U.S. ENVIRONMENTAL PROTECTION AGENCY

UNDERGROUND INJECTION CONTROL PERMIT

CLASS I NONHAZARDOUS

PERMIT NUMBER MI-139-1I-0001

H. J. HEINZ COMPANY

HOLLAND, MICHIGAN

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL PERMIT: CLASS I NON-HAZARDOUS

Permit Number: MI-139-1I-0001
Facility Name: Heinz U.S.A. I.W. No.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 C.F.R.),

H. J. Heinz Company of Pittsburg, Pennsylvania

is hereby authorized to continue operation of an existing Class I non-hazardous injection well located in Michigan, Ottawa County, T5N, R15W, Section 30, SE Quarter Section, for injection into the Munising Group and Mount Simon Sandstone at depths between 4606 feet and 5028 feet relative to ground surface, upon the express condition that the permittee meet the restrictions set forth herein. The injection of any hazardous waste as identified in 40 C.F.R. Part 261 is prohibited.

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, and H.

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 and reissued, terminated, or modified 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
Division 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 and Reissuance, and Termination** - The Director of the Water Division of the United States Environmental Protection Agency (EPA), hereinafter, the Director, may modify, revoke and reissue, or terminate this permit in accordance with 40 C.F.R. §§ 144.12, 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, Subpart B and 40 C.F.R. § 144.5, any information submitted to the EPA 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 information covered by such a claim will be disclosed by EPA only to the extent, and by means of the procedures set forth in 40 C.F.R. Part 2, Subpart B. 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 must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application; except that the permittee need not comply with the provisions of this permit 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.

2. **Penalties for Violations of Permit Conditions** - Any person who violates a permit requirement is 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 the 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. If the permit is denied, 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 permit 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 available on EPA's website), 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 (3) and Attachment A of this permit.

(a) 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.

(b) 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 human 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 a USDW; and

(ii) Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDWs; 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 Attachment B of this permit. Within 60 calendar days after plugging a well, 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 the reason for the difference.

3. **Temporary Abandonment** - If the permittee ceases injection into the well for more than 24 consecutive months, the well is considered to be in temporary abandoned status. The permittee shall plug and abandon the well in accordance with the approved plan and 40 C.F.R. § 144.52 (a)(6) unless the permittee:

   (a) Provides notice to the Director within 30 days of the end of the 24th consecutive month of temporary abandonment, and

   (b) Describes actions or procedures, satisfactory to the Director, that the owner or operator will take to ensure that the well will not endanger USDWs during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived 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 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; or

(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 unless an authorized representative informs the permittee that it is not possible to witness the test.

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 upon completion of this well, and 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 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.

(c) The permittee may request the Director to use any other test approved by the Director in accordance with the procedures in 40 C.F.R §146.8(d).

3. **Prior Notice and Reporting** - The permittee shall notify the Director of his or her intent to demonstrate mechanical integrity 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 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 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.

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 Attachment C of 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 adjust the cost estimate of plugging and abandonment for inflation within 30 calendar days after each anniversary of the first estimate. The inflation factor is the result of dividing the latest published annual Oil and Gas Field Equipment Cost Index by the index for the previous year.

   (c) 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.

   (d) 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) and (c) of this permit.

   (e) The permittee must keep on file at the facility a copy of the latest plugging and abandonment cost estimate prepared in accordance with 40 C.F.R. §144.52(a)(7), during the operating life of the facility.

2. **Insolvency** - The permittee must notify the Director within 10 business 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 business 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 (3) of this permit.

I. CORRECTIVE ACTION

1. **Compliance** - The permittee shall comply 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 due to injection activities at this facility, 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** – All Class I wells shall be sited in such a fashion that they inject into a formation which is beneath 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 Attachment 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 Attachment E of this permit. Any changes shall be submitted by the permittee for the approval of 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.

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 Attachment 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. Prior to performing any stimulation and /or fracturing of the well, the permittee is required to submit procedures to the Permits Branch for review and approval. A list of all products to be used for the test along with their chemical composition must also be submitted.

2. **Additional Injection Limitation** - No waste streams other than those identified in Attachment F of this permit shall be injected. Every twelfth month the permittee shall submit a certified statement attesting to compliance with this requirement.

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 Attachment 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 Attachment A of this permit.

5. **Automatic Warning and Automatic Shut-off System** - The permittee shall continuously operate and maintain an automatic warning and automatic shut-off system to stop injection in 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 Attachment A of this permit.

   A trained operator must be on site and within perceptible distance of the alarm at all times when the well is operating. The permittee must test the automatic warning and automatic shut-off system at least 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 the Director waives this requirement.

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. 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. 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, pH or acidity of the injected waste; and

   (2) Develop procedures necessary to assure that pressure imbalances do not occur.

C. TESTING AND MONITORING

1. **Sampling Point** - The injection fluid samples shall be taken at the sampling location as specified in Attachment 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 the 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 G 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 initially upon completion of the well, and at least once every twelfth month thereafter, 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 three wells at the facility during each twelfth month monitor event. In this case, the permittee shall rotate the twelve-month testing between the three wells on site uniformly to ensure that all three wells are tested on a three year cycle.

