



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

**APPLICATION FOR LICENSE TO AUTHORIZE
COMMERCIAL DISPOSAL OF
NATURALLY OCCURRING RADIOACTIVE
MATERIAL (NORM) WASTE**

*Radioactive Material Licensing Team,
Waste Permits Division
Office of Permitting Remediation & Registration*

September 26, 2005

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INSTRUCTIONS

1. In developing an application for a NORM waste disposal facility, it is recommended that the applicant present information in the following format to ensure uniformity of information and to demonstrate that the facility is protective of human health and the environment. Use of this format is not required; however, using the application format will assist the TCEQ staff in locating necessary information and will aid in shortening the time needed for the review process. An applicant has the burden of proof on all applicable statutory and rule requirements, whether or not the information is specifically requested in this application form.
2. The application format is designed to assist the applicant in writing a license application that will achieve four main goals:
 - 2.1 Ensure compliance with all associated regulations, including the statutes of Texas Health and Safety Code (THSC) Chapter 401 and Title 30 of the Texas Administrative Code (TAC) Chapter 336;
 - 2.2 Present information that is complete and well-documented for quality;
 - 2.3 Organize the material to aid in locating and understanding the information; and
 - 2.4 Provide for a timely review of the application.
3. Commercial NORM waste disposal facilities shall be sited, designed, constructed, operated, closed, and controlled after closure so that reasonable assurance exists that exposures to humans are maintained as low as reasonably achievable (ALARA), and within the dose limits established in the performance objectives in 30 TAC §336.1011 (relating to Performance Objectives).
4. Any person (individual, corporation or other legal entity) who disposes of NORM waste received from other persons must obtain a license pursuant to THSC Chapter 401. If the operator of the NORM waste disposal facility is not the owner, then the operator shall be the applicant for a license.

The applicant is referred to THSC Chapter 401, and 30 TAC Chapters 1-100, 281, 305 and 336 for technical and procedural regulations.

5. A person may not commence construction or operation of a NORM waste disposal facility, or receive NORM waste for disposal, until the commission has issued a NORM waste disposal license.
6. The application (one signed original plus six complete copies) should be mailed to:

Texas Commission on Environmental Quality
Waste Permits Division
Radioactive Material Licensing Team
MC 126
PO Box 13087
Austin TX 78711-3087

Copies should consist of paper copies of all text, plans, well logs, seismic data, maps and cross-sections, and a computer diskette or compact disk (CD) of the documents. The document should be formatted in Microsoft Word® word processing software or a 100% compatible format. The applicant is encouraged to provide electronic copies of all aforementioned data (plans, well logs, seismic data, maps, etc.) on the diskette or CD in PDF (Adobe Acrobat) format. Files may be compressed using WINZIP® or a 100% compatible program. [30 TAC §305.42(c)].

Telephone inquiries:

(512) 239-6313 - Radioactive Material Licensing Team
(512) 239-2007 - Facsimile Machine
(512) 239-0600 - Legal - Office of Legal Services
(512) 239-0192 - Fees - Financial Administration Division, Revenues Section
(512) 239-6239 - Financial Assurance

Organization and labeling of information submitted should be consistent with the organization of this form. The application should be organized in three-ring binders, each not to exceed three inches in thickness. All pages should be numbered and placed in the binders. New pages, figures, tables, or maps should be clearly marked as revisions, dated, numbered and labeled appropriately for insertion in the application.

7. The application must be signed by the applicant or an authorized designee. [THSC §401.107(c)]. The signatory must indicate that person's title, role or position in the organization of the applicant. In all cases, the person signing the form should be authorized to do so by the applicant. [30 TAC §305.44]. The commission may require a person signing on behalf of an applicant to provide proof of authorization. An application submitted for a corporation must be signed by (or the signatory must be authorized by) a principal executive officer of at least the level of vice president; or for a partnership or sole proprietorship, by a general partner or the proprietor, respectively. For a municipal, state, federal, or other public facility, the application must be signed by either a principal executive officer or ranking elected official.
8. The applicant should ensure that the application contains sufficient information to allow for a detailed technical review of all sections in this application. An application will not be processed until all information required to properly consider the application has been submitted. If the applicant fails to submit additional requested information in a timely manner, the application will not be considered to be filed in accordance with the rules and regulations of the commission and may be returned. [30 TAC §281.18].

9. Application Fees and Costs

- 9.1 The fee for filing an application for a NORM waste disposal site license is \$50,000. The application processing fee is nonrefundable. [30 TAC §336.105].
- 9.2 Payment of fees shall be made at the time the application is submitted and shall include a copy of page 1 of the application form. Payment should be sent to:

Texas Commission on Environmental Quality
Cashier's Office, MC 214
PO Box 13088
Austin TX 78711-3088

- 9.3 After completion of the commission's technical review, the applicant is required to bear the cost of publication of notice of the application in a newspaper. [30 TAC §39.707(a)].

10. Designation of Material as Confidential:

The commission has responsibility to provide a copy of each application to other review agencies and to interested persons upon request and to safeguard confidential material from becoming public knowledge. Thus, the commission requests that an applicant submitting data or information (1) be prudent in the designation of material as confidential and (2) submit such material only when it might be essential to the staff in their development of a recommendation.

The commission suggests that the applicant **NOT** submit confidential information as part of the license application. However, if this cannot be avoided, the confidential information should be described in non-confidential terms throughout the application and cross-referenced to a separate document or binder entitled "CONFIDENTIAL MATERIAL." At the time of submission, the document or binder itself and each page individually must be conspicuously marked "CONFIDENTIAL."

Reasons for designating material confidential may include avoiding disclosure of trade secrets, proprietary processes, economics of operation or information that if made public would give an advantage to competitors or bidders. This includes authorizations under 5 U.S.C., §552(b)(4) and special rules cited in Title 40 of the Code of Federal Regulations, §§2.301-2.309. The composition of the waste subject to the jurisdiction of the commission may not be regarded as confidential information. Finally, the name and address of the applicant or bidder may not be regarded as confidential information.

