

TITLE 180 CONTROL OF RADIATION

CHAPTER 12 LICENSING REQUIREMENTS FOR MANAGEMENT OF RADIOACTIVE
WASTE

GENERAL PROVISIONS

12-001	Scope and Authority	1
12-002	Definitions	1
12-003	Exemptions	2
12-004	License Required.....	2
12-005	Term	2
12-006	Content of Application.....	2
12-007	General Information	2
12-008	Specific Technical Information.....	3
12-009	Technical Analyses.....	4
12-010	Institutional Information.....	5
12-011	Financial Information	5
12-012	Requirements for Issuance of a License	5
12-013	Conditions of License	6
12-014	Changes	7
12-015	Amendment of License	7
12-016	Application for Renewal or Closure	7
12-017	Contents of Application for Site Closure and Stabilization	8
12-018	Post-Closure Observation and Maintenance	8
12-019	Transfer of License	8
12-020	Termination of License	9

PERFORMANCE OBJECTIVES

12-021	General Requirement	9
12-022	Protection of the General Population From Release of Radioactivity	9
12-023	Protection of Individuals From Inadvertent Intrusion	9
12-024	Protections of Individuals During Operations.....	10
12-025	Stability of the Management Site After Closure	10

TECHNICAL REQUIREMENTS FOR MANAGEMENT FACILITIES

12-026	Management Site Suitability Requirements.....	10
12-027	Management Site Design	11
12-028	Management Facility Operation and Management Site Closure	11
12-029	Environmental Monitoring	12
12-030	Alternative Requirements for Design and Operation	12
12-031	Institutional Requirements	12
12-032	Reserved	13

FINANCIAL ASSURANCES

12-033	Applicant Qualification and Assurances	13
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EFFECTIVE DATE NEBRASKA HEALTH AND HUMAN SERVICES
JULY 12, 2001 REGULATION AND LICENSURE 180 NAC 12

12-034 Funding for Management site Closure and Stabilization 14
12-035 Financial Assurances for Institutional Controls..... 14

RECORDS, REPORTS, TESTS, AND INSPECTION

12-036 Maintenance of Records Reports and Transfers 14
12-037 Tests on Management Facilities 16
12-038 Agency Inspections and Management Facilities..... 16

NOTE: Attachments are currently not available electronically in this file.

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NEBRASKA HEALTH AND HUMAN SERVICES
REGULATION AND LICENSURE

180 NAC 12

TITLE 180 CONTROL OF RADIATION

CHAPTER 12 LICENSING REQUIREMENTS FOR MANAGEMENT OF RADIOACTIVE WASTE
GENERAL PROVISIONS

12-001 SCOPE AND AUTHORITY

12-001.01 180 NAC 12 establishes procedures, criteria, and terms and conditions upon which the Agency issues licenses for the management of wastes received from other persons. Applicability of the requirements in 180 NAC 12 to Agency licenses for waste management facilities in effect on the effective date of this regulation will be determined on a case-by-case basis and implemented through terms and conditions of the license or by orders issued by the Agency. The regulations are authorized by and implement the Nebraska Radiation Control Act, Neb. Stat. Rev. sections 71-3501 to 3519.

12-001.02 180 NAC 12 establishes procedural requirements and performance objectives applicable to any method of waste management. It establishes specific technical requirements for management of radioactive waste which involves disposal above ground of the earth.

12-001.03 The requirements of 180 NAC 12 are in addition to, and not in substitution for requirements in 180 NAC 1, 3, 4, 10, 13, 15, 17 and 18.

12-002 DEFINITIONS: As used in 180 NAC 12.

Active maintenance means any significant activity needed during the period of institutional control to maintain a reasonable assurance that the performance objectives in 180 NAC 12-021 and 12-022 are met. Such active maintenance includes ongoing activities such as the pumping and treatment of water from a disposal unit or one-time measures such as replacement of a disposal unit cover. Active maintenance does not include custodial activities such as repair of fencing, repair or replacement of monitoring equipment, revegetation, minor additions to soil cover, minor repair of disposal unit covers, and general management site upkeep such as mowing grass.

Buffer zone means a portion of the management site that is controlled by the licensee and that lies under the disposal units and between the disposal units and the boundary of the site.

Commencement of construction means any clearing of land, excavation, or other substantial action that would adversely affect the environment of a management facility. The term does not mean disposal site exploration, necessary roads for disposal site exploration, borings to determine foundation conditions, or other preconstruction monitoring or testing to establish background

information related to the suitability of the management site or the protection of environmental values.

Custodial agency means an agency of the government designated to act on behalf of the government owner of the management site.

Custodial care means the continued observation, monitoring, and care of a management facility for a minimum of one hundred years following transfer of ownership of the management facility from the operator to the Agency.

Disposal means the permanent isolation of radioactive wastes from the biosphere inhabited by man and his food chain by emplacement in a management facility.

Disposal facility means a management facility in which radioactive waste is disposed of in a structure above the earth's surface.

Disposal site means that portion of a disposal facility which is used for disposal of waste. It consists of disposal units and a buffer zone.

Disposal unit means a discrete portion of the management site into which waste is placed for disposal. For surface disposal, the unit is usually a permanent structure above ground.

Engineered barrier means a man-made structure or device that is intended to improve the management facility's ability to meet the performance objectives in 180 NAC 12.

