

Comanche Peak Nuclear Power Plant, Units 3 & 4
COL Application
Part 3 - Environmental Report

CHAPTER 1
INTRODUCTION

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ACRONYMS AND ABBREVIATIONS

| | |
|--------------------|--|
| °F | degrees Fahrenheit |
| µgm/m ³ | micrograms per cubic meter |
| /Q | relative air concentration |
| AADT | annual average daily traffic |
| A/B | auxiliary building |
| ac | acre |
| AC | alternating current |
| ac-ft | acre-feet |
| ACFT | acre-feet |
| ACRS | advisory committee on reactor safeguards |
| ACSR | aluminum-clad steel reinforced |
| ADFGR | Alaska Department of Fish and Game Restoration |
| AEA | Atomic Energy Act |
| AEC | U.S. Atomic Energy Commission |
| AHD | American Heritage Dictionary |
| agl | above ground level |
| ALA | American Lifelines Alliance |
| ALARA | as low as reasonably achievable |
| AMUD | Acton Municipal Utility District |
| ANL | Argonne National Laboratory |
| ANSI | American National Standards Institute |
| AOO | anticipated operational occurrences |
| APE | areas of potential effect |
| APWR | Advanced Pressurized Water Reactor |

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ACRONYMS AND ABBREVIATIONS

| | |
|-------|---|
| ARLIS | Alaska Resources Library and Information Services |
| ARRS | airborne radioactivity removal system |
| AS | ancillary services |
| ASCE | American Society of Civil Engineers |
| AVT | all volatile treatment |
| AWG | American wire gauge |
| BAT | best available technology |
| bbl | barrel |
| BC | Business Commercial |
| BDTF | Blowdown Treatment Facility |
| BEA | U.S. Bureau of Economic Analysis |
| BEG | U.S. Bureau of Economic Geology |
| bgs | below ground surface |
| BLS | U.S. Bureau of Labor Statistics |
| BMP | best management practice |
| BOD | Biologic Oxygen Demand |
| BOP | Federal Bureau of Prisons |
| BRA | Brazos River Authority |
| bre | below reference elevation |
| BRM | Brazos River Mile |
| BSII | Big Stone II |
| BTI | Breakthrough Technologies Institute |
| BTS | U.S. Bureau of Transportation Statistics |
| BTU | British thermal units |
| BUL | Balancing Up Load |

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ACRONYMS AND ABBREVIATIONS

| | |
|-------|---|
| BW | Business Week |
| BWR | boiling water reactor |
| CAA | Clean Air Act |
| CBA | cost-benefit analysis |
| CBD | Central Business District |
| CCI | Chambers County Incinerator |
| CCTV | closed-circuit television |
| CCW | component cooling water |
| CCWS | component cooling water system |
| CDC | Centers for Disease Control and Prevention |
| CDF | Core Damage Frequency |
| CDR | Capacity, Demand, and Reserves |
| CEC | California Energy Commission |
| CEDE | committed effective dose equivalent |
| CEED | Center for Energy and Economic Development |
| CEQ | Council on Environmental Quality |
| CESQG | conditionally exempt small quantity generator |
| CFC | chlorofluorocarbon |
| CFE | Comisin Federal de Electricidad |
| CFR | Code of Federal Regulations |
| cfs | cubic feet per second |
| CFS | chemical treatment system |
| CG | cloud-to-ground |
| CGT | Cogeneration Technologies |
| CHL | Central Hockey League |

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ACRONYMS AND ABBREVIATIONS

| | |
|-----------------|---|
| CO | carbon monoxide |
| CO ₂ | carbon dioxide |
| COD | Chemical Oxygen Demand |
| COL | combined construction and operating license |
| COLA | combined construction and operating license application |
| CORMIX | Cornell Mixing Zone Expert System |
| CPI | Consumer Price Index |
| CPP | continuing planning process |
| CPS | condensate polishing system |
| CPNPP | Comanche Peak Nuclear Power Plant |
| CPSES | Comanche Peak Steam Electric Station |
| CRDM | control rod drive mechanism cooling system |
| CRP | Clean Rivers Program |
| CS | containment spray |
| Cs-134 | cesium-134 |
| Cs-137 | cesium 137 |
| CST | Central Standard Time |
| CST | condensate storage tank |
| CT | completion times |
| CT | cooling tower |
| cu ft | cubic feet |
| C/V | containment vessel |
| CVCS | chemical and volume control system |
| CVDT | containment vessel reactor coolant drain tank |
| CWA | Clean Water Act |

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ACRONYMS AND ABBREVIATIONS

| | |
|------|--|
| CWS | circulating water system |
| DAW | dry active waste |
| dBA | decibels |
| DBA | design basis accident |
| DBH | diameter at breast height |
| DC | direct current |
| DCD | Design Control Document |
| DDT | dichlorodiphenyltrichloroethane |
| DF | decontamination factor |
| DFPS | Department of Family and Protective Services |
| DFW | Dallas/Fort Worth |
| DO | dissolved oxygen |
| DOE | U.S. Department of Energy |
| DOL | Department of Labor |
| DOT | U.S. Department of Transportation |
| DPS | Department of Public Safety |
| D/Q | deposition |
| DSHS | Department of State Health Services |
| DSM | Demand Side Management |
| DSN | discharge serial numbers |
| DSWD | Demand Side Working Group |
| DVSP | Dinosaur Valley State Park |
| DWS | demineralized water system |
| DWST | demineralized water storage tank |
| E | Federally Endangered |

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ACRONYMS AND ABBREVIATIONS

| | |
|---------|--|
| EA | Environmental Assessment |
| EAB | exclusion area boundary |
| E. coli | Escherichia coli |
| EDC | Economic Development Corp. |
| EDE | effective dose equivalent |
| EEl | Edison Electric Institute |
| EEER | Energy Efficiency and Renewable Energy |
| EFH | Energy Future Holdings Corporation |
| EFW | energy from waste |
| EIA | Energy Information Administration |
| EIS | Environmental Impact Statement |
| EJ | environmental justice |
| ELCC | Effective Load-Carrying Capacity |
| EMFs | electromagnetic fields |
| EO | Executive Order |
| EOF | emergency operation facility |
| EPA | U.S. Environmental Protection Agency |
| EPRI | Electric Power Research Institute |
| EPZ | emergency planning zone |
| ER | Environmental Report |
| ERA | Environmental Resource Associates |
| ERCOT | Electric Reliability Council of Texas |
| ESA | Endangered Species Act |
| ESP | Early Site Permit |
| ESRP | Environmental Standard Review Plan |

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ACRONYMS AND ABBREVIATIONS

| | |
|-------|--------------------------------------|
| ESW | essential service cooling water |
| ESWS | essential service water system |
| F&N | Freese & Nicholas, Inc. |
| FAA | U.S. Federal Aviation Administration |
| FAC | flow-accelerated corrosion |
| FBC | fluidized bed combustion |
| FCT | Fuel Cell Today |
| FEMA | Federal Emergency Management Agency |
| FERC | Federal Energy Regulatory Commission |
| FFCA | Federal Facilities Compliance Act |
| FLMNH | Florida Museum of Natural History |
| FM | farm-to-market |
| FP | fire protection |
| FPL | Florida Power and Light |
| FPS | fire protection system |
| FPSC | Florida Public Service Commission |
| FR | Federal Register |
| FSAR | Final Safety Analysis Report |
| FSL | Forecast Systems Laboratory |
| ft | feet |
| FWAT | flow weighted average temperature |
| FWCOC | Fort Worth Chamber of Commerce |
| FWS | U.S. Fish and Wildlife Service |
| gal | gallon |
| GAM | General Area Monitoring |