Information designated as confidential and accepted as such by the commission, will not be made public. However, any open records request that is received by the commission regarding information that an applicant claims to be confidential will be forwarded by the executive director of the commission to the Texas Attorney General in accordance with the Texas Government Code, §552.301. Following submission, the Attorney General will make a determination whether or not the designated confidential information is within an exception to the requirements to provide the information to the public.

11. All engineering plans, specifications, and other related documents must be prepared, sealed, signed, and dated by a Texas professional engineer (P.E.), in accordance with 22 TAC §131.166 of the rules of the Texas Board of Professional Engineers. The Board rules require that all engineering pages be sealed, signed, and dated unless contained in a bound document, in which case only the original title sheet needs to be sealed. If a single seal is used on a bound document, there must be a note near the seal clearly stating which pages of the document the seal covers. All engineering drawings or plans must be individually sealed, signed, and dated. If there are subsequent revisions to pages covered by

the engineering seal, each revised page must be individually sealed. An engineer may not seal a document in a field outside of his or her area of expertise. If more than one P.E.'s work is contained in a document, both seals are required on the document and the limits of their work clearly indicated. Please refer to the Texas Engineering Practice Act and the rules of the Texas Board of Professional Engineers for more information.

12. All geoscience documents must be prepared by or under the supervision of a Texas licensed professional geoscientist (P.G.), in accordance with Section 6.01 of the Texas Geoscience Practice Act. Geoscience includes the science of the earth and its origin and history, the investigation of the earth's environment and its constituent soils, rocks, minerals, fossil fuels, solids, and fluids, and the study of the natural and introduced agents, forces, and processes that cause changes in and on the earth. All geoscience documents submitted in this application must bear the full name, signature, date, license number, and seal of the geoscientist under which the document was prepared. If more than one P.G.'s work is contained in a document, both seals are required on the document and the limits of their work clearly indicated.

PROCEDURAL INFORMATION

1. Upon receipt of an application for a radioactive material license, the executive director's staff reviews the application for administrative completeness. During the review, the applicant may be contacted to provide clarification or additional information. The application or a summary of its contents may be forwarded for review to a commission contractor, other state agencies and local governmental entities. Not later than the 45th day after the date an application is received, the executive director shall issue an administrative notice of deficiency to each applicant whose application is timely submitted, but is determined by the executive director to be administratively incomplete. [30 TAC §281.3].
2. The executive director shall provide an applicant, for whom an administrative notice of deficiency is issued, a 30-day opportunity to correct the noted deficiencies in the application. The executive director will evaluate the information received in response to a notice of deficiency within 30 days. If the required information is not received from the applicant within 30 days of the date of receipt of the deficiency notice, the executive director shall return the incomplete application to the applicant. The executive director may grant an extension of an additional 60 days upon sufficient proof from the applicant that an adequate response cannot be submitted within 30 days. Unless there are extenuating circumstances, if an applicant does not submit an administratively complete application, the application shall be considered withdrawn. [30 TAC §281.18].
3. When an application is determined to be administratively complete, the chief clerk mails *Notice of Declaration of Administrative Completeness* to the applicant, to potentially affected persons, and to others. [30 TAC §39.702]. 30 TAC §§39.413 and 39.705 describe the mailed notice procedures for this first notice.
4. The executive director's staff begins a technical review as soon as the application is administratively complete. The applicant may be contacted for clarification or additional information at any time during the technical review. [30 TAC §281.19]. For new applications, renewal applications, or major amendment applications, the executive director shall complete application processing within the technical review period (450 days) if the applicant provides the information within 75 days of the date of the first Notice of Deficiency (NOD) and 60 days of the second NOD. Once the technical review is complete, the draft license is filed with the chief clerk. The chief clerk mails the *Notice of Completion of Technical Review*. [30 TAC §§39.703 & 39.705]. The applicant publishes newspaper notice. [30 TAC §39.707(a)]. The deadline for filing public comments, protests, or hearing requests with the chief clerk is 30 days after publication. [30 TAC §39.703(a)].

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Agency Use Only: RW-_____

Texas Commission on Environmental Quality

APPLICATION FOR LICENSE TO AUTHORIZE
COMMERCIAL DISPOSAL OF
NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM) WASTE

TABLE OF CONTENTS *(Provided by Applicant)*

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LIST OF COMMON TERMS AND ABBREVIATIONS

1.0 GENERAL INFORMATION

1.1 Type of Application Submittal (check all that apply):

Initial ___ Renewal ___ Amendment ___

1.2 Facility Name _____

TCEQ Solid Waste Registration No. _____ EPA ID No. _____

RN _____ CN _____

Street Address _____

City _____, Texas Zip Code _____ County _____

Mailing Address _____

City _____, Texas Zip Code _____ County _____

1.3 Operator (Applicant) _____
(Individual, Corporation, or Other Legal Entity Name)

Address _____

City _____ State _____ Zip Code _____

Telephone Number _____

1.4 Mineral Rights

Does the applicant own all of the mineral rights to the facility property?

____ Yes ____ No

Comments _____

1.5 Charter Number

If the application is submitted on behalf of a corporation, please identify the Charter Number as recorded with the Office of the Secretary of State for Texas.

(Charter Number)

1.6 Registered Agent

If the application is submitted by a person residing out of state, or is submitted by a corporation, the applicant must name the Agent in Service or Agent of Service who is registered with the Texas Secretary of State's office, and provide a complete mailing address for the agent. The agent must be a Texas resident.

Agent _____

Address _____

City _____ State _____ Zip Code _____

Telephone Number _____

1.7 Owner (if the same as operator, state "same as operator"):

Name _____

Address _____

City _____ State _____ Zip Code _____

Telephone Number _____

Charter Number _____

1.8 Indicate the ownership status of the facility [30 TAC §305.45(a)(2)]

1.8.1 Private:

1.8.2 Public:

1.8.3 Other (specify) _____

1.9 List those persons or firms authorized to act for the applicant during the processing of the license application. Also indicate the capacity in which each person may represent the applicant (health physics, engineering, geology, hydrology, legal, etc.). The person listed first will be the primary recipient of correspondence regarding this application. Include the complete mailing address, e-mail address, fax and telephone number(s) for each person listed. Also, include an organization chart which clearly shows the lines of communication for the various offices or firms providing support to the applicant for applicable areas of expertise.

