Attachment

South Texas Project

Units 1 and 2

2014 Annual Environmental and Annual Radiological Environmental Operating Reports

2014

South Texas Project Electric Generating Station
Annual Environmental Operating Report

STP
Nuclear Operating Company

The 2014 Annual Environmental Operating Report for the South Texas Project Electric Generating Station combines in one report the requirements for the Annual Environmental Operating Report (Non-radiological) found in Appendix B to Facility Operating License Nos. NPF-76 and NPF-80 and the requirements for the Annual Radiological Environmental Operating Report found in Part A of the station's Offsite Dose Calculation Manual.

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STP Nuclear Operating Company

Completed in accordance with
Technical Specifications for
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License Nos.
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2014

Annual Environmental

Operating Report

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION

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Photo By: Bud Nosbisch

Executive Summary

Photo By: Nancy Kubecka

Chapter 1

Executive Summary

The South Texas Project continues to operate with no adverse effect on the population or the environment. The exposure for people living in the area remains at less than one millirem per year. Environmental programs at the site monitor known and predictable relationships between the operation of the South Texas Project and the surrounding area. These monitoring programs verify that the operation of the South Texas Project has no impact offsite and is well within state and federal regulations and guidelines. These programs are verified by the State of Texas through collection and analysis of samples and placement of the State's monitoring dosimeters and other onsite and offsite inspections.

This report describes the environmental monitoring programs, radiological and nonradiological, conducted at the South Texas Project during 2014. Included in this report are the Environmental Protection Plan Status, the results of the Radiological Environmental Monitoring Program, and the Land Use Census.

Nonradiological environmental monitoring is performed each year as part of the station's overall Environmental Protection Plan which is intended to provide for protection of nonradiological environmental values during station operations. Nonradiological monitoring encompasses, as a minimum, water quality, air quality, waste generation and minimization, and local aquatic and terrestrial ecological conditions. In 2014, nonradiological monitoring by the station confirmed that the South Texas Project's efforts to respect and protect local environmental conditions were successful. The South Texas Project continued to be rated by the Texas Commission on Environmental Quality as a high performer in the area of environmental compliance, continued to provide high-quality habitat areas for a variety of flora and fauna, and continued to have no indications of negative non-radiological impacts to local environmental conditions.

The environment within a 15-mile radius of the South Texas Project is routinely monitored for radiation and radioactivity. Sampling locations are selected using weather, land use, and water use information. Two types of sampling locations are used. The first type, control stations, are located in areas that are beyond the measurable influence of the South Texas Project or any other nuclear facility. The sample results from these stations are used to explain radiation from sources other than the South Texas Project. Indicator stations are the second type of stations. The samples from these stations measure any radiation contributed to the environment that could be caused by the South Texas Project. Indicator stations are located in areas close to the South Texas Project where any plant releases would be detected.

Prior to initial operation of the South Texas Project, samples were collected and analyzed to determine the amount of radioactivity present in the area. These results are used as a "preoperational baseline." Results from the indicator stations are compared to both current control sample results and the preoperational baseline values to determine if changes in radioactivity levels are attributable to station operations or other causes such as previous nuclear weapons testing programs and natural variations.

Radioactivity levels in the South Texas Project's environment frequently fall below the minimum detection capabilities of state-of-the-art scientific instruments. Samples with radiation levels that cannot be detected are below the Lower Limits of Detection. The United States Nuclear Regulatory Commission requires that equipment used for radiological monitoring must be able to detect

specified minimum limits for certain types of samples. This ensures that radiation measurements are sufficiently sensitive to detect small changes in the environment. The United States Nuclear Regulatory Commission also has a required reporting level. Licensed nuclear facilities must prepare a special report and increase their sampling if any measured radiation level is equal to or greater than this reporting level. No sample from the South Texas Project has ever reached or exceeded this reporting level.

Measurements performed are divided into four categories, or pathways, based upon how the results may affect the public. Airborne, waterborne, ingestion, and direct radiation are the four pathways that are sampled. Each pathway is described below.

- ★ The airborne pathway is sampled in areas around the South Texas Project by measuring the levels of radioactive iodine and particulate radioactivity on air filters. The 2014 airborne results were similar to preoperational levels detecting only naturally occurring radioactive material unrelated to the operation of the South Texas Project.

- ★ The waterborne pathway includes samples taken from surface water, ground water, and drinking water. Also included in this pathway are sediment samples taken from the Main Cooling Reservoir and the Colorado River. Tritium was the only man-made nuclide consistently detected in water samples and was measured in the shallow aquifer, the Main Cooling Reservoir, ditches, and sloughs consistent with the South Texas Project Main Cooling Reservoir operating design. The levels of tritium found were near or lower than the concentration of the Main Cooling Reservoir. Additional onsite wells have been sampled to map tritium migration. The average tritium level in the Main Cooling Reservoir remained stable throughout 2014. Tritium levels remain well below United States Nuclear Regulatory Commission reporting limits and within United States Environmental Protection Agency drinking water standards. Previously detected plant-related nuclides, cobalt-60 and cesium-137, were also detected in the reservoir sediment this year at the designated sample locations. Several samples had detectable cesium-137 which is present in the environment and was detected at preoperational concentrations. Onsite sediment samples continue to occasionally indicate traces of plant-related nuclides such as cobalt-60. Offsite sediment samples continue to show no radioactivity from the South Texas Project. In summary, the station produces no detectable waterborne effects offsite.

- ★ The ingestion pathway includes broadleaf vegetation, agricultural products, and food products. Naturally occurring nuclides were detected at average environmental levels in the samples. The data indicated there were no man-made nuclides detected in these types of samples.

- ★ The direct exposure pathway measures environmental radiation doses using thermoluminescent dosimeters. These results are consistent with the readings from previous years and continue to show no effect from plant operations.

The South Texas Project continues to operate with no negative effect on the population or the environment. The dose for people living in the area is maintained at less than one millirem per year. Environmental programs at the site monitor known and predictable relationships between the operation of the South Texas Project and the surrounding area. These monitoring programs verify that the operation of the South Texas Project has no impact offsite and is well within state and federal regulations and guidelines. These programs are verified by United States Nuclear Regulatory Commission inspections, STP Nuclear Operating Company sponsored quality assurance audits, and the State of Texas through collection and analysis of samples and State radiation monitoring dosimeters.