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)(f) 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 (WP-16J)
77 West Jackson Boulevard
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) 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;

   (b) 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.

   (c) A statement of the total volumes of the fluid injected to date, in the current calendar year, and the current month;

   (d) 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;

   (e) 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.

   (f) 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 at least every quarter the results of the injection fluid analyses specified in the Waste Analysis Plan attached to this permit. This report must include statements showing that the requirements of Part I(E)(10) and Part II(C)(3) have been met.

3. **Annual Reports** - The permittee shall report the following at least every twelfth month:

   (a) Results of ambient monitoring required by 40 C.F.R. § 146.13(d)(1) and Part II(C)(4) of this permit; and

   (b) A certified statement attesting that no waste streams other than those identified in Attachment F of this permit were injected into the well.

4. **Reports on Well Tests and Workovers** - Within 45 calendar days after the activity, the permittee shall report to the Director the results of demonstrations of mechanical integrity, any well workover, and/or results of other tests required by this permit.

PART III
ATTACHMENTS

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 (ATTACHED)

B. PLUGGING AND ABANDONMENT PLAN (ATTACHED)

C. FINANCIAL ASSURANCE MECHANISM (ATTACHED)

D. CONTINGENT CORRECTIVE ACTION (ATTACHED)

E. CONSTRUCTION DETAILS (ATTACHED)

F. SOURCE AND ANALYSIS OF WASTE (ATTACHED)

G. TESTING PROCEDURES (ATTACHED)

H. WASTE ANALYSIS PLAN (ATTACHED)

ATTACHMENT A
SUMMARY OF OPERATING, MONITORING AND REPORTING REQUIREMENTS

CHARACTERISTIC	LIMITATION	MINIMUM MONITORING FREQUENCY	MINIMUM REPORTING FREQUENCY
Injection Pressure	1111 psig maximum*	continuous	monthly
Annulus Pressure	100 psig minimum	continuous	monthly
Annulus/Tubing Differential	100 psig minimum above operating injection pressure	continuous	monthly
Injection Rate		continuous	monthly
Cumulative Volume		continuous	monthly
Temperature**		daily**	monthly
Annulus Fluid Level		daily	monthly
pH, Eh, and Specific Gravity		daily	monthly
Annulus Fluid Loss		monthly	monthly
Chemical Composition of Injected Fluids		***	quarterly
Physical Characteristics of Injected Fluids		***	quarterly

Sampling Location: The sample location is after final filtration, immediately prior to the injection pumps.

* The maximum injection pressure was determined using the following formula:

[{Fracture gradient – (0.433 psi/ft × Specific gravity)} × Depth] + Friction pressure loss – 14.7 psi

The friction pressure loss is 58 psi, and was calculated using the Hazen-Williams Equation:

$$0.433 \times 0.002083 \times \text{Tubing Length} \times (100 \times \text{Roughness Constant})^{1.852} \div \text{Tubing Inner Diameter}^{4.8655}$$

The maximum injection pressure is dependent upon depth, specific gravity of the injection fluid, and friction loss.

The fracture gradient of 0.6865 psi/ft was determined by site specific testing of the injection zone. The Munising Group at 4606 feet was used as the depth and a specific gravity of 1.05 was used for the injection fluid. The flow rate of 100 gallons per minute is the specific value speed of the injection pump for this well. The inner diameter of the fracture gradient tubing in this well is 2.992 inches.

** Frequency of temperature measurements will be in accordance with Section II(C)(5) of this permit. Reporting of injectate temperature will be in accordance with Section II(D)(1)(f) of this permit.

*** As specified in the Waste Analysis Plan attached to this permit.

1. **Maximum Injection Pressure (146.13)**

   If a need is identified that requires modifying the maximum injection pressure, the permittee shall conduct one or more of the following tests to ensure that the maximum injection pressure exerted during operation will not propagate existing or open new fractures in any part of the injection zone. In all cases, the permittee shall submit a plan, for the Director's written approval, describing the detailed procedures to be followed during any test designed to determine the fracture gradient to calculate maximum injection pressure. Modification of the maximum permitted injection pressure following a test conducted under Attachment A (1) of this permit shall follow the procedures set forth for minor permit modifications, as specified at 40 C.F.R. §144.41(f).

   (a) **In-Situ Stress Tests**

   The permittee shall isolate zones for testing the fracturing pressure by means of a straddle packer assembly, or other comparable means. The zones chosen for testing shall be those predicted to have the lowest fracturing value. The permittee shall use either fresh water to conduct this test or a fluid that is permissible for injection into this well as allowed by this permit. At a minimum, the permittee shall measure the test fluid for its specific gravity and viscosity during the In-Situ Stress test. The results of this test shall be submitted to the EPA as specified at Attachment A (2) of this permit. Failure to report test results shall be considered grounds to deny a requested permit modification.

