. A contingency plan will be prepared as follows:
  - a. Locate well and identify present operator or owner, if any.
  - b. Identify mode of failure.
  - c. Prepare remedial plan outlining course of action.
  - d. The remedial plan will be submitted to the EPA, Region 5 UIC Branch for approval.
  - e. Upon authorization, the remediation plan will be implemented.



April 2024  
Revised October 2020  
Original August 2020

Ottawa County Farms Landfill, Inc., Well IW-2  
UIC Permit Application

*For such wells which are improperly sealed, completed, or abandoned, also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluid into USDWs.*

## **RESPONSE**

### **A.4.1 CORRECTIVE ACTION**

As shown in Table A-3, and discussed above, one oil and gas well penetrates the confining zone within the 6.18 mile AOR and that well is sufficiently plugged, in addition to the adjacent OCF IW-1 well. Data pertaining to IW-1 drilling and completion were provided to EPA. Therefore, the only well potentially requiring corrective action would be the IW-1 or the IW-2 well after it is drilled. The following summarizes the plan to address failure of the wells to protect the surface environment and prevent migration of injected fluids into any USDW:

#### **Ottawa County Farms Landfill IW-2 Contingency Plan**

Continuous monitoring and periodic routine investigative testing procedures will be performed on the disposal wells as required by applicable laws, permits and regulations, but not less frequently than once every five years as discussed in Attachment D.1.3.1 of this document. Pertinent data will be forwarded to the agencies as required. This monitoring and testing is required to ensure well integrity and safe operations. Contingency plans will include the following:

1. If a well fails required monitoring or periodic testing standards, it will be shut-in and the agency notified according to applicable regulations and permit conditions. After investigation into the cause for the failure, work plans will be prepared and reviewed with the regulators for repairing the problem.
2. If a workover is performed on a well, copies of all work reports and logs will be forwarded to the regulatory agencies within 45 days.
3. During the period of time required for a well workover or for shut-ins due to MIT failure, the contingency plans of the facility will include the following:
  - a. If shut-in period is sufficiently brief, the fluid generated during this period of time will be held in storage at the facility or managed in the second well at the facility, if appropriate.
  - b. If well shut-in is required for a longer period of time, some of the fluid may be shifted to another facility
  - c. If required, fluids will be removed from the facility via licensed waste transport vehicles and managed according to applicable regulations.

April 2024  
Revised October 2020  
Original August 2020

Ottawa County Farms Landfill, Inc., Well IW-2  
UIC Permit Application

The current IW-1 and future IW-2 well construction and, as necessary, implementation of a Corrective Action Plan would preclude the potential for endangerment of the lowermost USDW).

#### **A.4.2 AREA OF REVIEW OIL AND GAS DATA**

Data regarding artificial penetrations collected for wells within the area of review have been categorized; data are listed by well type and are discussed in Attachment A.3 of this document. Oil and gas industry (non-freshwater) well locations are shown on Figure A-7, provided as a portion of Attachment A.3 in this document. Based on these data presented in this figure, no wells in the AOR have any potential to serve as a pathway from the proposed injection interval. Table A-3 presents a summary of well information for deep non-freshwater wells located within the 2-mile AOR.

Table A-4 presents freshwater well information for wells within 1/4-mile of the AOR boundary. Freshwater well records are presented at the end of Attachment A.

#### **A.5 LANDOWNER INFORMATION (40 CFR § 144.31 AND PART 147)**

*Requirement: Identify and submit a list with the names and addresses of all owners of record of land within one-fourth (1/4) mile of the facility property boundary. This requirement may be waived by the Regional Administrator if the site is in a populous area and the Regional Administrator determines that the requirement would be impracticable.*

*Consult with your regional EPA office, as additional state landowner notification requirements may apply (40 CFR part 147).*

#### **RESPONSE**

A graphical representation of the ownership of property located within a 1/4-mile radius with respect to the Ottawa County Farms Landfill boundary is provided on Figure A-10. This is conservative with respect to the proposed well locations, which are inside the property boundaries. Table A-5 presents a printed listing of names, addresses and parcel numbers obtained from the Ottawa County records for these properties. Note that Ottawa County Farms Landfill's parent company, Republic Services, owns property south of the landfill and property upon which the current and proposed injection wells would be installed. The property's AOR boundary presented throughout this document includes the landfill itself and small adjacent portion upon which the wells would be installed, rather than the entire owned area.

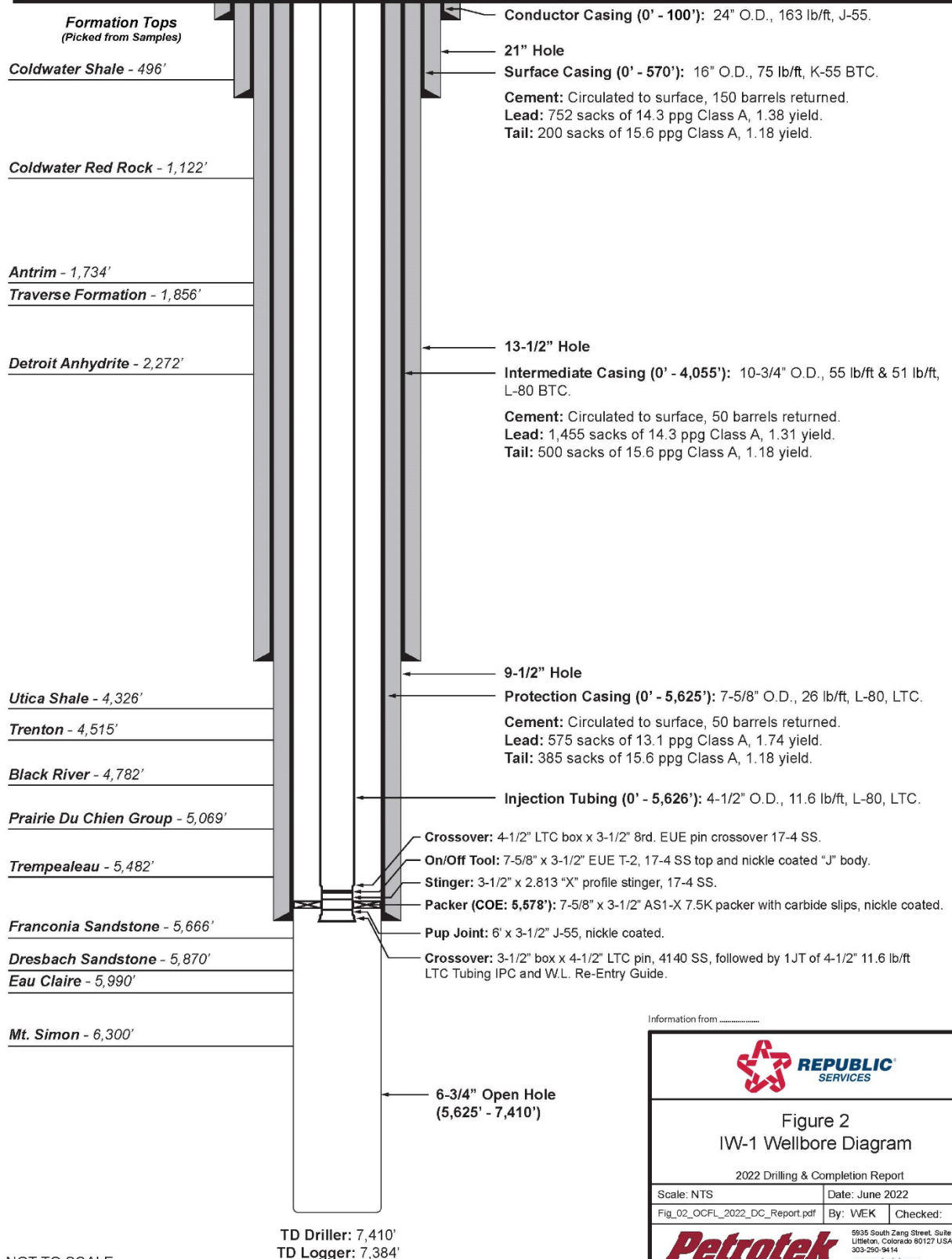
**PART III(E)**  
**CONSTRUCTION DETAILS**

Attached are diagrams of the well construction and wellhead schematic.

