



U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
DIVISION OF RULEMAKING, ENVIRONMENTAL, AND FINANCIAL SUPPORT

ENVIRONMENTAL ASSESSMENT

**Proposed Renewal of
U.S. Nuclear Regulatory Commission License
SNM-2500 for the GE-Hitachi Nuclear Energy
Morris Operation Independent Spent Fuel Storage
Installation, Grundy County, Illinois**

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ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ALARA	as low as is reasonably achievable
BWR	boiling water reactor
CFR	<i>Code of Federal Regulations</i>
CSAR	consolidated safety analysis report
DNPS	Dresden Nuclear Power Station
DOE	U.S. Department of Energy
EA	environmental assessment
EIS	environmental impact statement
EJ	environmental justice
EO	executive order
EPA	U.S. Environmental Protection Agency
ER	environmental report
FONSI	finding of no significant impact
FR	<i>Federal Register</i>
FWS	U.S. Fish and Wildlife Service
GE	General Electric
GEH	GE-Hitachi Nuclear Energy
IEPA	Illinois Environmental Protection Agency
IPaC	Information for Planning and Consultation
ISFSI	independent spent fuel storage installation
MRS	monitored retrievable storage facility
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NMSS	NRC's Office of Nuclear Material Safety and Safeguards
NOAA	National Oceanic and Atmospheric Administration
NRC	U.S. Nuclear Regulatory Commission
OCA	owner-controlled area
PWR	pressurized water reactor
SER	Safety Evaluation Report
SHPO	State Historic Preservation Office/Officer
SNM	special nuclear material
USGS	U.S. Geological Survey

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1.0 INTRODUCTION

In June 2020, the U.S. Nuclear Regulatory Commission (NRC) received an application from GE-Hitachi Nuclear Energy Americas, LLC (GEH) for the subsequent renewal of Special Nuclear Material (SNM) License Number 2500 (SNM-2500) for the Morris Operation independent spent fuel storage installation (ISFSI) in Grundy County, Illinois (GEH, 2020a). GEH is co-owned by General Electric Company (General Electric) and Hitachi, Ltd. General Electric was the previous NRC licensee for this site, as explained further in section 1.5. The Morris Operation ISFSI provides interim storage for spent nuclear fuel (spent fuel) that is stored in the fuel storage basins (pools)¹ of the former Midwest Fuel Recovery Plant, a planned nuclear fuel reprocessing plant at this location that was constructed but never operated. If the NRC approves this renewal, GEH will be allowed to continue interim storage of spent fuel at the Morris Operation ISFSI for a 20-year period that would begin upon expiration of the current license on May 31, 2022. In April 2021, the NRC staff accepted GEH's application for detailed technical review (NRC 2021a). The NRC issued a notice in the *Federal Register* (FR) on June 30, 2021, providing an opportunity to request a hearing and petition for leave to intervene (86 FR 34790). The NRC received no request for a hearing or petition for leave to intervene following the notice.

In accordance with title 10 of the *Code of Federal Regulations* (10 CFR) part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," which implements the National Environmental Policy Act of 1969, as amended (NEPA), GEH submitted an environmental report (ER) along with its renewal license application (GEH 2019). The NRC staff's environmental review of the proposed subsequent license renewal is documented in this environmental assessment (EA). The NRC is also conducting a safety evaluation of GEH's subsequent license renewal request, which will be documented in a separate safety evaluation report (SER). The NRC staff's decision about whether to renew the Morris Operation ISFSI license as proposed will be based on the results of the NRC staff's review, as documented in this EA and in the SER.

1.1 Site Location and Description

The Morris Operation ISFSI is in Grundy County, Illinois, about 7 miles (11 km) east of Morris and about 50 miles (80 km) southwest of the Chicago, Illinois and Gary, Indiana area. The site is less than 1 mile (1.6 km) south of the Illinois River and southwest of the confluence of the Kankakee and Des Plaines Rivers. Figure 1 shows the site location and surrounding areas.

The ISFSI and support facilities are situated within a fenced, 15-acre (6-ha) owner-controlled area (OCA) on a property of about 327 acres (132 ha) that is owned by General Electric. The site's northern and eastern boundaries are defined by E. Collins Road. To the north and east between the site and the rivers are Constellation Energy Corporation (Constellation) land (formerly owned by Exelon Generation Company, LLC) and a privately owned plot of about 50 acres (20 ha). The Constellation-owned property is occupied by the Dresden Nuclear Power Station (DNPS) and related facilities. More information about the site and its surroundings is provided in section 3.1.

¹ In this EA, the terms "basin" and "pool" are used interchangeably to refer to the water-filled spent nuclear fuel storage basins.

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Figure 1. Morris Operation Site Location (GEH 2019)

1.2 Proposed Action

GEH is requesting to renew license SNM-2500 for the Morris Operation ISFSI for a 20-year period. The current license expires on May 31, 2022. If the NRC approves the renewal, GEH could continue to possess and store spent fuel at the ISFSI in accordance with the requirements in 10 CFR part 72 for up to an additional 20 years.

License SNM-2500 allows GEH to store spent fuel from several pressurized water reactors and boiling water reactors. As described in the EA that the NRC staff prepared as part of its review of the previous license renewal, GEH stores spent fuel in a wet (water) storage basin consisting of a cask-loading basin and two spent fuel storage basins, which have a capacity of about 600,000 gallons (2,270 m³) and 827 tons (750 MT) of uranium (NRC 2004a). The current inventory is about 787 tons (714 MT) of total uranium (GEH 2019). In accordance with its license, GEH has no plans to receive additional spent fuel or to replace any spent fuel currently in inventory at the ISFSI.

1.3 Purpose and Need for the Proposed Action

The purpose of the proposed renewal of the Morris Operation ISFSI license is to enable GEH to continue to safely store spent fuel. Accordingly, continued storage of the spent fuel and continued operation of the ISFSI is necessary because no facility is yet available for monitored retrievable storage or permanent spent fuel disposal.

The Morris Operation ISFSI was built to store spent fuel that was originally planned for reprocessing at the Midwest Fuel Recovery Plant, a nuclear fuel reprocessing plant at this location that was constructed but never operated. The U.S. Department of Energy has the ultimate responsibility for the permanent disposition of the spent fuel stored at the Morris Operation ISFSI. Interim storage for the spent fuel was necessary because there was no facility available for monitored retrievable storage or permanent disposal at the time General Electric, the licensee at the time, stopped development of the reprocessing plant.

1.4 Scope of the Environmental Analysis

The NRC staff has evaluated the potential environmental impacts associated with the proposed action to renew the SNM-2500 license and alternatives to the proposed action, and has documented the results of the assessment in this EA. The NRC staff performed this review in accordance with the requirements of 10 CFR part 51 and staff guidance found in

NUREG-1748, *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs* (NRC 2003).

The staff reviewed and considered the following documents in the development of this EA:

- information contained in GEH's application, which includes the ER (GEH 2019) and the consolidated safety analysis report (CSAR), originally submitted June 30, 2020 (GEH 2020a) and updated on February 26, 2021 (GEH 2021a), March 19, 2021 (GEH 2021b), March 24, 2021 (GEH 2021c), January 27, 2022 (GEH 2022a), and May 12, 2022 (GEH 2022b); and

- information contained in previous NRC documents for the Morris Operation ISFSI (NRC 2004a, 1980).

1.4.1 Continued Storage of Spent Nuclear Fuel

On September 19, 2014, the NRC published a revised rule at 10 CFR 51.23, “Environmental Impacts of Continued Storage of Spent Nuclear Fuel Beyond the Licensed Life for Operations of a Reactor” (79 FR 56238). The rule codifies the NRC’s generic determinations in NUREG-2157 (NRC 2014b), *Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel* regarding the environmental impacts of the continued storage of spent fuel beyond the life of a reactor’s operating license. In NRC Memorandum and Order CLI-14-08 (NRC 2014a), the Commission held that the revised 10 CFR 51.23 and associated NUREG-2157 corrected the deficiencies identified by the court in *New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012) and stated that the rule satisfies the NRC’s NEPA obligations with respect to continued storage. The revised rule requires that EAs prepared for future reactor and spent fuel storage facility licensing actions consider the environmental impacts of continued storage of spent fuel if the impacts are relevant to the proposed action. In this case, the proposed action, if approved, will renew the term of the license for 20 years. Therefore, the impacts of continued storage of spent fuel are relevant to the proposed action. Section 4.15 of this EA provides the NRC staff’s consideration of the generic environmental impacts assessed in NUREG-2157 as they apply to the proposed renewal of the Morris Operation ISFSI license.

1.5 Morris Operation ISFSI Licensing History

The Morris Operation facility was originally designed in 1964 as a spent fuel reprocessing plant named the Midwest Fuel Recovery Plant (MFRP). The facility was licensed by the Atomic Energy Commission in 1971 to receive and store spent fuel, and the storage of spent fuel began in December 1972. In 1974, the Atomic Energy Commission terminated the license for construction of the MFRP and reissued Materials License SNM-1265 to General Electric for the receipt and storage of spent fuel for a five-year period. In December 1975, the NRC revised and reissued license SNM-1265 to authorize the receipt and storage of up to 750 metric tons (826.7 tons) of total uranium in spent fuel. General Electric applied for renewal of SNM-1265 in 1979. During its review of the application, the NRC staff noted that spent fuel storage at this ISFSI was covered under the new 10 CFR part 72 regulations that became effective in 1980. Accordingly, the NRC staff requested that General Electric revise its license renewal request to conform with the requirements of part 72. General Electric submitted a revised application in 1981. On May 4, 1982, the NRC issued Materials License Number SNM-2500 pursuant to 10 CFR part 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste.” This license allowed spent fuel to be stored at the Morris Operation ISFSI for a 20-year term.

In 2000, General Electric filed an application for renewal of license SNM-2500 for an additional 20 years. On December 21, 2004, the NRC renewed the license for a 20-year term with an expiration date of May 31, 2022. In that licensing action, the NRC also issued approval of amendment 12, which modified the license to authorize storage of only the spent fuel then in inventory. Between 2007 and 2017, the NRC approved three amendments:

- Amendment 13 allowed for the transfer of the license from General Electric to GEH, which then acquired ownership of the ISFSI and assumed responsibility for its operation and maintenance (NRC 2007).
- Amendment 14 modified the Technical Specifications regarding submittal of annual environmental reports (NRC 2015).
- Amendment 15 provided clarifying administrative changes to the license, including adding descriptions of authorized materials and physical forms currently onsite (NRC 2017).

2.0 PROPOSED ACTION AND ALTERNATIVES

As part of its review, the NRC staff considered the proposed action and alternatives: taking the proposed action, taking no action, or shipping the spent fuel to an offsite facility. These three options are discussed in the following sections.

2.1 Proposed Action

The NRC's proposed action is the renewal of license SNM-2500, which would allow GEH to continue storing spent fuel at the Morris Operation ISFSI in accordance with the requirements in 10 CFR part 72 for up to 20 additional years. The current license expired on May 31, 2022. However, GEH's license status is in "timely renewal" because GEH submitted its license renewal application on June 30, 2020, in accordance with a previously granted exemption to the timely filing requirement in 10 CFR 72.42(b) (NRC 2020). The license allows GEH to store spent fuel from several pressurized water reactors and boiling water reactors (NRC 2017). The current inventory is about 787 tons (714 metric tons (MT)) of total uranium (GEH 2019). In accordance with its license, GEH cannot receive additional spent fuel or to replace any of the ISFSI's current inventory.

Section 2.1.1 describes the current ISFSI operations, which would continue if the license is renewed. Sections 2.1.2 through 2.1.5 describe the basins and stored fuels at the ISFSI and the associated permits and authorizations, the radioactive waste management system, and ISFSI decommissioning provisions.

2.1.1 ISFSI Description and Activities

The entire site consists of approximately 327 acres (132 ha). The 15-acre (6-ha) fenced OCA houses the main building containing the basins (pools) where the spent fuel is stored (i.e., the wet storage ISFSI). Section 2.1.2 provides more information about the basins. In addition, the OCA encompasses other buildings, structures, and transportation facilities, including the administration building, warehouse, utility and service building, cask service facility, sand filter and emergency equipment buildings, water tower, and three inactive vaults (cladding, low-activity waste, and dry chemical vaults). A rail spur is located in the northwest portion of the OCA, and immediately north of the OCA is a parking lot and warehouse. Figure 2 shows the site boundaries and Figure 3 is a view of the facility looking north. Security measures are in place to protect the facility against unauthorized access (GEH 2019; NRC 2004a).

The building containing the sand filter is a principal part of the facility's ventilation system. All air exhausted from the fuel storage areas and supporting areas in the main building is passed through the sand filter, sampled, and vented via a 300-foot (91-m)-tall stack located southeast of the main building. The emergency equipment building is attached to the sand filter building. As mentioned above, the site also contains three inactive vaults. As described in the NRC's 2004 license renewal EA, the low-activity waste, cladding, and dry chemical vaults have been emptied of their radioactive contents, and the piping to the vaults has been capped and sealed (NRC 2004a; GEH 2019).

GEH does not plan to make any significant changes to the ISFSI's facility structure, utility systems, or waste management systems under the proposed action. GEH recently installed a small (approximately 15-acre [6-ha]) solar photovoltaic farm on the northeast corner of the GEH property to augment the facility's power supply. If a change becomes necessary but does not satisfy the criteria under 10 CFR 72.48, GEH would need to apply for a license amendment that would require a separate NRC safety and environmental review. Other minor changes due to maintenance requirements or the upgrading of facility systems may occur to comply with applicable regulations. For example, the ISFSI is subject to aging management requirements to ensure the continued integrity of the spent fuel and facility structures, systems, and components. Aging management activities include monitoring as well as prevention, maintenance, and corrective action programs for structures (e.g., concrete and steel basin structures) and basin water chemistry. Aging management programs are described in the CSAR (section A.8 of GEH 2020a, 2021c) and updated in GEH responses to NRC requests for information (GEH 2022a, 2022b). Environmental monitoring (effluent air and water), radiation monitoring and protection, and facility maintenance and operations would continue during the license renewal period.

