June 01, 2026

Ian Willard, P.E.
Environmental Engineer Senior
Water Quality Monitoring and Assessment Section
Iowa Department of Natural Resources
6200 Park Ave, Suite 200
Des Moines, IA 50321
Transmitted via Email: ian.willard@dnr.iowa.gov; section401wqc@dnr.iowa.gov

Subject: Section 401 Water Quality Certification Pre-Filing Meeting Request Form for NextEra Energy Duane Arnold, LLC

Dear Mr. Willard:

Enclosed is the Section 401 Water Quality Certification Pre-Filing Meeting Request Form for NextEra Energy Duane Arnold, LLC (NEDA). NEDA is seeking authorization from the U.S. Nuclear Regulatory Commission (NRC) to resume nuclear power operations at Duane Arnold Energy Center (DAEC) under the facility's existing federal operating license (DPR-49). NRC considers this authorization to resume power operations a federal licensing action, which triggers the Clean Water Act (CWA) 401 Water Quality Certification requirement. A CWA 401 Water Quality Certification or a waiver from Iowa DNR is needed for NRC to reauthorize power operations at DAEC.

DAEC is a 615-megawatt nuclear power facility that ceased operations in August 2020. NEDA intends to resume operations at DAEC no later than the first quarter of 2029, pending necessary regulatory approvals. DAEC effluent is discharged to the Cedar River in accordance with NPDES Permit No. 5700104, which supports the facility's current non-operational conditions. To resume operations at DAEC, cooling tower blowdown (CTBD) and provisions for the planned treatment, monitoring, and reuse of low volume wastewater (LVW) need to be incorporated into the NPDES Permit. NEDA submitted an application to modify and renew NPDES Permit No. 5700104 to Iowa DNR on 05/18/2026.

In support of the requested permit modification and renewal, NEDA submitted a Water Quality and Antidegradation Analysis to Iowa DNR addressing both the reincorporation of CTBD into the Outfall 006 discharge and the inclusion of the proposed LVW treatment system in the NPDES permit. Iowa DNR reviewed and approved the analysis on 03/16/2026, under DNR Project No. 2025-0352A. The analysis and Iowa DNR's approval are included with this enclosure.

If you have any questions or require additional information, please feel free to contact me at diane.nguyen@nee.com or 772-214-8628.

Best regards,

Diane Nguyen, P.E.
Principal Engineer, Environmental Services

Iowa Department of Natural Resources
Section 401 Water Quality Pre-Filing Meeting and Certification Request Form

Pre-Filing Meeting Request Form

1a. Property Owner/Project Proponent (aka Applicant) Name: NextEra Energy Duane Arnold, LLC (NEDA)

Company Name (if applicable): NextEra Energy Duane Arnold, LLC

Mailing Address: 3277 DAEC Road Palo, IA 52324

Email Address: michael.casey@nexteraenergy.com

Phone numbers (with area code): Home: N/A Cell: 319-538-7481 Business: 319-851-7606

1b. Authorized Agent's Name (if applicable): Not applicable

Company Name:

Mailing Address:

Email Address:

Phone numbers (with area code): Business: Cell:

2. Identify the Proposed Project:

Project Name: Duane Arnold Energy Center (DAEC) Restart

NEDA is seeking authorization from the U.S. Nuclear Regulatory Commission (NRC) to resume nuclear power operations at DAEC under the facility's existing federal operating license (DPR-49). NRC considers this authorization to resume power operations a federal licensing action, which triggers the Clean Water Act (CWA) 401 Water Quality Certification requirement. A CWA 401 Water Quality Certification or a waiver from Iowa DNR is needed for NRC to reauthorize power operations. DAEC effluent discharges to the Cedar River in accordance with NPDES Permit No. 5700104. To resume operations at DAEC, cooling tower blowdown and provisions for low volume wastewater need to be reincorporated back into the NPDES Permit. NEDA submitted an application to modify and renew the NPDES Permit to Iowa DNR on 05/18/2026.

3. Project Location:

County: Linn Latitude: 42.0970 Longitude: -91.7721

Receiving Water(s): Cedar River

Discharge: Outfall 006: Cooling tower blowdown; Outfall 002: Treated domestic wastewater; Outfall 003: Alternate cooling tower blowdown discharge location at the intake for deicing during winter months.

4. Pre-filing Meeting Request Verification:

I certify that I have read and understand the following statements per the Clean Water Act Section 401 Certification Rule:

- Submission of this form completes the requirement of the pre-filing meeting request.
- I cannot submit my certification request until at least 30 calendar days after submitting this pre-filing meeting request. This request must be signed by the Property Owner/Applicant and the Authorized Agent, if applicable.
- I have included the following materials in the application:
  - ☒ Map/diagram of the proposed project area (required)
  - ☒ Photographs of the proposed project area (required)
  - ☒ Relevant site data (if applicable)

    NEDA completed an antidegradation alternatives analysis (attached as relevant site data) to reincorporate cooling tower blowdown and include the planned treatment, monitoring, and reuse of low volume wastewater in the NPDES Permit. IDNR approved it on 03/16/2026.

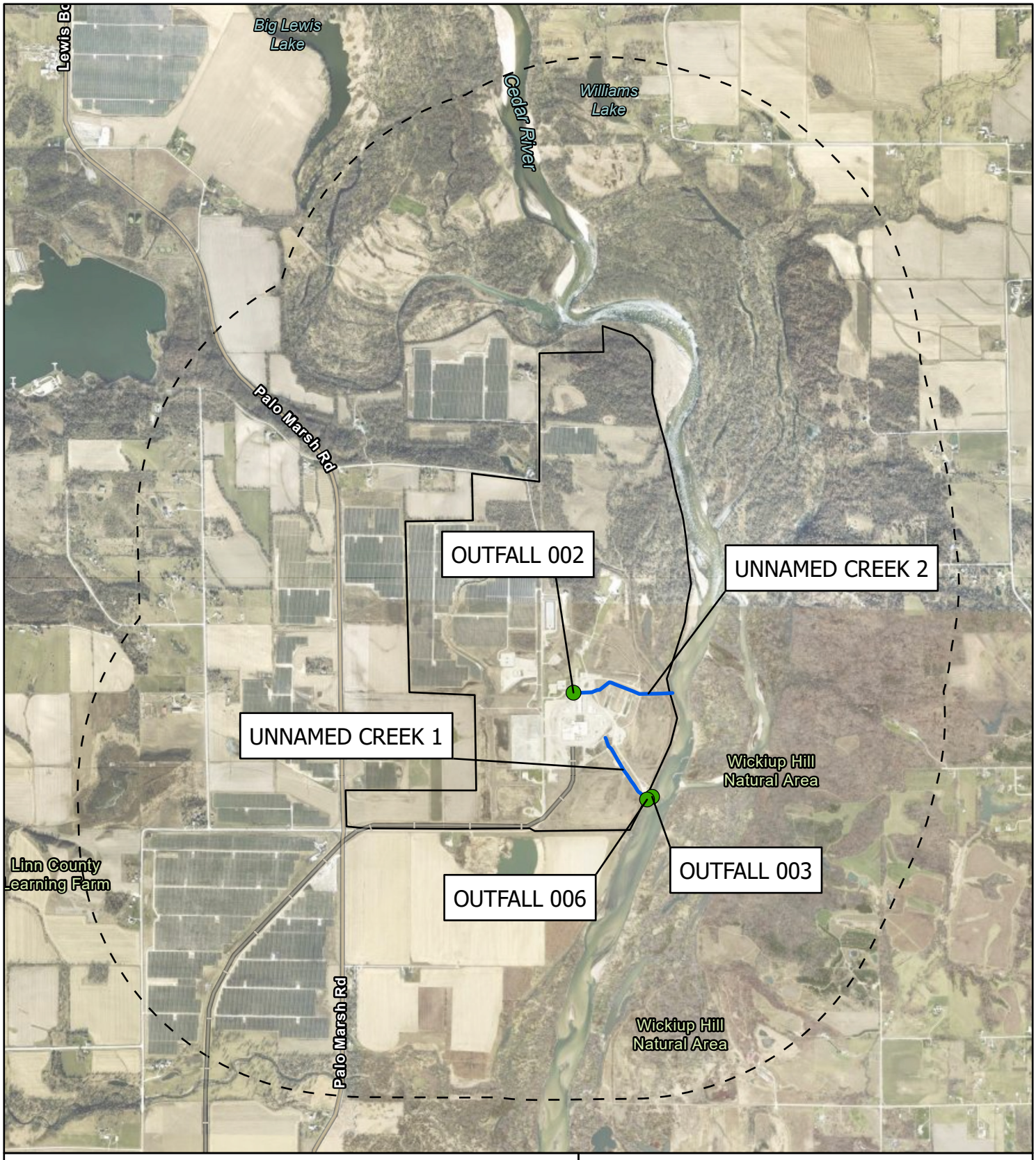
Property Owner/Applicant's Name (printed): Michael Casey

Property Owner/Applicant's Signature: Michael Casey Date: 6/15/26

If applicable: Authorized Agent's Name (printed): Not applicable

Authorized Agent's Signature: Date:

Submit Request and attachments by email to Section401WQC@dnr.iowa.gov.



Legend

- Creek
- Outfall
- Property Boundary
- 1 Mile Buffer from Property Boundary

N

0 3,000 Feet

Section 401 Water Quality
Pre-Filing Meeting Request Form
Item 4: Project Area Map

NextEra Energy Duane Arnold, LLC
Palo, IA

Geosyntec consultants

CSWR1091	April 2026	**Figure 1**

C:\Local Copies\CSWR1091 GIS for MC\APRX\APRX.aprx\Form 1 Site Figure v3 4/14/2026 2:27 PM (aaron.vandermus)

NextEra Energy Duane Arnold, LLC

DAEC Restart Project

Intake and Discharge Structures

Outfall 006 Discharge to Cedar River

IOWA DEPARTMENT OF NATURAL RESOURCES

GOVERNOR, KIM REYNOLDS
LT. GOVERNOR, CHRIS COURNOYER
DIRECTOR, KAYLA LYON

March 16, 2026

NextEra Energy Resources
Michael Casey
3277 DAEC Rd.
Palo, IA 52324

RE: NextEra Energy Duane Arnold, LLC
DNR Project No. 2025-0352A

Subject: Antidegradation Alternatives Analysis Approval

Dear Mr. Casey:

The Iowa Department of Natural Resources (DNR) has reviewed the 01/23/2026 Antidegradation Alternatives Analysis for the Duane Arnold Energy Center (DAEC). We are in agreement that the selected alternatives are the least degrading reasonable alternatives identified and that the analysis is in accordance with subrule 567 IAC 61.2(2) and the 2010 EPA-approved Iowa Antidegradation Implementation Procedure.

The following is a brief summary of the approved antidegradation alternatives analysis:

Wastewater Treatment/Disposal Facilities

The DAEC facility will be restarted with planned discharge of cooling tower blowdown and low volume wastewater (LVW) from pumphouse floor drains, pumphouse sump pumps and the facility General Service Water (GSW) system. The selected blowdown alternative is discharge to the Cedar River (Outfall 006) through an existing pipeline previously in service from 2015 through 2020, when the plant ceased operations. The selected LVW treatment and disposal alternatives are installation of a new sedimentation basin/slow sand filter system and indirect discharge to Outfall 006 following recycle of treated LVW effluent back into the facility Circulating Water System.

Selected Alternative Design Flows and Loads - LVW Treatment System[1] (2028)

Design Flows			Peak Month Design Loadings		
ADW	0.0063	MGD	BOD_5	N/A	lbs/day
AWW	0.0063	MGD	TSS	0.98779	lbs/day
MWW	0.015	MGD	TKN	N/A	lbs/day

[1] ADW = AWW design flow for Outfall 006 including LVW contribution = 2.88 MGD.

Other blowdown and LVW treatment and disposal alternatives that have been considered include:

Alternative No.	Description	Classification	Rationale
Blowdown			
1	Radial Collector Well	LDA	Not practicable
2	Deep Well Field	NDA	Not practicable
4	Land Application	NDA	Not practicable
5	Regional Treatment	NDA	Not practicable
LVW Treatment			
2	Subsurface Wetlands	LDA	Not practicable
3	Ultrafiltration	LDA[1]	Not economically efficient
LVW Disposal			
2	Direct Discharge to Outfall 006	LDA[2]	Not economically efficient
3	New Outfall	LDA[2]	Not economically efficient
4	Land Application	NDA	Not practicable

[1] Expected effluent quality the same as selected alternative.
[2] More degrading than selected alternative.

Public and interagency participation has been completed in the analysis. No public comments were received.

In approving the Analysis the Department has made the following findings:

1. The level of water quality necessary to protect applicable beneficial uses is fully maintained. Water quality shall not be degraded to a level that does not comply with the applicable Water Quality Standards (WQS).

   Wasteload allocation calculated Water Quality Based Effluent discharge criteria for the selected alternatives are shown in Table 4-1 of the Analysis. The selected alternatives are shown as practicable in Tables 7-1, 7-2 and 7-3. The Department is in agreement that the selected alternatives are practicable as described in Section 3.2 of the AIP and capable of providing the Minimum Level of Pollution Control as defined in the AIP.

2. The highest statutory and regulatory requirements for new and existing point sources are achieved.

   Technology-Based and wasteload allocation calculated Water Quality Based Effluent discharge criteria for the selected alternatives are shown in Table 4-3 of the Analysis. The selected alternatives are shown as practicable in Tables 7-1, 7-2 and 7-3. The Department is in agreement that the selected alternatives are practicable as described in Section 3.2 of the AIP and capable of providing the Minimum Level of Pollution Control as defined in the AIP.

3. All cost-effective and reasonable BMPs for nonpoint source pollution control are implemented.

   See Section 8 of the AIP.

4. Allowing degradation of water quality is necessary and accommodates important economic or social development in the area where the surface water is located.

The Department is in agreement that the selected alternatives are the least degrading reasonable alternatives (see Section 7 of the Analysis) and therefore degradation is “necessary” as defined in the AIP. Important social and economic development associated with the project is described in Section 8 of the Analysis. The Department is in agreement that the project will accommodate this important development.

Based on the above findings, the antidegradation review is accepted and the Department has made a final determination to approve the analysis for the above project. Our approval is limited to the selected treatment and disposal alternatives described in the analysis under the stated flow and loading conditions. If the design conditions or selected alternative are modified subsequent to this approval, a new or revised alternatives analysis may be required.

If you have any questions or comments concerning this project, please feel free to contact me at 515-725-8426 or larry.bryant@dnr.iowa.gov.

Sincerely,

Larry Bryant
Project Manager
Wastewater Engineering Section

Copy (via electronic delivery): Nicholas W. Muenks, nmuenks@geosyntec.com
Wendy Hieb, IDNR
Thabit Hamoud, IDNR
DNR FO 1 (Manchester, Iowa)
DNR Sewage File 6-57-00-1-04
Project File

Geosyntec consultants

engineers | scientists | innovators

WATER QUALITY AND ANTIDEGRADATION ANALYSIS

NextEra Energy Duane Arnold, LLC

Prepared for

Iowa Department of Natural Resources
6200 Park Avenue
Suite 200
Des Moines, IA 50321

Prepared by

Geosyntec Consultants, Inc.
2009 East McCarty St., Suite 1
Jefferson City, MO 65101

Project: CSWR 1091

January 23, 2026

Geosyntec consultants

Licensed Professional Engineer Certification

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa

Maria Vishnevskiy 01/23/2026

Signature Date

Name: Maria Vishnevskiy

License Number: P28183

License Renewal Date: 12-31-2026

The Entire Bound Document is covered by this seal.