(b) **Step Rate Test**

The permittee shall isolate the entire injection zone by means of a packer assembly, or other comparable means. The permittee shall inject either fresh water for this test or a fluid that is permissible for injection into this well as allowed for in this permit. At a minimum, the permittee shall measure the test fluid for its specific gravity and viscosity during the Step Rate Test. The permittee shall inject into the well at increasing rates, holding each rate step constant. Each rate step shall span the same amount of time (at least 30 minutes per rate step is recommended). The permittee shall attempt to inject at three rates which result in a pressure higher than the injection zone fracture pressure during this test. A Cartesian plot of rate against the final stabilized pressure at each step shall be included as part of the data package submitted to the EPA. The results of this test shall be submitted to the EPA as specified at Attachment A (2) of this permit. Failure to report test results shall be considered grounds to deny a requested permit modification.

(c) **Other Test(s) Approvable by the Director**

The permittee may choose to conduct test(s) other than the two described in Parts III(A)(1)(a) and (b) of this permit. If so, the permittee shall submit a plan to conduct alternative test(s) to the Director for approval prior to conducting the test(s).

2. **Reporting Maximum Injection Pressure Determination**

The permittee shall report the results of the measurements, tests and determinations conducted in Attachment A (1) of this permit within 30 days of their completion.

ATTACHMENT B
PLUGGING AND ABANDONMENT PLAN

OMB No. 2040-0042 Approval Expires 12/31/2018

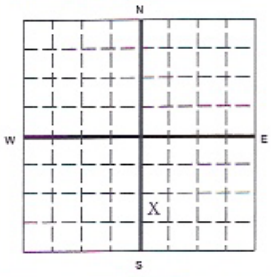
United States Environmental Protection Agency
Washington, DC 20460

EPA

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility	Name and Address of Owner/Operator
Kraft Heinz Company Injection Well No. 1, Permit UIC MI-139-1I-0001	Heinz North America Injection Well No. 1, Permit UIC MI-139-1I-0001

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Michigan	Ottawa	051-737-870

Surface Location Description
1/4 of NW 1/4 of SW 1/4 of SE 1/4 of Section 30 Township 5N Range 15W

Locate well in two directions from nearest lines of quarter section and drilling unit
Surface Location 905 ft. frm (N/S) S Line of quarter section
and 82 ft. from (E/W) W Line of quarter section.

TYPE OF AUTHORIZATION
- [x] Individual Permit
- [ ] Area Permit
- [ ] Rule

Number of Wells NA

Lease Name MI-139-1-0001

WELL ACTIVITY
- [x] CLASS I
- [ ] CLASS II
  - [ ] Brine Disposal
  - [ ] Enhanced Recovery
  - [ ] Hydrocarbon Storage
- [ ] CLASS III

Well Number 1

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
16"	65	90'	90'	20"
10 3/4"	40.5	554'	554'	13 3/4"
7"	23	5,032'	5,032'	9 7/8"
5 1/2"	15.5	4,849'	4,849'	7" casing

METHOD OF EMPLACEMENT OF CEMENT PLUGS
- [x] The Balance Method
- [ ] The Dump Bailer Method
- [ ] The Two-Plug Method
- [ ] Other

CEMENTING TO PLUG AND ABANDON DATA: *	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inche	9",6.4",4.8"	4.81"	4.81"	4.81"			
Depth to Bottom of Tubing or Drill Pipe (ft	5,800'	4,770'	3,180'	1,590'			
Sacks of Cement To Be Used (each plug)	393	180	180	180			
Slurry Volume To Be Pumped (cu. ft.)	463	212	212	212			
Calculated Top of Plug (ft.)	4,770'	3,180'	1,590'	0			
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)	15.6	15.6	15.6	15.6			
Type Cement or Other Material (Class III)	Class A	Class A	Class A	Class A			

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (if any)

From	To	From	To
5,910'	5,032'		