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ACRONYMS AND ABBREVIATIONS

| | |
|-------|---|
| GAO | U.S. General Accountability Office |
| GDEM | Governor's Division of Emergency Management |
| GEA | Geothermal Energy Association |
| GEIS | Generic Environmental Impact Statement |
| GEOL | overall geological |
| GFD | ground flash density |
| GIS | gas-insulated switchgear |
| GIS | Geographic Information System |
| GMT | Greenwich Mean Time |
| gpd | gallons per day |
| gph | gallons per hour |
| gpm | gallons per minute |
| gps | gallons per second |
| GRCVB | Glen Rose, Texas Convention and Visitors Bureau |
| GST | gas surge tank |
| GTC | Gasification Technologies Conference |
| GTG | gas turbine generators |
| GWMS | gaseous waste management system |
| H-3 | radioactive tritium |
| HC | Heavy Commercial |
| HCl | Hydrochloric Acid |
| HCP | Ham Creek Park |
| HEM | hexane extractable material |
| HEPA | high efficiency particulate air |
| HIC | high integrity container |

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ACRONYMS AND ABBREVIATIONS

| | |
|--------------------------------|---|
| HL | high-level |
| HNO ₃ | Nitric Acid |
| hr | hour(s) |
| HRCQ | highway route-controlled quantity |
| H ₂ SO ₄ | Sulfuric Acid |
| HT | holdup tank |
| HTC | Historic Texas Cemetery |
| HUC | hydrologic unit code |
| HUD | U.S. Department of Housing and Urban Development |
| HVAC | heating, ventilating, and air-conditioning |
| I | Industrial |
| I-131 | iodine-131 |
| IAEA | International Atomic Energy Agency |
| I&C | instrumentation and control |
| IEC | Iowa Energy Center |
| IGCC | Integrated Gasification Combined Cycle |
| IH | Interim Holding |
| in | inch |
| INEEL | Idaho National Engineering and Environmental Laboratory |
| IOUs | investor-owned electric utilities |
| IPE | individual plant examination |
| ISD | Independent School District |
| ISFSI | independent spent fuel storage installation |
| ISO | independent system operator |
| ISO rating | International Standards Organization rating |

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ACRONYMS AND ABBREVIATIONS

| | |
|----------|---|
| ISU | Idaho State University |
| JAMA | Journal of the American Medical Association |
| K-40 | potassium-40 |
| KC | Keystone Center |
| JRB | Joint Reserve Base |
| km | kilometer |
| kVA | kilovolt-ampere |
| kWh | kilowatt hour |
| L | LARGE |
| LaaR | Load Acting as a Resource |
| LANL | Los Alamos National Laboratory |
| lb | pounds |
| LC | Light Commercial |
| LG | Lake Granbury |
| LL | low-level |
| LLD | lower limits of detection |
| LLMW | low-level mixed waste |
| LNG | liquid natural gas |
| LOCA | loss of coolant accident |
| LPSD | low-power and shutdown |
| LPZ | low population zone |
| LQG | large-quantity hazardous waste generators |
| LRS | load research sampling |
| LTSA | long term system assessment |
| Luminant | Luminant Generation Company LLC |

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ACRONYMS AND ABBREVIATIONS

| | |
|-------------------|---|
| LVW | low volume waste |
| LWA | Limited Work Authorization |
| LWMS | liquid waste management system |
| LWPS | liquid waste processing system |
| LWR | light water reactor |
| M | MODERATE |
| ma | milliamperes |
| MACCS2 | Melcor Accident Consequence Code System |
| MCES | Main Condenser Evacuation System |
| Mcf | thousand cubic feet |
| MCPE | Market Clearing Price for Energy |
| MCR | main control room |
| MD-1 | Duplex |
| MDA | minimum detected activity |
| MDCT | mechanical draft cooling tower |
| MEIs | maximally exposed individuals |
| MF | Multi-Family |
| mG | milliGauss |
| mg/l | milligrams per liter |
| mg/m ³ | milligrams per cubic meter |
| MH | Manufactured Housing |
| MHI | Mitsubishi Heavy Industries |
| mi | mile |
| mi ² | square miles |
| MIT | Massachusetts Institute of Technology |

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| | |
|---------|--|
| MMbbl | million barrels |
| MMBtu | million Btu |
| MNES | Mitsubishi Nuclear Energy Systems Inc. |
| MOU | municipally-owned utility |
| MOV | motor operated valve |
| MOX | mixed oxide fuel |
| mph | miles per hour |
| MSDS | Materials Safety Data Sheets |
| msl | mean sea level |
| MSR | maximum steaming rate |
| MSW | municipal solid waste |
| MT | Main Transformer |
| MTU | metric tons of uranium |
| MW | megawatts |
| MW | monitoring wells |
| MWd | megawatt-days |
| MWd/MTU | megawatt–days per metric ton uranium |
| MWe | megawatts electrical |
| MWh | megawatt hour |
| MWS | makeup water system |
| MWt | megawatts thermal |
| NAAQS | National Ambient Air Quality Standards |
| NAPA | Natural Areas Preserve Association |
| NAP | National Academies Press |
| NAR | National Association of Realtors |

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ACRONYMS AND ABBREVIATIONS

| | |
|--------|--|
| NARM | accelerator-produced radioactive material |
| NAS | Naval Air Station |
| NASS | National Agricultural Statistics Service |
| NCA | Noise Control Act |
| NCDC | National Climatic Data Center |
| NCDENR | North Carolina Department of Environmental and Natural Resources |
| NCES | National Center for Educational Statistics |
| NCI | National Cancer Institute |
| NCTCOG | North Central Texas Council of Governments |
| ND | no discharge |
| NDCT | natural draft cooling towers |
| NEI | Nuclear Energy Institute |
| NELAC | National Environmental Laboratory Accreditation Conference |
| NEPA | National Environmental Policy Act |
| NERC | North American Electric Reliability Corporation/Council |
| NESC | National Electrical Safety Code |
| NESDIS | National Environmental Satellite, Data, and Information Service |
| NESW | non-essential service water cooling system |
| NESWS | non-essential service water system |
| NETL | National Energy Technology Laboratory |
| NHPA | National Historic Preservation Act |
| NHS | National Hurricane Center |
| NINI | National Institute of Nuclear Investigations |
| NIOSH | National Institute for Occupational Safety and Health |