1.10 Specify the individual who will be responsible for causing notice to be published in the newspaper. Include his or her complete mailing address, e-mail address, fax and telephone number.

1.11 If the applicant is a partnership, the name and address of each partner and the principal location where the partnership does business.

1.12 If the applicant is a corporation or unincorporated association,

1.12.1 the state where it is incorporated or organized and the principal location where it does business; and

1.12.2 the names and addresses of its directors and principal officers.

1.13 If the applicant proposes to contract the management of the construction and/or operation of the disposal facility to another person, the full name, address, and telephone number of the management contractor, the full name and address of each principal, partner, or director of the contractor, the state where it is organized, and the principal location where it does business.

- 1.14 If the applicant is a corporation under the Texas Business Corporation Act, provide written verification (either affidavit or tax receipt), to confirm that no tax owed the State under Chapter 171, Tax Code, is delinquent. [30 TAC §305.54(b)].
- 1.15 Business Information
 - 1.15.1 Give a brief description of the nature of the applicant's business.
 - 1.15.2 List the principal products and/or services which are provided by the applicant's business. Please itemize by Standard Industrial Classification (SIC) codes.
- 1.16 The TCEQ requires that a Core Data Form (Form 10400) be submitted on all incoming applications unless a Regulated Entity Number (RN) and a Customer Reference Number (CN) has been issued by the TCEQ and no core data information has changed. For more information regarding the Core Data Form, call (512) 239-5175 or go to the TCEQ Web site at <http://www.TCEQ.state.tx.us/permitting/projects/cr>.
- 1.17 Submit as "Attachment A" a copy of the warranty deed or other conveyance showing that the applicant has acquired the title to and any interest in land and buildings, including the surface and mineral estates, on which the facility or facilities are to be located by either having acquired:
 - 1.17.1 an undivided ownership of the buildings, surface estate, and mineral estate in fee simple through purchase or completed condemnation; or
 - 1.17.2 an undivided ownership of the buildings and surface estate, along with an exemption, granted by the commission in accordance with federal law for use of a surface use agreement, in lieu of acquiring fee simple title to the mineral estate. [30 TAC §336.207(4)].
- 1.18 Provide any additional information on land ownership and any covenants or restrictions on land use. [30 TAC §336.1007(a)(16)].
- 1.19 Provide a discussion of the applicant's justification for the proposed disposal method. [30 TAC §336.1007(a)(17)].
- 1.20 If application is for renewal or amendment to existing license(s), please describe all requested license changes (in a manner that facilitates their incorporation into the license) and the reasons for the request.
- 1.21 Describe the activities conducted by the applicant which require a permit or license from a regulatory authority. [30 TAC §305.45(a)(5)].
- 1.22 Describe the applicant's technical competence, financial qualifications, and compliance history to demonstrate its regard for the regulatory process. [THSC §401.110].

1.23 Indicate (by listing the permit/license number(s) in the column below) all existing, pending, or interim status permits or licenses; permits-by-rule; state and/or federal permits or other approvals which pertain to pollution control or waste management conducted by your facility. [30 TAC §§305.45(a)(7)] . Complete each blank by entering the permit/license number, the date of application, or "none".

Relevant Program and/or Law		Permit No./ License No.	Gov. Agency*
1.	Texas Solid Waste Disposal Act	_____	_____
2.	Wastewater disposal under Texas Water Code	_____	_____
3.	Underground Injection Well	_____	_____
4.	Texas Clean Air Act	_____	_____
5.	Texas Uranium Surface Mining & Reclamation Act	_____	_____
6.	Texas Surface Coal Mining & Reclamation Act	_____	_____
7.	Hazardous Waste Management program under the Resource Conservation and Recovery Act	_____	_____
8.	NPDES program under the Clean Water Act	_____	_____
9.	PSD program under the Clean Air Act	_____	_____
10.	Nonattainment program under the Clean Air Act	_____	_____
11.	National Emission Standards for Hazardous Air Pollutants (NESHAP) preconstruction approval under the Clean Air Act	_____	_____
12.	Ocean dumping permits under the Marine Protection Research and Sanctuaries Act	_____	_____
13.	Dredge or fill permits under Section 404 of the Clean Water Act	_____	_____
14.	Texas Radiation Control Act	_____	_____
15.	Other relevant environmental permits/licenses	_____	_____

*Use the following acronyms for each agency as shown below:

TCEQ	- Texas Commission on Environmental Quality	EPA	- U.S. Environmental Protection Agency
RCT	- Railroad Commission of Texas	CORPS	- U.S. Army Corps of Engineers
TDSHS	- Texas Department of State Health Services	TDA	- Texas Department of Agriculture
NRC	- U.S. Nuclear Regulatory Commission		

SIGNATURE PAGE

I, _____, _____
(printed name of applicant) (title)

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

Signature _____, Date _____
(applicant or applicant's authorized agent)

TO BE COMPLETED BY THE APPLICANT IF THE APPLICATION IS SIGNED BY AN AGENT FOR THE APPLICANT

I, _____ hereby designate _____
(applicant) (agent)

as my agent and hereby authorize said agent to sign any application, submit additional information as may be requested by the commission, and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Radiation Control Act license. I further understand that I am responsible for the contents of this application, for oral statements given by my agent in support of the application, and for compliance with the terms and conditions of any license which might be issued based upon this application.

Printed or Typed Name of Applicant or Principal Executive Officer

Signature

(Note: Application Must Bear Signature & Seal of Notary Public)

SUBSCRIBED AND SWORN to before me by the said _____
on this _____ day of _____, 20_____.

My commission expires on the _____ day of _____, _____.

