Energy, Mineral
and Land Resources
ENVIRONMENTAL QUALITY

PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

TRACY DAVIS
Director

November 17, 2016

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Woodlake CC Corp.
c/o National Corporate Research, Ltd.
212 South Tryon Street; Suite 1000
Charlotte, North Carolina 28281

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Woodlake CC Corp.
401 South Tryon Street; Suite 3000
Charlotte, North Carolina 28202

RE: Dam Safety Order 16-02
Woodlake Dam
Moore County
State Dam ID: MOORE-040
Cape Fear River Basin

Dear Sir or Madam:

Attached is an order, issued under the authority of the North Carolina Dam Safety Law of 1967, requiring that by December 5, 2016, the final submittal of the final design of the interim emergency remedy for the subject dam located on Crane Creek in Moore County be developed by a North Carolina registered professional engineer and submitted to the Director of the Division of Energy, Mineral, and Land Resources. In addition, construction of the interim emergency remedy must be initiated by December 8, 2016 and completed by March 1, 2017 or temporary breach of the subject dam must be initiated by December 8, 2016 and completed by December 31, 2016. Lastly, a complete design for permanent replacement of the failed spillway must be developed by a North Carolina registered professional engineer and submitted to the Director of the Division of Energy, Mineral, and Land Resources within 91 days of issuance of this order. A copy of the North Carolina Dam Safety Law of 1967 is enclosed for your information.

If you wish to contest this Dam Safety Order, you must request a contested case hearing within 10 days after receiving this notice. This request must be in the form of a written petition that conforms to the requirements set forth in North Carolina General Statute (NCGS) 150B-23. The original petition and one copy must be filed as follows:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, North Carolina 27699

Any questions about filing a petition may be directed to the Clerk of the Office of Administrative Hearings by telephone at (919) 431-3000.

A copy of the petition must also be served on the Department as follows:

Mr. Sam M. Hayes, General Counsel
Department of Environmental Quality
1601 Mail Service Center
Raleigh, North Carolina 27699-1601

Please note that failure to comply with this Dam Safety Order may result in:

1. The assessment of a civil penalty of not less than $100.00 nor more than $500.00 for each day of violation. This penalty will begin to run from the deadline established in the Dam Safety Order; and/or

2. A request to the Attorney General's Office for injunctive relief.

If you have any questions, please contact me in writing or by telephone at:

Mr. Brian Shane Cook, PE, LSIT
State Dam Safety Engineer
1612 Mail Service Center
Raleigh, North Carolina 27699-1612
Telephone: (919) 707-9217

We would appreciate your calling us as soon as you receive this notice so that we can be aware of your plans and schedule.

Sincerely,

Brian Shane Cook, PE, LSIT
State Dam Safety Engineer
Land Quality Section

Enclosure

cc: Mr. Njoroge Wainaina, PE, Geosyntec Consultants of NC, PC
Mr. Beau Hodge, PE, Geosyntec Consultants of NC, PC
Mr. Nick Mills, DEMLR Environmental Specialist – FRO
Surface Water Protection Regional Supervisor
Mr. Scot Brooks, CEM, Emergency Manager – Moore County
Ms. Julie Watson, Owner's Representative

DAM SAFETY ORDER

FINDINGS AND ORDER OF THE DIRECTOR
DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES

Woodlake CC Corp.
c/o National Corporate Research, Ltd.
212 South Tryon Street; Suite 1000
Charlotte, North Carolina 28281

Woodlake CC Corp.
401 South Tryon Street; Suite 3000
Charlotte, North Carolina 28202

RE: Woodlake Dam
Moore County
MOORE-040
Cape Fear River Basin

Order No.: DSO 16-02

Pursuant to the authority contained in North Carolina General Statute (NCGS) 143-215.32 as delegated to the Director in the North Carolina Administrative Code, Title 15A, Subchapter 2K, Section .0302 (15A NCAC 2K.0302), I find the following:

1. Woodlake CC Corp. owns a dam on Crane Creek in Moore County. The dam is located approximately 2,450 feet northwest of the intersection of Lobelia Road (SR 690) and McGill Road (SR 2017).

2. The dam is approximately 23 feet in height and has an impoundment capacity of approximately 10,000 acre-feet at the top of the dam elevation.

3. The dam has the following deficiencies that threaten its integrity:

   A. During Hurricane Matthew, a large portion of the concrete spillway system collapsed on the dam, damaged the underdrain system, and washed out a large portion of the downstream embankment of the dam.

   B. Boils were noted downstream of the dam while the reservoir was draining and since the reservoir has been drained, large amounts of sand and other types of soil have been found on the downstream side of the dam which seems to indicate that undermining of the soil under the concrete spillway has occurred.

   C. Several cracks were noted in the concrete of the principal spillway of the dam. Areas of concern are located along the right side (as viewed facing downstream) subsurface drain outlets. All joints in the principal spillway are in need of maintenance or repair. In addition, large areas of spalling concrete are present at the entrance and outfall of the spillway.