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ACRONYMS AND ABBREVIATIONS

| | |
|-----------------|---|
| NIST | U.S. National Institute of Standards and Technology |
| NJCEP | NJ Clean Energy Program |
| NLDN | National Lightning Detection Network |
| NOAA | National Oceanic and Atmospheric Administration |
| NOAEC | no observable adverse effects concentration |
| NOI | Notice of Intent |
| NOIE | non-opt-in entities |
| NO _x | oxides of nitrogen |
| NP | Nacogdoches Power |
| NPDES | National Pollutant Discharge Elimination System |
| NPS | nonpoint source |
| NR | not required |
| NRC | U.S. Nuclear Regulatory Commission |
| NREL | U.S. National Renewable Energy Laboratory |
| NRHP | National Register of Historic Places |
| NRRI | National Regulatory Research Institute |
| NSPS | New Source Performance Standards |
| NSSS | nuclear steam supply system |
| NTAD | National Transportation Atlas Database |
| NVLAP | National Voluntary Laboratory Accreditation Program |
| NWI | National Wetlands Inventory |
| NWS | National Weather Service |
| NWSRS | National Wild and Scenic Rivers System |
| O ₂ | Oxygen |
| O ₃ | Ozone |

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ACRONYMS AND ABBREVIATIONS

| | |
|-------------------|--|
| ODCM | Off-site Dose Calculation Manual |
| OECD | Organization for Economic Co-operation and Development |
| O&M | operations and maintenance |
| ORNL | Oak Ridge National Laboratory |
| ORP | oxidation-reduction potential |
| OSHA | Occupational Safety and Health Act |
| OW | observation well |
| P&A | plugging and abandonment |
| PAM | primary amoebic meningoencephalitis |
| PD | Planned Development |
| PDL | Proposed for Delisting |
| PE | probability of exceedances |
| percent g | percent of gravity |
| PET | Potential Evapotranspiration |
| PFBC | pressurized fluidized bed combustion |
| PFD | Process Flow Diagram |
| PGA | peak ground acceleration |
| PGC | power generation company |
| PH | Patio Home |
| P&ID | piping and instrumentation diagram |
| PM | particulate matter |
| PM ₁₀ | particulate matter less than 10 microns diameter |
| PM _{2.5} | particulate matter less than 2.5 microns diameter |
| PMF | probable maximum flood |
| PMH | probable maximum hurricane |

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ACRONYMS AND ABBREVIATIONS

| | |
|------|--|
| PMP | probable maximum precipitation |
| PMWP | probable maximum winter precipitation |
| PMWS | probable maximum windstorm |
| PPE | plant parameter envelope |
| ppm | parts per million |
| PPS | preferred power supply |
| PRA | probabilistic risk assessment |
| PSD | Prevention of Significant Deterioration (permit) |
| PSWS | potable and sanitary water system |
| PUC | Public Utility Commission |
| PUCT | Public Utility Commission of Texas |
| PURA | Public Utilities Regulatory Act |
| PWR | pressurized water reactors |
| QA | quality assurance |
| QC | quality control |
| QSE | qualified scheduling entities |
| R10 | Single-Family Residential |
| R12 | Single-Family Residential |
| R7 | Single-Family Residential |
| R8.4 | Single-Family Residential |
| RAT | Reserve Auxiliary Transformer |
| RB | reactor building |
| R/B | reactor building |
| RCDS | reactor coolant drain system |
| RCDT | reactor coolant drain tank |

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| | |
|-------------------|---|
| RCRA | Resource Conservation and Recovery Act |
| RCS | reactor coolant system |
| RDA | Radiosonde Database Access |
| REC | renewable energy credit |
| REIRS | Radiation Exposure Information and Reporting System |
| RELFRC | release fractions |
| rem | roentgen equivalent man |
| REMP | radiological environmental monitoring program |
| REP | retail electric providers |
| REPP | Renewable Energy Policy Project |
| RFI | Request for Information |
| RG | Regulatory Guide |
| RHR | residual heat removal |
| RIMS II | regional input-output modeling system |
| RMR | Reliability Must-Run |
| Rn ₂₂₂ | Radon-222 |
| RO | reverse osmosis |
| ROI | region of interest |
| ROW | right of way |
| RPG | regional planning group |
| RRY | reactor reference year |
| RTHL | Recorded Texas Historic Landmarks |
| RTO | regional transmission organization |
| Ru-103 | ruthenium-103 |
| RW | test well |

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| | |
|-------|--|
| RWSAT | refueling waste storage auxiliary tank |
| RWST | refueling water storage tank |
| RY | reactor-year |
| S | SMALL |
| SACTI | Seasonal/Annual Cooling Tower Impact Prediction Code |
| SAL | State Archaeological Landmark |
| SAMA | severe accident mitigation alternative |
| SAMDA | severe accident mitigation design alternative |
| SB | Senate Bill |
| SCR | Squaw Creek Reservoir |
| SCDC | Somervell County Development Commission |
| scf | standard cubic feet |
| SCWD | Somervell County Water District |
| SDS | sanitary drainage system |
| SECO | State Energy Conservation Office |
| SER | Safety Evaluation Report |
| SERC | SERC Reliability Corporation |
| SERI | System Energy Resources, Inc. |
| SFPC | spent fuel pool cooling and cleanup system |
| SG | steam generator |
| SGBD | steam generator blow-down |
| SGBDS | steam generator blow-down system |
| SGs | steam generators |
| SGTR | steam generator tube rupture |
| SH | State Highway |

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ACRONYMS AND ABBREVIATIONS

| | |
|-----------------|---|
| SHPO | State Historic Preservation Office |
| SIP | State Implementation Plan |
| SMP | State Marketing Profiles |
| SMU | Southern Methodist University |
| SOP | Standard Operations Permit |
| SO ₂ | sulfur dioxide |
| SO _x | sulfur |
| SPCCP | Spill Prevention Control and Countermeasures Plan |
| SPP | Southwest Power Pool |
| SQG | small-quantity generators |
| sq mi | square miles |
| SRCC | Southern Regional Climate Center |
| SRP | Standard Review Plan |
| SRST | spent resin storage tank |
| SSAR | Site Safety Analysis Report |
| SSC | structures, systems, and components |
| SSI | Safe Shutdown Impoundment |
| SSURGO | Soil Survey Geographic |
| SWATS | Surface Water and Treatment System |
| SWMS | solid waste management system |
| SWPC | spent fuel pool cooling and cleanup system |
| SWP3 | Storm Water Pollution Prevention Plan |
| SWS | service water system |
| SWWTS | sanitary wastewater treatment system |
| T | Federally Threatened |

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ACRONYMS AND ABBREVIATIONS

| | |
|------------------|--|
| t | ton |
| TAC | technical advisory committee |
| TAC | Texas Administrative Code |
| TB | turbine building |
| Tc ₉₉ | Technetium-99 |
| TCEQ | Texas Commission on Environmental Quality |
| TCPS | Texas Center for Policy Studies |
| TCR | transmission congestion rights |
| TCS | turbine component cooling water system |
| TCWC | Texas Cooperative Wildlife Collection |
| T&D | transmission and distribution utility |
| TDCJ | Texas Department of Criminal Justice |
| TDOH | Texas Department of Health |
| TDOT | Texas Department of Transportation |
| TDPS | Texas Department of Public Safety |
| TDS | total dissolved solids |
| TDSHS | Texas Department of State Health Services |
| TDSP | transmission and distribution service provider |
| TDWR | Texas Department of Water Resources |
| TEDE | total effective dose equivalent |
| TGLO | Texas General Land Office |
| TGPC | Texas Groundwater Protection Committee |
| TH | Townhome |
| THC | Texas Historical Commission |
| THPOs | tribal historic preservation officers |