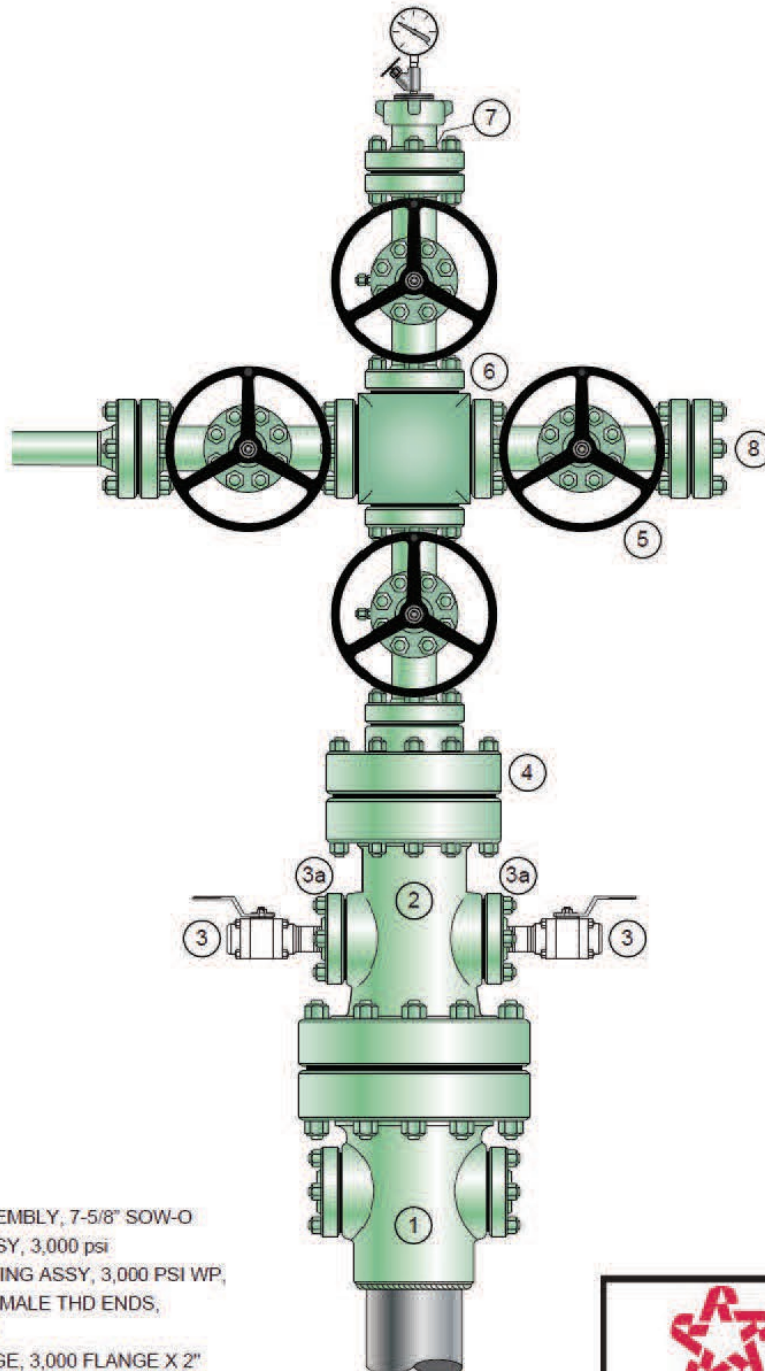
US EPA Permit: MI-139-11-0007  
EGLE Permit: 61574  
API: 21-139-62002-70-00  
Ottawa County, Michigan  
NW NE NE, Sec. 34, T08N, R14W  
Lat: 43.044394919° / Long: -85.949350019° (NAD 83)

**MI-139-11-C009**  
**Page E-2 of 3**

**Note:** All measurements are from Kelly Bushing (KB),  
14 feet above ground surface.  
**KB Elevation:** 689.59'  
**DF Elevation:** 688.59'  
**GL Elevation:** 675.52'







1. CASING HEAD ASSEMBLY, 7-5/8" SOW-O
2. SPOOL CASING ASSY, 3,000 psi
3. BALL VALVE FLOATING ASSY, 3,000 PSI WP,  
2" API LINE PIPE FEMALE THD ENDS,  
LEVER OPERATED
- 3a. COMPANION FLANGE, 3,000 FLANGE X 2"  
API LINE PIPE
4. ADAPTER FLANGE ASSEMBLY, 3,000 psi
5. GATE VALVE ASSY, 3,000 psi
6. STUDDED CROSS ASSEMBLY, WFT, 4-1/16" API 3,000  
STUDDER RUN X 4-1/6" API 3,000 STUDDED OUTLET
7. BLIND FLANGE ASSY WITH TREE CAP
8. BLIND FLANGE ASSY

NOT TO SCALE



Figure C-3  
Proposed Wellhead Schematic, Ottawa  
County Farms Landfill Wells IW-1 and IW-2  
2020 Class I Permit Application

Scale: NTS	Date: August 2020
2020_OCFL_EPA_Fig_C-03.pdf	By: WEK   Checked: NB
<b>Petrotek</b>	5935 South Zang Street, Suite 200 Littleton, Colorado 80127 USA 303-260-4414 www.petrotek.com

PART III(F)  
SOURCE AND ANALYSIS OF WASTE

Source of Waste - Ottawa County Landfill, Inc. is authorized to use this injection well to dispose non-hazardous waste and wastes excluded from management under the Resource Conservation and Recovery Act, as specified at 40 C.F.R. § 261.4, provided the requirements in Part A, regarding new source, have been met.

Limitation - Non-hazardous waste generated onsite and by clients of Ottawa County Landfill, Inc. may be injected into the IW-2, provided the requirements in Part A, regarding new source, have been met. All other fluids entering this borehole must be approved by the Director for purposes of well testing, stimulation, workovers, or as buffer fluids.

Waste Analysis Plan - This plan will be entered into this record and thus becomes an integral part of this permit.

# UNDERGROUND INJECTION CONTROL (UIC) WASTE ANALYSIS PLAN

Class I Deepwell IW-1  
Republic Services  
Ottawa County Farms Landfill

Ottawa County Landfill, Inc.

Class I Deepwells EPA Permit #  
MI-139-1I-0009

Coopersville, Michigan Revised  
April 2024

Prepared By:

***Petrotek***

Petrotek Corporation  
5935 South Zang Street, Suite 200  
Littleton, Colorado 80127  
Phone: (303) 290-9414  
Fax: (303) 290-9580

FINAL

Ottawa County Farms Landfill UIC  
Waste Analysis Plan  
April 2024

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## ATTACHMENTS

Attachment 1 - Republic Services Off-Site Waste Acceptance and Sampling Plan



## **1.0 INTRODUCTION**

### **1.A Background**

The purpose of this Waste Analysis Plan (WAP) is to characterize the non-hazardous landfill leachate and other non-hazardous waste water to be injected into the Ottawa County Landfill, Inc. injection wells that are and will be located at the Ottawa County Farms Landfill (OCFL) in Ottawa County, Michigan. OCFL will be responsible for implementing this WAP. Injection Well IW-1 was constructed in 2022 and IW-2 is projected for construction in 2025. Waste will be injected into the Mt. Simon Formation through Trempealeau Formations.