Hydrogeologic unit means any soil or rock unit or zone which by virtue of its porosity or permeability, or lack thereof, has a distinct influence on the storage or movement of groundwater.

Inadvertent intruder means a person who might occupy the management site after closure and engage in normal activities, such as agriculture, dwelling construction, or other pursuits in which an individual might be unknowingly exposed to radiation from the waste.

Institutional control means the institutional control program to physically control access to the disposal site. The institutional control program shall also mean, but not be limited to, custodial care and other requirements as determined by the Agency.

Intruder barrier means a sufficient cover over the waste that inhibits contact with waste and helps to ensure that radiation exposures to an inadvertent intruder will meet the performance objectives set forth in 180 NAC 12 or engineered structures that provide equivalent protection to the inadvertent intruder.

Management facility means the land, buildings, and equipment which is intended to be used for the management of radioactive wastes. A near-surface disposal facility would be a type of management facility.

Monitoring in addition to the definition of monitoring in 180 NAC 1-002. Monitoring means observing and making measurements to provide data to evaluate the performance and characteristics of the management site.

Near-surface disposal facility means a facility built above grade, provided with a protective earthen cover, used for disposal of waste.

Site closure and stabilization means those actions that are taken upon completion of operations that prepare the management site for custodial care and that assure that the management site will remain stable and will not need ongoing active maintenance.

Stability means structural stability.

Surveillance means monitoring and observation of the management site for purposes of vital detection of need for maintenance, custodial care, evidence of intrusion, and compliance with other license and regulatory requirements.

12-003 EXEMPTIONS: 180 NAC 12 does not apply to disposal of byproduct material as defined in 180 NAC 1-002 in quantities greater than 10,000 kilograms containing more than 185 MBq (5 millicuries) of radium-226 or disposal of radioactive material as provided for in 180 NAC 4.

12-004 LICENSE REQUIRED

12-004.01 No person may receive, possess, and dispose of waste received from other persons at a management facility unless authorized by a license issued by the Agency pursuant to 180 NAC 3 and 12.

12-004.02 Each person shall file an application with the Agency pursuant to 180 NAC 3-010 and obtain a license as provided in 180 NAC 12 before commencement of construction of a management facility. Failure to comply with this requirement may be grounds for denial of a license.

12-005 TERM: Licenses shall be issued for a period of thirty (30) years subject to review every five (5) years.

12-006 CONTENT OF APPLICATION: In addition to the requirements set forth in 180 NAC 3-011, an application to receive from others, possess, and dispose of wastes shall consist of general information, specific technical information, institutional information, and financial information as set forth in 180 NAC 12-007 through 12-011.

12-007 GENERAL INFORMATION: The general information shall include each of the following:

12-007.01 Identity of the applicant including:

1. The full name, address, telephone number, and description of the business or occupation of the applicant;
2. If the applicant is a partnership, the name and address of each partner and the principal location where the partnership does business;
3. If the applicant is a corporation or an unincorporated association:
 - a. The state where it is incorporated or organized and the principal location where it does business, and
 - b. The names and addresses of its directors and principal officers; and
4. If the applicant is acting as an agent or representative of another person in filing the application, all information required under 180 NAC 12-007.01 must be supplied with respect to the other person.

12-007.02 Qualifications of the applicant:

1. The 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;
2. The 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 key positions described in 180 NAC 12-007.02, item 1 must be provided, and meet the requirements of 180 NAC 15-032.
3. A description of the applicant's personnel training program; and

4. The plan to maintain an adequate complement of trained personnel to carry out waste receipt, handling, and management operations in a safe manner.

12-007.03 A description of:

1. The location of the proposed management site;
2. The general character of the proposed activities;
3. The types and quantities of waste to be received, possessed, and disposed of;
4. Plans for use of the management facility for purposes other than management of radioactive wastes; and
5. The proposed facilities and equipment.

12-007.04 Proposed schedules for construction, receipt of waste, and first emplacement of waste at the proposed management facility.

12-008 SPECIFIC TECHNICAL INFORMATION: The specific technical information shall include the following information needed for demonstration that the performance objectives and the applicable technical requirements of 180 NAC 12 will be met:

12-008.01 A description of the natural and demographic disposal site characteristics as determined by management site selection and characterization activities. The description shall include geologic, geochemical, geotechnical, hydrologic, ecologic, archaeologic, meteorologic, climatologic, and biotic features of the management site and vicinity.

12-008.02 A description of the design features of the management facility and the disposal units. For surface disposal, the description shall include those design features related to infiltration of water; integrity of covers for disposal units; structural stability of backfill, wastes, and covers; contact of wastes with standing water; management site drainage; management site closure and stabilization; elimination to the extent practicable of long-term management site maintenance; inadvertent intrusion; occupational exposures; management site monitoring; and adequacy of the size of the buffer zone for monitoring and potential mitigative measures.

12-008.03 A description of the principal design criteria and their relationship to the performance objectives.

12-008.04 A description of the design basis natural events or phenomena and their relationship to the principal design criteria.

12-008.05 A description of codes and standards which the applicant has applied to the design and which will apply to construction of the land management facilities.