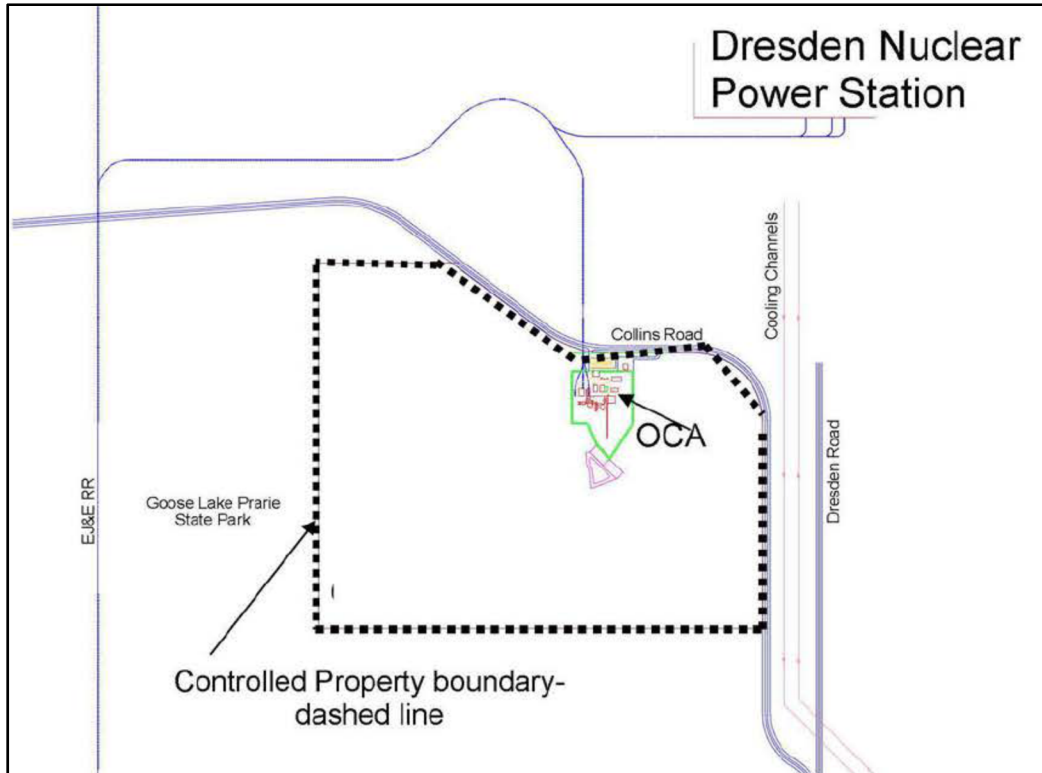


Figure 2. Morris Operation ISFSI Boundaries (GEH 2021c)



Figure 3. Morris Operation ISFSI Buildings (looking north) (GEH 2019)

2.1.2 Basins and Stored Fuels

The fuel storage facility consists of two interconnected, water-filled basins for cask loading and storage, as well as cranes, a water treatment system, and other support facilities. The basins are below ground and have stainless-steel-lined, reinforced poured concrete walls about 2 feet (60 cm) thick that are in contact with the surrounding bedrock. The south wall is about 4 feet (120 cm) thick because it was intended to stand independent of the surrounding rock in the event of an expansion to the basins.

The facility was designed to store uranium dioxide fuel having an initial enrichment of 5 percent uranium-235 or less, with stainless steel, zirconium, or zircaloy cladding in a “bundle of rods” configuration. Fuel bundles are stored in stainless steel basket assemblies (see Figure 4) designed to protect the fuel from physical damage and maintain the fuel in a configuration that prevents a nuclear criticality. Baskets are locked into grids in the fuel basins to provide protection against earthquakes.

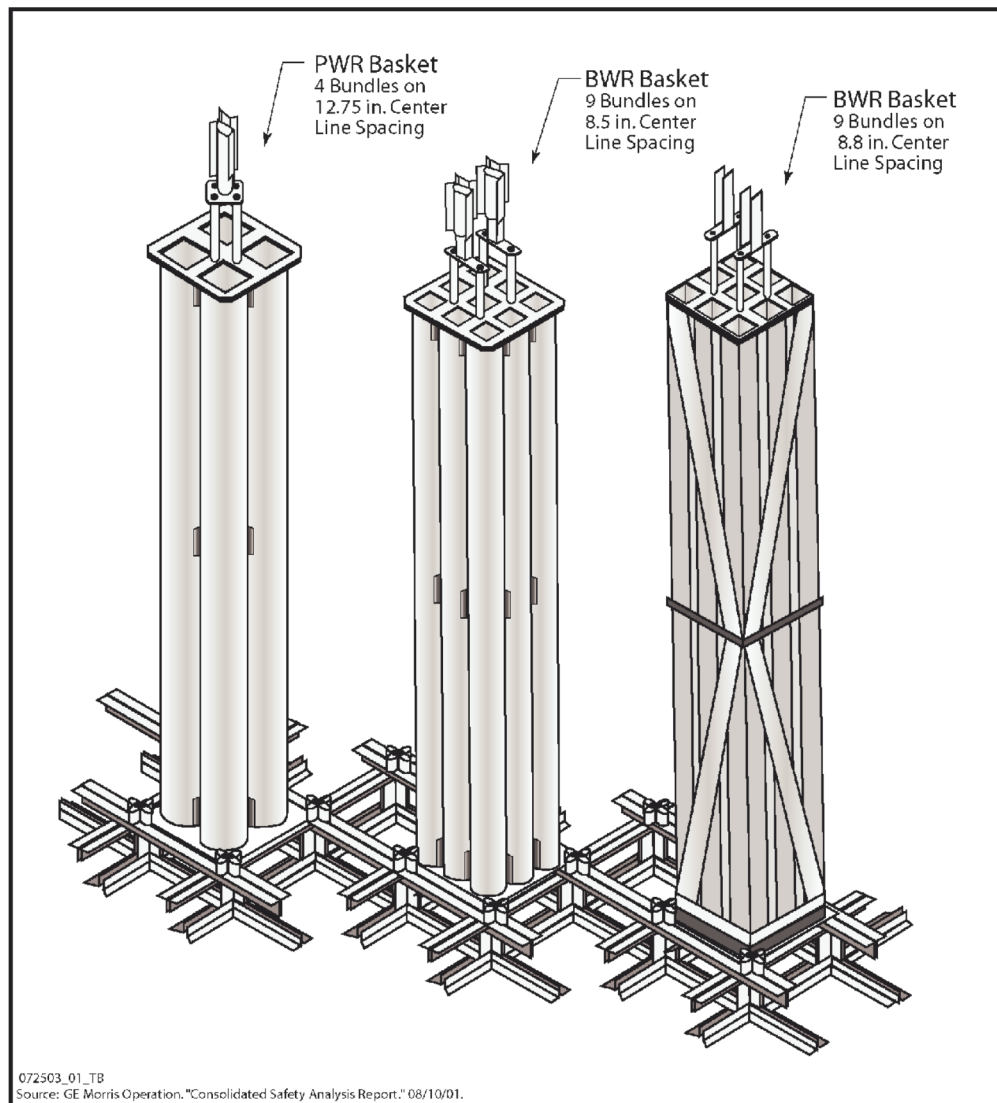


Figure 4. Three Types of Baskets for Storing Spent Fuel Rods (GEH 2021c)

No new fuel has been added to the basins since 1989. All of the spent fuel has been cooling under water since that time, and the basin water is maintained in an ultra-pure state to minimize the potential for adverse chemical effects on the fuel cladding, storage baskets, or basin liner. As amendment 12 of materials license SNM-2500 (2004 renewed license; NRC 2004b) restricts GEH from accepting any new spent fuel, the types and quantities of fuel stored at the Morris Operation ISFSI will not change without a license amendment. Table 1 lists the limited types and quantities of fuel stored in the Morris Operation ISFSI basins.

Table 1. Fuel in Storage at the Morris Operation ISFSI

Nuclear Station	Operating Status	Fuel Type	Cladding Type	Total Bundles
Connecticut Yankee	Shut down 1996, decommissioned by 2004	PWR	Stainless Steel	2
Cooper	Operating	BWR	Zircalloy	1054
Dresden	Operating	BWR	Zircalloy	753
Monticello	Operating	BWR	Zircalloy	1058
San Onofre	Shut down 2013	PWR	Stainless Steel	270

BWR = boiling water reactor; PWR = pressurized water reactor.

Source: GEH 2021c (Section 10.2) (except operating status).

Note: No spent fuel has been added to the basins since 1989 (GEH 2004a).

The basins are equipped with a cleanup and water treatment system to remove impurities and radioactive materials from the water and to ensure that radiation levels are as low as is reasonably achievable (ALARA). The water treatment system helps maintain clarity and water quality to limit the potential for corrosion and corrosion-induced cracking of the system components. Radioactive materials collected by this system are processed in the high-activity radioactive waste treatment system, described below in section 2.1.4.

A leak-detection system and pump-out facilities are provided for the space between concrete walls and floor and the stainless-steel liner (illustrated in CSAR figure 1-10). In 1994, a leak was discovered in the corner of a weld located in the north liner (steel) wall of the unloading pit. The licensee performed underwater weld repairs. GEH subsequently detected an increased flow rate into the leak detection system but was unable to determine the source. Current flow rates are constant, except for small changes due to variation in temperature, and within the pump-out system capabilities. Sections 5.5.1.3 and 5.5.1.4 of the CSAR provide more information about the basin liner and leak-detection system. Leaked water (or any groundwater that may seep in through the concrete) flows between the steel liner and the concrete wall in channels in the concrete to a sump where it collects, is sampled, and is then directed to the radioactive wastewater treatment system. No leaked water is passing through the concrete walls, which are about two feet thick. As described in section 3.4.2 of this EA, GEH performs groundwater monitoring, which has verified no leaks are occurring from the spent fuel storage system into the surrounding bedrock or soils (GEH 2004a, 2021c).

2.1.3 Permits and Authorizations

GEH holds a water pollution control permit (2019-EO-64003) issued by the Illinois Environmental Protection Agency (IEPA) for a 1-million-gallon (3.8 million L) holding pond and two 275,000-gallon (1 million L) lagoons for treatment of sanitary wastewater, potable and utility water system drainage, compressor condensate, and pumped groundwater intrusion water. The permit requires that there be no discharges to the environment from these features and that sludges from the lagoons be disposed of at a site acceptable to the IEPA (IEPA 2019).

GEH periodically seeks authorization from the Texas Low-Level Radioactive Waste Disposal Compact Commission to dispose of low-level radioactive waste at the Waste Control Specialists facility in Andrews, Texas (GEH 2019). Such authorization is required to enable GEH to occasionally ship its low-level radioactive waste to this facility.

2.1.4 Wastes and Effluents

The radioactive waste management system at the facility is composed of two subsystems identified as high-activity and low-activity systems. The waste management system is described briefly here and in more detail in section B.23 of appendix B in GEH's CSAR (GEH 2004b). The purpose of this two-subsystem design is to separate highly radioactive basin filter sludge from low-activity wastewater, such as laundry, sump waste, intrusion water, and decontamination solutions. The Morris Operation ISFSI generates less than 250 cubic feet (7 m³) per year of class A waste (low activity) and about 150 cubic feet (4.2 m³) of class B waste (higher activity) every five years (NRC 2004a; GEH 2019, 2021c, 2021d).

Low-activity radioactive water streams are collected from various sources and piped to the radwaste water storage tank. Water from this tank is then pumped to an electric evaporator. Evaporator steam is demisted and exhausted via a filtered and monitored ventilation system. Evaporator bottoms are put in barrels and shipped offsite for disposition in a licensed, low-level radioactive waste facility. Figure 5 is a diagram of the low-activity waste treatment process.

The high-activity system dewateres spent resins from the basin filter and then returns about 350–400 gallons (1,136–1,314 L) of water to the basins after testing. Spent resins from the filter are pumped to a shielded, high-integrity container. When filled, the containers are dried and shipped offsite for burial in a licensed facility. Figure 6 is a diagram of the basin filter spent resin (high-activity waste) system.

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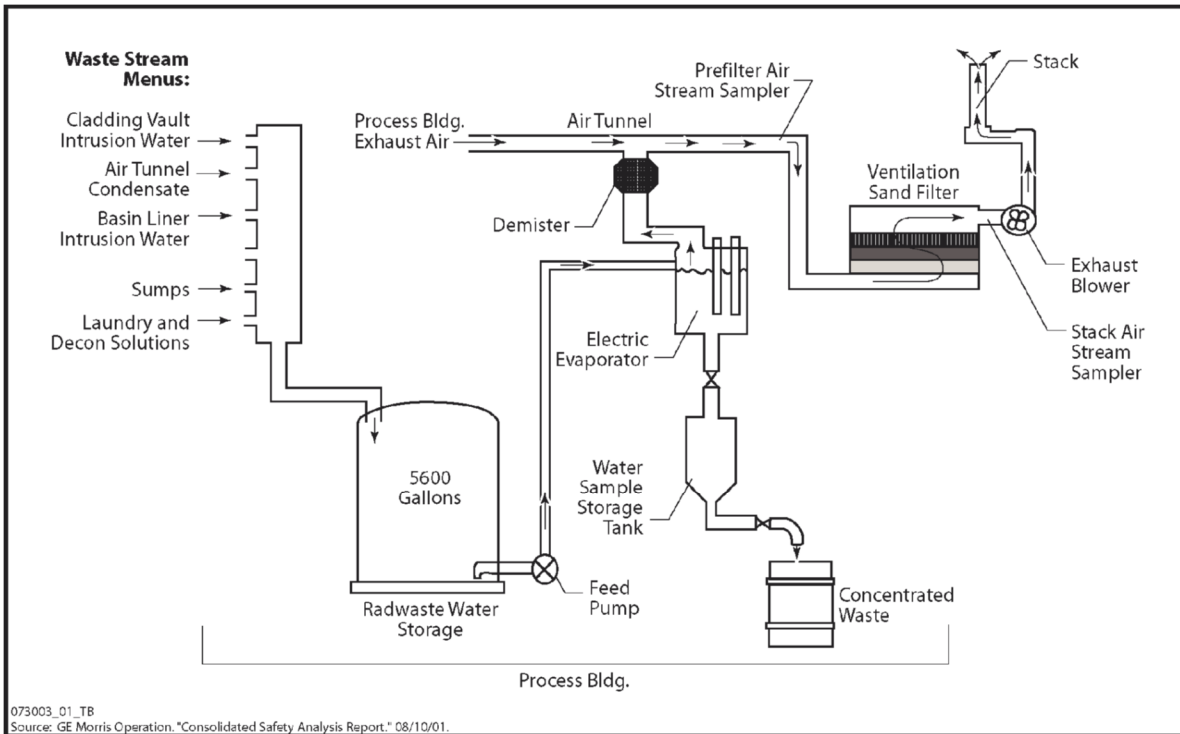


Figure 5. Low Activity Radioactive Wastewater Treatment System (GEH 2021c)

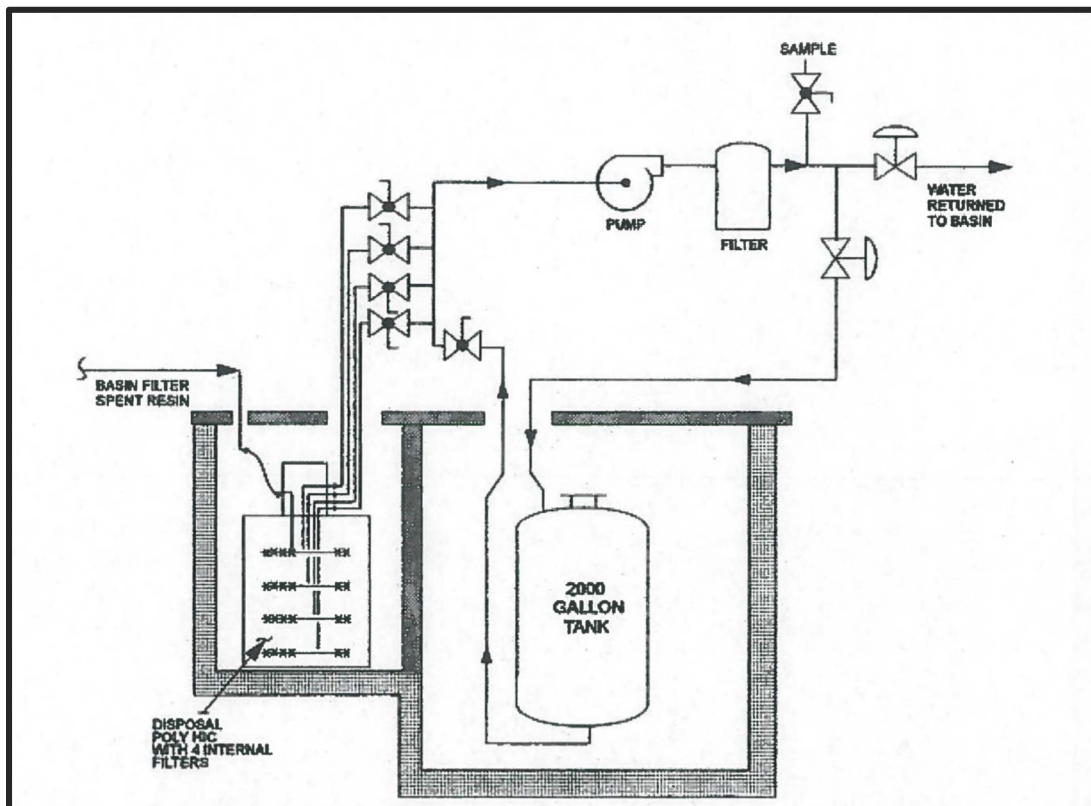


Figure 6. Basin Filter Spent Resin System (GEH 2021c)

There are no radioactive liquid effluents from the Morris Operation ISFSI. The only liquid wastes produced are sanitary wastes, which flow through underground lines and lift stations for collection and routing to a sewage treatment system located 183 meters (600 feet) south of the main process building. The treated liquid is pumped to the two clay-lined lagoons, which are enclosed by a fence. Any lagoon overflow can be routed into a holding pond. The treated sanitary wastewaters are permanently stored and evaporated from the lagoons. None of these lagoons discharge to the environment.

