

NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY PERMIT FOR CLASS V
AQUIFER STORAGE AND RECOVERY INJECTION WELLS
UNDERGROUND INJECTION CONTROL (UIC) PROGRAM

This permit is issued in compliance with the provisions of the Nebraska Environmental Protection Act (Neb. Rev. Stat. Secs. 81-1501, 81-1502 through 81-1510 *et. seq.* as amended to date), the Nebraska Administrative Procedure Act (as amended to date), the Rules and Regulations promulgated pursuant to these Acts, and the Nebraska Department of Environmental Quality Title 122, Rules and Regulations for Underground Injection and Mineral Production Wells. The facility and injection well(s) identified in this permit are authorized to inject, test, and monitor, and are subject to the limitations, requirements, prohibitions and conditions set forth herein. This permit regulates and controls the release of pollutants in the injection(s) authorized herein. This permit does not relieve permittees of other duties and responsibilities under the Nebraska Environmental Protection Act, as amended, or established by regulations promulgated pursuant thereto.

UIC Permit No.: **NE0212007**
NDEQ ID: **55721**
Permittee: **City of Hastings, NE and Hastings Utilities**
Facility Name: **Hastings Aquifer Storage and Recovery Project**
Facility Location: **1228 North Denver Avenue, Hastings, NE 68901**
Facility Mailing Address: **1228 North Denver Avenue, Hastings, NE 68901**
Latitude/Longitude: **40.60824 N, 98.40479 W**
Legal Description: **NW ¼ and NE ¼, Sect. 2, Township 7 N, Range 10 W, Adams County, NE**
Receiving Formation(s): **Quaternary Aquifer (100-200 feet bgs)**
Effective Date:
Expiration Date:

It is the responsibility of the permittee to read and understand all provisions of this permit.

Pursuant to a Delegation Memorandum dated April 4, 2016 and signed by the Director, the undersigned hereby executes this document on behalf of the Director.

Signed this _____ day of _____, _____

Marty Link
Water Quality Division Administrator

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Part I. Specific Permit Conditions

A. General Description of Permitted Activity

1. This permit is for a Class V Aquifer Storage and Recovery (ASR) project located in the NW¼ and NE¼ of Section 2, Township 7 North, Range 10 West, Adams County, Nebraska.
2. This permit is for Class V injection wells associated with the Hastings ASR project designed to supply the City of Hastings, Village of Trumbull, and Hastings wholesale customers with a sustainable supply of potable water. The groundwater supply is contaminated with nitrate and uranium. Nitrate occurrence has been linked to the mobilization of naturally occurring uranium. Areas up gradient of the municipal wells have nitrate and uranium levels greater than the Safe Drinking Water Act levels.

The City of Hastings has worked with the Little Blue Natural Resources District (NRD) and the Upper Big Blue NRD to define the problem and develop long and short term solutions to address the nitrate legacy. A Nitrogen Management Plan has been implemented by the City of Hastings to reduce future nitrate contamination. To meet short term needs for the Hastings Municipal Water System, Hastings Utilities has commissioned several studies and have begun the implementation and construction of the Hastings ASR Project. The ASR Project combines groundwater injection, two-depth dual pumping, focused water treatment, irrigation management, blending, and storage of treated water. The plan is intended to minimize treatment costs and limit water and energy consumption.

This ASR project involves separate pumping and injection wells and well locations. The operation of the injection wells allows for the storage and restoration of contaminated groundwater. The rate of injection will generally be constant on a daily basis, but may vary depending on processing operations at the treatment facility. The treated water will be pumped to the injection wells and introduced into the shallow Quaternary aquifer. Continuous recording devices will be installed to monitor injection pressure, flow rate, and volume. The injection pressure at the wellhead plus the hydrostatic pressure will not exceed the fracture pressure of the aquifer injection zone.

3. This permit does not authorize any discharge to the land surface or to the surface waters of the State of Nebraska. Water that is to be discharged to the surface will be regulated under a separate permit.

B. Notice of Intent to Operate

Prior to injection activity, a notice of intent must be submitted to the Director, which contains the following information:

1. A well completion report for each injection well.
2. A diagram of the as-built construction of the injection well.
3. A scaled map of the entire property on which the injection is proposed. The map should include all requirements listed in the Nebraska Department of Environmental Quality Application for a Class V Injection Well Permit, as found in Title 122 Chapter 10.
4. Physical and Chemical data needed to calculate or demonstrate the integrity and validity of the injection well operation. Such data include but may not be limited to:
 - a. The physically determined values for Transmissivity and Hydraulic Conductivity of the injection formations.
 - b. The physical determination of the Total Dissolved Solids (TDS) content of the injection formations.

