



DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
110 9TH AVENUE SOUTH, ROOM A-405
NASHVILLE, TENNESSEE 37203

IN REPLY REFER TO

Plan Formulation Section

February 19, 2016

City of Crossville
Mr. David Rutherford, City Manager
392 North Main Street
Crossville, Tennessee 38555-4232

Dear Mr. Rutherford:

This letter is in regards to the Cumberland County Regional Water Supply Plan the U.S. Army Corps of Engineers, Nashville District, is developing with the City of Crossville. On November 17, 2005, the Corps entered into a Project Cooperation Agreement with the City of Crossville for the design of the Cumberland County Regional Water Supply project. The project is authorized by Section 219 of the Water Resources Development Act of 1992, as amended by Section 502 (24) of the Water Resources Development Act of 1999. Per the Act, \$5,000,000 is authorized for technical planning, design and construction of water supply projects in Cumberland County.

The project is cost-shared with the City. Seventy-five percent of the project costs are borne by the Federal Government with a five million dollar limit. A minimum of 25 % matching funds must be provided by the City. The "project" deliverables are summarized as "preparation of an environmental impact statement, including engineering analysis of alternatives generally described in the Cumberland County Water Supply Project Letter Report, dated August 17, 2005, and preliminary design of a preferred plan." The alternatives described in the Letter Report included:

- a. Water Conservation
- b. Groundwater
- c. Pipeline to Large Reservoir
- d. Storage Impoundments, and
- e. Water Harvesting

The past years' efforts have involved determining the projected population growth and estimated water supply demand forecasts through 2056. The following has been accomplished:

- a. Land-use Assumptions for Phase II of the Cumberland County Regional Water Supply Project, November 2006.
- b. Water Conservation Plan for the Cumberland County Regional Water Supply Plan, March 2008.
- c. Cumberland County Regional Water Supply – Water Needs Assessment and Water Conservation Plan, March 2009.
- d. Cumberland County Regional Water Supply – Drought Identification and Existing Sources Yield Analysis, January 2010.
- e. Cumberland County Regional Water Supply – Task 1 Technical Memorandum, October 26, 2012.

- f. Cumberland County Regional Water Supply – Task 2D.1 System Model Development, Regional Water Supply Need Determination, and Water Supply Alternatives Yield Evaluation Presentation, February 5, 2013.
- g. Bathymetric Survey of Lake Holiday, Lake Tansi and Meadow Park Lake, June 2015.
- h. Task 3: Water Needs Summary Memo, October 2015.

On October 22, 2015, GKY & Associates, Inc., presented the findings and recommendations of the Water Needs analysis, completed on October 15, 2015. The presentation identified the projected water needs for the region out to planning year 2056 and a sequence of actions that could be implemented in phases to meet the projected water demands. Those actions include:

- Expand Water Treatment Plant Capacities (begin 2016)
- Relax Institutional Constraints (Between Utility Districts) (begin 2026)
- Expand Lake Holiday Water Treatment Plant Service Area (begin 2026)
- Remove Pipe Constraints (begin 2036)
- Raise Meadow Park Lake (begin 2046)

(See enclosed timeline)

Following the October 22, 2015 presentation, we discussed moving forward with a detailed feasibility study and the National Environmental Policy Act documentation.

As mentioned above, five million dollars is the authorized limit of Federal funds to be expended on this project. To date, \$1,061,410.34 (Federal) has been allocated to the project. This leaves \$3,938,589.66 remaining in authorized, but yet to be allocated funds. Currently, approximately \$530,000 of Federal funds are available to expend on the project. To continue the project and maintain the 75% to 25% cost share the USACE will require additional funds (\$133,000) from the City.

Given the funds available for the project, we recommend awarding a contract to develop a hydraulic model of the water providers' distribution systems as the next step. The purpose of the modeling is to understand the infrastructure required to establish a distribution system which allows for efficient sharing of water between the different water providers in the county. The capacities modeled would be based on the projected demand in the GKY documents. An option in the contract may be to prepare a preliminary design of the distribution and water treatment plant systems, to include a Class 4 cost estimate. This action supports the immediate needs of the county and appears relatively straightforward from an environmental effects standpoint. With this information, an understanding of the areas impacted by construction would be identified and the appropriate National Environmental Policy Act (NEPA) documentation could be initiated.