Solid wastes generated by the Morris Operation ISFSI consist of disposable protective clothing, wipes, rags, gloves, and similar materials (i.e., class A low-level radioactive wastes) as well as spent resin filter materials (i.e., class B low-level radioactive wastes). The Morris Operation ISFSI also generates nonradioactive, nonhazardous solid waste from its offices, restrooms, staff breakrooms, and maintenance activities. These wastes are collected onsite and disposed of in local and regional permitted solid waste disposal facilities. Universal wastes such as fluorescent light bulbs and batteries are also generated in low quantities and disposed of in accordance with Illinois requirements for universal wastes. Low quantities of hazardous waste (e.g., solvents, epoxy paints) are also generated occasionally by maintenance activities and are managed in accordance with Illinois hazardous waste regulations (GEH 2019).

The primary air emission from the facility is krypton-85, which is released via a 300-foot (92-m) exhaust stack. From 2014 through 2018, krypton-85 was released at a rate of 0.92 to 1.7 curies per year (GEH 2019). The facility's air system is a loop. First, fresh incoming air is combined with recycled air from the offices, control room, and lobby. This combined air is then split into two streams. One is a once-through stream that passes through controlled areas to the air tunnel, through the sand filter, and out the stack. The other stream ventilates the offices and is then recycled such that it mixes with fresh incoming air and starts the loop again. After passing through the offices, a small, once-through side stream is diverted to flow through a decontamination room and a filter to the stack. Effluent air is sampled weekly after passing through the sand filter but before being released through the stack to demonstrate that the offsite concentrations do not exceed NRC limits in 10 CFR part 20 (GEH 2019, 2021c).

Nonradiological air emissions from the facility include emissions from the stand-by diesel generator, which is operated on an infrequent and intermittent basis and does not require an air permit under Illinois regulations. Air emissions also result from employee vehicles and infrequent delivery vehicles (GEH 2019). The quantity of these nonradiological air emissions is consistent with the types of emissions from other commercial operations that use generators and vehicles.

Eventually, the spent fuel will be removed from wet storage and packaged for dry storage or transport to another storage facility or repository (whether during the proposed license renewal term or later) (GEH 2020). If GEH determines that the spent fuel needs to be removed from the storage basins and placed in dry storage during the license renewal term, GEH would need to request approval from the NRC and the environmental impacts of such activities would be assessed as part of that licensing action. A separate licensing action would not be required for GEH to remove the spent fuel from the pools and place it into approved transportation containers. The potential impacts of spent fuel removal and shipment activities are described in chapter 4 of the NRC's 2004 license renewal EA (NRC 2004a). The analysis from the 2004

license renewal EA is bounding in this case because the quantity of the fuel is the same and the fuel has decayed since 2004, meaning the environmental effects would be less significant than those determined in 2004.

2.1.5 Decommissioning

The NRC requirement in 10 CFR 72.54, titled “Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas,” identifies the provisions for termination of specific licenses and decommissioning of ISFSIs. In accordance with 10 CFR 72.54(d), as required by 10 CFR 72.54(b), or within sixty days of any of the following, each licensee must notify the NRC in writing, and submit within 12 months of this notification, a final decommissioning plan and begin decommissioning upon approval of the plan if (1) the licensee has decided to permanently cease principal activities at the entire site or any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release in accordance with NRC requirements, (2) no principal activities under the license have been conducted for a period of 24 months, or (3) no principal activities have been conducted for a period of 24 months in any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release in accordance with NRC requirements.

The required content of the decommissioning plan is provided in 10 CFR 72.54(g). Pursuant to the NRC’s requirements for determining whether licensing actions require an environmental impact statement (EIS) or an EA in 10 CFR 51.20 and 51.21, respectively, and NRC decommissioning guidance in NUREG-1757, “Consolidated Decommissioning Guidance: Decommissioning Process for Materials Licensees (NUREG-1757, Volume 1, Revision 2),” (NRC 2006), the NRC would conduct a separate environmental review in parallel with the safety review of the decommissioning plan. As indicated in table 15.3 of NUREG-1757, the environmental review would be either an environmental assessment or an environmental impact statement depending on whether the site is decommissioned for unrestricted use or restricted use.

Decommissioning of the ISFSI is discussed in the NRC’s 2004 license renewal EA (NRC 2004a)² and in appendix A.7 of GEH’s CSAR (GEH 2021c). GEH’s decommissioning plan (section A.7.2 of appendix A.7 of the CSAR) is based on the following assumptions:

- Offsite transfer of stored spent fuel will be completed in accordance with normal operating procedures rather than as a part of decommissioning activities.
- The decision to terminate licensed operations at the site will be made in the course of normal (not emergency) business considerations.
- There is no plan for subsequent use of the site for nuclear activity requiring NRC licensing.

As stated in section A.7.2.2 of the decommissioning plan, the primary objective of the decommissioning plan is to ensure the site will be decontaminated sufficiently to eliminate the need for continued NRC licensing (i.e., the site would be available for unrestricted use). In general, section A.7.3.5 of GEH’s decommissioning plan states that facility decontamination and decommissioning will be accomplished in four main areas:

² Chapter 4 of the NRC’s 2004 EA provides some analysis of the potential impacts of removing the spent fuel from the basins and shipping it elsewhere.

- Fuel receipt and storage facilities: These areas include the cask receiving area, decontamination area, cask unloading pit, fuel storage basins, basin filter room, basin pump room, and basin chiller heat exchangers. Basin water, liner materials, cranes and other equipment would be removed; embedded piping would be decontaminated and filled with grout; remaining surfaces would be decontaminated as needed; basins would be backfilled and covered; concrete floors would be decontaminated or removed; wastes would be shipped to licensed disposal facilities.
- Canyon cells: This is the area of the building that was constructed to house reprocessing activities. Fixed piping and instrument and electric cables would be removed; stainless steel liners would be decontaminated or removed; embedded piping would be decontaminated and filled with grout; canyon cell covers and crane would be decontaminated or packaged for offsite disposal; canyon structure would be left in place after decontamination; wastes would be shipped offsite.
- Other main building areas: There are several areas of the main building that were not used for fuel storage operations. Contaminated equipment and other contaminated items, such as instruments and piping ducts, would be removed; surfaces would be decontaminated, and wastes would be shipped offsite.
- Waste storage vaults: These are the low-activity waste vault (empty as of 1996), cladding vault (empty as of 1996), and the dry chemical vault (empty as of 1993). As necessary, inner walls of vaults would be decontaminated or removed before vaults are backfilled. Removed walls and other decontamination wastes would be shipped offsite for disposal.

Planned activities in each of these areas are described in more detail in appendix A.7 of the CSAR (GEH 2021c).

2.2 No-Action Alternative

The no-action alternative is the NRC's denial of GEH's request to renew the Morris Operation ISFSI license. This would result in the license expiring on May 31, 2022. The license, however, would remain in effect with respect to possession of licensed material per 10 CFR 72.54(c) until the NRC notifies the licensee in writing that the license is terminated. GEH would continue to maintain the spent fuel at the ISFSI until decommissioning begins and the fuel is removed and packaged for dry storage or shipment.

Impacts from the no-action alternative would result from activities supporting the continued operation of the ISFSI until GEH could remove the fuel and decommission the site. These activities would be the same as the current activities, which also apply to the proposed action (described in Section 2.1 of this EA). As discussed in Section 4 of this EA, the NRC staff concludes that the proposed action would have no significant effects. Thus, given that the no action alternative would involve the same activities, the staff concludes that the impacts associated with the no-action alternative also would not be significant.

Under the no-action alternative, GEH ultimately would need to remove the spent fuel from the Morris Operation ISFSI, transport the fuel to another licensed storage facility, and decommission the ISFSI. Pursuant to 10 CFR 72.54, decommissioning of the ISFSI shall commence once the NRC approves a final decommissioning plan. NRC approval of a decommissioning plan would constitute a major Federal action under NEPA and would be subject to separate NRC safety and environmental reviews. Therefore, the environmental impacts of such an approval are not evaluated in this EA. Section 2.1.5 above provides more information about decommissioning.

2.3 Shipment of Spent Fuel to an Offsite Facility Alternative

Shipment of the spent fuel to a commercial reprocessing facility, a Federal repository, or an interim storage facility is not a reasonable alternative to renewing the license because these facilities are not available in the United States as of the date of this EA. The NRC issued a license in September 2021 to Interim Storage Partners for the construction and operation of a consolidated interim storage facility in Andrews County, Texas, near the current Waste Control Specialists low-level waste disposal facility. As described in Section 1.6.2 of the final EIS for that facility (NRC 2021b), Interim Storage Partners needs to obtain all applicable State and local approvals before the facility can be constructed and operated. The NRC is reviewing another application for a consolidated interim storage facility in Lea County, New Mexico (NRC 2022b); however, the facility is not currently licensed by the NRC. Although either of these facilities could become available during the proposed license renewal period, neither has yet been constructed. Therefore, and as the Morris Operation ISFSI's license is in timely renewal, neither facility is a reasonable storage alternative to renewing the license.

3.0 AFFECTED ENVIRONMENT

Council on Environmental Quality regulations define the affected environment as the environment of the area or areas to be affected or created by the alternatives under consideration (40 CFR 1502.15). For this EA, the affected environment is the environment that currently exists at and around the Morris Operation ISFSI. The aspects of the environment that could be affected by the proposed license renewal, such as land use, water resources, air quality, and others, are referred to as "resource areas." This section describes current conditions of each resource area, including geographic area and any past, present, or future actions relevant to each resource area.

3.1 Land Use

The present GEH property is about 327 acres (132 ha) in area, within which 15 acres (6 ha) is the fenced OCA of the ISFSI site. The 327-acre property is enclosed by an agricultural fence with posting advising unauthorized persons not to trespass beyond the fence barrier. A lease agreement allows limited farming and cattle grazing on the property outside the 15-acre area. At the time of the 2004 ISFSI license renewal, General Electric owned approximately 892 acres (361 ha). Four parcels totaling approximately 565 acres (229 ha) were sold in 2013. Those parcels were located south of the current Morris Operation ISFSI site boundary, and no Morris

Operation ISFSI facilities or activities were located on these parcels. This land was and is still used for agricultural purposes (GEH 2019).

GEH has leased about 15 acres at the northeast corner of its property adjacent to E. Collins Road, as shown in Figure 7. A solar farm was developed in 2021 on this parcel to supply electricity to the Morris Operation ISFSI, thereby augmenting the offsite power supply. The solar farm will not be connected to the regional power grid and is not subject to NRC oversight (GEH 2019).

A natural gas pipeline is proposed for development that would run in a north-south direction along the west side of the GEH property, approximately 500 ft (152 m) from the OCA (FERC 2022). The Federal Energy Regulatory Commission (FERC) is conducting a regulatory and environmental review of this proposed pipeline and has published a draft environmental impact statement for the project (FERC 2022). The NRC and GEH are coordinating with FERC in its environmental review. In addition, GEH is conducting a safety analysis to determine if the action would impact safe operation of the Morris Operation ISFSI. The NRC will review GEH's analysis as part of its oversight role, and GEH's analysis may be subject to NRC approval.

The ISFSI site is less than 1 mile (1.6 km) south of the Illinois River and southwest of the confluence of the Kankakee and Des Plaines Rivers. I-55 is about 4 miles (6.4 km) east, and I-80 is about 5 miles (8 km) north of the site. The site's northern and eastern boundaries are defined by E. Collins Road. To the north and east between the site and the rivers are Constellation land and a privately owned plot of about 50 acres (20 ha). Canals that connect the power station to its cooling pond run parallel to the eastern boundary of the ISFSI site between E. Collins Road and Dresden Road. A small residential area is located beyond the power station canals, along the west bank of the Kankakee River. Goose Lake Prairie State Natural Area is adjacent to the site to the west.

The Constellation-owned property is occupied by the DNPS. Canals that connect the power station to its cooling pond run parallel to the eastern boundary of the ISFSI site between E. Collins Road and Dresden Road. A small residential area is located beyond the power station canals, along the west bank of the Kankakee River. Other lands bordering the property include industrial areas to the northwest (primarily chemical production facilities). Table 3-3 in the ER indicates that there are at least 12 chemical production facilities within a 5-mile (8-km) radius of the facility. Collins Station, a former gas-fired electric generating station located about 5 miles (8 km) southwest of the GEH property, was closed and decommissioned in 2004. The Collins Stations site was restored for eventual redevelopment (GEH 2019).

An energy production facility is being constructed on an 80-acre (32.4-ha) property directly south of the Morris Operation ISFSI site. This facility, the Competitive Power Ventures (CPV) Three Rivers Energy Center, will occupy about 30 acres (12 ha) of the 80-acre property and will be a 1,250-megawatt, natural gas-fueled combined-cycle electric generation facility. It is planned to begin operation in 2023 (CPV 2021; GEH 2021c). Natural gas would be piped from this facility through the pipeline described above that is proposed to run through the GEH property west of the OCA (FERC 2022).