- c. Delineation of the actual confinement interval established from the designation of recognized formation log tops.
5. Calculations for: Pressure increase due to injection, Theis Equation calculations, radius of fluid displacement, maximum surface injection pressure, injection formation fracture pressure, anticipated surface injection pressure, radius of pressure response for the injection well and receiving formations utilizing the physically measured and determined values in parts (B) (1.), (2.), and (3.) above.
6. A pre-calculated amount of cement necessary to complete the well along with well records demonstrating the presence of adequate cement to prevent fluid migration behind casing.
7. An evaluation of the compatibility of the proposed injection fluids with fluids in the proposed injection horizons (under prevailing physical conditions).
8. Demonstration of adequate monitoring equipment in order to acquire monitoring data required in this permit.
9. In addition, the permittee shall have available on site for review upon request any other pertinent information which they have compiled, such as:
 - a. All available geological and geophysical logging and testing on the well;
 - b. The results of the formation testing program;
 - c. Compatibility of injected material with fluids in the injection zones and the minerals in both the injection zones and the confining zone; and
 - d. Information that the Director may require in consultation with the permittee.

C. Duration of Permit

This UIC Class V ASR permit shall be issued for 10 years.

Part II. Injection Limitations, Monitoring, Reporting, and Testing Requirements

- A. This permit is for Class V injection wells associated with the Hastings ASR project designed to supply the City of Hastings, Village of Trumbull, and Hastings wholesale customers with a sustainable supply of potable water.
- B. Such injection shall be controlled, limited, and monitored by the permittee as specified in this permit. All monitoring reports are to be submitted to the Nebraska Department of Environmental Quality no later than 28 days after the last day of the month for which the monitoring data are being reported. Monitoring reports and other information required by this permit shall be directed to:

Nebraska Department of Environmental Quality
UIC Program, Groundwater Unit
Suite 400, The Atrium
1200 "N" Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922

- C. Operational parameters and limitations required for this project are set forth in Appendix A.
- D. The monthly average, maximum, and minimum values taken from the continuous recordings for the month for injection flow rate and volume shall be reported in the monthly monitoring report submitted to NDEQ.

- E.** The following shall also be reported to NDEQ by the permittee
1. Any well treatment procedures used, including those associated with normal maintenance and malfunction correction, and all well workovers shall be reported to the NDEQ for review within thirty (30) days of completion. A well treatment plan or workover plan shall be submitted to the NDEQ for review and approval prior to commencement of a well treatment or workover. No well treatment or workover shall commence until the permittee has obtained approval for the well treatment or workover plan from the NDEQ.
 2. Immediate notification to the NDEQ of all spills or releases associated with the operation of the injection well or its appurtenances.
 3. A written description and explanation of any noncompliance with operating limitations as specified in this permit for wellhead injection pressure, injection flow volume, or injection limits occurring during the month being reported shall be submitted with the monthly monitoring report.
 4. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the NDEQ, the permittee shall submit such facts or corrected information to the NDEQ, postmarked within five (5) calendar days of becoming aware of the circumstances.

Part III. Plugging and Abandonment

- A.** The wells shall be plugged and abandoned upon reaching the end of their useful life or when determined necessary by the NDEQ to protect human health, or the fresh and/or usable waters or soils of the state. The permittee shall notify the NDEQ at least sixty (60) days prior to plugging and abandonment of a well. In addition to the notice, the permittee shall submit a plugging and abandonment plan to the NDEQ for review and approval. The permittee shall conform to all plugging and abandonment requirements of State and Federal regulations and the NDEQ. The well shall be plugged in a manner that will not allow the movement of fluids into or between sources of underground sources of drinking water (USDWs) or allow the movement of injected fluids out of the injection zones. Plugging and abandonment work shall not commence until approval of the plugging and abandonment plan has been obtained from NDEQ. The report of plugging and abandonment and related information shall be submitted to the NDEQ within thirty (30) days after the completion of the plugging operation.
- B.** The permittee shall reclaim all disturbed land surfaces to conserve the soil and water resources in the affected are of the injection well. The Natural Resource Conservation Service (NRCS) shall be consulted for technical assistance in reclaiming the land surface. Topsoil shall be reapplied to the natural contoured surface of the land, and the soils re-seeded with an appropriate seed mixture.

