

SECTION 1 - PROJECT SUMMARY

Purpose and Background

The City of Novi Department of Public Services has identified several areas of storm water conveyance concerns at various locations in the City. The overall intentions of this report are to review these specific areas to develop potential measures to reduce or eliminate the problems and improve storm water quality, and develop cost estimates for future budgeting and planning purposes.

The following areas were evaluated as part of this project:

Subject Area	Evaluated Item / Area of Concern
Lexington Green	<ul style="list-style-type: none">• Rear yard flooding• Overland flow between detention ponds
Oakland Glens Mobile Home Park	<ul style="list-style-type: none">• Detention pond overflowing into yards and street
Orchard Hill Place Detention	<ul style="list-style-type: none">• Damage at inlet and outlet structures• Reduced capacity due to sedimentation
Village Oaks / Village Woods	<ul style="list-style-type: none">• Inlet and outlet structure condition• Access to structures for maintenance
Streambank Erosion (various)	<ul style="list-style-type: none">• Middle Branch of Rouge River downstream of Grand River to the southerly City Limits (excluding Meadowbrook Lake)• Ingersol Creek downstream of Ten Mile to Meadowbrook Lake• Bishop Creek downstream of 11 Mile to Ingersol Creek

The following paragraphs present a brief summary of each area evaluated, potential measures to improve the situation(s), and cost estimate ranges. Refer to the full sections of this report for detailed discussion of the subject areas and presentation of options for improvements.



Lexington Green

The Lexington Green subdivision is situated south of Nine Mile Road and west of Taft Road. The areas of concern are along Galway Drive from Taft to the west. During heavy and/or long duration rain events, residents report overland flow causing rear-yard flooding between a subdivision detention pond and a wetland in the Pheasant Hills subdivision to the south (which is in the City of Northville). North of the wetland, the water level can rise, leading to rear-yard inundation for homes in the immediate vicinity.

Based on a report prepared by the Oakland County Water Resources Commissioner's (OCWRC) Office in 2012, and field and topographic observations as part of this study, there are several contributing factors which may lead to the flooding. The detention basin is undersized, the outlet from the basin to the wetland lacks capacity, the wetland pond contains significant sediment reducing capacity, and the outlet from the wetland pond to the Randolph Street Drain appears restricted. The study prepared in 2012 presents several potential improvements, all of which require property impacts south of the Lexington Green Subdivision in Northville. This report examined additional options which do not require work outside of the City of Novi.

Evaluated Option	Estimated Construction Cost
Storing storm water upstream of existing basin	\$300,000 - \$370,000
Construct additional surface detention basin upstream of existing basin	N/A – not viable
Redirecting flow to Regional Basin	\$850,000

Refer to Section 2 for a detailed report on the evaluation of the Lexington Green Subdivision.



Oakland Glens Mobile Home Park

The Oakland Glens mobile home park is located north of Thirteen Mile Road and east of Novi Road. The private detention pond in the northerly portion of the site is reported to rise significantly during larger storm events, flooding yards and encroaching on Montmorency Drive (northern loop road) pavement. After it was brought to the City's attention, this drainage issue was reviewed to determine if there were any improvements required upstream and downstream of this area. The condition of the detention pond was reviewed (capacity, inlets, outlets), as well as any potential downstream constraints including the culverts under Novi Road and the ultimate discharge into Walled Lake.

Utilizing existing information, (2 foot GIS data), the volume of the pond cannot be calculated due to lack of information. However, the pond is exhibiting overtopping, which is likely a combination of inflow greater than has been determined, a reduction in stormwater storage capacity due to sedimentation and overgrowth, and the poor condition of the outlet pipe to the adjacent wooded wetland. Potential options to improve the conditions are summarized in the following table.

Evaluated Option	Estimated Construction Cost
Dredge detention pond – increase capacity	\$225,000
Clean out ditches between sections of pond	\$59,000
Re-route upstream (inflow) drainage	\$231,000
Replace and upsize outlet culvert	\$32,000

Refer to Section 3 for a detailed report on the current conditions at Oakland Glens, and further discussion on the suggested mitigation measures.

Orchard Hill Place Detention Basins

There are two storm water detention basins north of Eight Mile Road on either side of Haggerty Road which serve the Orchard Hill Place development as well as the businesses on the east side of Haggerty across from the Sheraton hotel. The westerly basin (Orchard Hill Place Basin #1) is on the west side of Haggerty Road in front of the Sheraton hotel. The easterly basin (Orchard Hill Place Basin #2) is on the east side of Haggerty Road north of the Taco Bell restaurant.

Concerns with these basins include deterioration at the inlet and outlet structures, reduced capacity due to sedimentation (particularly basin #2), downstream ditch condition, and maintenance responsibilities due to an unusual ownership arrangement. The following table includes a summary of the potential options to improve the conditions of the Orchard Hill Place Basins.

Evaluated Option	Estimated Construction Cost
Revise ownership and maintenance responsibilities	N/A – potential for \$0 transfer
Dredge detention basin #2 – increase capacity	\$51,000
Reconstruct outlet of basin #2	\$29,000
Remove outlet restriction on basin #1 – increase detention capacity of basin	\$19,000
Drainage course stabilization downstream of basin #2	\$26,000

Refer to Section 4 for a detailed description of the existing conditions and proposed improvements for the basins.



Village Oaks and Village Wood Lakes

Village Oaks Lake and Village Wood Lake are man-made ponds which receive storm water from subdivisions east of Meadowbrook Road and north of Nine Mile Road. Each pond has several structures at various locations which are the outlet of a storm sewer run and an inlet to the pond. The condition of these inlets is a concern as they have not been maintained appropriately over the years, and are the responsibility of the City. Lack of access to the structures is a primary reason for the lack of maintenance – several of the inlets are located directly behind homes in steep or difficult terrain, and there are no easements in place to allow access. Additionally, the safety of visitors to Village Wood Park and the security of the outlet structure are a concern.

The following table presents the primary options to improve the access and condition problems.

Evaluated Option	Estimated Construction Cost
Acquire easements to have access to structures	\$150,000
Repair deteriorated infrastructure	\$819,000
Prevent public access to the outlet structure at park	\$23,000

Refer to Section 5 for a detailed presentation of the observed deterioration, options for repairs, and cost estimates.

Streambank Stabilization

The City has identified several sections of streambank which have exhibited erosion in the last several years. The erosion is loading the water with sediment which reduces water quality and settles in ponds, causes trees to partially fall blocking flow, and in some cases threatens private and public property.

Several stream segments were evaluated, and the majority of the segments were walked to locate and classify the damage, and develop specific remediation and estimates for the most severe locations.

56 specific sites of concern were identified. Of these, thirteen (13) of the sites were further identified as “priority sites of concern” based on the resulting erosion characteristics, length, and potential to damage property. The estimated costs to repair the priority sites range from \$20,000 to \$832,000, as detailed in Section 6 of this report.