Geosyntec consultants

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LIST OF ACRONYMS

AIP – Iowa Antidegradation Implementation Procedure (IDNR, 2010)

AWW – Average Wet Weather

BPCA – Base Pollution Control Alternative

DAEC – Duane Arnold Energy Center

GSW – General Service Water

IAC – Iowa Administrative Code

IDNR – Iowa Department of Natural Resources

LDA – Less-Degrading Alternative

LVW – Low Volume Wastewater

MGD – Million Gallons per Day

NDA – Non-Degrading Alternative

NEDA – NextEra Energy Duane Arnold, LLC

O&G – Oil and Grease

POCs – Pollutants of Concern

SEI – Socioeconomic Importance

TBEL – Technology Based Effluent Limit

TRC – Total Residual Chlorine

TSS – Total Suspended Solids

WLA – Wasteload Allocation

WQBEL – Water Quality Based Effluent Limit

1. EXECUTIVE SUMMARY

Geosyntec Consultants, Inc. (Geosyntec) prepared this Water Quality and Antidegradation Analysis on behalf of NextEra Energy Duane Arnold, LLC (NEDA) to provide the Iowa Department of Natural Resources (IDNR) with information necessary to satisfy state antidegradation requirements outlined in Iowa Code Section 455B.174, Rule 567-61.2(455B) of the Iowa Administrative Code (IAC), and IDNR's 2010 "Iowa Antidegradation Implementation Procedure" (AIP) document.

NEDA plans to restart the Duane Arnold Energy Center (DAEC, Facility), Iowa's only nuclear facility, pending regulatory approval. Once restarted, the plant will generate approximately 615 megawatts (MW) and interconnect to the Midcontinent Independent System Operator (MISO) grid. To resume operations, NEDA must renew and modify its NPDES Permit (NPDES Permit #5700104, issued March 1, 2022) to reincorporate the discharge of cooling tower blowdown and include the planned treatment of low volume wastewater (LVW).

This report describes the evaluation of base pollution control alternatives (BPCA) for blowdown management, LVW treatment, and LVW management. The BPCA represents the most cost-effective alternative necessary to meet the more stringent of technology-based effluent guidelines or water quality-based permit limits.

Five alternatives for blowdown management were evaluated to determine the least degrading reasonable alternative. The preferred alternative uses an existing gravity flow pipeline to convey blowdown to the Cedar River through Outfall 006, which was previously permitted when the facility was operating. This alternative is the least degrading reasonable option, representing the best combination of practicability, economic efficiency, and ease of operation and maintenance. In accordance with the IDNR's guidance, a Facility Plan and Construction Permit are not required for this preferred alternative because the pipeline is already in place.

For LVW, three treatment and four discharge alternatives were assessed to comply with the technology-based effluent limits outlined in 40 CFR 423. The preferred alternative for treatment is to install a sedimentation basin system. The preferred alternative for LVW management is to recirculate the treated LVW back into the Circulating Water System, which avoids a direct surface water discharge and reduces annual water consumption by approximately 1.6 million gallons. A Facility Plan will be prepared for the sedimentation basin system once NEDA receives Antidegradation Alternatives Analysis approval from IDNR.

Based on evaluation of technical feasibility, economic reasonableness, and operational constraints, the preferred alternatives represent the least degrading reasonable alternatives capable of meeting DAEC's wastewater management needs, while maintaining compliance with Iowa's antidegradation requirements. The proposed LVW treatment system, together with recirculation of treated LVW, will yield an effluent of higher water quality than the Cedar River source water without a direct surface water discharge. The preferred alternative of reincorporating blowdown into Outfall 006's NPDES authorized effluent and recirculating treated LVW is necessary for the facility to resume operations and provide significant socioeconomic benefits to Linn County and Iowa. These preferred alternatives will meet the water quality-based effluent limits for total

residual chlorine (TRC), zinc, pH, and temperature. These preferred alternatives will also meet the applicable technology-based effluent limits found in 40 CFR 423 for cooling tower blowdown and LVW.

2. EXISTING CONDITIONS AND DESIGN PARAMETERS

NEDA announced the planned restart of operations at the DAEC, located approximately eight miles northwest of Cedar Rapids in Palo, Iowa. DAEC, Iowa's only nuclear power plant, operated for 45 years, from 1975 to 2020, when it ceased operations. Prior to resuming operations, NEDA plans to construct new cooling towers and reincorporate blowdown back into the NPDES permit.

NEDA was issued a NPDES Permit on March 1, 2022, for discharges related to non-operational activities. Pursuant to the authority of Iowa Code Section 455B.174 and Rule 567-64.3 of the IAC, the IDNR issued Iowa NPDES Permit number 5700104 with coverage until February 28, 2027. Under this permit, NEDA is currently authorized to discharge well water used for non-contact cooling water, construction, potable, and sanitary wastewater from Outfall 006 in accordance with effluent limitations, monitoring requirements, and terms of the permit. Outfall 006 has permit limitations for pH, acute toxicity (Ceriodaphnia and Pimephales), and temperature. The previous permit (NPDES Permit #5700104, issued March 1, 2016) had also authorized NEDA to discharge cooling tower blowdown from the Circulating Water System through Outfall 006, which is a process NEDA seeks to resume.

NEDA currently withdraws water from onsite wells. Well water is sent directly to the 2 million gallon circulating water pit in the pumphouse. Pumps in the circulating water pit supply cooling water used in the plant's Circulating Water System and the general service water (GSW) system (also a circulating system). Currently, this water is used as non-contact cooling water across the site and discharged through Outfall 006.

As part of resuming operations, NEDA is planning to install new cooling towers that will function similarly to the original cooling towers. The Cedar River is the main source of makeup water for the cooling towers. Once the new cooling towers are operational, blowdown from the Circulating Water System will have an average dry weather (ADW) and an average wet weather (AWW) flow of 2.88 MGD. The blowdown will be discharged directly to the Cedar River via Outfall 006, as was done prior to the plant ceasing operations in August 2020. Outfall 006 effluent will consist mainly of blowdown (99.75%) with small amounts of recirculated treated low volume wastewater (<0.25%). The previous permit (NPDES Permit #5700104, issued March 1, 2016) contained Outfall 006 effluent limitations for pH, total zinc (as Zn), total residual chlorine (TRC), free available chlorine (FAC), total chromium (as Cr), duration of chlorine discharge, and acute toxicity (Ceriodaphnia and Pimephales). Based on monthly sampling values from 2017 through 2020 (prior to ceasing operations), measurements for these parameters were consistently in compliance with permit effluent limitations.

Additionally, prior to cessation of operations, NEDA was also permitted to discharge from Outfall 005. Outfall 005 was used to discharge LVW from the pump house floor drains, sump pumps, and backwash from the GSW strainer. At that time, LVW was sent to the transformer pit prior to filtration and discharge. Currently, only stormwater goes to the transformer pit. Upon resuming operations, the LVW will be sent to a new wastewater treatment system. The LVW treatment system will be designed to meet effluent limits for pH, total suspended solids (TSS), and oil and grease (O&G) in accordance with 40 CFR 423.12(b). Following treatment, LVW will be monitored for pH, TSS and O&G at an internal monitoring point prior to being returned to the Circulating Water System for reuse as a means of water conservation.

The facility location and layout are shown in Figure 1, Site Location, and Figure 2, Facility Layout, included in Appendix A.

3. RECEIVING STREAM INFORMATION

Outfall 006 discharges to the Cedar River, a tributary to the Iowa River (state waterbody identification number [SWBID] IA 02-CED-457). Table 3-1 summarizes the beneficial uses designated for this reach of the Cedar River.

Table 3-1: Receiving Stream Information

Receiving Stream	Designated Uses	Source
Cedar River SWBID IA 02-CED-457	Recreation: Class A1 Aquatic Use: Class B(WW-1) Human Health: Class HH	Wasteload Allocation Calculations and Notes, December 10, 2025 Surface Water Classification – July 24, 2019

Notes: SWBID # = State Waterbody Identification Number

Class A1 waters are primary contact recreational use waters in which recreational or other uses may result in prolonged and direct contact with the water, involving considerable risk of ingesting water in quantities sufficient to pose a health hazard. Such activities would include, but are not limited to, swimming, diving, water skiing, and water contact recreational canoeing.

Waters designated Class B(WW-1) are those in which temperature, flow and other habitat characteristics are suitable to maintain warm water game fish populations along with a resident aquatic community that includes a variety of native nongame fish and invertebrate species. These waters generally include border rivers, large interior rivers, and the lower segments of medium-size tributary streams.

Waters designated Class HH are those in which fish are routinely harvested for human consumption or waters both designated as a drinking water supply and in which fish are routinely harvested for human consumption.

This segment of the Cedar River was designated as impaired in 2024 *Section 303(d) Listed Waters* for bacteria and other microbes, specifically *Escherichia coli (E. coli)*. The source is unknown. There are no total maximum daily loads (TMDLs) for this segment of the Cedar River applicable to Outfall 006. The 2024 Iowa Integrated Report noted downstream impairments for copper and biological community (loss of native mussel species). Two TMDLs have been prepared to address nitrate (2006) and bacteria (2010). DAEC's sanitary wastewater treatment system, which discharges to Outfall 002, was assigned wasteload allocations in both TMDLs. No other TMDLs have been assigned to DAEC.

4. FINAL EFFLUENT LIMITS DERIVATION

The wasteload allocations and water-quality based permit limits for applicable pollutants of concern (POCs) were derived by IDNR, and provided to NEDA on December 12, 2025, in a Wasteload Allocation (WLA) Calculation and Notes package (Appendix C). The WLA is based on the annual critical low flows in the Cedar River at the outfall as estimated based on the Weighted Drainage Area Ratio (WDAR) method and NEDA's anticipated ADW and AWW flows from Outfall 006 of 2.88 MGD. The water quality-based permit concentration limits are derived using the allowed stream flow and the ADW flow and the mass-based limits are derived using the allowed stream flow and the AWW flow as presented in Table 4-1.

Table 4-1: Water Quality Based Effluent Limits Outfall 006

Water Quality-Based Effluent Limits				
Parameters	**Average Concentration (mg/L)**	**Maximum Concentration. (mg/L)**	**Average Mass (lbs./d)**	**Maximum Mass (lbs./d)**
Total Residual Chlorine (TRC)	0.077	0.077	1.86	1.86
Zinc	0.607	0.607	14.6	14.6
pH	5.2-14.0 Standard Units			
Temperature	**Monthly Average**		**Daily Maximum**	
Month	**T (°C)**	**T (°F)**	**T (°C)**	**T (°F)**
January	88.5	191.3	100.0	212.0
February	93.9	100.9	100.0	212.0
March	97.8	208.0	100.0	212.0
April	100.0	212.0	100.0	212.0
May	100.0	212.0	100.0	212.0
June	100.0	212.0	100.0	212.0
July	100.0	212.0	100.0	212.0
August	100.0	212.0	100.0	212.0
September	100.0	212.0	100.0	212.0
October	100.0	212.0	100.0	212.0
November	94.0	201.1	100.0	212.0
December	88.9	192.0	100.0	212.0
Stream Network/Classification of Receiving Stream: Cedar River (A1, B(WW-1) HH)				
Annual critical low flow in Cedar River at the outfall: 1Q10 flow 324 cfs, 7D10 428 cfs, 30Q10 flow 491 cfs ADW= 2.88 MGD AWW 2.88 MGD				

Notes: mg/L = milligrams per Liter; SU = standard units; lbs./d = pounds per day; cfs = cubic flow per second

In addition to the water quality-based effluent limits, discharges from Outfall 006 are subject to the technology-based effluent limits associated with the Federal Effluent Guidelines for Steam Electric Power Generating found in 40 CFR 423.13(d)(1), shown in Table 4-2.

Table 4-2: Technology-Based Effluent Limits Outfall 006

Technology-Based Effluent Limits (Best Available Technology)		
	Maximum Concentration (mg/L)	**Average Concentration (mg/L)**
Pollutant or pollutant property		
Free available chlorine	0.5	0.2
Duration of Chlorine Discharge	No more than 2 hours per day	
	Maximum for any 1-day (mg/L)	**Average of daily values for 30 consecutive days shall not exceed (mg/L)**
Pollutant or pollutant property		
The 126 priority pollutants contained in chemicals added for cooling tower maintenance (excluding total chromium and total zinc)	No detectable amount	No detectable amount
Chromium, total	0.2	0.2
Zinc, total	1.0	1.0

Notes: mg/L = milligrams per Liter; lbs./d = pounds per day

For each parameter (pollutant or pollutant property) the more stringent of the water quality-based effluent limit or the technology-based effluent limit is used as the final permit limit. The final permit limits for Outfall 006 are shown in Table 4-3. The technology-based effluent limit (TBEL) for free available chlorine is less stringent than the water quality-based effluent limit (WQBEL) for TRC. Free available chlorine is a component of TRC. The TBEL for free available chlorine will be achieved if the WQBEL for TRC is met. Accordingly, the WQBEL for TRC would be the applicable limit.

Priority pollutants are defined in the U.S. EPA's Clean Water Act regulations under 40 CFR 423 Appendix A. Treatment chemicals intended to be used in the Circulating Water System have undergone a formulation review by NEDA's chemical supplier, SUEZ Water Technologies & Solutions (see Appendix D), and the supplier determined that the treatment chemicals do not contain the priority pollutants listed under 40 CFR 423 Appendix A, including zinc and chromium. The WQBEL for zinc is more stringent than the TBEL, therefore, the WQBEL is used for a final effluent limit for zinc. Chromium has a TBEL of 0.2 mg/L established under 40 CFR 423, however, chromium is not present in any process or chemical used in the Circulating Water System. The TBEL for chromium is used as the final effluent limit.

Table 4-3: Final Effluent Limits

Final Effluent Limits				
Parameters	**Average Concentration (mg/L)**	**Maximum Concentration (mg/L)**	**Monitoring Frequency**	**Basis for Limit**
Total Residual Chlorine (TRC)	0.077	0.077	1/week	WQBEL
Duration of Chlorine Discharge	No more than 2 hours per day			TBEL
The 126 priority pollutants contained in chemicals added for cooling tower maintenance (excluding total chromium and total zinc)	No detectable amount	No detectable amount	N/A	TBEL
Chromium, total	0.2	0.2	N/A	TBEL
Zinc, total	0.607	0.607	1/week	WQBEL
pH	6.5-9.0 Standard Units			IAC[1]
Whole Effluent Toxicity	Pass		1/year	IAC[2]

Temperature	**Monthly Average**		**Daily Maximum**		**Monitoring Frequency**	**Basis for Limit**
Month	**T (°C)**	**T (°F)**	**T (°C)**	**T (°F)**		
January	88.5	191.3	100.0	212.0	1/Week	WQBEL
February	93.9	100.9	100.0	212.0	1/Week	WQBEL
March	97.8	208.0	100.0	212.0	1/Week	WQBEL
April	100.0	212.0	100.0	212.0	1/Week	WQBEL
May	100.0	212.0	100.0	212.0	1/Week	WQBEL
June	100.0	212.0	100.0	212.0	1/Week	WQBEL
July	100.0	212.0	100.0	212.0	1/Week	WQBEL
August	100.0	212.0	100.0	212.0	1/Week	WQBEL
September	100.0	212.0	100.0	212.0	1/Week	WQBEL
October	100.0	212.0	100.0	212.0	1/Week	WQBEL
November	94.0	201.1	100.0	212.0	1/Week	WQBEL
December	88.9	192.0	100.0	212.0	1/Week	WQBEL

1 - Iowa Administrative Code (IAC 567.61.3.(3) a. (2) and IAC 567.61.3.(3) b. (2)) require that pH in Class A or Class B waters "shall not be less than 6.5 nor greater than 9.0."

2 – Iowa Administrative Code (IAC 567.64) requires all major municipal and industrial discharges to conduct annual static whole effluent toxicity testing.