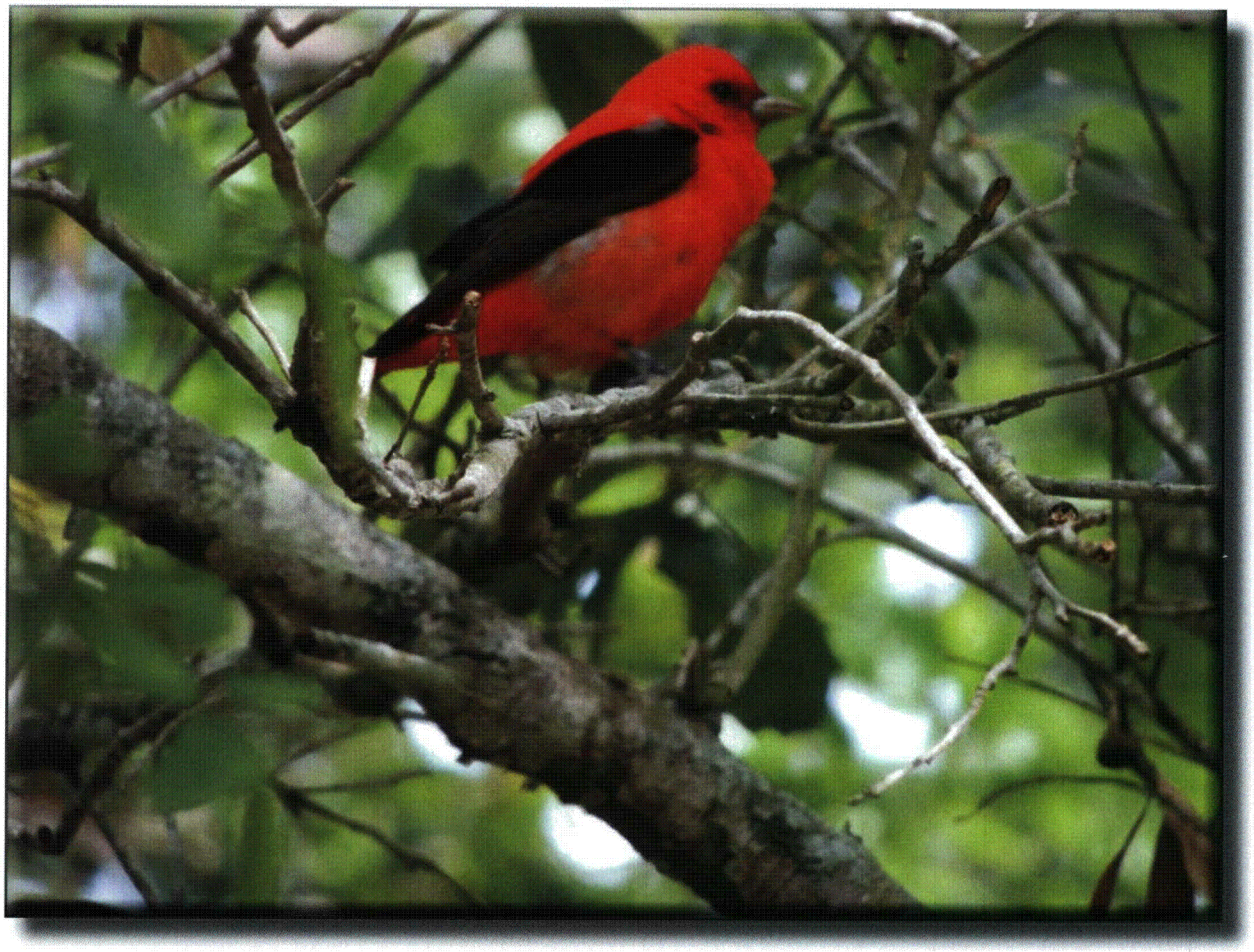

Photo By: Robyn Savage

Site and Area Description

Photo by: Robyn Savage

Chapter 2

Site and Area Description

The South Texas Project is located on 12,220 acres in Matagorda County, Texas, approximately 15 miles southwest of Bay City along the west bank of the Colorado River. The South Texas Project Electric Generating Station is owned by NRG South Texas LP, City of Austin, and City Public Service Board of San Antonio as tenants in common. Houston Lighting & Power Company was the original project manager of the South Texas Project and was responsible for the engineering, design, licensing, construction, startup, and initial commercial operation of the two-unit facility. In 1997, the STP Nuclear Operating Company assumed operational control of the South Texas Project and responsibility for implementation of associated environmental programs.

The South Texas Project has two Westinghouse pressurized water reactors. The rated core thermal power of each unit is 3,853 megawatts-thermal (MWt). Each unit was originally designed for a net electrical power output of 1,250 megawatts-electric (MWe). Unit 1 received a low-power testing license on August 21, 1987, achieved initial criticality on March 8, 1988, and was declared commercially operational on August 25, 1988. Unit 2 received a low-power testing license on December 16, 1988, achieved initial criticality on March 12, 1989, and was declared commercially operational on June 19, 1989. The combined units currently produce enough electricity to serve more than two million homes and businesses throughout Texas. With nearly 1,200 baseline employees, the STP Nuclear Operating Company is the largest employer and source of revenue for Matagorda County.

The South Texas Project initiated activities in 2008 to pursue renewal of the operating licenses for Units 1 and 2 from the United States Nuclear Regulatory Commission. The license renewal application was submitted to the United States Nuclear Regulatory Commission in October of 2010 to request authorization to operate the South Texas Project, Units 1 and 2, for an additional 20 years beyond the period specified in the current licenses. The Nuclear Regulatory Commission issued the final Supplemental Environmental Impact Statement for the license renewal in November of 2013. The final Supplemental Environmental Impact Statement was prepared in compliance with the National Environmental Policy Act. The process for preparation of the final supplemental impact statement included consultation with other applicable regulating agencies, review of information provided by the South Texas Project, the Nuclear Regulatory Commission's own independent environmental review and consideration of public comments received during the process.

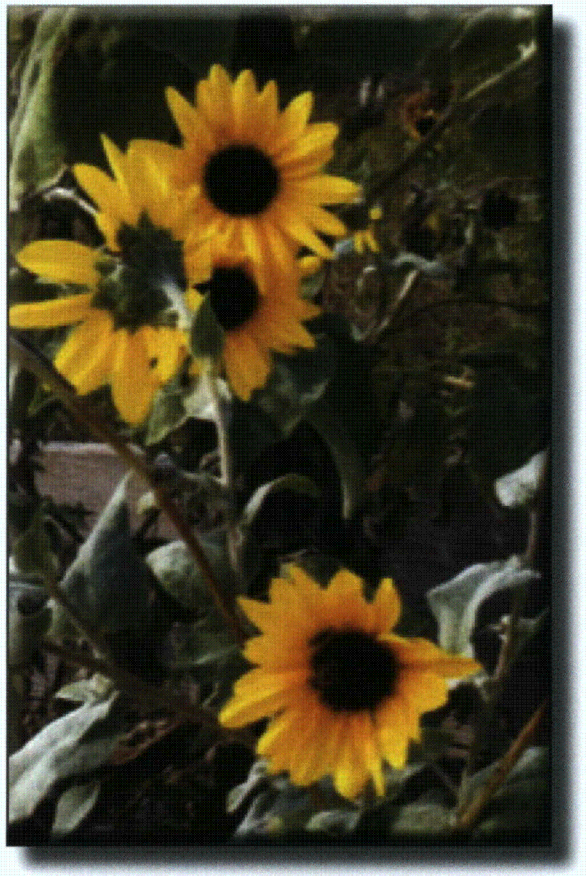

Photo By: Cheryl Bentley

In September of 2007, a Combined Construction and Operating License Application (COLA) was filed with the United States Nuclear Regulatory Commission to build and operate two additional units, Units 3 and 4, at the South Texas Project. The Nuclear Regulatory Commission issued the Final Environmental Impact Statement for Units 3 and 4 in February of 2011. The Final Environmental Impact Statement was prepared in compliance with the National Environmental Policy Act. The process for preparation of the final impact statement included consultation with other applicable regulating agencies, review of information provided by the South Texas Project, the Nuclear Regulatory Commission's own independent environmental review and consideration of public comments received during the process. Efforts continue to secure licensing for the two new units.

Nuclear energy continues to provide long-term cost stability and promote energy independence. It is our nation's largest source of carbon-free energy. As we work collectively to secure our state's long-term energy future, nuclear energy will continue to play an important role as a safe and reliable supply of clean baseload electricity.

HOW THE SOUTH TEXAS PROJECT WORKS

Fossil-fueled and nuclear-powered steam generating plants operate on the same principle. Fuel is used to produce heat to convert water into high-pressure steam. The steam is directed through a turbine to turn a generator. In a fossil fuel plant, either coal, lignite, oil or natural gas is burned in a boiler to produce the heat. In a nuclear plant, the reactor replaces the boiler and the "fissioning" or splitting of uranium atoms inside the reactor produces the heat.

The fuel for a nuclear reactor is uranium. It is formed into cylindrical ceramic pellets, each about the size of the end of your little finger. One pellet has the energy potential of about a ton of coal. Millions of these pellets are stacked in fuel rods that are arranged into assemblies that make up the core of the reactor. The use of uranium allows us to conserve natural gas, oil and coal and to avoid the associated production of greenhouse gases.

The fission process and generation of usable heat begins in a nuclear reactor when control rods in the core are withdrawn. In pressurized water reactors, like those at the South Texas Project, the fuel rods heat water circulating in sealed, stainless steel piping that passes through large heat exchangers called steam generators. The water in the reactor is under pressure to prevent boiling. This is why the South Texas Project's Units 1 and 2 reactors are called "pressurized water reactors."

This hot, pressurized water heats a separate supply of water in the steam generators to produce steam that is directed through the blades of a turbine generator to produce electricity. The steam is then fed to a condenser where a separate supply of cooling water from the reservoir turns it back into water that is then pumped back to the steam generator for reuse. A diagram of the plant water systems is shown in Figure 2-1.