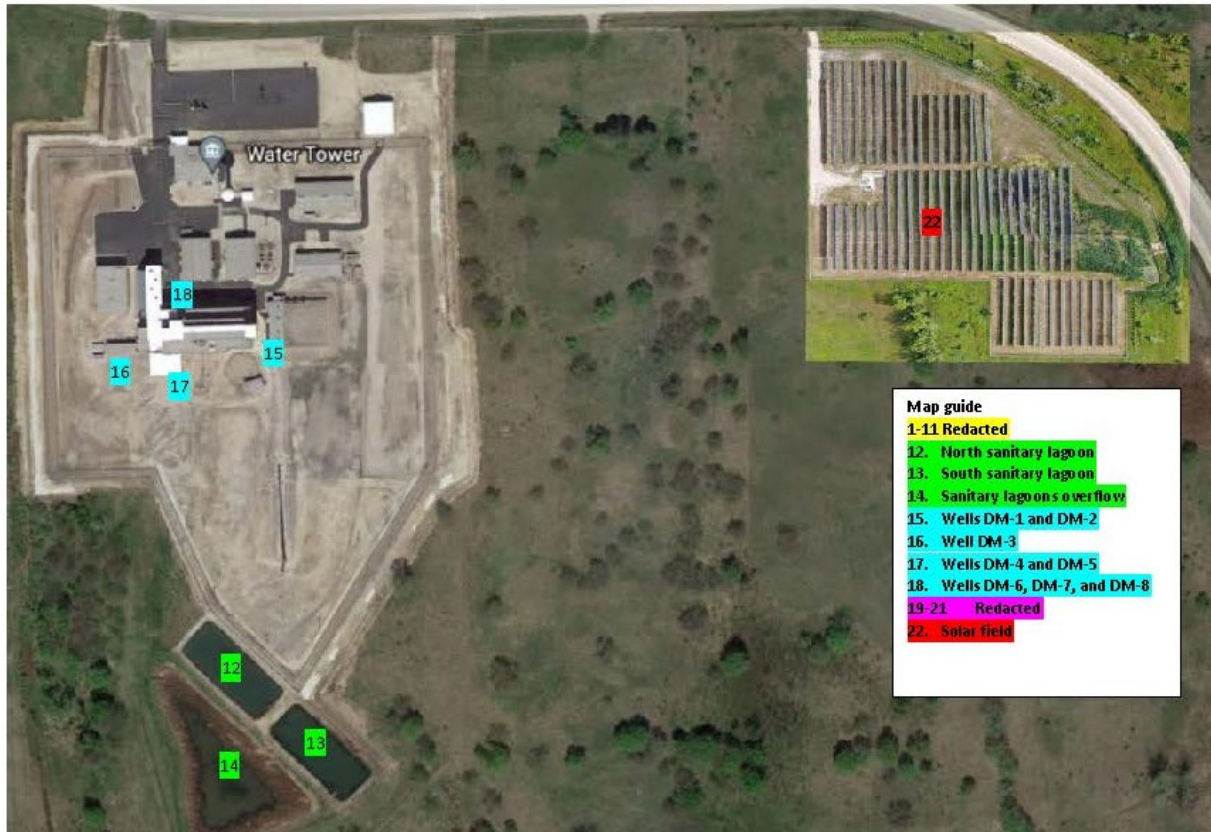


Figure 7. Morris Operation Buildings and Support Facilities

3.2 Transportation

Transportation routes near the Morris Operation ISFSI site are shown in Figure 1. The site is within approximately 5 miles (8 km) of two major interstate highways (I-55 and I-80). I-80 connects to the City of Chicago about 50 miles (80 km) east of the site. Access from the site to the interstate highways continues to be via county roads and state highways. Most employees of the Morris Operation ISFSI or the nearby DNPS who are from the Grundy and Will counties area travel via these roads (GEH 2019; NRC 2004c).

The site is also served by a railroad spur that has access to mainline rail service. Four mainline railroads pass through the area: the Burlington Northern-Santa Fe, the CSX Transportation, the Union Pacific, and the Canadian National (GEH 2019).

The closest major airports are Chicago O'Hare International Airport and Chicago Midway Airport, situated about 50 and 40 miles (80 and 64.4 km), respectively, to the north and northeast of the site (GEH 2021c, Section 3.3.3).

3.3 Geology, Soils, and Seismology

Elevations in the area range from 532 feet (162 m) above mean sea level at the Morris Operation site to about 500 feet (152 m) at the Illinois River bottom. The general appearance

ranges from flat to very gently rolling terrain with slopes. The surface topography is characterized by shallow topsoils and numerous outcroppings of bedrock.

The geologic stratigraphy of the site consists of an upper layer Spoon Formation (Pennsylvanian Pottsville) sandstone of varying thicknesses, underlain by Fort Atkinson (Ordovician Maquoketa Divine) limestone about 46 feet (14 m) thick. Scales Formation (Maquoketa) shale is beneath the limestone. The Ordovician stratum has a thickness of about 1,000 feet (304 m) overlaying the Cambrian stratum. Brecciated or fragmented rock has been identified in some cross sections, indicating ancient faulting.

Surface soils range from about 1 to 2 feet (30 to 61 cm) and consist of dark brown to black clayey silt topsoil with some inclusions of weathered limestone, sandstone, and glacial deposits. Ice-deposited glacial till and water-deposited lacustrine (lake environment) sediments were also found in the southern and western portions of the site. Site soils are level or gently sloping, allowing low to moderate water and air movement through the soil. The organic matter content of the soils, which influences the water-holding capacity of the soils, was determined to be moderate to high. The Channahon Series is the most prevalent soil series on the property, consisting of shallow, well-drained, moderately permeable soils.

As described in GEH's ER, General Electric conducted a significant amount of research related to site geology and potential seismic hazards to support licensing of the original reprocessing facility that never operated. That research included evaluation of regional geology, site geology, surface faulting, seismicity, maximum earthquake potential, and stability of subsurface materials and foundations. The research confirmed the rock is sound at all depths with no evidence of active faults (GEH 2019).

Historical data shows that seismic events in the vicinity of the site are rare and characterized by fairly low intensities and magnitudes. Most earthquakes in Illinois occur in the southern portion of the state near the New Madrid fault. Figure 8 is a seismic risk map for the United States. The Morris Operation site area lies within an area with the third lowest hazard rating (green area) according to the U.S. Geological Survey.

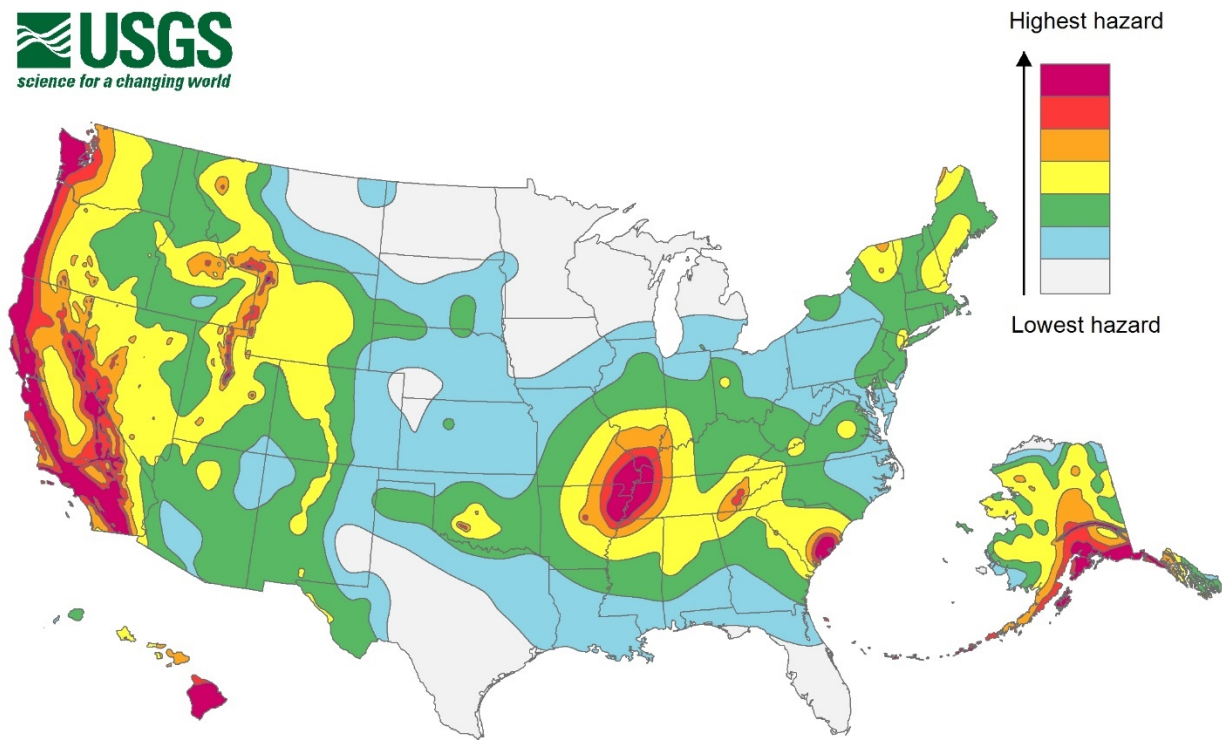


Figure 8. Seismic Hazard Map (USGS 2018)

3.4 Water Resources

3.4.1 Surface Water

The site is located in the Illinois River Basin. The Kankakee River is 0.5 miles (0.8 km) east of the site, flowing north until it meets the Des Plaines River about 2 miles (3.2 km) northeast of the site (see Figure 1). The Illinois River flows west and south, ultimately flowing into the Mississippi River north of St. Louis, Missouri. The stretch of the Illinois River north of the site is part of the Dresden Island Pool of the waterway and includes the Dresden Island Lock and Dam, which are almost due north of the site.

Dresden Lake, a 1,275-acre (516-ha) cooling pond for the DNPS, is approximately 1.5 miles (2.4 km) southeast of the site. The intake and discharge flumes are located along the east boundary of the GEH property, as shown in Figure 1. Heidecke Lake, a 200-acre (81-ha) former cooling pond for the previous Collins Station power plant, is located west of the site in the Goose Lake Prairie State Natural Area. It is now managed by the Illinois Department of Natural Resources as the Heidecke Lake State Fish and Wildlife Area (GEH 2019). In addition, many small water bodies or marshes are within 2 to 4 miles (3.2 to 6.4 km) generally south of the site.

The Morris Operation ISFSI site is about 30 feet (9 m) above normal pool level in the Kankakee River and is between the flood plains of the Kankakee and Illinois Rivers. Studies concluded

that there is no serious flood threat to the Morris Operation ISFSI (GEH, 2021c). Federal Emergency Management Agency maps indicate the site is outside flood hazard areas.

As shown in Figure 1, there is a small marsh or pond at the northwestern corner of the property adjacent to the Goose Lake Prairie. In addition, as described previously in sections 2.1.3 and 2.1.4, two lagoons and a holding pond (to receive any overflow from the lagoons) are located south of the main process area. These ponds, which have clay liners, receive about 500 gallons (1,893 L) per day of nonhazardous wastewaters in accordance with a permit from the Illinois Environmental Protection Agency's (IEPA's) Division of Water Pollution Control. The permit allows the ponds to receive and retain sanitary wastewater, potable and utility water system drainage, compressor condensate, and groundwater intrusion pump-out (IEPA 2019). There are no discharges from the ponds to any surface waters or to groundwater. Some noncontact stormwater drains from the site via open ditches and ultimately flows into the Kankakee River.

3.4.2 Groundwater

The groundwater in the vicinity of the Morris Operation ISFSI site is drawn from the Cambrian-Ordovician aquifer system, which is used almost exclusively as the groundwater supply for municipal and industrial use in the area. Glacial drift in the area is underlain by sandstone or limestone, or both. Beneath these formations and directly over the Cambrian-Ordovician aquifer system is a layer of shale approximately 65 feet (19 m) thick. The top of the Cambrian-Ordovician aquifer at the site is approximately 100 to 150 feet (30 to 46 m) beneath the surface. The shale layer over the aquifer prevents or significantly decreases the transmission of groundwater into and out of the overlying sandstone or limestone layers. This also significantly decreases the potential for any contamination from the Morris Operation ISFSI to reach the aquifer (NRC 2004a).

Water to meet potable, sanitary, spent fuel storage basins, and fire-fighting requirements is obtained principally from a 788-foot (240-meter)-deep well in the Cambrian-Ordovician aquifer. The well is located within the OCA (GEH 2021c). The Morris Operation ISFSI currently withdraws approximately 200 gallons (757 L) per day for the spent fuel storage basins and another 200 gallons per day for potable, sanitary, and miscellaneous uses (GEH 2019). This is essentially the same rate of withdrawal as that reported in the NRC's 2004 license renewal EA.

GEH has installed eight monitoring wells around the main building (housing the spent fuel pools). GEH samples these wells quarterly to ensure that sampling results meet compliance criteria for both tritium and beta-emitting radionuclides. The general locations of these wells are shown in Figure 57. Analyses from quarterly sampling of the wells for the past 5 years indicate that tritium concentrations were at or below minimum detectable quantities. Analyses for gross beta resulted in concentrations well below operational limits specified in the Morris Operation ISFSI procedures (GEH 2019, 2020b, 2021e).

3.5 Ecology

As described in the NRC's 2004 license renewal EA and in GEH's ER, Goose Lake Prairie State Natural Area is representative of the ecological resources in the area. The park is over 2,537 acres (1,027 ha) in area and is the largest remnant of prairie left in Illinois. Tall prairie grasses,

including bluestern, Indian grass, and switch grass, make up 60 percent of the prairie, and the broad-leaved flowering plants known as forbs compose the prairie's other 40 percent. Wildlife observed include deer, coyote, red fox, cottontail rabbit, muskrat, beaver, and badger. The Goose Lake Prairie is especially important as a breeding area for wading birds (e.g., American bittern, least bittern), marsh-dwelling waterbirds (e.g., Virginia rail, king rail, common gallinule), and grassland songbirds (e.g., Henslow's sparrow, grasshopper sparrow, sedge wren). The prairie is also an important wintering area for waterfowl and birds of prey, including the rough-legged hawk and short-eared owl. Other birds in the area include barred owls, red-tailed and marsh hawks, red-winged blackbirds, great blue herons, belted kingfishers, Canada geese, wood ducks, mallards, blue-winged teals, doves, and northern bob whites. The prairie is also home to turtles, snakes, and frogs (NRC 2004a; GEH 2019).

3.5.1 Rare, Threatened, and Endangered Species

Under section 7 of the Endangered Species Act of 1973, prior to taking a proposed action, a Federal agency must, among other things, determine (1) whether endangered and threatened species or their critical habitats are known to be near the proposed action and, if so, (2) whether the proposed Federal action may affect listed species or critical habitats.

The NRC visited the U.S. Fish and Wildlife Service's (FWS's) Information for Planning and Consultation (IPaC) website (<https://ipac.ecosphere.fws.gov/>) and generated a list from the Illinois-Iowa Ecological Services Field Office of federally designated threatened, endangered, proposed, or candidate species or critical habitats that could be found on the GEH site or could be affected by the proposed renewal. These species are the Indiana bat (endangered), northern long-eared bat (threatened), scaleshell mussel (endangered), sheepsnose mussel (endangered), monarch butterfly (candidate), and eastern prairie fringed orchid (threatened) (FWS 2022). Although these species may have been observed in prairie and marshland habitats south and west of the site, GEH states in the ER that none has been observed on the site proper, which contains no natural habitats and is subject to constant disturbance (GEH 2019). The FWS confirms that no critical habitats are in the project area (FWS 2022).