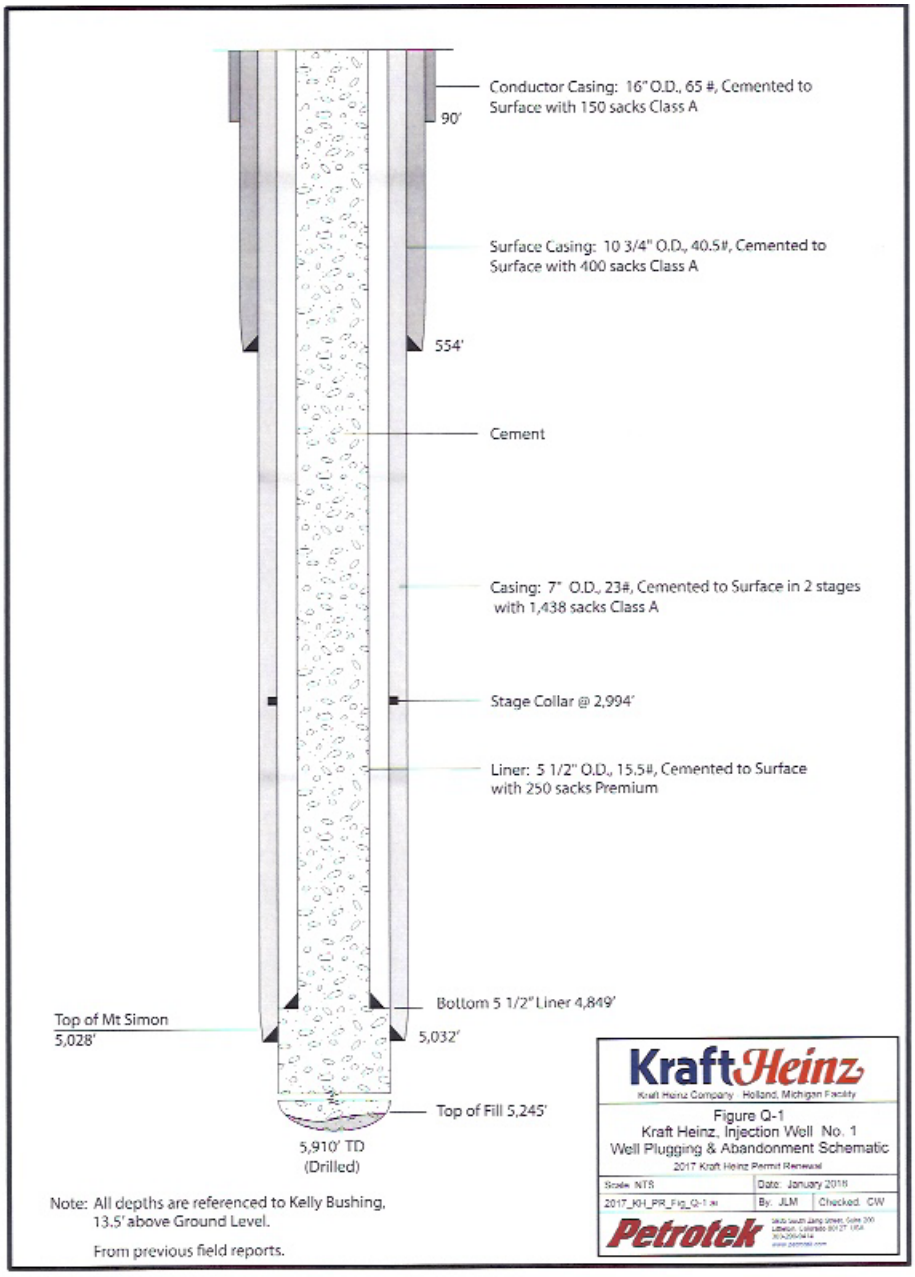
Estimated Cost to Plug Wells
$157,600, No logging, assuming 5,800' fill depth and 9 7/8" open hole diameter.

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)	Signature	Date Signed
Marena L. Rash, Engineering Manager		14 Feb 2018

EPA Form 7520-14 (Rev. 12-11) * Cementing data are based on original well TD as presented in the Mineral Well Completion Report submitted June 1973.


Conductor Casing: 16" O.D., 65 #, Cemented to Surface with 150 sacks Class A
90'
Surface Casing: 10 3/4" O.D., 40.5#, Cemented to Surface with 400 sacks Class A
554'
Cement
Casing: 7" O.D., 23#, Cemented to Surface in 2 stages with 1,438 sacks Class A
Stage Collar @ 2,994'
Liner: 5 1/2" O.D., 15.5#, Cemented to Surface with 250 sacks Premium
Bottom 5 1/2" Liner 4,849'
5,032'
Top of Mt Simon
5,028'
Top of Fill 5,245'
5,910' TD
(Drilled)
Note: All depths are referenced to Kelly Bushing, 13.5' above Ground Level.
From previous field reports.
KraftHeinz
Kraft Heinz Company Holland, Michigan Facility
Figure Q-1
Kraft Heinz, Injection Well No. 1
Well Plugging & Abandonment Schematic
2017 Kraft Heinz Permit Renewal
Scale: NTS
Date: January 2018
2017_KH_PR_Fig_Q-1.ai
By: JLM
Checked: CW
Petrotek

KRAFT- HEINZ PLUGGING AND ABANDONMENT PLANS

KRAFT HEINZ WELL NO. 1
PLUGGING AND ABANDONMENT PLAN
(February, 2018)

1. Notify regulatory agencies at least 45 days prior to commencement of plugging operations.
2. Pressure test casing tubing annulus to at least 1,200 psi.
3. Run temperature log from surface to bottom of 5 1/2 inch casing (4,849 feet) to demonstrate external mechanical integrity.
4. Run pressure gauge to approximately 5,050 feet and record pressure for a minimum of 6 hours or for a time period specified by USEPA director.
5. Flush well with approximately 10,000 gallons of fresh water followed by approximately 5,000 gallons of ± 10 lb/gal brine.
6. Move in rig, pump and tank. Install blow out preventer.
7. Pull seal assembly from packer bore receptacle (PBR) and pump ± 4,000 gallons of brine into annulus.
8. Remove tubing and seal assembly from well.
9. Run work string or coiled tubing to top of fill in open hole. Use Balance Method to place cement from the top of fill to approximately 4,770 feet.
10. After allowing sufficient time for the cement to set, pressure test casing and top of cement plug to 1,000 psi.
11. Tag top of cement plug and use Balance Method to fill casing with cement from top of first cement plug (± 4,700 feet) to approximately 3,180 feet.
12. Use Balance Method to fill casing with cement from the top of the second plug (± 3,180 feet) to approximately 1,590 feet.
13. Use Balance Method to fill casing with cement from top of third plug (± 1,590 feet) plug to surface.
14. Remove BOP and wellhead equipment. Release equipment.
15. Install a permanent marker on the well site.
16. Prepare a plugging report and final well status drawing.