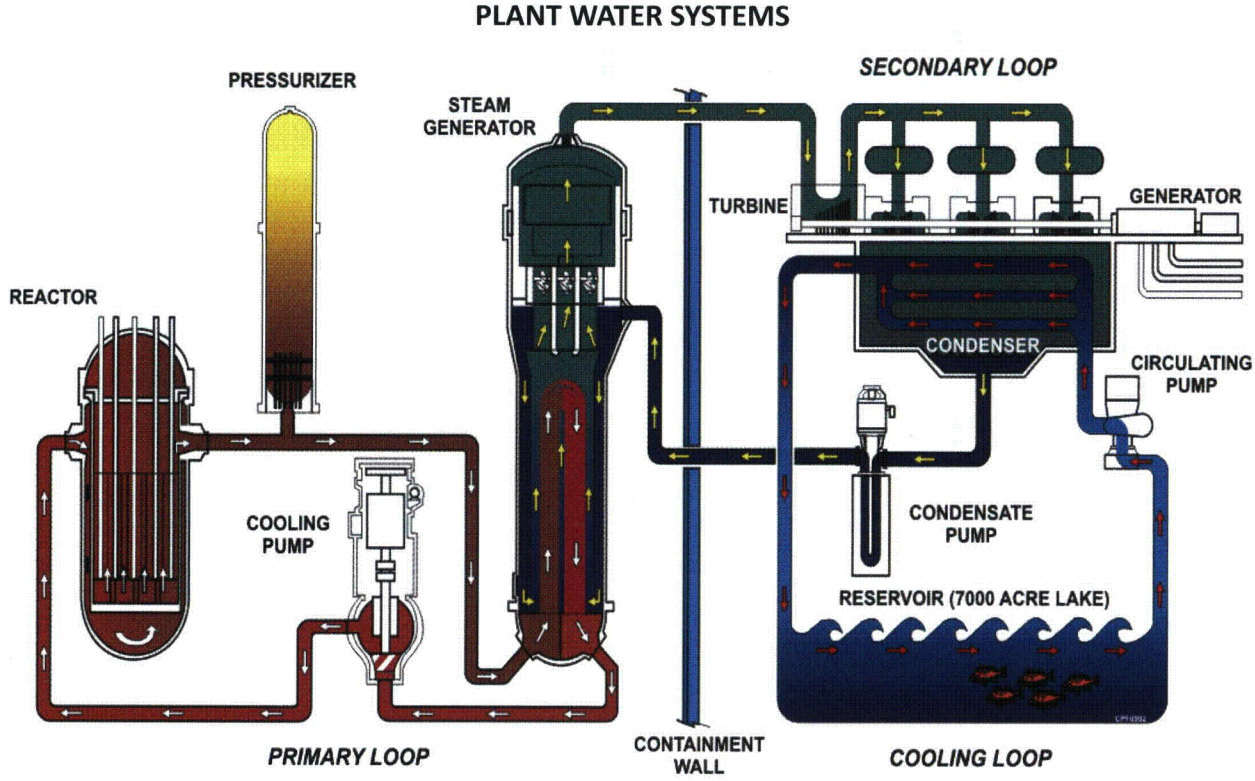

Figure 2-1

In addition to its safety systems, the South Texas Project has many built-in physical barriers that would prevent the release of radioactive materials in the unlikely event of an accident. The most visible ones are the 200-foot-tall, domed containment buildings with steel-reinforced concrete walls four feet thick. Inside each of these massive structures, two more concrete walls provide another 11 feet of shielding. The reactor vessel itself has steel walls six inches thick, and the fuel pellets inside it are sheathed in hardened metal tubes.

Nuclear energy has one of the lowest impacts on the environment. It is the most eco-fficient energy source because it produces the most electricity in relation to its minimal environmental impact. In 2013, the most recent year for which data is available, nuclear generation in the United States prevented 588.54 million metric tons of carbon dioxide, 0.97 million short tons of sulfur dioxide, and 0.48 million short tons of nitrogen oxide from entering the Earth's atmosphere.[1] In 2013, nuclear power plants generated approximately 63 percent of all clean-air electricity in the United States.[2] Additional information on nuclear energy and the environment can be found on the website maintained by the Nuclear Energy Institute at http://www.nei.org.

[1] Nuclear Energy Institute. Emissions Avoided by the U.S. Nuclear Industry. http://www.nei.org/Knowledge-Center/Nuclear-Statistics/Environment-Emissions-Prevented/Emissions-Avoided-by-the-US-Nuclear-Industry. April 2014.

[2] Nuclear Energy Institute. Environment: Emissions Prevented. http://www.nei.org/Knowledge-Center/Nuclear-Statistics/Environment-Emissions-Prevented. Sources of Emission-Free Electricity Infographic (2013). Viewed on March 9, 2015.

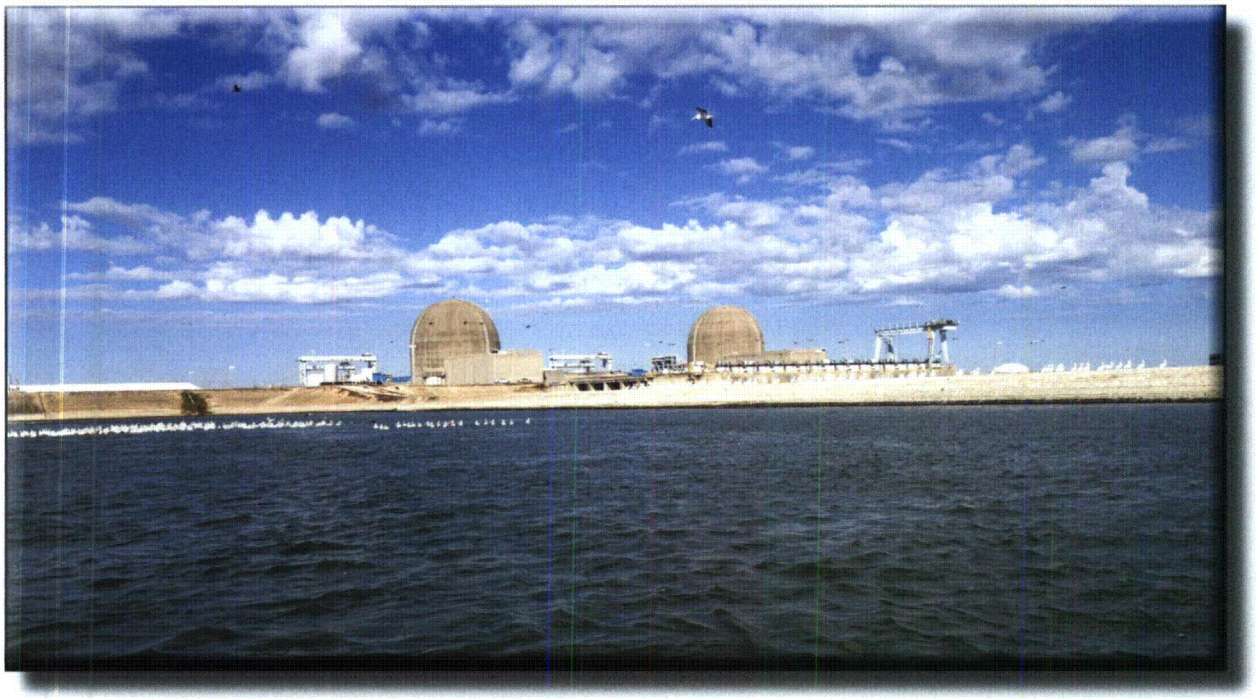

Photo By: Edmond Hardcastle

THE PLANT SITE

Sixty-five of the entire 12,220 acres at the South Texas Project are occupied by the two current power plants. Plant facilities include a 7,000-acre main cooling reservoir and a 47-acre essential cooling pond. Many smaller bodies of water onsite include wetlands, Kelly Lake, drainage ditches, sloughs, and depressions. Much of the land east of the cooling reservoir is leased for cattle grazing. Approximately 1,700 acres remain in a more natural state as a lowland habitat. A 110-acre wetland habitat area was established in 1996 on previously unused land located northeast of the power plants. The area surrounding the South Texas Project is characterized by coastal plain with farmland and pasture predominating. Local relief of the area is characterized by flat land, approximately 23 feet above sea level.

THE AREA

Matagorda County's economy is based primarily on ranching, farming, oil and natural gas production and refinement, petrochemical production, electricity generation, and commercial fishing and fisheries. The area within 10 miles of the site is generally rural and characterized as farmland, which is primarily pastureland used for livestock ranching. Although the surrounding area is heavily cultivated, significant amounts of woodlands, thicket, brush, fields, marsh, and open water exist to support wildlife. The area lies in the southern region of the central flyway and is host to an abundance of migratory birds. The local estuary environments provide the necessary habitat for a variety of fish types to complete their life cycles. The area also affords opportunity for recreational hunting and fishing.

