

City of Ladue

PROJECT IDENTIFICATION INFORMATION SHEET

Storm Water Management Program
 Phase II: Master Plan
 Ladue, Saint Louis County, Missouri

PROJECT NAME: Robin Hill Lane/McKnight Lane Bank Stabilization
LOCATION: Country Club Creek A
PROJECT No: 1618

STATUS:	
Easements Required:	11
Properties Benefited:	10
Properties Impacted:	11
Project Benefit Points:	1725
Property Benefit Multiplier: X	0.91
Priority WGT Multiplier: X	1.05
Adj Prjct Benefit Points:	1646.59
EOPC, thousand:	\$1,618.58
Cost Sharing, MSD:	
Cost Sharing, Other:	
Adj EOPC, thousand:	\$1,618.58
Benefit to Cost Ratio:	1.02

- Project Source:**
- Citizen Complaint
 - Ladue
 - MSD
 - Other: Geomorphic Assessment
- Coordination Required:**
- MSD
 - Corps of Engineers
 - MO DNR
 - MODOT
 - County Highways
 - City Streets
 - City Parks
 - County Parks
 - Municipality: City of Ladue
 - Railroad:
 - Subdivision Trustees
 - Other: Local Utilities

- Problem Categories:**
- WGT Description
 - 1.15 Habitable structural flooding & erosion from overland flow (non-floodplain)
 - 1.15 Public roadway flooding & erosion
 - 1.10 Private roadway flooding & erosion
 - 1.05 Flooding from inadequate sinkhole
 - 1.05 Maintenance of stormwater system facilities
 - 1.05 Non-habitable structural flooding & erosion
 - 1.00 Yard erosion & erosion of common ground or unmaintained area
 - 1.00 Yard flooding
 - 0.85 Structural flooding from creeks or rivers (floodplain)

Benefited Property Definition:

- 1 A benefited property is one at which flooding and/or erosion is reduced;
- 2 A property that does not receive an actual reduction in flooding or erosion from the construction of storm water improvements is NOT a benefited property; and
- 3 A property that only receives a financial gain from the construction of storm water improvements is NOT a benefited property.

Impacted Property Definition:

- 1 An impacted property is one at which physical disturbance occurs to construct storm water improvements.

MSD/MO American Water Base Map Number(s): 18L; 18K
 Laclede Gas Map Number(s): 146-17
 FEMA FIRM Map Number(s): 29189C0213K
 USGS Quadrangle Map(s): Clayton, MO

- Attachments**
- Scope of Work
 - Benefit Points Calculation
 - Engineer's Opinion of Probable Construction Cost
 - Property Contact Information
 - Improvement Concept Plan

Notes: The project is located in the FEMA floodway. A Floodplain Study and a No-Rise Certificate or LOMR will be required. Permitting through the USACE will also be required.

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SCOPE OF WORK

Problem Description:

Structural damage is occurring to the existing stone block retaining wall at Country Club Creek from #7 Brookside lane to #8 McKnight Ln. Portions of the stone block wall has been replaced through the years with concrete retaining walls that are in fair condition. The channel bottom is composed of granite cobble stone with sections patched with concrete overlay. Severe erosion and mass wasting is occurring along the property line with #2 and #3 Robin Hill Ln exposing private storm outfalls and threatening a shed on the property. Construction rubble has been put along the bank as protection at #3 Robin Hill Ln, but much of the rubble has been carried and deposited downstream.

The existing culvert under the Brookside Lane cul-de-sac is undersized and forces stream flow out of its bank on the upstream side. Water then flows over the cul-de-sac preventing road access by #'s 7, 5 and 12 Brookside Lane. Problem categories include chronic erosion.

Proposed Solution:

Remove the existing concrete and stone block channel and replace with approximately 549 lineal feet of biostabilized streambank protection. Construct approximately 230 lineal feet of hard armoring consisting of modular block wall on the north bank. Replace culvert with approximately 100 linear feet of double 10'x6' box culvert.

Commentary:

If the project cannot be completed in its entirety as proposed, or construction is phased, additional analysis is highly recommended to account for the dynamic nature of streams and the geomorphic effects of the reduced scope of work.

The project is located in the FEMA floodway. A Floodplain Study and a No-Rise Certificate or LOMR will be required. Permitting through the USACE will also be required.

