

Final Environmental Assessment

City of Bentonville Improvements to Lake Bella Vista Dam

FEMA-1975-DR-AR / PW1562

Benton County, Arkansas

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Acronyms and Abbreviations

ADEQ	Arkansas Department of Environmental Quality
AGFC	Arkansas Game and Fish Commission
AMFI	Area Median Family Income
ANHC	Arkansas Natural Heritage Commission
ANRC	Arkansas Natural Resource Commission
APE	Area of Potential Effect
ASTM	American Society for Testing and Materials
BFE	base flood elevation
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
dBA	A-weighted decibels
DNL	Day-Night Average Sound Level
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	environmental justice
EO	Executive Order
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FPPA	Farmland Protection Policy Act
gpm	gallons per minute
LF	linear feet
MSA	metropolitan statistical area
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program

NHPA	National Historical Preservation Act
NPL	National Priorities List
NOAA	National Oceanic and Atmospheric Association
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NWP	Nationwide Permit
NWSR	National Wild and Scenic Rivers Act
PA	Public Assistance
PJD	Preliminary Jurisdictional Determination
PMF	probable maximum flood
psi	pounds per square inch
RQD	Rock Quality Designation
SHPO	State Historic Preservation Office
SW3P	Storm Water Pollution Prevention Program
T&E	Threatened and Endangered
THPO	Tribal Historic Preservation Office
tpy	tons per year
US	US Route
USACE	US Army Corps of Engineers
USC	United States Code
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey

1.0 INTRODUCTION

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the President's Council on Environmental Quality (CEQ) regulations to implement NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Federal Emergency Management Agency's (FEMA) regulations implementing NEPA (44 CFR Part 10). FEMA is required to consider potential environmental impacts before funding or approving actions and projects. The purpose of this EA is to analyze the potential environmental and social impacts of the Improvements to Lake Bella Vista Dam project. FEMA will use the findings in this EA to determine whether to prepare an Environmental Impact Statement (EIS) or Finding of No Significant Impact.

1.1 Project Authority

Lake Bella Vista Dam, located on Little Sugar Creek, is owned by the City of Bentonville, Arkansas (the "Applicant"). Beginning on April 23, 2011, many communities in Arkansas sustained extensive damage from severe storms, tornados, and associated flooding. Subsequently, a Presidential Disaster Declaration, DR-

1975-AR, was signed for this event. Significant flooding that occurred along the creek during this time resulted in the dam overtopping and causing erosion along the entire 410-foot long downstream slope. The erosion at the toe of the dam caused a progressive slope failure of an 80-foot wide section of the downstream slope near the west spillway. Toe erosion along the east section of the dam resulted in loss of support beneath the concrete slope cover, leading to extensive breakage and cracking of the concrete cover on the downstream embankment. The water flow beneath the damaged concrete caused erosion of embankment soils. This extensive erosion along the toe and embankment resulted in a slump forming along the crest near the east spillway. Further settlement and cracking resulted in potholes and the washing away of asphalt pavement from the crest of the dam. The structure poses a serious safety risk in the event of another flood and overtopping event such as what occurred on April 19, 2013 when heavy rains caused Little Sugar Creek to flood resulting in a second overtopping of Lake Bella Vista Dam (Heard, Arkansas Democrat Gazette, 2013). Another overtopping event on August 12 and 13, 2013 resulted in two Jersey barriers on the top of the dam being moved by the powerful currents of the floodwaters. The dam is classified as a small, high-hazard structure under dam safety regulations of the Arkansas Natural Resources Commission (ANRC). **Figure 1-1** and **Figure 1-2** show the damage to the Lake Bella Vista Dam after the above described flood events.

FEMA's Public Assistance (PA) Grant Program provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process. The project falls under the PA

work category D: Water Control Facilities, which includes repair of levees, dams, and flood control channels; the eligibility of these facilities is restricted, however.

This EA was prepared in response to the Applicant's proposal to restore the dam's function, long-term usability, and safety by removing and replacing the existing structure.

In accordance with 44 CFR for FEMA, Subpart B, Agency Implementing Procedures, Part 10.9, this EA has been prepared pursuant to Section 102 of the NEPA of 1969, as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ; 40 CFR Parts 1500-1508)

Figure 1-1: Flood Damage to the Lake Bella Vista Dam (west spillway)



April 2, 2013



Post-flood. August 13, 2013.

Figure 1-2: Flood Damage to the Lake Bella Vista Dam (looking east)



April 1, 2013



Post-flood. August 19, 2013.

1.2 Project Location

Lake Bella Vista Dam is located along US Route (US) 71 within Bentonville's city limits in northwest Arkansas. Its central coordinates are at 36.43270°, -94.23091° (NAD 1983). This dam, constructed circa 1918, created Bella Vista Lake, which was subsequently used for recreational purposes. The dam is located in Lake Bella Vista Park just outside the town of Bella Vista (**Figure 1-3**). The park is bounded by Veterans Way, Cold Cave Drive, and US 71 (Bella Vista Way). The dam is crossed by the Lake Bella Vista Trail, which is used for walking, jogging, and biking.

Approximately 18,000 people a month utilize the Lake Bella Vista jogging trail for recreation purposes. This number does not include recreational activities that do not directly utilize the jogging path such as disc golf, picnicking, and use of the lake for water sports such as canoeing and kayaking. The nearest public park providing comparable facilities (running, walking, biking, fishing, kayaking, disc golf, etc.) is more than 10 miles away.

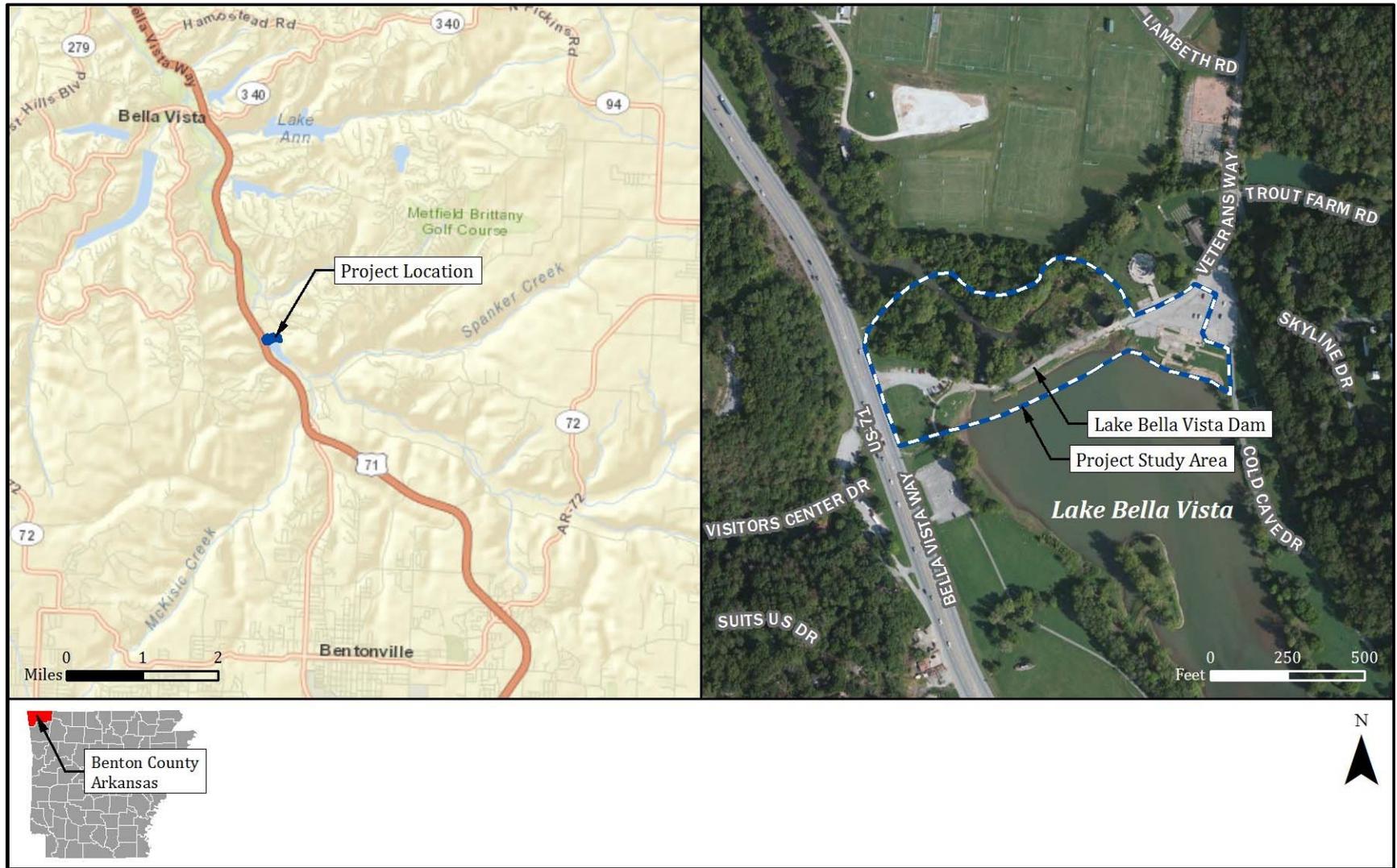
The project site is located within a FEMA-designated 100-year floodplain where the base flood elevation (BFE) is approximately 1,031 feet (FEMA, 2007). This area is prone to flooding.

1.3 Project Description

The Lake Bella Vista Dam is comprised of an earthen embankment with concrete spillways located at both the west and east abutments. Both spillways are spanned by concrete vehicular bridges. Pictures of the dam are in **Appendix A**. The dam is classified as a small, high-hazard structure under dam ANRC safety regulations and poses a serious safety risk in the event of another flood and dam breach. The Applicant is proposing to improve the dam facility through replacement of the structure. The study area is identified in the figures throughout this EA and is approximately eight acres, which includes both the existing dam structure and its surrounding resources. Details of project actions are provided in **Section 3.0**. A temporary diversion will be installed to divert Little Sugar Creek around the work area during construction while still remaining within the eight acres study area.

Following completion of the project, the recreation area will be returned to pre-construction conditions, including removal of temporary erosion control measures and re-connection of the Lake Bella Vista Trail.

Figure 1-3: Vicinity Map



2.0 PURPOSE AND NEED

2.1 Purpose

The objective of FEMA's PA Grant Program is to provide assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities can quickly respond to and recovery from major disasters or emergencies declared by the President.

Through the PA Program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged publicly owned facilities and the facilities of certain Private Nonprofit organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

The specific purpose of the project is to restore the function, safety, and long-term usability of Lake Bella Vista as a park amenity and to satisfy current dam and spillway design criteria of the ANRC as discussed in the *Rules Governing Design and Operation of Dams, Title 7* (ANRC, 1993). The Lake Bella Vista dam is currently classified as a small, high-hazard dam. A high-hazard classification indicates a potential loss of human life and/or excessive economic damage (over \$500,000) in the event of dam failure. Spillway design for small, high-hazard dams shall be for 0.50 probable maximum flood (PMF).

2.2 Need

With the damage to the existing dam structure, there is a need to provide improved functionality and safety of the Lake Bella Vista Dam, to preserve its useful life, to maintain the usability of the associated recreation facilities, and to satisfy dam and spillway design criteria.

3.0 ALTERNATIVES

This section describes the project alternatives considered by the City of Bentonville to address the Purpose and Need of the project (**Section 2.0**). The alternatives analysis consists of the No Action, Proposed Action, and Alternatives Considered and Dismissed. The No Action and the Proposed Action alternatives are carried forwarded in the EA.

3.1 No Action Alternative

Under the No Action Alternative, the existing dam structure would remain as-is with no improvements to its condition through repair or rehabilitation efforts. The dam would not adhere to the safety regulations of the ANRC and would continue to pose a serious safety risk. Further, the functionality and usability of the dam is a concern, as the severely degraded dam is currently beyond its functional life, particularly in the presence of future floods. If left in the current partially-breached state described in **Section 1.1**, the dam is likely to experience additional failure (by advancement of the existing partial breach through the crown of the dam toward the lake), ultimately extending into the normal pool of the lake and resulting in a complete failure and uncontrolled release of the lake contents (water and sediment) into the downstream floodplain of Little Sugar Creek. This alternative would not meet the project's purpose and need; safety conditions under this option necessitate alternative provisions for flood protection in order to maintain the surrounding recreational area and the flows within Little Sugar Creek. Furthermore, loss of the lake may trigger regulatory issues, in particular those associated with Section 404 permitting under the jurisdiction of the U.S. Army Corps of Engineers (USACE). If no repairs or replacement are undertaken, the lake would need to be drained and the dam removed in a safe manner.