The Illinois Endangered Species Protection Board maintains and periodically updates the Illinois List of Endangered and Threatened Species and publishes lists of these endangered and threatened species by county. The GEH site lies in eastern Grundy County, a mile from Will County, so the NRC reviewed the Illinois Natural Heritage Database for lists of state-protected species from both counties (IDNR 2022a). Nine of these state-listed species, all birds, have been documented at Goose Lake Prairie: king rail, common gallinule, upland sandpiper, American bittern, least bittern, osprey, Northern harrier, short-eared owl, and loggerhead shrike. Finally, bald eagles, protected under the Bald and Golden Eagle Protection Act, are regularly observed in Goose Lake Prairie (GEH 2019).

Section 4.5 describes the potential impacts of the proposed action on ecological resources.

3.6 Waste Management

Section 2.1.4 of this EA describes the wastes produced, stored, and shipped for disposal. No wastewaters are discharged from the site. Nonradioactive wastewaters are collected in

permitted lagoons, and radioactive wastewater is treated and evaporated or returned to the spent fuel storage basin. Facility trash and other solid nonhazardous, nonradioactive wastes are sent to local municipal solid waste facilities.

Collected low-level radioactive wastes are shipped occasionally to a licensed low-level radioactive waste disposal site. As described in section 2.1.3, GEH periodically seeks authorization from the Texas Low-Level Radioactive Waste Disposal Compact Commission for the disposal of class A and B low-level radioactive wastes at the Waste Control Specialists facility in Andrews County, Texas. The facility accepts class A, B, and C low-level radioactive wastes, as well as low activity waste, mixed low-level radioactive waste, and hazardous wastes. Waste Control Specialists has a near-surface disposal landfill (Texas Compact Waste Facility) of 333,000 cubic yards. Since 2012, the facility has received about 7,400 cubic yards of waste (NRC 2021c).

3.7 Climate, Meteorology, and Air Quality

The climate of Illinois is typically continental, with cold winters and warm humid summers. There are frequent short-term fluctuations in temperature, humidity, cloud cover, and wind speed and direction. Winds are controlled primarily by storm systems and weather fronts that move eastward and northeastward through the area. Southeasterly and easterly winds usually bring mild and wet weather. The southerly winds are warm and showery, while westerly winds are dry with moderate temperatures. Winds from the northwest and north are usually cool and dry (GEH 2019; NRC 2004a).

The Illinois State Climatologist issued monthly temperature averages for various Illinois stations spanning 1981–2010, including Channahon Dresden Island located approximately 1 mile north of the Morris Operation site. The coldest average temperature was 23.2 degrees Fahrenheit (°F) (4.8°C) in January and the warmest average temperature was 73.7°F (23.2°C) in July. The warmest high temperature of the 30-year period was 84.4°F (29.1°C) and the coldest low temperature was 15.6°F (-9.1°C). Annual rainfall over the 30-year period averaged 36.5 inches (55 cm) and annual snowfall averaged 19.8 inches (GEH 2019; ISC 2021a).

The Illinois State Climatologist reports that it expects Illinois to experience increasing air temperatures and precipitation throughout the 21st century. By the end of the century, average daily temperatures are projected to increase by between 4 and 14°F (by between 2.2 and 7.8°C), depending on the extent to which emissions are reduced. These increases will likely coincide with an increased risk of extreme high temperatures and a reduced risk of extreme low temperatures. The projected temperature increases are also expected to increase the severity of naturally occurring droughts in the state (ISC 2021b).

Severe weather conditions can occur in the area. For the period from January 1, 2000, through September 30, 2021, the predominant severe weather events in Grundy County were hail and thunderstorm winds. The reported days or events of certain severe weather types are as follows (GEH 2019; NOAA 2021):

- hail – 33 days
- tornadoes – 9 days (strongest was EF3 on the Enhanced Fujita Scale)

- thunderstorm wind 50 knots (92.6 kilometers per hour) and above – 66 days
- blizzard – 4 days
- drought – 9 reports (from June 2005 through February 2006)
- excessive heat – 3 days (2009, 2012, and 2019).

Under the Clean Air Act, the US EPA has established National Ambient Air Quality Standards for six criteria pollutants: nitrogen dioxide, sulfur dioxide, carbon monoxide, lead, ozone, and particulate matter. The ISFSI site is in the Metropolitan Chicago Interstate Air Quality Control Region (40 CFR 81.14). Grundy County's air quality is in attainment for all criteria pollutants with the exception of 8-hour ozone in portions of the County, Goose Lake Township (where the ISFSI is located) and Aux Sable Township (north of the Illinois River) (GEH 2019; EPA 2021). The operation of the Morris Operation ISFSI does not require an air emissions permit.

Section 2.1.4 describes the air emissions from the Morris Operation ISFSI, primarily consisting of krypton-85, which is released via the exhaust stack. From 2014 through 2018, krypton-85 was released at a rate of 0.92 to 1.7 curies per year (GEH 2019). As described in Section 3.10 of this EA, GEH incorporates krypton-85 emissions into its calculations of dose to the public.

3.8 Demography and Socioeconomics

The Morris Operation ISFSI has a small workforce consisting of security personnel and operations staff who conduct periodic maintenance, monitoring, and inspections. Most of the current workers reside in the nearby cities of Morris and Joliet, Illinois. GEH pays property taxes to Grundy County for the structures and land at the Morris Operation site. In 2018, GEH paid a total of \$149,763 in property taxes. GEH expects that the property tax payments will remain about the same over the remaining life of the facility (GEH 2019).

In 2000 (as reported in the NRC's EA for the 2004 license renewal), Grundy County's population was 37,535. In 2019, the population was 51,054, representing a 1.9 percent increase during that period. The neighboring Will County population likewise increased by 1.9 percent during that period (USCB 2021). Section 3.11.1 of the ER provides a detailed description of the surrounding population by county within a 5-mile radius and within a 10- to 50-mile (20.6- to 80.5-km) radius and provides population growth estimates from 2010 through 2050, which covers the period of the proposed license renewal. Within a 5-mile (8-km) radius of the site, the population was 19,574 in 2010 and is projected to be 21,554 by 2050 (GEH 2019).

In addition to census-derived population estimates, transient populations are associated with workplaces, seasonal housing, and recreational areas in the vicinity of the site. Less than a mile (1.6 km) to the east of the site, a cluster of about 30 cottages (known as the Thorsen cottages) is on the west shore of the Kankakee River; they are primarily rental properties for area visitors. On the east shore of the Kankakee River, there are a couple hundred residences, both permanent and temporary. Other transient or temporary populations are associated with the DNPS adjacent to the site to the north (temporary staffing increase during occasional refueling), farming, and tourism at the adjacent Goose Lake Prairie State Natural Area and the Des Plaines State Fish and Wildlife Area (GEH 2019).

Table 2 shows the ethnicity breakdown, median income, and individuals in poverty estimates for Grundy and Will counties and the State of Illinois.

Table 2. Ethnicity, Income, and Poverty^(a)

	Grundy County (Morris Operation ISFSI)	Will County	State of Illinois
White ^(b)	95.6	79.2	76.8
Black or African American ^(b)	1.8	12.2	14.6
American Indian and Alaska Native ^(b)	0.4	0.5	0.6
Asian ^(b)	0.8	6.0	5.9
Native Hawaiian and other Pacific Islander ^(a)	0.1	0.1	0.1
Persons reporting two or more races	1.3	2.0	2.1
Persons of Hispanic or Latino origin ^(c)	10.5	18.2	17.5
White persons, not Hispanic	85.8	62.5	60.8
Median household income, 2015-2019	\$77,350	\$86,961	\$65,886
Individuals below poverty level	5.6	6.5	11.5

(a) Expressed as percentage for 2019, unless otherwise indicated.

(b) Includes persons reporting only one race.

(c) Hispanics may be of any race, so are also included in applicable race categories.

Note: For all estimates except median income, estimates are not comparable to other geographic levels because of methodology differences that may exist between different data sources.

Source: U.S. Census website:

<https://www.census.gov/quickfacts/fact/table/IL.willcountyillinois,grundycountyillinois/PST045219>

In its ER (GEH 2019), GEH describes its review to determine the presence of environmental justice (minority and low-income) populations in accordance with the NRC's guidance in appendix C of NUREG-1748 for materials licensing reviews (NRC 2003). GEH determined minority and low-income characteristics by block group within 4 miles (6.4 km) of the ISFSI site. A total of 10 block groups were identified within the 4-mile (6.4-km) radius of the site.

GEH calculated the percentage of minority categories within each block group for the 10 block groups within the 4-mile (6.4-km) radius and assessed whether the percentage of any minority category exceeded 50 percent of the total block group population or exceeded the corresponding state or county percentage by more than 20 percent. The results of GEH's analysis indicate that census block groups within the 4-mile (6.4-km) radius do not have significant percentages of minority populations.

For low-income populations, GEH calculated the percentage of low-income populations within each block group for the 10 block groups within the 4-mile (6.4-km) radius and assessed whether the percentage of any block group low-income category exceeded 50 percent of the total block group population or exceeded its corresponding state or county percentage by more than 20 percent. The results of GEH's analysis indicate that census block groups within the 4-mile (6.4-km) radius do not have significant percentages of low-income households (GEH 2019).

3.9 Historic and Cultural Resources

Section 106 of the National Historic Preservation Act, as amended, (NHPA) requires the NRC staff to take into account the effects of the proposed licensing action on historic properties. The proposed license renewal action would not involve construction, excavation, or ground disturbance and would be a continuation of existing conditions. GEH anticipates no new significant construction at the ISFSI and no impact on cultural resources.

Records of numerous historic and cultural resources exist for the general area, as described in detail in the ER (GEH 2019) and summarized here. As stated in section 3.9 of the ER, GEH conducted online reviews of archaeological records from the Illinois State Museum's Archaeological Site Geographic Information System, the Illinois Historic Preservation Division's Historic and Architectural Resources Geographic Information System, and the National Register of Historic Places (NRHP). Based on this online research, no studies or archaeological sites have been identified within the Morris Operation site boundary. Nine archaeological sites are listed within 1 mile (1.6 km) of the facility, but none have been evaluated for eligibility for listing in the NRHP. These consist of five prehistoric Native American sites and four historic sites. Eight properties or districts are listed in the NRHP in Grundy County ranging from about 1 mile (1.6 km) to about 8 miles (12.8 km) from the site. The closest of these, about 1 mile (1.6 km) north-northwest of the site, is the Dresden Island Lock and Dam Historic District. Hundreds of unevaluated properties are inventoried in Grundy and Will counties, and 12 of these properties are located within 3 miles (4.8 km) of the site. Finally, previous documents have recorded the presence of a historic period stone wall paralleling E. Collins Road east of the facility and extending about 300 feet (91 m). GEH found no records documenting or assessing the wall in the online resources it consulted (GEH 2019).

Section 4.10 of this EA describes the NRC's conclusions about potential impacts from the proposed action on historic and cultural resources. Section 6.0 describes NRC staff communications with the Illinois State Historic Preservation (SHPO) Office and with Native American tribes.

3.10 Public and Occupational Health and Safety

The Atomic Energy Act, as amended, requires the NRC to develop and enforce standards that provide an adequate level of protection and public health and safety and the environment. The NRC has established multiple layers of radiation protection limits to protect the public against potential health risks from exposure to effluent discharges from nuclear facility operations. ISFSIs in the United States are licensed by the NRC and must comply with NRC regulations and conditions specified in the license in order to operate. Licensees such as GEH are required to comply with NRC regulations that limit doses to the public in 10 CFR part 20, subpart D, "Radiation Dose Limits for Individual Members of the Public." In addition, licensees must comply with NRC limits for radioactive materials in effluents in 10 CFR 72.104, "Criteria for Radioactive Materials in Effluents and Direct Radiation from an ISFSI or [monitored retrievable storage facility (MRS)]."

GEH conducts environmental monitoring of the ISFSI and surrounding area and has a program to maintain radiation exposures to personnel, visitors, and the general public below regulatory

limits and ALARA. Workers in the ISFSI wear personnel radiation monitoring devices, and dose is recorded and tracked for analysis. Radiation is monitored in the facility using a combination of area radiation monitors, air sampling and monitoring, criticality monitors, and portable monitors. Radiation is also continually measured at twelve locations along the fence line at the OCA boundary. If measured doses were to significantly exceed historical levels, GEH would perform analyses to determine the cause and would establish mitigation measures (GEH 2019).

GEH provides annual radioactive effluent release reports to the NRC, per 10 CFR 72.44(d). GEH's reports indicate that small quantities of radionuclides are released to the environment via air emissions. Measurements of particulate radioactive materials in air exhausted via the stack are analyzed weekly and, per technical specification 4.1.1, the maximum value must not exceed a weekly average of 4×10^{-8} microcuries per milliliter (GEH 2019; NRC 2004b). As discussed in section 2.1.4, the primary effluent is krypton-85, which was released in quantities ranging from 0.92 to 1.7 curies per year from 2014 through 2018.

GEH also annually estimates the maximum potential dose to the public from effluents and direct radiation at the OCA boundary. This estimated dose is the sum of the doses from stack releases, drinking surface water from the sanitary lagoons, consuming water from the onsite wells, and direct radiation at the OCA boundary. In its ER (GEH 2019), GEH reports that from 2014 through 2018, the maximum total effective dose equivalent to a member of the public was calculated to range from 0.27 millirem (in 2018) to 0.70 millirem (in 2014), well below the NRC requirements of 25 millirem in 10 CFR 72.104(a) and 100 millirem in 10 CFR 20.1301(a).

To protect workers at the Morris Operation ISFSI, GEH is required to comply with NRC regulations that limit doses to workers in 10 CFR part 20, subpart C, "Occupational Dose Limits for Adults." The primary source of radiation exposure for the workers is neutron and gamma radiation emanating from the spent fuel. The spent fuel is contained in two interconnected basins that provide a minimum of 9 feet of water to shield employees. GEH states in its ER that operating experience since 1972 demonstrates that radioactive material concentration in the basin water can be reliably maintained at personnel exposures that are ALARA (GEH 2019). GEH's management controls to limit exposures include operating limits for radioactive material concentration in basin water, which is implemented through the use of a cleanup and water treatment system to remove impurities and radioactive materials from the water (GEH 2019).

NUREG-0713, *Occupational Radiation Exposure at NRC Licensed Facilities* (NRC 2020), summarizes the occupational exposure data maintained in the NRC Radiation Exposure Information and Reporting System database, compiled from the annual reports submitted by NRC licensees subject to certain reporting requirements, including the Morris Operation ISFSI (in Table A1 of NUREG-0713). The data, which are submitted by licensees, consist of radiation exposure records from dosimeters for each monitored individual. The data for the Morris Operation ISFSI indicate exposures to workers have been well below the regulatory limits in 10 CFR 20.1201, found in 10 CFR part 20, subpart C. For example, the average measured total effective dose equivalent³ for workers was 102 millirem (1.02 mSv) in 2018, 32 millirem (0.32 mSv) in 2017, and 26 millirem in 2016 (NRC 2018–2020). The applicable limit in 10 CFR 20.1201(a)(1) is a total effective dose equivalent of 5 rem (5,000 millirem or 50 mSv).

³ The NRC's regulations (10 CFR 20.1003) define total effective dose equivalent as "the sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures)."

For context, the average annual estimated total effective dose equivalent from natural background and manmade radiation sources for a U.S. resident is about 620 millirem (6.2 millisieverts), of which about half is from natural background radiation from cosmic rays, radon in the air, and Earth itself. Other sources include naturally occurring radionuclides that exist in the body, medical and occupational sources, industrial sources, and radionuclides present in consumer products (NRC 2021d).

