South Carolina Chapter
Community Associations Institute

Budgeting & Funding for Major Repairs and Replacements

November 17, 2016

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millerdodson ASSOCIATES | Capital Reserve Consultants

Budgeting and Funding for MR & R

Challenge:

- **Budget funding for "long-term", "large-ticket" expenditures.**
- **Spread funding equitably over time.**

Replacement Reserve Study

- **Established and accepted budget forecasting system.**
- **Based upon:**
  - **Replacement Costs**
  - **Remaining Useful Life**
- **Analyses required annual funding for major repair and replacement (MR&R)**

IRS Guidelines for *CIC's*

- **Specific monies for specific projects;**
- **Separate bank Account;**
- **Only "Capital Expenditures";**
- **No "Maintenance & Operations" expenditures;**

Expense Classification

"Capital Expenditures"

Versus

"Maintenance & Operations Costs"

How do we differentiate?

Filter One:
IRS Guidelines

- A normal, annual and anticipated expense cannot be a "Capital Expenditure"; it must be considered a "Maintenance Expense".

Filter Two –
Cost Threshold Consideration

Established by Policy of the Board of Directors:

Life of 3 yrs or more and Cost more than X → **Capital Expenditure**

Life of less than 3 yrs and Cost less than X → **Maintenance & Operations Cost**

Pond Expenditure Breakdown

- **Typical Costs** 1 acre pond, 1,000 shoreline
- **Annual Maintenance Costs**
- **Threshold Costs** below minimum costs
- **Reserve Costs** for major repair and replacement.

Typical Costs pg 1

Pond Service	Cost for typical 1.0 acre pond (5-8' depth), 1,000' shoreline
Water Quality	
Water Management-Chemical applications	$1,000-$3,000/year
Water Management-Bacteria applications	$3,000-$5,000/year
10-12" Triploid Grass Carp(20 fish/acre)	$200-$400
Blue Tilapia(200-400 fish/acre)	$200-$500
Aeration-1 hp aerating fountain	$2,000-$4,000
Aeration-2 diffuser bottom aeration unit	$3,000-$5,000
Mosquito abatement	
-chemical	$1,500-$2,500/yearly
-biological (Gambusia, Bluegill, dragonfly, etc.)	$400-$1,000
Dredging-removal of 3' depth-est. 4800 cubic yd	
-hydraulic dredging	$200,000-$400,000
-heavy equipment dredging	$100,000-$300,000
-hauling	$50,000-$70,000

Typical Costs pg 2

Pond Service (cont.)	
Upland Shoreline restoration	
-upland planted shoreline	$5,000-$10,000
-regrade and hydroseed	$5,000-$10,000
-reinforced shoreline(turf reinforcement)	$15,000-$25,000
Lower Shoreline restoration	
-reinforced aquatic planting-coir log and wetland carpet	$10,000-$20,000
-Bare root aquatic planting	$3,000-$5,000
-stonework or bulkhead	$500,000-$1,000,000
-rip-rap	$70,000-$130,000
Engineering consultation	$500-$5,000
Storm water feature repairs	
Trash grates and outfall covers	$400-$1,500
Inflow rip-rap repairs(estimate 50')	$7,000-$13,000
Clogged pipe cleaning-Vacuum truck	$2,000-$5,000
Trash and minor debris removal	$500-$1,000
Vegetation and Debris removal	$2,000-$5,000
Tree and branch removal	$5,000-$10,000

Annual Maintenance Costs pg 1

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Threshold Costs pg 1

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MR&R Costs pg 1

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Reserve Study Sample

Replacement Reserve Study

TTC Pond
North Charleston, SC

Example of shoreline issues

EXECUTIVE SUMMARY

The TTC Pond Replacement Reserve Analysis uses the Cash Flow Method (CFM) to calculate Replacement Reserve funding for the periodic replacement of the 9 Projected Replacements identified in the Replacement Reserve Inventory.

$51,917 **RECOMMENDED REPLACEMENT RESERVE FUNDING FOR THE STUDY YEAR, 2017**

$4,326.39 Per unit (average), minimum monthly funding of Replacement Reserves

We recommend the Association adopt a Replacement Reserve Funding Plan based on the annual funding recommendation above. Inflation adjusted funding for subsequent years is shown on Page A5.