Notes: mg/L = milligrams per Liter, WQBEL = Water Quality Based Effluent Limit, TBEL = Technology Based Effluent Limit; IAC = Iowa Administrative Code

5. POCS AND TIER DETERMINATION

Table 5-1 shows the pollutants of concern that were identified based on permit limits and 40 CFR 423.

Table 5-1: POCs Tier Determination

Pollutants of Concern	Tier Protection	Secondary or WQBEL	Beneficial Use Affected
Chlorine, Free Available	2	No	Aquatic life
Chlorine, Total Residual	2	Yes	Aquatic life
Chromium, Total	2	Yes	Aquatic life
pH	2	Yes	Aquatic life/general use
Priority Pollutants	2	Yes	Aquatic life/general use
Temperature	2	Yes	Aquatic life
Zinc, Total (Zn)	2	Yes	Aquatic life/human health

Notes: Secondary = Secondary Treatment Standards, WQBEL = Water Quality Based Effluent Limit

6. IDENTIFICATION AND DISCUSSION OF ALTERNATIVES

Treatment and disposal alternatives have been developed to comply with the federal categorical standards for cooling towers and LVW and the WLAs developed by IDNR for the final discharges from Outfall 006. While developing these alternatives, considerations were made for future wastewater characteristics, effluent regulations and compliance requirements, area available for expansion, and financial costs including up-front capital costs, energy usage, and operations and maintenance (O&M) costs.. Alternatives are identified as: BPCA, less-degrading alternatives (LDA), and non-degrading alternatives (NDA). For this alternatives analysis, the BPCA is the preferred alternative.

6.1 Blowdown Alternatives

The DAEC 2014 Antidegradation Alternatives Analysis evaluated options associated with addressing water quality effects from blowdown on a drainage ditch (unnamed tributary of the Cedar River).The 2014 evaluation determined that the primary pollutant of concern was temperature. The preferred alternative, constructing a pipeline to the Cedar River, was approved by IDNR in 2014, constructed in 2015, and discharged blowdown until 2020, when the plant ceased operations. Since then, there have been no discharges of blowdown from Outfall 006.

Five alternatives that are less or non-degrading were reevaluated to achieve or maintain water quality standards and are described in the following subsections. The first two alternatives evaluated utilization of groundwater sources: (1) groundwater via radial collector wells; and (2) construction of deep wells. The third alternative evaluated resuming the former blowdown discharge to the Cedar River via a gravity flow pipeline from the cooling towers. The fourth and fifth alternatives were non-degrading and evaluated offsite blowdown disposal through land application or discharge to a neighboring community's wastewater treatment plant (WWTP). Each of these alternatives takes into consideration system redundancy by design or through existing infrastructure to maintain compliance with the IDNR system reliability requirements.

6.1.1 Blowdown Alternative 1: Radial Collector Well

This alternative includes replacing the river water influent into the Circulating Water System with groundwater from a shallow collector well system. NEDA considered this alternative because radial collector well technology along the Cedar River has been successful in providing adequate supply to the City of Cedar Rapids .Groundwater from radial collector wells is anticipated to have better water quality characteristics than groundwater directly withdrawn from the Cedar River, thereby improving water quality of the blowdown. To replace the river intake system, a radial collector well would need to be constructed adjacent to the river and attached to a lift station that could pump water into the Circulating Water System.

Based on the prior DAEC 2014 Antidegradation Alternative Analysis evaluations, radial collector wells have the following disadvantages:

- The well location would likely be over 1-mile from the plant in a limited access area.
- A feasible location for a collector well has not been identified, and the cost for a siting study is substantial with no guarantee of locating a viable site.

- This alternative would include significant labor requirements and O&M costs.

Due to significant costs, accessibility issues with potential siting locations, and the uncertainty of finding favorable alluvial deposits within the river channel, this alternative is impractical and not economically efficient in comparison to the preferred alternative.

6.1.2 Blowdown Alternative 2: Deep Well Field

This alternative would entail replacing the river water influent into the Circulating Water System with groundwater from a series of deep wells that would be located on NEDA property north of the plant. Groundwater from deep wells is anticipated to have better water quality characteristics than groundwater directly withdrawn from the Cedar River, thereby improving water quality of the blowdown. However, similar to Blowdown Alternative 1, this area has accessibility issues that make this alternative not practicable.

Up to 10 wells could be needed to provide sufficient capacity to replace the river intake system. Based on the design of existing wells at the facility, new wells are expected to be 16-inch casing diameter and be approximately 300 feet deep. A 100-horsepower submersible pump in each of these wells would be needed to feed into a central lift station that would pump water to the Circulating Water System. The O&M associated with this system of wells would be significant. The annual and lifecycle maintenance costs listed in Table 6-1 only include one cleaning per well over the lifecycle; however, up to three cleanings may be needed over the lifecycle of these wells. Additionally, the electrical cost for running ten submersible pumps and the lift station pump was determined to be not economically efficient or reasonable compared to the preferred alternative.

6.1.3 Blowdown Alternative 3: Discharge to Cedar River – BPCA/Preferred Alternative

This alternative includes a pipeline to discharge/dispose of blowdown to the Cedar River via Outfall 006. Construction of a pipeline to discharge blowdown to the Cedar River was evaluated and implemented after IDNR approval of the 2014 Antidegradation Alternative Analysis. This gravity flow pipeline is roughly 1,500 feet long and enters the Cedar River adjacent to the confluence of an unnamed tributary and the river. Over the pipe route, several access structures span the distance and allow for cleaning of the pipe. Th outfall for this pipeline, Outfall 006, consists of a pipe penetration through the existing sheet pile wall south of the intake structure with a riprap apron beneath it. The invert of the pipe at Outfall 006 is set above the 100-year floodplain.

A WLA performed by the IDNR (dated January 4, 2013) demonstrated that the temperature effluent limitations at the Cedar River discharge point would meet water quality standards for the Cedar River after accounting for thermal conductivity through the pipe walls into the surrounding soils (pipeline cooling credits) and the mixing zone available in the Cedar River.

NEDA is proposing to use the same cooling technology (cooling towers) and discharge approach evaluated in 2014, piping blowdown directly to the Cedar River to take advantage of the thermal conductivity through the pipe to the surrounding soils and the thermal mixing zone in the river. The POCs will remain the same as during prior operations. Resuming blowdown discharge through Outfall 006 is the preferred alternative because it has demonstrated reliability, is proven to meet NPDES Permit effluent limits, and is the most economically efficient (existing pipeline).

6.1.4 Blowdown Alternative 4: Land Application

This alternative includes land application of the blowdown from DAEC. This would be a non-degrading alternative because there would be no surface water discharge. This alternative was evaluated and determined to be impracticable.

The Iowa Wastewater Facilities Design Standards Chapter 21 governs design requirements for land application of wastewater (i.e., blowdown). The minimum storage required for land application is 200 days based on climatic restraints per Figure 3 of Chapter 21. The volume of storage required to allow land application was calculated based upon the design flow of 2.88 MGD. The storage requirement associated with this flow for 200 days was calculated as approximately 576 million gallons. The associated land area required for this volume would be approximately 180 acres with a lagoon depth of 10 feet. Assuming that the land application site could be located adjacent to the treatment and storage site (minimal conveyance), the addition of a slow rate land application system to land apply the blowdown from the Circulating Water System would need to include storage lagoons, a pumping station, chlorine disinfection prior to land application, land purchase, sprinkling system, and associated O&M costs. Given the extensive storage requirement, land area required, and high estimated costs for infrastructure and ongoing operations (Table 6-1), this alternative is impracticable.

6.1.5 Blowdown Alternative 5: Pipeline to Neighboring WWTP

This alternative entails constructing a pipeline to a neighboring WWTP. This would be a non-degrading alternative because NEDA would not be directly discharging to surface water. This alternative was evaluated and determined to be impracticable and not economically efficient.

The blowdown would need to be pumped to the city of Palo for conveyance to the Cedar Rapids WWTP. The city of Palo likely has undersized piping to handle the estimated 2.88 MGD from DAEC. The corridor length required for installation of a pipeline would be a minimum of five miles. The cost of constructing a force main to the nearest city is not economically efficient, as shown in Table 6-1.

The reliability of treatment during flood events makes this alternative not practicable. During the 2008 historic flood, nearby municipal wastewater treatment plants were unable to maintain service, whereas DAEC's onsite systems remained operational. Also, the need to avoid impacts to sensitive areas (e.g., the Palo Marsh) may require constructing infrastructure around or beneath these resources, which adds significant construction costs and extends the project schedule.

6.2 Low Volume Wastewater (LVW) Management Alternatives

The 2016 NPDES permit authorized NEDA to discharge LVW from the transformer pit to Outfall 005 (NPDES Permit #5700104, issued March 1, 2016). The LVW consisted of wastewater from pumphouse floor drains, pumphouse sump pumps, and the GSW strainer backwash. Prior to ceasing operations in 2020, NEDA had some instances of noncompliance with one or more effluent limits associated with this discharge. In preparation for the recommissioning of operations, NEDA evaluated three LVW treatment alternatives capable of treating an average design flow of approximately 6,300 gallons per day (less than 0.25% of the average design flow for Outfall 006) and four disposal alternatives to achieve compliance with anticipated NPDES permit conditions. Each of the three treatment alternatives could be paired with any one of the four disposal

alternatives. The disposal alternatives considered include non-degrading, less-degrading, and degrading alternatives. Non-degrading and less-degrading alternatives avoid a direct surface water discharge while degrading alternatives result in treated discharges that would comply with LVW best practicable control technology currently available (BPT) effluent limits (40 CFR 423). Each alternative takes into consideration system redundancy by design or through existing infrastructure to maintain compliance with the IDNR system reliability requirements.

6.2.1 LVW Treatment Alternative 1: Sedimentation Basin – BPCA/Preferred Alternative

This treatment alternative consists of an equalization tank followed by two redundant sedimentation basins and two slow sand filters. This semi-passive sedimentation basin system is the preferred alternative because it can consistently meet BPT limitations for O&G and TSS concentrations while minimizing O&M requirements and capital costs. This alternative is simple, robust, and economically efficient. Anticipated O&M activities include sediment removal and occasional sand filter media replacement. This preferred alternative is the most practical and has the greatest economic efficiency. Appendix B contains a process flow diagram of the proposed sedimentation basin system.

6.2.2 LVW Treatment Alternative 2: Subsurface Wetlands

This treatment alternative consists of an equalization basin with discretionary (as needed) pH control measures, followed by two semi-passive subsurface constructed wetland cells in series. The subsurface wetlands cells would be designed for vertical flow through engineered coarse sand or pea gravel media to reduce O&G and TSS concentrations. The semi-passive constructed wetlands system offers the lowest potential O&M requirements but has uncertainty in meeting BPT effluent limits and has limited regulatory precedent, because it is not a standard treatment process with existing applications in Iowa. Given the uncertainty, this alternative is considered not practicable. Also, the capital cost of the system is projected to be slightly higher than Treatment Alternative 1, making it less economically efficient.

6.2.3 LVW Treatment Alternative 3: Active Treatment

The active treatment alternative evaluated consists of a low-pressure membrane system that includes ultra filtration, a solids holding tank, and a solids management process. The active treatment alternative has the highest level of certainty to meet the BPT O&G and TSS concentrations, as well as the lowest process risk. However, it requires a climate-controlled building, which adds additional capital and O&M costs, as well as O&M complexity. This alternative has the highest estimated capital cost and highest O&M requirements, making it not economically efficient compared to the preferred alternative.

6.2.4 LVW Disposal Alternative 1: Recirculation – BPCA/Preferred Alternative

This alternative consists of pumping LVW back into the Circulating Water System from which it originated after treatment and compliance monitoring and is considered a less-degrading alternative. Treatment and reuse of LVW in the Circulating Water System is the resource responsible approach and requires the least amount of construction activity compared to the other alternatives. By reusing the treated LVW, NEDA will avoid a direct discharge to the Cedar River and reduce the average annual facility water consumption by approximately 1.6 million gallons,

based on average design flows. This is the preferred alternative because it is the most practical and economically efficient and has additional environmental benefits.

6.2.5 LVW Disposal Alternative 2: Pipe Connection to Existing Pipeline to Cedar River

The pipe connection is a more degrading alternative than the preferred alternative and consists of the construction of a pipeline from the LVW treatment system to the existing pipeline that discharges at Outfall 006 and would combine the LVW with the blowdown after treatment and monitoring. This alternative requires substantial construction activity and costs. This option is practicable, but not economically efficient compared to the preferred alternative, as demonstrated in Table 6-1.

6.2.6 LVW Disposal Alternative 3: New Pipeline Direct to Cedar River – New Outfall

This alternative is considered a more degrading alternative than the preferred alternative and consists of the construction of an approximately 1,500-foot-long pipeline that would convey the treated LVW directly to the Cedar River (proposed outfall adjacent to existing Outfall 006). This alternative requires substantial construction activity and costs. This option is practicable, but not economically efficient compared to the preferred alternative, as demonstrated in Table 6-1.

6.2.7 LVW Disposal Alternative 4: Land Application

Land application of the LVW would be a non-degrading alternative because there would be no surface water discharge. This alternative was evaluated and determined to be impracticable.

The Iowa Wastewater Facilities Design Standards Chapter 21 governs design requirements for land application of wastewater. The minimum storage required for land application is 200 days based on climatic restraints per Figure 3 of Chapter 21. A large volume storage lagoon or tank would be required during winter months to allow land application. DAEC's available land near the treatment system for this application lies within the 100-year flood plain, making this alternative not feasible.

6.3 Summary of Alternatives

Table 6-1 summarizes the financial impacts of the alternatives identified for meeting effluent limits and highlights the preferred alternative, which is also the BPCA, for each category. Based on the conceptual designs described, estimates of the projected 20-year worth associated with each option were developed. The cost estimates assume that the project would be executed using a traditional design-bid-build approach.

Table 6-1: Estimated Alternative Costs

Alternative Category	Alternatives	Total Cost
Blowdown	1 – Radial Collector Well	$9,299,560*
	2 – Deep Well Field	$21,432,280*
	3– Discharge to Cedar River (BPCA)	$0**
	4 – Land Application	$24,000,000
	5 - WWTP	$4,515,520*
LVW Treatment	1 - Sedimentation Basin (BPCA)	$950,000
	2 - Subsurface Wetlands	$965,000
	3 – Active Treatment	$1,300,000
LVW Disposal	1 – Recirculation (BPCA)	$20,000
	2 – Pipe Connection	$60,000
	3 – New Pipeline	$130,000
	4 – Land Application	$500,000

*The cost from 2014 Antidegradation Alternatives Analysis was multiplied by 1.37 to reflect what the equivalent cost would be in 2025, per US inflation. Adjusting for inflation captures the expected increases in costs because no new costs are anticipated.

**There is no cost as this alternative has already been constructed.

Note: Costs were developed using a discount rate of 3.75 for Iowa as provided by the Federal Reserve Bank of St. Louis (Discount Window Primary Credit Rate (DPCREDIT) | FRED | St. Louis Fed)

7. JUSTIFICATION OF DEGRADATION

Based on the Iowa Antidegradation Implementation Procedure (AIP), each alternative is evaluated for practicality, economic efficiency, and reasonableness. All practicable alternatives were assumed to be affordable. Per the AIP, economic efficiency and affordability do not need to be evaluated for non-practicable alternatives. Table 7-1 provides a summary of the evaluation performed for the blowdown alternatives.

Table 7-1: Reasonableness Classification and Evaluation of Blowdown Alternatives

Alternative	BPCA, NDA, or LDA	Practicable?	Economically Efficient?	Percent of BPCA?	Reasonable?
1 – Radial Collector Well	LDA	No	N/A	*	No
2 – Deep Well Field	LDA	No	N/A	*	No
3 – Discharge to River	BPCA	Yes	Yes	100	Yes
4 – Land Application	NDA	No	N/A	*	No
5 – Pipeline to WWTP	NDA	No	N/A	*	No

*As Alternative 3 is already constructed and was approved in the 2014 Antidegradation Alternatives Analysis, the cost would be zero, making any other alternative's percentage of the BPCA undefinable.