Site and Area Description

The South Texas Project is home to many species of animals. Inhabitants include American alligators, a variety of birds, and several hundred deer. In winter, literally hundreds of thousands of waterfowl, principally migratory geese as well as white pelicans and the common tern, have found that the plant's 7,000-acre cooling reservoir provides a good resting place during their migrations.

The climate of the region is subtropical maritime, with continental influence. It is characterized by short, mild winters and long, hot and humid summers. Although drought conditions continued in Texas throughout 2014, rainfall normally ranges from about two inches per month in February peaking to about four to five inches per month in May, June, September and October. The prevailing wind direction is from the south-southeast, shifting to north-northeast for short intervals during the winter months.

Photo courtesy of: Jodie Jankauskas

NONRADIOLOGICAL ENVIRONMENTAL INTRODUCTION AND SUMMARY

Photo By: Tammy Stevens

CHAPTER 3

Nonradiological environmental conditions and performance at the South Texas Project during 2014 remained satisfactory and demonstrated that the South Texas Project continued to operate in an environmentally responsible manner during the year. The South Texas Project achieved and maintained high standards of environmental performance and compliance throughout 2014.

The South Texas Project is committed to the production of electricity in a safe, reliable, and economical manner using nuclear energy. The station's programs, policies, and business plan objectives also incorporate a commitment to environmental protection and management. The station's commitment to sound environmental management is illustrated by the following successes in 2014.

★ Continued classification as a high performer[3] by the Texas Commission on Environmental Quality based on the station's environmental compliance record in all areas considered, including water quality, waste management, and air quality compliance;

Photo By: Gene Fisseler

[3]Per Compliance History Report for CN601658669, RN102395654, Rating Year 2014; as prepared by the Texas Commission on Environmental Quality on March 10, 2015.

- ★ No reportable spills or leaks; and,
- ★ Reduction to the lowest amount over the past five years in the generation and shipment of hazardous waste at the station.

Everyone has a responsibility to protect the environment. Commitment to environmental safety is an integral component of the South Texas Project operating policy and core values. This responsibility reaches further than mere compliance with laws and regulations to encompass the integration of sound environmental practices into our daily operational and business decisions. The people at the South Texas Project understand the need to balance economic, operational and environmental issues for the benefit of the station and the public. We recognize our responsibility to hold ourselves to the highest principles of environmental stewardship for station activities.

Photo By: Gene Fisseler

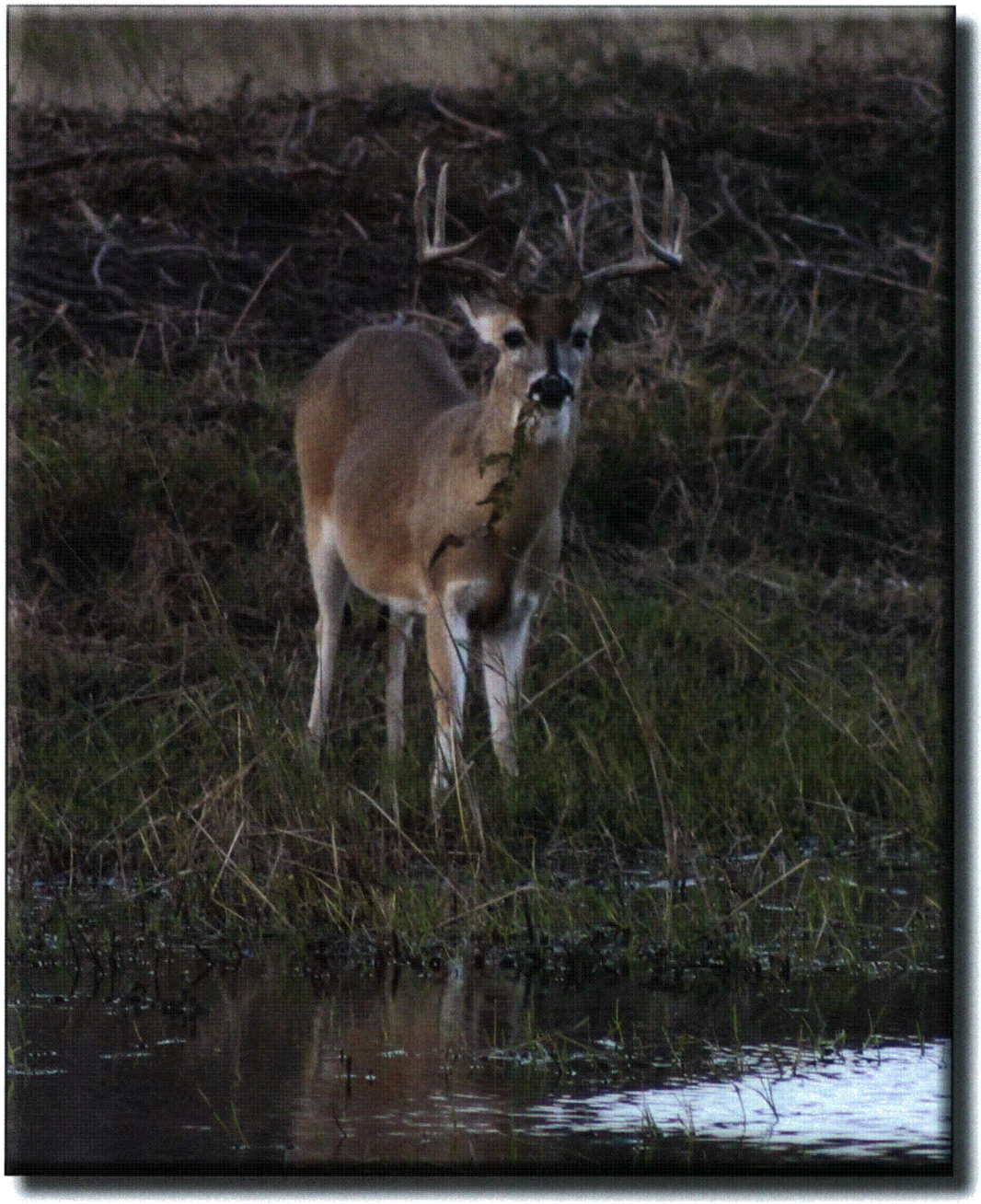

Photo By: Bud Nosbisch

Nonradiological Environmental Operating Report

Photo courtesy of: Jodie Jankauskas

Chapter 4

ENVIRONMENTAL CONDITIONS

This section of the report describes the South Texas Project's nonradiological environmental program performance and environmental conditions from January 1 through December 31, 2014. The STP Nuclear Operating Company closely monitors environmental conditions and performance at the South Texas Project. NRG Energy, Inc. provides support and technical assistance to the South Texas Project. The Texas Commission on Environmental Quality conducted one onsite air quality permit compliance inspection and one onsite wastewater quality permit compliance inspection in 2014.

The Texas Commission on Environmental Quality rated the South Texas Project as a high performer in 2014 based on the station's environmental compliance record. Facilities, such as the South Texas Project, are classified by the state as a high performer, satisfactory performer, or unsatisfactory performer based on that facility's compliance history. The state's classification of the South Texas Project as a high performer was based on the station's environmental performance over the last five year period.

The South Texas Project, along with other local industries and organizations, co-sponsored and participated in the annual Matagorda County Household Hazardous Waste Collection Day in the fall of 2014, and station employees also participated in other community area environmental projects such as the county's Matagorda County Beach Cleanup. During the period of this report, the station continued to promote "green" initiatives including encouraging carpooling among employees and the recycling of plastics and aluminum by site employees. The station also continued to support various bird counts and surveys in 2014 sponsored by federal and state agencies and volunteer organizations such as the annual National Audubon Society Christmas Bird Count, the Great Texas Birding Classic, and the United States Fish and Wildlife Service Colonial Waterbird Survey.