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BENEFIT POINTS CALCULATION

PROBLEM SOLVED CATEGORY		Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points		
		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected			
Note: Problem points are awarded only for those problems solved by the proposed solution.										
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) Address:	300		150		25			
		Basement (1 lot per structure) Address:	200		100		15			
		Attached Garage (1 lot per structure) Address:	100		50		8			
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) Address:	50		25		4			
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) Address:	300		150		25			
		Yard Flooding (1 per lot) Address:	10		5		0			
		1.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)								
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure Address: #5, 7, 12 Brookside Ln	200		100	3	15		300	
	Traffic obstruction (> 6" of water) on arterial street Address:	50		25		4				
	Traffic obstruction (> 6" of water) on collector street Address:	25		12		2				
	Traffic obstruction (> 6" of water) on residential street Address:	10		5		1				
	1.2. EROSION	1.2.1. Threatening Structure (Ratio=Height of bank / distance from structure)		Pts. for Ratio \wedge 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
		Habitable structures, residential (1 lot per structure) Address: Chronic-#8 Brookside Ln; Frequent-#10 Brookside Ln; Infrequent-#7 Brookside Ln, 8 McKnight Ln		300	1	200	1	50	2	600
		Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) Address: Chronic-#3 Robin Hill Ln (shed), 8 McKnight Ln, 5, 10 Brookside Ln		150	4	100		25		600
		Industrial, office, commercial and warehouse (1 lot per structure) Address:		300		200		50		
		1.2.2. No. of lots (from 1.2.1) on outside of bend		4	lots	10 points per lot			40	
		1.2.3. Threatening Roadway (Ratio=Height of bank / distance from road)		Pts. for Ratio \wedge 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
Arterial Road: Address:		75		50		12				
Collector Road: Address:		35		25		6				
Residential Road: Address:		20		12		3				

CONTINUED:

	PROBLEM SOLVED CATEGORY, CONT.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points	
		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected		
	Note: Problem points are awarded only for those problems solved by the								
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* <i>Address:</i>	350		250		65		
		Basement (1 lot per structure)* <i>Address:</i>	250		200		50		
		Industrial, office, commercial and warehouse lot per 2,500 sf of floor space flooded)* (1 lot per 2,500 sf of floor space flooded)* <i>Address:</i>	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) <i>Address:</i>	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) <i>Address:</i>	50		35		12		
		Yard Flooding (1 per lot) <i>Address:</i>	10		6		0		
		2.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)						
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure <i>Address:</i>	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street <i>Address:</i>	50		35		6		
		Traffic obstruction (> 6" of water) on collector street <i>Address:</i>	25		15		2		
		Traffic obstruction (> 6" of water) on residential street <i>Address:</i>	10		6		1		
		Ponding (per ponding area) <i>Address:</i>	No. Ponds:		Points/pond:		5		
		2.2. Moderate Risk Erosion of misc. structures <i>Address:</i>	No. Lots:		Points/lot:		20		
		2.3. Yard Erosion (1 per lot) <i>Address:</i>	No. Lots:		Points/lot:		10		
		2.4. Age of Existing System	>50 yrs (30 pts)		26-50 yrs (15 pts)		<25 yrs (0 pts)		
	Points for Age								
	Note: Problem points are awarded only for those problems solved by the proposed solution.	TOTAL PROBLEM POINTS						1540	

CONTINUED:

SOLUTION BENEFIT CATEGORY					
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate :		Max points:	1000
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:		Points per Add'l Proj.:	50
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units		Points per Unit	
	Bioswales		PER 100 LF	10	
	Forebays		AC	200	
	Wet Ponds		AC	100	
	Wetlands		AC	50	
	Biostabilization of banks (per bank)	16.5	PER 100 LF	10	165
	Riffle Pool Complex		PER 100 LF	10	
	4.2. Eliminates combined sewer (per project)		EA	100	
4.3	Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA	10	
5.0 MISC.	5.1. Ease of Implementation (No. of Easements)	0-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)
	Points for Easements	20	0	0	0
	5.2. Recreational/Educational	Yes = 100, no = 0 pts		0	
TOTAL SOLUTION POINTS					185
TOTAL BENEFIT POINTS					1725

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS=

\$1,618.58

MSD BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS=

1.07

PROJECT NAME:		Robin Hill Lane/McKnight Lane Bank Stabilization			
PROJECT No:		1618			
<u>ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST</u>					
ITEM NUMBER	PAY ITEM DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Mobilization	1	Lump Sum	\$26,534.89	\$26,534.89
2	Asphalt Overlay (4")	260	Square Yards	\$40.00	\$10,400.00
3	Bank Protection - Biostabilization	2,491	Square Yards	\$155.00	\$386,105.00
4	Box Culvert - Double 10'x6'	100	Linear Feet	\$2,690.00	\$269,000.00
5	Bypass Pumping	1	Lump Sum	\$12,455.00	\$12,455.00
6	Clearing (Channel Projects)	1	Lump Sum	\$9,964.00	\$9,964.00
7	Excavation Class "A"	11	Cubic Yards	\$190.00	\$2,111.11
8	Excavation Class "B"	1	Cubic Yards	\$55.00	\$61.11
9	Modular Block Wall	230	Linear Feet	\$800.00	\$184,000.00
10	Headwall - Reinforced Concrete	2	Each	\$5,200.00	\$10,400.00
11	Protection and Restoration of Site	1	Lump Sum	\$136,655.00	\$136,655.00
12	Utility Relocation (Allowance)	1	Lump Sum	\$18,221.00	\$18,221.00
*Excavation Class 'C' cost included in unit price					
				Sub-Total:	\$1,065,907.11
				Estimated Construction Engineering Fee:	\$17,832.76
				Estimated Construction Survey Fee:	\$1,210.63
				Estimated MSD Construction Permit Fee:	\$195.00
				Estimated MSD Stormwater Construction Inspection Fee:	
				Estimated MSD Sanitary Construction Inspection Fee:	
				Estimated area disturbed:	0.57 ac
				Estimated MDNR Land Disturbance Permit Fee:	
				Estimated CWA 404/401 Permit Fee:	
				Sub-Total:	\$1,085,145.49
				30% Contingency:	\$325,543.65
				SUB-TOTAL - CONSTRUCTION:	\$1,410,689.14
				Estimated Design Engineering Fee:	\$101,052.31
				Estimated MSD Plan Review Submittal Fee:	
				Estimated MSD Conceptual Review Fee:	
				Estimated MSD Plan Review Fee:	
<i>Note: MSD submittal & review fees are waived by reciprocal agreement with the City of Ladue.</i>					
				CWA 404/401 Permit Application Preparation:	\$3,000.00
				MDNR Land Disturbance Permit Application & SWPPP Preparation:	
				Sinkhole Report:	
				Floodplain Study:	\$15,000.00
				No Rise Certification or LOMR:	\$5,000.00
				Estimated Geotechnical Engineering Fee:	2 Borings @ \$2000/each = \$4,000.00
				Estimated Property Strip Map Survey Fee:	\$16,500.00
				Estimated Topographic Survey Fee:	\$4,035.42
				Estimated Property Title/Easement Search Report Fee:	11 ESR's @ \$500/each = \$5,500.00