The preferred alternative is Alternative 3 (highlighted) and is the BPCA. This alternative uses the previously constructed gravity flow pipeline to convey blowdown from the Circulating Water System to the Cedar River through Outfall 006, which is downstream of the intake structure. This alternative represents the best combination of effectiveness, cost efficiency, and ease of O&M. In accordance with the IDNR's guidance, a Facility Plan and Construction Permit are not required for the selected alternative since the pipeline is already in place.

Table 7-2: Reasonableness Classification and Evaluation of LVW Treatment Alternatives

Alternative	BPCA, NDA, or LDA	Practicable?	Economically Efficient?	Percent of BPCA?	Reasonable?
1 - Sedimentation Basin	BPCA	Yes	Yes	100	Yes
2 - Subsurface Wetlands	LDA	No	N/A	N/A	No
3 - Active Treatment	LDA	Yes	No	139	No

For LVW treatment the BPCA is to install the sedimentation treatment system (highlighted in Table 7-2) to treat the LVW for O&G and TSS in accordance with federal regulations (40 CFR 423). The subsurface wetlands were determined to be impracticable. The sedimentation basin and the active treatment alternative provide equal environmental benefits, as they produce the same effluent quality. However, the greater economic cost of the active treatment alternative (exceeding 115% of the cost of the sedimentation basin) results in no additional environmental benefits for the Cedar River. Therefore, the sedimentation basin system is the preferred alternative because it provides environmental benefits equal to the active treatment alternative, while minimizing O&M

requirements and capital costs. Anticipated O&M activities include sediment removal and occasional sand filter media replacement. The preferred alternative is practicable, simple and robust, economically efficient, affordable and reasonable, as well as the preferred choice for installation footprint and future maintenance. The semi-passive sedimentation basin provides the facility with an effective treatment system to comply with NPDES permit requirements.

Table 7-3: Reasonableness Classification and Evaluation of LVW Discharge Alternatives

Alternative	BPCA, NDA, or LDA	Practicable?	Economically Efficient?	Percent of BPCA?	Reasonable?
1– Recirculation	BPCA/LDA	Yes	Yes	100	Yes
2 – Pipe Connection	LDA	Yes	No	300	No
3 – New Pipeline	LDA	Yes	No	650	No
4 – Land Application	NDA	No	N/A	N/A	No

For LVW management the BPCA and preferred alternative is to recirculate treated LVW back into the Circulating Water System, rather than discharging it directly to the Cedar River. The LVW consists mainly of GSW strainer backwash, which originates from the Cedar River via the GSW System and Circulating Water System. The LVW will undergo treatment to remove TSS and O&G. The treated water will be monitored for compliance with LVW effluent limit guidelines prior to recirculation. Treatment and reuse of the LVW in the Circulating Water System is the resource responsible approach. It is expected to reduce annual water consumption by approximately 1.6 million gallons based on the average design flow of the LVW treatment system.

The proposed sedimentation treatment system, together with recirculation and reuse of treated LVW, will generate an effluent of higher water quality than the Cedar River source water and will avoid a direct discharge to surface waters. This is the preferred alternative because it is the most reasonable and economically efficient.

8. SOCIAL AND ECONOMIC IMPORTANCE

According to the Iowa AIP, a demonstration of socioeconomic importance (SEI) is required for Tier 2 degradation. The following information is provided to demonstrate the importance of this project and its benefit to the affected community. To show SEI, the Iowa AIP directs the applicant to identify the affected community, identify socioeconomic factors relevant to the community, and describe how the project will benefit the community relative to those factors.

8.1 Affected Community

DAEC is located in Linn County, Iowa approximately 8 miles northwest of Cedar Rapids, near the city of Palo. The restart of DAEC represents an opportunity to return approximately 615 megawatts (MW) back to service in Midcontinent Independent System Operator, Inc.'s ("MISO") footprint. The project presents one of the last viable nuclear recommissioning opportunities in the United States, which would add new nuclear generation to the grid before the end of the decade.

The discharge of blowdown to the Cedar River and reincorporation of the blowdown into NEDA's NPDES permit, as well as the treatment and management of the LVW, are necessary components to resume operations at DAEC. As described below, the DAEC recommissioning has significant social and economic importance to Linn County and the state of Iowa as a whole.

8.2 SEI Factors

The Economic Impact Analysis of the DAEC Recommissioning conducted by Strategic Economic Research, LLC (November 2025) included the following relevant statistics.

- The median household income (MHI) in Linn County is $76,421.
- Unemployment in Linn County was at its highest at 6 percent in 2010 and 2020 and its lowest at 2.7 percent in 2018 and 2019.

The report in its entirety can be found online at https://www.strategiceconomic.com/news-release/duane-arnold-energy-center-recommissioning (accessed 01/05/2026).

8.3 Anticipated Benefits

The Project can provide significant local economic benefits and create hundreds of jobs in the affected community through resuming operations of DAEC. As the only nuclear power plant in Iowa, DAEC provided substantial benefits to the local community during its operations, including:

- Supported $255 million per year in economic activity.
- Provided hundreds of high-quality, full-time positions during normal operations with an increase of 1,500 workers onsite during refueling operations.
- Provided annual salaries of approximately $85 million (including during outages).
- Generated approximately $3 million in direct state and local taxes annually.
- Supported 2,350 direct and indirect jobs.

Once recommissioned, DAEC is anticipated to again provide significant economic benefits and support hundreds of jobs in the affected community. The expected economic benefits are described

in detail in the Economic Impact Analysis. Over the modeled construction and 25-year operating period, DAEC is anticipated to generate:

- $15.9 billion in economic impact to the United States and $9.1 billion in economic impacts across the state of Iowa.
- $8.2 billion in economic impact and $3.2 billion in labor earnings in Linn County.
- Approximately 880 direct, indirect, and induced jobs in Linn County and 1,600 direct, indirect, and induced jobs in the state of Iowa.
- 393 new direct, full-time, high-quality jobs at DAEC in Linn County during operations, increasing site total to 433 direct jobs.
- Approximately $75 million in total Generation Tax that will be distributed amongst Cedar Rapids Community School District, Linn County, Kirkwood Community College, Fire Department #6, Fayette Township, and miscellaneous County levies.

Additionally, NEDA has entered into a Host Community Agreement with Linn County to provide annual payments to Linn County. The first payment of $1.9 million will be made once the site is operational and this payment will escalate by 5.00% beginning on the first anniversary of the initial Host Community Funds payment, and on each anniversary thereafter during the term, the Host Community Funds amount shall be increased by this annual escalator. This will result in significant additional funding for Linn County to support emergency training, infrastructure, and other community services.

The economic effect that DAEC has had and will have on the surrounding communities is significant. The preferred alternatives discussed above are necessary for DAEC to resume operations and achieve the socio-economic benefits outlined here.

9. CONCLUSION

The DAEC facility operated safely and reliably for 45 years. This antidegradation review demonstrates that resuming the blowdown discharge and recirculation of treated LVW at DAEC will conform to all applicable regulations and improve upon the facility's commitment to environmental stewardship.

This review evaluated multiple alternatives for managing cooling tower blowdown and LVW produced at the facility. The assessment evaluated the practicability, economic efficiency, and environmental impact of these alternatives and concluded that the preferred alternative for the blowdown discharge is to use the existing 1,500-foot pipeline to Outfall 006 at the Cedar River. For the LVW, the preferred alternative was determined to be treatment via a sedimentation basin with introduction of the treated LVW into the Circulating Water System for reuse. The proposed LVW treatment system will produce an effluent with higher water quality than the Cedar River source water. Reusing the treated LVW avoids direct discharge to the Cedar River and results in annual water savings of approximately 1.6 million gallons.

Based on evaluation of technical feasibility, economic reasonableness, and operational constraints, these combined alternatives represent the least degrading, reasonable approach for addressing DAEC's wastewater management needs and complying with Iowa's Antidegradation Implementation Procedure. The preferred alternatives will meet effluent limits for TRC, zinc, pH and temperature, as well as 40 CFR 423 requirements for cooling tower blowdown and LVW.

10. LIST OF REFERENCES

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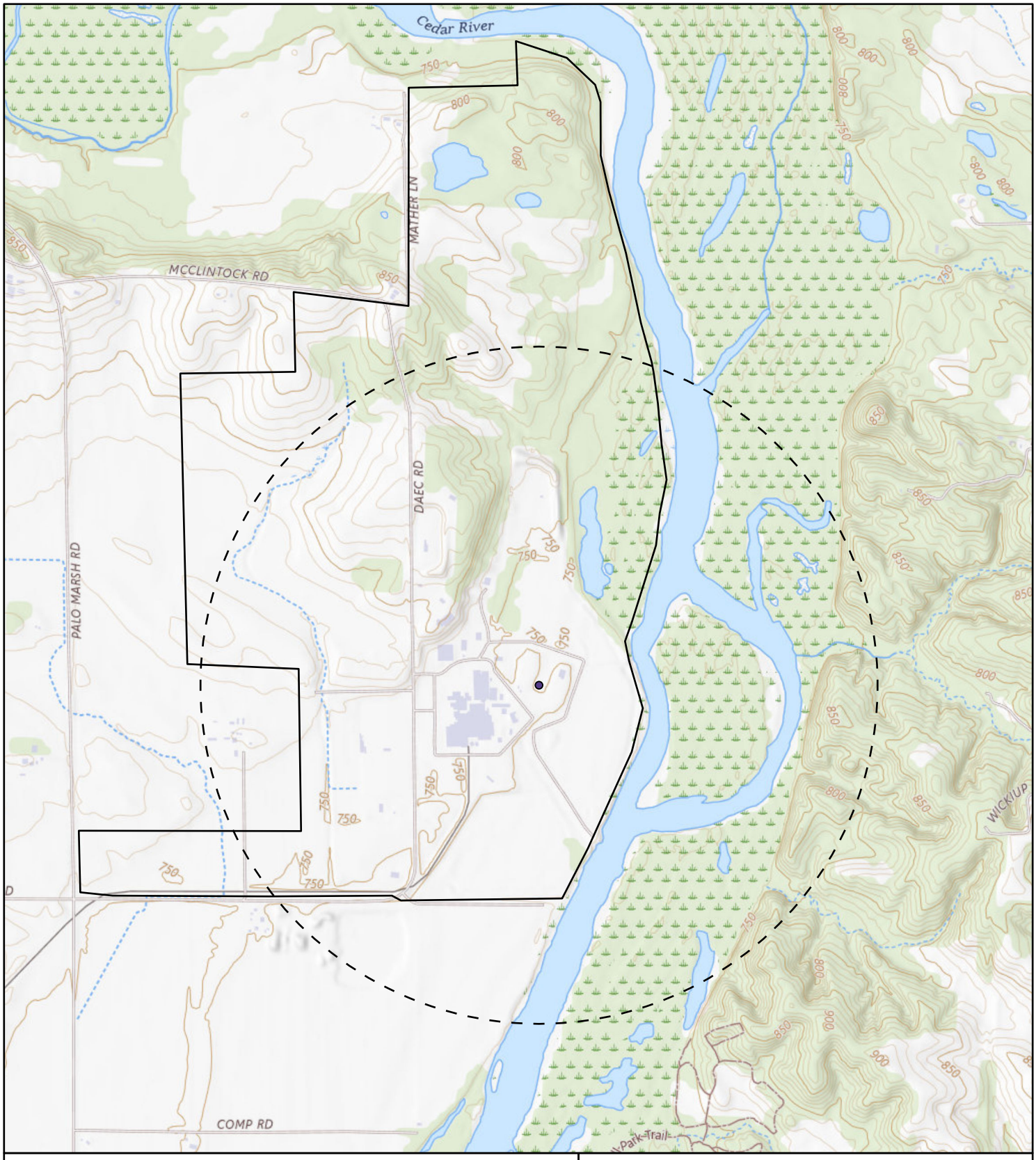
APPENDIX A - FACILITY LAYOUT AND LOCATION



Legend

- Property Boundary
- One Mile Radius
- Proposed Treatment Works

N

0 3,000 Feet

NextEra Energy Duane Arnold, LLC
One Mile Radius
Site Location

Palo, IA

Geosyntec consultants

CSWR1091	October 2025

Figure 1

C:\Local Copies\CSWR1091 GIS for MC\APRX\APRX.aprx\One Mile 10/16/2025 9:56 AM (aaron.vandermus)

Legend

- Creek
- Outfall

N

0 1,000 Feet

NextEra Energy Duane Arnold, LLC

Facility Layout Map

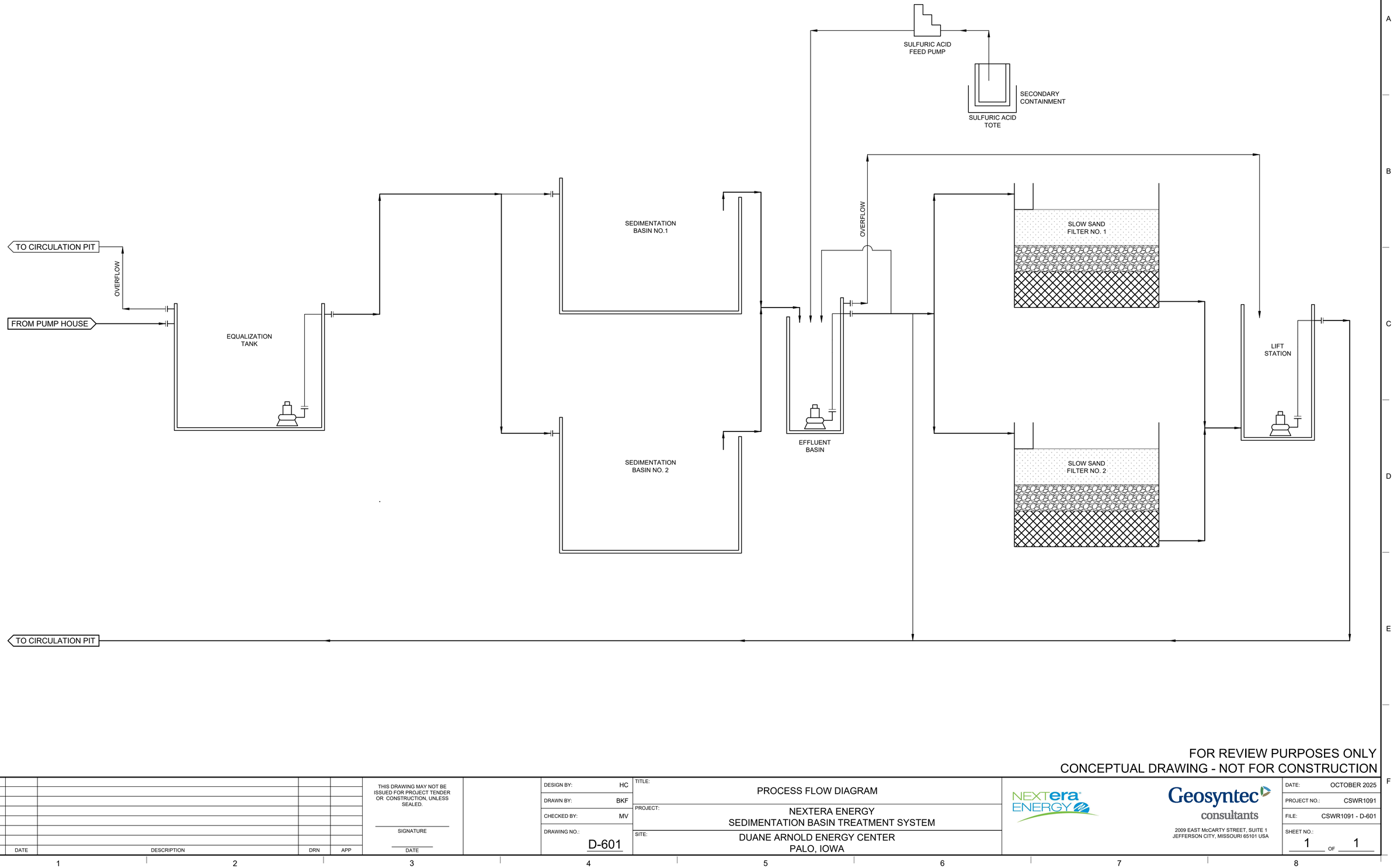
Palo, IA

Geosyntec consultants

CSWR1091	August 2025	**Figure 2**

C:\Local Copies\CSWR1091 GIS for MC\APRX\APRX.aprx\Form 1 Site Figure 8/22/2025 2:46 PM (aaron.vandermus)