Photo By: Gary Parkey

AQUATIC AND ECOLOGICAL MONITORING

The location of the South Texas Project falls within the Texas Land Resource Area designation as coastal prairie and can be divided into two broad ecological areas based on topography, soils, and vegetation. The bottomland lowland habitat is a swampy, marshy area that provides an important habitat for birds and other wildlife and occupies approximately 1,700 acres of the site near the Colorado River. A spoil impoundment originally constructed in 1972 by the United States Army Corps of Engineers is included in this area. In addition, a 110-acre wetland habitat area that attracts a variety of bird groups and other wildlife was established in 1996 on previously unused land located northeast of the power plants. In 2012, the Matagorda County chapter of Ducks Unlimited awarded the station the John Runnels Good Steward Award for maintenance of the wetland habitat area. The remaining area of the site offers diverse habitats for mammals and several types of birds. The South Texas Project regularly monitors the site's environs for changing conditions. Ecological conditions onsite in 2014 remained generally unchanged and satisfactory.

The South Texas Project is located on the state-sponsored Great Texas Coastal Birding Trail that spans the entire Texas Gulf Coast from Brownsville to the Louisiana border. Matagorda County, which includes the South Texas Project, consistently ranks at or near the top of the National Audubon Society's annual Christmas Bird Count for the number of species identified. Several bird species have been observed visiting the wetland habitat and elsewhere onsite. These include the bald eagle, white-faced ibis, and brown pelican. Additional migratory and resident

Photo By: Gary Parkey

bird species such as a variety of ducks, geese, turkey and pelicans (both brown and white) have been observed during informal surveys of the site's diverse natural and man-made habitats. Intensive bird nesting continues throughout the lowland habitat, particularly in a heron rookery around the perimeter of Kelly Lake. U. S. Fish and Wildlife Service biologists estimate that approximately one-third of Texas' breeding adult Gull-billed Tern population, considered to be in decline, nest on the internal dikes of the Main Cooling Reservoir at the South Texas Project. The South Texas Project continues to provide vital habitat for more than an estimated 125 different species of wintering and resident birds.

The South Texas Project continues to monitor important wildlife species to detect population changes. Informal observations by station and NRG Energy, Inc. personnel continue to indicate that the site provides high-quality habitat in which a wide range of animals live. The site continues to attract extensive wildlife populations, offering a refuge for resident species as well as seasonal migrants. The lowland habitat located between the Colorado River and the east bank of the Main Cooling Reservoir offers a significant source of water year-round. These natural resource areas, in concert with numerous additional wetland and grassland areas, offer the key ingredients necessary to sustain the extensive wildlife population at the South Texas Project.

WATER QUALITY MANAGEMENT

Water is an essential component in electricity production, and all electric utilities must comply with extensive federal, state and local water regulations. These regulations govern virtually every aspect of business operations at the South Texas Project. Water usage, wastewater treatment onsite and certain maintenance and repair activities are regulated under the Safe Drinking Water Act, the Federal Clean Water Act, and the Texas Water Quality Act. Collectively, these acts provide for the safeguarding of public drinking water supplies and maintaining the integrity of state and federal waters. Regulating agencies that administer these requirements include the United States Army Corps of Engineers, the United States Environmental Protection Agency, the Texas Commission on Environmental Quality, the Texas General Land Office and the Lower Colorado River Authority.

The South Texas Project uses both surface water and groundwater for station purposes. Groundwater is pumped from deep aquifer wells to provide onsite drinking water for station personnel, to replenish the Essential Cooling Pond, and for other industrial purposes onsite. Consistent with the station's environmental principles encouraging efficient water usage and conservation, groundwater usage is carefully managed to conserve this important resource. Water from the Main Cooling Reservoir and the Essential Cooling Pond is used as cooling water for plant activities. Water from the Colorado River replenishes the Main Cooling Reservoir via intermittent pumping periods. Surface water diverted to the Main Cooling Reservoir from the Colorado River accounted for almost 97 percent of the water used at the South Texas Project in 2014. Information regarding water use in Texas can be found on the website maintained by the Texas Water Development Board at http://www.twdb.state.tx.us/.

Most of the water used by the South Texas Project is needed to condense steam and provide cooling for plant generating systems. The majority of this water is drawn from and returned to the station's Main Cooling Reservoir. The Main Cooling Reservoir is a 7,000-acre, above grade, off-channel reservoir capable of impounding 202,600 acre-feet of water at its maximum level. Water is diverted intermittently from the adjacent Colorado River to replenish the Main Cooling Reservoir. In addition, the Essential Cooling Pond, a 47-acre, below grade, off-channel reservoir that supplies water to cool crucial plant components, is capable of impounding 388 acre-feet of water. Various water rights permits, contractual agreements, and compliance documents authorize the South Texas Project to maintain these reservoirs, impound water diverted from the Colorado River, and to circulate, divert, and use water from the reservoirs for industrial purposes to operate the plant. These permits also limit the rate of diversion from the Colorado River. Although widespread drought conditions during the year continued to limit the amount of water available for diversion from the river, the South Texas Project diverted 35,994 acre-feet in 2014 from the Colorado River for Main Cooling Reservoir fill operations, mainly in the second quarter of the year, while preserving adequate freshwater flow conditions for downstream bay and estuarine ecosystems. Approximately 3 percent, or 1,057 acre-feet, of the water used by the station was withdrawn from onsite groundwater sources in 2014.

Existing federal and state water quality standards are implemented and enforced through the Texas Pollutant Discharge Elimination System (TPDES) permit program to restore and maintain the state's waters. Under this permit program, the South Texas Project monitors, records, and reports the types and quantities of pollutants from wastewater discharges to ensure

Photo By: Jodie Jankauskas

that we meet or exceed the stringent levels set in the permit. A monthly monitoring report is submitted to the Texas Commission on Environmental Quality for wastewater discharges. Reports identifying groundwater use, surface water use and water conservation are submitted annually to the Texas Water Development Board. Reports of diversion and consumptive use are submitted to the Texas Commission on Environmental Quality and the Lower Colorado River Authority. An annual groundwater use report is also submitted to the Coastal Plains Groundwater Conservation District.

Wastewater generated at the South Texas Project is processed and discharged to the onsite Main Cooling Reservoir to be re-used by the station as cooling water for plant systems. No water was discharged from the reservoir in 2014. Station conditions neither required site aquatic monitoring studies be conducted in 2014, nor were any additional studies required by the United States Environmental Protection Agency or the State of Texas either by way of station discharge permits or otherwise. The Texas Commission on Environmental Quality conducted one onsite wastewater quality permit compliance inspection in 2014. One area of concern was identified regarding a sampling technique that was immediately corrected in the field and no further actions were required. Wastewater discharges met state and federal water quality standards during the year, while conserving and maximizing efficient water usage at the station.

In addition to the wastewater discharge permit program, the Federal Clean Water Act, as amended, requires permits for storm water discharges associated with industrial activity. The South Texas Project Storm Water Pollution Prevention Plan ensures that potential pollution sources at the site are evaluated and that appropriate measures are selected and implemented to prevent or control the discharge of pollutants in storm water runoff. This plan is a working document that is revised whenever there is a change in design, construction, operation, or maintenance that has a significant effect on the potential for the discharge of pollutants from the station.

Following a severe drought in 1996, the Texas Legislature recognized the need to address a wide range of state water resource management issues. In 1997, the Texas Senate drafted legislation known as Senate Bill 1 to address these issues and to develop a comprehensive state water policy. Towards this end, this legislation required that the Texas Water Development Board create a statewide water plan that emphasizes regional planning. Sixteen planning regions were created, each tasked to prepare a regional plan for the orderly development, management, and conservation of water resources. The South Texas Project was chosen to represent the electric generating utility interest for the water-planning region, Region K, encompassing the lower Colorado River Basin. A state water plan is prepared by the Texas Water Development Board based on the regional water plans that are developed every five years by the regional water planning groups. The fourth cycle of regional and state water planning commenced in 2011 and will extend through 2016. The regional water plans will be revised based on updated population and water demand projections, water supply analyses, and water management strategies for a water planning horizon out to the year 2070. The South Texas Project continues to actively participate in the Lower Colorado Regional Water Planning Group to identify strategies to meet future water supply demand projections for the region and update the existing plan accordingly. Additional information regarding regional water planning in Texas can be found on the website

maintained by the Texas Water Development Board at http://www.twdb.state.tx.us/.