OCFL intends to operate the wells consistent with Title 40 of the Code of Federal Regulations (40 CFR), Section 146.13 that requires operators of Class I underground injection wells to monitor and analyze the fluids injected into the well "to yield representative data of their characteristics." This waste analysis plan also fulfills the specifications at 40 CFR 146.68 and applicable permit conditions by presenting parameters for which the waste will be analyzed, methods that will be used to test for these parameters, and methods that will be used to obtain representative samples of the waste to be analyzed.

### **1.B Sources**

The OCFL generates non-hazardous leachate. There is no SIC code for sanitary landfill leachate.

The waste waters produced at the OCFL include water collected from leachate collection system, which originates from water infiltration through waste, as well as condensate from the gas collection system. Fluids generated during well maintenance or testing activities may also be reinjected into the well. The waste stream is primarily composed of inorganic, non-hazardous compounds such as chloride, and potassium, with a historic total dissolved solids TDS of up to approximately 10,000 ppm.

Waste water is first accumulated in each OCFL landfill cell, then piped to a leachate collection tank(s). Although some settling may occur and OCFL may elect to filter or chemically manage waste water prior to injection in the future, no waste treatment for regulatory purposes is performed.

OCFL may also accept landfill leachate and related waste from other landfills as well as Class I non-hazardous waste. Offsite waste will be trucked to the site and transferred to the collection tanks. Waste analysis for all Republic leachate and off-site non-hazardous Class I waste shall comply with conditions of this WAP.

### 1.C Summary

The major components of the OCFLs waste characterization and underground injection control (UIC) monitoring program include:

- Volume Monitoring
- Sampling and Analysis
- Quality Assurance/Quality Control

These components are addressed in Sections 2 and 3, below.

The WAP may be reviewed and, if necessary, revised if conditions are identified that may significantly alter the chemical or physical properties of the waste. Revisions to the WAP may also be required if new permit conditions are added by the Agency for cause. Any future revisions to the WAP, upon approval, will become part of the administrative record and constitute a minor modification of the permit. Compatibility issues regarding the subsurface rock matrix and well construction materials are documented in the permit application and are not addressed in this WAP.

## **2.0 PROCEDURES**

### **2.A Volume Monitoring**

As discussed in the text of the UIC Permit Application, flow and pressure recorders are to be used to continuously monitor injection pressure, annulus pressure, and flow rate; totalized cumulative volumes for the wells will be calculated from monitoring data. A summary of recorded data will be provided to the US EPA per applicable permit requirements. The remaining portions of this WAP address physical and chemical characterization of the waste.

### **2.B On-Site Generated Waste Characterization**

OCFL leachate waste analysis parameters were selected based on process knowledge, historical analysis, and analysis suggested by US EPA Region 5 guidance. These parameters include pH, TDS, TSS, specific gravity, and toxicity characteristics. The leachate pH is generally near neutral (i.e., averaging 7.6 for analysis performed in 2015-2023). The total dissolved solids (TDS) concentration of the waste is also a useful indicator of fluid properties. Sodium and potassium are among the predominant cations and chloride is the predominant anion, with bicarbonate alkalinity also a major waste component. TDS average (2017-2023) ranges from approximately 5,700 to 11,000 mg/l. Because the native brine present in the injection zone contains relatively high TDS including high cation-anion concentration, injectate will have a lower TDS concentration than natural formation waters.

Although only a limited number of chemical constituents are expected in injectate, a comprehensive analysis will be performed on an annual basis, with analysis of select parameters performed on a quarterly basis. The leachate is non-hazardous and originates from a non-hazardous waste landfill, but periodic comprehensive analysis will ensure the non-hazardous nature of injectate. Wastewater is not expected to be ignitable, reactive, or corrosive, but waste will be analyzed for flashpoint, reactive cyanide, and pH as specified in Table 2-1 as a basic way to confirm the non-hazardous nature of the waste and to ensure any trends or changes are identified. Physical parameter monitoring is to be conducted as specified in the permit application and permit conditions.

Table 2-1 of the following section lists the parameters and monitoring frequency used to characterize wastewater to be injected into the wells. On-site generated fluid routed to the injection wells will originate from the same tank, therefore tank sampling would be representative of injectate disposed in both wells. The table also summarizes the applicable analytical method and reporting units for each. Characterization parameters were selected based on historical leachate sampling and identified for characterization as needed to satisfy regulatory requirements and applicable specifications listed in typical US EPA Region 5 non-hazardous UIC permits.

### 2.B.1 On-Site Waste Sampling and Analysis

OCFL waste samples will be collected on a daily, quarterly, or annual basis depending on parameter (see Table 2-1) via grab sample from the flow line exiting the dedicated landfill leachate accumulation waste storage tank during calendar days when injection of waste takes place. OCFL personnel, contractor personnel, or contracted analytical laboratory personnel will collect required on-site waste stream samples. Sampling procedures will be conducted at the direction of site representatives and in accordance with the certified or accredited analytical laboratory procedures, and will meet the minimum current standard US EPA procedures. As applicable, the grab sample will be sent to a certified laboratory for analysis. Sufficient mixing and residence time in the system will have occurred at this sampling point for the waste to be representative of the waste stream that is being injected. The sampler's name, sampling point, and date sampled will be documented using COC methods specified in Section 3.A.

Table 2-1 presents the parameters, analytical methods, reporting unit and sample frequency for each test parameter. Sampling and analytical methods will meet or exceed the standards cited below or as presented in US EPA "Methods for the Chemical Analysis of Water and Wastes" or "Standard Methods for the Examination of Water and Wastewater".



**TABLE 2-1**  
**OTTAWA COUNTY FARMS LANDFILL**  
**CLASS I WASTE ONSITE WASTE SAMPLING AND ANALYSIS SUMMARY**

Test Parameter	Example Test Methods*	Reporting Units	Minimum Monitoring Frequency**	Minimum Reporting Frequency**
Ignitability (flash point)**	SW846 1010, SW1010A	---	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses Quarterly select parameters **
Alkalinity (carbonate/bicarbonate), total**	EPA 310.1	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Reactive Sulfide and Cyanide	SW846 9010b, 376.1	---	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
pH	USEPA 150.1	pH units	Daily	Monthly when wells are in operation
Specific Gravity	Hydrometer, ASTM 2710F, D5057	----	Daily	Monthly when wells are in operation
Temperature	Thermometer	°F	Daily	Monthly
TDS**	USEPA 160.1	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
TOC**	USEPA 415.1	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
<b>Toxicity Characteristic Constituents</b>				
Arsenic (D004)**	USEPA 6000 or 7000 series	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select analyses **
Barium (D005)**	USEPA 6000 or 7000 series	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Benzene (D018)**	USEPA 8260B/8021B	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Cadmium (D006)	USEPA 6000 or 7000 series	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Carbon Tetrachloride (D019)	USEPA 8260B/8021B	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Chlordane (D020)	USEPA 8081A, 8270	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Chlorobenzene (D021)**	USEPA 8260B/8021B	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Chloroform (D022)	USEPA 8260B/8021B	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Chromium (D007)**	USEPA 6000 or 7000 series	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
o- Cresol (D023)	USEPA 8270C	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **

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Test Parameter	Example Test Methods*	Reporting Units	Minimum Monitoring Frequency**	Minimum Reporting Frequency**
m-Cresol (D024)	USEPA 8270D	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
p-Cresol (D025)	USEPA 8270D	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Cresol (D026)	USEPA 8270D	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
2,4 D (D016)	USEPA 8151A	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
1,4-Dichlorobenzene (D027)	USEPA 8260B/8021B	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
1,2-Dichloroethane (D028)**	USEPA 8260B/8021B	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
1,1- Dichloroethylene (D029)	USEPA 8260B/8021B	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
2,4-Dinitrotoluene (D030)	USEPA 8270C	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Endrin (D012)	USEPA 8081A, 8085, 8270	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Heptachlor (and its epoxide) D031	USEPA 8081A, 8085, 8270	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Hexachlorobenzene (D032)	USEPA 8081A, 8121, 8270C	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Hexachloro-1,3 butadiene (D033)	USEPA 8021B, 8260B	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Hexachloroethane (D034)	USEPA 8270CD	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Lead (D008)**	USEPA 6000 or 7000 series	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Lindane (D013)	USEPA 8081A, 8270	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Mercury (D009)	USEPA 6000 or 7000 series	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Methoxychlor (D014)	USEPA 8270D, 8081A	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Methyl ethyl ketone (D035)**	USEPA 8260B/8261	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Nitrobenzene (D036)	USEPA 8270D	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Pentachlorophenol (D037)	USEPA 8270D	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Pyridine (D038)	USEPA 8270D	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **

Procedures

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**Petrotek**

Test Parameter	Example Test Methods*	Reporting Units	Minimum Monitoring Frequency**	Minimum Reporting Frequency**
Selenium (D0101)	USEPA 6000 or 7000 series	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Silver (D011)	USEPA 6000 or 7000 series	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Tetrachloroethylene (D039)	USEPA 8260B/8021B	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Toxaphene (D015)	USEPA 8081A, 8270	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Trichloroethylene (D040)	USEPA 8260B/8021B	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
2,4,5-Trichlorophenol	USEPA 8270D	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
2,4,6-Trichlorophenol	USEPA 8270D	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
2,4,5-TP (Silvex) D017	USEPA 8151A, 8321, 8085	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Vinyl Chloride (D043)	USEPA 8260B/8021B	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
<b>Additional Parameters</b>				
Potassium	USEPA 200.8/6010	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Sodium**	USEPA 200.8/6010B, 6020A, 3005A	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Chloride**	USEPA 325.2/A4500, 300.0	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Total inorganic nitrogen**	USEPA 350.2, 300.0	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **
Ammonia (as nitrogen)**	USEPA 350.2, 300.0	mg/L	Annually: full analyses, Quarterly: select parameters **	Annually: full analyses, Quarterly: select parameters **

Notes: \* Test methods cited are examples; alternative methods with equal or better detection limits may be used.

\*\* Monitoring of select parameters to occur and be reported quarterly.

Results of select analyses collected to satisfy Landfill Operating License are presented in Section H of the US EPA UIC Permit Application and are summarized in Section B.9 of the EGLE 625 mineral well application and subsequent permit modification requests. As shown in these Sections and other submittals, analysis shows that only a relatively few organic and inorganic constituents are detected, and inorganic parameters are analyzed on an annual basis as required by the Landfill Operating License. Therefore, based on process knowledge and historical analytical results, the WAP parameter list provides analysis for 1) US EPA mandated parameters and 2) compounds typically present in injectate at significant concentrations (e.g., chloride).



It is important to note that OCFL is required to perform ongoing leachate analysis as part of landfill operating permits and requirements. OCFL may collect and analyze samples of injectate as described in this WAP, and share resulting data with operations to satisfy landfill operating permit requirements.

## 2.C Off-site Generated Waste Characterization

OCFL may also accept leachate from other offsite landfills operated by Republic in addition to Class I non-hazardous waste from other sources. Each non-site generated waste will require initial full waste characterization prior to acceptance commensurate with that performed for OCFL waste; all waste will be manifested and undergo periodic fingerprint analyses to ensure continued acceptance of non-hazardous waste that is consistent with the original waste characterization. As with OCFL waste, off-site waste must undergo annual re-analysis for the full analytical suite of sampling parameters.

Prior to acceptance of any off-site waste, generators must complete a waste Deep Well Form (i.e. DWP or Waste Profile Form, see example presented in Attachment 1 of this Waste Analysis Plan) that includes applicable toxicity characteristic analysis of a representative waste stream sample prior to both initial waste acceptance and annually, with periodic fingerprint analyses of a reduced parameter list. Initial analysis shall be performed as presented in Table 2-2.

**TABLE 2-2**  
**OTTAWA COUNTY FARMS LANDFILL**  
**CLASS I WASTE OFF-SITE WASTE SAMPLING AND ANALYSIS SUMMARY**

Test Parameter	Example Test Methods*	Reporting Units	Monitoring and Reporting Frequency**
Ignitability (flash point)	SW846 1010, SW1010A	---	Initially and Annually***
Alkalinity (carbonate/bicarbonate), total	EPA 310.1	mg/L	Initially and Annually***
Reactive Sulfide and Cyanide	SW846 9010b, 376.1	---	Initially and Annually***
pH	USEPA 150.1	pH units	Initially and Annually***; included in fingerprint analyses
Specific Gravity	Hydrometer, ASTM 2710F, D5057	----	Initially and Annually***; included in fingerprint analyses
TDS	USEPA 160.1	mg/L	Initially and Annually***
TOC	USEPA 415.1	mg/L	Initially and Annually***



Test Parameter	Example Test Methods*	Reporting Units	Monitoring and Reporting Frequency**
<b>Toxicity Characteristic Constituents</b>			
Arsenic (D004)	USEPA 6000 or 7000 series	mg/L	Initially and Annually***
Barium (D005)	USEPA 6000 or 7000 series	mg/L	Initially and Annually***
Benzene (D018)	USEPA 8260B/8021B	mg/L	Initially and Annually**y
Cadmium (D006)	USEPA 6000 or 7000 series	mg/L	Initially and Annually***
Carbon Tetrachloride (D019)	USEPA 8260B/8021B	mg/L	Initially and Annually***
Chlordane (D020)	USEPA 8081A, 8270	mg/L	Initially and Annually***
Chlorobenzene (D021),	USEPA 8260B/8021B	mg/L	Initially and Annually***
Chloroform (D022),	USEPA 8260B/8021B	mg/L	Initially and Annually***
Chromium (D007)	USEPA 6000 or 7000 series	mg/L	Initially and Annually***
o- Cresol (D023)	USEPA 8270C	mg/L	Initially and Annually***
m-Cresol (D024)	USEPA 8270D	mg/L	Initially and Annually***
p-Cresol (D025)	USEPA 8270D	mg/L	Initially and Annually***
Cresol (D026)	USEPA 8270D	mg/L	Initially and Annually***
2,4 D (D016)	USEPA 8151A	mg/L	Initially and Annually***
1,4-Dichlorobenzene (D027)	USEPA 8260B/8021B	mg/L	Initially and Annually***
1,2-Dichloroethane (D028)	USEPA 8260B/8021B	mg/L	Initially and Annually***
1,1- Dichloroethylene (D029)	USEPA 8260B/8021B	mg/L	Initially and Annually***
2,4-Dinitrotoluene (D030)	USEPA 8270C	mg/L	Initially and Annually***
Endrin (D012)	USEPA 8081A, 8085, 8270	mg/L	Initially and Annually***
Heptachlor (and its epoxide) D031	USEPA 8081A, 8085, 8270	mg/L	Initially and Annually***
Hexachlorobenzene (D032)	USEPA 8081A, 8121, 8270C	mg/L	Initially and Annually***
Hexachloro-1,3 butadiene (D033)	USEPA 8021B, 8260B	mg/L	Initially and Annually***
Hexachloroethane (D034)	USEPA 8270CD	mg/L	Initially and Annually***
Lead (D008)	USEPA 6000 or 7000 series	mg/L	Initially and Annually***
Lindane (D013)	USEPA 8081A, 8270	mg/L	Initially and Annually***
Mercury (D009)	USEPA 6000 or 7000 series	mg/L	Initially and Annually***
Methoxychlor (D014)	USEPA 8270D, 8081A	mg/L	Initially and Annually***
Methyl ethyl ketone (D035)	USEPA 8260B/8261	mg/L	Initially and Annually***