APPENDIX B – PROCESS FLOW DIAGRAM FOR SEDIMENTATION BASIN SYSTEM



FOR REVIEW PURPOSES ONLY
CONCEPTUAL DRAWING - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DRN	APP

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

DATE

DESIGN BY: HC
DRAWN BY: BKF
CHECKED BY: MV
DRAWING NO.: D-601

TITLE: PROCESS FLOW DIAGRAM

PROJECT: NEXTERA ENERGY
SEDIMENTATION BASIN TREATMENT SYSTEM

SITE: DUANE ARNOLD ENERGY CENTER
PALO, IOWA

NEXTera ENERGY

Geosyntec consultants
2009 EAST McCARTY STREET, SUITE 1
JEFFERSON CITY, MISSOURI 65101 USA

DATE: OCTOBER 2025
PROJECT NO.: CSWR1091
FILE: CSWR1091 - D-601
SHEET NO.: 1 OF 1

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Geosyntec consultants

APPENDIX C – IDNR WASTELOAD ALLOCATION (WLA) CALCULATION AND NOTES PACKAGE

12-10-2025 *NPDES # 5700104*
Revised 12-16-2025

NextEra Energy Duane Arnold

(Reintroduction of non-contact cooling water through Outfall 006)

This Package Contains

Wasteload Allocation Calculations & Notes

ENVIRONMENTAL SERVICES DIVISION
WATER QUALITY-BASED PERMIT LIMITS

SECTION VI: WATER QUALITY-BASED PERMIT LIMITS[1]

Facility Name: NextEra Energy Duane Arnold NPDES Number: 5700104

Parameters	Ave. Conc. (mg/l)	Max. Conc. (mg/l)	Ave. Mass (lbs/d)	Max. Mass (lbs/d)
Outfall No. 006	**ADW = 2.88 MGD & AWW = 2.88 MGD**			
Total Residual Chlorine (TRC)	0.077	0.077	1.86	1.86
Zinc	0.607	0.607	14.6	14.6
pH	5.2-14.0 Standard Units			
Temperature	Monthly Average		Daily Maximum	
Month	T (°C)	T (°F)	T (°C)	T (°F)
January	88.5	191.3	100.0	212.0
February	93.9	200.9	100.0	212.0
March	97.8	208.0	100.0	212.0
April	100.0	212.0	100.0	212.0
May	100.0	212.0	100.0	212.0
June	100.0	212.0	100.0	212.0
July	100.0	212.0	100.0	212.0
August	100.0	212.0	100.0	212.0
September	100.0	212.0	100.0	212.0
October	100.0	212.0	100.0	212.0
November	94.0	201.1	100.0	212.0
December	88.9	192.0	100.0	212.0

Stream Network/Classification of Receiving Stream: Cedar River (A1, B(WW-1) HH)

Annual critical low flows in Cedar River at the outfall:
1Q10 flow 324 cfs, 7Q10 flow 428 cfs, 30Q10 flow 491 cfs

Performed by: Angie Rosenboom

1: The limits in this report start at the beginning of the effluent pipe.

Antidegradation Review Requirement

A tier II antidegradation review is required. See Section 2 for details.

The antidegradation review conducted in this wasteload allocation is based on the current information available. Antidegradation could also be triggered during the NPDES permitting process based on new information.

WLAs/Permit Limits for NextEra Energy Duane Arnold's Wastewater Discharge

This is a revision of the 12-10-2025 WLA report. The only changes to this WLA include correcting the outfall on page 1 from 001 to 006 and updating the language in Table 2 item 1.

These wasteload allocations and water quality-based permit limitations are for NextEra Energy Duane Arnold's wastewater discharge. The wasteload allocations/permit limits are based on the Water Quality Standards (IAC 567.61) and the "Iowa Wasteload Allocation (WLA) Procedure," effective November 11, 2020.

The water quality-based limits in this WLA are calculated to meet the surface water quality criteria to protect downstream uses. There could be technology-based limits applicable to this facility that are more stringent than the water quality-based limits shown in this WLA. The technology-based limits could be derived from either federal guidelines based on different industrial categories or permit writer's judgment.

Section 1. Background:
NextEra Energy Duane Arnold proposes discharging a stream of wastewater into Cedar River (at 42° 5' 48.89" N, 91° 46' 20.65" W) for Outfall 006 via 1,500 ft effluent pipe. This facility is also permitted to discharge through outfall 002. Outfall 002 is not considered in this WLA report and does not share a mixing zone on the Cedar River with Outfall 006.

Route of flow and use designations:
At the outfall, the Cedar River is an A1, B(WW-1) HH designated use water body. The designations have been adopted in Iowa's state rule described in the rule-referenced document of "Surface Water Classification," effective July 24, 2019. Based on the pollutants of concern, the use designations of water bodies further downstream will not impact the resulting limits for this facility.

Critical low flow determination:
The annual critical low flows in the Cedar River at the outfall are estimated based on the Weighted Drainage Area Ratio (WDAR) method from "Methods for estimating selected low-flow frequency statistics and harmonic mean flows for streams in Iowa" (2012, revised 2017) and flow statistics obtained at USGS gage station 05464500, located on the Cedar River at Cedar Rapids, Iowa.

Table 1: Annual critical low flows

Location	D.A. (mi^2)	1Q10 (cfs)	7Q10 (cfs)	30Q10 (cfs)
Cedar River at the outfall	6,240	324	428	491
Cedar River at the USGS gage 05464500	6,510	329	440	504

Section 2. Antidegradation Review:
According to the "Iowa Antidegradation Implementation Procedure," effective February 17, 2010 (IAC 567-60.7(2).d.(4)), all new or expanded regulated activities (with limited exceptions, such as unsewered communities) are subject to antidegradation review requirements.

Table 2: Antidegradation review analysis

Item #	Factor or scenario	Antidegradation determination	Analysis/comments
1	Design capacity increase	Yes ☒, No ☐, or Not Applicable ☐	1: Reintroduction of cooling tower blowdown as shown in the WLA request form.
2	Significant Industrial Users (SIU) contributing new pollutant of concern (POC)	Yes ☐, No ☐, or Not Applicable ☒	
3	New process contributing new pollutant of concern (POC)	Yes ☒, No ☐, or Not Applicable ☐	1: Reintroduction of cooling tower blowdown and addition of planned circulating water system treatment chemicals.
4	Less stringent water quality-based limits?	Yes ☐, No ☒, or Not Applicable ☐	1: Less stringent WQ-based pH limits will not trigger an antidegradation review.
5	Outfall location change	Yes ☐, No ☒, or Not Applicable ☐	
Conclusion and discussion: Due to Items 1 and 3, a tier II antidegradation review is required. The antidegradation review conducted in this WLA is based on the current information available. Antidegradation could also be triggered during the NPDES permitting process based on new information.			

Section 3. Total Maximum Daily Load (TMDL) Limitations:
The following impaired water bodies in the discharge route are contained in the 2024 Iowa Integrated Report:

- Cedar River for metals (copper), bacteria (indicator bacteria – *E. coli*), and biological (loss of native mussel species)
- Iowa River for bacteria (indicator bacteria – *E. coli*)

Two TMDLs have been completed on downstream segments of the Cedar River. One TMDL was completed for nitrate and was approved by the EPA in 2007; the other was completed for bacteria and was approved by the EPA in 2010. This facility (the SBR plant – Outfall 002) was assigned WLAs in both TMDLs. Outfall 002 is not addressed in this WLA report. This facility has not been assigned allocations from any other TMDLs at this time.

The results presented in this report are wasteload allocations based on meeting the State's current water quality standards in the receiving water body. Additional and/or more stringent effluent limits may be applicable to this discharge based on approved TMDLs for impaired water bodies, which may provide watershed based wasteload allocations. Information on impaired streams in Iowa and approved TMDLs can be found at the following website: https://programs.iowadnr.gov/adbnet/Docs/TMDL.

Section 4. Calculations:
The WLAs/permit limits for this outfall are calculated based on the facility's Average Dry Weather (ADW) flow of 2.88 MGD and its Average Wet Weather (AWW) flow of 2.88 MGD.

Only wasteload allocations/permit limits (water quality-based effluent limits) calculated using DNR approved flows can be applied in NPDES permits. Water quality-based effluent limits calculated using proposed flows that have not been approved by the DNR for permitting and compliance may be used for informational purposes only.

Toxics:
The water quality-based permit concentration limits are derived using the allowed stream flow and the ADW flow, while the loading limits are derived using the allowed stream flow and the AWW flow.

The acute criteria apply at the end of the Zone of Initial Dilution (ZID), and the chronic criteria apply at the end of the Mixing Zone (MZ). In this case, 25% of the 7Q10 flow and 2.5% of the 1Q10 flow in the Cedar River at the outfall are used as the MZ and the ZID, respectively.

A default hardness of 200 mg/l for background and effluent is used for applicable criteria. Default background concentrations are used for other toxics in cases where there is sufficient stream data.

Effective November 11, 2020, water quality criteria for metals (excluding aluminum) are expressed as dissolved in IAC 567.61. Using EPA dissolved metal translators, water quality-based effluent limits in this WLA are expressed as total recoverable.

TRC decay in the effluent pipe is taken into consideration. The decay is estimated by using a first order decay model with a length of 1,500 ft and a decay rate of 20/day. Calculated based on information provided by the facility, a flow velocity of 0.939 fps for both ADW/AWW conditions is used in the effluent pipe.

The TRC and other toxic limits are based on a sampling frequency of 1/week.

pH:
Iowa Water Quality Standards (IAC 567.61.3.(3).a.(2) and IAC 567.61.3.(3).b.(2)) require that pH in Class A or Class B waters “shall not be less than 6.5 nor greater than 9.0.” The criteria apply at the end of the MZ, which is 25% of the 7Q10 flow in the Cedar River at the outfall.

Temperature:
Monthly average and daily maximum limits were derived based on the IAC Chapter 61.3(3)”b”(5) of the temperature criteria. The statewide maximum and 90th percentile background temperatures for streams designated as warm waters, as shown in Table 3, are used to derive the monthly average and daily maximum limits, respectively.

Table 3: Statewide background temperature for streams designated as warm water

Month	Maximum (°C)	90th Percentile (°C)
January	12.6	2.3
February	17.9	1.7
March	21.8	6.0
April	25.0	14.6
May	26.4	19.2
June	29.5	23.6
July	34.3	27.4
August	33.5	28.2
September	32.7	24.6
October	31.0	19.8
November	18.0	12.0
December	13.0	5.4

Monthly average limits:

WQS requires that "no heat shall be added to interior streams or the Big Sioux River that would cause an increase of more than 3°C". This criterion applies at the end of the MZ, which is a percentage of the 7Q10 flow (from Apr to Oct) or the greater between the 7Q10 and the 2*AWW flow (from Nov to Mar), in the receiving stream. In this case, the MZ is determined to be 25% of the 7Q10 flow at the discharge point for all 12 months. The resulting limits are the monthly average limits. The calculation is described by Equation (1):

$$T_e = T_r + 3° C * (Q_e + Q_r * MZ) / Q_e \quad (1)$$

Where: Q_e = effluent flow (cfs) (AWW is used as the Q_e)
Q_r = stream annual 7Q10 flow (cfs) for months from Apr to Oct; the greater between the 7Q10 flow and 2*AWW flow, for month Nov to Mar.
T_e = allowed monthly average effluent temperature, °C
T_r = river background maximum temperature for the month, °C
MZ = percentage of stream flow in the mixing zone

Daily maximum limits:

WQS requires that "in no case shall heat be added in excess of that amount that would raise the stream temperature above 32 °C". This criterion applies at the end of the MZ, which is a percentage of the annual 7Q10 in the receiving stream. In this case, based on the ratio of the stream flow to the AWW flow, the MZ is determined to be 25% of the 7Q10 flow the discharge point. The AWW was used in the calculation. The resulting limits are the daily maximum limits. The calculation is described by Equation (2):

$$T_{e\text{-maximum}} = T_r + (32 - Tr) * (Q_e + Q_r * MZ) / Q_e \quad (2)$$

Where: $T_{e\text{-maximum}}$ = allowed daily maximum effluent temperature
T_r = river background 90th percentile temperature for the month, ° C
The other notations are the same as in Equation (1)

Allowed maximum effluent temperature change:
Cessation of thermal inputs to the receiving water by a thermal discharge shall occur gradually so as to avoid fish mortality due to cold shock during the winter months (November through March). The basis for this requirement is to allow fish associated with the discharge-heated MZ to acclimate to the decreasing temperature. Likewise, when the discharge resumes the temperature would need to be increased gradually to avoid negative impacts to aquatic life in the receiving stream.

Temperature change in pipes, storm sewers and tiles:
The effluent temperature will change from the time it leaves the facility (normally the sampling point) to the time it reaches the receiving stream due to heat exchange between the effluent and the surrounding soil through the pipe. The temperature limits at the sampling point were estimated by using the water quality-based limits that need to be met at the discharging point to the receiving stream plus the estimated temperature change in the pipe.

The temperature change along the pipe (ΔT) is calculated using a Log Mean Temperature Difference (LMTD) approximation. In order to further improve the accuracy of the calculation, the pipe is divided into small segments and the temperature drop is estimated for each segment and the total heat exchange is estimated as the sum of the temperature change for each segment along the total length of the pipe.

The total temperature change in this case was estimated based on the pipe length of 1,500 ft and the following assumptions: a fluid velocity of 0.939 fps, PVC effluent pipe with inner diameter of 29.5 inches and wall thickness of 1.35 inches, and a soil temperature of 55 ^{o}F.

Section 5. Permit Limitations:
The acute and chronic WLAs are used as the values for input into the current permit derivation procedure. The water quality-based limits are shown on Page 1 of this report.

APPENDIX D – CHEMICAL SUPPLIER FORMULATION REVIEW

Water Technologies & Solutions

10-Jun-20

Nextera Energy
Duane Arnold Nuclear

Palo, Iowa

Daron Tanko

Priority pollutants are defined in the US EPA Clean Water Act under 40 CFR 423 Appendix A: http://water.epa.gov/scitech/methods/cwa/pollutants.cfm . The table presented below summarizes the priority pollutant status of each product concerned.

This data is provided to identify contaminants of concern related to products directly discharged to surface waters. Our products are not intentionally formulated using ingredients containing priority pollutants; rigorous manufacturing, clean-out, and batch sequencing procedures are used to minimize cross-contamination. However, it may be determined upon testing neat product trace levels of contaminants are detected. Under normal applications, the concentrations of these contaminants in the neat product is expected to fall below detectable levels resulting in no measurable amounts in the discharge.

Except where formulation review is noted, all products were analyzed for the 126 priority pollutants according to published EPA analytical methods and procedures most of which can be found under 40 CFR Part 136. http://water.epa.gov/scitech/methods/cwa/index.cfm Detection limits for the complete priority pollutant scan are established by the test method or altered due to the matrix of the sample.