Photo By: Cheryl Yeamans

Senate Bill 1 also required groundwater conservation districts to develop groundwater management plans with estimates on the availability of groundwater in the district, details of how the district would manage groundwater, and management goals for the district. The water planning and management provisions were further clarified in 2001 with the enactment of Senate Bill 2. Accordingly, the Coastal Plains Groundwater Conservation District, encompassing Matagorda County, was confirmed by local election in late 2001. The purpose of the District is to "...manage and protect the groundwater resources of the District." The South Texas Project groundwater wells are registered with the Coastal Plains Groundwater Conservation District. The station's groundwater wells' operating permits were renewed in 2014 as required every three years. Station personnel continue to monitor onsite groundwater usage according to the requirements of the District's rules. Additional information regarding the Coastal Plains Groundwater Conservation District can be found on their website at http://www.coastalplainsgcd.com/.

In 2007, in further recognition of the importance of water conservation to meet future demands in the state, Senate Bill 3, enacted by the Texas Legislature, created a stakeholder-driven process for the development of environmental flows. Environmental flows are the amount of water necessary for a river, estuary, or other freshwater system to maintain its health and productivity. The law established a process to develop environmental flow regime recommendations for each major river basin in Texas. The process tasked a team of stakeholders for each area of the state, working with a science team, to develop a set of recommendations to submit to the Texas Commission on Environmental Quality. The South Texas Project participates as a member of the stakeholder committee that includes the Colorado River and Matagorda Bay. In August of 2011, the stakeholder committee recommendations for the Colorado River Basin were submitted to the Texas Commission on Environmental Quality. The commission, after considering these recommendations along with public input, adopted formal environmental flow standards that

must be maintained. The environmental flow standards set flow levels at various points in rivers and streams to protect water in the rivers and estuaries along the coast. As a follow up to the initial flow recommendations, the stakeholder committee submitted a Draft Work Plan to the Texas Commission on Environmental Quality in June of 2012. The Draft Work Plan addressed additional efforts needed for research and data development to support a planned review of the environmental flow standards in 2021. In 2013, the stakeholder committee evaluated and recommended additional environmental studies for the Matagorda Bay and Estuaries and subsequently submitted this recommendation to the Texas Water Development Board for approval and funding. Accordingly, additional field studies were initiated and conducted in 2014. The existing South Texas Project surface water diversion right is not impacted by this legislation. Additional information regarding environmental flows can be found at http://www.tceq.texas.gov/permitting/water_supply/water_rights/eflows/.

In January 2010, the Texas Commission on Environmental Quality approved a revised Lower Colorado River Authority Water Management Plan. The Water Management Plan determines how water is allocated from the Highland Lakes (specifically, Lakes Travis and Buchanan) to meet the needs of water users, including the South Texas Project, during water supply shortages. As part of the of January 2010 approval of the revised Water Management Plan, the Texas Commission on Environmental Quality directed the Lower Colorado River Authority to file an application to revise the Water Management Plan no later than July of 2013. To assist with this update, the Lower Colorado River Authority assembled an advisory committee to represent the diverse interests that rely on the Highlands Lakes water supply. The advisory committee included representatives from cities, industry, lake area business and residents, the environment and agriculture. The advisory committee started in July 2010 and completed its recommendations in late 2011. The South Texas Project represented industrial firm water customers on the advisory committee. The Lower Colorado River Authority Board of Directors approved the revised plan in 2012 and forwarded it to the Texas Commission on Environmental Quality for final approval. The Texas Commission on Environmental Quality subsequently determined that it was necessary to update the plan to include more recent drought data. The Lower Colorado River Authority filed an amended application incorporating the updated data with stakeholder input in 2014. The plan remains under technical review by the Texas Commission on Environmental Quality. Additional information on the Water Management Plan can be found at http://www.lcra.org.

In 1999, the South Texas Project developed, submitted and implemented an initial station Water Conservation Plan in accordance with state water use regulations. The purpose of the station's Water Conservation Plan is to identify and establish principles, practices, and standards to effectively conserve and efficiently use available water supplies and provide historical and projected average industrial water demand. Annual implementation reports are submitted to the Texas Water Development Board. Plans are required to be updated every five years. The station reviewed, updated and re-submitted a revised plan to the Texas Water Development Board in 2014. The South Texas Project personnel understand that the water resources of the state are a critical natural resource requiring careful management and conservation to preserve water quality and availability. Accordingly, the station continues to explore and support efforts focusing on the efficient use of water resources and reduction of water waste.

AIR QUALITY MANAGEMENT

Air emission sources at the South Texas Project fall under the scope of air pollution regulations promulgated under the Texas Clean Air Act and the Federal Clean Air Act and the numerous associated amendments. The purpose of these regulations is to protect air resources from pollution by controlling or abating air pollution and emissions. The South Texas Project uses small amounts of fossil fuel for backup and emergency equipment. Regulated emission sources at the South Texas Project include a fossil-fuel boiler, diesel-powered emergency generators and fire pumps, fire-fighting training, and other minor maintenance equipment and activities. The station submits a report of air emissions annually to the Texas Commission on Environmental Quality.

The South Texas Project has one fossil fuel-fired auxiliary steam boiler available to furnish steam for plant use when steam is not available from the nuclear steam supply system. In addition to the auxiliary steam boiler, a number of fossil-fueled diesel generators are located onsite. These diesels are designed to provide emergency power to various plant systems or buildings in the event of a loss of power. This equipment is not normally needed for daily operations and the station does not use it to produce electricity for distribution. Routine maintenance runs are conducted to ensure availability if needed and for equipment maintenance.

Photo By: Janice Hopes

The Federal Clean Air Act mandates a permitting program to clearly define applicable air quality requirements for affected facilities such as the South Texas Project. This program is commonly known as the Title V Federal Operating Permit Program and is administered by the state. The station's Federal Operating Permit grants authority to operate identified emission sources at the station in accordance with applicable permit and regulatory requirements. The station notified the Texas Commission on Environmental Quality of changes related to replacement of two tanks at the station's Fuel Island in 2014. The new applicable requirements associated with the changes will be incorporated into the permit in the next renewal. The Texas Commission on Environmental Quality conducted one onsite inspection in 2014 for compliance with applicable requirements for air quality as identified in the station's Federal Operating Permit. No findings or violations were identified.

Unlike conventional electrical generating stations, nuclear power plants do not burn fossil fuel for production of electricity. Therefore, the South Texas Project produces virtually no greenhouse gases or other air pollutants that are the typical by-products of industrial production processes. The use of emissions-free nuclear power is a significant contributor to the preservation of our community's clean air resources.

Photo By: Edmond Hardcastle

NONRADIOACTIVE WASTE MANAGEMENT

Solid waste management procedures for hazardous and non-hazardous wastes generated at the South Texas Project ensure that wastes are properly dispositioned in accordance with applicable federal, state, and local environmental and health regulations. By regulatory definition, solid waste includes solid, semi-solid, liquid, and gaseous waste material. The Texas Commission on Environmental Quality, which administers the Texas Solid Waste Disposal Act and also the federal Resource Conservation and Recovery Act program, is the primary agency regulating nonradioactive wastes generated at the South Texas Project. The Texas Commission on Environmental Quality regulates the collection, handling, storage, and disposal of solid wastes, including hazardous wastes. The transportation of waste materials is regulated by the United States Department of Transportation.

The South Texas Project is classified as a small quantity generator of industrial solid wastes. Texas Commission on Environmental Quality regulations require that industrial solid wastes generated at the South Texas Project be identified to the Commission. These are listed in the Texas Commission on Environmental Quality Notice of Registration for the South Texas Project. The registration is revised whenever there is a change in waste management practices at the site. Hazardous waste and Class I non-hazardous waste handling and disposal activities are summarized and documented in a waste summary report for the South Texas Project that is submitted annually to the Texas Commission on Environmental Quality. The station's five year Source Reduction and Waste Minimization plan for hazardous waste was updated and the associated executive summary submitted to the Texas Commission on Environmental Quality in 2014.

Hazardous waste accumulation at the South Texas Project in 2014 was limited to a maximum holding period of 180 days. The Resource Conservation and Recovery Act and Texas Solid Waste Disposal Act also requires the use of proper storage and shipping containers, labels, manifests, reports, personnel training, a spill control plan, and an accident contingency plan. Plant personnel routinely inspect areas throughout the site to ensure wastes are not stored or accumulated inappropriately.