12-008.06 A description of the construction and operation of the management facility. The description shall include as a minimum the methods of construction of disposal units; waste emplacement; the procedures for and areas of waste segregation; types of intruder barriers; onsite traffic and drainage systems; survey control program; methods and areas of waste storage; and methods to control surface water access to the wastes. The description shall also include a description of the methods to be employed in the handling and management of wastes containing chelating agents or other non-radiological substances that might affect meeting the performance objectives of 180 NAC 12.

12-008.07 A description of the management site closure plan, including those design features which are intended to facilitate management site closure and to eliminate the need for ongoing active maintenance.

12-008.08 An identification of the known natural resources at the management site, whose exploitation could result in inadvertent intrusion into the low-level wastes after removal of active institutional control.

12-008.09 A description of the kind, amount, classification and specifications of the radioactive material proposed to be received, possessed, and disposed of at the management facility.

12-008.10 A description of the quality assurance program, tailored to low level waste disposal, developed and applied by the applicant for the determination of natural disposal site characteristics and for quality assurance during the design, construction, operation, and closure of the management facility and the receipt, handling, and emplacement of waste.

12-008.11 A description of the radiation safety program for control and monitoring of radioactive effluents to ensure compliance with the performance objective in 180 NAC 12-022 and occupational radiation exposure to ensure compliance with the requirements of 180 NAC 4 and to control contamination of personnel, vehicles, equipment, buildings, and the management site. Both routine operations and accidents shall be addressed. The program description must include procedures, instrumentation, facilities, and equipment.

12-008.12 A description of the environmental monitoring program to provide data to evaluate potential health and environmental impacts and the plan for taking corrective measures if migration of radionuclides is indicated.

12-008.13 A description of the administrative procedures that the applicant will apply to control activities at the management facility.

12-008.14 A description of the facility electronic recordkeeping system as required in 180 NAC12-036.

12-009 TECHNICAL ANALYSES: The specific technical information shall also include the following analyses needed to demonstrate that the performance objectives of 180 NAC 12 will be met:

12-009.01 Pathways analyzed in demonstrating protection of the general population from releases of radioactivity shall include air, soil, groundwater, surface water, plant uptake, and exhumation by burrowing animals. The analyses shall clearly identify and differentiate between the roles performed by the natural disposal site characteristics and design features in isolating and segregating the wastes. The analyses shall clearly demonstrate that there is reasonable assurance that the exposures to humans from the release of radioactivity will not exceed the limits set forth in 180 NAC 12-022.

12-009.02 Analyses of the protection of individuals from inadvertent intrusion shall include demonstration that there is reasonable assurance the waste classification and segregation requirements will be met and that adequate barriers to inadvertent intrusion will be provided.

12-009.03 Analyses of the protection of individuals during operations shall include assessments of expected exposures due to routine operations and likely accidents during handling, storage, and management of waste. The analyses shall provide reasonable assurance that exposures will be controlled to meet the requirements of 180 NAC 4.

12-009.04 Analyses of the long-term stability of the management site and the need for ongoing active maintenance after closure shall be based upon analyses of active natural processes such as erosion, mass wasting, slope failure, settlement of wastes and backfill, container or building defects, infiltration through covers over management areas, adjacent soils, and surface drainage of the management site. The analyses shall provide reasonable

assurance that there will not be a need for ongoing active maintenance of the management site following closure.

12-010 INSTITUTIONAL INFORMATION: The institutional information submitted by the applicant shall include.

12-010.01 A certification by the Federal or State government which owns the management site that the Federal or State government is prepared to accept transfer of the license when the provisions of 180 NAC 12-019 are met and will assume responsibility for custodial care after site closure and post-closure observation and maintenance.

12-010.02 Where the proposed management site is on land not owned by the Federal or a State government, the applicant shall submit evidence that arrangements have been made for assumption of ownership in fee by the Federal or a State agency before the Agency issues a license.

12-011 FINANCIAL INFORMATION: The financial information shall be sufficient to demonstrate that the financial qualifications of the applicant are adequate to carry out the activities for which the license is sought and meet other financial assurance requirements of 180 NAC 12.

12-012 REQUIREMENTS FOR ISSUANCE OF A LICENSE: A license for the receipt, possession, and management of waste containing or contaminated with radioactive material will be issued by the Agency upon finding that:

1. The application is complete.
2. The issuance of the license will not constitute an unreasonable risk to the health and safety of the public;
3. The applicant is qualified by reason of training and experience to carry out the management operations requested in a manner that protects health and minimizes danger to life or property;
4. The applicant's proposed management site, management design, management facility operations, including equipment, facilities, and procedures, management site closure, and post-closure institutional control are adequate to protect the public health and safety in that they provide reasonable assurance that the general population will be protected from releases of radioactivity as specified in the performance objective in 180 NAC 12-022;
5. The applicant's proposed management site, management site design, management facility operations, including equipment, facilities, and procedures, management disposal site closure, and post-closure institutional control are adequate to protect the public health and safety in that they will provide reasonable assurance that individual inadvertent intruders are protected in accordance with the performance objective in 180 NAC 12-023;
6. The applicant's proposed management facility operations, including equipment, facilities, and procedures, are adequate to protect the public health and safety in that they will provide reasonable assurance that the standards for radiation protection set out in 180 NAC 4 will be met;
7. The applicant's proposed management site, management site design, management facility operations, management site closure, and post-closure institutional control are adequate to protect the public health and safety in that they will provide reasonable assurance that long-term stability of the disposed waste and the management site will

be achieved and will eliminate to the extent practicable the need for ongoing active maintenance of the management site following closure;

8. The applicant's demonstration provides reasonable assurance that the applicable technical requirements of 180 NAC 12 will be met;
9. The applicant's proposal for institutional control provides reasonable assurance that such control will be provided for the length of time found necessary to ensure the findings in 180 NAC 12-012 items 4 through 7. and that the institutional control meets the requirements of 180 NAC 12-031; and
10. The financial or surety arrangements meet the requirements of 180 NAC 12.
11. The requirements of 10 CFR Chapter I, Part 51, Subpart A, Section 51.20(b) (11) and (12) and Appendix A, attached hereto as Attachment Number 12-1 and incorporated herein by this reference have been met.
12. Any additional information submitted, as requested by the Agency, is adequate.