Part IV. Financial Responsibility for Plugging and Abandonment

The permittee shall maintain financial responsibility and financial resources to close, plug, and abandon the injection wells and appurtenances in a manner required by the NDEQ. This requirement includes the costs for reclaiming the disturbed land surfaces associated with the injection well. An abandonment plan that includes financial responsibility documents shall be prepared and submitted by the permittee. Financial assurance documents shall be revised and updated when required by the NDEQ or annually.

Part V. Construction Requirements

The permittee shall construct any wells that fall under this permit in accordance with the requirements of Nebraska Title 122 Rules and Regulations for Underground Injection and Mineral Production Wells, Chapter 17. This includes well registration with the Nebraska Department of Natural Resources.

Part VI. Spill Prevention and Containment

The injection well will be equipped with high level sensing instruments to detect water levels as a means of spill prevention.

Part VII. Standard Permit Conditions

A. Duty to Comply

The permittee shall comply with all conditions of this permit, Federal and State laws and regulations. Any permit noncompliance constitutes a violation of the appropriate act or regulations and is grounds for enforcement actions or for permit termination, revocation and reissuance, modification, or denial of permit renewal application.

B. Duty to Reapply

If the permittee wished to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. An application to renew this permit shall be filed with the NDEQ at least one hundred eighty (180) days prior to its expiration date.

C. Duty to Cease or Reduce Activity

It shall not be an acceptable defense for a permittee in an enforcement action to declare or 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.

D. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or correct any adverse impact to the environment resulting from noncompliance with this permit, including additional monitoring as necessary to determine the nature and impact of a noncomplying discharge or injection, and the necessary actions to be taken based on monitoring.

E. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of monitoring, 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 when necessary to maintain compliance with the conditions of the permit.

F. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege, nor does it authorize any injury to private property or any invasion of a person's rights, nor any infringement of Federal, State, or local laws or regulations.

G. Duty to Provide Information

The permittee shall furnish to the NDEQ within a reasonable time, any information which the NDEQ may request to determine whether cause exists for modifying, revoking, reissuing or terminating the permit, or to determine compliance with this permit. The permittee shall also furnish to the NDEQ, upon request, copies of reports and information required to be kept by this permit.

H. Inspection and Right of Entry

The permittee shall allow the Director, or any authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- a. Enter 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 must be kept under the conditions of this permit;
- c. Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit;
- d. Sample or monitor for the purpose of assuring permit compliance or as otherwise authorized by appropriate Rules and Regulations, any substances or parameters at any location.

I. Samples, Measurements, and Records

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. The permittee shall retain records of all monitoring information, including calibration and maintenance records, and all continuous monitoring instrumentation records, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five (5) years from the date of sample, measurement, report, or application. This period may be extended by request of the NDEQ at any time.
- c. The permittee shall retain records concerning the nature and composition of all injected fluids until five (5) years after the completion of any plugging and abandonment procedures. The NDEQ may require the owner or operator to deliver the records to the NDEQ at the conclusion of the retention period.
- d. Records of monitoring information shall include:
 - i. The date, exact place, and time of sampling or measurements;
 - ii. The individual(s) who performed the sampling or measurements;
 - iii. The date(s) analyses were performed;
 - iv. The individual(s) who performed the analyses;
 - v. The analytical sampling and preservation techniques or methods used; and
 - vi. The results of such analysis.

J. Signatory Requirements

All permit applications, reports required by this permit, or other information requested by the NDEQ shall be signed and certified in accordance with the requirements of Nebraska Title 122 Rules and Regulations for Underground Injection and Mineral Production Wells, Chapter 15.

K. Monitoring and Records

All monitoring requirements shall be in accordance with those stated in Nebraska Title 122 Rules and Regulations for Underground Injection and Mineral Production Wells, Chapter 20.

- a. Representative Sampling
 - i. Samples and measurements taken as required herein shall be representative of all the volume and nature of the monitored discharge or injection. All samples shall be taken at

the monitoring points specified in this permit unless otherwise specified. Monitoring points shall not be changed without notification to and the approval of the NDEQ.