3.2 Proposed Action

The proposed action will include the removal of the currently existing Bella Vista Dam which is located on Little Sugar Creek on the north shore of Lake Bella Vista and replacing it with a new dam structure constructed within the footprint and at the same height of the original dam (**Figure 3-1**). The existing dam structure will be replaced with a zone earthfill embankment with concrete facing on the crest and upstream and downstream slopes. The zoned embankment will include a clay core and keyway of sufficient depth to cut off subsurface seepage, which is an issue with the current dam structure. The new dam design will prevent normal flows from sweeping and eroding the toe of the dam. This design is keeping with cost studies conducted by the contractor, CP&Y, Inc. (CP&Y) in January 2013 and with FEMA approval. The conceptual replacement dam design will not alter the capacity or normal operating elevation of the lake or impact surrounding infrastructure based on the HEC-RAS obtained from FEMA in September, 2008 (FEMA 2008). The HEC-RAS is an USACE computer program that is widely used to develop floodplain models based on a hydraulic analyses of a watershed for the National Flood Insurance Program (NFIP). Therefore, it is anticipated that the dam replacement project will maintain the hydraulic characteristics of Little Sugar Creek, both upstream and downstream of the dam during flood events.

The conceptual design of the dam's principal spillway is a reinforced concrete overflow weir, with reinforced concrete-lined approach section and discharge basin and reinforced concrete sidewalls. The weir crest elevation will match the current normal lake operating level and will provide approximately the same spillway discharge capacity as the two existing spillways. The dual outlet gates in the spillway weir section will be provided for lowering the lake level when necessary. Construction equipment will be staged in the adjacent asphalt and concrete parking area located east and west of the dam. The City of Bentonville has identified a borrow pit for fill material located in Benton County, approximately 9 miles southwest of the project area (36.351147, -94.358624). There may be a need for a temporary cofferdam and the dewatering or drawing down of the lake during construction. Also, the dam will be constructed in two stages to manage the flow of Little Sugar Creek. The existing west spillway will be used to temporarily divert Little Sugar Creek during the eastern half of dam construction. The western half of the dam will be completed by allowing the stream to use the newly constructed east spillway. The spillway structure will be spanned by a pedestrian bridge with reinforced concrete abutments. As part of the dam construction, 0.7 acres of trees and brush will be removed adjacent and north of the dam.

Locating the new dam at the site of the existing Bella Vista Dam structure will result in minimal disturbance to environmental or cultural resources as the project will take place on already disturbed land. This action will also result in the least disturbance to park usage by the public.

3.3 Alternatives Considered and Dismissed

The following project alternatives were considered, but each had limitations that precluded their practical implementation. Therefore, they were dismissed and are not discussed any further in the document beyond the below discussion.

Rehabilitation of the Lake Bella Vista Dam

This project alternative proposes rehabilitation of the existing Lake Bella Vista Dam structure in its current location. Based on the results of geotechnical, hydrologic and hydraulic analyses of the existing dam, repair of the partial breach was deemed infeasible. The dam is susceptible to frequent overtopping of the unprotected earthfill embankment, which is a recurring condition that will eventually lead to a complete (and possibly sudden) failure. The west spillway may have structural problems of unknown severity, with visible evidence of cracking and spalling of the concrete, and the gates are in poor and almost inoperable condition. There are also substantial under seepage and slope stability issues.

Actual construction of breach repairs in the confined area adjacent to the west spillway would be difficult and likely ineffective, since the placement of good-quality compacted fill directly abutting the existing fill (which is of highly-variable content and poor quality for an earthfill dam) would not achieve the consistency and quality control associated with a reconstructed dam. The probable high cost of repairs, with no achievement of a long-term solution to extend the life of the dam, is not considered to be a prudent use of public funds and is therefore not justifiable, and the repair alternative is deemed inconsistent with the City of Bentonville's objective of maintaining Lake Bella Vista as a long-term resource.

Because of the condition of the structure and the cost of repairs, this alternative was determined to be infeasible and was not carried forward for further evaluation.

Relocation of the Lake Bella Vista Dam

Relocation of the Lake Bella Vista Dam was considered as an alternative to rehabilitating or replacing the dam in place. Under this alternative, the dam would be relocated further downstream at the north end of Lake Bella Vista. Relocating the dam would result in greater environmental impacts as it would involve installing a dam in a new location, which would lead to additional hydrological and biological impacts. After agency consultation, it was decided to not carry this alternative forward for further evaluation.

Removal of Lake Bella Vista Dam with No Replacement

The removal of Lake Bella Vista Dam with no planned replacement was considered as an alternative to replacing the dam in place. Under this alternative, Lake Bella Vista would be allowed to drain under controlled conditions, eliminating the lake entirely and returning Little Sugar Creek to an unimpeded stream. The City of Bentonville has interpreted this alternative to be inconsistent with the restrictions in the Special WARRANTY DEED filed of record in Benton County, AR., Nov.21, 2006 in DEED Book 2006, Page 55778, following the purchase of Lake Bella Vista Park by the City of Bentonville from Bentonville/Bella Vista Trailblazers Association, Inc. In addition, it would completely eliminate Lake Bella Vista as a park amenity, which would go against the purpose and need of the project to maintain Lake Bella Vista as a recreational amenity. There are few lakes within the area of the project for use in recreational activities. The removal of Lake Bella Vista would greatly affect the ability of the public to enjoy lake habitats for recreational purposes. This alternative would also go against the wishes of the Bentonville City Council which has voted to keep Lake Bella Vista as a recreational amenity for the surrounding community. This alternative was not considered in the Phase 2 Engineering Report produced by CP&Y as it was not deemed viable for consideration due to the deed restrictions on the study area and the expressed wishes of the Applicant. Therefore, there are no preliminary design plans for this alternative.

4.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

This section includes a description of existing conditions, and assessment of potential impacts from the No Action Alternative and the Proposed Action Alternative. Conditions and mitigation measures to offset these impacts are also discussed. **Table 4-5** summarizes these potential impacts and mitigation measures (**Section 4.5**).

4.1 Physical Resources

4.1.1 Geology, Soils, and Seismicity

The Geologic Map of Arkansas indicates that the project site is underlain by the Chattanooga Shale and Cotter and Jefferson City Dolomites. These formations, comprised of shale and dolomite with thin beds of sandstone and limestone with some chert, are located at or slightly above the floodplain (USGS, 1993).

The Ozark Highlands where Lake Bella Vista is located are dominated by limestone and dolomite bedrock. Both types of rock are water soluble, allowing rainwater that absorbs carbon dioxide in the air and other acids from decaying organic matter on the ground to slowly dissolve the rock. This allows for the creation of breaks, passages, and caves in the bedrock. Land characterized by this sort of water soluble bedrock is known as having karst topography. Karst topography in the Ozarks includes features such as caves, springs and sinkholes (ANHC, 2013).

Approximately 25% of the national groundwater supply is located in cave and karst regions. Karst systems can move large quantities of water over long distances relatively quickly, but the fast transmission of water allows for very little natural filtration, leaving the water in these systems more vulnerable than usual to pollution. Contamination of aquifers can happen quickly and endangers sensitive plant and animal species, as well as humans (ANHC, 2013). Site surveys of the study area indicate that there are no caves, springs, sinkholes related to karst, or karst openings within the study area (Redman, 2013).

Engineering aspects of the “bedrock” subsurface geology for the dam’s construction have been addressed in a geotechnical report by Grubbs, Hoskyn, Barton & Wyatt, Inc. titled Geotechnical Investigation – Phase I, Lake Bella Vista Dam, Bella Vista, Arkansas dated September 2009. For this study two deep borings were drill and sampled to determine foundation conditions and leakage potential through the foundation and abutments. The borings were drilled through the existing earthen embankment to depths of 61.5 feet and 57 feet, penetrating more than 40 feet of bedrock consisting of moderately hard, fine-to medium-grained dolomite with occasional chert seams and nodules and shale seams. Some healed horizontal fractures and weathered seams were also encountered. Rock was cored using an NX double tube core barrel. The borings did not encounter detectable voids, caves or other evidence of karst geologic conditions at the site. Water pressure testing was conducted in both borings in the rock sections to assure no significant leakage was occurring or would occur in the foundation for a new dam constructed at this location. Boring B-A took 1.15 gallons per minute (gpm) at a pressure of 60 pounds per square inch (psi) in the zone

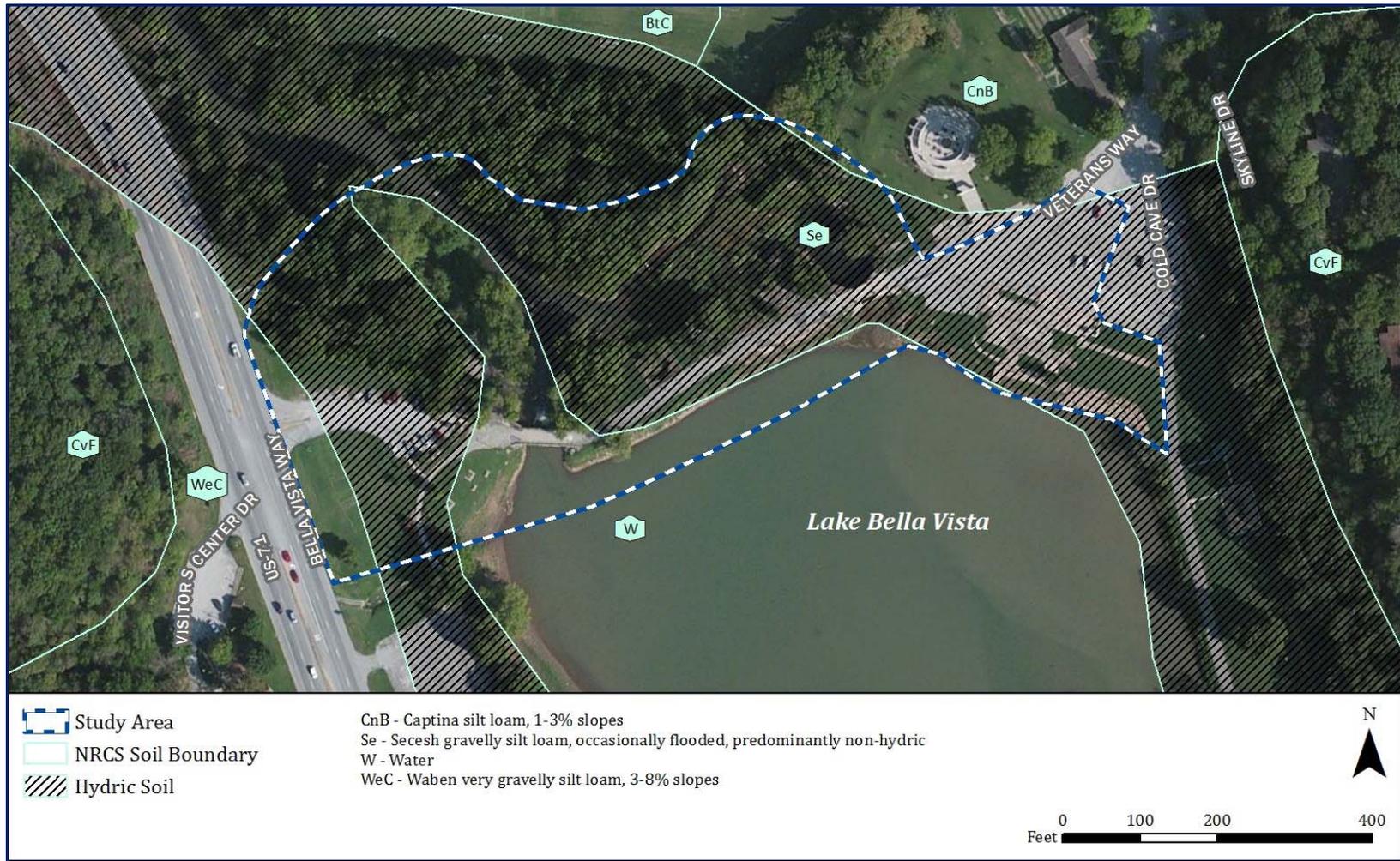
from 23.5 feet to 41.5 feet and 0.22 gpm from 44 feet to 61.5 feet at 50 psi. Boring B-B was tested from 19.5 feet to the total depth of 57 feet. At 50 psi the rock took 1.1 gpm. Core recovery was 100 percent in both borings and the Rock Quality Designation (RQD) generally exceeded 90. Unconfined compressive strengths in the rock were found to be on the order of 3400 psi to 12,300 psi. All indications are that the dam foundation bedrock conditions are excellent. A cutoff grout curtain does not appear to be warranted. A shallow inspection trench in the bedrock would be adequate. There is no reporting or evidence of leaking from the reservoir, i.e. sinkhole development, during the operational history of the dam and lake. There is leakage through an approximate four-foot gravel layer that overlies the bedrock. That leakage emits from the downstream toe of the embankment. It will be stopped with the construction of the new embankment that will have an impervious core.