12-013 CONDITIONS OF LICENSE

12-013.01 A license issued under 180 NAC 12, or any right thereunder, may be transferred, assigned, or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of the license to any person, only if the Agency finds, after securing full information, that the transfer is in accordance with Title 180 and the Act and gives its consent in writing in the form of a license amendment.

12-013.02 The licensee shall submit written statements under oath upon request of the Agency, at any time before termination of the license, to enable the Agency to determine whether the license should be modified, suspended, or revoked.

12.-013.03 The license will be terminated only on the full implementation of the final closure plan as approved by the Agency, including post-closure observation and maintenance.

12-013.04 The licensee shall be subject to the provisions of the Act now or hereafter in effect, and to all rules, regulations, and orders of the Agency. The terms and conditions of the license are subject to amendment, revision, or modification, by reason of amendments to, or by reason of rules, regulations, and orders issued in accordance with the terms of Title 180 and the Act.

12-013.05 Each person licensed by the Agency pursuant to 180 NAC 12 shall confine possession and use of materials to the locations and purposes authorized in the license.

12-013.06 The licensee shall not dispose of waste until the Agency has inspected the management facility and has found it to be in conformance with the description, design, and construction described in the application for a license.

12-013.07 The Agency may incorporate in any license at the time of issuance, or thereafter, by appropriate rule, regulation or order, additional requirements and conditions with respect to the licensee's receipt, possession, and management of waste as it deems appropriate or necessary in order to:

1. Protect health or to minimize danger to life or property;
2. Require reports and the keeping of records, and to provide for inspections of activities under the license that may be necessary or appropriate to effectuate the purposes of the Act and regulations thereunder.

12-013.08 The authority to dispose of wastes expires on the date stated in the license. Any expiration date on a license applies only to the above ground activities and to the authority to management of waste. Failure to renew the license shall not relieve the licensee of responsibility for implementing site closure, post-closure observation, and transfer of the license to the site owner.

12-013.09 Each licensee shall notify the Agency in writing immediately following the filing of a voluntary or involuntary petition for bankruptcy under any Chapter of Title II (Bankruptcy) of the United States Code by or against:

1. The licensee;
2. An entity (as that term is defined in 11 U.S.C. 101 (14) Attachment Number 12-2 herein) controlling the licensee or listing the license or licensee as property of the estate; or
3. An affiliate (as that term is defined in 11 U.S.C. 101 (2) Attachment Number 12-2 herein) of the licensee.
4. This notification must indicate:
 - a. The bankruptcy court in which the petition for bankruptcy was filed; and
 - b. The date of the filing of the petition.

12-014 CHANGES

12-014.01 Except as provided for in specific license conditions, the licensee shall not make changes in the management facility or procedures described in the license application. The license will include conditions restricting subsequent changes to the facility and procedures authorized which are important to the public health and safety. These license restrictions will fall into three categories of descending importance to public health and safety as follows:

1. Those features and procedures which may not be changed without:
 - a. 60 days prior notice to the Agency;
 - b. 30 days prior notice of opportunity for a prior hearing; and
 - c. Prior Agency approval.
2. Those features and procedures which may not be changed without:
 - a. 60 days prior notice to the Agency; and
 - b. Prior Agency approval; and
3. Those features and procedures which may not be changed without 60 days prior notice to the Agency. Features and procedures falling in 180 NAC 12-014.01, item 3 may not be changed without prior Agency approval if the Agency, after having received the required notice, so orders.

12-014.02 Amendments authorizing site closure, license transfer or license termination shall be included in 180 NAC 12-014.01, item 1 .

12-015 AMENDMENT OF LICENSE

12-015.01 An application for amendment of a license shall be filed in accordance with 180 NAC 3-021.

12-016 APPLICATION FOR RENEWAL OR CLOSURE

12-016.01 An application for renewal or an application for closure under 180 NAC 12-017 must be filed at least 90 days prior to license expiration. Failure to renew the license shall

not relieve the licensee of responsibility for implementing site closure, post closure observation, and transfer of the license to the site owner.

12-016.02 Applications for renewal of a license must be filed in accordance with 180 NAC 12-006 through 12-011. Applications for closure must be filed in accordance with 180 NAC 12-017. Information contained in previous applications, statements, or reports filed with the Agency under the license may be incorporated by reference if the references are clear and specific.

12-016.03 In any case in which a licensee has timely filed an application in proper form for renewal of a license, the license does not expire until the Agency has taken final action on the application for renewal.

12-016.04 In determining whether a license will be renewed, the Agency will apply the criteria set forth in 180 NAC 12-012.

