

## APPENDIX 5: RETURN ON INVESTMENT CALCULATOR

*Prepared by Zachary & Associates, Inc.*

To aid property owners, a GSI Financing Calculator has been developed to illustrate financial constraints. The calculator accounts for the metrics contributing to the DWSD drainage charge credit system, including impervious surface area and volume and peak flow GSI performance. The calculator also considers hard costs (construction), soft costs (design), legal costs, and the costs of financing. The costs of financing reflect the interest rate for loans taken out to install GSI. Additional information in the calculator includes the added values of GSI systems such as estimated increase in property value and energy savings.

This tool can be used to estimate the Return on Investment (ROI) or to quantify the “financial gap” based upon desired terms of ROI given a specific time period or interest rate. Establishing that criteria will yield a value for how much of the project must be financed with grants. This tool is a template to be adjusted as necessary for estimating purposes only.

# EXAMPLE CALCULATOR

PROJECT NAME	
Project Description	

PARCEL INFORMATION		
Address		
Total Parcel Size (acres)	XX	
Assessed Impervious Area (acres)	XX	
Current Rate per acre (monthly)	\$661.00	
	MONTHLY	ANNUAL
Monthly Drainage Charge before practice	\$XX	\$XX

\$661 is the current drainage charge rate per impervious acre per month. This rate is subject to change.

PROPERTY INFORMATION	
Property Value	\$XX
Annual Energy Costs	\$XX
Annual Cost of Rent (if applicable)	\$XX
Annual Retail Profit (if applicable)	\$XX

GSI has the potential to increase property and rent values, increase sales, and reduce energy costs.

PRACTICE(S) METRICS	
Anticipated Volume Credit (≤40)	XX%
Anticipated Peak Flow Credit (≤40)	XX%
Total Anticipated Site Credit (≤80)	XX%
Size of Practice (sqft)	XX

These values should be determined by an engineer or landscape architect.

COSTS OF PRACTICE/IMPROVEMENTS	
Hard Costs	\$XX
Soft Costs	\$XX
Legal Costs	\$XX
<b>Total Project Cost</b>	<b>\$XX</b>

CAPITAL	
DWSD 50/50 Capital Partnership Program (≤\$50k)	\$XX
Grant(s)	\$XX
Community Outreach Credit from DWSD	\$XX
Private Equity	\$XX
<b>Total Capital</b>	<b>\$XX</b>

As part of DWSD outreach and public education efforts they will compensate non-profit organizations for: information sharing, awareness surveys, testimonials, and hosting events.<sup>1</sup>  
<sup>1</sup> DWSD Community Outreach Credits

LOAN		TERMS	
Principal	\$XX		
Loan Term (years)	XX		
Annual Interest Rate	XX%		
Payments per Year	XX		
	MONTHLY	ANNUAL	
Principal and Interest Payments	\$XX	\$XX	

Determined by the lender and the property owner.

4% interest is a likely rate, though it may vary.<sup>2</sup>  
<sup>2</sup> Financing Integrated Green Stormwater Infrastructure to Improve Community Health, Resiliency -- Getting the best Deal for the Money

ADDED VALUES OF GSI		ANNUAL
Property Value w. GSI & Trees (+2-5%)	\$XX	
Rental Added Value of GSI (+7%)	\$XX	
Rental Added Value of Green Roof (+16%)	\$XX	
Energy Savings from Mature Trees (\$45 ea.)	\$XX	
Retail Impact of GSI (+8-10%)	\$XX	
<b>Total Added Values</b>	<b>\$XX</b>	

These site characteristics tied to GSI have the potential to increase the value of the property.<sup>3</sup>  
<sup>3</sup> Bridging High & Low Density Neighborhoods with Green Stormwater Infrastructure

DRAINAGE EXPENSE (DURING LIFETIME OF LOAN)	MONTHLY	ANNUAL
Drainage Charge	\$XX	\$XX
Drainage Charge Credit	\$XX	\$XX
Principal and Interest of GSI Practice	\$XX	\$XX
Operations and Maintenance	\$XX	\$XX
Added Value of GSI	\$XX	\$XX
<b>Total</b>	<b>\$XX</b>	<b>\$XX</b>

DRAINAGE EXPENSE (POST LOAN TERM)	MONTHLY	ANNUAL
Drainage Charge	\$XX	\$XX
Drainage Charge Credit	\$XX	\$XX
Operations and Maintenance	\$XX	\$XX
Added Value of GSI	\$XX	\$XX
<b>Total</b>	<b>\$XX</b>	<b>\$XX</b>