Permitting for new water supply projects, such as raising Meadow Park Dam, must undergo thorough environmental review, including compliance with the Clean Water Act Section 404 (b)(1) guidelines and Section 401 Water Quality Certification (from TDEC). The former requires the permitting authority to select the Least Environmentally Damaging Practicable Alternative (LEDPA). All permit decisions are reviewed by additional agencies including the U.S. Environmental Protection Agency.

Given that the Corps (GKY) Water Needs Summary Memo has identified several steps that meet the forecasted water supply needs for the County without generating impacts associated with construction of a new source, we are of the opinion the LEDPAs would have to be pursued before permits could be obtained for a raise of Meadow Park Lake Dam. The actions prior to raising the dam do not involve the same degree of impacts to Waters of the US while still increasing water supplies to serve future county needs. The Section 404 (b)(1) guidelines require less impacting measures to be accomplished first. In

addition, we anticipate raising Meadow Park Dam to elevation 1836.7 would impact approximately 75 acres of wetlands based on the City's 2009 report. Mitigation costs alone for this type of wetland impact are estimated to be \$5.2 million (\$35,000 per credit). Wetland mitigations cost are based on a 2:1 ratio and typical wetland mitigation cost from an approved mitigation bank within the area. Stream impacts and stream mitigation cost would also add to this total. Based on the City's 2009 report, impacts to multiple streams surrounding Meadow Park Lake would be anticipated. Impacts to streams appear to be 8,000 to 10,000 linear feet. Mitigation cost based off of typical stream mitigation cost would be from \$1.9 million to \$2.4 million (\$240.00 per foot). Permits for this degree of impact would only be considered after other alternatives (LEDPA's) are implemented or found impractical. For these reasons, the Corps believes it important to phase the NEPA documents to coincide with the implementation of scope features identified in the Water Needs Summary Memo.

At this point our recommended path forward is as follows:

1. USACE and City of Crossville meet and revisit the Letter Report, in order to clearly define the "short list" of alternatives and plan for detailed feasibility of the "short list".
2. USACE to provide the GKY Water Needs Summary memo to the Tennessee Department of Environment and Conservation. The purpose is to inform TDEC of a proposed regional plan to address the forecasted water needs in Cumberland County and to learn the timing of TDEC's permitting for a Dam Raise Alternative. USACE will request a formal opinion on the GKY report and permitting considerations.
3. City of Crossville provides USACE with \$133,000 in order to access additional Federal funding for the project.
4. USACE and City meet with the Utility Districts serving the County and discuss development of a Hydraulic Model for the combined water distribution system that allows for efficient sharing of water.
5. USACE contracts to develop a hydraulic model of the Cumberland County regional potable water distribution system.

The Corps of Engineers appreciates the opportunity to work with the City to develop cost effective solutions to meet future water needs in the County. I look forward to hearing back from you on the proposed path forward and any other questions you may have concerning the Section 219 authority.

Sincerely,





Russ L. Rote, P.E., PMP, CFM
Chief, Project Planning Branch

Enclosure

RECOMMENDED UPGRADE TIMELINE



Upgrade Description (Scenario)	<=>	2016	=	2026	=	2036	=	2046	=	2056	>=>
Expand WTP Capacities (2A)											
Relax Institutional Constraints (3A)											
Expand Lake Holiday Service Area (4A)											
Remove Pipe Constraints (5A1)											
Raise Meadow Park Lake Dam (6A1)											

 = 10% Safety Factor
 = 20% Safety Factor

WTP Capacity Timeline

Peak WTP Capacity (MGD)	Expand WTP Capacities (2A, 2016-26)	Relax Institutional Constraints (3A, 2026-36)	Expand Lake Holiday Service Area (4A, 2026-36)	Remove Pipe Constraints (5A1, 2036-46)	Raise Meadow Park Lake Dam (6A1, 2046-56)
MPL WTP	2.59	4.95	4.41	10.54	12.44
Lake Holiday WTP	3.44	3.58	4.12	4.50	4.50
Crab Orchard WTP	2.42	5.17	4.82	4.62	4.62



U.S. Army Corps
 of Engineers
 Norfolk District

Enclosure