



TOWNSHIP OF FERGUSON

Stormwater User Fee Funding Feasibility Study Cost of Service Summary

Development of a cost analysis for stormwater services provided by the Township, including current and future cost estimates, addresses strategies that focus on critical infrastructure, water quality protection and permit compliance, as well as staffing and operational support for on-going system maintenance.

The planning period is five (5) years and costs are based on two scenarios. The 5-year scenario focuses on accomplishment of goals to address corrugated metal pipe (CMP) failures (lining and reconstruction) and full costs for the current Shade Tree Program. Costs related to general operations, including personnel, and maintenance of the system are constant in both the 5-year and 10-year plan. The 10-year Plan extends the time for CMP issues and provides 50% funding for the Shade Tree Program.

All projected costs are shown in Table 1, summarized by Program Area and the 5-year and 10-year approach.

Table 1 – Summary of Plans – All Costs

Five Year Plan By Expense Type and Program Area						
	FY2018	Year One	Year Two	Year Three	Year Four	Year Five
Salaries						
Program Management	\$ 38,175	\$ 39,320	\$ 96,539	\$ 99,435	\$ 102,418	\$ 105,490
MS4	\$ 103,943	\$ 174,881	\$ 198,591	\$ 204,333	\$ 210,247	\$ 216,339
Infrastructure	\$ 213,723	\$ 227,335	\$ 252,619	\$ 537,661	\$ 553,574	\$ 569,966
Direct Expenses						
Program Management	\$ 6,828	\$ 5,966	\$ 33,711	\$ 18,431	\$ 18,977	\$ 19,537
MS4	\$ 55,190	\$ 73,085	\$ 313,190	\$ 283,624	\$ 290,913	\$ 298,384
Infrastructure	\$ 112,414	\$ 583,492	\$ 448,640	\$ 359,100	\$ 643,668	\$ 213,351
CIP						
MS4	\$ 214,000	\$ 229,000	\$ 245,000	\$ 269,000	\$ 281,000	\$ -
Infrastructure	\$ 1,197,000	\$ 1,215,800	\$ 1,908,520	\$ 1,951,440	\$ 1,743,600	\$2,354,480
Totals	\$ 1,941,274	\$ 2,548,879	\$ 3,496,809	\$ 3,723,022	\$ 3,844,397	\$3,777,546

Ten Year Plan By Expense Type and Program Area						
	FY2018	Year One	Year Two	Year Three	Year Four	Year Five
Salaries						
Program Management	\$ 38,175	\$ 39,320	\$ 96,539	\$ 99,435	\$ 102,418	\$ 105,490
MS4	\$ 103,943	\$ 174,881	\$ 198,591	\$ 204,333	\$ 210,247	\$ 216,339
Infrastructure	\$ 213,723	\$ 227,335	\$ 252,619	\$ 537,661	\$ 553,574	\$ 569,966
Direct Expenses						
Program Management	\$ 6,828	\$ 5,966	\$ 33,711	\$ 18,431	\$ 18,977	\$ 19,537
MS4	\$ 55,190	\$ 73,085	\$ 195,690	\$ 163,186	\$ 167,464	\$ 171,850
Infrastructure	\$ 112,414	\$ 583,492	\$ 448,640	\$ 359,100	\$ 643,668	\$ 213,351
CIP						
MS4	\$ 214,000	\$ 229,000	\$ 245,000	\$ 269,000	\$ 281,000	\$ -
Infrastructure	\$ 1,197,000	\$ 1,215,680	\$ 1,140,260	\$ 1,196,220	\$ 896,800	\$1,452,240
Totals	\$ 1,941,274	\$ 2,548,759	\$ 2,611,049	\$ 2,847,365	\$ 2,874,149	\$2,748,772



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Table 2 below provides the details for new program elements, on-going compliance costs for the MS4 permit, and CIP initiatives for stormwater. It is organized by Infrastructure, MS4 Permit Compliance and CIP focus topics, provides a list of actions under each area, the timeframe, and cost basis. The 5-Year and 10-Year projections are provided. The investments are based on discussions with staff and the SAC and reflect strategies to begin a shift to a more proactive stormwater program.