Test Parameter	Example Test Methods*	Reporting Units	Monitoring and Reporting Frequency**
Nitrobenzene (D036)	USEPA 8270D	mg/L	Initially and Annually***
Pentachlorophenol (D037)	USEPA 8270D	mg/L	Initially and Annually***
Pyridine (D038)	USEPA 8270D	mg/L	Initially and Annually***
Selenium (D0101)	USEPA 6000 or 7000 series	mg/L	Initially and Annually***
Silver (D011)	USEPA 6000 or 7000 series	mg/L	Initially and Annually***
Tetrachloroethylene (D039)	USEPA 8260B/8021B	mg/L	Initially and Annually***
Toxaphene (D015)	USEPA 8081A, 8270	mg/L	Initially and Annually***
Trichloroethylene (D040)	USEPA 8260B/8021B	mg/L	Initially and Annually***
2,4,5-Trichlorophenol	USEPA 8270D	mg/L	Initially and Annually***
2,4,6-Trichlorophenol	USEPA 8270D	mg/L	Initially and Annually***
2,4,5-TP (Silvex) D017	USEPA 8151A, 8321, 8085	mg/L	Initially and Annually***
Vinyl Chloride (D043)	USEPA 8260B/8021B	mg/L	Initially and Annually***
<b>Additional Parameters</b>			
Potassium	USEPA 200.8/6010	mg/L	Initially and Annually***
Sodium	USEPA 200.8/6010B, 6020A, 3005A	mg/L	Initially and Annually***
Chloride	USEPA 325.2/A4500, 300.0	mg/L	Initially and Annually***
Total inorganic nitrogen	USEPA 350.2, 300.0	mg/L	Initially and Annually***
Ammonia (as nitrogen)	USEPA 350.2, 300.0	mg/L	Initially and Annually***

Notes: \* Test methods cited are examples; alternative methods with equal or better detection limits may be used.

\*\* Fingerprint analyses and frequency to be established on a waste stream basis and may include any of the parameters listed on Table 2-2.

\*\*\* OCFL may reduce the annual analytical parameter list based on analytical data and generator knowledge.

It is expected that the data submitted by each generator will include the above initial analyses, as well as detailed process knowledge addressing absence of all listed wastes to ensure the waste accepted is non-hazardous. OCFL will evaluate each waste as detailed above and determine if the waste is acceptable for injection at the facility. If determined to be acceptable, OCFL will issue a written acceptance to the waste generator with the details of how the waste will be accepted. OCFL will submit the completed DWP and associated analyses for each approved waste stream to USEPA. For each waste-stream/source approved, OCFL will establish waste-specific fingerprint sample frequency and analytical parameters. However, in all cases, each waste stream will be approved for disposal by OCFL for one-year and the approval process must be repeated to recertify the waste for disposal at the OCFL injection well.

Once approved as a new source, an off-site waste stream may be disposed in the well(s) by OCFL. Attachment 1 presents the OCFL Off-Site Waste Acceptance and Sampling plan, which details how off-site waste will be tracked, sampled and managed at OCFL prior to disposal. Elements of this plan include but are not limited to:

- Example Waste Manifest Form and Manifesting Requirements (suitable equivalent form, such as a Bill of Lading, may be substituted at the election of Republic).
- Fingerprint Sample Collection and Analyses prior to load acceptance and consequences if sample analyses are not in agreement with annual analyses
- Waste Offloading Information
- Site Security Plan
- Mandatory confirmatory annual re-analysis of waste

## **2.D Pre-Injection Waste Characterization**

Because all waste entering the tank management system at OCFL will be non-hazardous and undergo sampling and analysis prior to placement in a storage tank, no pre-injection sampling of the composite injectate will be conducted. OCFL may elect to conduct such analyses for operational purposes.

### **3.0 QUALITY ASSURANCE/QUALITY CONTROL**

#### **3.A General Sampling and Analytical Information**

Sampling protocols outlined in this document are to be followed. OCFL is responsible for obtaining data necessary to comply with this WAP, and will ensure adherence to guidelines set forth in the referenced standards listed in Section 2.C or equivalents, as appropriate. Approved sample collection vessels and preservation techniques from 40 CFR 136.3 or equivalent will be followed as applicable and appropriate. These will include preservation in plastic or glass sample containers provided by the laboratory and storage in a sample refrigerator or cooler for shipment to the laboratory. OCFL reserves the option to choose alternate laboratories for testing provided equivalent QA/QC standards are met. The following applies to samples collected for laboratory analysis (i.e., quarterly analysis).

#### **COC Form Content**

Each OCFL and off-site sample taken will be accompanied by facility or contract laboratory Chain of Custody (COC) form that provides a record of sample handling starting with sample acquisition, documenting the process up to laboratory analysis. Samples taken are to be logged in the field using the COC, sealed, and delivered to the laboratory with a COC form. The COC form shall provide the following items collected by the sampler:

1. Sample ID including code or name, in addition to date and time;
2. Name of sample collector; (include sampling company name if not site personnel);
3. Sample collection method;
4. Sample collection date;
5. Sample collection point; and
6. Sample presentation technique, as applicable

Sample container labels will also include a COC seal if personnel responsible for collecting the sample do not deliver the sample to the laboratory. Sample chain-of-custody will be followed at all times during the sampling and subsequent analysis. Chain-of-custody will be used to document the handling and control necessary to identify and trace a sample from collection through to final analytical results. Standard laboratory COC forms that document the times and dates of all personnel handling the sample, along with standard labels and container seals sufficient to distinguish between samples and prevent tampering, will be acceptable.



### Reporting and Records Retention

Analytical reports and regulatory submittals regarding the nature and composition of injected fluids are to be maintained in the well files until authorization is obtained from US EPA, in writing, to discard the records. All laboratory reports submitted annually to US EPA will include, at a minimum, the following:

1. Test description;
2. Analytical method for parameter detection;
3. Identification of analysis date and analyst;
4. Result and units; and
5. Analytical reporting limits.

The following sections present QA/QC parameters which will be followed to help to assure the adequacy of the sampling and analytical techniques for wellhead sampling and analysis described in this plan.

### 3.B Sampling Controls

#### 1. Equipment Blanks

Fluid samples will be obtained directly from the sample accumulation container before being sealed in the sample container shipped to the laboratory. In this case, no equipment cleaning blanks will be required. If samples cannot be directly placed in the bottles intended for preservation and shipment, equipment blanks will be taken as deemed appropriate by OCFL.

#### 2. Trip Blanks

If the laboratory analysis is ever suspect because it contains anomalous parameters, trip blanks will be collected to assess in-transit contamination. The trip blank will consist of sample containers filled and sealed at the laboratory with laboratory-provided deionized (DI) water that accompany the sample containers used throughout the sampling event. The sample containers shall be handled in the same manner as the samples. The trip blank(s) will be sent to the laboratory for analysis of, at a minimum, the same parameters specified in the sampling plan above. A minimum of one (1) trip blank per sampling event will be utilized, when deemed necessary. At the discretion of OCFL, trip blanks may be submitted with any sample to verify representativeness of the sampling program.

### 3. Sample Duplicates

On advance written request of US EPA, duplicate samples will be taken to further assess the QA/QC program of the laboratory conducting the analysis. Such samples will be drawn from the same site from which primary samples will be taken consecutively from the same sampling tap or sample location to ensure representativeness. The duplicate will be labeled with a sample number that will not conflict with the other samples, but will not be discernable to the laboratory as a duplicate sample. Upon the request of US EPA or at the discretion of site representatives, one duplicate sample per selected sampling event will be taken and analyzed for the same parameters as the sampling event.

### 3.C Analytical Controls

#### 1. Equipment Calibration

The selected analytical laboratories must maintain QA/QC records of the frequency and type of instrument calibration performed at the laboratory and in the field. Any calibration of thermometers, gauges, chromatographs, spectrometers and other analytical equipment will be conducted according to appropriate instrument manufacturer specifications and manufacturer recommended frequencies or as dictated by applicable laboratory QA/QC plans that have been developed by the laboratory. Valid calibration certificates for instruments used offsite by a certified lab will be maintained at that facility. Calibration data for onsite field testing or continuous monitoring will be maintained as part of the site well records.

