



Gardiner Stormwater Assessment Project

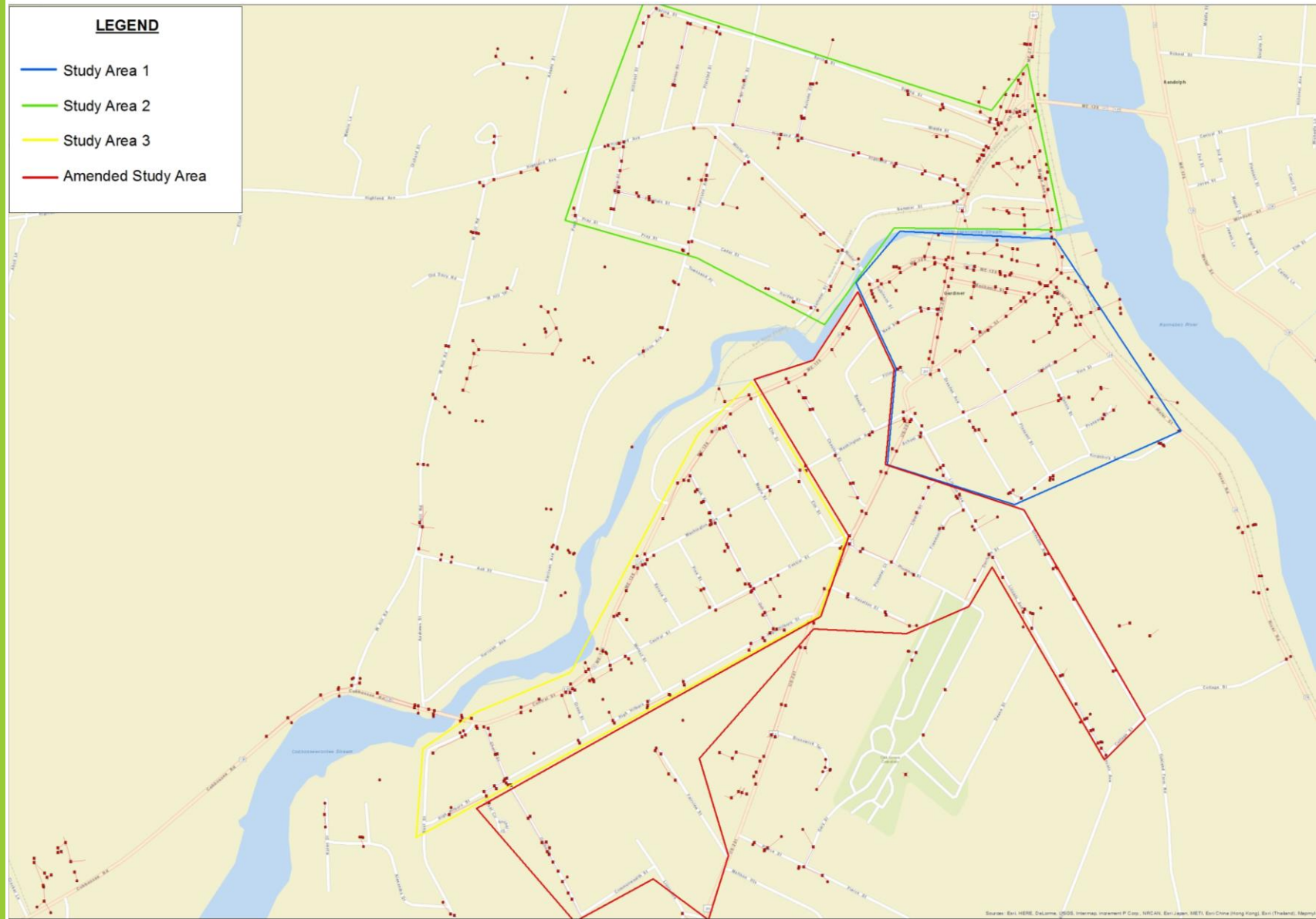
Hoyle, Tanner
& Associates, Inc.