This calculation estimates \$1 per sqft of installed GSI practice for annual maintenance costs.<sup>4</sup> However, these expenses could be included in existing landscape and site maintenance costs.  
<sup>4</sup> Water Environment Federation; Stormwater Report: The Real Costs of Green Infrastructure, Dec. 2015

SUMMARY		MONTHLY	ANNUAL
<b>Drainage Charge w/o. GSI Credit</b>	<b>\$XX</b>	<b>\$XX</b>	
Drainage Charge Credit	\$XX	\$XX	
Drainage Charge w. GSI Credit	\$XX	\$XX	
Operations and Maintenance	\$XX	\$XX	
Principal and Interest of GSI Practice	\$XX	\$XX	
Drainage Charge w. loan repayment, O+M, + GSI Credit	\$XX	\$XX	
Added Value of GSI	\$XX	\$XX	
<b>Total Drainage Expense w GSI Credit (loan term)</b>	<b>\$XX</b>	<b>\$XX</b>	
<b>Total Drainage Expense w GSI Credit (loan term w/o O+M)</b>	<b>\$XX</b>	<b>\$XX</b>	
<b>Total Drainage Expense w GSI Credit (post loan term)</b>	<b>\$XX</b>	<b>\$XX</b>	
<b>Total Drainage Expense w GSI Credit (post loan term w/o O+M)</b>	<b>\$XX</b>	<b>\$XX</b>	

# EXAMPLE CALCULATOR: GRANDMONT ROSEDALE

GRANDMONT ROSEDALE DEVELOPMENT CORPORATION			
Project Description			
PARCEL INFORMATION			
Address	19560 Grand River Ave, Detroit, MI 48223		
GRDC (impervious acres)	0.25		
Liquor Store (impervious acres)	0.15		
Assessed Impervious Area (acres)	0.40		
Current Rate per acre (monthly)	\$661.00		
	MONTHLY	ANNUAL	
GRDC	\$165.25	\$1,983.00	
Liquor Store	\$99.15	\$1,189.80	
Monthly Drainage Charge before practice	\$264.40	\$3,172.80	
PROPERTY INFORMATION			
Property Value	\$XX		
Annual Energy Costs	\$XX		
Annual Cost of Rent (if applicable)	\$XX		
Annual Retail Profit (if applicable)	\$XX		
PRACTICE(S) METRICS			
GRDC Total Anticipated Site Credit (≤80)	41.6%		
Liquor Store Total Anticipated Site Credit (≤80)	47.1%		
Size of Practice (sqft)	1,917		
COSTS OF PRACTICE/IMPROVEMENTS			
Hard Costs	\$47,748.00		
Soft Costs	\$3,820.00		
Legal Costs	\$XX		
<b>Total Project Cost</b>	<b>\$51,568.00</b>		
CAPITAL			
DWSD 50/50 Capital Partnership Program (≤\$50k)	\$25,784.00		
Grant(s)	\$XX		
Community Outreach Credit from DWSD	\$XX		
Private Equity	\$XX		
<b>Total Capital</b>	<b>\$25,784.00</b>		
LOAN		TERMS	
Principal	\$25,783.92		
Loan Term (years)	10		
Annual Interest Rate	0.04		
Payments per Year	12		
	MONTHLY	ANNUAL	
Principal and Interest Payments	\$261.05	\$3,132.60	
ADDED VALUES OF GSI		ANNUAL	
Property Value w. GSI & Trees (+2-5%)	\$XX		
Rental Added Value of GSI (+7%)	\$XX		
Rental Added Value of Green Roof (+16%)	\$XX		
Energy Savings from Mature Trees (\$45 ea.)	-\$225.00		
Retail Impact of GSI (+8-10%)	\$XX		
<b>Total Added Values</b>	<b>-\$225.00</b>		
DRAINAGE EXPENSE (DURING LIFETIME OF LOAN)		MONTHLY	ANNUAL
GRDC Drainage Charge	\$165.25	\$1,983.00	
Liquor Store Drainage Charge	\$99.15	\$1,189.80	
Total Drainage Charge	\$264.40	\$3,172.80	
GRDC Drainage Charge Credit	-\$68.74	-\$824.93	
Liquor Store Drainage Charge Credit	-\$46.70	-\$560.40	
Total Drainage Charge Credit	-\$115.44	-\$1,385.32	
Principal and Interest of GSI Practice	\$261.05	\$3,132.60	
Operations and Maintenance	\$159.75	\$1,917.00	
Added Value of GSI	-\$18.75	-\$225.00	
<b>Total</b>	<b>\$289.96</b>	<b>\$3,479.48</b>	
DRAINAGE EXPENSE (POST LOAN TERM)		MONTHLY	ANNUAL
GRDC Drainage Charge	\$165.25	\$1,983.00	
Liquor Store Drainage Charge	\$99.15	\$1,189.80	
Total Drainage Charge	\$264.40	\$3,172.80	
GRDC Drainage Charge Credit	-\$68.74	-\$824.93	
Liquor Store Drainage Charge Credit	-\$46.70	-\$560.40	
Drainage Charge Credit	-\$115.44	-\$1,385.32	
Operations and Maintenance	\$159.75	\$1,917.00	
Added Value of GSI	-\$18.75	-\$225.00	
<b>Total</b>	<b>\$289.96</b>	<b>\$3,479.48</b>	

