PRELIMINARY ASSESSMENT REPORT

Lake Conestee
Greenville, Greenville County, South Carolina

Final

Prepared for:

U.S. Environmental Protection Agency
Region 4
61 Forsyth Street
Atlanta, Georgia 30303

Prepared by:

Oneida Total Integrated Enterprises (OTIE)
1220 Kennestone Circle, Suite 106
Marietta, Georgia 30066

Contract No. : EP-S4-15-01
TDD No. : 0005/OT-05-031
Date Submitted : August 15, 2019
EPA Task Monitor : Jeff Crowley
Telephone No. : 404-562-9587
Prepared by : Stacy Kowalski
Telephone No. : 770-366-6751

Approved by: JEFFERY CROWLEY

Digitally signed by JEFFERY CROWLEY
Date: 2019.08.15 15:22:10 -04'00'

Jeff Crowley, EPA
Site Assessment Manger

CONTENTS

Section Page

1.0 INTRODUCTION 1
2.0 SITE BACKGROUND 1

2.1 SITE DESCRIPTION 1
2.2 SITE OPERATIONS AND HISTORY 2
2.3 PREVIOUS RELEASES AND INVESTIGATIONS 3
2.4 GEOLOGY AND HYDROGEOLOGY 8
2.5 POTENTIAL SOURCE AREAS 9

3.0 PATHWAYS 9

3.1 GROUNDWATER MIGRATION PATHWAY 9
3.2 SURFACE WATER MIGRATION PATHWAY 10
3.3 SOIL EXPOSURE AND SUBSURFACE INTRUSION PATHWAY 10
3.4 AIR MIGRATION PATHWAY 11

4.0 SUMMARY AND CONCLUSIONS 11

APPENDIX

A FIGURES

1 Topographical Map
2 Aerial Map
3 Surface Water Pathway Map
4 1-Mile Target Distance Limit Map

ED_006262_00000228-00002

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) has tasked the Oneida Total Integrated Enterprises (OTIE) Superfund Technical Assessment and Response Team (START) to perform a Preliminary Assessment (PA) under Contract Number (No.) EP-S4-15-01, Technical Direction Document (TDD) No. 0005/OT-05-031, at the Lake Conestee site (the site), located in Greenville, Greenville County, South Carolina (SC).

Under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), the EPA tasked OTIE to conduct a PA at the site. The purpose of the PA is to review all available file material, assess the threat posed to human health and environment, update target populations, determine the need for additional investigation under CERCLA, and support the site evaluation using the Hazard Ranking System (HRS).

Specifically, the objectives of this PA are:

- Obtain, review, and summarize relevant file material including analytical data;
- Update target populations;
- Evaluate all available data and prepare the PA report, including the generation of an HRS score, and identifying and summarizing human and ecological target populations.

2.0 SITE BACKGROUND

This section describes the site and its present and past operations, waste disposal practices, regulatory history, previous investigations, and potential source areas.

2.1 SITE DESCRIPTION

The site is comprised of Lake Conestee on the Reedy River, and includes two former islands, plus a variably defined buffer (typically 25 to 50 feet) around the lake. The property surrounding the site is currently the Lake Conestee Nature Park that includes nature trails. The lake was created by the construction of a large stone masonry dam, the Lake Conestee Dam (LCD), in the late 1800s on the Reedy River (Ref. 1, p. 6). Lake Conestee is located in south-central Greenville County, South Carolina adjacent to the unincorporated community of Conestee, approximately 7 miles south of the City of Greenville. The site coordinates (using the LCD as the reference location) are 34° 46' 12" North latitude and 82° 20' 56" West longitude. The 145-

ED_006262_00000228-00003

acre site was purchased by a non-profit organization, The Conestee Foundation, Inc., (CFI) in 2000. The lake level, as controlled by the top of the dam elevation, originally had a water area of approximately 135 acres, not including the islands and buffer zones. Currently, the lake is estimated to be volumetrically over 95% silted-in (Ref. 2, p. 10). According to CFI, the lake is currently filled with roughly 2.8 million tons of contaminated sediments including, but not limited to: metals (arsenic, mercury, chromium, lead); semi-volatile organic compounds (SVOCs) (chrysene, fluoranthene); polycyclic aromatic hydrocarbons (PAHs) (benzo(a)pyrene, pyrene); pesticides (aldrin, endrin, 4,4-DDD, 4,4-DDE); and polychlorinated biphenyls (PCBs) (PCB-1254). Concentrations of many of the contaminants downstream are above human health and ecological screening standards, correlating with the sediments within Lake Conestee (Refs. 3; 4, p. 2; 5, p. 22). CFI indicates that the contamination of the sediments originated from hundreds of industrial point and non-point sources within the 65-square mile watershed. Many of the potential sources mentioned in documentation provided by CFI originated from industries dating back to the 1890s and includes most of old industrial Greenville (Ref. 3).

2.2 SITE OPERATIONS AND HISTORY

Lake Conestee is a 140-acre millpond that was created by the LCD, built in 1892 to power the Reedy River Factory (aka Conestee Mill) (Refs. 1, pp. 6-7; 2, p. 10; 3). Various mill operators have owned the Conestee Mill property, the dam, and the dam site, dating back to the early 1800s. The property was operated as a textile mill until the late 1960s. Standard Textile Mills, Inc., was the last operator of the property and sold to J&B Associates in March 1978. The property was operated as a mill warehouse and textile goods brokerage warehouse from 1978 until it was sold to CFI in 2000 (Ref. 1, pp. 1, 8).

In 1892, the City of Greenville constructed its first wastewater collection sewer, which discharged to the Reedy River without treatment at the river's confluence with Richland Creek, upstream of the LCD. In 1928, the City constructed its first wastewater treatment plant (the present-day Mauldin Road Wastewater Treatment Plant) on the Reedy River approximately 2 miles upstream of the LCD. Concentrated discharges to the Reedy River from these collection and treatment facilities accelerated the delivery of industrial and municipal contaminants to Lake Conestee, substantially contributing to the progressive degradation of the lake. Additionally, numerous industrial facilities within the watershed upstream were also discharging untreated wastewater during the late 1800s and early 1900s (Ref. 2, p. 10).