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ACRONYMS AND ABBREVIATIONS

| | |
|--------|---|
| TIS | Texas Interconnected System |
| TLD | Thermoluminescence Dosemeter |
| TMDLs | total maximum daily loads |
| TMM | Texas Memorial Museum |
| TOs | Transmission Owners |
| TPDES | Texas Pollutant Discharge Elimination System |
| TPWD | Texas Parks and Wildlife Department |
| tpy | tons per year |
| TRAGIS | Transportation Routing Analysis Geographic Information System |
| TRB | Transportation Research Board |
| TRC | total recordable cases |
| TRE | Trinity Railway Express |
| TSC | technical support center |
| TSD | thunderstorm days per year |
| TSD | treatment, storage, and disposal |
| TSDC | Texas State Data Center |
| TSHA | Texas State Historical Association |
| TSP | transmission service provider |
| TSWQS | Texas Surface Water Quality Standards |
| TSS | total suspended sediment |
| TTS | The Transit System (Glen Rose) |
| TUGC | Texas Utilities Generating Company |
| TUSI | Texas Utilities Services Inc. |
| TWC | Texas Workforce Commission |
| TWDB | Texas Water Development Board |

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| | |
|-----------------|--|
| TWR | Texas Weather Records |
| TWRI | Texas Water Resources Institute |
| TxDOT | Texas Department of Transportation |
| TXU | Texas Utilities Corporation |
| TXU DevCo | TXU Generation Development Company LLC |
| UC | University of Chicago |
| UFC | uranium fuel cycle |
| UHS | Ultimate Heat Sink |
| UIC | Uranium Information Center |
| UO ₂ | uranium dioxide |
| USACE | U.S. Army Corps of Engineers |
| US-APWR | (MHI) United States-advanced pressurized water reactor |
| USC | U.S. Census |
| USCA | United States Court of Appeals |
| USDA | U.S. Department of Agriculture |
| USDOT | U.S. Department of Transportation |
| USEPA | United States Environmental Protection Agency |
| USFWS | United States Fish and Wildlife Service |
| USGS | U.S. Geological Survey |
| USHCN | United States Historical Climatology Network |
| USHR | U.S. House of Representatives |
| USNPS | U.S. National Park Service |
| UTC | Universal Time Coordinated |
| UV | ultra-violet |
| VCIS | Ventilation Climate Information System |

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ACRONYMS AND ABBREVIATIONS

| | |
|----------------|--|
| VCT | volume control tank |
| VERA | Virtus Energy Research Associates |
| VFD | Volunteer Fire Department |
| VOC | volatile organic compound |
| VRB | variable |
| WB | Weather Bureau |
| WBR | Wheeler Branch Reservoir |
| WDA | work development area |
| WDFW | Washington Department of Fish and Wildlife |
| weight percent | wt. percent |
| WHT | waste holdup tank |
| WMT | waste monitor tank |
| WNA | World Nuclear Association |
| WPP | Watershed Protection Plan |
| WQMP | Water Quality Management Plan |
| WRE | Water Resource Engineers, Inc. |
| WWS | wastewater system |
| WWTP | wastewater treatment plant |
| yr | year |

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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

The purpose of this project is to develop, construct and operate two units, each with a net electrical output of approximately 1600 MWe as merchant plants using the US-APWR technology to generate electricity specifically for sale in the ERCOT Wholesale Market. This project is the result of a detailed evaluation of the potential environmental conditions as discussed in Chapters 1-7 and the assessment of other alternatives to this project (Chapter 9 and 10) for meeting the 2017 to 2027 market requirements projected by ERCOT and discussed in Chapter 8.

The National Environmental Policy Act (NEPA) requires any federal agency taking a “major federal action” to prepare an Environmental Impact Statement (EIS) for the action. The proposed action is the U.S. Nuclear Regulatory Commission (NRC) issuance of a combined construction and operating license (COL) to Luminant Generation Company LLC (Luminant) for the Comanche Peak Nuclear Power Plant (CPNPP) Units 3 and 4, located in Somervell and Hood counties, Texas. This action includes the proposed construction and operation of CPNPP Units 3 and 4, with the associated support facilities, including new water pipelines connecting with Lake Granbury and new electrical distribution infrastructure in preparation for the future connection to the electric delivery system. This action includes activities related to removal of existing buildings and some buried material from the site, including repair and remediation activities. In accordance with the provisions of Title 10 of the Code of Federal Regulations (CFR) Part 52, Subpart C, “Combined Licenses”(10 CFR 52), the Applicant is submitting to the NRC an application for a combined construction and operating license (COLA) for CPNPP Units 3 and 4. The regulations in 10 CFR 50.30(f) and 10 CFR 52.79(a)(2) require a complete Environmental Report (ER) to support the NRC in preparing an EIS as required by 10 CFR 51.45. This ER is submitted to aid the NRC in fulfilling their obligations under NEPA.

The general format and content is based on the guidance presented in NUREG-1555, “Environmental Standard Review Plan,” dated October 1999, and draft section revisions issued in July 2007. This ER is organized into the following chapters:

- **Chapter 1** - Introduction
- **Chapter 2** - Environmental Description
- **Chapter 3** - Plant Description
- **Chapter 4** - Environmental Impacts of Construction
- **Chapter 5** - Environmental Impacts of Station Operation
- **Chapter 6** - Environmental Measures and Monitoring Programs
- **Chapter 7** - Environmental Impacts of Postulated Accidents Involving Radioactive Materials

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- **Chapter 8** - Need for Power
- **Chapter 9** - Alternatives to the Proposed Action
- **Chapter 10** - Environmental Impact of Proposed Action

These chapters describe the proposed project (**Chapter 1**), describe the existing environment at the CPNPP site and in the vicinity (**Chapter 2**), describe the proposed two-unit Mitsubishi Heavy Industries (MHI) U.S. Advanced Pressurized Water Reactors (US-APWR) (**Chapter 3**), summarize potential environmental impacts of construction and operation of the proposed facility (**Chapter 4** and **Chapter 5**), and describe the methods of monitoring the effects of this action and consider appropriate mitigation measures and possible accident conditions involving radioactive materials (**Chapter 6** and **Chapter 7**). The ER includes discussions of the need for power and alternatives to the proposed action, including the no action alternatives, energy alternatives, alternative sites, and alternative plant and transmission system (**Chapter 8** and **Chapter 9**), unavoidable adverse impacts, commitment of resources, relationships with the environment, and an evaluation of the costs and benefits associated with construction and operation of the two proposed US-APWR units (**Chapter 10**).

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1.1 THE PROPOSED PROJECT

The proposed project is the construction and operation of two nuclear-powered electrical generation units, Comanche Peak Nuclear Power Plant (CPNPP) Units 3 and 4. The proposed project is to be constructed within the site boundaries of the current CPNPP Units 1 and 2. The proposed project utilizes the U.S. Advanced Pressurized Water Reactor (US-APWR) design. The proposed project, in addition to constructing and operating the nuclear units, includes construction of all the necessary support facilities, cooling water intake and discharge structures, cooling towers and water pipelines, and the necessary transmission infrastructure to connect to the local power grid. Environmental justice is addressed in the body of this report and public involvement provides opportunity for all concerned citizens to discuss their interest and receive information about the project prior to a U.S. Nuclear Regulatory Commission (NRC) decision.