Notary Public in and for
_____ County, Texas

2.0 SITE CHARACTERISTICS

2.1 Location and Geography

- 2.1.1 Legal Description of Facility - Submit as "Attachment B" a legal description of each tract of land upon which the waste management operations referred to in this license application will occur or have occurred. Although a legal description is required, a metes and bounds description is not necessary for urban sites with appropriate "lot" description(s).
- 2.1.2 Survey Map - Submit as "Attachment C" a map illustrating the location of the proposed disposal unit(s) relative to established surveys.
- 2.1.3 Location Map - Submit as "Attachment D" a map showing the location of the facility site with respect to known or easily identifiable landmarks, for example, a map illustrating county boundaries, highways and other major roads. Describe the access route(s) from the nearest U.S. or State Highway to the facility.
- 2.1.4 Disposal Unit Locations - Provide the geographical coordinates (in terms of latitude and longitude) for the area centroid of each proposed disposal unit (repeat as necessary):

Latitude: ___° ___' ___" North Longitude: ___° ___' ___" West

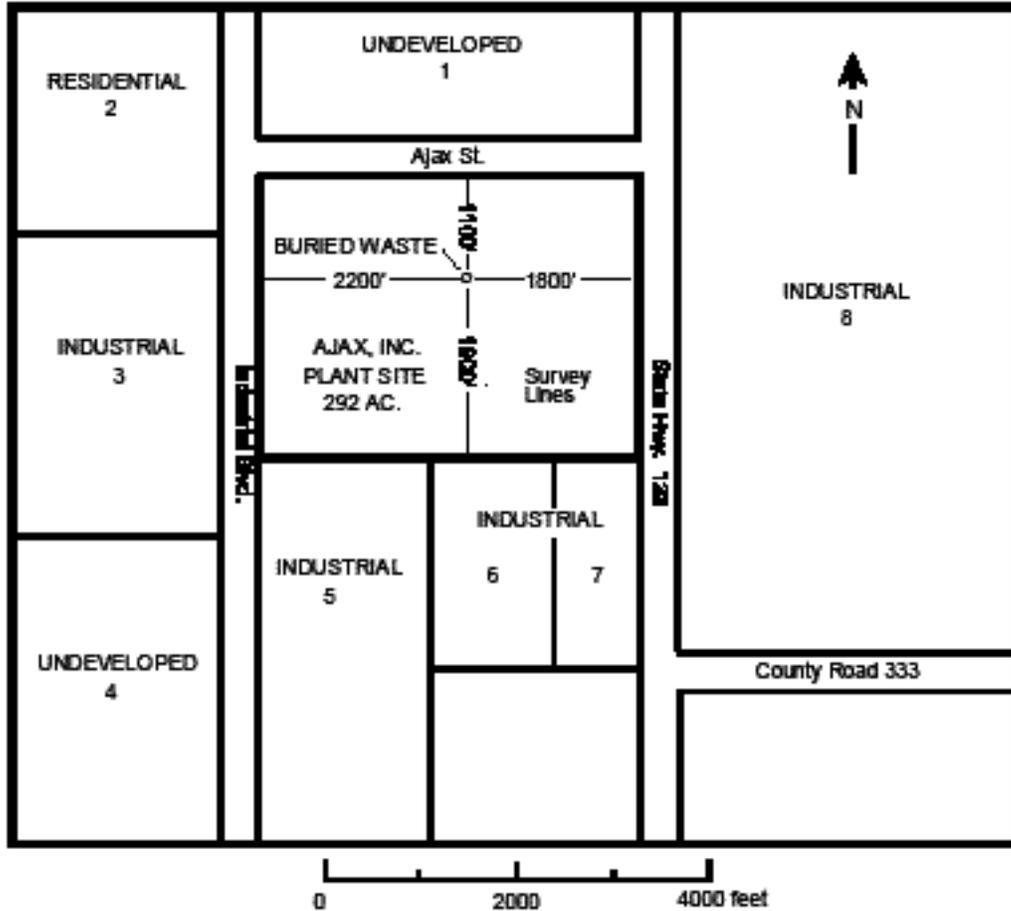
Latitude: ___° ___' ___" North Longitude: ___° ___' ___" West

2.1.5 Topographic Map [30 TAC §305.45(a)(6)]

Submit as "Attachment E" a drawn-to-scale topographic map of the facility and area extending at least one mile beyond the facility boundaries. Maps must be prepared by a licensed professional engineer or a registered surveyor. Maps must be of material suitable for a permanent record, and be on sheets 8½ inches by 11 inches or folded to that size, and be on a scale of not less than one inch equals two thousand feet. The scale should be adequate to depict the following features:

- 2.1.5.1 the approximate boundaries and areal size in acres of the facility;
- 2.1.5.2 the overall facility, each of its surface intake and discharge structures, each of its waste treatment, storage or disposal facilities; and
- 2.1.5.3 all wells (water, oil and gas, disposal, etc.), springs and other surface water bodies, listed in public records or otherwise known to the applicant within one mile of the facility property boundary, the purpose for which each water well is used (e.g., domestic, livestock, agricultural, industrial, etc.), and its status (active, abandoned, etc.).

Sample Application Map



LANDOWNERS CROSS-REFERENCED TO APPLICATION MAP

- | | | | |
|----|---|----|--|
| 1. | Mr. & Mrs. Samuel L. Davis
11901 Knights Bridge
Austin, Texas 78759 | 5. | Jaxson Brewing Co.
4240 Line Road
Dallas, Texas 77640 |
| 2. | Mr. & Mrs. Edward Sanchez
1405 Craigmont Lane
Waco, Texas 76710 | 6. | Plainview Company
6647 Star Blvd.
Houston, Texas 77590 |
| 3. | Tex-Link Corp.
8411 Zip Street
Houston, Texas 77590 | 7. | ABC Chemicals, Inc.
1212 Austin Ave.
Dallas, Texas 77640 |
| 4. | Mr. & Mrs. Ted Goldsby
3210 20th Street
Waco, Texas 76724 | 8. | Big-C Bottle Co.
10024 N.W. Hwy.
Bovina, Texas 79402 |