Photo By: Connie Milliff

Station policies and regulations encourage the recycling, recovery, or reuse of waste when possible to reduce the amount of waste generated or disposed of in landfills. Approximately 89 percent of the industrial nonradioactive waste generated in 2014 at the South Texas Project was recycled or processed for reuse. (Reference Figure 4-1) Used oil, diesel fuels, electro-hydraulic fluid and used oil filters are sent to a recycling vendor for reprocessing. Empty polyethylene

drums are returned, when possible, to the original manufacturer for reuse. Non-hazardous blast grit and construction debris were also shipped for recycle in 2014. This included approximately 15,665 tons of concrete for recycle. In addition, the station supports recycling programs for cardboard, paper, aluminum, printer cartridges and plastic. Approximately 127 tons of scrap metal, in addition to tin and steel recovered from building demolitions, were removed from the station for recycle in 2014. The station continues to explore new areas where recycling may be expanded or initiated.

Nonradioactive solid waste that cannot be shipped for recycling is shipped for disposal. Municipal-type trash is transported to an offsite landfill. Hazardous waste accounts for only a small portion of the waste generated at the South Texas Project; however, minimization and reduction of hazardous waste generation where feasible remains an important goal at the station. Changes in the amount of hazardous waste shipped each year generally reflect differences in operation and maintenance activities that result in the generation of hazardous waste. Successful waste minimization and source reduction efforts by employees have allowed the South Texas Project to remain classified as a small-quantity generator since 2004. (Reference Figures 4-2 and 4-3)

2014 Matagorda County Household Hazardous Waste

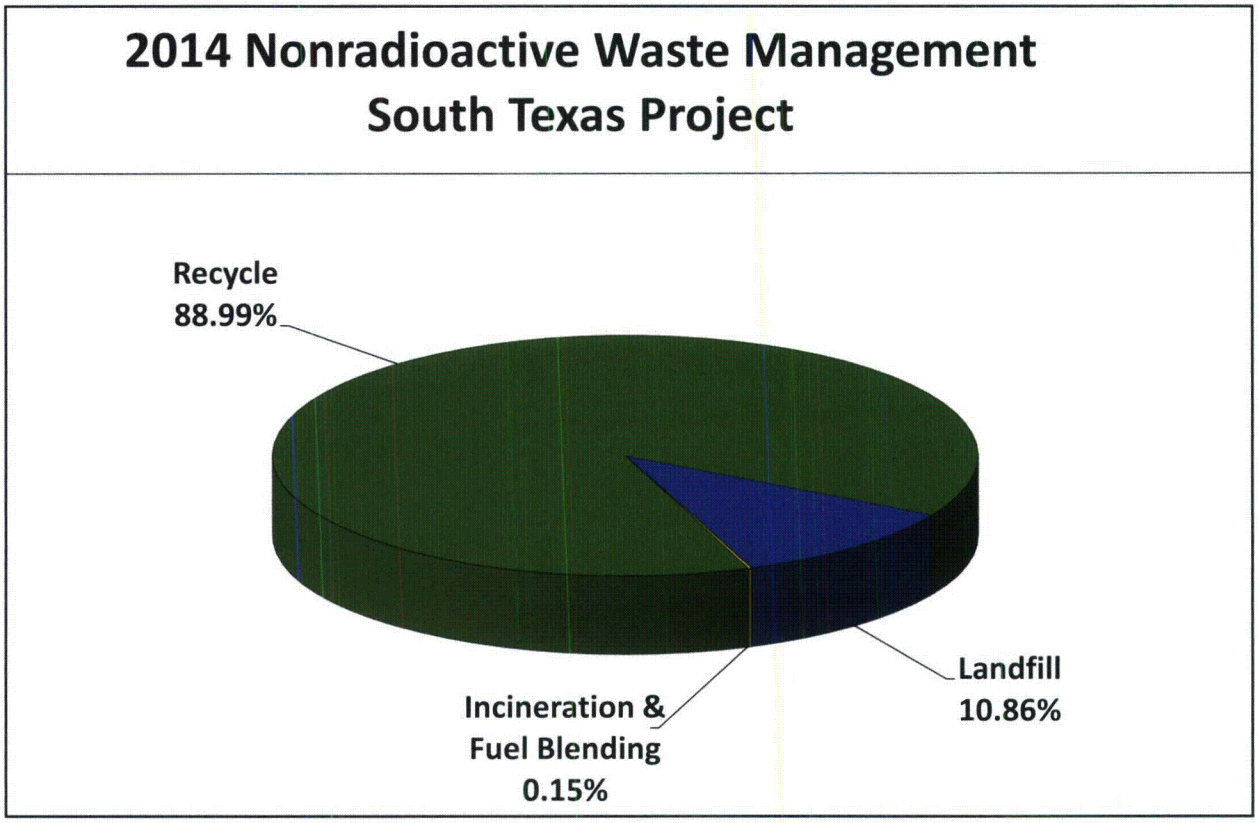

Figure 4-1

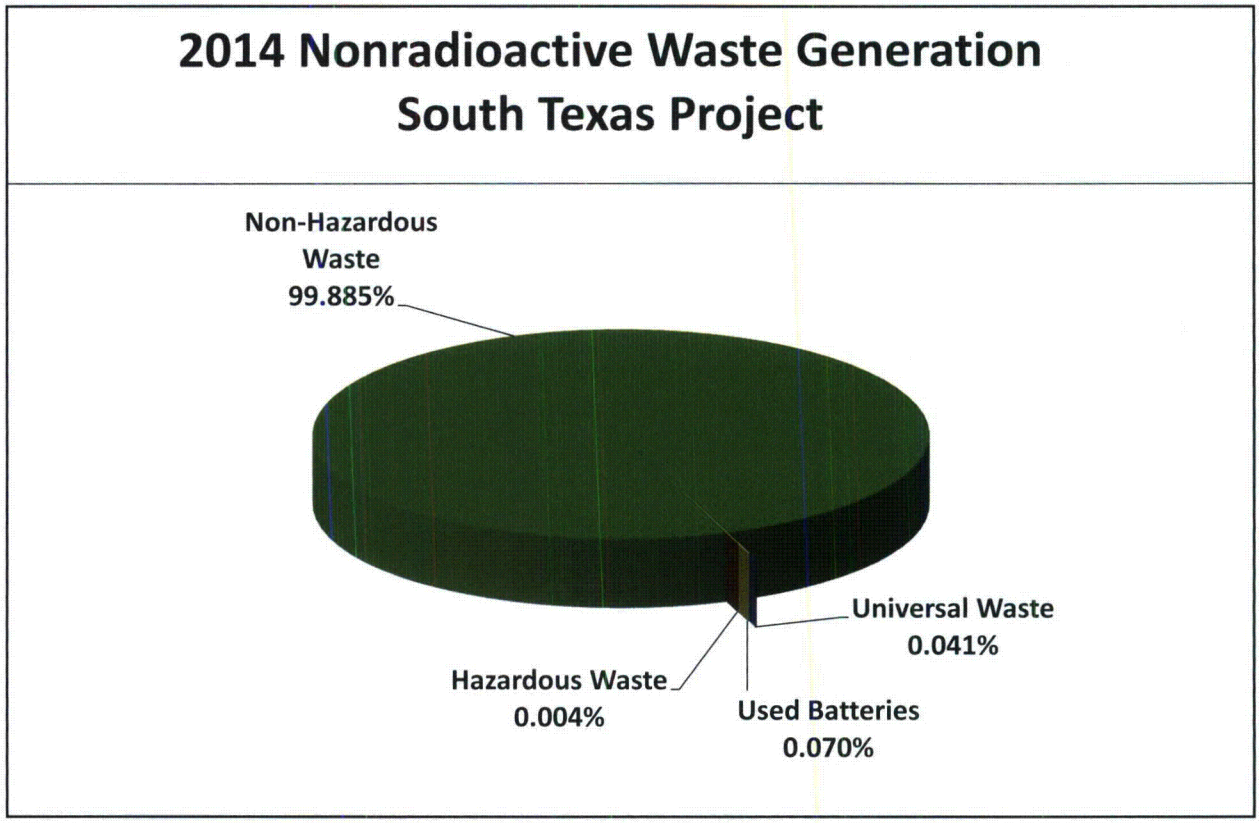

Figure 4-2

Figure 4-3

CHEMICAL CONTROL AND MANAGEMENT

The station's Integrated Spill Contingency Plan for the South Texas Project Electric Generating Station, updated and recertified in 2014, consolidates multiple federal and state requirements into one plan. The plan is implemented through standard site operating procedures and guidelines. The South Texas Project uses standard operating procedures, policies, and programs to minimize the generation of waste materials, control chemical use, and prevent spills. The South Texas Project also evaluates chemicals and products proposed for use at the station. Site procedures that implement the station's Integrated Spill Contingency Plan and the station's Chemical Control Program address the evaluation, storage, use, labeling, spill control, and disposal requirements of chemicals. These guidelines also assist in reducing waste generation, ensuring proper packaging for disposal and mitigating the consequences of inadvertent spillage.