NOTE - if value remain unchanged between 5 and 10 Year Plans, same level of service is recommended.												
Program Cost Area	Timeframe	Cost Basis	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr
A. Infrastructure Inspection and Assessment Program			Year One		Year Two		Year Three		Year Four		Year Five	
1. Research and inventory BMPs/Basins constructed prior to 2003 (back to 1975) capturing specific data on location, type, date constructed, owner and add to overall system inventory for inspection and assessment.	Each Summer starting year one	One Intern for 480 hours @\$15 an hour	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200
2. Inspect inlets, developing inventory including condition, material, geolocation, photograph.	Each summer starting year one	One Intern for 480 hours @\$15 an hour	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200
3. Contract CCTV pipe inspection (35 miles) using NASSCO rating scale. Service includes pipe cleaning in advance, traffic controls, TV footage upload, classification by material type, rating, location.	One-time - year one	Based on experience in Ferguson - \$10,000/mile of pipe inspected.	\$ 350,000	\$ 350,000								
4. West End cross-pipe inspection and assessment, updating inventory data: location, headwall/outlet condition, material, pipe status (clogged, open, debris build up, sediment buildup) and add inventory to database.	One-time - year one	No additional cost - completed by Foreman and one worker										
5. Based on an estimate of linear feet of pipe crossing private property that connects public system to basin, to private system, to direct discharge, to channels, add to CCTV inspection program.	6.5 miles to total of 42 miles for CCTV inspection	Based on experience in Ferguson - \$10,000/mile of pipe inspected.	\$ 65,000	\$ 65,000								
6. Contract system-wide condition assessment for above ground system components (basins, channels, BMPs, other than inlets)	Contract in Year One - complete in Year Two	Approximately 265 above ground structures (basins, BMPs, outfalls) 5 a day; 53 day workload - two people using hand-held data capture such as smart phones; weekly data review to ensure data capture/picture loading; 425 hours/2 people or 850 hours plus direct expenses @ \$80 hr plus 100 hrs of database review @ \$100/hr = \$78K labor and \$1K expenses = \$79K Channels - 70,000 linear feet - drone inspected including video capture, condition assessment, database input and QA/QC, summary report = 160 person hours \$125 plus 80 person hours @\$90 + direct expenses	\$ 119,000	\$ 119,000								
7. Convert part-time stormwater inspector position to full-time and assign oversight of system-wide inspection program and interns.	Complete in Year One - impacts all future years	Cost based on current benefit package and full year salary at a grade 22	\$ 88,430	\$ 88,430	\$ 91,083	\$ 91,083	\$ 93,815	\$ 93,815	\$ 96,630	\$ 96,630	\$ 99,529	\$ 99,529
8. Develop long-range inspection program to maintain current data on system status.	Complete plan by end of year one	Existing staff will develop a program for inspection of all stormwater infrastructure										