L. Transfer of Permit

This permit is not transferable to any person except after notice and approval by the NDEQ. The NDEQ may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the appropriate Rules and Regulations. In some cases, modification and reissuance is mandatory. The existing permittee shall notify the NDEQ at least ninety (90) days in advance of the proposed transfer date. The notice shall include a written agreement between the existing and new permittee containing a specific date for the transfer of permit responsibility, coverage and liability between them, and demonstrate that financial requirement will be met by the new permittee. The new permittee shall submit to the NDEQ at least ninety (90) days prior to the proposed transfer date a new permit application including the financial assurance documents guaranteeing that resources are available to properly plug, abandon, and reclaim the well and surrounding affected lands.

M. Emergency Reporting

The permittee shall verbally report to the NDEQ any noncompliance which may endanger human health or the environment within twenty-four (24) hours of becoming aware of the circumstances. A written submission shall also be provided, postmarked within five (5) calendar 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, corrective action taken, 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 reoccurrence of the noncompliance. The permittee shall comply with any corrective or remedial action required by the NDEQ.

N. Operation Requirements

- a. The operator of the wells shall not allow the movement of fluid into any formation or aquifer not permitted to receive fluid by this permit. The operator shall have the burden of showing that the requirements of this paragraph are met.
- b. If any water quality monitoring of an aquifer indicates the movement of any contaminant into any formation or aquifer not permitted to receive fluids by this permit, the operator shall take such action as required by the NDEQ including, but not limited to, taking the well out of service, closure of the well, or plugging and abandonment of the well.

O. Permit Modifications and Terminations

After notice and opportunity for a hearing, this permit may be modified, revoked and reissued, or terminated in whole or in part during its term for cause as provided, but not limited to those set forth in Nebraska Title 122, Chapter 30. The permittee shall furnish to the NDEQ, within a reasonable amount of time, any information which the NDEQ 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, upon request, copies of all records required to be kept by this permit.

P. Severability

The provisions of this permit are severable, and if any provision of this permit and any circumstance is held invalid, the application of such provision to other circumstances and the remainder of the permit shall not be affected as stated in Nebraska Title 122, Chapter 36.

Q. Change in Injectate

Any facility changes or process modifications which may result in new, different, or altered injectate shall be reported to the NDEQ at least one hundred eighty (180) days before such changes.

R. Anticipated Noncompliance

If for any reason, the permittee will be unable to comply with permit requirements, the permittee shall give advance notice to the NDEQ. The notice shall include the reason for the anticipated noncompliance and a description of steps taken to reduce, eliminate, and prevent reoccurrence of the noncompliance. Upon receiving proper notice from the permittee, the NDEQ may grant for a specified time a temporary waiver to a permit requirement for the purpose of testing and treating the well, or for conducting a well workover, or to protect human health or the environment.

S. Plugging and Abandonment

Plugging and abandonment shall be done in accordance with Nebraska Title 122, Chapter 35. Prior to abandonment the permittee shall notify the Director seven days before commencing plugging and abandonment. Plugging shall conform to the following standards:

- a. A plugging and abandonment plan shall be submitted to the NDEQ for approval. The permittee shall follow the plugging and abandonment plan as approved by the Director.
- b. Prior to abandoning the injection well, the well shall be plugged with cement or other approved plugging material in a manner which will prohibit the movement of fluids out of the injection zones into or between underground sources of drinking water.

T. Financial Responsibility

The permittee shall secure and maintain in full force and effect at all times a form of financial security acceptable to the Director. This financial security will provide for proper plugging and abandonment of the injection well, and surface reclamation. This permit shall not become effective until the permittee secures a form of financial security acceptable to the Director in the appropriate amount.

U. Permit Modification and Reopening

This permit may be modified, reopened, revoked, reissued, or terminated for causes by the NDEQ (Nebraska Title 122, Chapters 30 and 31) or upon filing a request by the permittee. The permittee shall furnish to the Director any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit. Such information may also be requested by the Director to determine compliance with the permit. Upon request by the Director, the permittee shall also furnish copies of records required to be kept by the permit.

V. Confidential Information

Any information to be treated as confidential must be clearly identified by the permittee at the time it is submitted to the Department. Information determined by the Director to be confidential shall be managed in accordance with Nebraska Title 122, Chapter 28.

W. Averaging of Measurements

Calculations for all limitations which require averaging shall utilize an arithmetic mean unless otherwise specified by the Director in this permit.

