

## MEMORANDUM

August 21, 2012

TO: Nectarios Pittos – Planner, Development Services Department

CC: Kimberly Flom – Assistant Director, Development Services Department  
Kevin Lehmann – Engineer, Development Services Department

FROM: Thomas T. Burke, PhD, PE  
Travis M. Parry, EI, CFM

SUBJECT: Flood-prone Homes in Tuckaway  
(CBBEL Project No. 03-15A1)

This purpose of this memorandum is to summarize the stormwater improvements that have been implemented in the Tuckaway Subdivision in the Village of Orland Park (Village) to reduce the risk of future flooding of the residential structures and to outline the requirements for future residential structures built on the properties. As you are aware, several homes in the area were repeatedly subjected to substantial flooding since their construction in the late 1960's. As a result, the Village commissioned more than eight flood studies for the area over the last three decades to try to address the flooding. Following extensive village-wide flooding in 2003, Christopher B. Burke Engineering Ltd. (CBBEL) was contracted to perform a flood risk reduction assessment to determine the causes of the flooding and provide solutions to reduce the risk of future flooding for the impacted areas.

The Tuckaway Subdivision is located in the natural, historical drainageway for approximately 160 acres that drain to McGinnis Slough. Prior to the development of the first homes, the area drained through an open channel toward the northwest and discharged under 143<sup>rd</sup> Street to McGinnis Slough. Following the creation of the Flood Insurance Rate Maps (FIRM) by the Federal Emergency Management Agency (FEMA), the majority of the natural drainageway was designated within the 100-year floodplain. As the area continued to develop, modifications were made to the open drainageway that included enclosing portions of the system in pipes without updating the FIRM.

As part of the 2003 CBBEL Flood Risk Reduction Assessment, a detailed hydrologic and hydraulic model of the Tuckaway Subdivision stormwater system was created to assess the extent of the flooding and develop alternatives to alleviate it. The model was calibrated to the storm of record for the area, which is in excess of the 100-year, 24 hour storm event. Utilizing this model, CBBEL evaluated a number of alternatives and determined that the construction of a 60" overflow storm sewer was the most effective way to reduce the risk of future flooding for the Tuckaway Subdivision. The analysis indicated reductions in the 100-year flood elevation of over 4 feet in some areas and approximately 1.8 feet in the vicinity of homes along Westwood Drive.



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9575 W Higgins Road, Suite 600 Rosemont, Illinois 60018-4920 Tel (847) 823-0500 Fax (847) 823-0520

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Following a lengthy permitting process, construction of the overflow storm sewer began in the fall of 2007. The overflow system consists of an overflow structure located at Brown Park and a 60" Reinforced Concrete Pipe (RCP) storm sewer that discharges independently of the existing system into McGinnis Slough. The entire existing storm sewer system remains in place and functioning for all low flow events. The overflow system is utilized once the storage capacity of Brown Park is exceeded and significantly increases the conveyance capacity of the Tuckaway Subdivision storm water sewer system. Since the construction of the overflow sewer, the area has been subjected to several intense storm events with no flooding reported or experienced through the subdivision. Following the construction, CBBEL applied and received for a Letter Of Map Revision (LOMR) from FEMA to remove all areas of the Tuckaway Subdivision from the 100-year floodplain.

Based on the improvements the Village has implemented, CBBEL's opinion is that the vacant lots on Westwood Drive area reasonably are safe from flooding based on historical data and can be rebuilt on. There is still a flood risk to this area. To minimize the risk of flooding to new homes and not adversely impact the neighboring homes, CBBEL recommends the following actions for the development of the parcels at 14610 and 14620 Westwood Drive:

- The two properties have an historical Base Flood Elevation (BFE) of 692.8. Any new structures on the site must be built at or above the site-specific Flood Protection Elevation (FPE) of 694.8. The 694.8 elevation is consistent with the finished foundations of the structures at 14600 and 14630 Westwood Drive.
- Apply a waterproof coating or membrane for all exterior walls of the structure below the FPE.
- Install backflow valves in all stormwater and sanitary lines connected to the structure below the FPE.
- Install a foundation drain system and connect to sump to reduce the hydrostatic pressure on the foundation walls.
- Require a water resources review of any proposed development by the Village Engineer or similarly qualified professional to verify compliance with these requirements and other generally accepted practices for properties in flood prone areas.

In addition to the requirements listed above, CBBEL also strongly suggests the following:

- The sump pump system for each residential structure should consist of a minimum of two separate sumps that are connected underground. At least one of the sump pumps should also have a battery backup system.

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