Program Cost Area	Timeframe	Cost Basis	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr
9. Add stormwater dedicated maintenance crew to address non-roadway maintenance. Team includes:												
i. Foreman	Year Three - on going	Grade 20			\$ -	\$ -	\$ 79,568	\$ 79,568	\$ 81,955	\$ 81,955	\$ 84,413	\$ 84,413
ii. Equipment Operator	Year Three - on going	Grade 18			\$ -	\$ -	\$ 74,539	\$ 74,539	\$ 76,775	\$ 76,775	\$ 79,078	\$ 79,078
iii. Stormwater Worker (2)	Year Three - on going	Grade 17			\$ -	\$ -	\$ 123,573	\$ 123,573	\$ 127,280	\$ 127,280	\$ 81,450	\$ 81,450
10. Establish Maintenance plan for above ground system repairs based on assessment and prioritization plan.	Year Two	Superintendent, FTPW Director, and Township Engineer plan developed for routine maintenance of stormwater										
11. Purchase vector truck and continue borrowing/sharing equipment as needed for maintenance program	Year Two	Estimated cost based on 2018 \$			\$ 330,000	\$ 330,000						
12. Develop protocols for on-going inspection program to ensure that all system components are inspected on routine basis. Implement in year 3 after completion of the first round of a complete assessment of all public and private system components (those addressed in policy regarding public runoff).	Year Two	Developed internally based on inspection schedule for all stormwater infrastructure										
13. Designate/hire stormwater program superintendent to coordinate all program elements for infrastructure inspections, inventory management, operations and maintenance and CIP development. Works with Roadway Superintendent, Township Engineer and FTPW Director in work plan development and execution.	Year Two	Grade 25			\$ 93,398	\$ 93,398	\$ 96,200	\$ 96,200	\$ 99,086	\$ 99,086	\$ 102,059	\$ 102,059
14. Continue system-wide assessment of infrastructure as needed and finalize on-going inspection/assessment long-range plan.	Year Two - contingency for contract, Year Three and ongoing - oversight with staff -	Contingency for contracted services in year one for system inspections. On-going program utilizes two interns annually with oversight by Stormwater/Roadways foremen.			\$ 25,000	\$ 25,000						
15. Purchase CCTV camera and truck for long-term inspection of all pipe (roadway, cross-connecting in West End, crossing private property carrying public	Year Three	\$180K truck for camera, computer setup, various equipment storage plus camera, computer, line, supplies. (\$25K) - 2018 \$					\$ 205,000	\$ 205,000				
16. Evaluate staffing/material/equipment needs based on initial system assessment and stormwater crew accomplishments	Year Three	On-going assessment of staffing, evaluating effort and accomplishments to determine if additional resources (contracted or internal) are needed.										
17. Prepare system-wide master plan, identifying potential sites for GSI and partnerships to reduce runoff volumes impacting channels and stream erosion.	Year Three	Contracted, HH model, master plan and GSI evaluation; ordinance review and draft changes; training for engineering community					\$ 275,000	\$ 275,000				



Program Cost Area	Timeframe	Cost Basis	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr
18. Develop design standards for LID and GSI use in Ferguson. Provide training to engineering community on approved/encouraged practices. Determine need for ordinance updates based on design standards.	Year Four	Contracted engineering services for the development of a GSI Design Standards Manual							\$ 50,000	\$ 50,000		
19. Sustain above ground infrastructure maintenance program for basins, BMPs, channels. Assess progress in addressing critical/high priority problems identified in the assessment program.	Year Three - on going	Materials and supplies for routine maintenance of stormwater systems					\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000
20. Maintain pipe inspection program using Township equipment - priority is pipe with poor grade on first round	Year Four	Based on purchase of CCTV rig. Utilities stormwater crew for staffing of program.										
21. Purchase flusher truck (chassis and unit)	Year Four	Based on current year - 2018 - equipment cost estimate							\$ 210,000	\$ 210,000		
22. Evaluate overall investment program in GSI, based on Master Plan prepared in Year Three; identify strategies and opportunities for partnering in Year Four and Five	Year Five	Stormwater Superintendent, FTPW Director, Township Engineer, lead inspector to develop updated CIP for installation of GSI features										
B. Maintain MS4 primary program requirements responding to permit renewal feedback as needed. (Program Plan, Annual Report)	Maintain on-going compliance	Costs captured in Operations Worksheet total \$247,966 in Year one growing to \$279,723 in Year Five based on labor and direct cost percentage dedicated to MS4	\$ 247,966	\$ 247,966	\$ 276,871	\$ 276,871	\$ 252,957	\$ 252,957	\$ 266,160	\$ 266,160	\$ 279,723	\$ 279,723
1. Public Education and Outreach	Maintain on-going compliance											
2. Public Involvement	Maintain on-going compliance											
3. Construction Site Inspection/ Enforcement (done by CCCD).	Maintain on-going compliance											
4. Post Construction Management (20% inspection of private BMPs/enforcement of maintenance requirements)	Maintain on-going compliance											
5. Illicit Discharge – outfall screening of 20% a year including inspection for infrastructure condition	Maintain on-going compliance											
6. Good Housekeeping Practices	Maintain on-going compliance											
7. Shift 100% of annual Shade Tree Program to Stormwater.	Year Two - on going	Includes staff salaries, supplies, new and replacement trees - currently replacing on planting 150 a year			\$ 235,000	\$ 120,000	\$ 235,000	\$ 120,000	\$ 235,000	\$ 120,000	\$ 235,000	\$ 120,000



