



Ed Curtis/State/NCEM
03/07/2008 06:47 PM

To KAshe@ncem.org@NCEM, John Gerber@ncem
cc AmyMHelms@co.union.nc.us
bcc
Subject Optimist Park letter for Union County

Ken/John -

My draft letter to Union County on the Optimist Park no-impact study is attached. I'm copying Amy to let her know that I haven't dropped off the face of the earth and to see if it addresses all of the issues she is concerned about.

I'll be out of the office until Thursday (3/13) if you need me to do any further work on it before it goes out.

The USGS quads on file at the DROC show 10 ft contours - Ken's notes said they were 20 ft on the maps he checked. I was looking at Weddington, Waxhaw, and Matthews quads.

Ed



Optimist Park ltr 2.doc



North Carolina Department of Crime Control and Public Safety
Division of Emergency Management
Office of Geospatial and Technology Management
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Michael F. Easley
Governor

Bryan E. Beatty
Secretary

March 7, 2008

Amy Helms, P.E.
Assistant Director
Infrastructure and Environment
Post Office Box 1398
Monroe, North Carolina 28111-1398

Reference: Optimist Park Grading/Flood Analysis

Dear Ms. Helms:

As you requested, the National Flood Insurance Program (NFIP) Engineer for the North Carolina Floodplain Management Branch, Ed Curtis, P.E., CFM, reviewed a grading/flood analysis report prepared by Yarbrough-Williams & Houle, Inc. for Optimist Park in Weddington, North Carolina. The study is titled "Flood Analysis for Wesley Chapel Weddington Athletic Association – Optimist Park, Revised 11-27-07". The report is signed and sealed by Marc Anthony Houle, P.E. and Joseph E. Whaley, Jr., P.E. Your request letter dated December 11, 2007 states that the purpose of the grading/flood analysis is to show that, by removing some of the fill material previously placed at the site, the remaining fill does not increase flood levels on the West Fork of Twelve Mile Creek. The report does not include a No-Impact certification.

As noted in your request letter, the analysis does not demonstrate that the remaining fill causes no increase in flood levels. At cross sections 35361 and W, there are increases of 0.02 feet in the base (100-year) flood elevations from the Corrected Effective model (which represents the topographic conditions along this reach of the West Fork of Twelve Mile Creek prior to development Optimist Park) to the Existing model (which represents the proposed topographic conditions after removal of some of the fill material previously placed at the site). There is also a 0.01 foot increase in the floodway elevation at cross section W. Federal Emergency Management Agency (FEMA) guidelines for No-Impact studies specify no increases in flood levels greater than 0.00 feet, so the Optimist Park grading/flood analysis report would not support a No-Impact certification.

As long as the excess fill material remains in place, the Optimist Park site is considered to be in violation of the Union County Flood Damage Prevention Ordinance. To remedy the violation, the owner of the site must either (a) remove all fill material and any other

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obstructions from the regulatory floodway; (b) provide a valid No-Impact study and certification demonstrating that removal of some of the fill material and/or other mitigation measures allow the site to be developed without increasing flood levels; or (c) obtain an approved Conditional Letter of Map Revision (CLOMR) from FEMA indicating that flood level increases caused by development of the site do not have an adverse impact on existing structures on properties affected by the increases.

If the violation is not remedied by one of these methods, Union County may be subject to sanctions imposed by FEMA. Initially, FEMA will provide written notice that the county will be placed on probation following a 90-day notice period. If the violation is not remedied to FEMA's satisfaction during the 90-day period, the probation period will begin and a \$50 premium will be charged on any flood insurance policies sold or renewed in the county.

If the violation is still not remedied to FEMA's satisfaction during the probation period, FEMA will suspend Union County from the NFIP. While on suspension, flood insurance policies cannot be sold or renewed and federally-backed mortgages, grants or loans cannot be issued for development in Special Flood Hazard Areas. Also, federal and state disaster assistance will not be available for flood-damaged structures located in Special Flood Hazard Areas.

If the owner of the Optimist Park site plans to pursue either a No-Impact study or CLOMR approach to remedying the violation, we suggest the following modifications to the methodology used by Yarbrough-Williams & Houle, Inc. in the Optimist Park grading/flood analysis:

1. The "Summary of Cross Section Elevations" table in the report shows the same starting water surface elevation for the HEC-RAS floodway runs for the Duplicate Effective, Corrected Effective, and Existing models. The starting water surface elevation for the floodway runs should be set to the floodway elevation from the Effective model.
2. The narrative states that the source of the topographic data for additional cross sections in the Corrected Effective model is USGS topographic data. USGS quadrangle maps in that area have 10 foot contour intervals. This is not considered a sufficient level of accuracy by FEMA for hydraulic modeling used for floodplain mapping – 5 foot or better contours are typically required. The North Carolina Floodplain Mapping Program collected LIDAR elevation data in Union County during the winter of 2001-2002. This data is available upon request from NCFMP and can be used to generate accurate topographic maps with 2 foot contours. We recommend that this or another acceptable source of topographic should be used to develop cross sections for the Corrected Effective model.
3. The narrative states that floodway boundary locations for cross sections X, Y, and Z for the Corrected Effective model are based on the effective FIRM and Union County GIS. This results in floodway widths that are significantly wider than those in the Effective model. Although the floodway widths on the FIRM do not match those in the Effective model, they are within FEMA tolerances for floodplain mapping. The



floodway boundary locations at published cross sections in the Duplicate Effective, Corrected Effective, and Existing models must all be based on the stations in the Effective model and FIS. The floodway boundary locations for additional cross sections can be scaled from the effective FIRM in between published cross sections.

4. The Manning's n values for the channel are reduced from 0.06 in the Duplicate Effective model to 0.04 in the Corrected Effective model. No explanation is provided in the narrative for this change. Documentation (i.e. photos, field reconnaissance) should be provided.
5. The Manning's n values on the left overbank are reduced from 0.045 in the Corrected Effective model to 0.025 in the Existing model. The areas where the lower value is used include both ball fields and the area between the ball fields and the stream. Verification should be provided that this area is maintained to the same standard as the ball fields, or else a different Manning's n value should be used.
6. The Manning's n value of 0.025 is lower than the values typically used in this type of modeling and does not allow for the presence of any obstructions, however minimal. The grading plan indicates that there are fences, dugouts, bleachers, score boards, goal posts, etc. located in the floodway and flood fringe areas. These features are not modeled as blocked obstructions in the Existing model. It is recommended that the Existing model be modified to include these obstructions. Alternatively, the Manning's n value should be changed to a higher value that accounts for the presence of the obstructions.
7. Comparison of the cross sections in the Corrected Effective and Existing models shows topographic modifications on the right side of the West Fork of Twelve Mile Creek (looking downstream). Since the proposed modifications only apply to the Optimist Park property on the left side of the stream, it is recommended that the same cross sections should be used on the right side of the stream in both models.

I hope this assessment of the Optimist Park grading/flood analysis and the accompanying recommendations will be useful in your discussions with Yarbrough-Williams & Houle, Inc. regarding this project. Please contact me if you have questions or need additional information.

Sincerely,

Kenneth W. Ashe, P.E., CFM
Assistant Director
Office of Geospatial and Technology Management