The South Texas Project emphasizes awareness training for spill prevention and maintains station readiness to respond should a spill occur. Spill response team members receive annual refresher training in hazardous material incident response. No reportable, significant, or consequential spills occurred in 2014.

ENVIRONMENTAL PROTECTION PLAN STATUS

The South Texas Project's Environmental Protection Plan was issued in March of 1989 to protect nonradiological environmental values during operation of the South Texas Project. This report reviews Environmental Protection Plan non-compliances, if any, identified by the plant in 2014 and the associated corrective actions taken to prevent their recurrence. Potential nonconformities are promptly addressed, as identified, to maintain operations in an environmentally acceptable manner. The station uses its Corrective Action Program to document these conditions and track corrective actions to completion. Internal assessments, reviews and inspections are also used to document compliance.

This report also reviews non-routine reports submitted by plant personnel and any activities that involved a potentially significant unreviewed environmental question. A proposed change, test or experiment is considered to present an unreviewed environmental question if it concerns:

1) A matter that may result in a significant increase in any adverse environmental impact previously evaluated in the Final Environmental Statement related to the Operation of South Texas Project, Units 1 and 2 (Docket Nos. 50-498 and 50-499), environmental impact appraisals, or in any decisions of the Atomic Safety and Licensing Board; or,

2) A significant change in effluents or power level; or,

3) A matter not previously reviewed and evaluated in the documents specified in (1) above, that may have a significant adverse environmental impact.

No unreviewed environmental questions were identified in 2014.

Events that require reports to federal, state or local agencies, other than the United States Nuclear Regulatory Commission, are reported in accordance with the applicable reporting requirements. The United States Nuclear Regulatory Commission is provided with a copy of any such report at the time it is submitted to the cognizant agency. If a non-routine event occurs and a report is not required by another agency, then a 30-day report to the United States Nuclear Regulatory Commission is required by the Environmental Protection Plan. No such 30-day or other non-routine report was required in 2014.

Photo By: Gene Fisseler

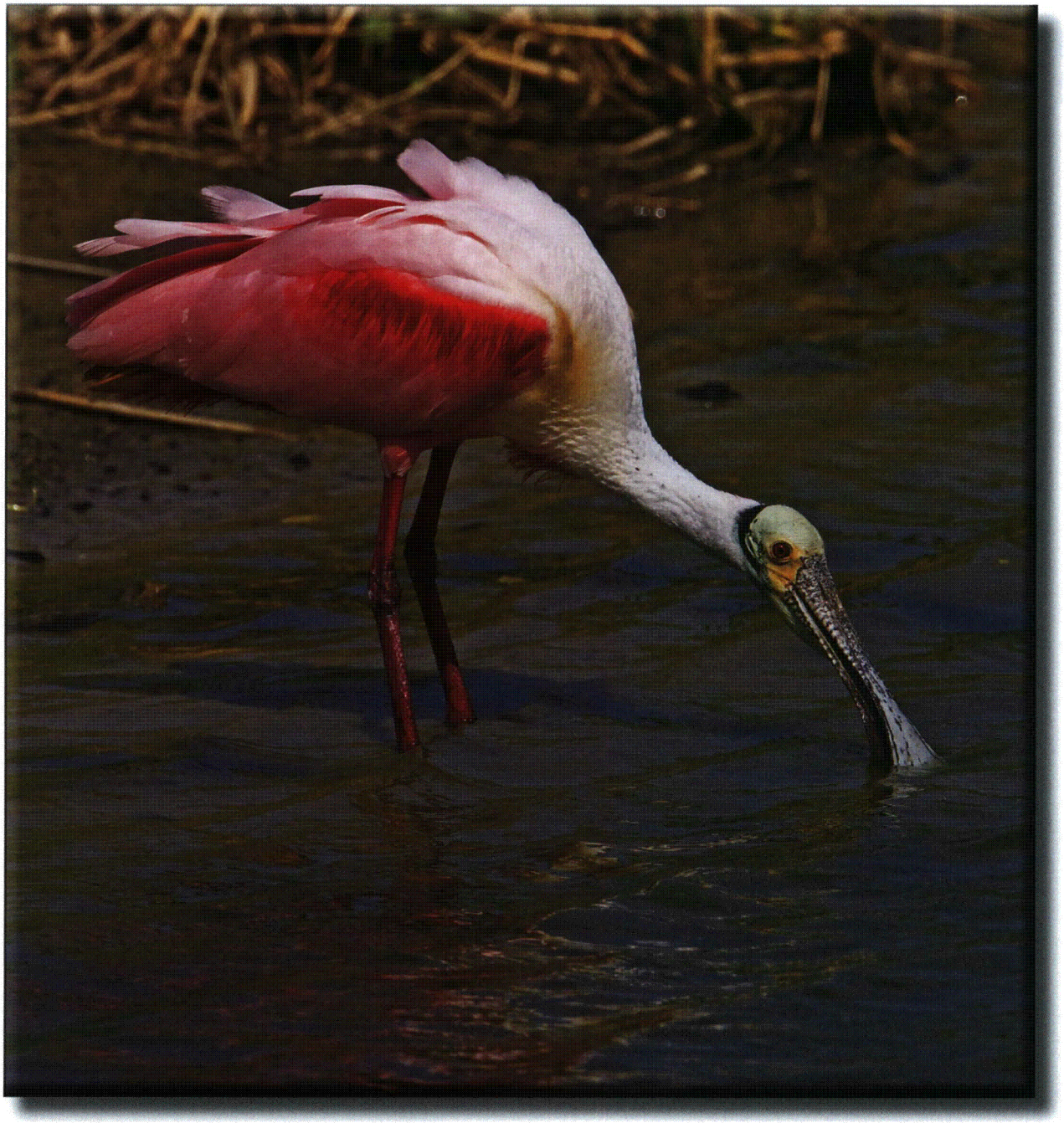

Photo By: Gary Parkey

Radiological Environmental Introduction and Summary

Photo By: Jodie Jankauskas

Chapter 5

Radiological Environmental Introduction and Summary

The Radiological Environmental Monitoring Program is designed to evaluate the radiological impact of the South Texas Project on the environment by collecting and analyzing samples for low levels of radioactivity. Measurements of samples from the different pathways indicate that there is no adverse effect offsite from the operation of the South Texas Project.

Only tritium and naturally occurring radioactive material were identified in the offsite environmental samples in 2014. Samples of fish and meat collected and analyzed show no plant-related nuclides were present. Water samples from the onsite drinking water supply from the deep aquifer and from offsite sampling stations on the Colorado River show only natural background radioactivity. The station also continues to monitor for radioactivity in onsite sediment of the Main Cooling Reservoir and ditches. Measurements of direct radiation onsite and offsite indicated no dose limits were exceeded.

Tritium is a radioactive isotope of hydrogen that is produced in the reactor and cannot be removed from effluents released to the Main Cooling Reservoir because it is a part of the water molecule. Due to the design of the Main Cooling Reservoir, the presence of tritium in various sloughs and ditches onsite and the shallow aquifer was expected. Tritium has been detected in these types of samples and the concentrations remain below the United States Environmental Protection Agency drinking water limits.

Photo By: Edmond Hardcastle and Aubrey Passafuma

In 2005, several nuclear plants discovered tritium in groundwater on site at levels exceeding the United States Environmental Protection Agency drinking water limits, mainly near underground process or effluent pipes. To determine if this were the case at the South Texas Project, test wells near underground process and effluent pipes were sampled and analyzed for tritium. Although some results were positive, all results were below the United States Environmental Protection Agency drinking water limits.

A sampling program was developed to monitor the tritium in the immediate area around the nuclear plants for long term trending. Wells are sampled semi-annually, annually, and once every five years, depending on location and the amount of tritium present. The tritium concentration remained below the United States Environmental Protection Agency drinking water limits in 2014 and within the design basis of the South Texas Project.

Analyses of the data collected from the implementation of the Radiological Environmental Monitoring Program indicates that the operation of the South Texas Project has no adverse offsite radiological impact.

Photo By: Gary Parkey

Photo By: Edmond Hardcastle and Aubrey Passafuma