TTC Pond reports a that the Association is currently not funding Replacement Reserves.
This Study contains the information necessary for the Association to develop a Funding Plan to address the $1,370,000 of Projected Replacements identified in the Replacement Reserve Inventory over the 40-year Study Period.

MR&R Costs pg 1

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SITE COMPONENTS
PROJECTED REPLACEMENTS

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST ($)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST ($)
1	Aerating Fountain	each	1	$20,000.00	15	7	$20,000
2	Pond Dredging, heavy equip	acre	1	$200,000.00	10	5	$200,000
3	Spoils Hauling & Disposal	acre	1	$60,000.00	10	5	$60,000
4	Shoreline Reinforcement	ls	1	$20,000.00	15	8	$20,000
5	Reinf. Aquatic Planting - coir log	ls	1	$15,000.00	15	8	$15,000
6	Rip-rap major repair	lf	50	$200.00	5	3	$10,000
7	Tree and Branch Removal	ls	1	$7,500.00	10	5	$7,500
8	Outfall Structure repair, allowance	ls	1	$25,000.00	25	25	$25,000
9	Bank Stabilization, allowance	ls	1	$10,000.00	10	10	$10,000
				SITE COMPONENTS - Replacement Costs - Subtotal			$367,500

PROJECTED REPLACEMENTS - YEARS ONE TO FIFTEEN

Item	2017 - STUDY YEAR	$
No Scheduled Replacements		

Item	2018 - YEAR 2	$
No Scheduled Replacements		

Item	2019 - YEAR 3	$
No Scheduled Replacements		

Item	2020 - YEAR 4	$
6	Rip-rap major repair	$10,000
Total Scheduled Replacements		$10,000

Item	2021 - YEAR 5	$
No Scheduled Replacements		

Item	2022 - YEAR 6	$
2	Pond Dredging, heavy equip	$200,000
3	Spoils Hauling & Disposal	$60,000
7	Tree and Branch Removal	$7,500
Total Scheduled Replacements		$267,500

Item	2023 - YEAR 7	$
No Scheduled Replacements		

Item	2024 - YEAR 8	$
1	Aerating Fountain	$20,000
Total Scheduled Replacements		$20,000

Item	2025 - YEAR 9	$
4	Shoreline Reinforcement	$20,000
5	Reinf. Aquatic Planting - coir	$15,000
6	Rip-rap major repair	$10,000
Total Scheduled Replacements		$45,000

Item	2026 - YEAR 10	$
No Scheduled Replacements		

Item	2027 - YEAR 11	$
9	Bank Stabilization, allowanc	$10,000
Total Scheduled Replacements		$10,000

Item	2028 - YEAR 12	$
No Scheduled Replacements		

Item	2029 - YEAR 13	$
No Scheduled Replacements		

Item	2030 - YEAR 14	$
6	Rip-rap major repair	$10,000
Total Scheduled Replacements		$10,000

Item	2031 - YEAR 15	$
No Scheduled Replacements		

PROJECTED REPLACEMENTS - YEARS SIXTEEN TO THIRTY

Item	2032 - YEAR 16	$
2	Pond Dredging, heavy equip	$200,000
3	Spoils Hauling & Disposal	$60,000
7	Tree and Branch Removal	$7,500
	Total Scheduled Replacements	$267,500

Item	2033 - YEAR 17	$
	No Scheduled Replacements	

Item	2034 - YEAR 18	$
	No Scheduled Replacements	

Item	2035 - YEAR 19	$
6	Rip-rap major repair	$10,000
	Total Scheduled Replacements	$10,000

Item	2036 - YEAR 20	$
	No Scheduled Replacements	

Item	2037 - YEAR 21	$
9	Bank Stabilization, allowanc	$10,000
	Total Scheduled Replacements	$10,000

Item	2038 - YEAR 22	$
	No Scheduled Replacements	

Item	2039 - YEAR 23	$
1	Aerating Fountain	$20,000
	Total Scheduled Replacements	$20,000

Item	2040 - YEAR 24	$
4	Shoreline Reinforcement	$20,000
5	Reinf. Aquatic Planting - cos	$15,000
6	Rip-rap major repair	$10,000
	Total Scheduled Replacements	$45,000

Item	2041 - YEAR 25	$
	No Scheduled Replacements	

Item	2042 - YEAR 26	$
2	Pond Dredging, heavy equip	$200,000
3	Spoils Hauling & Disposal	$60,000
7	Tree and Branch Removal	$7,500
8	Outfall Structure repair, allow	$25,000
	Total Scheduled Replacements	$292,500