12-017 CONTENTS OF APPLICATION FOR SITE CLOSURE AND STABILIZATION

12-017.01 Prior to final closure of the management site, or as otherwise directed by the Agency, the applicant shall submit an application to amend the license for closure. This closure application shall include a final revision and specific details of the management site closure plan included as part of the license application submitted under 180 NAC 12-008.07 that includes each of the following:

1. Any additional geologic, hydrologic, or other data pertinent to the long-term containment of emplaced radioactive wastes obtained during the operational period.
2. The results of tests, experiments, or other analyses relating to closure and sealing, waste migration and interaction with emplacement media, or any other tests, experiments, or analysis pertinent to long-term containment of emplaced waste within the management site.
3. Any proposed revision of plans for:
 - a. Decontamination and/or dismantlement of surface facilities;
 - b. Backfilling of excavated areas; or
 - c. Stabilization of the management site for post-closure care.
4. Any significant new information regarding the environmental impact of closure activities and long-term performance of the management site.

12-017.02 Upon review and consideration of an application to amend the license for closure submitted in accordance with 180 NAC 12-017.01, the Agency shall issue an amendment authorizing closure if there is reasonable assurance that the long-term performance objectives of 180 NAC 12 will be met.

12-018 POST-CLOSURE OBSERVATION AND MAINTENANCE: The licensee shall observe, monitor, and carry out necessary maintenance and repairs at the management site until the site closure is complete and the license is transferred by the Agency in accordance with 180 NAC 12-019. Responsibility for the management site must be maintained by the licensee for 5 years. A shorter or longer time period for post-closure observation and maintenance may be established and approved as part of the site closure plan, based on site-specific conditions.

12-019 TRANSFER OF LICENSE: Following closure and the period of post-closure observation and maintenance, the licensee may apply for an amendment to transfer the license to the management site owner. The license shall be transferred when the Agency finds:

1. That the closure of the management site has been made in conformance with the licensee's management site closure plan, as amended and approved as part of the license;
2. That reasonable assurance has been provided by the licensee that the performance objectives of 180 NAC 12 are met;
3. That any funds for care and records required by 180 NAC 12-036.04 and 12-036.05 have been transferred to the management site owner;
4. That the post-closure monitoring program is operational for implementation by the management site owner; and
5. That the Federal or State agency which will assume responsibility for institutional control of the management site is prepared to assume responsibility and ensure that the institutional requirements found necessary under 180 NAC 12-012 item 9. will be met.

12-020 TERMINATION OF LICENSE

12-020.01 Following any period of institutional control needed to meet the requirements found necessary under 180 NAC 12-012, the licensee may apply for an amendment to terminate the license.

12-020.02 This application will be reviewed in accordance with the provisions of 180 NAC 3-010.

12-020.03 A license shall be terminated only when the Agency finds:

1. That the institutional control requirements found necessary under 180 NAC 12-012.09 have been met;
2. That any additional requirements resulting from new information developed during the institutional control period have been met; and
3. That permanent monuments or markers warning against intrusion have been installed.
4. That any funds for care and records required by 180 NAC 12-036.04 and 12-036.05 have been transferred to the management site owner.

PERFORMANCE OBJECTIVES

12-021 GENERAL REQUIREMENT: Management facilities shall be sited, designed, operated, closed, and controlled after closure so that reasonable assurance exists that exposures to individuals are within the requirements established in the performance objectives in 180 NAC 12-022 through 12-025. 180 NAC 12-022 applies only to a near-surface land disposal facility.

12-022 PROTECTION OF THE GENERAL POPULATION FROM RELEASE OF RADIOACTIVITY:

Concentrations of radioactive material which may be released to the general environment in ground water, surface water, air, soil, plants, or animals shall not result in an annual dose exceeding an equivalent of 0.25 mSv (25 millirems) to the whole body, 0.75 mSv (75 millirems) to the thyroid, and 0.25 mSv (25 millirems) to any other organ of any member of the public. Reasonable effort should be made to maintain releases of radioactivity in effluents to the general environment as low as is reasonably achievable.

12-023 PROTECTION OF INDIVIDUALS FROM INADVERTENT INTRUSION: Design, operation, and closure of the management facility shall ensure protection of any individual inadvertently intruding into the management site and occupying the site or contacting the waste at any time after active institutional controls over the management site are removed.

12-024 PROTECTION OF INDIVIDUALS DURING OPERATIONS: Operations at the management facility shall be conducted in compliance with the standards for radiation protection set out in 180 NAC 4, except for releases of radioactivity in effluents from the management facility, which shall be governed by 180 NAC 12-022. Every reasonable effort should be made to maintain radiation exposures as low as is reasonably achievable.

12-025 STABILITY OF THE MANAGEMENT SITE AFTER CLOSURE: The management facility shall be sited, designed, used, operated, and closed to achieve long-term stability of the management site and to eliminate, to the extent practicable, the need for ongoing active maintenance of the management site following closure so that only surveillance, monitoring, or minor custodial care are required.

TECHNICAL REQUIREMENTS FOR MANAGEMENT FACILITIES

12-026 MANAGEMENT SITE SUITABILITY REQUIREMENTS

12-026.01 Management Site Suitability for Disposal. The primary emphasis in management site suitability is given to isolation of wastes and to management site features that ensure that the long-term performance objectives are met.