- 2.1.6 Adjacent Landowners - [30 TAC §§305.45(a)(6)(D), 305.54(c)] Submit as “Attachment F” a map and a cross-referenced list of complete mailing addresses for all landowners of property adjacent to the facility (see example below). Also, submit a computer diskette or compact disk (CD) containing only the mailing list. The document should be formatted in Microsoft Word® word processing software, or a 100% compatible format. Please label the disk with the applicant’s name, Regulated Entity Number (RN), Customer Number (CN) and street address (physical address). In formatting the mailing list, type the applicant’s name, regulated entity number and street address on the top line before typing the addresses. Names and addresses must be typed in the format indicated below. This format is required by the U.S. Postal Service for machine readability. *Each letter in the name and address must be capitalized, contain no punctuation, and the appropriate two-character abbreviation must be used for the state. Each address listed must be blocked and spaced consecutively as shown below.*

Example:

Applicant’s name

Applicant’s regulated entity number: RNXXXXXXXXXX

Applicant’s customer number: CNXXXXXXXXXX

Applicant’s physical address

MR & MRS SAMUEL L DAVIS
11901 KNIGHTS BRIDGE
AUSTIN TX 78759

MR & MRS EDWARD SANCHEZ
1405 CRAIGMONT LANE
WACO TX 76710

- 2.1.7 Indian Lands - Is the facility located on Indian lands?

Yes No

- 2.1.8 Coastal Management Program - Is the facility located within the Coastal Management Program boundary?

Yes No

For questions regarding the Coastal Management Program, please call 1-800-998-4456, OR 1(512) 463-4228.

- 2.1.9 Local Waste Prohibition - Is the facility in an area in which the governing body of the county or municipality has prohibited the processing or disposal of municipal hazardous waste or industrial solid waste. [THSC §363.112]

Yes No

If yes, please provide a copy of the ordinance or order.

2.2 Meteorology and Climatology

- 2.2.1 Provide a description and analysis of local meteorological data, including hourly, daily, and/or monthly averages of precipitation, evapotranspiration, temperature, wind speed and direction, relative humidity, and atmospheric stability over annual and quarterly periods. [30 TAC §336.1007(a)(5)(G)].
- 2.2.2 Provide a description of the occurrence and frequency of hazardous local meteorological conditions including hurricanes, tornadoes, violent storms, susceptibility of flooding, and any other extreme meteorological phenomena.

2.3 Site Hydrogeological Data

- 2.3.1 Provide a description of all applicable site hydrogeological data including:
 - (1) identification of aquifers and confining units, including depths, saturated intervals, overall thicknesses, lithologies, and environments of deposition;
 - (2) identification of the water table and potentiometric surfaces;
 - (3) the processes of recharge and discharge of site groundwaters;
 - (4) porosities and hydraulic conductivities; and
 - (5) hydraulic gradients, flow directions, and flow velocities. [30 TAC §336.1007(a)(5)(D)].
- 2.3.2 Provide a description and analysis of surface water and surface drainage areas, including the location and identification of surface water bodies and wetlands and uses, if any. [30 TAC §336.1007(a)(5)(F)].
- 2.3.3 Identify all water wells within a one-mile radius of the facility, including location, use (e.g., commercial, livestock, drinking water, etc.), total depth, aquifer, and screened interval. [30 TAC §336.1007(a)(5)(E)].

2.4 Geology and Seismology

- 2.4.1 Describe and quantify area and site characteristics including geology, seismology and topography.
- 2.4.2 Provide a description of site stratigraphy from the surface to at least the base of the lower confining layer of the injection zone. [30 TAC §336.1007(a)(5)(B)].
- 2.4.3 Provide a description of potential geologic hazards, including faulting, seismic activity, sink holes, solution depressions, geopressurized zones, and flooding, including identification of the 100-year floodplain. [30 TAC §336.1007(a)(5)(C)].
- 2.4.4 Demonstrate that the disposal site avoids areas where surface geologic processes such as mass wasting, erosion, slumping, landsliding, or weathering occur with such frequency and extent to significantly affect the ability of the disposal site to meet the performance objectives of 30 TAC §336.1011 or may preclude defensible modeling and prediction of long-term impacts.

2.4.5 Provide the following maps and cross sections:

(i) United States Geological Survey (USGS) 7.5-minute topographic map(s).

(ii) Bureau of Economic Geology (BEG) Geologic Atlas of Texas map(s), or other site-specific surface geology map.

(iii) United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) soil map, or other site soil map.

(iv) water table and potentiometric surface maps of all aquifers.

(v) structural cross sections along dip and strike. [30 TAC §336.1007(a)(5)(H)].

2.5 Geotechnical and Geochemical Characteristics

2.5.1 Describe and quantify area and site characteristics including geotechnical features, geochemistry, soils, and natural radiation background.

2.5.2 Demonstrate that the disposal site will not be located in areas where soil conditions are such that spill cleanup would be impracticable.

2.5.3 Identify all soil layers by classification according to the Unified Soil Classification System, as described in the American Society for Testing and Materials standard D2487, *Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)*. [30 TAC §336.1007(a)(5)(A)].

2.5.4 Provide a discussion of site performance history, including erosion, flooding, subsidence, etc. [30 TAC §336.1007(a)(5)(J)].

2.6 Natural Resources

2.6.1 Provide a description of area resources (e.g., local land use, locations of nearby residences, etc.). [30 TAC §336.1007(a)(5)(I)].

2.6.2 Demonstrate that the selected disposal site avoids areas that have known natural resources which, if exploited, would result in failure to meet the performance objectives of 30 TAC §336.1011.

2.7 Pre-operational Environmental Monitoring

2.7.1 Describe and quantify area and site characteristics, including natural radiation background.

2.7.2 Describe the baseline environmental monitoring program, including radioactive and chemical characteristics.

2.7.3 Describe a pre-operational monitoring program to provide basic environmental data on the disposal site's characteristics. For those characteristics that are subject to seasonal variation, data must cover at least a 12-month period.