#### 2. Data Reduction

Transcription of the raw data into the reportable units is conducted by the laboratory in accordance with the selected laboratory Q/A plan. Data reduction utilized in the analysis and reporting process is presented in the reports to the US EPA for each sampling and analysis event. Data is recorded on hand written or computer work sheets that include identification data, sample data and all data required for calculations, or on computer print-outs accompanied by operator notes and summaries.

#### 3. Data Verification

Data verification is conducted after each sampling event by assigned laboratory personnel and includes, at a minimum, review of chain-of-custody forms, equipment calibration records and data completeness. Spot checks of raw data versus reported data are performed to review math accuracy, significant numbers and reporting units. In addition, certified laboratory standard quality assurance/quality control requirements or checklists are utilized to verify individual test methods such as blanks, standards, and for comparisons of

internal lab test duplicate results. Problems with any of these items will be indicated in the analytical report presented to the agency.

#### 4. Internal Quality Control

Per the laboratory QA/QC program, certified quality control samples from appropriate commercial sources or the US EPA, may be run periodically with sample batches. Internal quality control are addressed by disclosure of the laboratory's use of blanks, blind standards, matrix spikes and matrix spike duplicates, preparation of reagents, and laboratory duplicate or replicate analyses.

### 3.D Actions

#### 1. Corrective Actions

Corrective actions are implemented by laboratories if the analytical or sampling methods do not achieve plan objectives or data verification identifies inconsistencies in the results. Actions may entail re-sampling the waste stream and/or re-analyzing the fluid for a particular parameter, re-calibrating an analytical device, or other appropriate actions as dictated by the specific situation encountered. Action levels are typically taken in accordance with any applicable standards from USEPA "Methods for the Chemical Analysis of Water and Wastes" or "Standard Methods for the Examination of Water and Wastewater". OCFL representatives may, at their discretion, require re-sampling and retesting to confirm results that fall outside the historical range of expected analytical results, or outside equipment calibration curves.

#### 2. Reports to US EPA Region 5

Reports of waste analysis to US EPA will contain a table summarizing the sampling date, units and analytical result for each of the parameters listed in table 2-1 of this document. Reports will include analytical result for samples obtained at the frequency specified in Tables 2-1 and 2-2, as well as fingerprint analyses results for off-site generated waste as specified in USEPA's approval of the waste for disposal at the OCFL facility. Additionally, analytical results (i.e., data), including chain of custody forms, will be submitted to US EPA.

### 3.E Re-Characterization

OCFL shall review the results of quarterly leachate analysis, initial Waste Profile Form analyses associated with off-site waste, fingerprint analyses results, and all annual re-analyses to ensure that injectate is sufficiently characterized. Also, at the discretion of OCFL or at the written request of US EPA, re-characterization efforts may be conducted should a significant change occur in the injectate composition based on analyses, or if necessitated or required by process changes or new regulations.

The waste stream will be re-characterized as deemed necessary by OCFL if analyses shows a significant change in parameter concentration, particularly toxicity characteristic compound composition that might affect the non-hazardous nature of the waste. In this instance, sampling may be performed more frequently to obtain more representative analysis of waste composition, to ensure that the overall composition of injectate is still non-hazardous. Any future revisions to the WAP, upon approval, will become part of the administrative record and constitute a minor modification of the permit upon submittal by OCFL.



# **ATTACHMENT 1**

**APRIL 2024**

## **REPUBLIC SERVICES OFF-SITE WASTE ACCEPTANCE AND SAMPLING PLAN**

## **1.1 Waste Description**

### **1.1.1 Off-Site Wastes**

OCFL accepts off-site Class 1 nonhazardous wastewater (liquid waste), including landfill leachate originating from off-site sources. Some of the off-site landfill leachate is generated at Republic landfills other than the OCFL. The Class 1 non-hazardous wastewater that is accepted is expected to be tanker truck quantities from landfills (leachate and related waste), as well as non-hazardous waste from other industrial sources. Any waste accepted will be non-hazardous, i.e. below regulatory limits set forth by 40 CFR 261.24 Table I and will exhibit pH greater than 2 and less than 12.5. Waste characteristics will be demonstrated through initial, fingerprint, and annual sampling and analyses.

### **1.1.2 Wastes Generated On-Site**

It is possible that truck unloading on the containment pad may result in fluids from the trucks and hoses being discharged onto the pad and being collected in sumps present at the tanker unloading areas. Precipitation and rinse water used to flush the pad will also be accumulated in the tanker unloading area sumps. Fluids pumped out of the sumps will be derived from otherwise approved waste sources and will not be separately characterized when removed from the sumps and transferred to the waste water storage tanks. A record of the volume of such sump water will be maintained. Any waste residuals (i.e. solids) present in sump shall be fully characterized and disposed in the OCFL landfill cells or offsite at an appropriate EPA-approved facility based on analytical results.

## **1.2 Tanker Truck Acceptance Plan**

The tanker truck acceptance plan used by OCFL to evaluate and analyze a waste prior to acceptance at the facility is outlined as follows:

### INITIAL WASTE ACCEPTANCE

1. Deep Well Profile (DWP, see Section 1.4) and results of a sample analyses in accordance with Section 2.3 of the WAP are to be obtained by OCFL or submitted to OCFL by the Generator prior to the first scheduled shipment.
2. The sample is to be analyzed by a certified laboratory. The analysis is reviewed to determine if the waste is within the acceptance parameters based on regulatory requirements of the U.S. Environmental Protection Agency (EPA), and the Resource Conservation and Recovery Act (RCRA). Further data and samples may be requested from the Generator, if needed.

Upon receipt of analysis results OCFL will compare the laboratory analyses to the land disposal restrictions set forth in 40 CFR part 268, characteristics of hazardous waste 40 CFR part 261, subpart C, and make the determination if the wastewater is listed hazardous waste under 40 CFR 261, subpart D. The wastewater will be qualified as regulatorily acceptable for disposal if it is not within the parameters of 40 CFR part 268, 40 CFR 261 subpart C, 40 CFR 261 subpart D that classifies the wastewater as hazardous waste.

3. Note that while a waste may be non-hazardous, other operational considerations may deem the waste unacceptable for acceptance at the OCFL site. Such considerations are at the discretion of OCFL.

#### SUBSEQUENT WASTE SHIPMENT ACCEPTANCE

The following applies to both initial waste acceptance, subsequent waste shipments, and establishment of fingerprint analytes and frequencies.

1. Admit tanker truck into the facility. Confirm that the shipment is from a waste source that has been approved in accordance with OCFL's waste acceptance procedures. As specified by the waste approval, if a fingerprint sample is required, take a sample from selected tanker trucks and fingerprint test at the OCFL onsite laboratory or at a select off-site facility. Refer to Section 1.3.1 regarding the required frequency of fingerprint testing of liquid waste received.
2. Conduct fingerprint analysis (if required) of the sample and compare to the DWP.
3. If the comparison is unacceptable, e.g., if the waste is found to be hazardous, contact the customer to discuss the discrepancy. If the discrepancy is not resolved to the satisfaction of OCFL, require the tanker truck to exit the facility without being unloaded.
4. Note that while a waste may be non-hazardous, other operational considerations may deem the waste unacceptable for acceptance at the OCFL site. Such considerations are at the discretion of OCFL.
5. If the approval paperwork and any applicable fingerprint analysis result is within acceptable variance limits with the DWP, approve the tanker truck for unloading.
6. Complete Waste Manifest or Shipment Form to document shipment, volume, fingerprint analyses, etc.
7. File the comparative analysis and fingerprint data in onsite records.
8. Complete required regulatory forms and submit to designated regulatory agency per per-specified reporting requirements.