1. The management site shall be capable of being characterized, modeled, analyzed and monitored.
2. Within the region where the facility is to be located, a management site should be selected so that projected population growth and future developments are not likely to affect the ability of the management facility to meet the performance objectives of 180 NAC 12.
3. Areas shall be avoided having known natural resources which, if exploited, would result in failure to meet the performance objectives of 180 NAC 12.
4. The management site shall be generally well drained and free of areas of flooding or frequent ponding. Waste management shall not take place in a 100-year flood plain, meaning that area subject to a one percent or greater chance of flooding in any given year.
5. Upstream drainage areas shall be minimized to decrease the amount of runoff which could erode or inundate waste disposal units.
6. The hydrogeologic unit used for disposal shall not discharge ground water to the surface within the management site.
7. Areas shall be avoided where tectonic processes such as faulting, folding, seismic activity, or vulcanism may occur with such frequency and extent to significantly affect the ability of the management site to meet the performance objectives of 180 NAC 12, or may preclude defensible modeling and prediction of long-term impacts.
8. Areas shall be avoided 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 management site to meet the performance objectives of 180 NAC 12, or may preclude defensible modeling and prediction of long-term impact.
9. The management site must not be located where nearby facilities or activities could adversely impact the ability of the site to meet the performance objectives of 180 NAC 12 or significantly mask the environmental monitoring program.

12-026.02 Reserved

12-027 MANAGEMENT SITE DESIGN

12-027.01 Disposal Site Design

1. Site design features shall be directed toward long-term isolation and avoidance of the need for continuing active maintenance after site closure.
2. The management site design and operation shall be compatible with the management site closure and stabilization plan and lead to management site closure that provides reasonable assurance that the performance objectives will be met.
3. The management site shall be designed to complement and improve, where appropriate, the ability of the management site's natural characteristics to assure that the performance objectives will be met.
4. Covers shall be designed to minimize to the extent water infiltration, to direct percolating or surface water away from the disposed waste, and to resist degradation by surface geologic processes and biotic activity.
5. Surface features shall direct surface water drainage away from disposal units at velocities and gradients which will not result in erosion that will require ongoing active maintenance in the future.
6. The management site shall be designed to minimize to the extent practicable the contact of water with waste during storage, the contact of standing water with waste during management and the contact of percolating or standing water with wastes after disposal.

12-027.02 Reserved

12-028 MANAGEMENT FACILITY OPERATION AND MANAGEMENT SITE CLOSURE

12-028.01 Disposal Facility Operation and Management Site Closure

1. Wastes designated as Class A pursuant to Appendix 4-E of 180 NAC 4 shall be segregated from other wastes by placing in disposal units which are sufficiently separated from disposal units for the other waste classes so that any interaction between Class A wastes and other wastes will not result in the failure to meet the performance objectives of 180 NAC 12. This segregation is not necessary for Class A wastes if they meet the stability requirements in Appendix 4-E of 180 NAC 4.
2. Wastes designated as Class C pursuant to Appendix 4-E of 180 NAC 4 shall be disposed of with intruder barriers that are designed to protect against an inadvertent intrusion for at least 500 years.
3. Except as provided in 180 NAC 12-028.01, item 11, only waste classified as Class A, B, C shall be acceptable for disposal. All waste shall be disposed of in accordance with requirements of 180 NAC 12-028.01, item 4 through 10.
4. Wastes shall be emplaced in a manner that maintains the package integrity during emplacement, minimizes the void spaces between packages, and permits the void spaces to be filled.
5. Waste shall be placed and covered in a manner that limits the radiation dose rate at the surface of the cover to levels that at a minimum will permit the licensee to comply with all provisions of 180 NAC 4-014 at the time the license is transferred pursuant to 180 NAC 12-019.
6. The boundaries and locations of each disposal unit shall be accurately located and mapped by means of a land survey. Disposal units shall be marked in such a way that the boundaries of each unit can be easily defined. Three permanent survey marker control points, referenced to United States Geological Survey (USGS) or National Geodetic Survey (NGS) survey control stations, shall be established on the site to facilitate surveys. The USGS or NGS control stations

shall provide horizontal and vertical controls as checked against USGS or NGS record files.

7. A buffer zone of land shall be maintained between any waste and the management site boundary and beneath the disposed waste. The buffer zone shall be of adequate dimensions to carry out environmental monitoring activities specified in 180 NAC 12-029.04 and take mitigative measures if needed.
8. Closure and stabilization measures as set forth in the approved site closure plan shall be carried out as each disposal unit is filled.
9. Active waste management operations shall not have an adverse effect on completed closure and stabilization measures.
10. Only wastes containing or contaminated with radioactive material shall be disposed of at the management site.
11. Proposals for management of waste that is not generally acceptable for disposal because the waste form and disposal methods must be different and, in general, more stringent than those specified for Class C waste, may be submitted to the Agency for approval.

12-028.02 Reserved

12-029 ENVIRONMENTAL MONITORING:

12-029.01 At the time a license application is submitted, the applicant shall have conducted a preoperational monitoring program to provide basic environmental data on the management site characteristics. The applicant shall obtain information about the ecology, meteorology, climate, hydrology, geology, geochemistry, and seismology of the management site. For those characteristics that are subject to seasonal variation, data must cover at least a 12-month period.