ATTACHMENT C
FINANCIAL ASSURANCE MECHANISM

H. J. Heinz Company has demonstrated adequate financial responsibility to properly plug and abandon the Class I non-hazardous well. If Financial Statement Coverage is used as financial mechanism to cover the cost of plugging the injection well, this coverage must be updated on an annual basis. A letter of credit, in the amount of $157,600, has been established for this purpose with Intesa San Paolo.

ATTACHMENT D
CONTINGENT CORRECTIVE ACTION

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 USEPA will be notified. A Corrective Action Plan shall then be submitted.

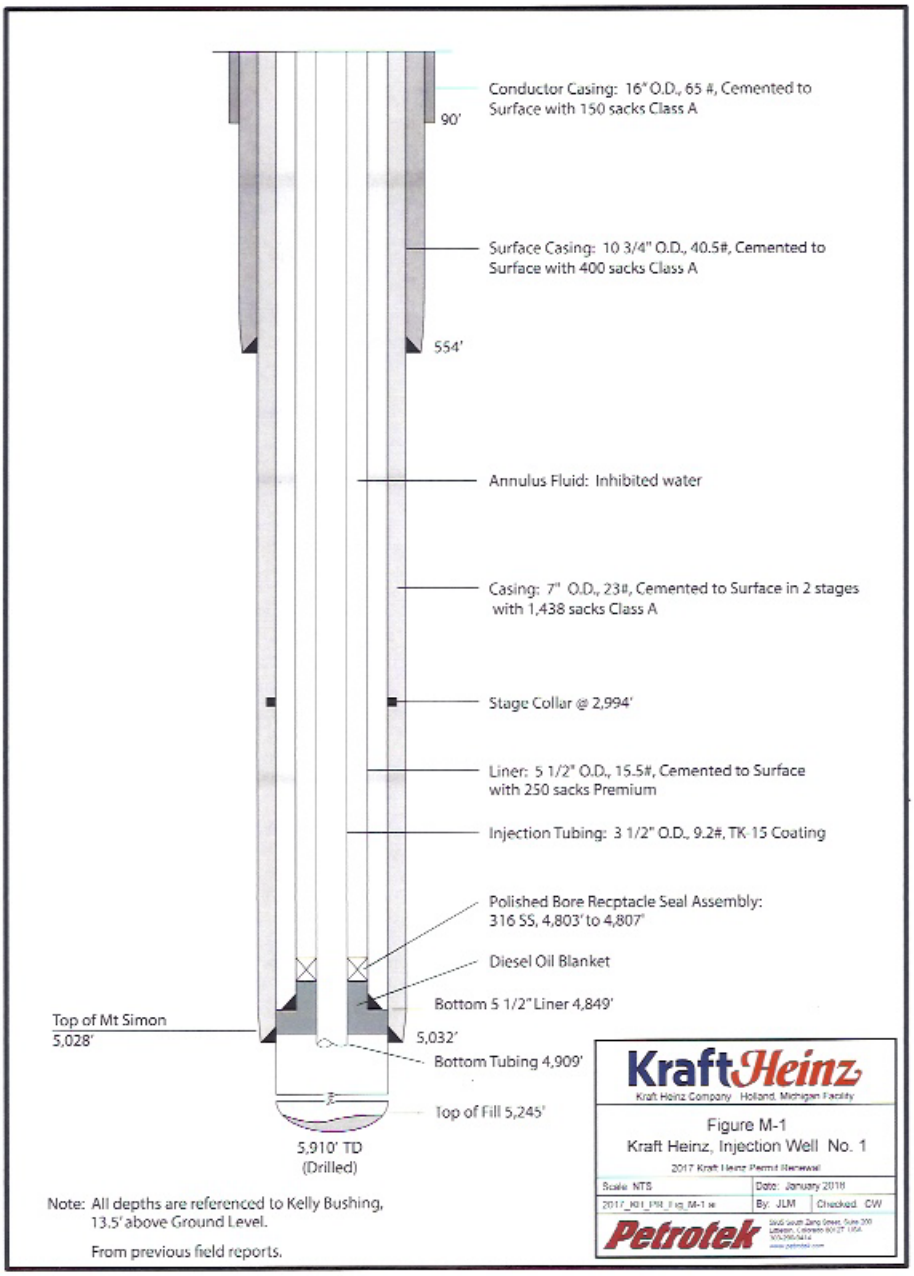
In the case of a well failure, an investigation of the indicated well failure problem and a plan of action to eliminate the problem must be conducted and the remedial work performed. Should well failure occur, the well would be immediately shut-in. The waste water that normally would be injected into this disposal well would be handled as described below until the cause of the well failure is remedied, mechanical integrity is demonstrated and written authorization to recommence injection is given, or the well is plugged and abandoned.