A Site Security Plan shall be in place to ensure that waste offload occurs in a safe and secure area. The Site Security Plan is included at the end of this attachment.

### **1.2.1 Frequency of Fingerprint Sampling and Analysis**

Fingerprint sampling and analysis will be required as specified in the OCFL waste approval. Frequency of fingerprint analysis sampling will be proposed in each waste-source approval request and will vary based on specifics associated with each waste-stream.

### **1.3 Deep Well Profile (DWP)**

Each Generator shipping waste to the OCFL facility will be required to provide a completed Deep Well Profile (DWP) or a suitable equivalent form prior to the initial shipment. OCFL has prepared a DWP form with instructions, and a copy of the current form is presented in the WAP and repeated at the end of this Attachment. The generator is responsible for completing the DWP. A representative sample will be obtained and analyzed in compliance with the parameters and methods specified in Table 2-2 of the WAP. Once OCFL has approved acceptance of the waste, shipments of the approved source may be received. As specified in regulatory approvals, future shipments will undergo applicable fingerprinting to verify continued consistency with profiled waste characteristics.

A DWP form may include, but not be limited to, the following information:

- The physical form of the waste
- The process generating the waste
- Analytical results of representative sample, per analytical suite specified in Table 2-2 of the WAP
- The general chemical composition, i.e., aqueous, organic, or inorganic

The DWP form is to be used as a tool in evaluating the acceptability for disposal of the waste at the OCFL facility and to document Generator compliance with applicable standards. If the components of the waste or the origin of the waste cannot be identified, or if any contaminants are identified which may be incompatible with the disposal system, additional analyses may be requested from the Generator at the discretion of OCFL.

### **1.4 Fingerprint Technical Acceptance Criteria**

Each waste stream is to be sampled and fingerprinted at a frequency sufficient to provide documentation of waste stream consistency with the approval to inject into the well. The following paragraphs describe the required waste stream



analysis and fingerprinting analysis.

Waste shall meet the analytical requirements as specified in the WAP, and no hazardous waste shall be accepted. Technical acceptance criteria are established with regard to allowable variance in a waste stream between its original analysis and the fingerprint analysis, with an emphasis on identifying potential waste composition changes. These criteria are to be used as guidelines or "flags" to recognize potential changes in the waste stream. If a waste stream appears to have changed, then the Facility Supervisor or their designee contacts the Generator and may request additional information to include:

- An explanation of the change,
- An up-to-date analysis of the waste, and
- Additional analyses.

**PART III(G)**  
**LIST OF APPROVED SOURCES**

Currently there is 1 landfill leachate approved source of Class I fluid being disposed of into the IW-2 well. Future Class I “sources”, as approved by the Director, will be added to this Part III(G) of the permit. All new sources will be identified below by identification number, company name, location, as well as sampling frequency and analytical parameters.

**NON-HAZARDOUS WASTE FLUIDS<sup>1</sup>**

"Source" ID Number	"Source" Name	Location (Address)	Waste Analysis Parameters	Waste Sampling Frequency
1CL1	Ottawa County Landfill, Inc.	15550 68th Ave. Coopersville, MI 49404	Toxicity Characteristic list (see 40 CFR §261.24)  Fingerprint**	Annually   Quarterly

\*\*Minimum Fingerprinting analytical parameters are specified in Part III(A) subpart(G) of this permit.

**APPROVED CLASS II SOURCES**

A complete chemical analysis of each source of brine that makes up the injection fluid is included in the administrative record for this permit. No fluids other than those from sources noted in Part III (G) of the permit shall be injected.

CL2	Field Name	Location (T-R-S)	Formation Name	Frequency
1CL2				

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<sup>1</sup>Non-hazardous waste fluid sampling parameters and frequencies shall be determined on a case specific basis, with different sources being tested at differing frequencies. Also, different sources may be required to be tested for different parameters.



**PART III(H)**  
**SPECIAL CONDITIONS RELATED TO REMOTE MONITORING**

If this well is monitored remotely, the following special conditions shall be applicable:

For the purpose of this permit, remote monitoring is defined as injection into the well when a trained operator is not present on site property and able to perceive shut-down alarms and able to physically respond to the well controls or the wellhead within 15 minutes of a compliance alarm condition.

1. Local operating system and remote monitoring system: If remote monitoring is to be used to operate the well, an operating system and programmable logic controller shall be on-site and shall have a back-up power supply and an automatic pager designed to alert designated on-call, off-site personnel in the event of a well alarm or shut-in. The off-site operator shall be able to remotely access the operating system to verify well conditions and alarm status.
2. Response to alarms and automatic shut-ins: Alarm conditions related to permit compliance conditions of the well under Part II (B) (5) shall be investigated on-site by a trained operator within one hour of pager notification of the occurrence.
3. Loss of power to the computer: In the event of a power failure beyond the capability of the back-up power supply shuts down the computer, the well shall be automatically shut-in.
4. Loss of dial tone: If the automatic pager cannot get a dial tone for 15 minutes, the well shall automatically be shut-in.
5. Restart of the well after an automatic shut-in: Restart of the well after an automatic shut-in related to a permit condition alarm (including, but not limited to, injection pressure, annulus differential pressure, loss of dial tone for more than 15 minutes or computer power failure) shall require the physical presence of the operator on-site before the well can be restarted.
6. Restart of the well after non-permit condition related or scheduled shut-ins: If the well is shut-in for more than 48 hours for circumstances unrelated to permit conditions, restart of the well shall require the physical presence of the operator on-site.
7. Weekly operator inspections: If fluid injection occurs during the period of any week and the well is being monitored remotely, a trained operator shall physically visit the site to inspect the facility at a minimum frequency of not less than once per week. This inspection shall verify the correct operation of the remote monitoring system by review of items such as, but not limited to, a comparison of the values shown on mechanical gauges with those reported by the remote operating system.
8. When not in use by a trained well operator, offloading connections shall be locked at the valves leading to waste water tanks so that access is restricted to trained well operators.

9. Offloading of waste from offsite sources can only occur with a trained operator physically present on site. An offsite waste related bound log book will be maintained documenting that a trained well operator allowed offsite waste to be unloaded. At a minimum, offsite waste log book entries are to include operator name, date, time, generator identification, approximate volume, and approved waste source identification number from the effective permit. The bound offsite waste log book(s) will be considered part of the plant monitoring records regarding the injection wells.

**ATTACHMENT I**  
**MECHANICAL INTEGRITY TESTING**

**Standard Annulus Pressure Test**

1. Ensure the packer is set within 100 feet of the top of the injection zone. Packers not set within 100 feet of the top of the injection zone will be evaluated by EPA on a case-by-case basis. Note any approved deviations from previously reported well construction.
2. Document the test using a mechanical or digital device or a service company job record which records the value of the parameters of interest as measured during the test.
  - a. Submit along with the test results a gauge calibration certificate for the mechanical or digital device used to record test parameters. All calibration (for new or recalibrated gauges) must have been performed within a year prior to the test.
  - b. Place a gauge on the wellhead to measure pressure. If a recording device is used, the recording device serves to verify the data witnessed on the wellhead gauge.
  - c. Use an appropriately scaled mechanical gauge which has a measurement range that is 1.2 – 2 times the maximum pressure measured or a 1 psi resolution digital gauge with sufficient full scale.
  - d. Measure and document pressure using a gauge and/or a digital record and/or a chart record that can be read with sufficient accuracy to identify pressure change which would result in a failure of the test and to record accurate values during the test interval. For example, if the test pressure is 300 psig, the gauge and/or chart record should be marked in increments of 5 psi or less.
3. Verify that the tubing/casing annulus is full of liquid. No unapproved fluids that may affect test outcomes are allowed. Measure and report the volume of liquid added to the annulus during pressurization (if any). If an annulus tank is pressurized with nitrogen to pressurize the well, record the liquid displaced from the tank into the well annulus.
4. Stabilize the temperature of the well and the annulus liquid, either by ceasing injection or injecting at a constant fixed rate. Ensure that the wellhead injection tubing pressure is at least 100 psi different from the annulus test pressure.
5. Pressurize the annulus to the greater of 300 psig or the maximum permitted injection pressure plus 100 psi. A positive pressure differential of greater than 100 psi should be maintained between the annulus and the injection tubing. If EPA does not approve any deviations from this criteria prior to testing, the test results might not be considered a sufficient demonstration of mechanical integrity and a new test would then be needed. A net gain or loss of more than 3% during the test indicates the well does not have mechanical integrity. Following pressurization, isolate the annular system from its pressure source and, if present, the sealpot or surge tank being sure to prevent any leaking across the shut-off valves.
6. Test for at least 60 minutes. Note the time, the annulus pressure, and the injection/tubing pressure at the start of the test and measure and note these same parameters at least every 10 minutes thereafter up to the end of the required test duration.
7. Send a report of the testing including any other data or documents available at the conclusion of the test which support the test results, such as gauge calibration certification, third-party service ticket, and/or original chart/digital recordings, to EPA per the reporting requirements of the permit.
8. If the tested well was reworked in association with the test, submit a rework record.