Supporting the conclusions stated above concerning the lack of evidence of adverse effects of karstic geology on the design and construction of a dam on Little Sugar Creek at the selected location is a geotechnical report on a considered dam site some 500 feet downstream from the original site. In June 2009 four borings were made at the alternate site. The deepest boring was 39.5 feet deep, penetrating 28.5 feet of dolomitic rock similar to the bedrock at the upstream site. Again, no voids, caves or other evidence of karstic geology was encountered in any of the borings. Water pressure tests in Boring B-2 from 15.5 feet to 24 feet and 26.5 feet to 39 feet were conducted. Maximum water take in the upper zone was 0.53 gpm at 25 psi. Maximum water take in the lower zone was 0.69 gpm at 35 psi. Tests in Boring B-3 showed similar results. Testing from 18 feet to 29.5 feet showed a maximum water take of 0.86 gpm at 35 psi. There was no water take in the zone from 29.5 feet to 39.5 feet at pressures up to 35 psi. The core recovery and RQD percentages were slightly lower than was obtained at the original site. Details of this study can be found in a report by Grubbs, Hoskyn, Barton & Wyatt, Inc. titled Geotechnical Investigation-Phase I, New Lake Bella Vista Dam, Bella Vista, Arkansas, dated July 2009.

A review of the United States Geological Survey (USGS) 7.5-minute topographic map for the Bentonville North quadrangle indicates that the approximate elevation of the project site ranges from 997 to 1018 feet above mean seal level (USGS, 2010). The topography in the immediate vicinity of the project is relatively flat with large elevation changes on either side of the lake.

According to the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey, the area within the study area contains the following soil types: Captina silt loam (CnB), Secesh gravelly silt loam, (Se), and Waben very gravelly silt loam (WeC) (USDA, 2014) (Figure 4-1). Hydric soils, defined by the National Technical Committee for Hydric Soils as soils that form under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part, are not present within the study area (Federal Register, 1994). Secesh gravelly silt loam is predominantly non-hydric and all other soils are non-hydric (USDA, 2014).

Figure 4-1: Soils



The Farmland Protection Policy Act (FPPA) requires Federal agencies to “minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses...” Captina silt loam and Secesh gravelly silt loam are considered to be prime farmland in all areas, whereas Britwater gravelly silt loam is considered to be farmland of statewide importance (USDA, 2014). However, the land within the study area is currently being utilized for parkland and is already disturbed by the development of Lake Bella Vista Park and Lake Bella Vista Dam. Therefore, the FPPA does not apply.

The project is located in northwestern Arkansas, which is in a mid to low risk area for seismic risk, according to the USGS (USGS, 2008).

No Action Alternative - Under the No Action Alternative, no construction would occur. There would therefore be no impacts to geology or soils as a result of construction. If the dam continues to operate as-is, continued overtopping and flooding is expected at the dam site and downstream; this would result in further erosion of the soils along Little Sugar Creek and degradation of its banks. This could have an impact on soils in the area. Furthermore, if the structural integrity of the dam continues to degrade the possibility exists for a complete collapse of the dam structure, resulting in an uncontrolled release of the contents of Lake Bella Vista into Little Sugar Creek. This could result in a massive release of sedimentation into Little Sugar Creek as well as extreme levels of erosion along the banks of Little Sugar Creek.

Proposed Action Alternative - Under the Proposed Action Alternative, construction activities will temporarily displace soil materials on the project site in order to demolish the currently existing dam structure and build its replacement. The Applicant will be required to submit Storm Water Pollution Prevention Program (SW3P) and National Pollutant Discharge Elimination System (NPDES) permit applications, and obtain these permits prior to construction. Implementation of appropriate Best Management Practices (BMPs) will be required at the construction location in order to minimize erosion; these may include the installation of silt fences, rock check dams, and permanent revegetation of disturbed soils. Excavated soil and waste materials will be managed and disposed of in accordance with applicable local, State, and Federal regulations. If contaminated materials are discovered during construction activities, work will cease until the appropriate procedures and permits could be implemented for cleanup and disposal. It is not anticipated that the project will impact karst features as none were identified within the study area (Grubbs, Hoskyn, Barton, & Wyatt, 2009). Although a geotechnical report determined that karst geology does not exist in the project area, if these features are found during construction, consultation will be initiated with the Arkansas Natural Heritage Commission (ANHC), the U.S. Fish and Wildlife Service (USFWS), and other relevant agencies.

4.1.2 Air Quality

The U.S. Environmental Protection Agency (EPA) is responsible for setting and enforcing the National Ambient Air Quality Standards (NAAQS) (40 CFR part 50) in accordance with the Clean Air Act. The NAAQS include both primary and secondary air quality standards: **primary standards** set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly; secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals,

crops, vegetation, and buildings (EPA, 2011a). The six principal pollutants, known as “criteria pollutants”, monitored in the NAAQS are: carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur oxides.

Areas that meet the NAAQS for the criteria pollutants are considered to be “in attainment.” Those that do not meet the air quality standard for one or more of the criteria pollutants may be designed as “nonattainment” for that standard and require action by the local jurisdiction.

According to the 1999 Emissions Summary of Criteria Air Pollutants (Scorecard, 2011), mobile sources are the largest contributor of air pollutant emissions in Benton County, except among nitrogen oxides, sulfur oxides, and volatile organic compounds. Both nitrogen and sulfur oxides are primarily emitted from point sources, while volatile organic compounds are primarily emitted through area sources (Table 4-1).

Table 4-1: 1999 Emissions Summary of Criteria Air Pollutants, Benton County, Arkansas

Pollutant	Mobile Sources^a (tpy)	Areas Sources^b (tpy)	Point Sources^c (tpy)	All Sources^d (tpy)
Carbon Monoxide	30,351	9,265	570	40,186
Nitrogen Oxides	5,250	1,129	6,102	12,481
Particular Matter (PM10)	8,601	4,660	243	13,504
Sulfur Oxides	432	582	11,858	12,873
Volatile Organic Compounds	3,238	4,074	339	7,650

Source: Scorecard, 2011.

Notes: the latest available year for criteria air pollutant emission data was 1999 tpy = tons per year emitted

^a Includes both on-road vehicles (such as cars, trucks and buses) and off-road equipment (such as ships, airplanes, agricultural and construction equipment)

^b Includes major industrial facilities like chemical plants, steel mills, oil refineries, power plants, and hazardous waste incinerators.

^c Point sources are defined as those that emit 10 tpy of any of the criteria pollutants or hazardous air pollutants

^d Mobile sources, area sources, and point sources combined.

The air quality standard for ground-level ozone, as set by the EPA, is 0.075 ppm for 8-hour, and 0.12 ppm for 1-hour (EPA, 2011c). According to the EPA Green Book, Benton County is

in attainment, meaning their 8-hour emissions of ground-level ozone do not exceed this standard (EPA, 2011d).

No Action Alternative - Under the No Action Alternative, no construction or development would take place; therefore, there would be no air quality impacts.

Proposed Action Alternative - The project will not emit any criteria air pollutants. Under the Proposed Action Alternative, no long-term impacts to air quality will occur. Temporary air quality impacts may occur during construction; however, these impacts will be short-term and isolated in nature. Impacts will primarily result from the mobilization of dust during site preparation and construction. These impacts will be mitigated through BMPs, such as watering of the construction site and limiting the speed of delivery and construction vehicles.

Emissions from heavy machinery and construction equipment could temporarily increase levels of some of the criteria pollutants. To reduce these emissions, contractors will reduce the run time of fuel-burning equipment wherever possible and avoid idling; they will also ensure engines are properly maintained.

4.1.3 Climate Change

Climate change is a global phenomenon attributable to human activities and natural processes which result in emissions of greenhouse gases, particularly atmospheric carbon dioxide, that impact our global climate. Climate change has the potential to cause the sea level to rise and increase the intensity of storm events.

The project will not affect climate change but rather address a potential impact of climate change by providing protection against flooding, one of the results of more frequent or severe storm events, by maintaining the existing lake level and hydrology of the study area.

4.1.4 Water Quality

Surface Water Quality

The Clean Water Act (CWA) (33 United States Code (USC) 1251-1376), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality.

The USGS 7.5-minute quadrangle map for Northern Bentonville shows Little Sugar Creek and Lake Bella Vista falling within the study area. Little Sugar Creek and its tributaries are identified as perennial streams on the topographic map.

A site visit conducted by a CP&Y biologist on April 3, 2013, identified two man-made drainage channels entering Lake Bella Vista on the northwestern and southwestern banks. Stormwater from US 71 likely sheet flows into these channels and into the lake during precipitation events. Both of these channels fall outside of the study area. No drainage channels or drains were observed in the study area itself but there are two spillways associated with the Lake Bella Vista Dam which allow water to pass between Lake Bella Vista and Little Sugar Creek. Stormwater likely sheet flows over impervious cover into Lake Bella Vista or Little Sugar Creek.

The CWA requires states to periodically assess and report on the quality of waters in their State. Section 303(d) of the CWA also requires states to report on streams and lakes identified as impaired for one or more pollutants and that do not meet one or more water

quality standards. The state must consider strategies to reduce the input of the specific pollutant(s) restricting waterbody uses in order to restore and protect the resource value. Neither Little Sugar Creek nor Lake Bella Vista has been designated as a 303(d) Impaired Water (ADEQ, 2012).

The National Wild and Scenic Rivers Act (NWSR) was created to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generation. Rivers protected under the NWSR may be designated by Congress or, if certain requirements are met, the Secretary of the Interior. Each river is administered by either a state or federal agency. Designated segments may not include the entire river and may just include tributaries. There are no wild and scenic rivers or tributaries as designated by the Wild and Scenic Rivers Act within the study area (NWSRS, 2013).

A Hazardous Materials Radius Report has been generated on the subject property (GeoSearch, 2013). Although surface water quality testing was not performed as part of the field study, there are no recognized environmental conditions that indicated the potential for contamination of surface waters on or adjacent to the project site.

Sediments have accumulated on the upstream side of the dam. These sediments will be removed prior to dam demolition and reconstruction. Because neither Lake Bella Vista nor Little Sugar Creek have been identified as impaired segments under the CWA and because Lake Bella Vista has been dredged twice in the past (see **Section 4.3.1** for further details), sediments will not be tested during removal. All other relevant local, State, and Federal guidelines for removal of sediments will be followed. It is possible that archeologists will need to sample the removed sediments prior to disposal (see **Section 4.3.2**).

Public drinking water is provided to the study area by the City of Bentonville. The City of Bentonville sources its water from local rivers, lakes, streams, ponds, reservoirs, springs, and wells. Water is also purchased from the Beaver Water District which procures its water from Beaver Lake.

No Action Alternative - Under the No Action Alternative, no construction would take place and no impacts to surface water quality would therefore occur. However, if the structure of the dam continues to degrade, water quality could be temporarily impacted during further overtopping events or in the event of a dam collapse which would result in an uncontrolled release of the contents of Lake Bella Vista, including sediments, into Little Sugar Creek. Continued overtopping and potential collapse of the dam could also lead to continued erosion within the downstream portion of Little Sugar Creek.

Proposed Action Alternative - The Proposed Action Alternative will add impervious cover to the study area in the form of concrete riprap on both the downstream and upstream portions of the new dam. Precipitation that falls on this new cover is expected to sheet flow into Little Sugar Creek and Lake Bella Vista with no significant impacts to water quality. Under the Proposed Action Alternative, temporary short-term impacts to surface water quality in the area of the project will occur during construction due to soil and sand erosion. BMPs such as silt fences, rock check dams, and revegetation will minimize impacts from erosion during construction to the greatest extent practicable. A SW3P and NPDES permit

will be required prior to construction. There are no anticipated impacts to public drinking water as a result of the project.

Groundwater Quality

The project is located in northern Arkansas where groundwater supplies are more limited than in the remainder of the state. Much of the Ozark Plateau region is underlain by carbonate rocks, which are soluble in the presence of water. The solubility of the rock has led to the formation of large openings through which water passes so quickly that contaminants in the water are not filtered out. As a result, water from shallow wells may not be suitable for human consumption without treatment. Two aquifers that serve as the principal source of high quality water for communities in northern Arkansas are the Roubidoux Formation and the Gunter Member of the Gasconade Formation. Both aquifers are permeable sandstone and carbonate units of the Ordovician age (Arkansas Geological Survey, 2013).

Based on a map from the Nature Conservancy, the study area is located in an area of moderate groundwater recharge sensitivity. However, the southern portion of Lake Bella Vista and the upstream portion of Little Sugar Creek are identified as areas of high groundwater recharge sensitivity. These areas are especially sensitive to pollution and contamination (TNC, 2013).

A Hazardous Materials Radius Report has been generated on the subject property (GeoSearch, 2013). Although groundwater quality testing was not performed as part of the field study, no recognized environmental conditions were identified that indicated the potential for contamination of groundwater.