For those products not tested, a formulation review was conducted by examination of the product chemical composition and available supplier data to calculate a theoretical priority pollutant concentration. When possible formulation reviews are compared against similar products having actual tested priority pollutant analysis data. To the best of our knowledge the products indicating formulation review do not contain the Priority Pollutants listed under 40 CFR 423 Appendix A.

Product	Analysis Type	Result
Depositrol BL5400	Formulation Review	None known to be present
Gengard GN8008	Formulation Review	None known to be present
Gengard GN8300	Formulation Review	None known to be present
Spectrus BD1501E	Formulation Review	None known to be present
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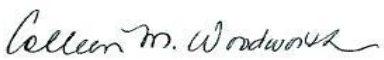
.	.	.

Should you have any questions or require any additional information on our products, please contact your SUEZ Water Technologies & Solution sales representative.

Sincerely,



SUEZ Water Technologies & Solutions
Product Compliance- Global Regulatory Leader
4636 Somerton Road
Trevose, PA 19053

July 1, 2026

Ian Willard, P.E.
Environmental Engineer Senior
Water Quality Monitoring and Assessment Section
Iowa Department of Natural Resources
6200 Park Ave, Suite 200
Des Moines, IA 50321
Transmitted via Email: ian.willard@dnr.iowa.gov; section401wqc@dnr.iowa.gov

Subject: NextEra Energy Duane Arnold, LLC - Section 401 Water Quality Certification Request Form

Dear Mr. Willard:

Enclosed is the Section 401 Water Quality Certification Request Form for NextEra Energy Duane Arnold, LLC (NEDA). NEDA submitted the Pre-Filing Meeting Request Form on June 1, 2026. In accordance with Iowa Administrative Code Chapter 567-61, the Certification Request Form is being submitted at least 30 days after submission of the Pre-Filing Meeting Request Form.

Please contact me at diane.nguyen@nee.com or 772-214-8628 if you have any questions or require additional information.

Best regards,

Diane Nguyen, P.E.
Principal Engineer, Environmental Services

Iowa Department of Natural Resources
Section 401 Water Quality Pre-Filing Meeting and Certification Request Form
Certification Request Form

5. Corps Project Manager*:

Email Address: Kimberly.Conway@nrc.gov

Phone numbers (with area code): Business: 301-415-1335 Cell: Use Business Number

*The corps project manager must be cc'ed on the certification request email.

This project is not required to have a Corps permit and therefore does not have a Corps Project Manager. The NRC Project Manager contact information is provided in Item 5.

6. Federal Permit / License Requiring Section 401 Water Quality Certificate and its Project Number*

Permit/License Number: DPR-49 Federal Agency: ☐ Corps of Engineers ☐ FERC

☒ Other: Nuclear Regulatory Commission

*A copy of the federal permit or license application is **required** to be submitted with a certification request.

Note: Please see Attachment 1 for a copy of Federal Permit DPR-49

7. Include a description of any methods and means proposed to monitor the discharge and the equipment or measures planned to treat, control, or manage the discharge. (Please provide a description of the best management practices you will use to protect water quality as well as any methods and means proposed to monitor the discharge/equipment or measures planned to treat or control the discharge.)

DAEC will monitor, treat, control, and manage authorized discharges in accordance with Iowa NPDES Permit No. 5700104 and applicable plant procedures. Discharges will occur only through permitted outfalls and will be monitored using permit-specified sampling locations, parameters, frequencies, analytical methods, recordkeeping, and reporting procedures, including submittal of required discharge monitoring reports to Iowa DNR. Domestic wastewater will be treated through a sequencing batch reactor wastewater treatment plant before discharge through Outfall 002. Cooling tower blowdown is non-contact cooling water and will be managed through the permitted conveyance and discharge structure (Outfall 006). Where de-icing operations are needed during winter conditions, the alternative cooling tower blowdown discharge location (Outfall 003) will be used only as authorized by the NPDES permit. Low volume wastewater (LVW) will be directed to a wastewater treatment system designed to meet effluent limitations in accordance with 40 CFR 423.12(b). Following treatment, LVW will be monitored for pH, total suspended solids, and oil and grease at an internal monitoring point prior to reuse. Best management practices include procedures to ensure compliance with NPDES permit requirements, preventive maintenance, spill prevention and response, chemical and material management, stormwater pollution prevention, erosion and sediment controls, controls to prevent unauthorized discharges, and routine inspections of discharge-related equipment and structures to protect Cedar River water quality.

8. Dates*

Planned Start Date of Proposed Project: Between Q2 2028 - Q1 2029

Planned End Date of Proposed Project: No plans to cease operations upon DAEC restart

Approximate date(s) of discharge(s) (if known): Daily upon resuming operations

*In normal situations, the DNR issues certifications within 90 days. This period of time accommodates internal review and the mandatory public comment period. If your project is scheduled to start sooner, please contact us at Section401WQC@dnr.iowa.gov. Be advised that the DNR is entitled up to six months by law to review certification requests.

9. List all other federal (not listed in #6), interstate, tribal, state, territorial, or local agency authorizations required for the proposed project, including all approvals or denials already received:

Agency	Type of Authorization	Agency Number	Date Applied	Date Approved	Date Denied
Please see Attachment 2					

10. Date Pre-filing Meeting Request was submitted 06/01/2026

11. Certification Request Verification

This request is hereby made for the activities described herein. I hereby certify that all information contained herein is true, accurate, and complete to the best of my knowledge and belief. I have completed the following tasks, as required for the certification request:

- ☒ Cc'ed the Corps contact associated with the proposed project*
- ☒ Attached a copy of the federal permit or license application
- ☒ Submitted a complete pre-filing meeting request at least 30 days ago

*This project does not have a Corps Project Manager. The NRC Project Manager has been copied.

I further certify that I possess the authority to undertake the proposed activities. I hereby request that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time. This application must be signed by the Property Owner/Applicant and the Authorized Agent, if applicable.

Property Owner/Applicant's Name (printed): Michael Casey on behalf of NextEra Energy Duane Arnold, LLC

Property Owner/Applicant's Signature: Michael Casey Date: 7/1/24

If applicable: Authorized Agent's Name (printed): Not Applicable

Authorized Agent's Signature: _____ Date: _____

Attachment 1

DAEC NRC Facility License No. DPR-49

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
	)	
NextEra Energy Duane Arnold, LLC	)	
Central Iowa Power Cooperative	)	
Corn Belt Power Cooperative	)	
	)	
	)	
(Duane Arnold Energy Center and	)	
the Associated Independent Spent Fuel	)	Docket Nos. 50-331 and 72-32
Storage Installation)	)	Renewed License No. DPR-49

ORDER APPROVING DIRECT TRANSFER OF LICENSES AND CONFORMING AMENDMENT

I.

NextEra Energy Duane Arnold, LLC (NEDA), Central Iowa Power Cooperative (CIPCO), and Corn Belt Power Cooperative (Corn Belt) are the owners of the Duane Arnold Energy Center (DAEC). With respect to their ownerships, they are co-holders of U.S. Nuclear Regulatory Commission (NRC, the Commission) Renewed Facility License No. DPR-49 for the DAEC and of the associated general license for the DAEC independent spent fuel storage installation (ISFSI). NEDA, the current operator licensee, holds 70 percent ownership of the DAEC, CIPCO holds 20 percent ownership of the DAEC, and Corn Belt holds 10 percent ownership of the DAEC. The DAEC is located in Linn County, Iowa.

II.

By application dated November 25, 2025 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML25330A015), as supplemented by letter dated February 23, 2026 (ML26055A092), NEDA, CIPCO, and Corn Belt requested, pursuant to

Section 184, “Inalienability of Licenses,” of the Atomic Energy Act of 1954, as amended (AEA), and title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.80, “Transfer of licenses,” that the NRC consent to the direct transfer of CIPCO's 20-percent ownership interest and Corn Belt’s 10-percent ownership interest of Renewed Facility License No. DPR-49 for the DAEC and of the associated general license for the DAEC ISFSI to NEDA. NEDA also requested, pursuant to 10 CFR 50.90, “Application for amendment of license, construction permit, or early site permit,” that the NRC approve an administrative amendment to Renewed Facility License No. DPR-49 to reflect the transfer, to be issued and made effective at the time the transfer occurs.

On January 29, 2026, the NRC published a notice of consideration of approval of the license transfer application in the *Federal Register* (91 FR 3930). This notice provided an opportunity to comment, request a hearing, and petition for leave to intervene on the license transfer application. The NRC did not receive any hearing requests in response to the notice. The NRC did receive comments in response to the notice, which the NRC staff considered and addressed in the safety evaluation supporting this transfer order.

Pursuant to 10 CFR 50.80, no license for a utilization facility, or any right thereunder, shall be transferred, either voluntarily or involuntarily, directly or indirectly, through transfer of control of the license to any person, unless the NRC gives its consent in writing. Upon review of the information in the license transfer application and other information before the Commission, and relying upon the representations contained in the application, the NRC staff has determined that NEDA is qualified to be the holder of the licenses to the extent proposed and that the transfer of the licenses, as described in the application, is otherwise consistent with applicable provisions of law, regulations, and orders issued by the Commission pursuant thereto.

Upon review of the request in the license transfer application for approval of a conforming administrative amendment to reflect the transfer, the NRC staff has determined that

the application for amendment complies with the standards and requirements of the AEA and the Commission's rules and regulations set forth in 10 CFR Chapter I; the facility will operate in conformity with the application, the provisions of the AEA, and the rules and regulations of the Commission; there is reasonable assurance that the activities authorized by the amendment can be conducted without endangering the health and safety of the public and that such activities will be conducted in compliance with the Commission's regulations; the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public; and the issuance of the amendment is in accordance with 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," of the Commission's regulations and all applicable requirements have been satisfied.

The findings set forth above are supported by an NRC staff safety evaluation dated the same date as this order, which is available at ADAMS Accession No. ML26068A226.

III.

Accordingly, pursuant to Sections 161b, 161i, and 184 of the AEA, Title 42 of the *United States Code* Sections 2201(b), 2201(i), and 2234, and 10 CFR 50.80 and 10 CFR 50.90, IT IS HEREBY ORDERED that the license transfer application, as described herein, is approved.

IT IS FURTHER ORDERED that, consistent with 10 CFR 2.1315(b), the license amendment that makes changes, as indicated in Enclosure 2 to the cover letter forwarding this order, to reflect the subject direct transfer is approved. The amendment shall be issued and made effective at the time the proposed direct transfer action is completed.

IT IS FURTHER ORDERED that after receipt of all required regulatory approvals of the proposed direct transfer action, NEDA shall inform the Director of the Office of Nuclear Reactor

Regulation in writing of such receipt no later than 2 business days prior to the date of the closing of the direct transfer. Should the proposed direct transfer not be completed within 1 year of the date of this order, this order shall become null and void; provided, however, that upon written application and for good cause shown, such date may be extended by order.

This order is effective upon issuance.

For further details with respect to this order, see the license transfer application dated November 25, 2025, as supplemented by letter dated February 23, 2026, and the associated NRC staff safety evaluation dated the same date as this order. Publicly available documents created or received at the NRC are accessible electronically through ADAMS in the NRC Public Documents collection at https://www.nrc.gov/reading-rm/adams.html. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS, should contact the NRC Public Document Room reference staff by telephone at 1-800-397-4209, or 301-415-4737, or by email to PDR.Resource@nrc.gov.

Dated: March 30, 2026.

FOR THE NUCLEAR REGULATORY COMMISSION.

JAMIE PELTON

Digitally signed by JAMIE PELTON
Date: 2026.03.30 15:50:42 -04'00'

Jamie Pelton, Acting Deputy Director,
Office of Nuclear Reactor Regulation.

NEXTERA ENERGY DUANE ARNOLD, LLC
CENTRAL IOWA POWER COOPERATIVE
CORN BELT POWER COOPERATIVE
DOCKET 50-331
DUANE ARNOLD ENERGY CENTER
RENEWED FACILITY LICENSE

Renewed License No. DPR-49

1. The Nuclear Regulatory Commission (the Commission) having found that:

   A. The application for license filed by FPL Energy Duane Arnold, LLC,* Central Iowa Power Cooperative and Corn Belt Power Cooperative (the licensees) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I and all required notifications to other agencies or bodies have been duly made;

   B. Deleted;

   C. The facility will be maintained in conformity with the application, as amended; the provisions of the Act; and the rules and regulations of the Commission;

   D. There is reasonable assurance: (i) that the activities authorized by this renewed license can be conducted without endangering the health and safety of the public; and (ii) that such activities will be conducted in compliance with the rules and regulations of the Commission;

   E. NextEra Energy Duane Arnold, LLC is technically qualified and NextEra Energy Duane Arnold, LLC, Central Iowa Power Cooperative and Corn Belt Power Cooperative are financially qualified to engage in the activities authorized by this renewed license in accordance with the rules and regulations of the Commission;

   F. The licensees have satisfied the applicable provisions of 10 CFR Part 140, “Financial Protection Requirements and Indemnity Agreements,” of the Commission’s regulations;

   G. The issuance of this renewed license will not be inimical to the common defense and security or to the health and safety of the public;

   H. After weighing the environmental, economic, technical, and other benefits of the facility against environmental costs and considering available alternatives, the issuance of renewed Facility License No. DPR-49 is in accordance with 10 CFR Part 50, Appendix D, of the Commission’s regulations and all applicable requirements of said Appendix D have been satisfied;

*On April 16, 2009, the name “FPL Energy Duane Arnold, LLC” was changed to “NextEra Energy Duane Arnold, LLC.”

I. Deleted.

2. Renewed Facility License No. DPR-49 is hereby issued to NextEra Energy Duane Arnold, LLC, Central Iowa Power Cooperative (CIPCO) and Corn Belt Power Cooperative (Corn Belt) to read as follows:

A. This renewed license applies to the Duane Arnold Energy Center, a permanently defueled boiling water reactor and associated equipment (the facility), owned by NextEra Energy Duane Arnold, LLC, Central Iowa Power Cooperative and Corn Belt Power Cooperative and operated by NextEra Energy Duane Arnold, LLC. The facility is located on NextEra Energy Duane Arnold, LLC's, Central Iowa Power Cooperative's and Corn Belt Power Cooperative's site near Palo in Linn County, Iowa. This site consists of approximately 500 acres adjacent to the Cedar River and is described in the "Final Safety Analysis Report" as supplemented and amended (Amendments 1 through 14) and the Environmental Report as supplemented and amended (Supplements 1 through 5).

B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:

(1) NextEra Energy Duane Arnold, LLC, pursuant to Section104b of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," to possess and use the facility as required for nuclear fuel storage; and CIPCO and Corn Belt to possess the facility at the designated location in Linn County, Iowa, in accordance with the procedures and limitations set forth in this license;

(2) NextEra Energy Duane Arnold, LLC, pursuant to the Act and 10 CFR Part 70, to possess at any time special nuclear material that was used as reactor fuel, in accordance with the limitations for storage, as described in the Updated Final Safety Analysis Report, as supplemented and amended as of June 1992 and as supplemented by letters dated March 26, 1993, and November 17, 2000.

(3) NextEra Energy Duane Arnold, LLC, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use at any time any byproduct, source or sealed sources for radiation monitoring equipment calibration, and to possess any byproduct, source and special nuclear material as sealed neutron sources previously used for reactor startup or reactor instrumentation; and fission detectors;

(4) NextEra Energy Duane Arnold, LLC, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated radioactive apparatus components;

(5) NextEra Energy Duane Arnold, LLC, pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not to separate, such byproduct and special nuclear materials that were produced by the operation of the facility.