9. Include the certification statement and signature on the transmittal letter or on the individual MIT results form and, if submitted, the rework record to comply with the requirements of 40 CFR § 144.32(b).

### **Fall-Off Test**

1. Injection of normal injectate at the normal rate is preferred.
2. The injection period should be at least 50% longer than the planned shut-in time, or at minimum as long as operationally possible. During this time injection at a constant rate (+/- 10%) should be attempted.
3. The pressure gauge utilized for the pressure transient test shall have been calibrated no more than one year prior to the test date.
4. Place the pressure gauge downhole at approximately the top of the permitted injection zone at least one hour prior to ceasing injection.
5. Following at least one hour of pressure data collection during injection, shut-in the well as quickly as possible.
6. Collect data at a frequency of at least one data point every 10 seconds for at least the first five minutes after shut-in; between five and 30 minutes at no less than one reading every 30 seconds; and the operator can reduce frequency as required after 30 minutes.
7. End pressure measurements when pressure is relatively stable, when operational necessity dictates, when sufficient radial flow dominated data has been collected to allow evaluation of kh and extrapolation of pressure to infinite shut-in time is possible, or if boundary effects are observed.
8. The test shall include a written report by a knowledgeable well test analyst. Such report must explain any anomalies shown in the results.
9. The test report shall include an up-to-date well schematic, a copy of the dated calibration certificate for the gauge utilized, and digital pressure data on CD/flash drive/email in a spreadsheet format.
10. The test report shall include a tabulation of values for the following background parameters: EPA permit number, porosity, net thickness (ft), viscosity (cp), formation compressibility (per psi), long string casing inner diameter (in), open hole diameter (in), and Kelly bushing elevation (ft). The test report shall also include a tabulation of values for the following test specific parameters: test start date/time, test end date/time, test length (hr), depth reference (Kelly bushing or ground level), specific gravity of test fluid, test fluid compressibility (per psi), gauge depth (ft), gauge calibration date, pressure required to maintain tubing fluid to the surface (psi), final tubing fluid level (ft), final flow rate immediately prior to shut-in (gpm), cumulative volume injected since last pressure equalization (gal), permeability thickness (md-ft), skin factor, radius of investigation (ft), final measured flowing pressure (psi), final measured shut-in pressure (psi), and p\* pressure (psi). Pressure gauge units (psia or psig) shall be specified.
11. The test must conclusively demonstrate its objectives and satisfy the Director to be considered a completed test.

**Radioactive Tracer Survey**

1. The tool shall be calibrated by recording the tool response to rock formations of lithology known to produce a low reading, and to lithology known to produce a high reading.
2. Set the scaling at the same level for all phases. 40 counts per second per inch is usually effective.
3. Record a base log before any radioactive material is released in the well.
4. Use slugs large enough to ensure the maximum height of deflection caused by the slug is 50 times higher than the background.
5. Inject at the highest practicable rate during the slug tracking test, but at low enough velocity to allow the slug to be followed effectively.
6. If the slug moves upward outside of the tubing or splits during the tracking test, follow the slug upward to determine the limit of its upward movement.
7. Inject at the highest practicable rate during the stationary test.
8. Set the tool with the bottom detector within five feet above the end of the tail pipe, the casing shoe or the top perforation (whichever is deeper) during the stationary test; or if the slug moved upward during the tracking test, place the top detector above and the bottom detector below the highest level of upward movement detected during the tracking test. If the slug passes both detectors during the stationary test, move the tool up in steps to find the shallowest extent of movement.
9. The stationary test must be run for a minimum of 30 minutes and must be run long enough to be able to detect upward flow of 2 feet per minute.
10. Run a final base log after testing.
11. The test shall include a written report by a knowledgeable analyst. Such report must explain any anomalies shown in the results.
12. The test report shall include an up-to-date well schematic; digital logging data on CD/flash drive/email in a spreadsheet format; description or illustration of the logging tool with measurements of detector and ejector placement relative to the tool bottom; and plots of the logging activity including merged and unmerged slug tracking records, stationary test plot, initial base log, final base log, and superimposed initial and final base logs.
13. The test report shall include a tabulation of values for the following background parameters: EPA permit number, long string casing inner diameter (in), long string casing length (ft), tubing inner diameter (in), tubing length (ft), depth to top of packer (ft), depth to bottom of packer (ft), tail pipe inner diameter (in), tail pipe length (ft), tail pipe lowermost depth (ft), top of open hole or uppermost perforation (ft), open hole diameter (in), well total depth (ft), plugged back total depth or top of fill depth (ft), Kelly bushing elevation (ft), and as applicable depth to top of confining zone (ft), depth to top of permitted injection zone (ft), and depth to top of injection interval (ft). The test report shall also include a tabulation of values for the following test specific parameters: test date, depth reference (Kelly bushing or ground level), and injection rate for each test (gpm).
14. The test must conclusively demonstrate its objectives and satisfy the Director to be considered a completed test.

## Temperature Log

1. To conduct a static temperature log, the well must be shut in for at least 36 hours, or longer if temperature stabilization based on previous logs requires more time.
2. If the well cannot be shut in for 36 hours, shut in for as long as possible and run two logs at least six hours apart.
3. Calibrate the temperature tool in a bucket of ambient temperature water and a bucket of ice water immediately prior to conducting the test.
4. Log from the top of the well to the bottom, recording both temperature and natural gamma ray activity.
5. Record log data at least once per foot.
6. Logging speed shall not exceed 30 feet per minute. Reduce speed to 20 feet per minute in air-filled well bores.
7. The test shall include a written report by a knowledgeable log analyst. Such report must explain any anomalies shown in the results.
8. The test report shall include an up-to-date well schematic, digital logging data on CD/flash drive/email in a spreadsheet format, and a plot of the logging activity.
9. The test report shall include a tabulation of values for the following background parameters: EPA permit number, long string casing length (ft), tubing and/or tail pipe lowermost depth (ft), top of open hole or uppermost perforation (ft), well total depth (ft), plugged back total depth or top of fill depth (ft), Kelly bushing elevation (ft), depth to top of confining zone (ft), and depth to top of permitted injection zone (ft). The test report shall also include a tabulation of values for the following test specific parameters: test date, depth reference (Kelly bushing or ground level), date of last injection, temperature of last injected fluid (°F.), elapsed time since last injection (hr), volume injected into the well in the past year (gal), names and depths of any other injection formations used at the site, temperatures logged by the tool and thermometer during calibration (°F.), depth to liquid level in the tubing (ft), depth to top of receptive strata (ft), and depth to bottom of receptive strata (ft).
10. The test must conclusively demonstrate its objectives and satisfy the Director to be considered a completed test.