The Environmental Report (ER) supports the combined construction and operating license application (COLA). The data and analyses provided in this report provide valuable information to support the proposed project during the NRC detailed review and issuance of an Environmental Impact Statement (EIS). Facts, tables, and figures are supplied as needed to support the ER and can be found within the following sections of this report. Constraints on the proposed project are reduced by a thorough and detailed ER. A description of the existing environment on the CPNPP site, in the surrounding area, a detailed description of the proposed action to construct and operate the power plants, associated on-site support facilities, the cooling water pipelines, and the transmission system is provided. In addition, an assessment of the environmental impacts that occur as a result of the proposed project construction and operation activities is provided as well as an evaluation of impacts from postulated accidents involving radioactive materials. Environmental measurements and monitoring programs, issues such as the need for power from the proposed plant, alternatives to the proposed action, irreversible and irretrievable commitments of resources, the relationship between short-term uses and long-term productivity of the human environment, and a benefit-cost evaluation are addressed.

The CPNPP Units 3 and 4 site selection is the result of an in-depth review of alternative sites. Criteria such as seismic characteristics, land ownership, demographics, emergency planning, exclusion area, transmission access, and water availability are used in the site-selection analysis. The current CPNPP site meets the desired characteristics necessary to support the construction and operation of CPNPP Units 3 and 4. The ER summarizes the process that produced the selection of the current CPNPP site for the proposed project.

1.1.1 THE APPLICANT AND OWNER

The Applicant and Owner is Luminant Generation Company LLC (Luminant) (NRC 2007). Luminant is the owner and operator of CPNPP Units 1 and 2 and is responsible for the construction and operation of CPNPP Units 3 and 4. Luminant, working with the Electric Reliability Council of Texas (ERCOT) and the Public Utility Commission of Texas (PUC), identified a growing need for additional electrical generation capacity in the 2009 – 2016 timeframe (ERCOT 2007). The Applicant is submitting the COLA to preserve the option of nuclear generation to meet this need. The need for this new power is further discussed in Chapter 8.

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1.1.2 SITE LOCATION

As described in [Section 2.1](#), the CPNPP site is a 7950-acre (ac) site located in rural portions of Hood and Somervell counties of north central Texas. [Figures 1.1-1, 1.1-2, and 1.1-3](#) provide a visual indication of the current region, vicinity, and site. The CPNPP Units 3 and 4 are located along the southern banks of Squaw Creek Reservoir (SCR). The site is 5.2 miles (mi) north of Glen Rose and 9.6 mi south of Granbury. Granbury is the largest city within a 10-mi radius of the site. The nearest population centers to the site are Glen Rose and Granbury. The four largest population centers (as defined by 10 Code of Federal Regulations [CFR] 100.3) in the region are Fort Worth, Haltom City, Burleson, and Cleburne.

[Section 2.1](#) lists the coordinates of the center of the new reactors as:

| LATITUDE AND LONGITUDE NAD83 (degrees/minutes/seconds) | | |
|--|-----------------|-----------------|
| | Latitude | Longitude |
| UNIT 3: | 32° 18' 08.9" N | 97° 47' 30.1" W |
| UNIT 4: | 32° 18' 07.5" N | 97° 47' 41.8" W |

| UNIVERSAL TRANSVERSE MERCATOR ZONE 14 NAD83 (Meters) | | |
|--|----------|---------|
| | Northing | Easting |
| UNIT 3: | 3574606 | 613759 |
| UNIT 4: | 3574559 | 613453 |

The center point of the CPNPP Units 3 and 4 site is located at 3574584N and 613606E.

The CPNPP site boundary ([Figure 1.1-3](#)) encompasses the operating nuclear CPNPP Units 1 and 2, the proposed location for CPNPP Units 3 and 4, the support structures and facilities, and the entire SCR. As noted in [Section 2.1](#), the aquatic environs are dominated by SCR, which has an approximate pool elevation of 775 feet (ft) above mean sea level (msl). The plant grade ([Subsection 2.3.1.2.6](#)) elevation for the new units is 822 ft above msl.

The proposed units, constructed within the CPNPP site boundary ([Figure 1.1-3](#)), utilize areas of previous construction activity (such as laydown yards and parking) along with previously undisturbed areas of land.

CPNPP Units 1 and 2 began commercial operations in 1990 and 1993, respectively. Construction activities for CPNPP Units 1 and 2 resulted in extensive alteration of the site involving vegetation clearing; establishment of on-site roads; establishment of a railroad spur to the site; extensive excavation and grading with heavy equipment; construction of SCR and the Safe Shutdown Impoundment (SSI); and building of on-site warehouses, shops, and support facilities. The CPNPP Units 3 and 4 construction proposed activities are similar in nature but effort is being made to utilize any existing facilities possible, thereby minimizing the impact on the environment. [Chapter 2](#) discusses the site in greater detail.

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1.1.3 REACTOR INFORMATION

The project proposes two US-APWR reactor units. Each reactor has a designed reactor power of 4451 megawatts thermal (MWt) and a net electrical output of approximately 1600 megawatts electrical (MWe). The reactor plant design and description is discussed in greater detail in [Chapter 3](#).

1.1.4 COOLING SYSTEM INFORMATION

The SCR is located entirely within the property boundary of the site. This reservoir is a key component of the cooling systems at CPNPP Units 1 and 2. Makeup water from Lake Granbury is pumped to SCR to maintain the reservoir inventory and aid in temperature control for the operation of CPNPP Units 1 and 2. Water from the reservoir is used for removing waste heat by once through condenser units and there are no cooling towers used for CPNPP Units 1 and 2.

Waste heat for CPNPP Units 3 and 4 is dissipated by a secondary side cooling water system consisting of a closed loop system with mechanical draft (wet) cooling towers. Makeup water for the cooling towers is withdrawn from Lake Granbury and transported by pipelines to the cooling towers. Cooling tower blowdown is then transported by return pipelines back to Lake Granbury to ensure the water quality of SCR, allow the continued operation to ensure there is no adverse effect on CPNPP Units 1 and 2, and to minimize the impact on Lake Granbury water inventory and water quality. A Blowdown Treatment Facility (BDTF), including evaporation ponds and treatment facilities, will be constructed along the blowdown return pipeline on the site property.

The intake structures for the CPNPP Units 3 and 4 supply pipelines located on Lake Granbury are shoreline structures with fine mesh passive screen strainers. The cooling tower blowdown is returned to Lake Granbury and the discharge structures on the outlet of the return pipelines are multi-port diffusers. The pipeline corridors used for all the makeup and cooling water pipelines do not require an increase in the width of the corridors to accommodate all the pipelines. A new intake structure on Lake Granbury requires additional right-of-way for construction. The infrastructure, facilities, and other support facilities associated with the cooling system is shown in [Figures 1.1.4](#) and [2.1-1](#) and is described in more detail in [Chapter 3](#).

The enhanced design of the US-APWR does not require the building of another SSI. The SSI is the ultimate heat sink (UHS) needed to provide a safety-related emergency cooling water source for CPNPP Units 1 and 2. The enhanced design of the US-APWR provides UHS water stored within the safety-related design parameters of the plant. No additional water bodies are required to be created for the purpose of supplying emergency cooling water.