3.0 DESIGN

Information provided in this section, including engineering plans, specifications, and other related documents must be prepared, sealed, signed, and dated by a Texas professional engineer (P.E.), in accordance with 22 TAC §131.166 of the rules of the Texas Board of Professional Engineers.

3.1 General Information

- 3.1.1 Provide a description of the general character of the proposed activities.
- 3.1.2 Describe the principal design criteria and their relationship to the performance objectives of 30 TAC §336.1011.
- 3.1.3 Describe the facilities and systems used for, or in connection with, the collection, transportation, treatment, and disposal of waste. [30 TAC §305.45(a)(8)(A)]
- 3.1.4 Demonstrate that the disposal is designed to complement and improve, where appropriate, the ability of the disposal site's natural characteristics to assure that the performance objectives of 30 TAC §336.1011 will be met.
- 3.1.5 Provide accurate drawings and descriptions of on-site buildings including, but not limited to, construction, foundation details, instrumentation, ventilation, plumbing and fire suppression systems, and types of intruder barriers; onsite traffic systems; physical security system; survey control program; areas of waste storage. [30 TAC §336.1007(a)(6)].
- 3.1.6 Describe how the facility design and procedures for operation will minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize the generation of low-level radioactive waste. [30 TAC §305.54(f)].
- 3.1.7 Describe the codes and standards which the applicant has applied to the design.

3.2 Design Considerations for Natural Events

- 3.2.1 Describe the design basis natural events or phenomena and their relationship to the principal design criteria.
- 3.2.2 Demonstrate how the design of the NORM waste disposal facility incorporates safeguards against hazards resulting from local meteorological conditions, including phenomena such as hurricanes, tornados, violent storms, and susceptibility to flooding.
- 3.2.3 Demonstrate how the design of the NORM waste disposal facility incorporates safeguards against hazards resulting from seismic phenomena such as earthquakes and earth tremors.

4.0 CONSTRUCTION

4.1 Construction Codes and Standards

Describe the codes and standards which will apply to construction of the NORM waste disposal facility.

4.2 Construction Methods and Features

Describe the proposed design and construction of the NORM waste disposal facility. [30 TAC §336.1007(a)(6)]

4.3 Construction Safety and Equipment

Describe the construction of the NORM waste disposal facility including:

4.3.1 the types of equipment used to construct the facility;

4.3.2 equipment specifications and capabilities; and

4.3.3 storage, maintenance, replacement, and inspection of equipment.

4.4 Construction Environmental Monitoring

4.4.1 Provide plans for the operation of a monitoring program during the NORM waste disposal facility site construction. Measurements and observations shall be made and recorded to provide data to evaluate the potential health and environmental impacts during the construction of the facility and to enable the evaluation of long-term effects and the need for mitigative measures. The monitoring system shall be capable of providing early warning of releases of radionuclides and chemical constituents before they leave the disposal site boundary. [30 TAC §336.1007(a)(12)]

5.0 OPERATION

5.1 Waste Receipt, Inspection, and Acceptance

5.1.1 Provide a projected inventory of radionuclides in the wastes to be disposed and the estimated concentration, specific activity, and total radioactivity by radionuclide.

5.1.2 Describe the estimated frequency and volume of each disposal.

5.1.3 Provide a description of waste packaging and other waste acceptance criteria.

5.1.4 Provide a detailed description of the nonradiological constituents in the waste (e.g., hazardous wastes, metals, adsorbents, acids, and chelating agents), including the chemical and physical characteristics of the waste.

5.1.5 Provide a summary of any past disposals, including inventories of any radiological parameters, and any observed effects. [30 TAC §§336.1007(a)]

5.2 Interim Storage, Processing, and Handling of Waste

- 5.2.1 Describe the storage, processing and waste handling procedures for the NORM waste disposal facility. The description shall include methods and areas of waste storage, the procedures for and areas of waste segregation, and facilities for and methods of processing waste including improperly packaged shipments. The description shall also include the methods to be employed in the handling of wastes.
- 5.2.2 Provide a flow diagram of waste processing and disposal operations and a description and accurate drawings of processing equipment, and any special handling techniques to be employed. [30 TAC § 305.54(e)]

5.3 Waste Disposal

- 5.3.1 Provide a description of the operation of the NORM waste disposal facility. The description shall include procedures for waste disposal. The description shall also include the methods to be employed in the handling and disposal of wastes containing chelating agents or other nonradiological substances that might affect meeting the performance objectives of 30 TAC §336.1011.
- 5.3.2 Provide, for each injection well the volume and rate of disposal of the defined waste, including appropriate averages, the maximum rates of disposal over representative periods of time, and detailed information regarding the patterns of disposal. [30 TAC §305.45(a)(8)(B)(i)]
- 5.3.3 Provide information on the depth of NORM waste disposal and proposed operational and safety procedures for disposal of NORM waste. [30 TAC §336.1007(a)(8)].

5.4 Operations and Safety

- 5.4.1 Provide proposed inspection, maintenance, and emergency procedures. [30 TAC §336.1007(a)(9)].
- 5.4.2 Provide an Operating and Emergency Procedures Manual that describes detailed procedures for receiving, handling, storing, processing, and disposal of waste. Emergency procedures shall include a spill detection and cleanup program for the site and associated transportation of waste. [30 TAC §336.1007(a)(9)].
- 5.4.3 Provide a description of the radiation safety program for control and monitoring of contamination to personnel, vehicles, equipment, buildings, and the disposal site. Both routine operations and accidents shall be addressed. The program description shall include the following:
- (1) administrative procedures;
 - (2) operating procedures;
 - (3) radiation safety program, including procedures for posting restricted areas, procedures for conducting surveys and monitoring, procedures for

respiratory protection, procedures for worker protection and monitoring, and procedures for implementing controls to limit exposure in restricted areas;

- (4) procedures for decontamination of equipment and facilities;
- (5) industrial safety program; and
- (6) quality assurance/quality control procedures. [30 TAC §336.1007(a)(11)].