No Action Alternative – Under the No Action Alternative, no construction would occur and therefore, there would be no impacts to groundwater. Further deterioration in the structure of the dam leading to further overtopping events or a dam collapse would be unlikely to impact groundwater.

Proposed Action Alternative – Under the Proposed Action Alternative, construction activities will not reach a sufficient depth to impact groundwater. The construction will not involve any deep excavation (or open cuts), drill shafts, or pilings. The dam section is a compacted earth embankment with a clay core center that is keyed into the existing impermeable rock approximately 5 to 10 feet in depth. The outfall structures of reinforced Portland cement concrete will be founded on a shallow spread footings requiring minimum excavation into the existing impermeable rock. The impact to the local groundwater will be negligible.

If the action will require additional excavation to groundwater depths, consultation with the EPA and the Arkansas Department of Environmental Quality (ADEQ) will be required to identify appropriate mitigation. The project is not expected to impact the areas of high groundwater recharge sensitivity on the southern end of Lake Bella Vista and the upstream portion of Little Sugar Creek.

4.1.5 Wetlands and Waters of the U.S.

Section 404 of the CWA mandates the USACE regulate the discharge of dredged or filled material into waters of the U.S., including wetlands. Additionally, Executive Order (EO) 11990, Protection of Wetlands, requires Federal agencies to avoid impact to wetlands to the greatest extent possible. Based on USACE definition, wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of wetland vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wetland data from the National Wetlands Inventory (NWI) shows one riverine area north of the dam and a large lacustrine open water area south of the dam, portions of which fall within the study area (**Figure 4-2**).

Lake Bella Vista is located on Little Sugar Creek, which is classified as a perennial stream on topographic maps (USGS, 2010). A wetland delineation was performed by Bonnie Doggett, a biologist with CP&Y, in April, 2013 and no wetlands were identified in the study area. However, 1,262 linear feet (LF) of Little Sugar Creek and its tributaries fall within the study area. Furthermore, 1.53 acres of Lake Bella Vista, which is hydrologically connected to Little Sugar, falls within the study area. Little Sugar Creek, its tributaries, and Lake Bella Vista are considered Waters of the

U.S. under Section 404 of the CWA. Therefore, any discharge of fill material into Little Sugar Creek, one of its tributaries, or Lake Bella Vista is subject to regulation by the USACE and will require agency coordination to determine the type of Section 404 permitting requirements.

No Action Alternative - Under the No Action Alternative, there would be no construction and therefore, no immediate impacts to waters of the U.S. would occur. However, if the structure of the dam continues to deteriorate, further overtopping events or a dam collapse could occur. This could lead to a potentially sudden and dramatic impact to Little Sugar Creek and Lake Bella Vista as water and sediment would be released into Little Sugar Creek downstream of the dam and water levels would change suddenly and potentially irrevocably both upstream and downstream of the dam. Release of sediment from Lake Bella Vista into the downstream portion of Little Sugar Creek and the change in function of the lake into a continuous stream upstream and downstream of the dam may require coordination with the USACE to determine the type of Section 404 permitting requirements, if any.

Proposed Action Alternative - Under the Proposed Action Alternative, there will be no permanent impacts to Little Sugar Creek or Lake Bella Vista. The new dam structure with divided spillway will maintain the some flow rates and hydrologic conditions as currently exist within the study area. Temporary impacts to Little Sugar Creek will occur as water must be diverted around the construction site during dam removal and rebuilding. Though exact temporary impacts are currently unknown, the final configuration of the project will be developed in order to minimize these impacts. Reasonable measures will be taken to protect the waters of the U.S. in the area of the Lake Bella Vista dam and coordination with the USACE will be ongoing through construction planning and staging at this site. As previously

discussed, the USACE has jurisdictional authority over Section 404 of the CWA. Under Section 404, authorization must be obtained from the USACE for discharges of dredged or fill material into waters of the U.S., including jurisdictional wetlands. Under the proposed action alternative, there will only be temporary impacts to Little Sugar Creek as the dam design will maintain the existing lake level, flow of Little Sugar Creek, and the overall hydrology of the study area. At this stage, it is assumed that Nationwide Permit (NWP) 3 – Maintenance or NWP 31 – Maintenance of Existing Flood Control Facilities will be used to authorize the Proposed Action pending approval from the USACE.

The USACE also has authority over Section 10 of the Rivers and Harbors Act of 1899, which allows the USACE to regulate work in, or affecting, navigable waters of the

U.S. Little Sugar Creek is not listed as a navigable water by the USACE Little Rock District. Since the proposed action alternative will not affect any navigable waters, a Section 10 permit will not be required.

A Preliminary Jurisdictional Determination (PJD) report was submitted to the USACE on August 5, 2013. In a response dated December 10, 2013, the USACE stated that they concur with the conclusions of CP&Y's investigation of the site. Their letter is available in Appendix B of this report.

4.1.6 Floodplains

According to EO 11988, Floodplain Management, Federal agencies are required to avoid direct or indirect support of development within the 100-year floodplain whenever there is a practicable alternative. FEMA uses Flood Insurance Rate Maps (FIRMs) to identify the regulatory 100-year floodplain for the National Flood Insurance Program. In accordance with EO 11988, the latest FIRMs were examined during preparation of this EA. Given that the majority of the study area is located within Lake Bella Vista and Little Sugar Creek, the entire project site is located in Flood Zone AE, which is a 100-year flood zone (Figure 4-2) (see also Community Panel Number 05007C0090J, dated September 28, 2007). The majority of the study area is also located within a NFIP delineated floodway, which is also shown on Figure 4-2.

No Action Alternative - Under the No Action Alternative, no construction or development would occur in the study area. Therefore, there would be no immediate impacts to floodplains under the No Action Alternative. However, if the condition of the dam's structure continues to deteriorate and there is a collapse, there could be a major impact to the existing floodplain as water levels upstream and downstream of the project would be suddenly and dramatically changed. This would likely result in the deposit of sedimentation from Lake Bella Vista into Little Sugar Creek as well as further erosion of Little Sugar Creek downstream of the dam. This would have the potential to impact flood elevations within the study area as well as in the general area of the project.

Proposed Action Alternative - Under the Proposed Action Alternative, development will occur within the FEMA-designated 100-year floodplain (Zone AE). Because of the high velocities and overtopping potential of the water held by the dam, the proposed alternative will require concrete riprap to face both the upstream and downstream slopes of the new dam structure. Additional riprap or other protection will also be required in the toe area

along the base of the dam (the existing Little Sugar Creek area below the dam) to prevent erosion, undercutting, and scouring. This additional concrete or other protective covering will increase the amount of impervious cover in the study area. However, the structure is designed to maintain the currently existing hydraulic characteristics of Little Sugar Creek – both upstream and downstream of the dam – during flood events to prevent significant changes in flood elevations (CP&Y, 2011).

The project design is consistent with federal guidance [44 CFR Section 9.2(b)], which seeks to minimize the impacts of floods on human health, safety and welfare, and attain the widest range of beneficial uses of the environment without degradation or risk to health and safety.

The Floodplain Management Checklist (Eight-Step Planning Process for Floodplains) has been completed in compliance with 44 CFR Part 9. The steps of the checklist are as follows:

Step 1 – Determine if the proposed action is located within the base floodplain: The project is located within the 100-year floodplain.

Step 2 - Early Public Notice (Preliminary Notice): The public will be notified of the project through the local newspaper, the Benton County Daily Record, after FEMA approval of the draft EA and the release of funds to the Applicant necessary for the project to proceed. It is anticipated that the public will largely support the project as the Lake Bella Vista dam has been in disrepair for years and has been discussed at numerous public hearings and in the local newspaper.

Step 3 – Identify and evaluate alternatives to locating in the base floodplain: Due to the nature of the project (dam replacement), there is no feasible alternative to locating the project outside the floodplain. Even if the dam were to be removed or relocated, the project will still be located within the floodplain of Little Sugar Creek. The dam is considered Functionally Dependent per 44 CFR Section 9.4, which means that it cannot fulfill its intended purpose unless it is located in close proximity to water.

Step 4 - Identify impacts of proposed action associated with occupancy or modification in floodplain: The project will not affect occupancy of nearby areas as it has been designed to maintain the existing hydrology of the floodplain and to maintain currently existing lake levels and flood levels. Based on the HEC-RAS, no significant changes from existing conditions are anticipated as a result of the project. Therefore, it is anticipated that the dam replacement project will maintain the hydraulic characteristics of Little Sugar Creek, both upstream and downstream of the dam during flood events.

The new dam will be constructed with improved spillways and the downstream face will be armoured with concrete riprap to minimize the erosion effects during the 100 Year storm event when the entire dam will be functioning as a spillway. All design and construction work will be in accordance with current local, state and federal criteria.

Step 5 – Design or modify the proposed action to minimize threats to life and property and preserve its natural and beneficial floodplain values: The project will not increase threats to life and property as it has been designed to maintain the existing hydrology of the floodplain. Currently existing flood levels will not be significantly altered based on the HEC-RAS.

Step 6 – Re-evaluate the proposed action: The action will not expose any segment of the population or sensitive ecological receptors to increased flood hazard as it has been designed to maintain currently existing conditions within the floodplain. Therefore, it is still practicable to construct the project within the floodplain.

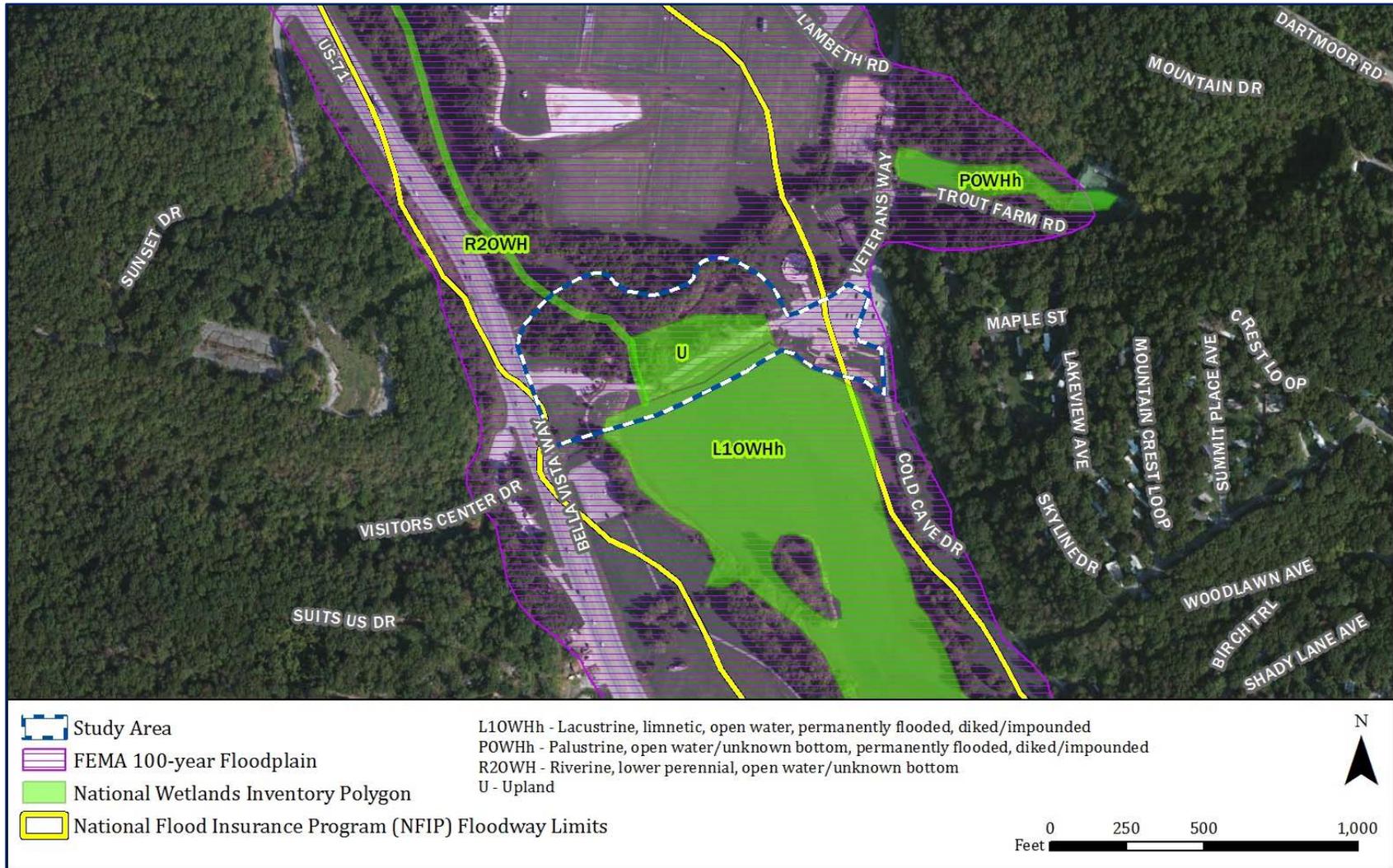
Step 7 – Findings and Public Explanation (Final Notice): Final notice will be given to the public after the draft EA has been accepted by FEMA and following an initial public comment period. Public comments are anticipated to be in support of the project as it has been discussed by the Applicant in council meetings numerous times. Per 44 CFR 9.12, the final public notice will be published at least 15 days prior to any construction occurring.