1.1.5 TRANSMISSION SYSTEM INFORMATION

There are two types of transmission lines, 345-kilovolt (kV) and 138-kV, that currently enter and exit the CPNPP site. To transfer the power generated by CPNPP Units 3 and 4 to the electrical distribution system, two new 345-kV transmission corridors and additional lines may be required. The primary choices and major additions to the system are outlined below ([Oncor 2008](#)):

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- A new double-circuit 345 kV line (one circuit in place) to Whitney using 2-1590 kcmil aluminum-clad steel reinforced (ACSR) conductor with a rating of 1631 MVA (approximately 45 mi). New corridor may be required.
- A new 345 kV circuit to Johnson Switch on existing structures using 2-1590 kcmil ACSR conductor with a rating of 1631 MVA (22.4 mi).
- A new 345 kV circuit from Johnson Switch to Everman on existing structures using 2-1590 kcmil ACSR conductor with a rating of 1631 MVA (22.4 mi).
- A new double-circuit 345 kV circuit (one circuit in place) to DeCordova using 2-1926.9 kcmil ACSS/TW conductor at 100° C to obtain a rating of 1969 MVA (approximately 17 mi). New corridor may be required.
- A new 345 kV line to Parker Switch on existing structures using 2-1590 kcmil ACSR conductor with a rating of 1631 MVA (41.6 mi).

Figure 1.1-5 contains information on the CPNPP Units 3 and 4 transmission corridors. The transmission system design and description is discussed in greater detail in Section 3.7.

1.1.6 CONSTRUCTION OVERVIEW

The completion of the proposed project results in two nuclear units supplying needed baseload electricity for the regional power grid. The overall duration of site preparation, construction, fuel load, and startup of the two US-APWR units at the CPNPP site is presented in Table 1.1-1 (CPSES 2007). Environmental impacts related to the construction of CPNPP Units 3 and 4 are presented in Chapter 4.

1.1.7 REFERENCES

(CPSES 2007) Comanche Peak Steam Electric Station. Part of a Presentation to the NRC. "Integrated Licensing, Construction, and Fabrication Schedule" received from Don Woodlan. May 28, 2007.

(ERCOT 2007) Electric Reliability Council of Texas (ERCOT). Meeting Texas' Future Energy Demands. Sam Jones- President and CEO. February 13, 2007. (June 5, 2007).

(Oncor 2008) Oncor Electric Delivery Company LLC, Final Steady-State Analysis Report, Luminant Generation Company LLC GIR 15INR0002, January 14, 2008.

(NRC 2007) Nuclear Regulatory Commission. Official Correspondence. Comanche Peak Steam Electric Station, Units 1 and 2 - Order approving the indirect Transfer of Facility Operating Licenses, and conforming license amendments (TAC NOS. MD5289 and MD5290). September 10, 2007.

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TABLE 1.1-1
DURATION OF CONSTRUCTION AND STARTUP OF CPNPP UNITS 3 AND 4

| Activity | Duration |
|---|-----------|
| Unit 3 | |
| Receipt of COL and Notice to Proceed for Project | |
| Site preparations | 36 months |
| Site construction, from first concrete to fuel load | 48 months |
| Fuel load to startup to Commercial operation | 8 months |
| Unit 4 | |
| Site preparations | 18 months |
| Site construction, from first concrete to fuel load | 46 months |
| Fuel load, startup to Commercial operation | 8 months |

Note: Licensing process and project schedule timeline changes have affects on various chapters in the COL application. However, these potential changes have been reviewed and the resulting impact would not change the overall assessment of potential impact

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1.2 STATUS OF REVIEWS, APPROVALS, AND CONSULTATIONS

Construction and operation of the proposed project requires Luminant Generation Company LLC (Luminant) to comply with environmental regulations, obtain associated permits and agreements, and perform consultations with governmental agencies. A search conducted for applicable regulations, permits, and consultations required by federal, state, regional, and local authorities, along with affected American Indian tribal agencies, produced the results that are presented in **Table 1.2-1**.

New permits for CPNPP Units 3 and 4 have not been applied for at this time; therefore, the column presented in **Table 1.2-1** entitled "License/Permit No." has been either left blank or given a need date; or the column contains information about CPNPP Units 1 and 2 that requires modification or renewal as part of the proposed project. Many permits require long lead times or expire prior to project completion. Therefore, some permits are not available at the time of submittal.

1.2.1 AGENCIES AND AUTHORITIES INVOLVED

Agencies and authorities listed in **Table 1.2-1** are presented below along with the abbreviations used in the table. These agencies include:

- American Indian Tribes (Tribes)
- Brazos River Authority (BRA)
- Federal Aviation Administration (FAA)
- U.S. Nuclear Regulatory Commission (NRC)
- State Historic Preservation Officer (SHPO) (**SHPO 2007**)
- Texas Commission on Environmental Quality (TCEQ)
- Texas Department of Health (TDOH)
- Texas Department of Transportation (TDOT)
- Texas Parks and Wildlife Department (TPWD)
- Public Utility Commission of Texas (PUC)
- U.S. Army Corps of Engineers (USACE)
- U.S. Environmental Protection Agency (EPA)
- U.S. Fish and Wildlife Service (USFWS) (**FWS 2006**)

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- Hood County, Texas (various departments)
- Somervell County, Texas (various departments)

1.2.2 REFERENCES

(FWS 2006) Response letter from the U.S. Department of the Interior Fish and Wildlife Service to ENERCON recommending that potential impact to three species be considered during project planning. December 4, 2006.

(SHPO 2007) State Historic Preservation Officer reply to ENERCON letter initiating National Historic Preservation Act Section 106 consultation, February 21, 2007.

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TABLE 1.2-1 (Sheet 1 of 7)
FEDERAL, STATE, AND LOCAL AUTHORIZATIONS

| Agency | Authority | Requirements | License/Permit No. | Activity Comment |
|---------------|---|--|--|---|
| NRC | 10 CFR 52 | Applicant submits Construction and Operating License Application (COLA) to NRC | | Applicant is required to submit an application to the NRC for a combined construction and operating license (COL). |
| NRC | 10 CFR 52.79 | Applicant submits an Environmental Report (ER) | | Applicant is required to submit a complete ER, 10 CFR 52.80 (b), 72 FR 57447, Oct 9, 2007, 10 CFR 52.79, 10 CFR 51.45, 10 CFR 51.50. |
| USFWS TPWD | | Consultation with Fish and Wildlife, Federal and State (FWS 2006) | | Consultation concerning potential impacts to federally threatened and endangered species must be obtained and interference with any listed species must be resolved prior to disturbance. |
| FAA TDOT | 14 CFR 77.13 | Notice of construction for permanent structures | | Permit for structures over 200 ft in height (containment buildings, permanent facilities, cooling towers, etc.). Thirty days prior to construction of the obstruction. |
| FAA TDOT | 14 CFR 77.13 | Notice of construction for temporary structures | | Permit for structures over 200 ft in height (construction cranes, towers, etc.). Thirty days prior to construction of the obstruction. |
| TCEQ EPA | 30 TAC 335 Applies only to Units 1 and 2 | Notice of Registration for solid waste management | Solid Waste Reg. # 33306 EPA ID # TXD02332078 | Transport, treatment, storage, and disposal of solid waste. Notice requires modification 3 months prior to any new solid waste not previously described. |