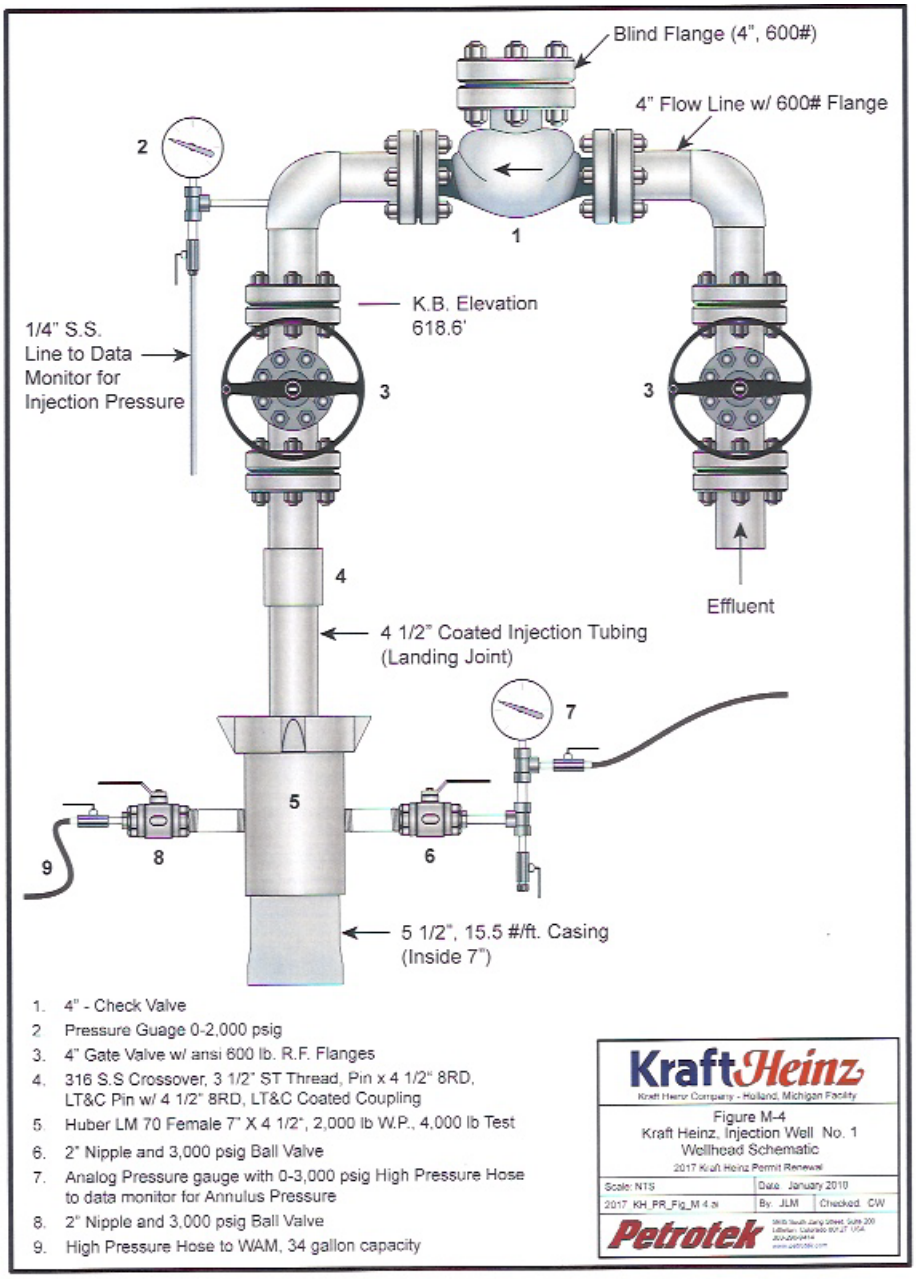
In the case of failure of a disposal well, wastewater discharge could continue to the remaining two wells at the facility. Current capacity needs are approximately 600,000 gallons per day during the peak of the fresh season production period from late July through early September. The wells have a maximum hydraulic capacity of 550,000 gallons per day each so that two wells could accept the entire wastewater load during any period of the year. Total pumping capacity is 620,000 gallons per day, falling to 550,000 gallons per day with the largest pump out of service.

If two wells should fail concurrently, it should be possible to discharge up to 115,000 to 360,000 gallons per day to the remaining serviceable disposal well. This would meet full factory production needs for all but a two-month period of the year. If the dual failure coincided with the peak production period, the plant would first attempt to reduce wastewater volume through the rescheduling of certain batch processes. If wastewater reduction efforts were not sufficient, temporary arrangements to deliver certain low-salt concentration waste streams to a municipal sewer for treatment may be necessary. If the remaining well cannot handle the reduced waste stream flow, a partial production curtailment may be necessary. In the event of simultaneous failure of all three wells, a plan would be worked out jointly with the City of Holland and Michigan Department of Environmental Quality to temporarily divert as much flow as can be properly handled by the municipal system for treatment. Factory production would then need to be reduced to a level necessary to decrease wastewater flow to the volume that can be adequately handled.