Step 8 – Implement the action: The project will be implemented once final approval has been received from all agency stakeholders and the public has been given sufficient time to comment upon the action.

In support of this project, the City Engineer for the City of Bentonville (who is also the Floodplain Administrator) indicated in a letter dated August 22, 2013 that the City of Bentonville is in favor of the project moving forward. This support is contingent upon the project complying with the City of Bentonville Flood Damage Prevention Ordinance. A copy of the letter and reference to the Ordinance are available in **Appendix B** of this report.

As noted in **Section 4.1.5**, the project is not subject to Section 10 of the Rivers and Harbors Act and/or any work performed in the area of discharge of fill material into Little Sugar Creek does not require a Section 10 permit from the USACE.

Figure 4-2: FEMA Floodplains and NWI Data



4.2 Biological Resources

4.2.1 Wildlife and Fish

The study area is located within the Level III Ozark Highlands ecoregion. Habitat diversity and species richness within this ecoregion are notably high. Historic vegetation found throughout the ecoregion is typically oak-hickory forest. Open forests are common on rugged terrain whereas pastureland and hay crops are common on more level sites. Shortleaf pine grows on steep escarpments and glades dominated by grass and eastern red cedar are found on shallow soils (EPA, 2004).

The study area is located within the Level IV Springfield Plateau ecoregion which is located within the Ozark Highlands. This ecoregion has upland areas dominated by oak-hickory and oak-hickory-pine forests. Savannas and tall grass prairies historically also occurred within this area and were maintained by fire. Much of the historic vegetation within this ecoregion has been replaced by agriculture and expanding residential areas (EPA, 2004). Plant species observed during the April 2013 field survey by CP&Y include: Black walnut (*Juglans nigra*), wild cherry (*Prunus serotina*), Chinese privet (*Ligustrum sinense*), honey locust (*Gleditsia triacanthos*), box elder (*Acer negundo*), maple (*Acer* sp.), osage orange (*Maclura pomifera*), wild grape (*Vitis* sp.), saw greenbrier (*Smilax bona-nox*), poison ivy (*Toxicodendron radicans*), flannel mullein (*Verbascum thapsus*), poison hemlock (*Conium maculatum*), bedstraw (*Galium* sp.), rough cocklebur (*Xanthium strumarium*), poke salad (*Phytolacca* sp.), and wild rye (*Elymus canadensis*).

The study area is located within a rural/suburban area. Wildlife species found in the study area will likely be those that are adapted to this habitat type, including white-tailed deer (*Odocoileus virginianus*), bobcats (*Felix rufus*), raccoons (*Procyon lotor*), Virginia opossums (*Didelphis virginiana*), fox squirrels (*Sciurus niger*), and eastern cottontail rabbits (*Sylvilagus floridanus*). Black bears (*Ursus americanus*) are likely rare but possible in the area (AGFC, 2013).

The study area is located on the edge of the Central and Mississippi Flyways for migratory birds. Migratory bird species are protected under the Migratory Bird Treaty Act (16 USC 703-712) which makes it illegal to “pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird” without prior permitting and approval. It is possible that migratory birds could use habitat within the study area during migration.

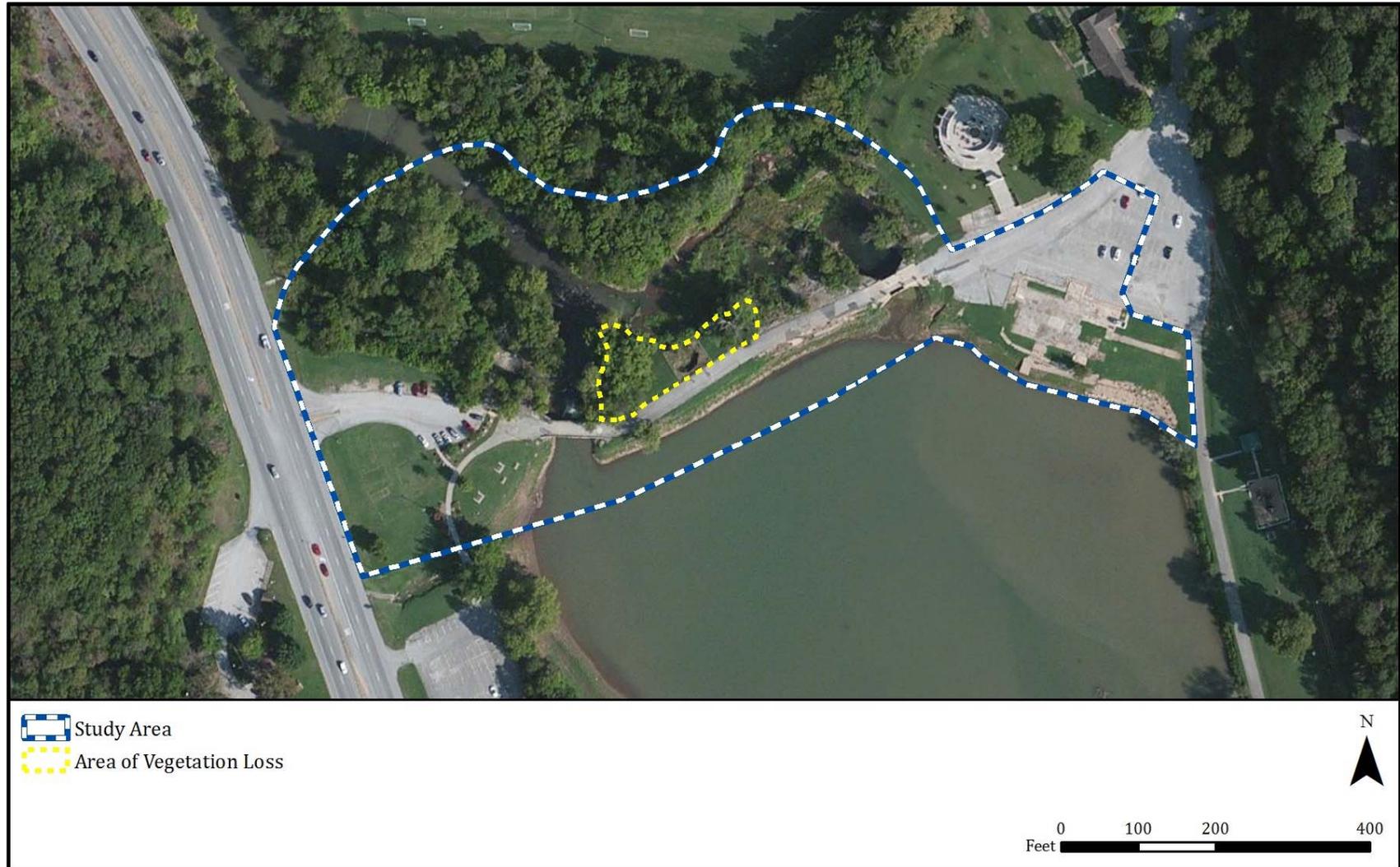
According to the National Oceanic and Atmospheric Administration National Marine Fisheries Service, there is no Essential Fish Habitat located within or adjacent to the study area (NOAA, 2013).

No Action Alternative - Under the No Action Alternative, there would be no immediate impacts to wildlife and fish as a result of the project. However, if the condition of the dam’s structure continues to deteriorate, resulting in a collapse, there could be major impacts to

the surrounding habitat both upstream and downstream of the study area as water levels would be suddenly and dramatically altered. Lake Bella Vista would likely be almost completely dewatered without the dam structure in place, eliminating all lake habitats within the study area and altering flow rates in the downstream portion of Little Sugar Creek. Potential habitat for fish and wildlife species would be destroyed or permanently altered.

Proposed Action Alternative – Under the Proposed Action Alternative, impacts to biological resources such as fish and wildlife species will be short-term and minor. Permanent impacts from the project are expected to affect the area of vegetation at the toe of the currently existing dam structure as shown in Figure 4-3. This vegetation will be removed; however, due to the small size and relatively isolated nature of this area, these impacts are not anticipated to have a major effect on biological resources and they will not significantly affect similar, more abundant habitat further upstream or downstream. Wildlife species may be temporarily displaced from the study area during construction activities but will be able to use similar, unaffected habitat nearby. The new dam design will allow for the movement of aquatic species from Lake Bella Vista to Little Sugar Creek but will not allow for movement from the downstream section of Little Sugar Creek to Lake Bella Vista. This is in keeping with the design of the existing dam and will therefore not affect existing aquatic migration patterns.

Figure 4-3: Area of Vegetation to be Removed as Part of Project



4.2.2 Threatened and Endangered Species and Critical Habitat

The endangered species list for Benton County maintained by the USFWS was reviewed on December 2, 2013 (**Table 4-2**). The bald eagle has been delisted, as of August 9, 2007. This species is protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Table 4-2: Federally- Listed Threatened, Endangered and Candidate Species of Benton County

Common Name	Scientific Name	Federal Status	Habitat Description	Likely Presence
Bald eagle	<i>Haliaeetus leucocephalus</i>	R	Breeding habitat consists of coastal areas, bays, rivers, lakes, reservoirs, or other bodies of water that support prey species. Usually nest in tall trees or on pinnacles or cliffs near water. Tend to avoid areas with high levels of human disturbance.	Likely transient through study area. Lake Bella Vista provides foraging habitat for this species. Human disturbance likely to limit species presence.
Piping plover	<i>Charadrius melodus</i>	T	Sandy upper beaches, especially where scattered grass tufts are present, and sparsely vegetated shores and islands of shallow lakes, ponds, rivers, and impoundments.	Unlikely in the study area. Beaches of Lake Bella Vista are not sandy. Human disturbance likely to limit species presence.

Common Name	Scientific Name	Federal Status	Habitat Description	Likely Presence
Neosho mucket	<i>Lampsilis rafinesqueana</i>	PE	Found in a variety of habitats in large streams and small rivers, most often in shallow riffles and runs with a predominantly gravel substrate. In Arkansas, the species was found in survey sites along the Illinois River in Washington and Benton Counties. It has not been found during surveys of the Arkansas River.	Unlikely in the study area. A 2013 survey of Lake Bella Vista did not identify this species or any suitable habitat for this species within the lake or study area (Redman, 2013).
Rabbits-foot	<i>Quadrula cylindrical cylindrical</i>	PT	Found in small to medium rivers with moderate to swift currents. In smaller streams it inhabits bars or gravel and cobble close to the fast current. Has been found at depths up to 3 meters. In Arkansas, it is found within the Arkansas River system.	Unlikely in the study area. A 2013 survey of the study area did not identify any rabbitsfoot mussels. There was little if any suitable habitat identified (Redman, 2013).
Cave crayfish	<i>Cambaraus aculabrum</i>	E	This species is known to occur in two caves in Arkansas: Logan Cave in and Bear Hollow Cave. Logan Cave is located within Benton County, approximately 20 miles to the southwest of the study area.	Unlikely in the study area. This is a cave-dwelling species. There are no known caves or karst openings within the study area.

Common Name	Scientific Name	Federal Status	Habitat Description	Likely Presence
Ozark cavefish	<i>Amblyopsis rosae</i>	T	This subterranean species is known to occur in Logan Cave in Benton County, approximately 20 miles to the southwest of the study area.	Unlikely in the study area. This is a cave-dwelling species. There are no known caves or karst openings within the study area.
Arkansas darter	<i>Etheostoma cragini</i>	C	Shallow, clear, spring-fed tributaries and headwater streams having sand or sandy-gravel substrates. Vegetated cover in spring-fed channels, near shore and away from swift currents. Known to occur in the Arkansas River basin in extreme northwest Arkansas.	Unlikely in the study area. A spring-fed stream that enters the study area from the northwest was sampled in May 2013 (Redman, 2013). Two species of darters were observed, but no Arkansas darters were identified. Previous surveys of this stream have also not identified the species.
Indiana bat	<i>Myotis sodalis</i>	E	Hibernate in caves. Maternity sites are generally in tree cavities or behind the bark of dead or dying trees. Forages in riparian areas, upland forests, ponds, and fields.	Possible transient through study area while foraging. No known dead or dying trees in study area for maternity sites. There are no cave or karst openings in the study area.
Gray bat	<i>Myotis grisescens</i>	E	Roosts almost exclusively in caves. Forested areas along streams and lakes provide important protection for adults and young.	Possible transient through study area while foraging. There are no known caves or karst openings in the study area for roosting.