Project Scope

The **objectives** of this project are:

1. To fully locate stormwater infrastructure within study area and update GIS map
2. To assess the existing condition of the stormwater conveyance system in Gardiner
3. To identify opportunities for upgrades to improve stormwater management, including potential for Green Infrastructure / Low Impact Development

Areas Investigated:



Review of First Public Meeting

1. Reporting of Initial work –
 - a. Visual investigation of catch basins and piping
 - b. Developed an initial scope of work from field investigation to be addressed with internal inspection (CCTV)
2. Received Public Comment

Review of Second Public Meeting

1. Reporting of CCTV Inspection work –
 - a. 7 Days of Camera Investigation
 - b. 71 Pipe Segments Inspected
 - c. 7927 Feet of Inspected Pipe

2. Reporting of Results Analysis –
 - a. 23 Delineated Watersheds
 - b. Review of Opportunities for Improvements & Low Impact Development Concerns
 - c. Capital Improvement Recommendations

3. Received Public Comments

Project Wrap-up

1. Finalized Field Work
 - a. Last Day of CCTV – Inspected an additional 1000' of pipe
 - b. Surveyed sections of Washington Avenue, High Holborn Street, Heselton Street, Harrison Street and Winter Street to determine feasibility of various re-routing solutions
2. Additional Investigation Projects
3. Prioritize Recommended Improvements
 - a. Developed a recommendations workbook

Severity										
	A	B	C	D	E	F	G	H	I	
	Severity	Recommendation Type	Issue	Recommendation	Address	Street	Secondary Street	Catchment Area	Culvert	Description
1										
2	3	Maintenance	Sediment Deposits	Clean	28 Autumn Street	Autumn	N/A	16	N	At 28 Autumn Street, the influent pipe is roughly 50% full
3	1	Maintenance	Inflow	Investigate	City Hall	City Hall	N/A	5	N	At City Hall, continuous inflow to catch basin CHSW12 w
4	4	Engineering	Flooding	Redesign	Commonwealth Avenue	Commonwealth	N/A	11	Y	Flooding has been reported along Commonwealth Avenu
5	2	Maintenance	Unknown Origin	Investigate	18 Dennis Street	Dennis	N/A	3	N	At 18 Dennis Street, there is a 6" PVC line influent to catc
6	2	Maintenance	Buried Structure	Raise Structure	50 Elm Street	Elm	Washington	8	N	buried catch basin in front of 50 Elm Street, recommende
7	2	Maintenance	Deteriorated Piping	Replace	50 Elm Street	Elm	Washington	8	Y	Piping between the 50 Elm Street catch basin and WASSV
8	3	Maintenance	Joint	Additional Infrastructure	Fairview Street	Fairview	N/A	11	N	The piping at the north end of Fairview Street is disconne
9	4	Maintenance	Sediment Deposits	Clean	Harden Street	Harden	N/A	21	N	catch basins and piping on Harden Street packed with sed
10	4	Engineering	Sediment Deposits	Additional Infrastructure	Harden Street	Harden	N/A	21	N	Flooding from plugged catch basins have been reported c
11	3	Maintenance	Sag	Replace	22 Harrison Avenue	Harrison	N/A	18	Y	The piping between HASW07 and HASW08 is sagged up to
12	2	Maintenance	Elevated Catch Basin	Regrade	Intersection	Harrison	Pray	21	N	Flooding at the Harrison/Pray intersection appears to be
13	4	Engineering	Deteriorated Piping	Reroute	22 Harrison Avenue	Harrison	Fountain	18	N	Camera inspection of the cross-country line between 22
14	4	Engineering	Flooding	Reroute	10 Heselton Street	Heselton	Plummer	4	N	Flooding has been reported at catch basin in front of 10
15	4	Maintenance	Deteriorated Piping	Replace	109 High Holborn	High Holborn	N/A	12	N	The outfall pipe at 109 High Holborn Street is in poor con
16	3	Maintenance	Deteriorated Piping	Replace	167 High Holborn	High Holborn	N/A	13	N	The outfall pipe at 167 High Holborn Street is in poor con
17	5	Maintenance	Catch Basin Deterioration	Replace	194 High Holborn	High Holborn	N/A	14	N	At 194 High Holborn Street, the concrete around the rim
18	4	Engineering	Flooding	Resize Pipe, Additional Infrastructure	90 High Holborn Street	High Holborn	N/A	11	N	Flooding has been reported at the catch basin in front of