12-029.02 During the management facility site construction and operation, the licensee shall maintain an environmental monitoring program. Measurements and observations must be made and recorded to provide data to evaluate the potential health and environmental impacts during both the construction and the operation of the facility and to enable the evaluation of long-term effects and the need for mitigative measures. The monitoring system must be capable of providing early warning of releases of waste from the management site before they leave the site boundary.

12-029.03 After the management site is closed, the licensee responsible for post-operational surveillance of the management site shall maintain a monitoring system based on the operating history and the closure and stabilization of the management site. The monitoring system must be capable of providing early warning of releases of waste from the management site before they leave the site boundary.

12-029.04 The licensee shall have plans for taking corrective measures and implementing these plans if the environmental monitoring program detects migration of waste which would indicate that the performance objectives may not be met.

12-030 ALTERNATIVE REQUIREMENTS FOR DESIGN AND OPERATION: The Agency may, upon request or on its own initiative, authorize provisions other than those set forth in 180 NAC 12-027 through 12-029 for the segregation and management of waste and for the design and operation of a management facility on a specific basis, if it finds reasonable assurance of compliance with the performance objectives of 180 NAC 12.

12-031 INSTIUTIONAL REQUIREMENTS

12-031.01 Land Ownership: Disposal of waste received from other persons may be permitted only on land owned in fee by the Federal or a State government.

12-031.02 Institutional Control: The land owner or custodial agency shall conduct an institutional control program to physically control access to the management site following transfer of control of the disposal site from the disposal site operator. The institutional control program shall also include, but not be limited to, conducting an environmental monitoring program at the management site, periodic surveillance, minor custodial care, and other requirements as determined by the Agency; and administration of funds to cover the costs for these activities. The period of institutional controls will be determined by the Agency, but institutional controls may not be relied upon for more than 100 years following transfer of control of the management site to the owner.

12-031.03 A map of the type, location and quantity of low-level radioactive waste disposed of at the site shall be filed, within 60 days of transfer of the license to the Agency, with the Register of Deeds of the County where such land is located and with the Agency.

12-032 RESERVED

FINANCIAL ASSURANCES

12-033 APPLICANT QUALIFICATIONS AND ASSURANCES: Each applicant shall show that it either possesses the necessary funds or has reasonable assurance of obtaining the necessary funds, or by a combination of the two, to cover the estimated costs of conducting all licensed activities over the planned operating life of the project, including costs of construction and management.

12-034 FUNDING FOR MANAGEMENT SITE CLOSURE AND STABILIZATION

12-034.01 The applicant shall provide assurances prior to the commencement of operations that sufficient funds will be available to carry out disposal site closure and stabilization, including: (1) Decontamination or dismantlement of management facility structures; and (2) closure and stabilization of the management site so that following transfer of the management site to the site owner, the need for ongoing active maintenance is eliminated to the extent practicable and only minor custodial care, surveillance, and monitoring are required. These assurances shall be based on Agency-approved cost estimates reflecting the Agency-approved plan for management site closure and stabilization. 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.

12-034.02 In order to avoid unnecessary duplication and expense, the Agency will accept financial sureties that have been consolidated with earmarked financial or surety arrangements established to meet requirements of Federal or other State agencies (and/or local governmental bodies) for such decontamination, closure, and stabilization. The Agency will accept these arrangements only if they are considered adequate to satisfy the requirements of 180 NAC 12-034 and that the portion of the surety which covers the closure of the management site is clearly identified and committed for use in accomplishing these activities.

12-034.03 The licensee's financial or surety arrangement shall be submitted annually for review by the Agency to assure that sufficient funds will be available for completion of the closure plan.

12-034.04 The amount of the licensee's financial or surety arrangement shall change in accordance with changes in the predicted costs of closure and stabilization. Factors affecting closure and stabilization cost estimates include inflation, increases in the amount of distributed land, changes in engineering plans, closure and stabilization that has already been accomplished, and any other conditions affecting costs. The financial or surety

arrangement shall be sufficient at all times to cover the costs of closure and stabilization of the disposal units that are expected to be used before the next license renewal.

12-034.05 The financial or surety arrangement shall be written for a specified period of time and shall be automatically renewed unless the person who issues the surety notifies the Agency, the beneficiary (the site owner), and the principal (the licensee) not less than 90 days prior to the renewal date of its intention not to renew. In such a situation, the licensee must submit a replacement surety within 30 days after notification of cancellation. If the licensee fails to provide a replacement surety acceptable to the Agency, the beneficiary may collect on the original surety.

12-034.06 Proof of forfeiture shall not be necessary to collect the surety so that, in the event that the licensee could not provide an acceptable replacement surety within the required time, the surety shall be automatically collected prior to its expiration. The conditions described above shall be clearly stated on any surety instrument.

12-034.07 Financial or surety arrangements generally acceptable to the Agency include surety bonds, cash deposits, certificates of deposit, deposits of government securities, escrow accounts, irrevocable letters or lines of credit, trust funds, and combinations of the above or such other types of arrangements as may be approved by the Agency. Self-insurance, or any arrangement which essentially constitutes self-insurance, will not satisfy the surety requirement for private sector applicants.

12-034.08 The licensee's financial or surety arrangement shall remain in effect until the closure and stabilization program has been completed and approved by the Agency, and the license has been transferred to the site owner.