C. This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I; Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Deleted

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 311, are hereby incorporated in the license. NextEra Energy Duane Arnold, LLC shall operate the facility in accordance with the Permanently Defueled Technical Specifications.

(3) Deleted

(4) Deleted

(5) Physical Protection

NextEra Energy Duane Arnold, LLC shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification,

and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "Duane Arnold Energy Center Physical Security Plan," submitted by letter dated May 16, 2006.

NextEra Energy Duane Arnold, LLC shall fully implement and maintain in effect all provisions of the Commission-approved Duane Arnold Energy Center/NextEra Energy Duane Arnold, LLC Cyber Security Plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The Duane Arnold Energy Center/NextEra Energy Duane Arnold, LLC CSP was approved by License Amendment No. 278, as supplemented by changes approved by license Amendment No. 284 and Amendment No. 291.

(6) Deleted

(7) Additional Conditions

The Additional Conditions contained in Appendix B, as revised through Amendment No. 279, are hereby incorporated into this license. NextEra Energy Duane Arnold, LLC shall operate the facility in accordance with the Additional Conditions.

(8) The licensee is authorized to revise the Updated Final Safety Analysis Report by deleting the footnote for Section 9.1.4.4.5 which states: "*The NRC has not endorsed the reactor building crane as single-failure proof (Reference 9)," and by deleting Reference 9 of the references for Section 9.1.

(9) Mitigation Strategy License Condition

Develop and maintain strategies for addressing large fires and explosions and that include the following key areas:

(a) Fire fighting response strategy with the following elements:
1. Pre-defined coordinated fire response strategy and guidance
2. Assessment of mutual aid fire fighting assets
3. Designated staging areas for equipment and materials
4. Command and control
5. Training of response personnel

(b) Operations to mitigate fuel damage considering the following:
1. Protection and use of personnel assets
2. Communications
3. Minimizing fire spread
4. Procedures for implementing integrated fire response strategy
5. Identification of readily-available pre-staged equipment
6. Training on integrated fire response strategy
7. Spent fuel pool mitigation measures

(c) Actions to minimize release to include consideration of:
1. Water spray scrubbing
2. Dose to onsite responders

(10) The licensee shall implement and maintain all Actions required by Attachment 2 to NRC Order EA-06-137, issued June 20, 2006, except the last action that requires incorporation of the strategies into the site security plan, contingency plan, emergency plan and/or guard training and qualification plan, as appropriate.

(11) Deleted.

(12) Deleted.

(13) Deleted.

D. This license is effective as of the date of issuance and is effective until the Commission notifies the licensee in writing that the license is terminated.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by Eric J. Leeds

Eric J. Leeds, Director
Office of Nuclear Reactor Regulation

Enclosures:

1. Appendix A Technical Specifications
2. Appendix B Additional Conditions

Date of Issuance: December 16, 2010

TABLE OF CONTENTS

1.0 USE AND APPLICATION

1.1 Definitions

----------NOTE----------
The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications and Bases.

Term	Definition
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
CERTIFIED FUEL HANDLER	A CERTIFIED FUEL HANDLER is an individual who complies with provisions of the Certified Fuel Handler training program required by Technical Specification Section 5.3.2.
NON-CERTIFIED OPERATOR	A NON-CERTIFIED OPERATOR is an individual who complies with the provisions of Technical Specifications Section 5.3.1.

1.0 USE AND APPLICATION

1.2 DELETED

1.0 USE AND APPLICATION

1.3 Completion Times

PURPOSE	The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.
BACKGROUND	Limiting Conditions for Operation (LCOs) specify minimum requirements for safely maintaining the facility. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO can fail to be met. Specified with each stated Condition are Required Action(s) and Completion Times(s).
DESCRIPTION	The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., inoperable equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the facility is in a specified condition stated in the Applicability of the LCO. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the facility is not within the LCO Applicability.
IMMEDIATE COMPLETION TIME	When “Immediately” is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

1.0 USE AND APPLICATION

1.4 Frequency

PURPOSE

The purpose of this section is to define the proper use and application of Frequency requirements.

DESCRIPTION

Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated LCO. An understanding of the correct application of the specified Frequency is necessary for compliance with the SR.

The "specified Frequency" consists of the requirements of the Frequency column of each SR, as well as certain Notes in the Surveillance column that modify performance requirements.

The use of "met" or "performed" in these instances conveys specific meanings. A Surveillance is "met" only when the acceptance criteria are satisfied. Known failure of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met." "Performance" refers only to the requirement to specifically determine the ability to meet the acceptance criteria.

(continued)

1.4 Frequency (continued)

EXAMPLE The following example illustrates the manner in which Frequencies are specified.

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Perform CHANNEL CHECK.	12 hours

Example 1.4-1 contains the type of SR most often encountered in the Technical Specifications (TS). The Frequency specifies an interval (12 hours) during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 12 hours, an extension of the time interval to 1.25 times the interval specified in the Frequency is allowed by SR 3.0.2 for operational flexibility. The measurement of this interval continues at all times, even when the SR is not required to be met per SR 3.0.1 (such as when the equipment is inoperable, a variable is outside specified limits, or the facility is outside the Applicability of the LCO). If the interval specified by SR 3.0.2 is exceeded while the facility is in a specified condition in the Applicability of the LCO, and the performance of the Surveillance is not otherwise modified, then SR 3.0.3 becomes applicable.

2.0 DELETED

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1	LCOs shall be met during the specified conditions in the Applicability, except as provided in LCO 3.0.2.
LCO 3.0.2	Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met.
LCO 3.0.3	Deleted.
LCO 3.0.4	Deleted.
LCO 3.0.5	Deleted.
LCO 3.0.6	Deleted.
LCO 3.0.7	Deleted.
LCO 3.0.8	Deleted.
LCO 3.0.9	Deleted.

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 3.0.1

SRs shall be met during the specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

SR 3.0.2

The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as “once,” the above interval extension does not apply.

SR 3.0.3

If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.

If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

(continued)

3.0 SR APPLICABILITY (continued)

SR 3.0.4 Entry into a specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency, except as provided by SR 3.0.3.

This provision shall not prevent entry into specified conditions in the Applicability that are required to comply with ACTIONS.

3.1 DELETED

3.2 DELETED

3.3 DELETED

3.4 DELETED

3.5 DELETED

3.6 DELETED

3.7 PLANT SYSTEMS

3.7.1 Deleted

3.7 PLANT SYSTEMS

3.7.2 Deleted

3.7 PLANT SYSTEMS

3.7.3 Deleted

3.7.4 Deleted

3.7.5 Deleted

3.7.6 Deleted

3.7.7 Deleted

3.7 PLANT SYSTEMS

3.7.8 Spent Fuel Storage Pool Water Level

LCO 3.7.8 The spent fuel storage pool water level shall be ≥ 36 ft.

APPLICABILITY: During movement of irradiated fuel assemblies in the spent fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spent fuel storage pool water level not within limit.	A.1 Suspend movement of irradiated fuel assemblies in the spent fuel storage pool.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	Verify the spent fuel storage pool water level is ≥ 36 ft.	In accordance with the Surveillance Frequency Control Program

3.7.9 Deleted

3.8 DELETED

3.9 DELETED

3.10 DELETED

4.0 DESIGN FEATURES

4.1 Site Location

The plant site, which consists of approximately 500 acres, is adjacent to the Cedar River approximately 2.5 miles northeast of the Village of Palo, Iowa. The boundary of the exclusion area defined in 10 CFR 100 is delineated by the property lines. The distance to the outer boundary of the low population zone is 6 miles. The plan of the site is shown on UFSAR Figures 1.2-1 and 1.2-2.

4.2 Deleted

4.3 Fuel Storage

4.3.1 Criticality

The spent fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having the following limits for maximum k-infinity in the normal reactor core configuration at cold conditions and maximum lattice-average U-235 enrichment weight percent:

	k-∞	wt %
i) 7x7 and 8x8 pin arrays (Legacy Fuel Assemblies only; Holtec and PaR racks)	$\leq$ 1.29	$\leq$ 4.6
ii) 10x10 pin arrays (Holtec and PaR racks)	$\leq$ 1.29	$\leq$ 4.95

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in 9.1 of the UFSAR; and

c. A nominal 6.060 inches for HOLTEC designed and 6.625 inches for PaR designed center to center distance between fuel assemblies placed in the storage racks.

d. The Boral neutron absorber shall have a ^{10}B areal density greater than or equal to 0.0162 grams $^{10}B/cm^2$ with an uncertainty of 0.0012 grams $^{10}B/cm^2$.

(continued)

4.0 DESIGN FEATURES (continued)

4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 831 ft. – 2 3/4 in.

4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 2563 fuel assemblies in a vertical orientation, including no more than 152 fuel assemblies stored in the cask pit in accordance with UFSAR Section 9.1.

5.0 ADMINISTRATIVE CONTROLS

5.1 Responsibility

5.1.1 The plant manager shall be responsible for overall facility operation and shall delegate in writing the succession to this responsibility during his absence.

The plant manager or his designee shall approve, prior to implementation, each proposed test, experiment or modification to systems or equipment that affect safe storage and maintenance of spent nuclear fuel.

5.1.2 The Operations Shift Manager shall be responsible for the shift command function.

5.0 ADMINISTRATIVE CONTROLS

5.2 Organization

5.2.1 Onsite and Offsite Organizations

Onsite and offsite organizations shall be established for facility staff and corporate management, respectively. The onsite and offsite organizations shall include the positions for activities affecting safety of the nuclear fuel.

a. Lines of authority, responsibility, and communication shall be defined and established throughout highest management levels, intermediate levels, and all facility organization positions. These relationships shall be documented and updated, as appropriate, in organizational descriptions. These organizational descriptions shall be documented in the UFSAR or QA Program Description;

b. The plant manager shall be responsible for overall safe operation of the facility and shall have control over those onsite activities necessary for safe storage and maintenance of spent nuclear fuel;

c. The corporate officer shall have responsibility for the overall facility safety and shall take measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support to the facility to ensure safe management of spent nuclear fuel.

d. The individuals who train the CERTIFIED FUEL HANDLERS and those who carry out health physics, or perform quality assurance functions may report to the appropriate onsite manager; however, these individuals shall have sufficient organizational freedom to ensure their ability to perform their assigned functions.

(continued)

5.2 Organization (continued)

5.2.2 Facility Staff

The facility organization shall meet the following:

a. Each on-duty shift shall include at least the following shift staffing:

- One (1) Operations Shift Manager (see f below); and
- Two (2) NON-CERTIFIED OPERATORS (see g below)

b. Shift crew composition may be less than the minimum requirement of 5.2.2.a for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements. During such absences, no fuel movement or movement of loads over the spent fuel shall be permitted. This provision does not permit any shift crew position to be unmanned upon shift change due to an incoming shift crew member being late or absent.

c. At times when nuclear fuel is stored in the spent fuel pool, at least one (1) person qualified to stand watch in the Control Room (NON-CERTIFIED OPERATOR or CERTIFIED FUEL HANDLER) shall be present in the Control Room.

d. Oversight of fuel handling operations shall be provided by a CERTIFIED FUEL HANDLER.

e. A person qualified to implement radiation protection procedures shall be on site during movement of fuel and during movement of loads over the fuel.

f. The Operations Shift Manager shall be a CERTIFIED FUEL HANDLER.

g. The position of NON-CERTIFIED OPERATOR may be filled by a CERTIFIED FUEL HANDLER.

5.0 ADMINISTRATIVE CONTROLS

5.3 Facility Staff Qualifications

5.3.1 Each member of the facility staff shall meet or exceed the minimum qualifications referenced for comparable positions in ANSI/ANS 3.1-1978. The radiation protection manager shall meet or exceed the qualifications of Regulatory Guide 1.8, September 1975.

5.3.2 The CERTIFIED FUEL HANDLER shall be qualified to the NRC-approved training and retraining program for CERTIFIED FUEL HANDLERS. The NRC-approved training and retraining program for CERTIFIED FUEL HANDLERS shall be maintained.

5.0 ADMINISTRATIVE CONTROLS

5.4 Procedures

5.4.1 Written procedures shall be established, implemented, and maintained covering the following activities:

a. The applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978;

b. The emergency operating procedures required to implement the requirements of NUREG-0737 and to NUREG-0737, Supplement 1, as stated in Generic Letter 82-33;

c. Quality assurance for effluent and environmental monitoring;

d. [Deleted]; and

e. All programs specified in Specifications 5.5.

5.0 ADMINISTRATIVE CONTROLS

5.5 Programs and Manuals

The following programs shall be established, implemented and maintained.

5.5.1 Offsite Dose Assessment Manual (ODAM)

a. The ODAM shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring alarm and trip setpoints, and in the conduct of the radiological environmental monitoring program; and

b. The ODAM shall also contain the radioactive effluent controls and radiological environmental monitoring activities and descriptions of the information that should be included in the Annual Radiological Environmental Operating Report and Radioactive Material Release Report required by Specification 5.6.2 and Specification 5.6.3.

c. Licensee initiated changes to the ODAM:

1. Shall be documented and records of reviews performed shall be retained. This documentation shall contain:

a. Sufficient information to support the change(s) together with the appropriate analyses or evaluations justifying the change(s), and

b. A determination that the change(s) maintain the levels of radioactive effluent control required by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 10 CFR 50, Appendix I, and not adversely impact the accuracy or reliability of effluent dose or setpoint calculations;

2. Shall become effective after the approval of the plant manager; and

3. Shall be submitted to the NRC in the form of a complete, legible copy of the entire ODAM as a part of or concurrent with the Radioactive Material Release Report for the period of the report in which any change in the ODAM was made. Each change shall be identified by markings in the margins of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (i.e., month and year) the change was implemented.

(continued)

5.5 Programs and Manuals (continued)

5.5.2 Deleted

5.5.3 Deleted

5.5.4 Radioactive Effluent Controls Program

This program, conforming to 10 CFR 50.36a, provides for the control of radioactive effluents and for maintaining the doses to members of the public from radioactive effluents as low as reasonably achievable. The program shall be contained in the ODAM, shall be implemented by procedures, and shall include remedial actions to be taken whenever the program limits are exceeded. The program shall include the following elements:

a. Limitations on the functional capability of radioactive liquid and gaseous monitoring instrumentation including surveillance tests and setpoint determination in accordance with the methodology in the ODAM;

b. Limitations on the concentrations of radioactive material released in liquid effluents from the site to unrestricted areas, conforming to ten times (10x) the concentrations listed in Appendix B, Table 2, Column 2 to 10 CFR 20.1001 – 20.2402;

c. Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents pursuant to 10 CFR 20.1302 and with the methodology and parameters in the ODAM;

d. Limitations on the annual and quarterly doses or dose commitment to a member of the public from radioactive materials in liquid effluents released to unrestricted areas, conforming to 10 CFR 50, Appendix I;

e. Determination of cumulative and projected dose contributions from radioactive effluents for the current calendar quarter and current calendar year in accordance with the methodology and parameters in the ODAM at least every 31 days;

(continued)

5.5 Programs and Manuals

5.5.4 Radioactive Effluent Controls Program (continued)

f. Limitations on the functional capability and use of the liquid and gaseous effluent treatment systems to ensure that the appropriate portions of these systems which were used to establish compliance with the design objectives in 10 CFR 50, Appendix I, Section II be used when specified to provide reasonable assurance that releases of radioactive material in liquid and gaseous effluents be kept as low as reasonably achievable;

g. Limitations on the dose rate resulting from radioactive material released in gaseous effluents from the site to areas at or beyond the site boundary shall be limited to the following:

1. For noble gases: less than or equal to a dose rate of 500 mrem/yr to the whole body and less than or equal to a dose rate of 3000 mrem/yr to the skin, and

2. For iodine-131, iodine-133, tritium, and for all radionuclides in particulate form with half lives $>$ 8 days: less than or equal to a dose rate of 1500 mrem/yr to any organ;

h. Limitations on the annual and quarterly air doses resulting from noble gases released in gaseous effluents to areas beyond the site boundary, conforming to 10 CFR 50, Appendix I;

i. Limitations on the annual and quarterly doses to a member of the public from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half lives $>$ 8 days in gaseous effluents released to areas beyond the site boundary, conforming to 10 CFR 50, Appendix I; and

j. Limitations on the annual dose or dose commitment to any member of the public, beyond the site boundary, due to releases of radioactivity and to radiation from uranium fuel cycle sources, conforming to 40 CFR 190.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Radioactive Effluent Controls Program surveillance frequency.