5.4.4 The radiation safety program should also include procedures for controlling radiation exposure (i.e., administrative limits, radiation work permits, access control, area postings, temporary shielding, etc.); personnel monitoring (i.e., external monitoring, internal monitoring, exposure records, visitor/contractor requirements, etc.); radiological monitoring and surveys (i.e., specifications and quantities of instruments, radioactive source handling, radiation surveys, contamination surveys, etc.); controlling airborne radioactivity; controlling surface contamination; anti-contamination clothing; environmental monitoring; respiratory protection (i.e., respirator fit testing, maintenance and cleaning, issuance, return and control, etc.); and the generation of records and reports. [30 TAC §336.1007(a)(11)].

5.4.5 Provide a radiological impact assessment consisting of modeling of radionuclide releases to site-specific critical exposure pathways and the projection of potential radiological doses to an individual on site and to a member of the public off site. [30 TAC §336.1007(a)(10)].

5.4.6 Provide a description of the administrative procedures that the applicant must apply to control activities at the disposal facility, including hours of proposed operation. [30 TAC §336.1007(a)(11)(A)].

5.4.7 Provide a description of the facility's security plans including information on the applicant's proposed methods of restricting access to the site (e.g., fencing) and proposed permanent site markers. [30 TAC §336.1007(a)(14)].

5.4.8 Provide a description of recordkeeping procedures, including electronic recordkeeping as required in 30 TAC §336.1015 (relating to Maintenance of Records and Reports). [30 TAC §336.1007(a)(15)].

5.4.9 Submit sufficient information to allow the executive director to assess the potential hazard to public health and safety and to determine whether the NORM waste disposal facility will have a significant impact on the environment as required under §336.1011. [30 TAC §336.1007(b)].

5.5 Operational Environmental Monitoring

Provide a description of the radiological monitoring programs, including radioactive and chemical characteristics which will be monitored. The description shall include a plan for taking corrective measures if migration of radionuclides or chemical constituents is indicated. Monitoring data shall be sufficient to evaluate the potential health and environmental impacts during the operation of the facility and to enable the evaluation of long-term effects and the need for mitigative measures. The monitoring system shall be capable of providing early warning of releases of radionuclides and chemical constituents before they leave the disposal site boundary. [30 TAC §336.1007(a)(12)]

6.0 CLOSURE

- 6.1 Provide a decommissioning plan that meets the standards in Subchapter G of 30 TAC Chapter 336 (relating to Decommissioning Standards) including an evaluation of the alternatives to disposing of NORM waste at a licensed NORM waste disposal facility. [30 TAC §336.1007(a)(18)].
- 6.2 Provide a description of the proposed design and construction of the final closed NORM waste disposal facility and of proposed closure procedures. [30 TAC §336.1007(a)(7)].
- 6.3 Describe how the site design features are directed toward long-term isolation and avoidance of the need for continuing active maintenance after site closure so that there is reasonable assurance that the performance objectives of 30 TAC §336.1011 will be met. [30 TAC §336.1011(f)].
- 6.4 Describe how the disposal site design and operation are compatible with the disposal site closure plan and lead to disposal site closure that provides reasonable assurance that the performance objectives of 30 TAC §336.1011 will be met.
- 6.5 Provide cost estimates approved by the executive director for site closure and stabilization of the disposal site including decontamination and dismantlement of disposal facility structures. Cost estimates shall take into account total costs that would be incurred if an independent contractor were hired to perform the closure and stabilization work. [30 TAC §336.1019(b)]
- 6.6 Closure Environmental Monitoring
 - 6.6.1 Provide a description of the long-term environmental monitoring program, including radioactive and chemical characteristics to be monitored. The description shall include a plan for taking corrective measures if migration of radionuclides or chemical constituents would indicate that the performance objectives of 30 TAC §336.1011 may not be met.
 - 6.6.2 Provide a post-operational surveillance monitoring program based on the operating history and the closure and stabilization of the disposal site. The monitoring system shall be capable of providing early warning of releases of radionuclides and chemical constituents before they leave the disposal site boundary.

7.0 PERFORMANCE ASSESSMENT

- 7.1 In meeting the performance objectives in 30 TAC §336.1011 (Performance Objectives), the applicant shall provide the following information:
 - 7.1.1 data used for demonstrating compliance with performance objectives;
 - 7.1.2 how data was collected;
 - 7.1.3 development of conceptual model(s);

- 7.1.4 defining scenarios and pathways;
 - 7.1.5 selection of appropriate mathematical model(s) and code(s);
 - 7.1.6 calibration of the model(s)/code(s) and the data output from execution of the code(s);
 - 7.1.7 sensitivity and uncertainty analyses; and
 - 7.1.8 a determination of site adequacy in meeting the performance objectives.
- 7.2 Demonstrate that the disposal site shall not be located where nearby facilities or activities could adversely impact the ability of the site to meet the performance objectives of 30 TAC §336.1011 or significantly mask the environmental monitoring program. If activities involving radioactive material were previously performed on or near the site, evaluate the contribution of those activities that may impact the ability of the site to meet performance objectives.
- 7.3 Source Term
- 7.3.1 Describe the types, chemical and physical forms, quantities, classification, and specifications of the radioactive material proposed to be received, possessed, processed, and disposed of at the NORM waste disposal facility. Provide sufficient information about the wastes projected to be disposed of at the disposal site to allow for defensible modeling of potential radiological impacts associated with waste disposal. This description shall include any prior disposal containing radioactive material at the site. This description shall include performance criteria for form and packaging of the waste or radioactive material that has been previously received and will be received. [30 TAC §305.45(a)(8)(B)(ii)] & [30 TAC §336.1007(a)(1)].
 - 7.3.2 Describe the waste anticipated to be generated during closure operations. The information should be sufficient to enable an independent staff assessment of potential closure costs and impacts. The waste description should thus provide information similar to that discussed in item 7.3.1 above.
- 7.4 Operations Under Normal And Accident Conditions
- 7.4.1 Demonstrate that operations at the NORM waste disposal facility shall be conducted in compliance with the standards for radiation protection set out in 30 TAC 336 Subchapter D (relating to Standards for Protection Against Radiation). [30 TAC §336.1011(c)].
 - 7.4.2 Provide analyses of the protection of individuals during operations including assessments of expected exposures due to routine operations and potential accidents during handling, processing, storage, and disposal of waste. [30 TAC §336.1011(c)].
 - 7.4.3 Demonstrate that concentrations of radioactive material which may be released to the general environment in groundwater, surface water, air, soil, plants, or animals shall not result in an annual dose above background exceeding an equivalent of 25 millirems to the whole body, 75 millirems to the thyroid, or 25 millirems to any other organ of a member of the public. Provide methods to help ensure that

releases of radioactivity in effluents to the general environment will be maintained as low as is reasonably achievable (ALARA). [30 TAC §336.1011(b)].

