

GRAND OAKS No. 3 SUBDIVISION: MEMO

Date: June 3, 2020

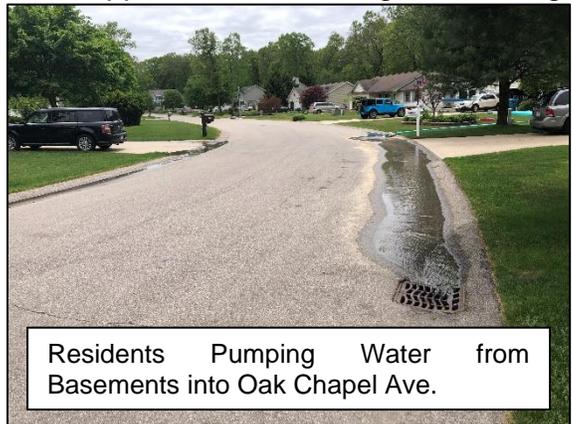
By: Andrew Stoffel. - Land & Resource Engineering (LRE)

Re: Grand Oak No. 3 Subdivision

Introduction: The Ottawa County Water Resources Commissioner (OCWRC) received complaints from Heather Walsh, 14071 Oak Chapel Avenue (Lot 66), regarding flooding issues within the Grand Oak No. 3 Subdivision in Grand Haven. Land & Resource Engineering (LRE) was retained by the OCWRC to investigate the flooding issues occurring within the subdivision. Andrew Stoffel of LRE visited the site on May 28th, 2020 to perform an inspection and preliminary survey of the retention basin and Lots 65 & 66.

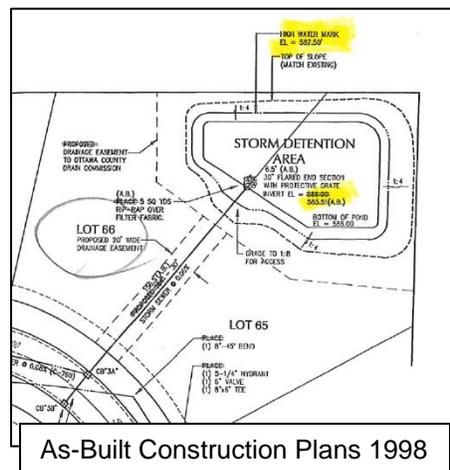
Existing Conditions: Upon entering the subdivision, it is apparent the flooding is affecting more properties than those immediately adjacent to the retention basin. Many of the properties were pumping water from their basements into Oak Chapel Avenue. The water pumped into the street enters the storm sewer and ultimately discharges to the retention basin located near Lots 65 & 66. The bottom of the basin elevation ranges between 585.25 to 585.50 feet. The elevation of the water in and around the basin is approximately 588.30 feet. The design high water mark, based on the construction plans from 1998, is 587.50 feet. The current water level is 0.80 feet, approximately 9.5 inches, higher than the design high water. The berm for the retention basin along the north and west property lines of Lots 65 & 66 has an elevation of approximately 590.60 feet.

A soil boring was performed via hand auger to determine the elevation of the ground water. The soil boring was dug between Lots 65 & 66, at a surface elevation of 591.09 feet. The boring was dug to a depth of 5.0-feet below the surface. Groundwater was encountered at 3.86-feet below the surface of the ground, at an elevation of 587.23 feet, at approximately the design high water for the retention basin. As a result of the high groundwater levels, the retention basin provides virtually no stormwater storage volume below the design high water mark.



The finished floor of Lot 66 (walkout basement) is 588.28 feet. Houses in the subdivision with daylight windows or ingress/egress windows appear to have basement floor elevations below the groundwater table. When the groundwater elevations are higher than the basement elevations, continuous pumping will be required to drawdown the water levels near the houses.

As previously stated, the groundwater elevation is approximately 2-feet higher than the bottom of the retention basin. The elevated groundwater levels have virtually greatly reduced the storage capacity of the basin and inhibit the ability to infiltrate back into the ground. As a result, stormwater runoff from the Grand Oaks No. 3 Subdivision will continue to inundate the retention basin and overflow onto adjacent yards during times of precipitation.



It is also important to note that the water elevation of Lake Michigan is currently above 582 feet (IGLD 1985 Datum). This is approximately 3-feet higher than average water elevations for the long-term average for the month of May. Increased water levels in the Great Lakes most likely affects the groundwater levels throughout the entire Great Lakes Basin.

Preliminary Recommendations: Unfortunately, the properties adjacent to the Grand Oaks No. 3 Subdivision retention basin are located in a natural low area, with limited opportunities for a gravity outlet. Correspondences with the OCWRC document basement flooding of Lots 66 – 69 from as far back as 2009. It appears as though many of the basements were constructed to low relative to groundwater levels.

The Grand Oaks No. 3 Subdivision is located within the Millhouse Bayou watershed. The most viable solution is to construct an approximately ½ mile gravity outlet from the retention basin to Millhouse Bayou. This will be a costly project requiring a petition under Chapter 8 of the Drain Code as well as additional easements and permits to extend the county drain.

Please feel free to contact our office at (616) 301-7888 with any questions or if LRE can be of further assistance.

Sincerely,

Land & Resource Engineering (LRE)

Andrew Stoffel
Project Engineer