Estimated Easement Preparation:	11	Plats @	\$450/each =	\$4,950.00
			Estimated Saint Louis County Recording Fee - Easements:	\$495.00
			Sub-Total:	\$159,532.73
			30% Contingency:	\$47,859.82
			SUB-TOTAL - DESIGN:	\$207,887.55
			TOTAL PROJECT:	\$1,618,576.69

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PROPERTY CONTACT INFORMATION

BENEFITED PROPERTY OWNERS			
Count	Property Address	Contact Name	Phone Number
1	2 ROBIN HILL LN	MCMILLAN STEPHEN W PARKER B H/W	
2	3 ROBIN HILL LN	MCGOWAN PETER J WENDY B H/W	
3	8 MCKNIGHT LN	OBATA KIKU TRUSTEE	
4	9 MCKNIGHT LN	PALANS LLOYD A & DEBORAH R H/W	
5	5 BROOKSIDE LN	GRACE R ALLEN	
6	7 BROOKSIDE LN	BADLER LAWRENCE P LAURIE H H/W	
7	8 BROOKSIDE LN	WHITNEY ROBERT M & DENKMANN JENNIFER A H	
8	10 BROOKSIDE LN	DODDS JAMES T	
9	12 BROOKSIDE LN	LANGSAM HANNAH S TRUSTEE	
10	BROOKSIDE LN R/W	SUBDIVISION TRUSTEES	
IMPACTED PROPERTY OWNERS			
Count	Property Address	Contact Name	Phone Number
1	2 ROBIN HILL LN	MCMILLAN STEPHEN W PARKER B H/W	
2	3 ROBIN HILL LN	MCGOWAN PETER J WENDY B H/W	
3	7 MCKNIGHT LN	BOMMARITO ANTHONY M MARY J H/W	
4	8 MCKNIGHT LN	OBATA KIKU TRUSTEE	
5	9 MCKNIGHT LN	PALANS LLOYD A & DEBORAH R H/W	
6	5 BROOKSIDE LN	GRACE R ALLEN	
7	7 BROOKSIDE LN	BADLER LAWRENCE P LAURIE H H/W	
8	8 BROOKSIDE LN	WHITNEY ROBERT M & DENKMANN JENNIFER A H	
9	10 BROOKSIDE LN	DODDS JAMES T	
10	12 BROOKSIDE LN	LANGSAM HANNAH S TRUSTEE	
11	BROOKSIDE LN R/W	SUBDIVISION TRUSTEES	
EASEMENTS REQUIRED			
Count	Property Address	Contact Name	Phone Number
1	2 ROBIN HILL LN	MCMILLAN STEPHEN W PARKER B H/W	
2	3 ROBIN HILL LN	MCGOWAN PETER J WENDY B H/W	
3	7 MCKNIGHT LN	BOMMARITO ANTHONY M MARY J H/W	
4	8 MCKNIGHT LN	OBATA KIKU TRUSTEE	
5	9 MCKNIGHT LN	PALANS LLOYD A & DEBORAH R H/W	
6	5 BROOKSIDE LN	GRACE R ALLEN	
7	7 BROOKSIDE LN	BADLER LAWRENCE P LAURIE H H/W	
8	8 BROOKSIDE LN	WHITNEY ROBERT M & DENKMANN JENNIFER A H	
9	10 BROOKSIDE LN	DODDS JAMES T	
10	12 BROOKSIDE LN	LANGSAM HANNAH S TRUSTEE	
11	BROOKSIDE LN R/W	SUBDIVISION TRUSTEES	