X. Test Procedures

Test procedures for the analysis of pollutants that are required to be monitored by this permit, unless otherwise specified by the Director, shall conform to the latest edition of the following references:

- a. Standard Methods for the Examination of Water and Wastewaters, 19th Edition, 1995, American Public Health Association. New York, NY 10019.
- b. A.S.T.M. Standards, Part 11, American Society for Testing and Materials, Philadelphia, PA 19103.
- c. Methods for Chemical Analysis of Water and Wastes, March 1979, Environmental Protection Agency Water Quality Office, Analytical Quality Control Laboratory NERC, Cincinnati, Ohio 45268.

Appendix A

Underground Injection Control (UIC) Monitoring Parameters and Monitoring Schedule for Hastings ASR Project

Injection and Operational Parameters From Each Injection Well	Units	Injection or Parameter Limitations	Reporting Requirements	Analysis or Measurement Type
Injection Pressure	pounds per square inch gauge (psig)	100.0	Monthly	Continuous Recording Device
Maximum Daily Injection Volume	gallons per day	Report	Monthly	Continuous Recording Device
Maximum Daily Injection Rate	gallons per minute	Report	Monthly	Continuous Recording Device
Average Daily Injection Rate (Annualized)	gallons per minute	Report	Monthly	Continuous Recording Device
Nitrate (as Nitrogen)	mg/L	10.0	Monthly	Monthly Composite
Uranium	mg/L	0.03	Monthly	Monthly Composite
Arsenic	mg/L	0.01	Monthly	Monthly Composite

Injection and Operational Parameters From Each Injection Well	Units	Injection or Parameter Limitation	Baseline Injectate Characterization (I)	Annual Injectate	3-Year Injectate	6-Year Injectate	9-Year Injectate	Baseline Well GW Characterization
<i>Inorganics and Metals</i>								
Aluminum	mg/L	0.05	X		X			X
Antimony	mg/L	0.006	X		X			X
Barium	mg/L	2.0	X		X			X
Beryllium	mg/L	0.004	X		X			X
Cadmium	mg/L	0.005	X		X			X
Chloride	mg/L	525.0	X		X			X
Chromium (Total)	mg/L	0.1	X		X			X
Copper	mg/L	1.3	X		X			X

Cyanide (as free Cyanide)	mg/L	0.2	X		X			X
Flouride	mg/L	4.0	X		X			X
Iron	mg/L	0.3	X		X			X
Manganese	mg/L	0.05	X		X			X
Mercury (inorganic)	mg/L	0.002	X		X			X
Nickel	mg/L	0.1	X		X			X
Selenium	mg/L	0.05	X		X			X
Silver	mg/L	0.1	X		X			X
Sodium	mg/L	500.0	X		X			X
Sulfate (2)	mg/L	1000.0	X		X			X
Thallium	mg/L	0.002	X		X			X
Total Dissolved Solids (3)	mg/L	2000.0	X		X			X
Zinc	mg/L	5.0	X		X			X
<i>Nitrate/Nitrite</i>								
Nitrite (as Nitrogen)	mg/L	1.0	X	X				X
Total Nitrate and Nitrite (as N)	mg/L	10.0	X	X				X
<i>Volatile Organic Contaminants (VOC)</i>								
Benzene	mg/L	0.005	X		X			X
Carbon tetrachloride	mg/L	0.005	X		X			X
Dibromo-3-chloropropane (1,2-)(DBCP)	mg/L	0.0002	X		X			X
Dichlorobenzene o-	mg/L	0.6	X		X			X
Dichlorobenzene p-	mg/L	0.075	X		X			X
Dichloroethane (1,2-)	mg/L	0.005	X		X			X
Dichloroethane (1,1-)	mg/L	0.007	X		X			X
Dichloroethylene (cis-1,2-)	mg/L	0.07	X		X			X
Dichloroethylene (trans-1,2-)	mg/L	0.1	X		X			X
Dichloromethane	mg/L	0.005	X		X			X