SUMMARY	MONTHLY	ANNUAL
GRDC Drainage Charge w/o. GSI Credit	\$165.25	\$1,983.00
Liquor Store Drainage Charge w/o. GSI Credit	\$99.15	\$1,189.80
<b>Total Drainage Charge w/o. GSI Credit</b>	<b>\$264.40</b>	<b>\$3,172.80</b>
GRDC Drainage Charge Credit	-\$68.74	-\$824.93
Liquor Store Drainage Charge Credit	-\$46.70	-\$560.40
Total Drainage Charge Credit	-\$115.44	-\$1,385.32
GRDC Drainage Charge w. GSI Credit	\$96.51	\$1,158.07
Liquor Store Drainage Charge w. GSI Credit	\$52.45	\$629.40
Total Drainage Charge w. GSI Credit	\$148.96	\$1,787.48
Operations and Maintenance	\$159.75	\$1,917.00
Principal and Interest of GSI Practice	\$261.05	\$3,132.60
Drainage Charge w. loan repayment, O+M, + GSI Credit	\$569.76	\$6,837.07
Added Value of GSI	-\$18.75	-\$225.00
<b>Total Drainage Expense w GSI Credit (loan term)</b>	<b>\$551.01</b>	<b>\$6,612.07</b>
<b>Total Drainage Expense w GSI Credit (loan term w/o O+M)</b>	<b>\$391.26</b>	<b>\$4,695.07</b>
<b>Total Drainage Expense w GSI Credit (post loan term)</b>	<b>\$289.96</b>	<b>\$3,479.48</b>
<b>Total Drainage Expense w GSI Credit (post loan term w/o O+M)</b>	<b>\$130.21</b>	<b>\$1,562.48</b>

Credits determined by livingLAB detailed in Bridging High & Low Density Neighborhoods with Green Stormwater Infrastructure

Costs estimated by livingLAB detailed in Bridging High & Low Density Neighborhoods with Green Stormwater Infrastructure

# EXAMPLE CALCULATOR: SOUTHWEST DETROIT BUSINESS ASSOCIATION

SOUTHWEST DETROIT BUSINESS ASSOCIATION	
Project Description	

PARCEL INFORMATION		
Address	7752 Vernor Hwy Detroit, MI 482093	
SDBA (Impervious)		0.43
Theater (Impervious acres)		0.40
Vacant Lot (Impervious acres)		0.08
Assessed Impervious Area (acres)		0.91
Current Rate per acre (monthly)		\$661.00
	MONTHLY	ANNUAL
SDBA	\$284.23	\$3,410.76
Theater	\$264.40	\$3,172.80
Vacant Lot	\$52.88	\$634.56
Monthly Drainage Charge before practice	\$601.51	\$7,218.12

PROPERTY INFORMATION	
Property Value	\$XX
Annual Energy Costs	\$XX
Annual Cost of Rent (if applicable)	\$XX
Annual Retail Profit (if applicable)	\$XX

PRACTICE(S) METRICS	
SDBA Total Anticipated Site Credit (≤80)	29.6%
Theater Total Anticipated Site Credit (≤80)	28.8%
Vacant Lot Total Anticipated Site Credit (≤80)	29.6%
Size of Practice (sqft)	2,000

COSTS OF PRACTICE/IMPROVEMENTS	
Hard Costs	\$106,619.00
Soft Costs	\$8,530.00
Legal Costs	\$XX
<b>Total Project Cost</b>	<b>\$115,149.00</b>

CAPITAL	
DWSD 50/50 Capital Partnership Program (≤\$50k)	\$50,000.00
Grant(s)	\$XX
Community Outreach Credit from DWSD	\$XX
Private Equity	\$XX
<b>Total Capital</b>	<b>\$50,000.00</b>