The factory treatment system contains a 218,000 gallon surge tank ahead of the wells which should allow from a few hours to an entire day or more to work out the necessary contingency plans in the case of sudden disposal well failures.

ATTACHMENT E
CONSTRUCTION DETAILS





1. 4" - Check Valve
2. Pressure Guage 0-2,000 psig
3. 4" Gate Valve w/ ansi 600 lb. R.F. Flanges
4. 316 S.S Crossover, 3 1/2" ST Thread, Pin x 4 1/2" 8RD, LT&C Pin w/ 4 1/2" 8RD, LT&C Coated Coupling
5. Huber LM 70 Female 7" X 4 1/2", 2,000 lb W.P., 4,000 lb Test
6. 2" Nipple and 3,000 psig Ball Valve
7. Analog Pressure gauge with 0-3,000 psig High Pressure Hose to data monitor for Annulus Pressure
8. 2" Nipple and 3,000 psig Ball Valve
9. High Pressure Hose to WAM, 34 gallon capacity

KraftHeinz
Kraft Heinz Company - Holland, Michigan Facility

Figure M-4
Kraft Heinz, Injection Well No. 1
Wellhead Schematic
2017 Kraft Heinz Permit Renewal

Scale: NTS	Date: January 2010	
2017_KH_PR_Fig_M 4.ai	By: JLM	Checked: CW

Petrotek

ATTACHMENT F
SOURCE AND ANALYSIS OF WASTE

The permittee is permitted to inject wastewater from food production and wash water generated from the cleaning of processing equipment at the Heinz U.S.A. facility in Holland, Michigan. Other fluids necessary for well testing, stimulation, workover or as buffer fluids may be injected when approved by the Director. A copy of the latest analytical report submitted by the operator is included.

ATTACHMENT G
TESTING PROCEDURES

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 fluid or substance 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 shutin 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 shutin (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.

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 fluid 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.

ATTACHMENT H
WASTE ANALYSIS PLAN

UIC WASTE ANALYSIS PLAN

Class I Deepwell
for
Kraft Heinz Company

Class I Injection Wells No. 1, 2 and 3

EPA Permit Numbers:

IW No. 1: MI-139-1I-0001
IW No. 2: MI-139-1I-0002
IW No. 3: MI-139-1I-0003

Ottawa County, Michigan

February, 2018
REVISED March, 2020

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

TABLE OF CONTENTS

1.0 INTRODUCTION

1.A Background

The purpose of this Waste Analysis Plan (WAP) is to characterize the non-hazardous process waste water injected into the Kraft Heinz Company (KHC) Injection Well Nos. 1, 2, and 3 located at the KHC facility in Holland, Michigan. KHC will be responsible for implementing this WAP. The wells have been in operation since 1974, the latest permit renewal request submitted in 2018. The permit- defined injection zone is the Munsing Group and Mount Simon Sandstone; the overlying confining zone is the Prairie du Chien Group and Trempealeau Formations.

KHC operates 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 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

KHC generates non-hazardous wastewater that originates from food bottling, pasteurizing/cooling, preparing/canning, desalting curing and washing/receiving operations. The NAICS code is 31142, Fruit and Vegetable Canning, Pickling, and Drying.

Wastewater is generated from washing, curing, brining, curing blanching and canning of vegetables, as well as rinsing and washing of tanks, process equipment and product containers including process equipment cleanup with alkaline hypochlorite. Other waste water including contaminated storm water, fluids derived from well maintenance, and groundwater, are conditioned and can be injected. The mixed wastewater from these operations is collected in a common sump and pumped for additional processing to remove large particles. The screened wastewater is retained in a mixed tank. The wastewater is chlorinated with sodium hypochlorite for disinfection and magnesium hydroxide for pH adjustment. The filtered wastewater is held in a small surge tank prior to injection into one or more of the three injection wells. The waste stream is primarily composed of organic and inorganic, non-hazardous compounds such as sodium chloride, with a TDS of up to approximately 20,000 ppm.

1.C Summary

The major components of the KHC waste characterization and UIC monitoring program include:

- Pressure 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 new waste constituents or conditions are identified that may significantly alter the 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 Pressure Monitoring

As discussed in the text of the 2018 Permit Application, transducer with recorders are to be used to continuously monitor injection pressure, annulus pressure, and to calculate 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 and MDEQ per applicable permit requirements. The remaining portions of this WAP address physical and chemical characterization of the waste.

2.B Waste Characterization

Waste analysis parameters were established in previous permits and are continued herein, based on process knowledge, historical analysis, and analysis suggested by EPA Region 5 guidance. These parameters include pH, TDS, TOC, standard plate count, and various inorganic constituents. The pH is generally slightly acidic to near in range (3.5-8.0). The total dissolved solids (TDS) concentration of the waste is also a useful indicator of fluid properties. Sodium and magnesium are the predominant cations and chloride is the predominant anion. Because the native brine present in any of the proposed injection formations contain high TDS including high cation-anion concentration, injectate will have a lower TDS concentration that natural formation waters.