In 1925, Conestee Mills sued the City of Greenville over pollution in the Reedy River and lake area, caused by the City's discharge of raw and untreated sewage. The South Carolina Supreme Court, twice hearing the

ED_006262_00000228-00004

case, allowed the suit to proceed. The Supreme Court of South Carolina eventually ruled in favor of the City (Refs. 1, p. 7; 2, p. 11).

Limited modifications and repairs have been completed on the LCD throughout its history; however, little significant repairs or maintenance have been completed since at least the early 1970s. The hydroelectric capabilities of the dam were retired prior to 1970 (Ref. 1, p. 6).

CFI, with support from the South Carolina Department of Natural Resources (SCDNR) and the South Carolina Department of Health and Environmental Control (SCDHEC), acquired Lake Conestee and the LCD in 2000 to be included within the Lake Conestee Nature Park (Ref. 3). Lake Conestee is managed to minimize human contact with contaminants within Lake Conestee (no swimming, wading, fishing, or boating), and the surrounding park is managed to minimize risks to park patrons (no digging, restricted access to only designated trails) (Refs. 3; 4, p. 2).

SCDHEC and CFI have demonstrated through multiple environmental studies of the area and engineering assessments of the dam that the sediments should not be disturbed and remain constrained behind the dam based on the significant volume of sediments within the lake and the cost effectiveness of repairing the dam. If not contained by the dam, sediment would migrate downstream potentially posing a threat to municipal water supplies, natural resources, and private property assets along the Reedy River, lower Greenville and Laurens Counties. Lake Greenwood located approximately 53 miles downstream of the LCD supplies municipal water to the area (Ref. 3).

No additional information regarding the history or operations of the properties is currently available.

2.3 PREVIOUS RELEASES AND INVESTIGATIONS

The following summarizes previous releases and investigations that have been conducted at the site.

C.T. Main Assessment - 1979

In 1979, J&B Associates, then owner of Conestee Mill, commissioned the Charles T. Main Company to develop a proposal to examine the potential for re-development of the dam for hydroelectric production. The proposal was submitted to the U.S. Department of Energy "Small Hydro Program" to request a grant for a feasibility study of the viability of the hydroelectric capability of the existing Lake Conestee Dam. The proposal reported the average gross head at the site, from the top of dam to the tailrace outlet, was 37 feet and the 8-foot diameter penstock assembly was reported as "collapsed"; however, the dam was

ED_006262_00000228-00005

characterized as in "good condition". The proposal confirmed that the double-runner, horizontal-shaft, Francis turbine, with two draft tubes, was still in place within the power house of the mill at the time. The turbine had previously been direct-connected to the generator and exciter; however, the components had reportedly been destroyed by fire. A proposed design flow of 165 cubic feet per second (cfs), would generate 400 kilowatts of power at design capacity. At a production rate of 8,200 hours per year, the proposal suggested the hydroelectric capability of 3.3 million kilowatt-hours of power per year (Ref. 5, p. 24). No further information related to this assessment is currently available.

Corps of Engineers Assessment - 1998-2007

The Charleston District of the U.S. Army of Corps of Engineers (COE) was contacted in 1998, prior to creation of CFI or the acquisition of the dam and lake property by the Foundation, regarding potential programs for assessing Lake Conestee and the condition of the LCD. In 2001, the COE approved a project focused on repairs to specific features of the dam, to be carried out through the COE Aquatic Ecosystem Restoration (AER) program.

The proposed project included the following components:

- Planning and Design Analysis
- Real Estate Plan
- Environmental Assessment
- Finding of No Significant Impact
- Expanded Fact Sheet
- Draft Project Cooperation Agreement

The COE assessment and design project was proposed to CFI in early 2007 and focused on the two primary orifices in the dam: the former penstock and the west sluice gate. The proposed work would have installed permanent hardened solutions to close and control these conduits. However, by the time the COE submitted the proposal, the Targeted Brownfields Assessment (TBA) between CFI and SCDHEC was nearly completed, the Voluntary Cleanup Contract (VCC) was nearly ready for certification, and SCDHEC had reclassified the dam as a Class 2 - Significant Risk structure (Ref. 9, p. 14). As a result, a more comprehensive approach to dam assessment and rehabilitation than the COE had proposed was required. CFI submitted a letter to the Charleston District of the COE in mid-2007 requesting that they suspend further work on its proposed repair project at that time (Ref. 5, pp. 25-27).

ED_006262_00000228-00006

Voluntary Cleanup Contract and Targeted Brownfields Assessment - 2000

CFI purchased the property and entered into a VCC with SCDHEC in 2000. Under the agreement, CFI conducted a TBA under SCDHEC Bureau of Land and Waste Management (BL&WM) oversight. At the time of purchase, the dam was allowing 100% of the river flow to pass through the penstock orifice in the bottom of the dam. CFI completed a temporary repair to the penstock in June 2001; however, during the 12 months that the orifice was open, the volume of contaminated sediment was eroded from the lake amounted to over 92,000 cubic yards. The TBA scope required the assessment of downstream river sediments as far as 5 miles downstream. Contaminants including, but not limited to: metals (arsenic, mercury, chromium, lead); semi-volatile organic compounds (SVOCs) (chrysene, fluoranthene); polycyclic aromatic hydrocarbons (PAHs) (benzo(a)pyrene, pyrene); pesticides (aldrin, endrin, 4,4-DDD, 4,4-DDE); and polychlorinated biphenyls (PCBs) (PCB-1254) were detected at levels above benchmark values in Lake Conestee. Concentrations of many of the contaminants downstream were above human health and ecological screening standards, correlating with the sediments within Lake Conestee. Based on historical mill operations, CFI speculated the contaminant migration was a result of routine intentional releases of sediment through two sluice gates in the dam dating back to the 1890s (Refs. 3; 4, p. 2; 5, p. 22).