Dichloropropane (1,2-)	mg/L	0.005	X		X			X
Ethylbenzene	mg/L	0.7	X		X			X
Monochlorobenzene	mg/L	0.1	X		X			X
Styrene	mg/L	0.1	X		X			X
Tetrachloroethylene	mg/L	0.005	X		X			X
Toluene	mg/L	1.0	X		X			X
Trichlorobenzene (1,2,4-)	mg/L	0.07	X		X			X
Trichloroethane (1,1,1-)	mg/L	0.2	X		X			X
Trichloroethane (1,1,2-)	mg/L	0.005	X		X			X
Vinyl chloride	mg/L	0.005	X		X			X
Xylenes	mg/L	10.0	X		X			X
<i>Pesticides</i>								
2,4-D (2,4-dichlorophenoxyacetic acid)	mg/L	0.07	X		X			X
2,4,5-TP (Silvex)	mg/L	0.05	X		X			X
Alachlor	mg/L	0.002	X		X			X
Aldicarb	mg/L	0.003	X		X			X
Aldicarb sulfone	mg/L	0.003	X		X			X
Aldicarb sulfoxide	mg/L	0.004	X		X			X
Atrazine	mg/L	0.003	X		X			X
Benzo(a)pyrene (PAH)	mg/L	0.0002	X		X			X
Carbofuran	mg/L	0.04	X		X			X
Chlordane	mg/L	0.002	X		X			X
Chlorpyrifos	mg/L	Reporting Limit	X		X			X
Cyanazine	mg/L	Reporting Limit	X		X			X
Dalapon (sodium salt)	mg/L	0.2	X		X			X
Di(2-ethylhexyl) adipate	mg/L	0.4	X		X			X
Di(2-ethylhexyl) phthalate	mg/L	0.006	X		X			X

Dicamba	mg/L	Reporting Limit	X		X			X
Dieldrin	mg/L	Reporting Limit	X		X			X
Dinoseb	mg/L	0.007	X		X			X
Dyfonate	mg/L	Reporting Limit	X		X			X
Endrin	mg/L	0.002	X		X			X
Ethylpaathion	mg/L	Reporting Limit	X		X			X
Glyphosate	mg/L	0.7	X		X			X
Heptachlor	mg/L	0.0004	X		X			X
Heptachlor epoxide	mg/L	0.0002	X		X			X
Hexachlorobenzene	mg/L	0.001	X		X			X
Hexachlorocyclopentadiene	mg/L	0.05	X		X			X
Lindane	mg/L	0.0002	X		X			X
Metolachlor	mg/L	Reporting Limit	X		X			X
Methomyl	mg/L	Reporting Limit	X		X			X
Methoxychlor	mg/L	0.04	X		X			X
Methylparathion	mg/L	Reporting Limit	X		X			X
Metribuzin	mg/L	Reporting Limit	X		X			X
Oxamyl (Vydate)	mg/L	0.2	X		X			X
Pentachlorophenol	mg/L	0.001	X		X			X
Picloram	mg/L	0.5	X		X			X
Polychlorinated biphenyls (PCBs)	mg/L	0.0005	X		X			X
Propachlor	mg/L	Reporting Limit	X		X			X
Simazine	mg/L	0.004	X		X			X
Terbufos	mg/L	Reporting Limit	X		X			X
Toxaphene	mg/L	0.003	X		X			X
Trifluralin	mg/L	Reporting Limit	X		X			X

Radionuclides

Gross alpha particle activity (including Radium 226 but excluding Radon and Uranium)	pCi/L	15.0	X			X		X
Radium-226 (only required if gross alpha is >= 5pCi/L)	pCi/L	5.0				X		X
Radium-228	pCi/L	5.0				X		X
Gross beta particle and photon emitters (5)	mrem/yr	4.0	X			X		X
Tritium (only if gross beta exceeds 50 pCi/L)	pCi/L	20,000	X			X		X
Strontium-90 (only if gross beta exceeds 50 pCi/L)	pCi/L	8.0	X			X		X
Radon	pCi/L		X			X		X
<i>Total Trihalomethanes (TTHMs) (required only if Chlorine is used as a disinfectant) (6)</i>								
Chloroform	mg/L	0.8	X	X				X
Bromodichloromethane	mg/L	0.8	X	X				X
Dibromochloromethane	mg/L	0.8	X	X				X
Bromoform	mg/L	0.8	X	X				X
<i>Haloacetic acids (HAA5) (required only if Chlorine is used as a disinfectant) (7)</i>								
Trichloroacetic acid (TCAA)	mg/L	0.06	X	X				X
Dichloroacetic acid (DCAA)	mg/L	0.06	X	X				X
Dibromoacetic acid (DBAA)	mg/L	0.06	X	X				X
Monochloroacetic acid (MCAA)	mg/L	0.06	X	X				X
Monobromoacetic acid (MBAA)	mg/L	0.06	X	X				X
<i>Disinfectants and Their By-Products (8)</i>								
Chloramine (only if used as a disinfectant)	mg/L	4.0	X	X				X
Chlorine	mg/L	4.0	X	X				X
Chlorine Dioxide (only if used as a disinfectant)	mg/L	0.8	X	X				X
Chlorite (only if Chlorine Dioxide is used)	mg/L	1.0	X	X				X