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TABLE 1.2-1 (Sheet 2 of 7)
FEDERAL, STATE, AND LOCAL AUTHORIZATIONS

| Agency | Authority | Requirements | License/Permit No. | Activity Comment |
|---------------|---|---|----------------------------------|---|
| USACE TCEQ | Clean Water Act 404 Permit | Construction in a wetland or shoreline | | Submit 24 months prior to dredging/filling activities in wetland if required. Depends on the 401 permit process. |
| EPA TCEQ | Clean Water Act Section 401 | Construction in a wetland or shoreline | | Submit 24 months prior to dredging/filling activities in wetland if required. |
| TCEQ | Storm Water Pollution Prevention Plan (SWP3) Texas Water Code Chapter 26 | Construction activities | General Permit No. TXR 150000 | Stormwater to surface water discharge associated with land disturbance and industrial activity during construction activities. Submit plan modification with Notice of Intent (NOI) for a disturbance of 5 acres or more. |
| TCEQ | Notice of Intent (NOI) Texas Water Code Chapter 26 (SWP3) | Pertains to General Permit relating to stormwater discharges from construction activities | General Permit No. TXR 150000 | Submit NOI 3 months prior to disturbance of land. |

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TABLE 1.2-1 (Sheet 3 of 7)
FEDERAL, STATE, AND LOCAL AUTHORIZATIONS

| Agency | Authority | Requirements | License/Permit No. | Activity Comment |
|--------|--|--|--|--|
| TCEQ | Storm Water Pollution Prevention Plan (SWP3) | Storm Water Pollution Prevention Plan (SWP3) for Operations of facility | Part III of General Permit No. TXR 050000 | Submit plan modification concurrent with submittal of Stormwater Operations NOI. |
| | Texas Water Code Chapter 26 | | | |
| TCEQ | Notice of Intent (NOI) | Pertains to General Permit relating to stormwater discharges from operation activities | General Permit No. TXR 050000 | Submit NOI 3 months prior to operations. |
| | Texas Water Code Chapter 26 | | | |
| TCEQ | Texas Water Code Chapter 5 and 26 TPDES Industrial Wastewater Permit (Major Source Modification) | Modification or additions to wastewater facilities | TPDES # WQ0001854000 | Certification and licensing of municipal and domestic wastewater facilities. Submit 18 months prior to new construction or modification. |
| | Clean Water Act Section 402 | | Must be renewed but may require modification | |

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TABLE 1.2-1 (Sheet 4 of 7)
FEDERAL, STATE, AND LOCAL AUTHORIZATIONS

| Agency | Authority | Requirements | License/Permit No. | Activity Comment |
|----------------|---|---|---|--|
| TCEQ | 30 TAC 285 | Submit on-site sewage treatment and design | | Six months prior to construction. |
| PUC | | Certificate of Convenience and Need Application | | Certification that present and future public convenience and necessity require or will require the operation of such equipment or facility and that it will be constructed and operated in compatibility with the environment. |
| SHPO TRIBES | 13 TAC 26 Archeological sites | Permission required prior to clearing of any lands (SHPO 2007) | | Identification and evaluation of historic properties and any cultural sites of significance to Native American tribes (site, transmission corridors, pipeline corridors). |
| SHPO | Section 106 National Historic Preservation Act 36CFR800 | Permission required prior to clearing of any lands (SHPO 2007) | | Review and analysis of cultural and historical resources, including completion of NHPA Section 106 consultation. SHPO concurrence supports no new study needed at CPNPP site. |
| BRA | | Use of surface water approved by local water authority | | New surface water rights secured from Lake Granbury for transfer to CPNPP site and return to Lake Granbury. |
| TPWD | 31TAC69 | Scientific Collection Permit | Each Vendor maintains a permit for collection | Sampling contractors need to have permit in hand for species collection. |

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TABLE 1.2-1 (Sheet 5 of 7)
FEDERAL, STATE, AND LOCAL AUTHORIZATIONS

| Agency | Authority | Requirements | License/Permit No. | Activity Comment |
|--------|----------------|--|--|---|
| TCEQ | 30TAC335 | Landfill #6 Closure Plan | | Plan to close landfill is needed 3 months prior to its being disturbed. |
| TCEQ | 30TAC335 | Landfill #6 Closure Certification Report | | Report upon completion of excavation as to the results versus the plan. |
| TCEQ | 30TAC116 | Concrete batch plant air permit | | Concrete batch plant air permit required 6 months prior to construction for operation of an on-site concrete plant. |
| TCEQ | 30TAC122 | Title V Operating Permit for diesel units | TCEQ Air Permit No. 19225 (not Title V permit) | Diesel engines air permit for discharge to environment. Emergency diesels, fire pump diesels, auxiliary boilers, gas turbines, etc. |
| | | | [Requires modification] | Twelve months prior to initial firing of diesels. |
| TCEQ | 7TAC111 | Air permit for burning debris in pit | | After burn pit is constructed, the permit is required 3 months prior to any burn activities. |
| EPA | 40 CFR 110/112 | Spill Prevention Control and Countermeasures Plan (SPCCP) | | Revise existing plan 6 months prior to construction if changes are indicated. |
| EPA | 40 CFR 110/112 | Spill Prevention Control and Countermeasures Plan (SPCCP) – Revision | | A revision to the plan may be required if contractors store more than 1320 gallons of petroleum products. |

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TABLE 1.2-1 (Sheet 6 of 7)
FEDERAL, STATE, AND LOCAL AUTHORIZATIONS

| Agency | Authority | Requirements | License/Permit No. | Activity Comment |
|--|---|--|--------------------|--|
| TDOT County Agencies - Hood and Somervell | | Road construction, road crossings, interruption of traffic flow | | Affected areas involving old or new roads – changes or interruption of traffic. |
| TCEQ | 30 TAC 106 | Rock crusher operations | | For rock debris going to be crushed, obtain a permit 6 months prior to operation. |
| NRC | | Appendix B - Facilities Operating License Environmental Protection Plan, non-radiological | | Changes required in the Environmental Protection Plan, non-radiological, to be modified pending final design reviews, approvals, and prior to operation of the facility. |
| TCEQ | 30 TAC 321.255 30 TAC 210.23 30 TAC 309 | Evaporation pond liner and size requirements | | Certify evaporation pond meets requirements prior to use. |
| TCEQ | | Hazardous materials storage (SARA Title III) | | |
| TCEQ | | Toxic chemical release inventory reporting form | | |
| | Disposal Facility | Radwaste disposal registration | | |
| PUC of Texas | | PUC approval of decommissioning plan | | |

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TABLE 1.2-1 (Sheet 7 of 7)
FEDERAL, STATE, AND LOCAL AUTHORIZATIONS

| Agency | Authority | Requirements | License/Permit No. | Activity Comment |
|--------|------------|-------------------------------|--------------------|------------------|
| TCEQ | 30 TAC 116 | State construction air permit | | |

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1.3 METHODOLOGY

For the combined construction and operating license applications (COLAs) that do not refer to an early site permit (ESP), U.S. Nuclear Regulatory Commission (NRC) regulations at 10 Code of Federal Regulations (CFR) 52.80, Contents of applications; additional technical information, subparagraph (b), states the application must contain an environmental report (ER), in accordance with 10 CFR 51.50(c), if a Limited Work Authorization (LWA) is not requested in conjunction with the COLA. A request for an LWA is not being submitted in conjunction with this COLA. Regulatory Guide (RG) 4.2, Preparation of Environmental Reports for Nuclear Power Stations, provides guidance to applicants preparing ERs for nuclear power stations. NUREG-1555, Environmental Standard Review Plan, provides guidance for the NRC's environmental reviews of applications related to nuclear power plants. As discussed in RG 1.206, Combined License Applications for Nuclear Power Plants (LWR Edition), Section C.II.2, Environmental Report, NUREG-1555 has been updated to recognize the alternative licensing structure under 10 CFR 52. Because RG 4.2 is an earlier NRC document and NUREG-1555 reflects the Part 52 regulatory structure, Luminant Generation Company LLC (Luminant) chose to rely on NUREG-1555 for guidance in establishing the format and content of the Comanche Peak Nuclear Power Plant (CPNPP) Units 3 and 4 ER.