Natural Resource Conservation Service Assessment and Repair - 2001

In June 2000, the penstock orifice of the LCD spontaneously opened in a "sunny day" event. A gate on the upstream side of the penstock turned out to be a submerged log-jam. The interwoven jam of large and small woody debris had provided sufficient hydraulic resistance of flow to maintain a continuous top-of-dam flow condition. During ordinary climatic conditions, the supply of woody debris flowing downriver had replenished the log-jam. However, due to an exceptionally severe and long-duration drought beginning in mid-1998, the supply of woody debris was diminished and the log-jam eventually decayed, allowing a sudden opening of the penstock orifice. With the penstock orifice open, the river was suddenly hydraulically re-connected with its natural base-level near the bottom elevation of the dam. As a result, the river rapidly eroded a "canyon" upstream into the lake sediments. Over the course of the next 12 months (June 2000 - June 2001) the canyon extended nearly 1 mile upstream within the lake, resulting in approximately 90,000 cubic yards of contaminated sediment eroding from the lakebed and being subsequently conveyed downstream. The Natural Resource Conservation Service (NRCS) and the Foothills Resource Conservation and Development Council (FRCDC) assisted in development and implementation of a cost-effective technical solution to repair the open orifice through a federal grant with the goal of mitigating the loss of sediment from the lake to improve downstream water quality and reduce stream health impacts. NRCS engineers conceived a simple, temporary solution in the form of a wooden "plate", 8 feet (ft) x 14 ft x 1.5 ft thick, to be positioned on the upstream side of the orifice. The plate was

ED_006262_00000228-00007

constructed of treated 8 inch (in.) x 8 in. oak beams in two crossing layers and bolted together. A 1-inch steel cable was tethered to the top of the plate to lower it into position and to enable removal in the future if needed. The plate was installed on June 21, 2001 (Ref. 5, pp. 24-25).

Targeted Brownfields Assessment Follow-Up Investigation – 2003

A follow up TBA was conducted by Zapta Engineering, Inc., and Pinnacle Consulting Group, Inc., at the direction of the COE in order to assess areas of the lake that had not previously been investigated during the initial TBA (Ref. 2, p. 8). Five new areas were investigated: North Lake Area, West Bay Area, Taylors Island/West Delta Area, East Bay and Crescent Slough, and the South Bay Area/Reedy River (Ref. 2, pp. 16-18). Sediment, soil, surface water, and fish tissue (benthic) samples were analyzed for a suite of analytes including volatile organic compounds (VOCs), SVOCs, PAHs, pesticides, PCBs, and Target Analyte List (TAL) metals (Ref. 2, p. 16).

No VOC or SVOC constituent exceeded screening criteria for any of the soil samples; however, concentrations of PAHs (benzo(a)pyrene, pyrene); pesticides (dieldrin, 4,4-DDT, 4,4-DDE, 4,4-DDD); and metals (arsenic, mercury, chromium) exceeded human health and ecological screening criteria. Sediment samples indicated that no VOCs, SVOCs, PAHs, pesticides, or PCBs exceeded the screening criteria; however, TAL metals exceeded the ecological screening criteria. Surface water samples indicated that no VOCs, SVOCs, PAHs, or pesticides exceeded the screening criteria; however, both human health and ecological criteria were exceeded by the detection of Aroclor-1260 in one surface water sample. The fish tissue samples indicated the pesticide dieldrin in five of the ten samples and mercury in two of the ten samples (Ref. 2, pp. 27-28).

Lake Conestee Fish Tissue Analysis – 2005

In May 2005, Clemson University collected 10 fish tissue samples from Lake Conestee for analysis. Results of the analysis indicated the presence of mercury and chlordane at levels that initiated a "Do Not Eat" advisory for largemouth bass, redear sunfish, and crappie from the lake (Ref. 6, pp. 3, 25).

Ecological Risk Assessment – 2006

In January 2006, North Winds, Inc., and Blue Ridge Environmental Consulting, Inc., submitted an Ecological Risk Assessment (ERA) to CFI. The scope of the ERA was specifically defined by SCDHEC following the completion of the two TBA (2001 and 2003) of the Lake Conestee property. The purpose of the ERA was to identify constituents that may pose unacceptable risk to ecological receptors and that may

warrant consideration for further study, potential remedial action, and/or special management activities. Analytical results were derived from the two previous TBA and no sampling was conducted during the ERA.

The ERA concluded that long-term management of the site should not include significant remedial action or site disturbance. Due to the size and complex nature of the site, active remediation would be both technically problematic and cost prohibitive. In addition, the ERA concluded that contaminated sediment conditions upstream would render any stabilization, capping, or removal action at least partly ineffectual. Likewise, any removal action could expose sediments that are significantly more contaminated than the sediments that are currently at the soil or water interfaces, potentially resulting in more serious releases to the environment. The ERA recommended that the site be managed as a passive, natural remediation site; however, the environmental characteristics and the concomitant ecological risks required significant monitoring and management attention for many decades or centuries to come (Ref. 7, pp. 1, 13, 63). The ERA was revised in April 2007 to include revised tables, figures, and appendices (Ref. 8).

South Carolina Dams and Reservoirs Safety Act - 2006

In August 2006, Mr. Steve Bradley, Director of the SCDHEC Dam Safety Program, inspected the LCD. Based on the inspection, and a review of results from the TBA studies, SCDHEC determined that the dam should be up-classified from a Class 3 "Low Risk" condition to a Class 2 "Significant Risk" condition. This action was based on the concerns associated with contamination of sediments behind the dam as documented through the TBA process. The reclassification recognized the potential impacts to downstream natural resources and downstream potable water resources in the case of a catastrophic failure of the LCD. The higher risk classification mandated the development of an Emergency Action Plan (EAP). The EAP was developed and submitted to SCDHEC's Dam Safety Program in June 2006 (Ref. 5, p. 27).

Limited Assessment by CFI – 2008

In 2008, CFI retained Hargett Resources, Inc. to conduct a Limited Assessment as a first step in developing a long-term care plan for the LCD. The limited assessment included detailed inspections of the dam, identification of priority features requiring repair or corrective action, a survey of the structure, a review of the structural integrity of the dam, a flood study assessing the impacts of catastrophic failure, and development of an EAP. The results of these activities were published in a report in November 2008 (Refs. 5, p. 27; 9, pp. 19-45).