In addition to meeting specific NRC limits in these regulations, licensees must ensure that exposures are maintained at levels that are ALARA. The ALARA requirements GEH must meet are specified in 10 CFR 72.104(b) and 10 CFR 20.1101(b). Under the latter requirement, GEH must, to the extent practical, use procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable. For example, as specified in 10 CFR 20.1101(d), GEH maintains controls to ensure that the dose to a member of the public specifically from air emissions is below 10 millirem (0.1 mSv). Additionally, GEH has established an operating limit for gross beta concentration in basin water of 0.02 microcuries per milliliter (GEH 2019). As described above, the total effective dose equivalent to a member of the public from all sources from 2014 through 2018 ranged well below the 10 millirem limit for air emissions alone, demonstrating that doses to the public are maintained as low as reasonably achievable. Also as described above, the doses to workers are maintained at levels that are orders of magnitude below the dose limit for workers. GEH's health physics program, the purpose of which is to minimize occupational exposure, is described in section 7.6 of the CSAR (GEH 2021c).

Nonradiological (industrial) hazards include moving heavy objects, working outside, working with and maintaining heavy equipment, and exposure to hazardous materials. Worker safety is managed through GEH's worker safety and health program and is not regulated by the NRC if there is no nexus to radiological materials.

3.11 Visual and Scenic Resources

The GEH property stands on a plateau above the Kankakee River. The Morris Operation ISFSI consists of a cluster of reinforced concrete and steel buildings (all gray or faded light blue) surrounded by a security fence. The two most visually notable features of the Morris Operation ISFSI are the 125-foot (38-m)-tall water tower (a white tank with blue pedestal) and a 300-foot (91-m) tall exhaust stack. Surrounded by prairie (marshes, grasslands, shrubs and hardwood trees), the larger buildings are visible from most sections of E. Collins Road, except where screened by trees (GEH 2019).

In its ER, and consistent with NRC guidance in NUREG-1748, GEH explains that visual impacts of projects are often assessed in terms of "key observation points" from which the project or site may be viewed, such as hilltops, highways, or nature preserves. According to GEH, the most important observation points in this instance are those associated with Goose Lake Prairie State Natural Area, which lies immediately west/southwest of the GEH property. GEH reports that from the perspective of a visitor to Goose Lake Prairie State Natural Area who is looking east or northeast, the Morris Operation ISFSI is dwarfed by the numerous buildings and structures of the larger DNPS. The DNPS lies just across E. Collins Road from the Morris Operation ISFSI

and has industrial facilities that occupy more than 250 acres (101 ha), including two 310-foot (94-m)-tall exhaust stacks. Because of its size and proximity to the ISFSI, the nuclear plant dominates the Morris Operation ISFSI viewshed from every direction (GEH 2019).

3.12 Noise

The closest residences are the cottages along the Kankakee River approximately 0.5 miles (0.8 km) east of the site. Although the development contains primarily part-time residences, it does include some permanent residences, which represent the closest potential sensitive noise receptors.

Morris Operation ISFSI activities associated with spent fuel management take place inside buildings. Audible noise directly attributable to operation of the ISFSI is generally limited to vehicle traffic to and from the ISFSI during routine operations and maintenance activities. The nearby Dresden nuclear power plant is a much larger source of potential noise, which comes primarily from traffic and cooling towers (GEH 2019).

4.0 ENVIRONMENTAL IMPACTS

The NRC staff reviewed the ER prepared by GEH (GEH 2019), collected information from Federal and State agencies, and evaluated the potential environmental impacts of the proposed action on the various resources (or aspects) of the affected environment. The staff used the guidelines outlined in NUREG-1748 (NRC 2003) to conduct its evaluation.

4.1 Land Use

Approval of the proposed action would not result in any construction or expansion of the existing ISFSI footprint or operations. Routine operation of the ISFSI is largely passive; activities include continuation of existing monitoring and maintenance activities for the wet storage basins, which are inside a building. Because there would be no new land use as a result of the proposed action, the NRC staff concludes that the impacts on land use would not be significant.

4.2 Transportation

The NRC staff expects that the volume of traffic at the Morris Operation ISFSI site and the surrounding area would not change as a result of the proposed action. The proposed action would not include new construction or expansion, and only infrequent radioactive waste shipments are expected, based on historic accumulation and shipment rates. Section 2.1.4 describes the types of class A and class B low-level radioactive wastes that are generated and occasionally shipped for disposal. Based on this information, the NRC staff concludes that the impacts on transportation from the proposed action would not be significant.

4.3 Geology and Soils

The NRC staff does not expect the continued operation of the ISFSI to affect the underlying soils or geology. The proposed action does not include any physical modifications to the ISFSI. The ISFSI does not generate any liquid or solid effluents that might affect the geology or soils. A

leak occurring from a breach in the stainless-steel basin liner is retained within the concrete walls of the basin, where it flows through channels in the concrete and is ultimately captured by the leak-detection and sump system for sampling and routing to the radioactive wastewater treatment system. As stated in section 3.4.2 of this EA, monitoring well data confirm there is no leakage into surrounding soils or groundwater. Monitoring well locations are shown in figure 7. Based on this information, the NRC staff concludes that the impacts on geology and soils from the proposed action would not be significant.

4.4 Water Resources

The proposed action would not result in any changes in water use (well water withdrawal) or in the types, characteristics, or quantities of radiological or nonradiological effluents. No wastewater is discharged from the property. Therefore, the NRC staff does not expect changes in the impacts on water resources as a result of the proposed action. Further, and as described in sections 3.4 and 3.10 of this EA, GEH conducts monitoring of groundwater for beta-emitting radionuclides and tritium, and the monitoring data show that concentrations of these parameters are at or below detectable quantities. Because the proposed action would not result in changes in water consumption or impacts on water quality, the NRC staff concludes that the impacts on water resources from the proposed action would not be significant.

4.5 Ecology

The proposed renewal of the Morris Operation ISFSI would be a continuation of current spent fuel storage and associated maintenance activities. Continued operation of the ISFSI would not involve activities that would disturb land or include physical modifications. Routine operation of the ISFSI is largely passive and takes place primarily inside buildings. With the exception of the continued potential for occasional foot traffic by ISFSI security personnel, the NRC staff expects that no NRC-licensed activities would take place on undisturbed or natural areas of the GEH site. The only features of the Morris Operation ISFSI that might attract wildlife are the lagoons, which contain treated sanitary wastewater and do not pose a hazard. The NRC concludes, therefore, that the proposed action would not have a significant effect on wildlife and vegetation and would not affect Federally listed, threatened, and endangered species or State-identified rare species or species of special concern.

4.6 Waste Management

Wastes generated at the Morris Operation ISFSI are described in section 2.1.4 of this EA and waste management facilities are discussed in section 3.6. GEH does not plan to make changes to ISFSI waste management systems. GEH would continue to operate the sanitary wastewater lagoons in compliance with its IEPA permit and to manage the radioactive wastewater system and solid radioactive waste generated from ISFSI operations in accordance with NRC regulations. Because continued operation of the ISFSI over a renewed license term would not involve a significant change in activities, the NRC staff concludes that the low-level radioactive waste generation rate would remain low, comparable to rates described in section 2.1.4. As described in section 3.6, the Waste Control Specialists facility has ample remaining disposal capacity. GEH would also manage nonhazardous solid wastes and universal wastes and any

hazardous waste in accordance with State and Federal regulations. The NRC concludes, therefore, that the impacts from waste management would not be significant.

4.7 Climate, Meteorology, and Air Quality

The ISFSI was designed to contain and confine radioactive materials within the building and vault structures. As a result of this design, continuing to store spent nuclear fuel would, as in the past, emit only insignificant quantities of pollutants as gaseous effluents (GEH 2019). Continued operation of the ISFSI would have minimal impact on local air quality because the ISFSI produces air emissions with very low concentrations of krypton-85, as described in section 2.1.4. GEH incorporates krypton-85 emissions into its calculations of dose to the public, as described in section 3.10 of this EA.

Levels of nonradiological emissions from employee and delivery vehicles and a stand-by diesel generator are also very low and are comparable to emissions from a commercial facility with a small staff. The generator is tested monthly to verify operation. During these tests, the generator is operated for about 1 hour. The infrequent operation of this generator for testing and use in the event of an occasional power outage does not require an air permit under Illinois regulations (GEH 2019). The NRC staff concludes, therefore, that impacts on air quality from the proposed action would not be significant.

4.8 Socioeconomics

In its license renewal application, GEH indicated that no significant changes would be made to current spent fuel storage operations (GEH 2019). For this reason, the NRC staff does not anticipate a significant change in staffing and, thus, no influx of people to the area who would require housing. Also, the NRC staff does not anticipate related changes to or impacts on the local economy. Therefore, the NRC staff concludes that the socioeconomic impacts from the proposed action would not be significant.

4.9 Environmental Justice

Executive Order (EO) 12898 (59 FR 7629; February 11, 1994), *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs Federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations. The NRC, an independent agency, was requested (rather than directed) to comply with EO 12898. In 2004, the Commission issued its *Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions* (69 FR 52040; August 24, 2004). As reflected in the Commission's policy statement, the NRC strives to meet the goals of EO 12898 through its well-established NEPA review process. Regarding EAs, the NRC's policy statement on environmental justice (EJ) states:

If there will be no significant impact as a result of the proposed action, it follows that an EJ review would not be necessary. However, the agency must be mindful of special circumstances that might warrant not making a [finding of no significant impact (FONSI)]. In most EAs, the Commission expects that there will be little or

no offsite impacts and, consequently, impacts would not occur to people outside the facility. However, if there is a clear potential for significant offsite impacts from the proposed action then an appropriate EJ review might be needed to provide a basis for concluding that there are no unique impacts that would be significant. If the impacts are significant because of the uniqueness of the communities, then a FONSI may not be possible and mitigation or an EIS should be considered. (69 FR 52040, 52047)

In the section “Guidelines for Implementation of NEPA as to EJ Issues” (69 FR 52040, 52048), the NRC explains that special circumstances arise only where the proposed action has a clear potential to have offsite impacts on minority and low-income communities.

As assessed throughout section 4 of this EA, there would be no significant impacts on any offsite population associated with the proposed action. Thus, the staff also concludes that the proposed action does not have a clear potential to have offsite impacts on minority or low-income communities. Further, as described in more detail in section 3.8 of this EA and consistent with NRC guidance in NUREG-1748, there are no census block groups within a 4-mile (6-km) radius with significant minority or low-income populations. Therefore, a detailed environmental justice review is not necessary for this action.

4.10 Historic and Cultural Resources

Under 36 CFR 800.3(a)(1) “[i]f the [proposed action] . . . is a type of activity that does not have the potential to cause effects on historic properties, assuming such historic properties were present, the agency official has no further obligations under Section 106 [of the NHPA] or this part.” As discussed in section 3.9, there are no known historic or cultural properties within the ISFSI site. GEH has no plans for expansion or construction activities. Therefore, even assuming historic properties were present, there would be no effect on any cultural resources in the vicinity of the Morris Operation ISFSI.

Because the NRC concluded that the proposed undertaking, renewal of the license for the ISFSI, does not have the potential to cause effects on historic or cultural resources, the NRC did not conduct consultation under Section 106 of the NHPA. As stated in sections 3.9 and 6.0, however, the NRC staff contacted the Illinois State Historic Preservation Office (SHPO) and sent letters to tribes notifying them of the proposed action.

4.11 Public and Occupational Health

The following sections describe the potential effects on public and occupational health related to potential exposure to radiation or to nonradiological effluents or wastes.

4.11.1 Nonradiological Impacts

Because the proposed renewal, if granted, would maintain the status quo at the facility, the proposed action would not result in any changes in the types, characteristics, or quantities of nonradiological effluents or solid wastes. There are no planned refurbishments beyond maintenance, storage, and routine inspections and monitoring of the ISFSI site in accordance with the requirements in 10 CFR parts 20 and 72. Air emissions from the facility consist of

emissions from vehicles and diesel generators, and the facility does not require an air emissions permit from the State. Accordingly, and consistent with the assessment of impacts on each resource area throughout section 4 of this EA, the NRC staff concludes that nonradiological impacts from the proposed action on public and occupational health and safety would not be significant.

4.11.2 Radiological Impacts

The primary pathways for radiation exposure are potential airborne radioactivity releases and direct radiation from the irradiated fuel rods and storage basin water. Operations during the proposed license renewal period would include continued storage in the spent fuel basin; treatment of wastewaters to remove low-level radioactive wastes for proper storage and disposal; and routine maintenance, inspection, and monitoring of the ISFSI site in accordance with the requirements in 10 CFR parts 20 and 72. The proposed action would involve no significant changes in routine operations from those described in section 2.0 of this EA. No liquid effluents are released from the facility. Further, GEH has requested no new construction or land disturbance as part of this license renewal application.

As also described in section 3.10 of this EA, GEH's environmental monitoring program monitors direct radiation through the use of optically stimulated luminescent dosimeters, which have been installed throughout the site and around the boundary of the 15-acre (6-ha) controlled access area. In addition, area radiation monitors are located in various zones in the facility that may be occupied and provide continuous readings of gamma radiation levels. Air sampling and monitoring stations are located in the areas where the spent fuel storage basins are located, and a criticality detection system operates in the fuel storage basin enclosure to warn personnel in the event of a criticality. GEH also uses portable survey instruments and counters (GEH 2021c). Through the environmental monitoring program, GEH evaluates exposure to the public and verifies compliance with dose limits in 10 CFR 72.104 (GEH 2021c).

4.11.2.1 Occupational Dose

The primary source of dose to workers at the Morris Operation ISFSI is direct radiation from the spent fuel and storage water in the basins, which are filled with water to a level of 9 feet (2.7 m) above the top of the spent fuel. As described in section 3.10 of this EA, GEH has a program in place to ensure that doses to workers are kept ALARA and well below NRC requirements for worker protection in 10 CFR part 20. This program, described in section 7 of the CSAR, includes controlling access to areas of the plant containing radiation, maintaining radiation measurement equipment throughout the facility (including area monitoring, criticality monitoring, portable survey meters, air sampling monitors, and personnel dosimeters), and maintaining procedures to further control worker exposures (GEH 2021c).

As described in section 3.10, worker exposures reported by the NRC for recent years ranged from 26 millirem (0.26 mSv) in 2016 to 102 millirem (1.02 mSv) total effective dose equivalent in 2018. These exposures are well below the 5-rem (5,000 millirem) (50 mSv) total effective dose equivalent limit in 10 CFR 20.1201(a)(1) for workers. The proposed license renewal, if granted, would maintain the status quo at the Morris Operation ISFSI, as described in section 2.1 of this EA. Accordingly, the NRC staff expects that continued operation of the ISFSI would result in

similar total effective dose equivalents for the 20-year proposed license renewal period. Therefore, the potential dose impacts on workers from continued operation of the ISFSI would not be significant.