Common Name	Scientific Name	Federal Status	Habitat Description	Likely Presence
Ozark big-eared bat	<i>Corynorhinus townsendii ingens</i>	E	Roosts in caves in limestone karst regions dominated by mature hardwood forests of hickory, beech, maple, and hemlock.	Possible transient through study area while foraging. There are no known caves or karst openings in the study area for roosting.

Source: USFWS, 2013b.

E- Endangered; T- Threatened; C- Candidate; R – Recovery; PT – Proposed Threatened; PE – Proposed Endangered

The USFWS maintains an online database of critical habitat for threatened, endangered, and at-risk species. A review of this database revealed that there is no critical habitat within 10 miles of the study area (USFWS, 2013a).

The ANHC reviewed their files for records indicating the occurrence of rare plants and animals, outstanding natural communities, natural or scenic rivers, or other elements of special concern within or near the study area. No records were located in or near the study area.

The eBirds.com bird observation reporting website, a public resource for sharing bird sightings, was utilized to inform potential Threatened and Endangered (T&E) species in the vicinity of the project (eBird, 2013). According to this resource, three sightings of the bald eagle (*Haliaeetus leucocephalus*) were recorded on the eBird register: January 8, 2013 at Lake Bella Vista, October 20, 2009 approximately two miles north of Lake Bella Vista, and December 23, 2006 approximately two miles downstream of Lake Bella Vista west of US 71. However, it is believed that these birds were utilizing Lake Bella Vista and the surrounding area to forage as there have been no nests reported in the general vicinity. Furthermore, Beaver Lake, located approximately ten miles to the southeast is considered to be preferable habitat for the species.

The area of intent for the Lake Bella Vista dam improvement project was surveyed in April and June of 2013 for T&E species (Redman, 2013). The report based on these surveys is included in Appendix D. The site lacks nearly all of the habitat requirements of the listed species and is highly developed with major roads on two sides of the project. What habitat is available on site is severely degraded from anthropogenic perturbations for both aquatic and terrestrial areas. No karst features were identified during the survey. Given that there is little appropriate habitat for listed species and what habitat there is available is of poor quality, the project will likely not adversely affect any of the listed species in Benton County. Given the proximity of the project to a known gray bat (*Myotis grisescens*) cave, gray bats may use the area for foraging. However, gray bats are nocturnal hunters and, since work for the Proposed Action Alternative will be conducted during the daytime, there should be no effect to nighttime gray bat use of the area. Furthermore, other suitable foraging habitat for the gray bat of better quality is abundant around the study area (Redman, 2013).

No Action Alternative - Under the No Action Alternative, there would be no immediate impacts to T&E species and critical or sensitive habitats. However, if the structure of the dam is allowed to continue to degrade, the dam could collapse, causing potential significant impacts to habitat as Lake Bella Vista drains into Little Sugar Creek. This would also cause significant impacts outside of the study area both upstream and downstream water levels changed and habitat altered. The No Action Alternative has the potential to affect possible habitat for T&E species, including the federally-listed endangered gray bat, and protected species such as the bald eagle.

Proposed Action Alternative - Under the Proposed Action Alternative, impacts to vegetation and soils in the area of development will occur, but these will be isolated and short-term in nature. There are no known T&E species or critical habitat within the study area or in the immediate vicinity. Potential impacts to T&E species will be remote and short-term. Construction activities will be planned in consultation with USFWS and ANHC to ensure no impact to listed species. It is not anticipated that the project will impact karst features as none were identified within the study area. If karst features are found during construction, consultation will be initiated with the ANHC, USFWS, and other relevant agencies to ensure the potential habitat of a threatened or endangered species, such as the gray bat, will not be affected.

A Threatened and Endangered Species report was submitted to FEMA dated August 8, 2013. In a response dated January 21, 2014, FEMA indicated that a No Effect determination for Federally Listed T&E species was made under the following conditions:

- The project will leave standing dead trees and snags within the project area (when practicable) to benefit bats and other wildlife species;
- Development and implementation of construction protocols in the event that bald eagles are observed near the construction site.

The full threatened and endangered species report, and the response from FEMA, are included in Appendix B of this report.

4.3 Cultural Resources

Federal agencies are required to consider the effects of proposed projects on historic properties and provide the Advisory Council on Historic Preservation an opportunity to comment on this work before implementation, pursuant to Section 106 of the National Historic Preservation Act (NHPA), implemented by 36 CFR Part 800. According to the NHPA, historic properties include archeological sites, standing structures, or other historic resources listed in or eligible for listing in the National Register of Historic Places (NRHP). The Area of Potential Effect (APE) is defined as the area of potential impact from the dam replacement project. The APE includes construction staging areas, and the footprint of the existing dam and spillway. As the project will not have a vertical increase, indirect visual effects are not anticipated for this project. No embankment modifications are anticipated outside the defined APE.

4.3.1 Archeological Resources

An Archeologist reviewed site records at the Arkansas Historic Preservation office (the Arkansas State Historic Preservation Officer) to determine the presence of previously recorded archeological sites within the APE and surrounding areas.

Several historic properties (including buildings, structures, objects, and prehistoric and historic archeological sites) have been documented in this part of the Ozark Plateau, some of which have been considered significant by the State Archeologist and SHPO (including some with clearly preserved contexts and human burials).

There are no previously-recorded archeological sites within the APE. The archeological investigations to date consist of initial reviews of the records of the State Archeologist and the State Historic Preservation Officer (SHPO). The lake has been dredged, with soil removed in the 1950s, and later in 2001. The dam, spillways, and retaining walls have been altered and repaired over the years. At least some of the APE has been previously disturbed by construction activities.

Although no archeological sites have been previously recorded in the APE, this part of Little Sugar Creek has never been documented and the possibility exists that historic properties may be present in the APE. Following the initial coordination with SHPO, archeologists will likely test areas of the APE for the presence of historic and pre-historic deposits. The testing areas will likely include the removed soils from the lake and construction areas (areas of impact and removed soils) (See Section 4.1.4 for additional information regarding sediment removal).

In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted and the Applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured and access to the sensitive area restricted. The Applicant will inform FEMA immediately and FEMA will consult with the SHPO or Tribal Historic Preservation Office (THPO) and Tribes and work in sensitive areas cannot resume until consultation is completed and appropriate measures have been taken to ensure that the project is in compliance with the NHPA.

4.3.2 Historic Properties

The area around Lake Bella Vista was farmland in 1915, when Reverend William S. Baker and his wife, Mary, decided to turn their land into a vacation resort. The Bakers purchased the land along Sugar Creek in 1909, and six years later constructed an earthen dam to create a recreational pond around which they platted six blocks and 389 lots, as well as a golf course and tennis courts. The lake was 600 feet wide at its largest point and 1200 feet long.

In 1917 the Bakers sold the fledgling resort to a family of land developers from Dallas, TX, the Linebargers. After the sale of the original Bella Vista property and the subsequent purchase of several of the surrounding parcels of land, the Linebarger Brothers Realty Co. made several improvements to the original dam built by the Bakers, including the addition of two spillways, and a hydro-electric pump house downstream.

The resort officially opened in June of 1917, and remained open well into the 1960s. During the numerous development phases, summer cottages were built along the surrounding hillsides, a large swimming pool and bath house were located just north of the east spillway, a dance hall and ice rink building was constructed on the lake south of the east spillway, and numerous other resort-related facilities and buildings populated the area around the lake. During the 1930s, the resort fell victim to fires and floods—a flood in December 1932 washed a hole through the dam at Sugar Creek, and another flood in September 1937 completely overtook a number of the properties small cottages. In 1952, the Linebargers sold Bella Vista to

E.L. Keith, the owner of another nearby resort at Cave Springs. Keith, a fan of water sports, was responsible for the deepening of Lake Bella Vista, as well as strengthening and raising the height of the dam. In 1952, Keith also constructed a new spillway and dredged the lake.

Today, the lake is owned by the City of Bentonville and is utilized as a park. There is very little infrastructure remaining from the resort facility time period. Most of the buildings from the 1920-1960s period have succumbed to fires. Two summer cottages listed on the NRHP are located east of the lake within a mobile home community. Some additional summer houses dating from the 1920s are located west of US-71, though these are in poor condition. Overall, the Lake Bella Vista area is no longer an intact, cohesive grouping of structures that relate to a particular historic theme or time period. The lake and dam do not convey a historical association with an early resort community that once was centered on the lake.

An architectural historian conducted fieldwork in April, 2013 to identify historic-age resources (those 45 years or older) within the APE. In addition, research was conducted at the Arkansas Historic Preservation office to determine the presence of previously recorded resources within the APE. Research indicated that the Lake Bella Vista Spillways (West and East; Resource Numbers BE3598 and BE3597, respectively) were surveyed in 2003, though an eligibility recommendation for inclusion in the NRHP was not made. Field investigations confirmed that the dam and spillways are the only historic-age resources within the APE.

Following the Section 106 process and the NRHP guidelines for evaluating historic properties, an architectural historian identified the Lake Bella Vista dam and spillways as historic-age resources. Though the resources are associated with the development of the early destination resort community of Lake Bella Vista, they do not convey this historical significance due to a lack of historic context and integrity. FEMA has determined that the dam and spillways are considered Not Eligible for listing in the NRHP due to lack of historic integrity.

A Section 106 Review Consultation letter was prepared by FEMA on August 7, 2013. The letter was submitted by FEMA to the Department of Arkansas Heritage- Arkansas Historic Preservation Program Office (SHPO) for review under Section 106 of the NHPA. In a letter dated September 24, 2014, the Arkansas SHPO concurred that the dam was not eligible for listing in the NRHP and determined that the project will have no effect on any known historic resources. **(Appendix B)**

4.3.3 Native American Consultation

Consultation with federally-recognized tribes is the sole responsibility of FEMA. The Section 106 process of the NHPA requires that any proposed action with the potential to adversely affect Native American cultural or religious resources must be identified within the study area, carefully assessed, and the potential impacts summarized in the final EA.

Tribal consultation letters for the Bella Vista Lake Dam project were sent to the four identified tribes with historic interests in Benton County, AR on September 22, 2014. The tribes consulted were the Caddo Nation, Eastern Shawnee Tribe of Oklahoma, Osage Nation, and the Shawnee Tribe. The tribes' had 30 days from September 22, 2014 to submit comments.

A response from the Caddo Nation Tribal Historic Preservation Officer (THPO) was received by FEMA dated September 23, 2014 which stated that the THPO had 'no concerns with the project proceeding as planned.' A response was received by FEMA from the Osage Nation THPO dated September 29, 2014 which stated that the project, 'will not adversely affect properties of cultural or sacred significance to the Osage Nation.'

A response was received from the Shawnee THPO on October 16, 2014 stating that the department, 'concurs that no known properties will be negatively impacted by this project. No response was received from the Eastern Shawnee Tribe of Oklahoma. (See Appendix B for Tribal Consultation coordination)

In the event that archeological resources are discovered during construction of the project, the project shall be halted and the Applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the resources. All archeological findings will be secured and access to the archeologically sensitive area restricted. The Applicant will inform FEMA immediately and FEMA will consult with the SHPO/THPO or appropriate tribes and work in sensitive areas cannot resume until consultation is completed and appropriate measures have been taken to ensure that the project is in compliance with the NHPA.

4.4 Socioeconomic Resources

The project site is located to the north of Bentonville, Arkansas, in Lake Bella Vista Park, a 132-acre community park located on US 71. The park is bound to the east by residential properties, to the west by US 71 and residential properties, and to the north and south by commercial properties. The total population in the City of Bentonville, as measured by the 2010 Census, was 35,301 individuals, with

68.8 percent of citizens over the age of 16 participating in the work force (U. S. Census Bureau, 2010; 2011a).

The City of Bentonville is part of the Fayetteville-Springdale-Rogers metropolitan statistical area (MSA). Within the MSA, the top employing occupations are office and administrative support (15.1%), sales and related occupations (11.2%), and transportation and materials moving (10.1%) (BLS, 2012). The MSA's largest industries by employment include government (11.4%), manufacturing (10.8%), and retail (9.8%) (BEA, 2011). Bentonville's largest employers include Wal-Mart, Inc., Northwest Medical Center, Mercy of Northwest

Arkansas and Bentonville School District (Bentonville Bella Vista Chamber of Commerce, 2013). In 2011, the unemployment rate in the City of Bentonville was relatively low at 5.7 percent, compared to 8.4 percent in Arkansas, and 8.7 percent nationwide. Median household income was also higher for Bentonville (\$54,194) than for the state (\$40,419) or nation (\$52,762) (U. S. Census Bureau, 2011a).

Lake Bella Vista Park is a locally popular outdoor recreational area drawing people to the north of Bentonville, AR. Fishing and kayaking are popular activities on the lake (Bentonville Bella Vista Chamber of Commerce, 2014)¹.

¹ Income and employment data are collected through the American Community Survey; these figures represent the most recent data available, collected from the ACS five-year estimates, reflecting the period 2007-2011.