ED_006262_00000228-00009

Feasibility Study of Alternatives for Rehabilitation of Lake Conestee Dam - 2012

A grant was provided by EPA and SCDHEC to CFI to assess the integrity of the LCD. The assessment of the dam was conducted from 2011-2012 by CFI and included documentation of the condition of the dam, emergency repairs, safety enhancements, and a study of long-term repair alternatives. The assessment confirmed that the dam is in urgent need of major rehabilitation or replacement due to age, deterioration of the stone masonry, accumulation of contaminated sediments upstream, and seepage of toxic metals through the dam. Additionally, the assessment confirmed that neither remediation of the sediments, nor removal of the dam are viable options for CFI. Dam inspections by both private engineering consultants and SCDHEC engineers confirmed numerous significant defects and deficiencies of the dam attributable to age and condition (Ref. 5, p. 18). SCDHEC dam safety engineers inspected the dam in late 2016 and determined the dam to be in "POOR" condition (Ref. 3).

Final Pre-Design Study for the Rehabilitation and/or Replacement of the LCD - 2018

In partnership with SCDHEC, CFI retained an expert dam engineering firm to perform a rigorous, independent, and objective review of all viable options for dealing with the dam. This study should identify the final solution for the LCD, intended to protect both Lake Conestee and downstream resources over a 100-year performance period. Selection of the best solution is the last step required prior to the final design and construction of a new dam (Ref. 10). A copy of this report is not currently in the file material.

2.4 GEOLOGY AND HYDROGEOLOGY

Lake Conestee is situated in the Piedmont physiographic province of South Carolina which is broad and plateau-like with elevations ranging from approximately 400 to 1,200 feet above mean sea level (amsl). More specifically, Lake Conestee is located in the Inner Piedmont belt of the Piedmont geologic province characterized by a northeast trending belt of igneous and metamorphic (crystalline) bedrock. The predominant rock types are highly metamorphosed gneiss and schist intruded by igneous rock. A variable thickness of regolith extends from the ground surface to the underlying bedrock. Regolith is characterized by a mixture of unconsolidated material, including saprolite (in-place weathering byproduct of bedrock), alluvium (surface water deposits), colluvium (slope wash and other mass wasting deposits), and the soils derived from these materials. The regolith contains zones of both saturated and unsaturated conditions; although, unconfined conditions predominate in the regolith/alluvium. Groundwater is recharged as a direct effect of precipitation and infiltration from topographically higher areas. Discharge areas are generally near streams in valley bottoms. Groundwater in the regolith is stored and transmitted through openings (pores) between soil and rock particles that supply and recharge groundwater to the underling fractured bedrock.

The regolith has a low permeability resulting in the storage of considerable volumes of groundwater released slowly to fractures in the underlying bedrock. A local flow system exists within the regolith often providing preferential flow paths in coarser lenses and in the remnants of geologic structural features in the weathered rock. Groundwater in the bedrock is generally restricted to the upper bedrock zone (less than 200 feet below ground surface) because fractures tend to decrease in frequency and the degree of openness at depth (Ref. 2, pp. 12-13).

2.5 POTENTIAL SOURCE AREAS

The potential source for the Lake Conestee site is contaminated sediments within the 135-acre lake and contaminated soil around the lake. The lake has been impacted from both point (industrial and municipal discharges) and non-point sources from throughout the 65-square mile watershed upstream of the lake, including historical agriculture, and construction and development activities. The Bramlett Road manufactured gas plant (MGP) is located upstream of and hydraulically connected to the LCD, and many of the contaminants found in LCD are similar to those found in historical MGP site studies (Ref. 8, p. 17).

3.0 PATHWAYS

This section discusses the groundwater migration, surface water migration, soil exposure, and air migration pathways associated with an HRS evaluation, the targets associated with each pathway, and pathway-specific conclusions.

For the purposes of HRS, elevated is defined as any detection greater than an undetected background value or three times greater than a detected background value. Screening values are used for reference purposes to determine whether Level I or Level II concentrations are present.

3.1 GROUNDWATER MIGRATION PATHWAY

The groundwater pathway is of minimal concern. No groundwater sampling has been conducted during investigations associated with Lake Conestee. It is assumed that private wells are present within 4 radial miles of the property; however, the exact locations are unknown. A well survey should be conducted during the Site Inspection (SI) to determine the presence or absence of wells within the target distance limit. Municipal drinking water is supplied from a surface water intake in Lake Greenwood located approximately 53 miles downstream of Lake Conestee.

ED_006262_00000228-00011

3.2 SURFACE WATER MIGRATION PATHWAY

The surface water pathway is of primary concern at the site. The watershed above Lake Conestee is approximately 65-square miles, which includes the majority of the City of Greenville, most of the historical industrial areas of Greenville, and the Mauldin Road Wastewater Treatment Plant, located approximately 2 miles upstream. The treatment plant has been the City of Greenville's primary wastewater treatment facility since it was constructed in 1928 (Ref. 2, p. 10). Prior to construction of the treatment plant, the City's raw and untreated sewage was discharged further upstream, at the confluence of the Reedy River and Richland Creek, in present-day Cleveland Park. Numerous textile mills and mill villages within the watershed historically discharged untreated waste streams directly to the Reedy River and its tributaries upstream of Lake Conestee (Ref. 7, p. 14).

The surface water pathway begins at the LCD [Probable Point of Entry (PPE) 1] and continues into the Reedy River. The Reedy River flows in a generally southeasterly direction. The surface water pathway ends at the 15-mile target distance limit (TDL) within the Reedy River, just south of SC Highway 418 (see Figure 3). Greenwood Lake, the municipal water supply, is located approximately 53 miles downstream of LCD.

Drinking water for the area is obtained from a surface water intake in Greenwood Lake approximately 53 miles downstream from the LCD.