Program Cost Area	Timeframe	Cost Basis	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr
C. CIP – implement projects as adopted in 5-year plan.												
Survey, Monument, Design and Permitting Phase 2	Year One	Based on current CIP project cost	\$ 57,000	\$ 57,000								
2. Park Hills Drainageway Improvements Phase 1 Construction	Year One	Based on current CIP project cost	\$ 114,000	\$ 114,000								
Reduction Plan Implementation (Design, ROW, Permitting, Construction)	Year One - Five	Based on Pollution Prevention Plan of 2018	\$ 229,000	\$ 229,000	\$ 245,000	\$ 245,000	\$ 262,000	\$ 262,000	\$ 281,000	\$ 281,000		
4. Replace concrete curb for this year's road projects	Year One - Five	Based on current CIP project cost	\$ 68,000	\$ 68,000			\$ 128,000	\$ 128,000	\$ 30,000	\$ 30,000		
5. Park Hills Drainageway Improvements Survey, Monument, Design and Permitting Phase 3	Year Two	Based on current CIP project cost			\$ 61,000	\$ 61,000						
6. Park Hills Drainageway Improvements Phase 2 Construction	Year Two	Based on current CIP project cost			\$ 261,000	\$ 261,000						
7. Park Hills Drainageway Improvements Phase 3 Construction	Year Three	Based on current CIP project cost					\$ 270,000	\$ 270,000				
8. Maintain capital investment based on historical average annually.	Year Five - On going	Based on current CIP project cost									\$ 500,000	\$ 500,000
9. Line 20% of CMP identified as candidates based on completed CCTV inspection	Year One - Five	Assume 5 miles of CMP pipe as candidates for lining program. Year One - line 10 percent of pipe requirement at \$200 a linear foot (1/2 mile) following CCTV feedback; Years 2-5, line 20% of CMP pipe	\$ 526,680	\$ 263,340	\$ 1,136,550	\$ 568,275	\$ 1,210,440	\$ 605,220	\$ 1,293,600	\$ 646,800	\$ 1,404,480	\$ 702,240
10. Replace CMP identified as "critical failures" based on completed CCTV inspection	Year One - Five	Fixed reinvestment program - adjust based on CCTV inspection completion	\$ 400,000	\$ 200,000	\$ 400,000	\$ 200,000	\$ 400,000	\$ 200,000	\$ 400,000	\$ 200,000	\$ 400,000	\$ 200,000
11. Repair stormwater inlets based on assessment/inspection program (10-15)	Year One - Five	10 to 15 a year at \$3000 to \$5000 a repair	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000

Key Outcomes:

System Assessment – completed in year one, with small contingency to carry over to year two.

System Maintenance – starting in year one, increased materials and direct costs for on-going system maintenance and minor repairs.

Corrugated Metal Pipe – major focus for infrastructure repair and replacement to address known problems as well as anticipated problems identified in assessment program.

CIP – funds known projects currently in the Township Stormwater CIP. Including permit compliance mandates.

Roadside ditches/cross-pipe maintenance – provides for inventory and assessment of cross-pipes as well as on-going annual maintenance. Provides inspection of roadside ditches and repairs.

Green Infrastructure (GSI) Planning – provides investment in Township-wide Master Plan for optimal placement of GSI and capital funding for investment Township projects.

Staff Augmentation – provides leadership as well as operational staff dedicated to stormwater management on-going inspection and assessment, targeted maintenance and repair, and long-range planning.