(continued)

5.5 Programs and Manuals (continued)

5.5.5 Deleted

5.5.6 Deleted

5.5.7 Deleted

5.5.8 Storage Tank Radioactivity Monitoring Program

This program provides controls for the quantity of radioactivity contained in unprotected outdoor liquid storage tanks. The liquid radwaste quantities shall be determined in accordance with Standard Review Plan, Section 15.7.3, “Postulated Radioactive Release due to Tank Failures”.

The program shall include a surveillance program to ensure that the quantity of radioactivity contained in all outdoor liquid radwaste tanks that are not surrounded by liners, dikes, or walls, capable of holding the tanks’ contents and that do not have tank overflows and surrounding area drains connected to the Liquid Radwaste Treatment System is $\leq$ 50 curies, excluding tritium and dissolved or entrained noble gases. The liquid radwaste storage tanks in the Low-Level Radwaste Processing and Storage Facility are considered unprotected outdoor tanks.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Storage Tank Radioactivity Monitoring Program surveillance frequencies.

5.5.9 Deleted

5.5.10 Technical Specifications (TS) Bases Control Program

This program provides a means for processing changes to the Bases of these Technical Specifications.

a. Changes to the Bases of the TS shall be made under appropriate administrative controls and reviews.

b. Licensees may make changes to Bases without prior NRC approval provided the changes do not require either of the following:

1. A change in the TS incorporated in the license; or

(continued)

5.5 Programs and Manuals

5.5.10 Technical Specifications (TS) Bases Control Program (continued)

2. A change to the UFSAR or Bases that requires NRC approval pursuant to 10 CFR 50.59.

c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the UFSAR.

d. Proposed changes that meet the criteria of Specification 5.5.10b above shall be reviewed and approved by the NRC prior to implementation. Changes to the Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e).

5.5.11 Deleted

5.5.12 Deleted

5.5.13 Deleted

5.5.14 Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

(continued)

5.5 Programs and Manuals (continued)

5.5.15 Spent Fuel Pool Neutron Absorber Monitoring Program

This program provides routine monitoring and actions to ensure that the condition of Boral in the spent fuel pool racks is appropriately monitored to ensure that the Boral neutron attenuation capability described in the criticality safety analysis of UFSAR Section 9.1 is maintained. The program shall include the following:

a. Neutron attenuation in situ testing for the PaR racks shall be performed at a frequency of not more than 10 years, or more frequently based on observed trends or calculated projections of Boral degradation. The acceptance criterion for minimum Boral areal density will be that value assumed in the criticality safety analysis.

b. Neutron attenuation testing of a representative Boral coupon for the Holtec racks shall be performed at a frequency of not more than 6 years, or more frequently based on observed trends or calculated projections of Boral degradation. The acceptance criterion for minimum Boral density will be that value assumed in the criticality safety analysis.

c. Description of appropriate corrective actions for discovery on nonconforming Boral.

5.0 ADMINISTRATIVE CONTROLS

5.6 Reporting Requirements

The following reports shall be submitted in accordance with 10 CFR 50.4.

5.6.1 DELETED

5.6.2 Annual Radiological Environmental Operating Report

The Annual Radiological Environmental Operating Report covering the operation of the facility during the previous calendar year shall be submitted by May 15 of each year. The report shall include summaries, interpretations, and analyses of trends of the results of the Radiological Environmental Monitoring Program for the reporting period. The material provided shall be consistent with the objectives outlined in the Offsite Dose Assessment Manual (ODAM), and in 10 CFR 50, Appendix I, Sections IV.B.2, IV.B.3, and IV.C.

The Annual Radiological Environmental Operating Report shall include the results of analyses of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the table and figures in the ODAM, as well as summarized and tabulated results of these analyses and measurements in the format of the table in Regulatory Guide 4.8. In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted in a supplementary report as soon as possible.

(continued)

5.6 Reporting Requirements (continued)

5.6.3 Radioactive Material Release Report

The Radioactive Material Release Report covering the operation of the facility during the previous calendar year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the facility. The material provided shall be consistent with the objectives outlined in the ODAM and Process Control Program and in conformance with 10 CFR 50.36a and 10 CFR Part 50, Appendix I, Section IV.B.1.

5.6.4 DELETED

5.6.5 DELETED

5.6.6 DELETED

5.6.7 DELETED

5.0 ADMINISTRATIVE CONTROLS

5.7 High Radiation Area

As provided in paragraph 20.1601(c) of 10 CFR Part 20, the following controls shall be applied to high radiation areas in place of the controls required by paragraph 20.1601(a) and (b) of 10 CFR Part 20:

5.7.1 High Radiation Areas with Dose Rates Not Exceeding 1.0 rem/hour at 30 Centimeters from the Radiation Source or from any Surface Penetrated by the Radiation

a. Each entryway to such an area shall be barricaded and conspicuously posted as a high radiation area. Such barricades may be opened as necessary to permit entry or exit of personnel or equipment.

b. Access to, and activities in, each such area shall be controlled by means of Radiation Work Permit (RWP) or equivalent that includes specification of radiation dose rates in the immediate work area(s) and other appropriate radiation protection equipment and measures.

c. Individuals qualified in radiation protection procedures and personnel continuously escorted by such individuals may be exempted from the requirement for an RWP or equivalent while performing their assigned duties provided that they are otherwise following plant radiation protection procedures for entry to, exit from, and work in such areas.

d. Each individual or group entering such an area shall possess:

1. A radiation monitoring device that continuously displays radiation dose rates in the area; or

2. A radiation monitoring device that continuously transmits dose rates in the area and alarms when the device's dose alarm setpoint is reached, with an appropriate alarm setpoint, or

3. A radiation monitoring device that continuously transmits dose rate and cumulative dose information to a remote receiver monitored by radiation protection personnel responsible for controlling personnel radiation exposure within the area, or

4. A self-reading dosimeter (e.g., pocket ionization chamber or electronic dosimeter) and, (continued)

5.7 High Radiation Area (continued)

(i) Be under the surveillance, as specified in the RWP or equivalent, while in the area, of an individual qualified in radiation protection procedures, equipped with a radiation monitoring device that continuously displays radiation dose rates in the area; who is responsible for controlling personnel exposure within the area, or

(ii) Be under the surveillance as specified in the RWP or equivalent, while in the area, by means of closed circuit television, of personnel qualified in radiation protection procedures, responsible for controlling personnel radiation exposure in the area, and with the means to communicate with individuals in the area who are covered by such surveillance.

e. Except for individuals qualified in radiation protection procedures, or personnel continuously escorted by such individuals, entry into such areas shall be made only after dose rates in the area have been determined and entry personnel are knowledgeable of them. These continuously escorted personnel will receive a pre-job briefing prior to entry into such areas. This dose rate determination, knowledge, and pre-job briefing does not require documentation prior to initial entry.

5.7.2 High Radiation Areas with Dose Rates Greater than 1.0 rem/hour at 30 Centimeters from the Radiation Source or from any Surface Penetrated by the Radiation, but less than 500 rads/hour at 1 Meter from the Radiation Source or from any Surface Penetrated by the Radiation

a. Each entryway to such an area shall be conspicuously posted as a high radiation area and shall be provided with a locked or continuously guarded door or gate that prevents unauthorized entry, and, in addition:

1. All such door and gate keys shall be maintained under the administrative control of the shift supervisor, radiation protection manager, or his or her designee.

2. Doors and gates shall remain locked except during periods of personnel or equipment entry or exit.

(continued)

5.7 High Radiation Area (continued)

b. Access to, and activities in, each area shall be controlled by means of an RWP or equivalent that includes specification of radiation dose rates in the immediate work area(s) and other appropriate radiation protection equipment and measures.

c. Individuals qualified in radiation protection procedures may be exempted from the requirement for an RWP or equivalent while performing radiation surveys in such areas provided that they are otherwise following plant radiation protection procedures for entry to, exit from, and work in such areas.

d. Each individual or group entering such an area shall possess:

1. A radiation monitoring device that continuously integrates the radiation rates in the area and alarms when the device's dose alarm setpoint is reached with an appropriate alarm setpoint, or

2. A radiation monitoring device that continuously transmits dose rate and cumulative dose information to a remote receiver monitored by radiation protection personnel responsible for controlling personnel radiation exposure within the area with the means to communicate with and control every individual in the area, or

3. A self-reading dosimeter (e.g., pocket ionization chamber or electronic dosimeter) and,

(i) Be under the surveillance, as specified in the RWP or equivalent, while in the area, of an individual qualified in radiation protection procedures, equipped with a radiation monitoring device that continuously displays radiation dose rates in the area; who is responsible for controlling personnel exposure within the area, or

(ii) Be under the surveillance as specified in the RWP or equivalent, while in the area, by means of closed circuit television, or personnel qualified in radiation protection procedures, responsible for controlling personnel radiation exposure in the area, and with the means to communicate with and control every individual in the area.

(continued)

5.7 High Radiation Area (continued)

4. In those cases where options (2) and (3), above, are impractical or determined to be inconsistent with the “As Low As is Reasonably Achievable” principle, a radiation monitoring device that continuously displays radiation dose rates in the area.

e. Except for individuals qualified in radiation protection procedures, or personnel continuously escorted by such individuals, entry into such areas shall be made only after dose rates in the area have been determined and entry personnel are knowledgeable of them. These continuously escorted personnel will receive a pre-job briefing prior to entry into such areas. This dose rate determination, knowledge, and pre-job briefing does not require documentation prior to initial entry.

f. Such individual areas that are within a larger area where no enclosure exists for the purpose of locking and where no enclosure can reasonably be constructed around the individual area need not be controlled by a locked door or gate, nor continuously guarded, but shall be barricaded, conspicuously posted, and a clearly visible light shall be activated at the area as a warning device.

APPENDIX B

ADDITIONAL CONDITIONS

LICENSE NO. DPR-49

NextEra Energy Duane Arnold, LLC (the term licensee in Appendix B refers to NextEra Energy Duane Arnold, LLC or prior license holders) shall comply with the following conditions on the schedule noted below:

Amendment Number	Additional Conditions	Implementation Date
223 275	NextEra Energy Duane Arnold, LLC is authorized to relocate certain requirements included in Appendix A to licensee-controlled documents. Implementation of this amendment shall include the relocation of these requirements to the appropriate documents, as described in the licensee's application dated October 30, 1996, as supplemented and consolidated in its March 31, 1998, submittal. These relocations were evaluated in the NRC staff's Safety Evaluation enclosed with this amendment.	This amendment is effective immediately and shall be implemented within 180 days of the date of this amendment.
260 (1) 275	NextEra Energy Duane Arnold shall take all necessary steps to ensure that the external trust fund is established at the time of the closing of the transfer of the license from Interstate Power (IPL) to FPLE Duane Arnold is maintained in accordance with the requirements of the December 23, 2005 order approving the license transfer, NRC regulations, and consistent with the safety evaluation supporting the order. The trust agreement shall be in a form acceptable to the NRC.	This amendment is effective immediately and shall be implemented within 30 days of the date of this amendment.
260 (2) 279	DELETED	
260 (3)	DELETED	

Attachment 2

List of Authorizations Required for Proposed Project

NextEra Energy Duane Arnold, LLC
Section 401 Water Quality Certification Request Form
Item 9: List of Authorizations Required for Proposed Project

Agency	Type of Authorization	Agency Number	Date Applied	Date Approved
Iowa DNR	NPDES Industrial Wastewater	5700104	May 18, 2026	In Renewal Process
Iowa DNR	Water Use Permit	3046-R7		July 1, 2022
U.S. EPA	Hazardous Waste Generator Registration	093025550007H		July 1, 2025
Iowa DNR	Floodplain and Sovereign Lands Permit	2025-1784SL-01		December 4, 2025
Linn County Building Division	Demolition Permit (Data Acquisition Center)	PD25-030		December 19, 2025
Linn County Board of Supervisors	Rezoning Approval	PR25-0006		January 14, 2026
U.S. Army Corps of Engineers	Clean Water Act Section 404 Permit	No Permit Required Determination		January 15, 2026
Linn County Health Department	Air Operation Permit (Package Boiler)	7709		January 26, 2026
U.S. FERC	Federal Power Act Section 203 Approval	EC26-41-000		February 26, 2026
City of Palo	Road Use Agreement	N/A		March 16, 2026
Linn County	Road Use Agreement	N/A		March 25, 2026
Iowa DNR	NPDES Stormwater General Permit No. 1 (GP1)	47526-47098		May 14, 2026

IOWA DEPARTMENT OF NATURAL RESOURCES

GOVERNOR, KIM REYNOLDS
LT. GOVERNOR, CHRIS COURNOYER
DIRECTOR, KAYLA LYON

July 16, 2026 (DRAFT)

Diane Nguyen, P.E.
Diane.Nguyen@nee.com
NextEra Energy Duane Arnold Energy Center, LLC

Dear Diane:

After reviewing your request for State 401 Water Quality Certification (Certification), the Iowa Department of Natural Resources (DNR) has issued the enclosed Certification. Please read the attached condition carefully before facility operation.

A copy of this Certification has been forwarded to the office of the Nuclear Regulatory Commission as indicated below.

Please note:

1. Prior to facility operation, the permittee is responsible for securing such other permits or approvals as may be required by the DNR, federal, state, or local governmental agencies for the project activities described. Issuance of this certification does not relieve you of the responsibility to comply with all local, state and federal laws, ordinances, regulations or other applicable legal requirements.

2. The permittee is responsible for ensuring that whoever performs, supervises, or oversees any portion of the facility operation complies with all the terms and conditions of this Certification as well as the associated Nuclear Regulatory Commission facility license.

If you have any questions about the certification or attached conditions contained therein, my contact information is provided in the certification.

Sincerely,

Ian Willard, P.E.
Environmental Engineer Senior

cc: Kimberly Conway, Nuclear Regulatory Commission, Kimberly.Conway@nrc.gov

IOWA DEPARTMENT OF NATURAL RESOURCES
SECTION 401 WATER QUALITY CERTIFICATION

Certification issued to:

NextEra Energy Duane Arnold Energy Center, LLC
3227 DAEC Road
Palo, IA 52324

License certified: Nuclear Regulatory Commission Facility License No. DPR-49

Project Description: Resumption of nuclear power operations at NextEra Energy Duane Arnold Energy Center, LLC.

Project Location: 42.0970, -91.7721, Linn County, Iowa

The Iowa Department of Natural Resources (DNR) has issued this State 401 Water Quality Certification (Certification) pursuant to Section 401 {40 C.F.R. §121}. The Nuclear Regulatory Commission considers authorization to resume nuclear power operations a federal licensing action, which triggers the Clean Water Act Section 401 Water Quality Certification requirement.

Subject to the attached condition, incorporated by reference herein, the DNR has determined that a discharge from the proposed project will comply with water quality requirements of the state of Iowa {567 IAC 61}.

Prepared By/Date Executed: _____

Ian Willard, P.E.
ian.willard@dnr.iowa.gov
515-954-6450
Iowa DNR
6200 Park Avenue
Des Moines, IA 50321

CONDITION

(1) Comply with the requirements listed in NPDES permit 5700104.