12-035 FINANCIAL ASSURANCES FOR INSTITUTIONAL CONTROLS

12-035.01 Prior to the issuance of the license, the applicant shall provide for Agency approval, a binding arrangement, between the applicant and the management site owner that ensures that sufficient funds will be available to cover the costs of monitoring and any required maintenance during the institutional control period. The binding arrangement shall be reviewed annually by the Agency to ensure that changes in inflation, technology, and management facility operations are reflected in the arrangements.

12-035.02 Subsequent changes to the binding arrangement specified in 180 NAC 12-035.01 relevant to institutional control shall be submitted to the Agency for prior approval.

RECORDS, REPORTS, TESTS, AND INSPECTIONS

12-036 MAINTENANCE OF RECORDS REPORTS AND TRANSFERS

12-036.01 Each licensee shall maintain any records and make any reports in connection with the licensed activities as may be required by the conditions of the license or by the rules, regulations, and orders of the Agency.

12-036.02 Records which are required by these regulations or by license conditions shall be maintained for a period specified by the appropriate regulations or by license condition. If a retention period is not otherwise specified, these records must be maintained and transferred to the officials specified in 180 NAC 12-036.04 as a condition of license termination unless the Agency otherwise authorizes their disposition.

12-036.03 Records which shall be maintained pursuant to 180 NAC 12 may be the original or a reproduced copy or microfilm if this reproduced copy or microfilm is capable of producing copy that is clear and legible at the end of the required retention period.

12-036.04 Notwithstanding 180 NAC 12-036.01 through 12-036.03, copies of records of the location and the quantity of wastes contained in the management site must be transferred upon license termination to the chief executive of the nearest municipality, the chief executive of the county in which the facility is located, the county zoning board or land development and planning agency, the state governor, and other State, local and Federal governmental agencies as designated by the Agency at the time of license termination.

12-036.05 Following receipt and acceptance of a shipment of radioactive waste, the license shall record the date that the shipment is received at the disposal facility, the date of disposal of the waste, a traceable shipment manifest number, a description of any engineered barrier or structural overpack provided for disposal of the waste, the location of disposal and the disposal site, the containment integrity of the waste disposal containers as received, any discrepancies between materials listed on the manifest and those received, the volume of any pallets, bracing, or other shipping or onsite generated materials that are contaminated, and are disposed of as contaminated or suspect materials, and any evidence of leaking or damaged disposal containers or radiation or contamination levels in excess of limits specified in Department of Transportation and Agency regulations. The licensee shall briefly describe any repackaging operations of any of the disposal containers included in the shipment, plus any other information required by the Agency as a license condition. The licensee shall retain these records until the Agency transfers or terminated the license that authorizes the activities described in 180 NAC 12.

12-036.06 Each licensee authorized to dispose of radioactive waste received from other persons shall file a copy of its financial report or a certified financial statement annually with the Agency in order to update the information base for determining financial qualifications.

12-036.07 Each licensee authorized to dispose of waste received from other persons, pursuant to 180 NAC 12, shall submit annual reports to the Agency. Reports shall be submitted by the end of the first calendar quarter of each year for the preceding year.

1. The reports shall include:
 - a. Specification of the quantity of each of the principal contaminants released to unrestricted areas in liquid and in airborne effluents during the preceding year,
 - b. The results of the environmental monitoring program,
 - c. A summary of licensee disposal unit survey and maintenance activities,
 - d. A summary, by waste class, of activities and quantities of radionuclides disposed of,
 - e. Any instances in which observed site characteristics were significantly different from those described in the application for a license; and
 - f. Any other information the Agency may require.
2. If the quantities of radioactive waste released during the reporting period, monitoring results, or maintenance performed are significantly different from those predicted, the report must cover this specifically.

12-036.08 In addition to the other requirements of 180 NAC 12, the licensee shall store, or have stored, manifest and other information pertaining to the receipt and disposal of radioactive waste in an electronic recordkeeping system.

1. The manifest information that must be electronically stored is:
 - a. That information required in 180 NAC 1, Appendix 4-D, with the exception of shipper and carrier telephone numbers and shipper and consignee certifications; and
 - b. That information required in 180 NAC 12-036.05.

2. As specified in facility license conditions, the licensee shall report the stored information, or subsets of this information, on a computer-readable medium.

12-037 TESTS ON MANAGEMENT FACILITIES: Each licensee shall perform, or permit the Agency to perform, any tests the Agency deems appropriate or necessary for the administration of the regulations in 180 NAC 12, including, but not limited to, tests of:

1. Wastes;
2. Facilities used for the receipt, storage, treatment, handling or management of wastes;
3. Radiation detection and monitoring instruments; or
4. Other equipment and devices used in connection with the receipt, possession, handling, treatment, storage, or management of waste.
5. Geohydrologic, hydrologic, soil, or other environmental conditions or parameters.

12-038 AGENCY INSPECTIONS OF MANAGEMENT FACILITIES

12-038.01 Each licensee shall afford to the Agency at all reasonable times opportunity to inspect waste not yet disposed of, and the premises, equipment, operations, and facilities in which wastes are received, possessed, handled, treated, stored, or disposed of.

12-038.02 Each licensee shall make available to the Agency for inspection, upon reasonable notice, records kept by it pursuant to these regulations. Authorized representatives of the Agency may copy and take away copies of, for the Agency's use, any record required to be kept pursuant to Title 180.