Fish tissue samples were collected from benthic fish within Lake Conestee in 2005 and indicated the presence of mercury and dieldrin at levels above SCDHEC benchmarks. These contaminants are also present at elevated levels in sediment samples previously collected from the lake in 2001 (Ref. 2, pp. 24-25). The contaminants in the fish tissue samples prompted an advisory against consumption of largemouth bass, redear sunfish, and crappie from the lake (Ref. 6, pp. 3, 25).

No state or federally listed threatened or endangered species are known to occur within the Lake Conestee site. The South Carolina Threatened and Endangered Species Inventory has recorded no listed species within a 5-mile radius of the site (Ref. 7, p. 19). Wetland frontage totaling approximately 27 miles is present along both sides of the 15-mile TDL of the site (see Figure 3).

3.3 SOIL EXPOSURE AND SUBSURFACE INTRUSION PATHWAY

The soil exposure and subsurface intrusion pathway is of concern. No VOC or SVOC exceeded screening criteria for any soil samples collected; however, concentrations of PAH, pesticide, and metal constituents

ED_006262_00000228-00012

exceeded background levels as well as human health and ecological screening criteria as documented in the 2001 and 2003 TBA. These constituents include but are not limited to: benzo(a)pyrene and pyrene (PAHs); dieldrin, 4,4-DDT, 4,4-DDE, and 4,4-DDD (pesticides); and arsenic and chromium (metals). No subsurface intrusion samples have been collected at the site.

The Lake Conestee Nature Park is a recreational area that allows visitors; however, there are restrictions against digging in soil around the lake and leaving the nature trails within the park to help limit access to soils on the property. There are 4 full time, 6 part time, and 6 FTE workers at the property. There are no residential properties located on areas of contaminated soil within the park. Two daycare facilities are located within ¼ to ½ mile TDL of the LCD. Nearby population is distributed as follows: 0 to ¼-mile, 298 persons; ¼ to ½-mile, 418 persons; ½ to 1-mile, 2,090 persons.

3.4 AIR MIGRATION PATHWAY

The Air Migration Pathway is of minor concern. No air sampling has been conducted during site investigations.

4.0 SUMMARY AND CONCLUSIONS

Lake Conestee is in south-central Greenville County, South Carolina adjacent to the unincorporated community of Conestee, approximately 7 miles south of the city of Greenville. The lake level, as controlled by the top of the dam elevation, originally had a water area of approximately 135 acres, not including islands and buffer zones. Currently, the lake is estimated to be volumetrically over 95% silted-in and filled with roughly 2.8 million tons of contaminated sediments from hundreds of industrial point and non-point sources within the 65-square mile watershed. The contaminated sediments originated from industries dating back to the 1890s and includes most of old industrial Greenville.

In 2000, CFI purchased the property and entered into a VCC with SCDHEC and conducted a TBA. Sampling included the assessment of Lake Conestee sediments and 5-miles of downstream river sediments. Contaminants including but not limited to: metals (arsenic, mercury, chromium, lead); SVOCs (chrysene, fluoranthene,); PAHs (benzo(a)pyrene, pyrene); pesticides (aldrin, endrin, 4,4-DDD, 4,4-DDE); and PCB-1254 were detected at levels above benchmark values in Lake Conestee. Concentrations of many similar contaminants downstream were also above human health and ecological screening standards, correlating with the sediments within Lake Conestee. Based on historical mill operations, CFI speculated the contaminant migration was a result of routine intentional releases of sediment through two sluice gates in the dam dating back to the 1890s.

ED_006262_00000228-00013

A follow-up TBA was conducted in 2003 that included five new areas of investigation in the lake: North Lake Area, West Bay Area, Taylors Island/West Delta Area, East Bay and Crescent Slough, and the South Bay Area/Reedy River. Sediment, soil, surface water, and fish tissue (benthic) samples were collected and analyzed for VOCs, SVOCs, PAHs, pesticides, PCBs, and Target Analyte List (TAL) metals. No VOC or SVOC constituents exceeded screening criteria in soil samples; however, PAHs (benzo(a)pyrene, pyrene); pesticides (dieldrin, 4,4-DDT, 4,4-DDE, 4,4-DDD); and metals (arsenic, mercury, chromium) exceeded both human health and ecological screening criteria. The sediment samples collected indicated no VOCs, SVOCs, PAHs, pesticides, or PCBs above screening criteria; however, TAL metals exceeded the ecological screening criteria. Surface water samples indicated that no VOCs, SVOCs, PAHs, or pesticides exceeded the screening criteria; however, both human health and ecological criteria were exceeded by the detection of Aroclor-1260 in one surface water sample. Fish tissue samples indicated the pesticide dieldrin in five of the ten samples and mercury in two of the fish tissue samples. No additional sampling has been conducted at the site.

The Lake Conestee Nature Park is managed to minimize human contact with contaminants within and surrounding the lake including no swimming, wading, fishing, or boating, no digging in soils and access to the area is restricted to designated trails. SCDHEC and CFI have demonstrated through multiple environmental studies of the area and engineering assessments of the dam that the sediments should not be disturbed and remain constrained behind the dam based on the significant volume of sediments within the lake and the cost effectiveness of repairing the dam. If not contained by the dam, sediment would migrate downstream posing a threat to municipal water supplies, natural resources, and private property assets along the Reedy River, lower Greenville and Laurens Counties. Lake Greenwood located approximately 53 miles downstream of the LCD supplies municipal water to the area.

Based on a thorough review of available file material and updating existing target value information, further CERCLA investigation is recommended at the site to identify current contamination concentrations in the sediments in the Lake and downstream in the Reedy River. This should be done via a Site Inspection (SI). Additionally, further investigation into upstream sources, both current and historical, needs to be conducted. Potential contaminants of concern at the site are PAHs, metals and PCBs.

ED_006262_00000228-00014

REFERENCES

1. Hargett Resources, Inc. Environmental Consultants (HRI) and Caliber Engineering Consultants LLC. Final Report: Feasibility Study of Alternatives for Rehabilitation of Lake Conestee Dam. September 30, 2012.