   D. A void of unknown size is present at the bottom of the principal spillway. Unsuccessful attempts have been made to stabilize these voids with concrete debris deposited at the end of the spillway.

E. Voids are present along the right side (as viewed facing downstream) wing wall as well as at the subsurface drain outlet locations.

F. Seepage was noted at various locations on the downstream slope of the dam.

G. Independent Hydrologic and Hydraulic engineering modeling was completed by DEMLR staff that indicate that it is possible for the spillway to be activated during a 4.75 inch in 6-hour rain event even with the reservoir completely drained and with both bottom drains fully open. Since October 2015, there have been at least 3 storm events that have exceeded this rainfall amount and duration in this area. Should another one of these type of storm events occur before the dam is temporarily breached, the spillway could be activated and the flow of water could continue to damage the spillway to a point that a breach of the dam could occur at or near full pool which could cause major destruction to downstream property and potential loss of life.

H. This dam is currently hydraulically deficient under applicable regulatory requirements and could potentially overtop during the regulatory design storm event. This structure is capable of passing and/or storing 9.14 inches of rainfall in a six-hour period without overtopping the dam in a pre-hurricane condition (reservoir being at normal pool before the storm event) based on the independent H&H analyses performed by DEMLR staff. The regulatory minimum spillway design storm for a large high hazard dam in Moore County is a ¾ PMP (22.9 inches of rainfall) described in 15A NCAC 2K.0205(a).

4. The dam is classified in the high hazard category because failure of the dam poses a threat to human life and property downstream from the dam that includes but not limited to downstream single-family residences at 3862 Lobelia Road and 1484, 1492, and 1494 McGill Road, as well as State Road 690 (Lobelia Road) and State Road 2017 (McGill Road). State Road 690 is a public roadway with a traffic count of approximately 4,000 vehicles per day (AADT). State Road 2017 is a public roadway with a traffic count of approximately 330 vehicles per day (AADT). The Emergency Action Plan that was submitted by Geosyntec Consultants of NC, PC on September 12, 2016 indicates that there are at least 551 structures that could potentially be inundated by a breach of the subject dam.

5. A Certificate of Approval to Repair for the subject dam was issued on May 15, 2015 to Woodlake CC Corp and was received by Woodlake CC Corp. on May 26, 2015. As part of that approval, Woodlake CC Corp. was notified that adherence to the approved construction schedule and impoundment drawdown elevation would be required to avoid further enforcement action by this Division. To date, no substantial site work has been performed to implement the approved repair plans. 15A NCAC 2K.0202(b) states that the Certificate of Approval period shall be valid for the construction schedule specified in the approved final design report. In any event, construction must commence within one year after the certificate is issued. 15A NCAC 2K.0202(d) states that if construction does not commence within one year after the certificate of approval is issued, the certificate shall expire and a new application shall be submitted. As this work did not commence within the period allowed by rule, the prior Certificate of Approval to Repair has expired and is no longer valid, thus, a new course of action must be taken to improve the current situation.

5. Since the repair plans were approved, Hurricane Matthew has caused further damage to the spillway system and, thus, there is an immediate need to temporarily breach the dam or implement an interim emergency remedy to protect the public and property downstream of the structure.

6. As an elevation reference datum, the elevation at the top of the spillway gates is plan elevation 224.5 according to the repair plans approved by this Division by letter dated May 15, 2015.

Therefore, by the authority of NCGS 143-215.32(b) and 15A NCAC 2K.0302, it is hereby Ordered that:

1. The reservoir surface elevation shall be immediately drawn down to a maximum plan elevation of 211 feet and maintained at or below that elevation until repair, alteration, reconstruction, or breaching is accomplished pursuant to plans and specifications developed by a licensed engineer and approved by Tracy E. Davis, PE, CPM, Director, Division of Energy, Mineral, and Land Resources. Any devices necessary to control erosion and prevent discharge of sediment shall be installed in the interim. Re-impoundment will also require the issuance of a Certificate of Approval to Impound after a design for a new permanent spillway has been submitted to and approved by DEMLR, said spillway has been constructed under the supervision of a North Carolina licensed professional engineer, and as-builts of said construction have been certified by a North Carolina licensed professional engineer and approved by DEMLR.

2.a. Woodlake CC Corp. shall by December 5, 2016 complete final design of the interim emergency remedy or emergency plans for temporary breaching the subject dam and submit such design to the Division of Energy, Mineral, and Land Resources in accordance with 15A NCAC 2K.0302(b).;

and

2.b. Woodlake CC Corp. shall by December 8, 2016 initiate the construction of the interim emergency remedy or emergency temporary breach in accordance with 15A NCAC 2K.0302(b) and said construction shall be completed by March 1, 2017. All construction or breach activities at this dam shall be conducted in a manner that will preclude the washing of sediment downstream.

11/28/2016
Date

Tracy E. Davis, PE, CPM
Director, Division of Energy, Mineral, and Land Resources