No Action Alternative - Under the No Action Alternative, no immediate impacts to socioeconomic resources would occur. However, if further deterioration of the dam occurs and leads to a complete collapse, Lake Bella Vista would likely be almost completely dewatered. This would lead to the loss of the lake as a recreational area for the community.

Proposed Action Alternative - Under the Proposed Action Alternative, it is expected that improvements to the Bella Vista Dam will increase the number of visitors to the park, which will generate economic benefits throughout Bentonville and Benton County as visitor expenditures can include restaurant and bar purchases, lodging, gasoline and other transportation-related costs, as well as retail and recreation.

4.4.1 Environmental Justice

All projects involving federal action (funding, permitting, or approval) must comply with EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, as amended. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of their programs, policies and activities on minority and low-income populations.

In 2010, the City of Bentonville had a population of 35,301 individuals. The median household income as reported in the City of Bentonville was \$54,194 with 10.2 percent of individuals living below the poverty line. As of 2012, Benton County had a population of 221,339 people. The median household income for Benton County in 2010 was \$52,159 with 11.8 percent of individuals living below the poverty line. In 2010, there were 2,915,918 people living in Arkansas. The median household income for the state was \$40,149, and 18.4 percent of individuals lived below the poverty level (U.S. Census Bureau, 2010; 2011a).

Minorities (defined as all residents that are not White, non-Hispanic) represented 23 percent, 23.4 percent, and 25.5 percent respectively, of populations of the City of Bentonville, Benton County, and the state of Arkansas. Hispanic residents comprised a greater percentage of the population in Bentonville and Benton County than in the state as a whole (U.S. Census Bureau, 2010). The specific racial and ethnic composition of these geographies is provided in Table 4-3.

Table 4-3: Racial and Ethnic Composition of Study Area and Surrounding Geographies

Census Geography	Total Population	Not Hispanic or Latino ¹						Hispanic or Latino (All Races)
		White	Black/African American	American Indian/Alaska	Asian	Native Hawaiian/Pacific	Other ²	
City of Bentonville	35,301	77.0%	2.4%	1.2%	8.3%	0.2%	2.2%	8.7%
Benton County	221,339	76.6%	1.2%	1.6%	2.8%	0.3%	2.0%	15.5%
State of Arkansas	2,915,918	74.5%	15.3%	0.7%	1.2%	0.2%	1.7%	6.4%

Source: US Census Bureau, 2010, SF1 Demographic Profile Data (Table P9)

¹The USCB 2010 data considers race and ethnicity to be separate identities. SF1 Table P9 provides race data by "Hispanic or Latino" and "Not Hispanic or Latino" ethnicities.

² Combines USCB Table P9 categories 'Some other race alone' and 'Two or more races'

The study area is located entirely in Block Group 1 of Census Tract 207.04 and is adjacent to Block Group 2 of Census Tract 208.05. See Figure 4-4 for a map of these Census boundaries. Both of these block groups are majority white, with median household incomes over 80 percent of area median family income (AMFI)². Census Tract 207.04 Block Group 1 has a median household income nearly twice the median household income for the City of Bentonville. These census tracts also had extremely low poverty rates in 2011: 1.8 percent in tract 207.04 and 2.1 percent in tract 208.05 (Census Bureau, 2011a). Racial and income information for these block groups is listed in Table 4-4.

² AMFI for the Fayetteville-Springdale-Rogers MSA in 2011 was \$57,500 for a family of four (HUD, 2011).

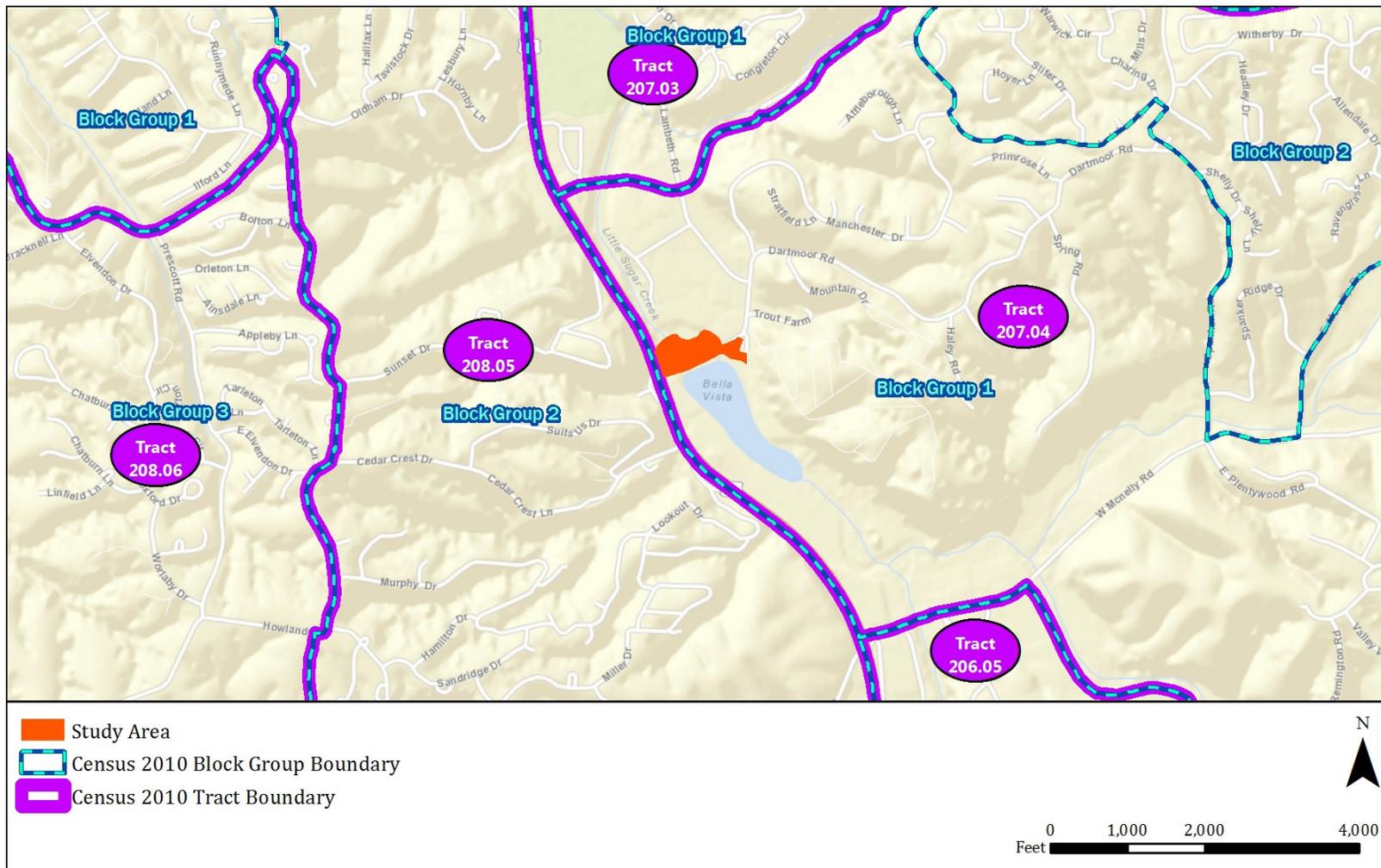
Table 4-4: Racial and Income Composition of Block Groups Near Study Area

Tract and Block Group	White, Non-Hispanic	Minority (non-White)	Median Household Income (2011\$)
Tract 207.04 Block Group 1	94.1%	5.9%	\$103,287
Tract 208.05 Block Group 2	95.4%	4.6%	\$51,744

No Action Alternative - Lake Bella Vista Park is a free, public park. Under the No Action Alternative, no impacts to environmental justice (EJ) populations would occur.

Proposed Action Alternative - Due to the fact that residents near the study area are majority White, non-Hispanic and earn incomes well above not only the poverty rate but also 80 percent AMFI, under the Proposed Action Alternative, there will be no impacts to EJ populations. Further, all residents, regardless of race or income level, will benefit from the Proposed Action Alternative as the park is free and open to the public.

Figure 4-4: Census 2010 Boundaries Within and Adjacent to the Study Area



4.4.2 Hazardous Material

Hazardous materials are defined as any solid, liquid, contained gas or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health or the environment. Improper management and disposal of hazardous substances can lead to pollution of groundwater or other drinking water supplies, and the potential contamination of surface water and soil. The Comprehensive Environmental Response, Compensation and Liability Act and the Resource Conservation and Recovery Act are the primary Federal regulations for the management and disposal of hazardous materials.

GeoSearch, Inc. was contracted to perform a standard regulatory records search. State and federal environmental databases were searched within a radius of the subject property as defined by ASTM E1527-05 distances. Only one locatable site was identified: Goodwill Industries as a Recycling Marketing Directory (see Radius Report in Appendix C for figures and additional information). There were no observations of hazardous materials or evidence of leaks or spills at this site or in the vicinity of the proposed project during a field investigation that took place April 2 and 3, 2013.

No Action Alternative - Under the No Action Alternative, no construction would occur and there would be no impacts to hazardous materials or waste.

Proposed Action Alternative - No hazardous materials or waste impacts are anticipated under the project. Small quantities of potentially hazardous materials may need to be temporarily stored within the study area during project construction. Hazardous materials will be stored and disposed of in accordance with applicable State, Federal, and local laws. Any hazardous materials discovered during construction will be handled and disposed of in accordance with applicable local, State, and Federal regulations.

4.4.3 Noise

Noise is generally defined as unwanted sound and is measured in decibels on the A-weighted scale (dBA), which is the scale most similar to the range of sounds that the human ear can hear. The Day-Night Average Sound Level (DNL) is an average measure of sound that is commonly accepted by Federal agencies as a standard for establishing guidelines for compatible land uses. EPA guidelines state that outdoor sound levels in excess of 55 dB DNL are “normally unacceptable” for noise-sensitive land uses such as residences, schools, or hospitals.

The project is located entirely within city-owned parkland. However, residential areas exist within 1/4-mile of the project.

No Action Alternative - Under the No Action Alternative, no construction would take place and there would be no impact to noise levels.

Proposed Action Alternative - Under the Proposed Action Alternative, temporary short-term increases in noise levels will be expected during the construction period, though these will be limited in area of impact and duration. The closest noise sensitive receiver is the park surrounding Lake Bella Vista. The Veteran’s War Memorial and the surrounding residences are also considered noise sensitive receivers.

Noise impacts to these receivers resulting from the project will be short term and related to construction activities. Once construction is completed, noise will return to the current existing conditions.

4.4.4 Traffic

The location of the project falls entirely within Lake Bella Vista Park where traffic is limited. However, the park is located immediately east of US 71, the only major thoroughfare between northern Arkansas and southern Missouri.

Approximately 1/4-mile of Veteran's Way traverses the northern portion of Lake Bella Vista Park across the dam, connecting US 71 with the residential area to the east of the park. However, cars are no longer allowed to cross the dam as they could further deteriorate the dam. Mercy Way, located approximately 0.5-mile north of the study area, provides another access route to the residential community from US 71. Cars can access the park via the residential area on the east side of the park. There is one small parking lot on the northeast side of the park and a second parking lot on the west side of the park, directly connected to US 71. Cold Cave Drive/Lake Bella Vista Trail forms a walking trail around the lake within the park. Vehicular access is not permitted on the trail.

No Action Alternative - Under the No Action Alternative, there would be no construction and therefore no impacts to existing road infrastructure would occur. However, continued deterioration of the dam may lead to the bridge over Little Sugar Creek being closed to foot traffic, causing the main path between the east and west side of Lake Bella Vista Park to be completely closed down. This might increase traffic to one side of the park or the other as visitors would no longer be able to quickly and easily traverse the park or complete the walking trail loop. In the event of a dam collapse due to deterioration, the foot path across the dam would likely be completely destroyed.

Proposed Action Alternative – Under the Proposed Action Alternative, the Veteran's Way in Lake Bella Vista Park will be closed down during construction of the dam. However, the road is currently closed to vehicular traffic and will remain so even after repairs are complete. It will be reopened to foot traffic after repairs are complete.

Traffic to Lake Bella Vista Park will increase temporarily during construction to bring equipment and workers to the study area. This is not expected to cause significant traffic delays to through traffic on US 71 adjacent to the park. City of Bentonville officials will communicate any possible delays caused by project traffic to first responders and area school districts. Road signs will also be used to communicate with the public. After completion of the project traffic levels are anticipated to return to normal.

4.4.5 Public Service and Utilities

Water and wastewater service are provided to Lake Bella Vista Park by the City of Bentonville. Carroll Electric Coop provides electricity to the Lake Bella Vista park area. No other public service or utilities are provided to the park. No utility lines were identified with the study area.

No Action Alternative - Under the No Action Alternative, there would be no anticipated impacts to public services and utilities.