By approved permit waste analysis, disposal wells are sampled monthly during periods of waste injection. Parameters mandated for analysis are:

pH
Standard Plate Count
Specific Gravity
Resistivity/Specific Conductance
Total Dissolved Solids
Sulfate
Chloride
Sodium
Calcium
Magnesium
Aluminum
Total Organic Carbon

Table 2-1 of the following section lists the parameters and monitoring frequency used to characterize wastewater injected. The table also summarizes the applicable analytical method and reporting units for each. Characterization parameters repeat historical permit requirements.

2.C Sampling and Analysis

Samples will be collected during periods of waste injection as a 24-hour composite sample taken manually at two hour intervals during the period leading up to the sampling event; the sample will be collected after the final filtration, just prior to injection. Additionally, two grab samples will be collected as required, one for temperature and pH, and the other for total plate count. The waste analysis to be conducted is designed to acquire representative samples of typical injectate. KHC personnel, contractor personnel, or contracted analytical laboratory personnel will collect required on-site wastewater 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. The grab sample will be sent to an independent contract 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 USEPA “Methods for the Chemical Analysis of Water and Wastes” or “Standard Methods for the Examination of Water and Wastewater”.

TABLE 2-1
KHC CLASS I WASTE SAMPLING AND ANALYSIS SUMMARY

Test Parameter	Example Test Methods*	Reporting Units	Frequency
pH	A4500-H	pH units	Monthly
Specific Gravity	D5057-90	--	Daily (taken the same date that injection occurred.)
Temperature	Thermometer	Degrees Fahrenheit	Daily (taken the same date that injection occurred.)
Specific Conductance/Resistivity	E120.1	Ohm-meter	Monthly
Additional Parameters			
TDS	A2540 C-97	mg/L	Monthly
Heterotrophic (Standard) Plate Count	E600-8-78	cfu/1ml	Monthly
Sulfate	E300.00	mg/l	Monthly

Test Parameter	Example Test Methods*	Reporting Units	Frequency
Chloride	A4500-CL	mg/L	Monthly
Sodium	E200.8	mg/L	Monthly
Calcium	E200.8	mg/l	Monthly
Magnesium	E200.8	mg/L	Monthly
Aluminum	E200.8	mg/L	Monthly
TOC	A5310C-96	mg/L	Monthly
Ignitability as flash point	ASTM Standard D3278-7	Temperature	Annually
Corrosivity	SW-846 1110A	Corrosion rate, mmpy	Annually
Reactivity as reactive sulfide**	SW-846 9034 Modified	mg/l	Annually

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

** EPA does not specify method use and instead requires generators and analytical laboratory to evaluate the waste for the reactivity characteristic, and may include the use of processknowledge.

The parameter list included in this WAP was developed based on process knowledge, such as expected constituents associated with processing of brine-cured vegetables, and has been maintained throughout the 20+ years of permit-required sampling that has taken place since issuance of the first permit. Monthly analysis of leachate has been maintained.

Attachment 2.H of the EPA UIC Permit Renewal Application includes a summary of analytical results. As shown in this Attachment, analysis shows that only a relatively few organic and inorganic constituents are detected, all of which are known and expected based upon activities performed at the site. In addition, the waste will be sampled and analyzed for other parameters required by this WAP as shown in Table 2- 1, including but not limited to calcium and aluminum, which were added to provide general characterization of wastewater. Results are summarized and presented in an annual report to the Agency.

3.0 QUALITY ASSURANCE/QUALITY CONTROL

3.A General Sampling and Analytical Information

Sampling protocols outlined in this document are to be followed. KHC 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. The following sampling protocol will be followed:

- Each container will be thoroughly washed and then rinsed with wastewater prior to sampling, unless a lab-provided single use container is utilized.
- Each sample will be a 24-hour composite sample taken manually at 2-hour intervals
- Two grab samples will be taken, one for pH and temperature, and the other for total plate count.
- Sample collection location is after final filtration prior to injection.
- Composite samples will be refrigerated and shipped to a contract laboratory within 4 hour of completing the sample.
- KHC reserves the option to choose alternate laboratories for testing provided equivalent QA/QC standards are met.

COC Form Content

Each 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 will 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 label will also include a COC seal. 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 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 injectate sampling and analysis described in this plan.

3.B Sampling Controls

1. Equipment Blanks

   Fluid samples will be obtained directly from the transmission line sampling port into an intermediary sampling container before being sealed in the sample container shipped to the laboratory. In this case, no equipment 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 KHC.

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 KHC, 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.

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". KHC 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. Additionally, analytical results (i.e. data), including chain of custody forms, will be submitted to US EPA.

3.E Re-Characterization

KHC shall review the results of waste analysis to ensure that injectate is sufficiently characterized. At the discretion of KHC or at the written request of 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 KHC if analyses show a significant change in parameter concentration. 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 and adequately characterized. 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 KHC.