4.11.2.2 Public Dose

The ISFSI is within the OCA of the GEH site and is surrounded by a double chain-link access control fence topped with razor wire. Potential exposure to the public associated with ISFSI operations is primarily the result of air emissions. No liquid effluents are released, and the security boundary maintains enough distance to limit external radiation exposure to members of the public. The release rate of gaseous or airborne effluents is not expected to significantly change over the license renewal period, and therefore, the NRC staff expects that the potential dose to the public for the 20-year renewal period would remain the same or would not be significantly different. As stated in section 3.10, from 2014 through 2018, the maximum total effective dose equivalent to a member of the public was calculated to be 0.70 millirem (0.007 mSv) in 2014, which is well below the NRC requirement of 25 millirem (0.25 mSv) in 10 CFR 72.104(a) for effluents and direct radiation from an ISFSI. This dose from all Morris Operation ISFSI radiation sources is also well below the NRC's ALARA limit of 10 millirem (0.1 mSv) for doses to the public specifically from air emissions (in 10 CFR 20.1101(d)). As discussed in more detail in section 3.10, GEH would continue to ensure that radioactivity in Morris Operation ISFSI effluents and dose to members of the public are ALARA in accordance with 10 CFR 20.1101(b) (GEH 2019) and consistent with 10 CFR 72.104(b). Therefore, the NRC staff concludes that the potential dose impacts on the public from continued operation of the ISFSI would not be significant.

4.11.2.3 Accidents

Accidents at the Morris Operation ISFSI could result in the release of radioactive or hazardous materials to the environment or increased direct radiation levels and thus may pose risks to workers and the public health and safety. In chapter 8 of its CSAR (GEH 2021c), GEH evaluated potential radiological impacts resulting from postulated accidents. Calculated doses resulting from these postulated accidents do not exceed the exposure limits identified in 10 CFR 72.104 (for normal operations) and 10 CFR 72.106 (for accidents). The accident scenarios evaluated and considered credible in sections 8.2 through 8.8 of the CSAR include loss of basin cooling, basin liner rupture leading to drainage of fuel basins, cask drop into cask-unloading basin, fuel bundle drop, fuel basket drop, tornado-generated missile, chiller system leak, and criticality accident. Ultimately, GEH determined that "no credible acts of nature, man-induced events or accidents have been identified that would result in biologically significant release of radioactive material or direct radiation doses in excess" of the limits in 10 CFR 72.106 for the exposure of an individual at the nearest boundary of the controlled area (GEH 2021c). This regulation also requires that the spent fuel be at least 100 meters (328 ft) from the nearest boundary of the controlled area.

In the NRC staff's EA for the issuance of license SNM-2500, the staff concluded that the impacts from the accident scenarios (described above) would not be significant (NRC, 1980). Specifically, the staff concluded in that EA that there would be no detectable radiological impacts from the postulated accidents and that any potential long-term health effects from these

accident scenarios would be less in quantity and no different in type from the potential health effects associated with natural background radiation (NRC, 1980). For the 2004 license renewal, GEH updated its CSAR, including the accident scenarios. The principal revision was to increase the time it takes for spent fuel to become exposed in the basin cooling water scenario (NRC, 2004). This scenario would not result in a radiological release, and the NRC staff concluded that any exposures from these accident scenarios would be a small fraction of the NRC exposure limits in 10 CFR 72.106(b) (NRC, 2004). The accident scenarios assessed by GEH in the current CSAR (GEH 2021c) have not changed because nothing about the facility has changed since 2004 that would affect the accident scenario consequences. Thus, for the reasons stated in its 2004 analysis, the NRC staff concludes that the potential impacts from accidents would not be significant and remain consistent with the assessment provided in the staff's EA for the 1980 license renewal.

Additionally, after the earthquake on March 11, 2011, at the Fukushima Daiichi nuclear power plant in Japan, the NRC inspected the Morris Operation ISFSI as part of the agency's effort to consider the lessons from the accident for nuclear facilities and require enhancements as appropriate. For sites with the nation's older spent fuel, such as the Morris Operation ISFSI, the impact of an extended loss of power to the site was predicted to be minimal because the spent fuel has been stored for a minimum of 30 years. The NRC predicted that "in the unlikely event that the [spent fuel wet storage basin] is completely drained of water, fuel melt would not occur given the limited fuel decay heat load" (NRC 2011). Similarly, NRC inspectors who reviewed scenarios such as station blackout, seismic events, tornado, flood, and fire found that the fuel would not melt as a result of these events because of its limited heat load (GEH 2019). In the intervening years, the only relevant change to the facility is that the heat load on the fuel has continued to decrease as the fuel continues to age. Therefore, the NRC staff concludes that the NRC findings remain valid that the fuel would not melt as a result of these events. The NRC also concludes that the renewal of this license, if granted, would not cause these events to have a significant impact on the environment.

4.12 Visual and Scenic Resources

The proposed action would not involve construction activities, land disturbance, excavation, or physical changes to the ISFSI site or physical environment. Therefore, the NRC staff does not anticipate changes in the local or regional scenic quality as a result of the proposed action. Accordingly, the staff concludes that the proposed action's potential impacts on visual and scenic resources would not be significant.

4.13 Noise

Storage of spent fuel and associated materials at the ISFSI is achieved through a largely passive system. No additional spent fuel would be added during the license renewal period without GEH first needing to request a license amendment. Most operations that generate noise, such as spent fuel pool maintenance, inspection, and monitoring, would take place inside the main process building and would not be audible outside. The main source of outside noise from the Morris Operation would continue to be primarily vehicle traffic to and from the ISFSI. This continued traffic from a small workforce would not represent a noticeable change from the current traffic to and from the ISFSI. Based on these considerations, the NRC staff does not

expect significant noise to be generated as a result of the continued operation of the ISFSI. The NRC staff concludes, therefore, that the potential impacts of noise from the proposed action would not be significant.

4.14 Cumulative Impacts

The Council on Environmental Quality has defined cumulative effects as “the effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.1(g)(3)). The NRC staff evaluated whether cumulative environmental impacts could result from the proposed action when the action’s incremental impact is added to the past, present, or reasonably foreseeable future actions in the area.

As discussed in section 4.0 of this EA, the NRC staff determined that impacts for all resource areas from the proposed action would not be significant. There would be no significant changes to nonradiological or radiological impacts if the Morris Operation ISFSI license were renewed. Impacts from the ISFSI operation would continue and their contribution to cumulative impacts would not change during the license renewal period.

The NRC staff considered other past, present, and reasonably foreseeable future actions that could affect the same resources impacted by the proposed action. Section 3.1 of this EA describes other nearby existing and proposed operations. In considering cumulative impacts, the NRC staff considered the same geographic areas as it did in sections 3 and 4 of this EA when considering only the renewal of the Morris Operation ISFSI license. With regard to reasonably foreseeable future actions, the NRC staff considered actions taken through 2042—which, if GEH’s license renewal is granted, would be license SNM-2500’s expiration year. As described in section 3.1, the DNPS is just north of the ISFSI. The area surrounding the GEH Morris ISFSI consists of a mix of other industrial, energy generation, and chemical facilities; farmland; residential areas; and state-designated natural areas. Developing (future) projects include the Competitive Power Ventures Three Rivers Energy Center (as described in section 3.1) and an associated gas transmission pipeline that is proposed to run northward from the energy center along the west side of the GE ISFSI site, approximately 500 feet (152 m) from the OCA (FERC 2022). Of these other actions, the staff determined that the major contributor to impacts that overlap with impacts from the Morris Operation ISFSI is now and would continue to be the operation of the DNPS, which employs a substantially larger workforce (over 800 employees) and represents most of the vehicle traffic in the immediate area. The DNPS contributes to noise levels (from cooling towers) and is a dominant visual presence in the area (GEH 2019). The DNPS also contributes to the potential for health effects from potential exposures to radiation.

Cumulative dose impacts would occur if multiple sources of radiological exposure, such as the Morris Operation ISFSI and the DNPS, affect the same population. Exelon⁴ calculated the potential cumulative dose from DNPS and Morris Operation activities in its annual effluent

⁴ Exelon was the licensee at the time these reports were produced and submitted. The NRC approved the transfer of the DNPS license from Exelon to Constellation Energy Generation LLC on February 1, 2022 (NRC 2022a).

reports for the DNPS. In its effluent report for 2018 (Exelon 2019), Exelon estimated the maximum combined total body dose from DNPS and Morris Operation activities during 2018 was 9.12 millirem (0.09 mSv), which is 36 percent of the 40 CFR Part 190 limit of 25 millirem (0.25 mSv). For 2019 and 2020, these combined DNPS and Morris Operation doses were less than the combined dose for 2018 (Exelon 2020, 2021). In comparison, the total body dose from 2014 through 2018 from the Morris Operation, as described in section 3.10, ranged at levels below 1 millirem, significantly less than the combined DNPS and Morris Operation estimated dose. The NRC staff concludes that, because continued operation of the DNPS and Morris Operation would not involve significant changes in activities or effluent releases from these facilities, the cumulative dose impacts of the ISFSI and DNPS would continue to be not significant.

As discussed in the preceding sections, the NRC staff determined that impacts for other resource areas from the proposed action would not be significant and that present conditions would continue. That is, there would be no significant changes to nonradiological or radiological impacts if the NRC renews the Morris Operation ISFSI license. The continued operation of the ISFSI would result in minor air emissions that do not noticeably affect the air quality in the area, which is affected by numerous other industrial facilities. Continued ISFSI operation would also result in minor traffic volume that, when added to the traffic from other nearby commercial and industrial facilities, would not result in a noticeable difference in traffic or noise because the Morris Operation workforce is very small. For similar reasons, the continued, unchanged operation of the Morris Operation ISFSI for a renewal period of twenty years would not contribute noticeably to future cumulative impacts. Thus, the NRC staff concludes that, while the cumulative impact of the overlapping operation of the DNPS and the Morris Operation ISFSI may be noticeable for air emissions and visual impacts, the ISFSI's contributions are not significant and would not change from current conditions. The staff concludes that the proposed action would not significantly contribute to potential cumulative impacts when the incremental impacts of the proposed action are combined with the potential impacts of other actions in the area.

In 2014, the NRC published a generic evaluation of the cumulative impacts of continuing to store spent fuel for several decades. This evaluation of the cumulative impacts of continued spent fuel storage is described in section 4.15.4 of this EA. The cumulative impacts associated with the proposed action for the Morris Operation ISFSI assessed in this EA would be comparable to or less than the impacts as assessed previously and described in section 4.15.4.

4.15 Continued Storage of Spent Nuclear Fuel

The NRC licensing proceedings for nuclear reactors and ISFSIs have historically relied on a generic determination codified in the NRC's regulations at 10 CFR 51.23 to satisfy the agency's obligations under NEPA with respect to the narrow area of the environmental impacts of onsite storage of spent nuclear fuel beyond a reactor's licensed life for operation or the term of an ISFSI's license and prior to ultimate disposal (continued storage). The Court of Appeals for the District of Columbia Circuit, in *New York v. NRC*, 681 F.3d 471 (D.C. Cir., 2012), vacated the NRC's 2010 update to that rule and remanded it to the NRC. Thereafter, the Commission determined that the NRC would not issue licenses dependent upon the formerly known Waste

Confidence Decision and Temporary Storage Rule until deficiencies identified by the Courts of Appeals were appropriately addressed (NRC 2012).

On September 19, 2014, the NRC published a revised rule at 10 CFR 51.23, “Environmental Impacts of Continued Storage of Spent Nuclear Fuel Beyond the Licensed Life for Operations of a Reactor” (79 FR 56238). The rule codifies the NRC’s generic determinations in NUREG-2157, *Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel* (NRC 2014b), regarding the environmental impacts of the continued storage of spent fuel beyond the life of a reactor’s operating license or the term of an ISFSI’s license and prior to ultimate disposal. In Commission Memorandum and Order CLI-14-08, the Commission held that the revised 10 CFR 51.23 and associated NUREG-2157 resolved the deficiencies identified by the court in *New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012) and stated that the rule satisfies the NRC’s NEPA obligations with respect to continued storage (NRC 2008). The revised rule requires, in 10 CFR 51.23(b), that EAs prepared for future reactor and spent fuel storage facility licensing actions consider the environmental impacts of continued storage if the impacts of continued storage of spent fuel are relevant to the proposed action. The rule, however, does not authorize the storage of spent fuel. As discussed in the statements of consideration for the final rule (79 FR 56238), the rule does not address the safety of continued storage of spent fuel. appendix B of NUREG-2157, however, discusses the feasibility of the safe storage of spent fuel.

In EAs prepared for reactor and spent fuel storage facility licensing actions submitted after October 20, 2014, 10 CFR 51.23(b) requires that the NRC consider the environmental impacts of the continued storage of spent fuel if the impacts of continued storage are relevant to the proposed action. The analysis provided below documents the required consideration of the environmental impacts of continued storage, as determined in NUREG-2157, for the proposed renewal of the Morris Operation ISFSI license.

4.15.1 Overview of 10 CFR 51.23 and NUREG-2157

NUREG-2157 (NRC 2014b) provides the regulatory basis for the revised rule at 10 CFR 51.23 and includes, among other things, the NRC staff’s analyses related to the particular deficiencies identified by the D.C. Circuit in the vacated Waste Confidence decision and rule. The information in NUREG-2157 was developed using an open and public process.

The NRC evaluation of the potential environmental impacts of continued storage of spent fuel presented in NUREG-2157 identifies an impact level, or a range of impacts, for each resource area for a range of site conditions and timeframes. The timeframes analyzed in NUREG-2157 include the short-term timeframe (60 years beyond the licensed life of a reactor) for storage in pools or in dry casks, the long-term timeframe (an additional 100 years after the short-term timeframe) for storage in dry casks, and an indefinite timeframe for storage in dry casks (see NUREG-2157, section 1.8.2).

The NRC concluded in NUREG-2157 that the potential impacts of spent fuel storage at a reactor site in both a spent fuel pool and in an at-reactor, dry cask ISFSI would be SMALL during the short-term timeframe (see NUREG-2157, section 4.20). However, for the longer timeframes for at-reactor storage, and for all timeframes for away-from-reactor storage, the analysis in NUREG-2157 has determined a range of potential impacts that are greater than

SMALL in some resource areas (see NUREG-2157, sections 4.20 and 5.20, respectively). The analysis in NUREG-2157 also presents an assessment of cumulative impacts for continued storage with ranges of potential impacts for most resource areas (see NUREG-2157, section 6.5). These ranges reflect uncertainties that are inherent in analyzing environmental impacts on some resource areas over long timeframes. As explained in NUREG-2157 (appendix D, page D-96), those uncertainties exist regardless of whether the impacts are analyzed generically or on a site-specific basis.

Appendix B of NUREG-2157 provides an assessment of the technical feasibility of a deep geologic repository and continued safe storage of spent fuel. That assessment concluded that a deep geologic repository is technically feasible and that a reasonable timeframe for its development is approximately 25 to 35 years. The assessment in NUREG-2157 referenced the U.S. Department of Energy's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* published in January 2013 (DOE 2013), which stated that the goal "... is to have a repository sited by 2026; the site characterized, and the repository designed and licensed by 2042; and the repository constructed and its operations started by 2048." Based on the evaluation of international experience with geologic repository programs, including the issues some countries have overcome, and the affirmation by the Blue Ribbon Commission of the geologic repository approach, the NRC continues to believe that 25 to 35 years is a reasonable period for repository development (i.e., candidate site selection and characterization, final site selection, licensing review, and initial construction for acceptance of waste).