2. Zapta Engineering, Inc. and Pinnacle Consulting Group, Inc. Targeted Brownfields Assessment Follow-up Investigation, Lake Conestee. April 3, 2003.

3. Dave Hargett, The Conestee Foundation. Case Statement - Protection of Upstate Water Resources, Water Supply of Greenwood, and Public Health and Environment: The Lake Conestee Dam (LCD) Project. LCD Case Statement 181201. December 18, 2001.

4. David L. Hargett, Ph.D., Founder and Executive Director, Lake Conestee Nature Park. Letter to Mary Walker, Acting Regional Administrator, EPA and Franklin Hill, Chief, Superfund Division, EPA. Subject: Lake Conestee Site – Follow-up, w/ EPA & SCDHEC Teams, 181204. December 13, 2018.

5. Hargett Resources, Inc. and Caliber Engineering Consultants, Inc. Final Report, Feasibility Alternatives for the Rehabilitation of Lake Conestee Dam. September 30, 2012.

6. Clemson University. Lake Conestee Fish Tissue Analysis. July 2005.

7. North Wind, Inc. and Blue Ridge Environmental Consulting, Inc. Final Report, Ecological Risk Assessment, Supplement to Targeted Brownfields Assessment, Lake Conestee. January 12, 2006.

8. North Wind, Inc. and Blue Ridge Environmental Consulting, Inc. Revised Final Report, Ecological Risk Assessment, Supplement to Targeted Brownfields Assessment, Lake Conestee. April 16, 2007.

9. Hargett Resources, Inc. Final Report, Limited Assessment of Lake Conestee Dam. November 30, 2008.

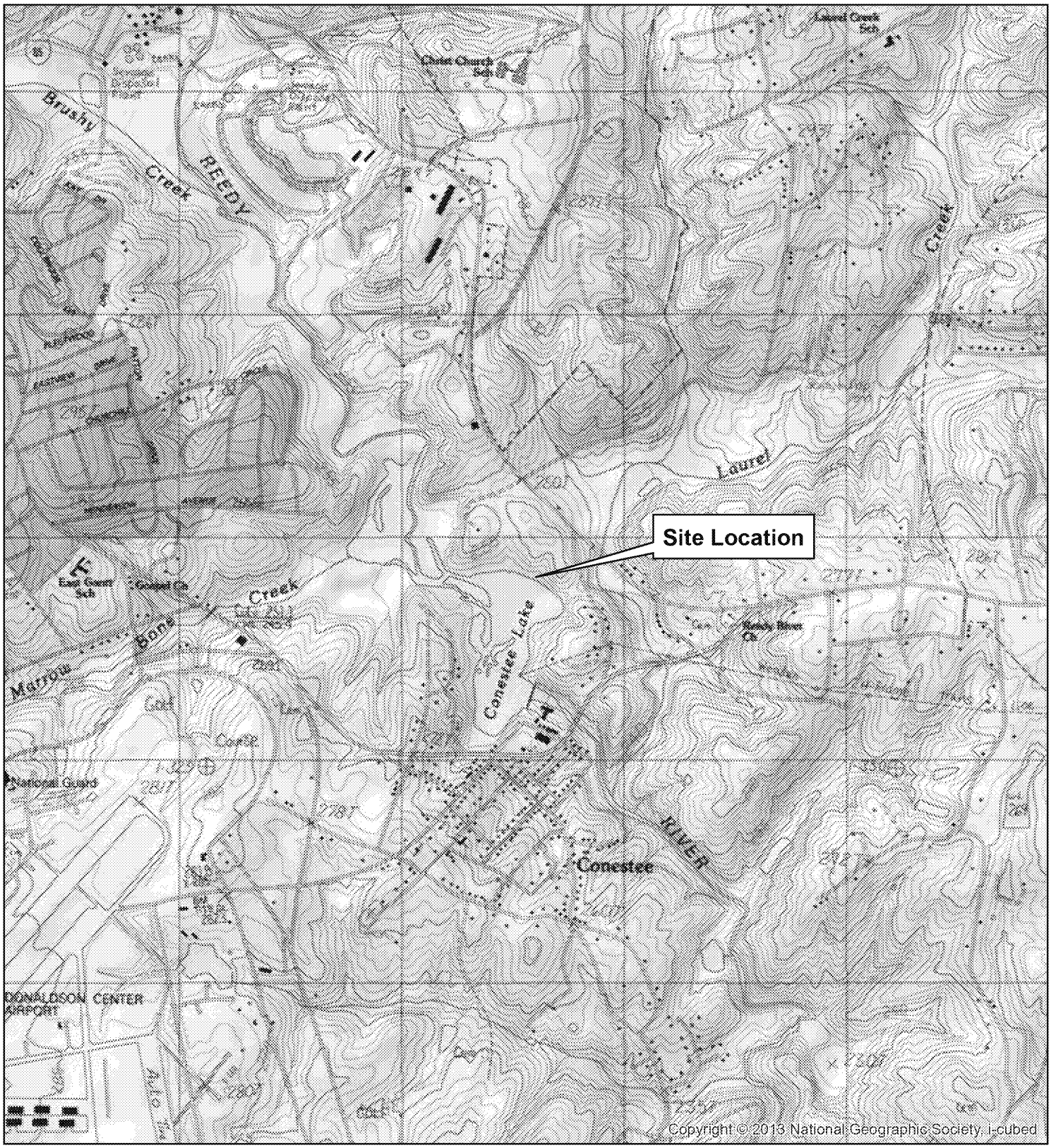
10. The Conestee Foundation, Inc. Case Statement – Protection of Upstate Water Resources, Water Supply of Greenwood, and Public Health and Environment: The Lake Conestee Dam Project. December 18, 2001.