- 7.4.4 Pathways analyzed in demonstrating protection of the general population from releases of radioactivity including air, soil, groundwater, surface water, plant uptake, and exhumation by animals shall clearly identify and differentiate between the roles performed by the natural disposal site characteristics and design features in isolating and segregating the wastes. [30 TAC §336.1011(e)].
- 7.4.5 Provide information regarding the types, significance, and magnitudes of releases of radioactivity associated with accidents or unusual operational conditions. The information should be sufficient to enable independent analysis of projected radiological impacts to any individual. [30 TAC §336.1011(c)].
- 7.4.6 Demonstrate that the location and characteristics of a NORM waste disposal facility will preclude potential off-site migration or transport of radioactive materials or ready access to critical exposure pathways. [30 TAC §336.1011(d)].
- 7.4.7 Demonstrate that the NORM waste disposal facility will be located, designed, constructed, operated, and closed so that long-term isolation and custodial care for long-term stability will not be required beyond the time the licensee occupies the NORM waste disposal facility. [30 TAC §336.1011(f)].
- 7.4.8 Demonstrate that the location of the NORM waste disposal facility is compatible with the uses of surrounding environs (both the applicant's and adjacent properties). [30 TAC §336.1009(5)].

8.0 PERSONNEL

Provide the following information concerning personnel qualifications:

- 8.1 Organizational structure of the applicant, both offsite and onsite, including a description of lines of authority and assignments of responsibilities, whether in the form of administrative directives, contract provisions, or otherwise. [30 TAC §336.1007(a)(13)].
- 8.2 Technical qualifications, including training and experience, of the applicant and members of the applicant's staff to engage in the proposed activities. Minimum training and experience requirements for personnel filling on-site management and key operations positions shall be provided. [30 TAC §336.1009(1)].
- 8.3 Description of the applicant's personnel training program.
- 8.4 Plans to maintain an adequate complement of trained personnel to carry out waste receipt, handling, and disposal operations in a safe manner. Those plans should include provisions for operating the facility in the event of unavailability of any contracted services or equipment.

9.0 LIABILITY COVERAGE AND FINANCIAL ASSURANCE

- 9.1 Provide assurance 60 days prior to the initial receipt of waste that sufficient funds will be available to carry out closure and stabilization of the NORM waste disposal facility, including:
 - 9.1.1 decontamination or dismantlement of NORM waste disposal facility structures;
 - 9.1.2 disposal of any radioactive material remaining at the NORM waste disposal facility at closure; and
 - 9.1.3 closure and stabilization of the NORM waste disposal facility so that the site may be released for unrestricted use.
- 9.2 The assurance must be based on cost estimates approved by the executive director that reflect the approved plan for closure and stabilization of the NORM waste disposal facility. The applicant's cost estimates must take into account total costs that would be incurred if an independent contractor were hired to perform the closure and stabilization work.
- 9.3 Financial assurance mechanisms submitted to comply with subsection 9.1 of this section must meet the requirements specified in Chapter 37, Subchapter S of this title (relating to Financial Assurance for Radioactive Material). The licensee's financial assurance mechanism and cost estimates must be reviewed by the executive director annually to assure that sufficient funds are available for completion of the closure plan, assuming that the work has to be performed by an independent contractor.
- 9.4 The amount of financial assurance must be adjusted as required to meet the predicted cost of future closure and stabilization. Factors affecting cost estimates for closure and stabilization include inflation, increases in the amount of disturbed land, changes in engineering plans, closure and stabilization that have already been accomplished, and any other conditions affecting costs. The closure amount must be at least sufficient at all times to cover the costs of closure of the NORM waste disposal facility.
- 9.5 Sixty days prior to the initial receipt of NORM waste, the licensee shall establish and maintain financial assurance for liability coverage for sudden and nonsudden bodily injury and property damage to third parties caused by accidental occurrences arising from operations of the NORM waste disposal facility that meets the requirements of this subsection, in addition to the requirements specified under Chapter 37, Subchapters A, E, F, and G of this title (relating to General Financial Assurance Requirements; Financial Assurance Requirements for Liability Coverage; Financial Assurance Mechanisms for Liability; and Wording of the Mechanisms for Liability, respectively).
 - 9.5.1 A licensee shall establish and maintain liability coverage for sudden accidental occurrences in the amount of at least \$1 million per occurrence with an annual aggregate of at least \$2 million, exclusive of legal defense costs.
 - 9.5.2 A licensee shall establish and maintain liability coverage for nonsudden accidental occurrences in the amount of at least \$3 million per occurrence with an annual aggregate of at least \$6 million, exclusive of legal defense costs.
 - 9.5.3 A licensee who combines coverage for sudden and nonsudden accidental occurrences shall maintain liability coverage in the amount of at least \$4 million per occurrence and \$8 million annual aggregate.

- 9.5.4 A licensee may use any of the mechanisms specified in Chapter 37, Subchapter F of this title to demonstrate financial assurance for sudden and nonsudden liability.
- 9.5.5 A licensee may not use a claims-made insurance policy as security unless the licensee places in escrow, as provided by the executive director, an amount sufficient to pay an additional year of premium for renewal of the policy by the state on notice of termination of coverage.