Proposed Action Alternative – Coordination with Carroll Electric Coop will be required to ensure the project does not impact their utility lines in the area of the project. There will be no anticipated impacts to public services and utilities under the proposed action alternatives.

4.4.6 Public Health and Safety

The health and safety concerns in the study area include consideration for flooding and environmental health. EO 13045 for the protection of children from environmental health and safety risks requires federal agencies to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children.

The project is located in a FEMA-designated flood zone (AE), which is a 100-year flood zone (FEMA, 2007) (Community Panel Number Community Panel Number 05007C0090J).

In terms of environmental health, there are no hazardous materials in or around the project site; therefore, no health or safety concerns result from the presence of waste materials in the area of the project.

There were no environmental health or safety risks identified that may disproportionately affect children.

No Action Alternative - Under the No Action Alternative, no facilities would be constructed and public health and safety within the study area and surrounding areas would remain consistent with the existing conditions. However, should the existing dam structure continue to deteriorate, it would pose a potential public health and safety hazard if the dam were to experience a complete collapse as flood hazards in the area could potentially increase. It would also pose a risk to any people utilizing the park at the time of collapse.

Proposed Action Alternative - Under the Proposed Action Alternative, the new Bella Vista Dam will be constructed to maintain the hydraulic characteristics of Little Sugar Creek – both upstream and downstream of the dam – during flood events to minimize significant changes in water surface elevations. The existing lake level will remain the same based on the HEC-RAS. Park closures, advisories and alerts will keep visitors safe during extreme weather events. No hazardous materials were identified within the study area.

4.5 Summary Table

The following table summarizes the potential impacts of the Proposed Action Alternative, agency coordination/permits, and mitigation measures to offset those impacts (**Table 4-5**).

Table 4-5: Impact Summary Table

Affected Environment	Impacts	Agency Coordination/ Permits	Mitigation
Geology, Soils, and Seismicity	Temporary displacement of soil materials during construction. No impacts to underlying geology are anticipated. No impacts related to seismic activity are anticipated.	SW3P, NPDES permit applications must be obtained prior to construction.	Implementation of BMPs to minimize erosion impacts. Excavated soil and waste materials will be managed and disposed of in accordance with applicable local, State and Federal regulations.
Air Quality	Temporary air quality impacts may occur during construction	None.	Contractors will be required to water down construction areas to prevent dust and flyaway; fuel-burning equipment running times will be kept to a minimum and their engines will be properly maintained.
Climate Change	No impacts to climate change are anticipated. The project will be designed to mitigate impacts from climate change, however (see Mitigation column)	None.	None.

Affected Environment	Impacts	Agency Coordination/ Permits	Mitigation
Water Quality	Surface runoff will increase as a result of the additional impervious cover installed.	SW3P, NPDES permit applications must be obtained prior to construction.	Erosion control measures will be implemented to minimize runoff and drainage impacts. If the action will require excavation to groundwater depths, consultation with the EPA and the ADEQ will be required to identify appropriate mitigation.
Wetlands and Waters of the U.S.	No wetlands occur in the area of the project. There will be no permanent impacts to waters of the U.S. associated with the project. Temporary impacts are unknown at this time but will be minor in nature.	Coordination with USACE to confirm type of permit required during project design and construction planning.	Project design sought to minimize waters of the U.S. impacts. Will likely seek project authorization under NWP 3 – Maintenance or NWP 31 – Maintenance of Existing Flood Control Facilities.
Floodplains	Development will occur within the FEMA-designated 100-year floodplain (Zone AE)	The City of Bentonville will comply with the City of Bentonville Flood Damage Prevention Ordinance.	The Floodplain Administration for the City of Bentonville is in favor of the project and suggests no mitigation so long as the hydraulic capacity of the replacement dam and impounded lake are maintained as close as reasonably possible with existing conditions (See Appendix B).
Wildlife and Fish	Minor impacts to fish and wildlife habitat. Most impacts will be	None.	None.

Affected Environment	Impacts	Agency Coordination/ Permits	Mitigation
Threatened and Endangered Species, Critical Habitat	No federally-listed listed species or critical habitat has been observed in the area of the project.	FEMA issued a No Effect determination (See Appendix B).	If karst features are found during construction, consultation will be initiated with the ANHC, USFWS, and other relevant agencies. The project will leave standing dead trees and snags within the project area (when practicable) to benefit bats and other wildlife species. Construction protocols will be developed in the event that bald eagles are observed near the construction site.

Affected Environment	Impacts	Agency Coordination/ Permits	Mitigation
Archeological Resources	No archeological survey required	Coordination with SHPO and Consulting Parties (See Appendix B).	In the event that archeological deposits, including any Native-American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted, and the applicant will stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured and access to the sensitive area restricted. The applicant will inform FEMA immediately, and FEMA will consult with the State Historic Preservation Office (SHPO) or Tribal Historic Preservation Office (THPO), and the Tribe. Work in the sensitive areas cannot resume until consultation is completed, and appropriate measures have been taken to ensure that the project is in compliance with the
Historic Properties	None	Coordination with SHPO and Consulting Parties (See Appendix B).	None.
Native American Consultation	None	FEMA coordinate with Tribal Agencies (See Appendix B).	None.

Affected Environment	Impacts	Agency Coordination/ Permits	Mitigation
Environmental Justice	All populations will benefit from the Proposed Action Alternative.	None.	None.
Hazardous Material	No hazardous materials or waste impacts are anticipated.	None.	Any hazardous materials discovered, generated, or used during construction will be disposed of and handled in accordance with applicable local, State, and Federal regulations
Noise	Temporary, short-term noise impacts will take place during the construction phase.	None.	None.
Traffic	There will be a temporary increase in traffic related to the construction of the project.	Coordination with AHTD.	Signage will be posted near project site alerting Lake Bella Vista Park visitors and staff of construction traffic.
Public Service and Utilities	No adverse impacts are anticipated.	Coordination with the City of Bentonville and Carroll Electric Coop for provision of	None.
Public Health and Safety	The design of the dam will protect public safety in the presence of wet weather conditions and flooding.	None.	Park closures, advisories and alerts will keep visitors safe during extreme weather events. Appropriate signage and barriers will alert pedestrians and motorists of project activities during

5.0 CUMULATIVE IMPACTS

According to CEQ regulations, cumulative impacts represent the “impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).” In accordance with NEPA, and to the extent reasonable and practical, this EA considers the combined effect of the Proposed Action Alternative and other actions occurring or proposed in the vicinity of the project site.

The project site located along US 71 within Bentonville’s city limits in northern Arkansas. The area includes Lake Bella Vista Park and Lake Bella Visit Dam as well as portions of Lake Bella Vista and Little Sugar Creek. The park is currently used as a public recreational area maintained by the City of Bentonville.

In the foreseeable future, construction of a new dam will be used to meet the needs of the City of Bentonville by allowing them to continue to provide a recreational area for its citizens. The new dam will allow for safe operation of the park and minimize flooding hazards within the study area as well as within the surrounding areas. Impacts from the project will be minor. There are no other planned construction or development projects within the study area at this time.

The study area falls entirely within parkland owned by the City of Bentonville. Habitat within the park will be disturbed as little as possible during project construction. As shown in Figure 4-2, the entire study area falls within the 100-year floodplain. However, the project will maintain current flood levels to the greatest extent practical. Therefore, considered in relation to past, present, and reasonably foreseeable future actions, the cumulative impact of the action to the built and natural environment will be minimal, will be beneficial rather than detrimental, and is not expected to contribute to any adverse effects or to otherwise significantly affect the human environment.

6.0 AGENCY COORDINATION, PERMITS, AND PUBLIC INVOLVEMENT

6.1 Agency Coordination

The following agencies and organizations were contacted by letter requesting project review during the preparation of this EA. Responses received were included in Appendix B.

- Local
 - City of Bentonville
- State
 - Arkansas Department of Emergency Management
 - Arkansas Department on Environmental Quality
 - Arkansas Game and Fish Commission
 - Arkansas Highway and Transportation Department
 - Arkansas Natural Resource Commission
 - Arkansas State Historic Preservation Officer
 - Department of Arkansas Heritage – Arkansas Historic Preservation Program
 - State Parks of Arkansas
- Federal
 - U.S. Environmental Protection Agency, Region 6 Office
 - U.S. Fish and Wildlife Service, Arlington, Arkansas Ecological Services Field Office
 - U.S. Army Corps of Engineers, Little Rock District
 - Federal Emergency Management Agency National Flood Insurance Program Region VI

An agency meeting was coordinated by CP&Y on July 11, 2013. In attendance were representatives from CP&Y, the City of Bentonville, ANRC, ANHC, ADEM, FEMA, HPA, USACE, and USFWS. The purpose of the meeting was to clarify the contents of the EA to satisfy the requirements of all involved agencies. A Meeting Summary is included in Appendix B.

6.2 Permits

In accordance with the applicable local, State, and Federal regulations, the Applicant will be responsible for acquiring any necessary permits prior to commencing construction at the project site. At this stage, it is assumed that impacts to wetlands will be authorized under NWP-3 – Maintenance or NWP 31 – Maintenance of Existing Flood Control Facilities pending approval from the USACE.

6.3 Public Involvement

FEMA is the lead federal agency for this EA. It is the goal of the lead agency to expedite the preparation and review of NEPA documents and to be responsive to the needs of the community and the purpose and need of the proposed action while meeting the intent of NEPA and complying with all NEPA provisions.

Public meetings will be held once the project is further along in the development process. Notification of meetings will be published in relevant local publications to inform the public of their time and location. The draft EA will be available at both a local repository and online at FEMA.gov. A 30-day public comment period will commence on the initial date of the public notice. FEMA will consider and respond to all public comments either individually or in the Final EA.

Per 40 CFR, §1506.6, FEMA was required to provide a public notice in the local newspaper that indicated the Draft EA prepared for this project was available for public review and comment on the FEMA Library and at the Bentonville Public Library. In support of the 30 day public comment period, the public notice appeared in the Benton County Daily Record newspaper on February 18 and March 4, 2015. The 30-day public comment period ended at 5:00 P.M. on March 20, 2015.

A total of 66 public comments were received at the close of the comment period. In addition, FEMA received 6 inquiries and another 5 public comments were received after the conclusion of the comment period. The inquiries and comments received after the comment period were recorded but are not part of this discussion. Aside from private citizens, the Arkansas Game and Fish Commission provided one of the comments.

Below is a summary of the total percentage based on the 66 comments.

- Against the proposed project: 55 (83.3%)
- For the proposed project: 11 (16.7%)

The percentages can be further broken down by the number of individuals who provided comments. Individuals who provided multiple comments are only counted once. A total of 58 individuals provided comments.

- Against the proposed project: 47 (81%)
- For the proposed project: 11 (19.0%)

The above percentages have all been weighted equally and do not distinguish between substantive and non-substantive comments.

Many of the public comments requested that the dam be removed for various reasons. However, FEMA's PA Grant Program can only provide supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit organizations. The dam removal would not be eligible for FEMA funding under the PA Grant program and therefore, was not considered as an alternative.

However, of the comments received, the comments regarding the potential presence of karst geology in the project area and how the deed restriction limited the project alternatives were considered substantive. As a result, the Applicant was requested to address these comments before a Finding of No Significant Impact (FONSI) could be considered by FEMA.

The Applicant was responsible for addressing and expanding upon the discussion of the presence/absence of karst topography in the project area with a defensible discussion and documentation from knowledgeable resources, publications, bulletins, geological surveys, engineering studies or the like to address the public comment concern with this environmental condition.

In the Final EA, in Section 4.1.1 (Geology, Soils, and Seismicity) the Applicant has revised this section in response to the public comments to indicate that a Geotechnical Investigation was conducted by Grubbs, Hoskyn, Barton, and Wyatt. This Geotechnical Investigation has established that subsurface karst geology does not exist in the project area.

The Applicant was responsible for addressing and expanding on the discussion of the deed restriction with documentation and clarification from official resources and records to illustrate the current and historical status of legal land use of the park and project area for the dam.

In the Final EA, in Section 3.3 (Alternatives Considered and Dismissed) the Applicant has revised this section in response to the public comments to indicate that the alternative involving the Removal of Lake Bella Vista Dam with No Replacement would be interpreted as being inconsistent with the restrictions in the Special WARRANTY DEED filed of record in Benton County, AR., Nov.21, 2006 in DEED Book 2006, Page 55778, following the purchase of Lake Bella Vista Park by the City of Bentonville from Bentonville/Bella Vista Trailblazers Association, Inc.

It will be the responsibility of the Applicant to use their normal protocols by way of public meetings, news/press releases or the like to notify the public regarding the completion, availability and posting of the Final EA and FONSI. FEMA has also post the Final EA document on the FEMA Library website and has brief regional External Affairs on the location and availability of the document to convey to outside citizen and press inquiries.

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9.0 APPENDICES