ED_006262_00000228-00015

APPENDIX A

FIGURES

ED_006262_00000228-00016

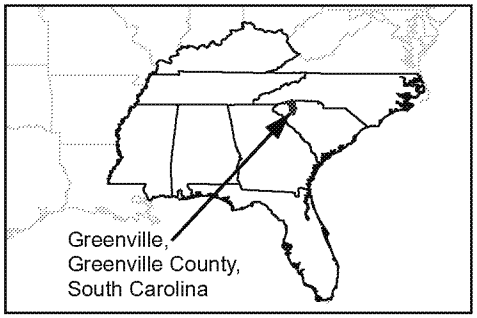


Source: ArcGIS Online Services, US Topo Maps

Disclaimer: This map is intended for visual orientation use only. In no way is this map to be used for precise locational use.

N

0 1,000 2,000 Feet



United States Environmental Protection Agency

LAKE CONESTEE
GREENVILLE, GREENVILLE COUNTY,
SOUTH CAROLINA
TDD No: 0005/OT-05-031

FIGURE 1
TOPOGRAPHICAL MAP

OTIE
An Oneida Nation Company

G:\GIS_Workspace\2015 Projects\2015105 - Lake Conestee\Figure 1 - Topographical Map.mxd

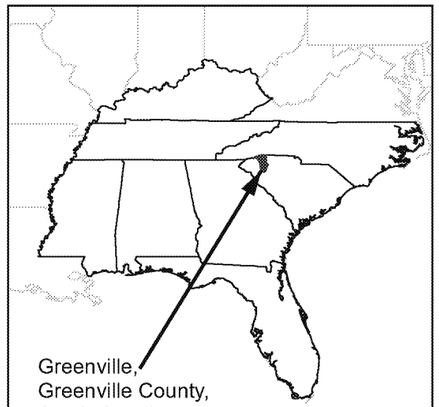
Aerial Basemap Source: Bing Maps

Legend

N

0 150 300 600

Feet



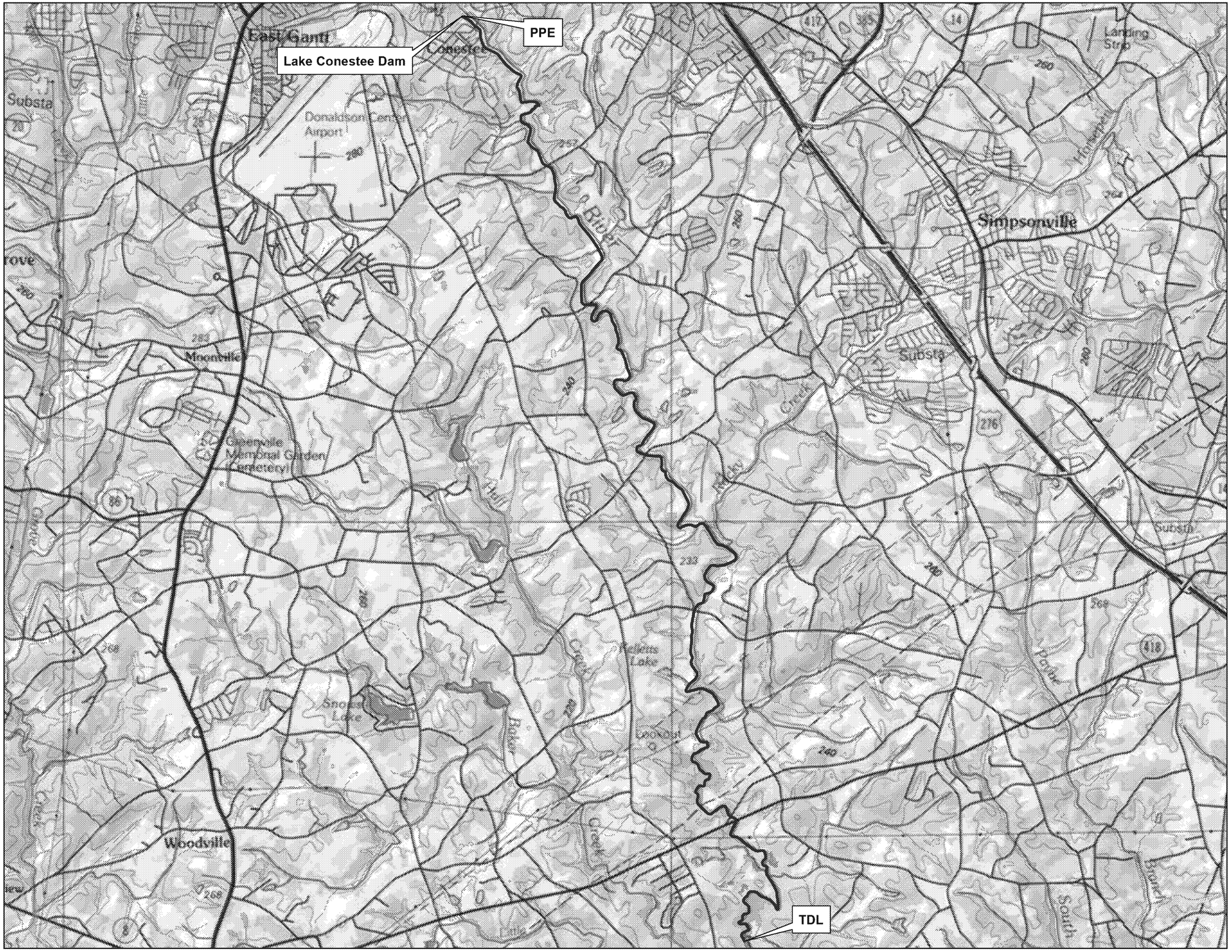
United States Environmental Protection Agency

LAKE CONESTEE
GREENVILLE, GREENVILLE COUNTY, SOUTH CAROLINA
TDD No: 0005/OT-05-031

FIGURE 2
SITE LOCATION MAP

OTIE
An Oneida Nation Company

G:\GIS_Workspace\2015 Projects\2015105 - Lake Conestee\Figure 2 - Site Location Map.mxd