4.15.2 Continued Storage at the GEH Morris Operation ISFSI

As discussed in section 4.0 of NUREG-2157 (NRC 2014b), although the Morris Operation wet storage ISFSI is not located at an operating reactor site, the facility was sited and constructed in a manner substantially like a reactor spent fuel pool and stores a quantity of fuel assemblies (714 metric tons [787 T] of total uranium) that is comparable to the licensed capacity of many boiling water reactor spent fuel pools. Therefore, the environmental impacts described in NUREG-2157 for at-reactor spent fuel pools are representative of the types of impacts at the Morris Operation ISFSI.

The analysis in NUREG-2157 concluded that the potential impacts of at-reactor storage in a pool or dry storage ISFSI during the short-term timeframe would be SMALL (see NUREG-2157, section 4.20). The analysis further stated that disposal of the spent fuel by the end of the short-term timeframe is the most likely outcome (see NUREG-2157, section 1.2). In this EA, the NRC staff determined that impacts from the proposed renewal for 20 years would not be significant for any environmental resource areas. This is due to the largely passive nature of the ISFSI, which emits insignificant gaseous effluents and has no liquid discharges. Further, GEH has not accepted fuel for storage in the pool since 1989 and cannot accept more fuel in the future without a license amendment. The most recently added fuel, therefore, has been cooling for longer than 30 years. Finally, the ISFSI is designed to minimize radiological doses to workers and members of the public. GEH is not requesting approval for any construction activities, expansion of the facility footprint, or other significant changes in authorized operations. Thus, the potential impacts of at-reactor continued storage in pools during the short-term timeframe

are consistent with the evaluation of the environmental impacts for the proposed Morris Operation ISFSI license renewal as documented in this EA.

The analysis in NUREG-2157, however, evaluated the potential impacts of continued storage if the fuel is not disposed of by the end of the short-term timeframe. NUREG-2157 assumed that spent fuel would be moved from spent fuel pools by the end of the short-term timeframe. Given that NUREG-2157 considers the impacts for at-reactor spent fuel pools as representative of the types of impacts for the Morris Operation ISFSI, the NRC staff understands this assumption to also apply to the Morris Operation ISFSI. During the long-term and indefinite timeframes, the analysis in NUREG-2157 determined that impacts on all resource areas would be SMALL, except for historic and cultural resources and nonradioactive waste management. The analysis determined that the potential impacts on historic and cultural resources from at-reactor storage during the long-term timeframe and the indefinite timeframe are dependent on factors that are unpredictable this far in advance, and therefore concluded those impacts would be SMALL to LARGE (see NUREG-2157, section 4.12). Among other things, as discussed in NUREG-2157, the NRC cannot determine at this time what resources may be present or discovered at a continued storage site a century or more in the future and whether those resources will be historically or culturally significant to future generations.

Additionally, potential impacts greater than SMALL could occur if the activities to replace the ISFSI and construct and replace a dry transfer system (DTS) adversely affect cultural or historic resources, and the effects cannot be mitigated. The analysis in NUREG-2157 recognized that ground-disturbing activities occurred during initial construction of nuclear power plants and, thus, the land within and immediately surrounding the facilities has been extensively disturbed. This assumption can also be made of the initial construction of the GEH Morris Operation buildings; that is, the ground within and immediately surrounding the ISFSI was extensively disturbed. The NUREG-2157 analysis also explained that if replacement of the ISFSI and construction and replacement of a DTS occur within the previously disturbed areas or there are no historic or cultural resources present, then impacts would likely be SMALL. If these facilities, however, are located in less-developed or less-disturbed portions of a site with historic and cultural resources present, then impacts on historic and cultural resources could be greater than SMALL (see NUREG-2157, sections 4.12.2 and 4.12.3).

As discussed in NUREG-2157, given the minimal size of an ISFSI and DTS, and the large land areas of nuclear power plant sites, licensees should be able to locate these facilities away from historic and cultural resources. Potential adverse effects on historic properties or impacts on historic and cultural resources could also be minimized through development of agreements and implementation of the licensee's historic and cultural resource management plans and procedures to protect known historic and cultural resources and address inadvertent discoveries during construction and replacement of these facilities. However, the analysis in NUREG-2157 recognized that it may not be possible to avoid adverse effects on historic properties under NHPA or impacts on historic and cultural resources under NEPA and, therefore, concluded that impacts would be SMALL to LARGE (see NUREG-2157, section 4.12.2). Like a nuclear power plant site, the Morris operation ISFSI site also has a large land area. Therefore, this analysis should apply equally to the Morris Operation ISFSI.

The NRC also concluded in NUREG-2157 that the impacts of nonradioactive waste management in the indefinite timeframe would be SMALL to MODERATE, with the higher impacts potentially occurring if the waste from repeated replacement of the ISFSI and DTS exceed local landfill capacity (see NUREG-2157, section 4.15). Although the NRC concluded that nonradioactive waste disposal would not be destabilizing (or LARGE), the range reflects uncertainty regarding whether the volume of nonradioactive waste from continued storage would contribute to noticeable waste management impacts over the indefinite timeframe when considered in the context of the overall local volume of nonradioactive waste.

As previously discussed, the NRC found in NUREG-2157 that disposal of the spent fuel is most likely to occur by the end of the short-term timeframe. Therefore, disposal during the long-term timeframe is less likely, and the scenario depicted in the indefinite timeframe—continuing to store spent nuclear fuel indefinitely—is highly unlikely. As a result, the most likely impacts of the continued storage of spent fuel are those considered in the short-term timeframe. In the unlikely event that fuel remains onsite into the long-term and indefinite timeframes, the associated impact ranges in NUREG-2157 reflect the accordingly greater uncertainties regarding the potential impacts over these very long periods of time. Taking into account the impacts that the NRC considers most likely, which are SMALL and consistent with the environmental impacts discussed in this EA; the greater uncertainty reflected in the ranges in the long-term and indefinite timeframes compared to the greater certainty in the SMALL findings; and the relative likelihood of the timeframes, the NRC staff finds that the impact determinations for continued storage from NUREG-2157 do not change the staff's evaluation of the potential environmental impacts from the proposed 20-year renewal of the GEH Morris Operation ISFSI license.

4.15.3 Continued Storage at Away-From-Reactor Storage

In NUREG-2157, the NRC concluded that a range of potential impacts could occur for some resource areas if the spent fuel from multiple reactors is shipped to a large (approximately 40,000 metric tons [44,093 T] of uranium) away-from-reactor ISFSI that would need to be constructed (see NUREG-2157, section 5.20). The ranges for resources such as air quality, terrestrial resources, and aesthetics were driven by the uncertainty regarding the location of such a facility and the local resources that would be affected. For example, regarding terrestrial resource impacts in the short-term timeframe, the analysis in NUREG-2157 explained that the impacts would likely be SMALL. However, it also stated that “it is possible that the construction of the project could have some noticeable, but not destabilizing, impacts on terrestrial resources, depending on what resources are affected.” Therefore, in NUREG-2157, for away-from-reactor storage, the NRC concluded that the impacts on terrestrial resources would be SMALL to MODERATE (see NUREG-2157, section 5.9.1) for the short-term timeframe, based primarily on the potential impacts of construction activities. In addition, there are uncertainties associated with the longer timeframes that contribute to the ranges for historic and cultural resources and for nonradioactive waste management, for the same reasons discussed above for at-reactor storage.

As discussed in section 2.3 of this EA, the NRC staff considered the storage of the spent fuel at an away-from-reactor storage facility as an alternative. The NRC determined, however, that it is not a reasonable alternative, because no such facility exists in the United States; however, the NRC has reviewed license applications for two consolidated interim storage facilities and has

issued a license to Interim Storage Partners authorizing the construction and 40-year operation of a facility that would be located in Andrews County, Texas (NRC 2021b). If a consolidated interim storage facility becomes available, an ISFSI of the size considered in NUREG-2157 could store the fuel from up to 25 reactors, which means that only a small portion of the overall impacts of the ISFSI would be attributable to the fuel from any individual reactor.

Based on the factors discussed above, there are uncertainties regarding whether an away-from-reactor storage facility will be constructed, where it might be located, and the impacts in the short-term and the longer timeframes, leading to ranges of impacts. As a result, consideration of the generic impacts from continued storage at an away-from-reactor storage facility provides limited insight to the decision-maker in the overall picture of the environmental impacts from the proposed renewal of the ISFSI license.

4.15.4 Cumulative Impacts of Continued Storage of Spent Nuclear Fuel

In NUREG-2157 (NRC 2014b), the NRC examined the incremental impact of continued storage on each resource area analyzed in NUREG-2157 in combination with other past, present, and reasonably foreseeable future actions. The analysis in NUREG-2157 presented ranges of potential cumulative impacts for multiple resource areas (see NUREG-2157, section 6.5). These ranges, however, are primarily driven by impacts from activities other than the continued storage of spent fuel; the impacts from these other activities would occur regardless of whether spent fuel is stored during the continued storage period. As described in section 4.14 of this EA, the NRC staff evaluated the incremental impact of the proposed renewal of the Morris Operation ISFSI license on each resource area in combination with other past, present, and reasonably foreseeable future actions. The NRC staff concluded that the potential impacts of the proposed ISFSI license renewal would not be a significant contributor to cumulative impacts. The analysis in NUREG-2157 similarly concluded that, in the short-term timeframe, which is the most likely timeframe for the disposal of the fuel in a deep geologic repository, the potential impacts of continued storage for at-reactor storage—which, as discussed above, NUREG-2157 found to be representative of the environmental impacts at the Morris Operation ISFSI—in pools or dry casks would be SMALL and would, therefore, not be a significant contributor to the cumulative impacts. Therefore, the NRC staff has determined that there would be no significant change to the cumulative impacts analysis in this EA.

4.16 Terrorist Acts

The NRC has determined that an NRC environmental review is not the appropriate forum for the consideration of terrorist acts. The NRC staff considers the security of spent fuel as part of its safety review of each application for an ISFSI license. In addition to reviewing an ISFSI application against the requirements of 10 CFR Part 72, the NRC staff evaluates the proposed security plans and facility design features to determine whether the requirements in 10 CFR part 73, “Physical Protection of Plants and Materials,” are met. The details of specific security measures for each facility are safeguards information and cannot be released to the public. Section 4.19 of NUREG-2157 (the Continued Storage EIS) provides a discussion of potential acts of sabotage or terrorism. Section 4.19.1 describes NRC actions in the wake of September 11, 2001, to improve security at nuclear facilities. That section and appendix F of NUREG-2157

assess the potential impacts of continued storage as they relate to spent fuel pools (NRC 2014b).

5.0 AGENCIES AND PERSONS CONSULTED

The NRC staff consulted with other agencies regarding the proposed action in accordance with NUREG-1748 (NRC 2003). These consultations were intended to (1) ensure that the requirements of section 7 of the Endangered Species Act of 1973 and section 106 of the NHPA of 1966 as amended were met and (2) provide the designated State liaison agencies the opportunity to comment on the proposed action.

The NRC provided the draft version of this EA to the Illinois Emergency Management Agency (IEMA), the Illinois Department of Natural Resources (IDNR), and the Illinois Environmental Protection Agency (IEPA). The NRC received no comments from the IEPA. The IDNR and IEMA responded that these agencies had no comments (IDNR 2022b; IEMA 2022).

5.1 National Historic Preservation Act

The NHPA was enacted to create a national historic preservation program, including the National Register of Historic Places and the Advisory Council on Historic Preservation. Section 106 of the NHPA requires Federal agencies to consider the effects of their undertakings on historic properties. The NHPA implementing regulations at 36 CFR 800.16(y), "Protection of Historic Properties," define an undertaking as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license, or approval." Therefore, the NRC's approval of this license renewal request constitutes a Federal undertaking. As discussed in section 4.10, however, the NRC staff has determined that the proposed license renewal does not have the potential to affect historic properties, assuming they were present, because continued ISFSI operations would not result in construction or land-disturbing activities. In accordance with 36 CFR 800.3(a)(1), no consultation is required under section 106 of the NHPA.

The NRC staff contacted the Illinois SHPO by email to inform them of the proposed action, and the Illinois SHPO responded indicating its review of this project is not necessary (ISHPO 2021). The NRC also notified 16 federally recognized Indian Tribes of the proposed action (NRC 2021e). These tribes are the Hannahville Indian Community, Forest County Potawatomi, Citizen Potawatomi Nation, Prairie Band Potawatomi, Nottawaseppi Huron Band of the Potawatomi, Match-E-Be-Nash-She-Wish Band of Potawatomi Indians, Ho-Chunk Nation, Kickapoo Tribe in Kansas, Kickapoo Tribe of Oklahoma, Kickapoo Traditional Tribe of Texas, Winnebago Tribe of Nebraska, Sac and Fox Nation, Peoria Tribe of Indians of Oklahoma, Miami Tribe of Oklahoma, Little Traverse Bay Bands of Odawa Indians, and Menominee Indian Tribe of Wisconsin. Two tribes, the Miami Tribe of Oklahoma and the Winnebago Tribe of Nebraska, provided a response and indicated their desire to be notified in the event of any inadvertent discoveries (Hunter 2021; Thomas-Bear 2021).

5.2 The Endangered Species Act

Under section 7 of the Endangered Species Act and through its implementing regulations (50 CFR part 402, subpart B), prior to taking a proposed action, a Federal agency must determine (1) whether endangered and threatened species or their critical habitats are known to be in the vicinity of the proposed action, and if so, (2) whether the proposed Federal action may affect listed species or critical habitats. If the proposed action may affect listed species or critical habitats, the Federal agency is required to consult with the FWS and/or the U.S. National Marine Fisheries Service.

As discussed above, the NRC staff used the FWS's IPaC website to obtain an official species list for the Morris Operation ISFSI area (FWS 2021). As described in section 3.5.1, certain Federally designated and Illinois-designated species could be found at the GEH site. Although there are listed species in the vicinity of the site, the proposed renewal of GEH's license would not, if granted, result in new construction activities or land disturbance. Based on the description of the proposed action in this EA and the fact that the project would not result in new construction or land disturbance, the NRC staff has determined that the proposed license renewal would not affect listed or proposed threatened or endangered species or critical habitats. Therefore, the NRC staff determined no further consultation is required.

6.0 CONCLUSION AND FINDING OF NO SIGNIFICANT IMPACT

Based on its review of the proposed action, in accordance with the requirements of 10 CFR part 51, the NRC staff has determined that renewal of NRC license SNM-2500, authorizing continued operation of the Morris Operation ISFSI for an additional 20 years, would not significantly affect the quality of the human environment. In its license renewal request, GEH is not proposing any changes in how it handles or stores spent fuel at the ISFSI. No significant changes in GEH's authorized operations for the ISFSI were requested as part of the license renewal application. The proposed action would not result in any new construction or expansion of the existing ISFSI footprint. The ISFSI is largely a passive facility that produces air emissions with very low concentrations of krypton-85 and no liquid discharges.

No significant radiological or nonradiological impacts are expected from continued normal operation of the ISFSI. Occupational dose estimates associated with the proposed action and continued normal operation and maintenance of the ISFSI are expected to be as low as reasonably achievable in accordance with 10 CFR 20.1101 and within the limits of 10 CFR 20.1201. Therefore, the NRC staff has determined that, pursuant to 10 CFR 51.31, preparation of an environmental impact statement is not required for the proposed action, and pursuant to 10 CFR 51.32, a FONSI is appropriate.

7.0 LIST OF PREPARERS

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—Subpart 106, Controlled area of an ISFSI or MRS.

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