LOAN	TERMS	
Principal	\$65,148.47	
Loan Term (years)	10	
Annual Interest Rate	0.04	
Payments per Year	12	
	MONTHLY	ANNUAL
Principal and Interest Payments	\$659.60	\$7,915.16

ADDED VALUES OF GSI	ANNUAL
Property Value w. GSI & Trees (+2-5%)	\$XX
Rental Added Value of GSI (+7%)	\$XX
Rental Added Value of Green Roof (+16%)	\$XX
Energy Savings from Mature Trees (\$45 ea.)	-\$270.00
Retail Impact of GSI (+8-10%)	\$XX
<b>Total Added Values</b>	<b>-\$270.00</b>

DRAINAGE EXPENSE (DURING LIFETIME OF LOAN)	MONTHLY	ANNUAL
SDBA Drainage Charge	\$284.23	\$3,410.76
Theater Drainage Charge	\$264.40	\$3,172.80
Vacant Lot Drainage Charge	\$52.88	\$634.56
Total Drainage Charge	\$264.40	\$7,218.12
SDBA Drainage Charge Credit	-\$84.13	-\$1,009.58
Theater Drainage Charge Credit	-\$76.15	-\$913.77
Vacant Lot Drainage Charge Credit	-\$15.65	-\$187.83
Total Drainage Charge Credit	-\$115.44	-\$2,111.18
Principal and Interest of GSI Practice	\$659.60	\$7,915.16
Operations and Maintenance	\$166.67	\$2,000.00
Added Value of GSI	-\$22.50	-\$270.00
<b>Total</b>	<b>\$1,229.34</b>	<b>\$14,752.10</b>

DRAINAGE EXPENSE (POST LOAN TERM)	MONTHLY	ANNUAL
SDBA Drainage Charge	\$284.23	\$3,410.76
Theater Drainage Charge	\$264.40	\$3,172.80
Vacant Lot Drainage Charge	\$52.88	\$634.56
Total Drainage Charge	\$264.40	\$7,218.12
SDBA Drainage Charge Credit	-\$84.13	-\$1,009.58
Theater Drainage Charge Credit	-\$76.15	-\$913.77
Vacant Lot Drainage Charge Credit	-\$15.65	-\$187.83
Drainage Charge Credit	-\$115.44	-\$2,111.18
Operations and Maintenance	\$166.67	\$2,000.00
Added Value of GSI	-\$22.50	-\$270.00
<b>Total</b>	<b>\$569.74</b>	<b>\$6,836.94</b>

SUMMARY	MONTHLY	ANNUAL
SDBA Drainage Charge w/o. GSI Credit	\$284.23	\$3,410.76
Theater Drainage Charge w/o. GSI Credit	\$264.40	\$3,172.80
Vacant Lot Charge w/o. GSI Credit	\$52.88	\$634.56
<b>Total Drainage Charge w/o. GSI Credit</b>	<b>\$601.51</b>	<b>\$7,218.12</b>
SDBA Drainage Charge Credit	-\$84.13	-\$1,009.58
Theater Drainage Charge Credit	-\$76.15	-\$913.77
Vacant Lot Charge Credit	-\$15.65	-\$187.83
Total Drainage Charge Credit	-\$175.93	-\$2,111.18
SDBA Drainage Charge w. GSI Credit	\$200.10	\$2,401.18
Theater Drainage Charge w. GSI Credit	\$188.25	\$2,259.03
Vacant Lot Drainage Charge w. GSI Credit	\$37.23	\$446.73
Total Drainage Charge w. GSI Credit	\$425.58	\$5,106.94
Operations and Maintenance	\$166.67	\$2,000.00
Principal and Interest of GSI Practice	\$659.60	\$7,915.16
Drainage Charge w. loan repayment, O+M, + GSI Credit	\$1,251.84	\$15,022.10
Added Value of GSI	-\$22.50	-\$270.00
<b>Total Drainage Expense w GSI Credit (loan term)</b>	<b>\$1,229.34</b>	<b>\$14,752.10</b>
<b>Total Drainage Expense w GSI Credit (loan term w/o O+M)</b>	<b>\$1,062.67</b>	<b>\$12,752.10</b>
<b>Total Drainage Expense w GSI Credit (post loan term)</b>	<b>\$569.74</b>	<b>\$6,836.94</b>
<b>Total Drainage Expense w GSI Credit (post loan term w/o O+M)</b>	<b>\$403.08</b>	<b>\$4,836.94</b>

Credits determined by livingLAB detailed in Bridging High & Low Density Neighborhoods with Green Stormwater Infrastructure

Costs estimated by livingLAB detailed in Bridging High & Low Density Neighborhoods with Green Stormwater Infrastructure