Aerial Basemap Source: USA Topo Map

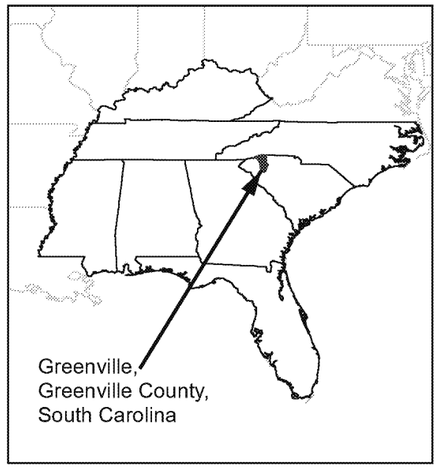
Legend

- Surface Water Pathway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

PPE = Probable Point of Entry
TDL = Target Distance Limit

0 5,000 10,000
Feet

N



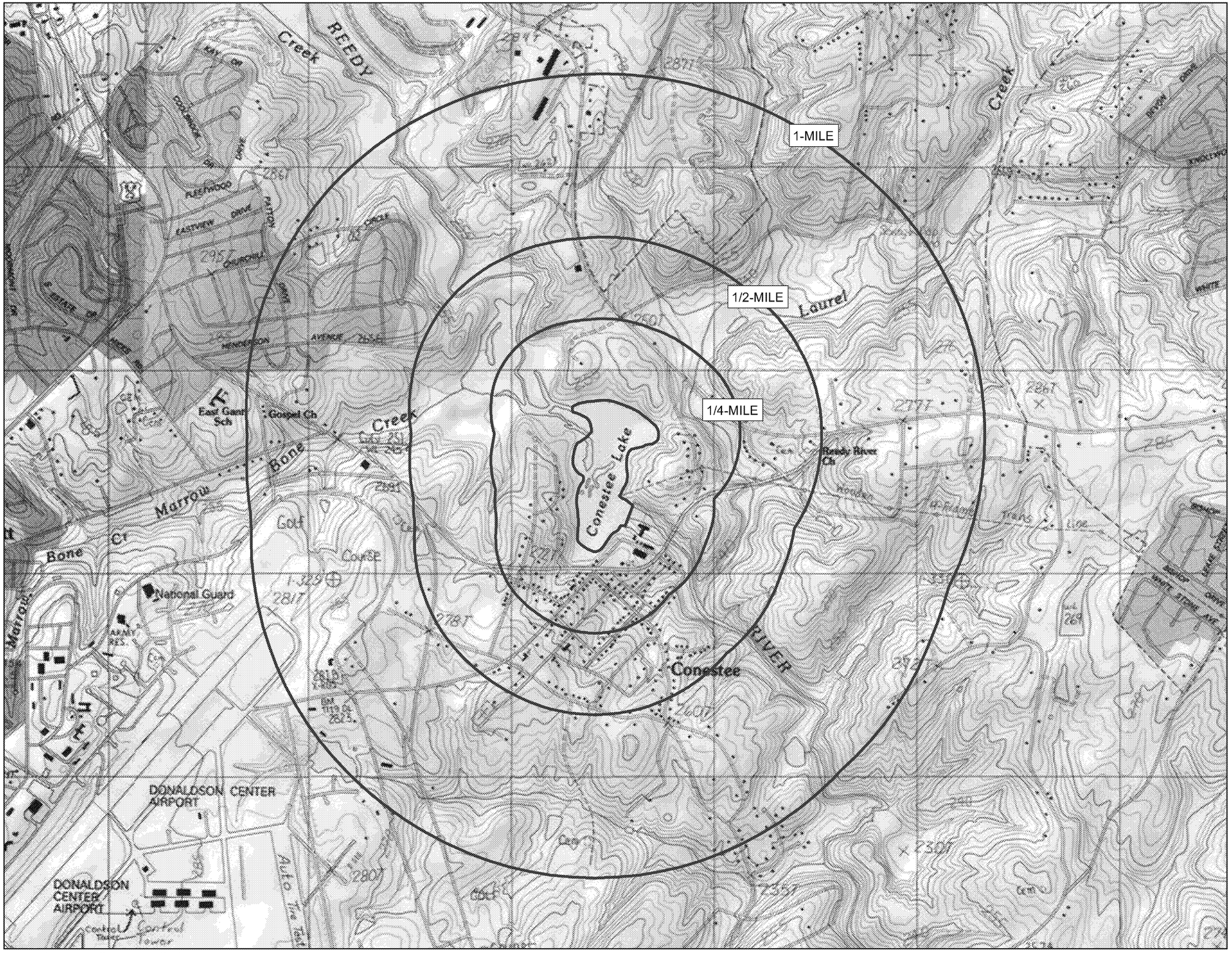
United States Environmental Protection Agency

LAKE CONESTEE
GREENVILLE, GREENVILLE COUNTY, SOUTH CAROLINA
TDD No: 0005/OT-05-031

FIGURE 3
15-MILE SURFACE WATER PATHWAY MAP

OTIE
An Oneida Nation Company

G:\GIS_Workspace\2015 Projects\2015105 - Lake Conestee\Figure 3 - Surface Water Pathway Map.mxd



Aerial Basemap Source: USA Topo Map

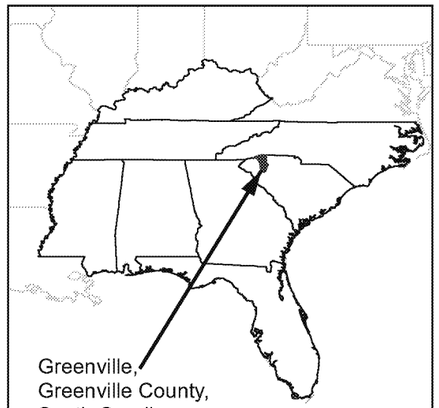
Legend

Radius Ring

N

0 1,500 3,000

Feet



United States Environmental Protection Agency

LAKE CONESTEE
GREENVILLE, GREENVILLE COUNTY, SOUTH CAROLINA
TDD No: 0005/OT-05-031

FIGURE 4
1-MILE TARGET DISTANCE LIMIT FOR LAKE CONESTEE

OTIE
An Oneida Nation Company

G:\GIS_Workspace\2015 Projects\2015105 - Lake Conestee\Figure 4 - 1-Mile Target Distance Limit for Lake Conestee.mxd