as a disinfectant)								
Bromide/Bromate (only if Ozone is used as a disinfectant) (9)	mg/L		X	X				X
<i>Turbidity</i>								
Turbidity	NTU	(10)	X	X				X
<i>Total Coliform</i>								
Total Coliform		(11)	X	X				X
<i>Additional Parameters for New Source Monitoring to Comply with DDW Requirements</i>								
Corrosivity		Non-Corrosive	X					X
pH	S.U.	6.5-9.5	X	X				X
Ammonia, as N	mg/L		X					X
Boron	mg/L	1.0	X					X
Calcium	mg/L		X					X
Lead	mg/L		X					X
Magnesium	mg/L	125.0	X					X
Potassium	mg/L		X					X
Specific Conductivity at 25°C	mmhos/cm, dS/m		X	X				X
Bicarbonate	mg/L		X					X
Carbon Dioxide	mg/L		X					X
Carbonate	mg/L		X					X
Hydroxide	mg/L		X					X
Phosphorus, Ortho as P	mg/L		X					X
Silica, dissolved as SiO ₂	mg/L		X					X
Total Hardness as CaCO ₃	mg/L		X					X
Alkalinity as CaCO ₃	mg/L		X					X
Temperature	°C or °F			X				X
Total Organic Carbon (TOC) (12)	mg/L		X					X

- (1) Permittee shall analyze any new injection source annually for the permit cycle.
- (2) If Sulfate is greater than 500 mg/L the permittee must demonstrate that no better water is available.
- (3) UIC regulations state that injection of water with TDS concentrations greater than the TDS limit of the Ground Water Class of the receiving aquifer is not permitted.
- (4) Asbestos monitoring is not required unless the new source is located in area of natural deposits of asbestos or the distribution system contains any asbestos cement piping.
- (5) Use 50 pCi/L as a screening level for further analysis.
- (6) The maximum contaminant level for community water systems serving a population of 10,000 or more and utilizing chlorine as a disinfectant is 80 µg/l as a location based running annual average.
- (7) HAA5 includes MCAA, DCAA, TCAA, MBAA, and DBAA.
- (8) The permit limits for disinfectants are maximum residual disinfectant levels (MRDLs) and not MCLs.
- (9) If the bromide concentration exceeds 0.04 mg/L, the permittee will be required to analyze for bromate concentrations.
- (10) The turbidity limit for surface water sources or ground water sources under the direct influence of surface water is 0.3 NTU in at least 95% of the samples per month. The turbidity limit for slow sand filtration and diatomaceous earth filtration is 1.0 NTU in at least 95% of the samples per month. The turbidity level for ground water sources not under direct surface water influence is 5.0 NTU.
- (11) For a system which collects less than 40 samples per month, no more than one sample per month may be total coliform-positive. For a system which collects 40 or more samples per month, no more than 5.0% of the samples collected during a month may be total coliform-positive. Any fecal coliform-positive or *Escherichia coli* (*E. coli*)-positive repeat sample or any total coliform-positive repeat sample following a fecal coliform-positive or *E. coli*-positive routine sample constitutes an acute MCL violation for total coliforms. This applies to samples taken throughout the distribution system. For the injection wells, no more than 5% of the monthly samples collected of the plant effluent may be total coliform-positive.
- (12) If surface water is the source of the injectate, total organic carbon (TOC) shall be included for analysis.
- (13) Contact the Nebraska Department of Health and Human Services Drinking Water Division for any analytical data that may be available for injectate source or ground water before commencing a monitoring plan.
- (14) All monitoring requirements and limitations will be reviewed after the 3-year injectate analysis in order to determine whether it is necessary to continue monitoring. Parameters which are found to be relevant will be continued on to be required under 6-year and/or 9-year injectate analyses.

*The injection of wastewater may be accompanied with the addition of an anti-scalant and/or biocide to inhibit precipitates and scale from developing in the injection well.

**Samples taken in compliance with injection requirements specified above shall be taken at the following locations:

Injection fluid: at a sampling outfall between the processing plant and the injection well.

***The gauge, meter, continuous recording device, or sight glass shall at all times be maintained operational and shall at all times be located to properly measure the activity being monitored