Luminant is providing additional information beyond what is called for by NUREG-1555, as deemed appropriate, when applying lessons learned from ESP and other COLA application reviews. In [Table 1.3-1](#), verification of conformance with the regulatory information requirements of 10 CFR 51.45 and 10 CFR 51.50 is provided, including an identification of each requirement and indication of where in the ER Luminant has responded to the requirement. [Table 1.3-2](#) provides a summary of additional sections added beyond the provisions of NUREG-1555 and the basic content of each section.

Luminant reviewed the conclusions provided in NUREG-1437, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, for input in assessing the impacts of the new Mitsubishi Heavy Industries (MHI) U.S. Advanced Pressurized Water Reactors (US-APWR) units on the CPNPP site. Based on this review, Luminant concluded that if characteristics of the proposed US-APWR reactors are similar to those of the existing pressurized water reactor fleet, the NUREG-1437 environmental issues, significance determination criteria, and significance conclusions could provide insights in the combined construction and operating license (COL) environmental review. The applicable sections identify where NUREG-1437 has been used in assessing environmental impacts for CPNPP Units 3 and 4. Where appropriate, these sections supplement the information provided in NUREG-1437 to account for more recent studies and site-specific information.

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TABLE 1.3-1 (Sheet 1 of 3)
ER RESPONSES TO COMBINED OPERATING LICENSE REGULATORY
REQUIREMENTS

| Regulatory Requirement (10 CFR) | ER Section Containing the Response |
|--|--|
| 51.45 (a), Signed original | Transmittal letter |
| 51.45 (b), Description of proposed action | Section 1.1 The Proposed Project, Chapter 3 Plant Description |
| 51.45 (b), Statement of purpose of proposed action | Section 1.1 The Proposed Project |
| 51.45 (b), Description of environment affected by proposed action | Chapter 2 Environmental Description |
| 51.45 (b)(1), Environmental impact of proposed action | Chapter 4 Environmental Impacts of Construction, Chapter 5 Environmental Impacts of Station Operation, Chapter 7 Environmental Impacts of Postulated Accidents Involving Radioactive Materials, and Chapter 10 Environmental Consequences of the Proposed Action |
| 51.45 (b)(2), Unavoidable adverse impacts | Section 10.1 Unavoidable Adverse Environmental Impacts |
| 51.45 (b)(3), Alternatives to proposed action | Chapter 9 Alternatives to the Proposed Action |
| 51.45 (b)(4), Relationship between short-term use and long-term productivity | Section 10.3 Relationship Between Short-Term Uses and Long-Term Productivity of the Human Environment |
| 51.45 (b)(5), Irreversible and irretrievable commitments of resources | Section 10.2 Irreversible and Irretrievable Commitments of Resources |

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TABLE 1.3-1 (Sheet 2 of 3)
ER RESPONSES TO COMBINED OPERATING LICENSE REGULATORY
REQUIREMENTS

| Regulatory Requirement (10 CFR) | ER Section Containing the Response |
|--|--|
| 51.45 (c), Comparison of environmental effects of proposed action and alternatives | Chapter 4 Environmental Impacts of Construction, Chapter 5 Environmental Impacts of Station Operation, Chapter 7 Environmental Impacts of Postulated Accidents Involving Radioactive Materials, Chapter 9 Alternatives to the Proposed Action, and Chapter 10 Environmental Consequences of the Proposed Action |
| 51.45 (c), Alternatives for reducing or avoiding adverse environmental impacts | Section 4.6 Measures and Controls to Limit Adverse Impacts During Construction and Section 5.10 Measures and Controls to Limit Adverse Impacts During Operation |
| 51.45 (c), Economic, technical, and other benefits and costs of proposed action and alternatives | Section 10.4 Benefit-Cost Balance |
| 51.45 (d), Federal permits and other entitlements and status of compliance | Section 1.2 Status of Reviews, Approvals, and Consultations |
| 51.45 (d), Compliance with Federal and other environmental quality standards and requirements | Section 1.2 Status of Reviews, Approvals, and Consultations |
| 51.45 (d), Compliance for alternatives | Section 9.2 Energy Alternatives and Section 9.3 Alternative Sites |
| 51.45 (e), Adverse information | Section 10.1 Unavoidable Adverse Environmental Impacts |
| 51.50 and 51.51(a), Uranium fuel cycle | Section 5.7 Uranium Fuel Cycle Impacts |
| 51.50 and 51.52, Fuel and waste transportation | Section 3.8 Transportation of Radioactive Materials, Section 5.12 Impacts of Transportation of Radioactive Materials, and Section 7.4 Transportation Accidents |

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TABLE 1.3-1 (Sheet 3 of 3)
ER RESPONSES TO COMBINED OPERATING LICENSE REGULATORY
REQUIREMENTS

| Regulatory Requirement (10 CFR) | ER Section Containing the Response |
|--|--|
| 51.50, Reporting and record keeping procedures | Chapter 6 Environmental Measures and Monitoring Programs |
| 51.50, Conditions and monitoring | Chapter 6 Environmental Measures and Monitoring Programs |

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TABLE 1.3-2
 ADDITIONAL SECTIONS IN THE CPNPP UNITS 3 AND 4 ER

| Section / Title | Description |
|---|--|
| 1.3 - Methodology | CPNPP ER responsiveness to 10 CFR 51 Subparts 45, 50, 51 (a), and 52 and an explanation of additional sections |
| 2.9 - Existing Plant Parameters and Site Characteristics | CPNPP Units 1 and 2 site and plant parameters relevant to cumulative impacts of CPNPP Units 1 – 4 |
| 3.9 - Construction Activities | Constructing activities conceptual discussion |
| 3.10 - Workforce Characterization | CPNPP Units 3 and 4 construction and operation workforce characterization |
| 4.7 - Cumulative Impacts Related to Construction Activities | Cumulative impacts of CPNPP Units 3 and 4 construction activities |
| 4.8 - Nonradiological Health Impacts During Construction | Non-radiological health impacts of CPNPP Units 3 and 4 construction |
| 5.11 - Cumulative Impacts Related to Station Operations | Cumulative impacts of operating CPNPP Units 3 and 4 |
| 5.12 - Impacts of Transportation Of Radioactive Materials | Transportation modes and radioactivity impacts |
| 5.13 - Nonradiological Health Impacts During Operations | Non-radiological health impacts of CPNPP Units 3 and 4 operation |
| 10.5 - Cumulative Impacts | Cumulative impacts of CPNPP Units 1 – 4 |