Recommendations Workbook

	A	B	C	D	E	F	G	H	I	
	Severity	Recommendation Type	Issue	Recommendation	Address	Street	Secondary Street	Catchment Area	Culvert	Description
2	3	Maintenance	Sediment Deposits	Clean			N/A	16	N	At 28 Autumn Street, the influent pipe is roughly 50% full
3	1	Maintenance	Inflow	Investigate			N/A	5	N	At City Hall, continuous inflow to catch basin CHSW12 w
4	4	Engineering	Flooding	Redesign			N/A	11	Y	Flooding has been reported along Commonwealth Avenu
5	2	Maintenance	Unknown Origin	Investigate			N/A	3	N	At 18 Dennis Street, there is a 6" PVC line influent to catc
6	2	Maintenance	Buried Structure	Raise Structure			Washington	8	N	buried catch basin in front of 50 Elm Street, recommende
7	2	Maintenance	Deteriorated Piping	Replace			Washington	8	Y	Piping between the 50 Elm Street catch basin and WASSV
8	3	Maintenance	Joint	Additional Infrastructure			N/A	11	N	The piping at the north end of Fairview Street is disconne
9	4	Maintenance	Sediment Deposits	Clean			N/A	21	N	catch basins and piping on Harden Street packed with sec
10	4	Engineering	Sediment Deposits	Additional Infrastructure			N/A	21	N	Flooding from plugged catch basins have been reported c
11	3	Maintenance	Sag	Replace			N/A	18	Y	The piping between HASW07 and HASW08 is sagged up to
12	2	Maintenance	Elevated Catch Basin	Regrade			Pray	21	N	Flooding at the Harrison/Pray intersection appears to be
13	4	Engineering	Deteriorated Piping	Reroute			Fountain	18	N	Camera inspection of the cross-country line between 22
14	4	Engineering	Flooding	Reroute			Plummer	4	N	Flooding has been reported at catch basin in front of 10 I
15	4	Maintenance	Deteriorated Piping	Replace			N/A	12	N	The outfall pipe at 109 High Holborn Street is in poor con
16	3	Maintenance	Deteriorated Piping	Replace			N/A	13	N	The outfall pipe at 167 High Holborn Street is in poor con
17	5	Maintenance	Catch Basin Deterioration	Replace			N/A	14	N	At 194 High Holborn Street, the concrete around the rim
18	4	Engineering	Flooding	Resize Pipe, Additional Infrastructure			N/A	11	N	Flooding has been reported at the catch basin in front of

Recommendations Workbook

High Priority Recommendations

Prioritization of Maintenance Recommendations is based on several factors:

1. Public Safety concerns (including flooding)
2. Potential for asset failure
3. Effects on associated assets and contribution to flooding issues
4. Coordination with City paving program

Only Maintenance Recommendations were prioritized since Engineering Recommendations are part of larger scale issues requiring alternatives analysis or other engineering design. As a result, some high priority Maintenance Recommendations are included as part of Engineering Recommendations.

Street	Repairs
Washington Avenue	109 – Repair eroded culvert invert* 63 – Replace damaged pipe
Harrison Street	22 – Replace sagged culvert*
Plummer Street	29 – Install catch basin 36 – Repair damaged pipe
Lincoln Avenue	49 – Replace collapsed pipe 39 – Replace deteriorated catch basin 24 – Install outlet
Water Street	Mill – Dig out buried outfall Bridge Street – Clean piping
Kingsbury Street	25 – Dig out buried outfall
High Holborn Street	194 – Replace deteriorated catch basin* 109 – Replace collapsed piping*
Harden Street	Clean sediment deposits*
Maine Avenue	Bridge Street – Replace outfall piping
Winter Street	87 – Replace outfall piping* 42 – Install catch basin

Engineering Analyses

12 locations were selected for further engineering analysis.

Analyses ranged from preliminary design to alternatives evaluation.

Each analysis is accompanied by preliminary opinions of probable cost for budgeting purposes.

- Assumed construction by contractor

Harrison to Winter Cross- Country Alternatives:



73 Summer Street Alternatives:



Harden Street Improvements:



Commonwealth Avenue Improvements:



10 Heselton Street Cross- Country:



109 Washington Avenue Cross-Country:



An aerial photograph of a residential neighborhood with houses, streets, and green spaces. A yellow line is drawn across the image, starting from the top left, running diagonally down to the bottom center, and then turning right to follow a street. A label 'Catch Basin' with a pointer line indicates a location at the end of the yellow line. Another label 'Abandon in Place' with a pointer line indicates a location further up the yellow line. The title '83 Washington Avenue Cross-Country' is at the top right.

Catch Basin

74 High Holborn Alternatives:



98 High Holborn Alternatives:



116 High Holborn Alternatives:



194 High Holborn Improvements:



27 Lincoln Street Improvements:



Final Results

80 Recommendations from general cleaning to redesign

Maintenance Total Cost - \$521,000

Engineering Total Cost – \$853,000 to \$2,194,000 plus engineering fees as applicable