Item	2043 - YEAR 27	$
	No Scheduled Replacements	

Item	2044 - YEAR 28	$
	No Scheduled Replacements	

Item	2045 - YEAR 29	$
6	Rip-rap major repair	$10,000
	Total Scheduled Replacements	$10,000

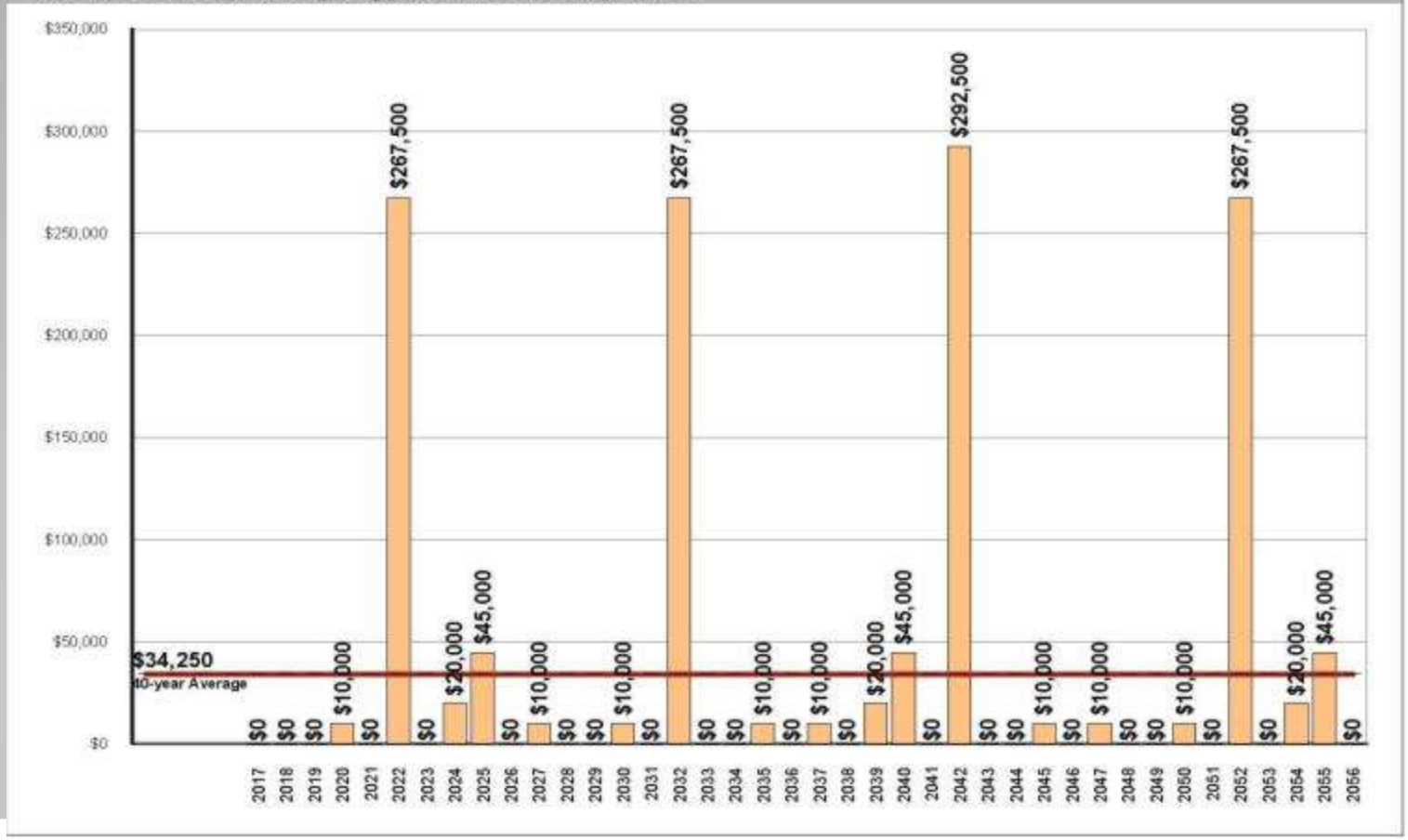
Item	2046 - YEAR 30	$
	No Scheduled Replacements	

$1,370,000 | **REPLACEMENT RESERVE INVENTORY - PROJECTED REPLACEMENTS**

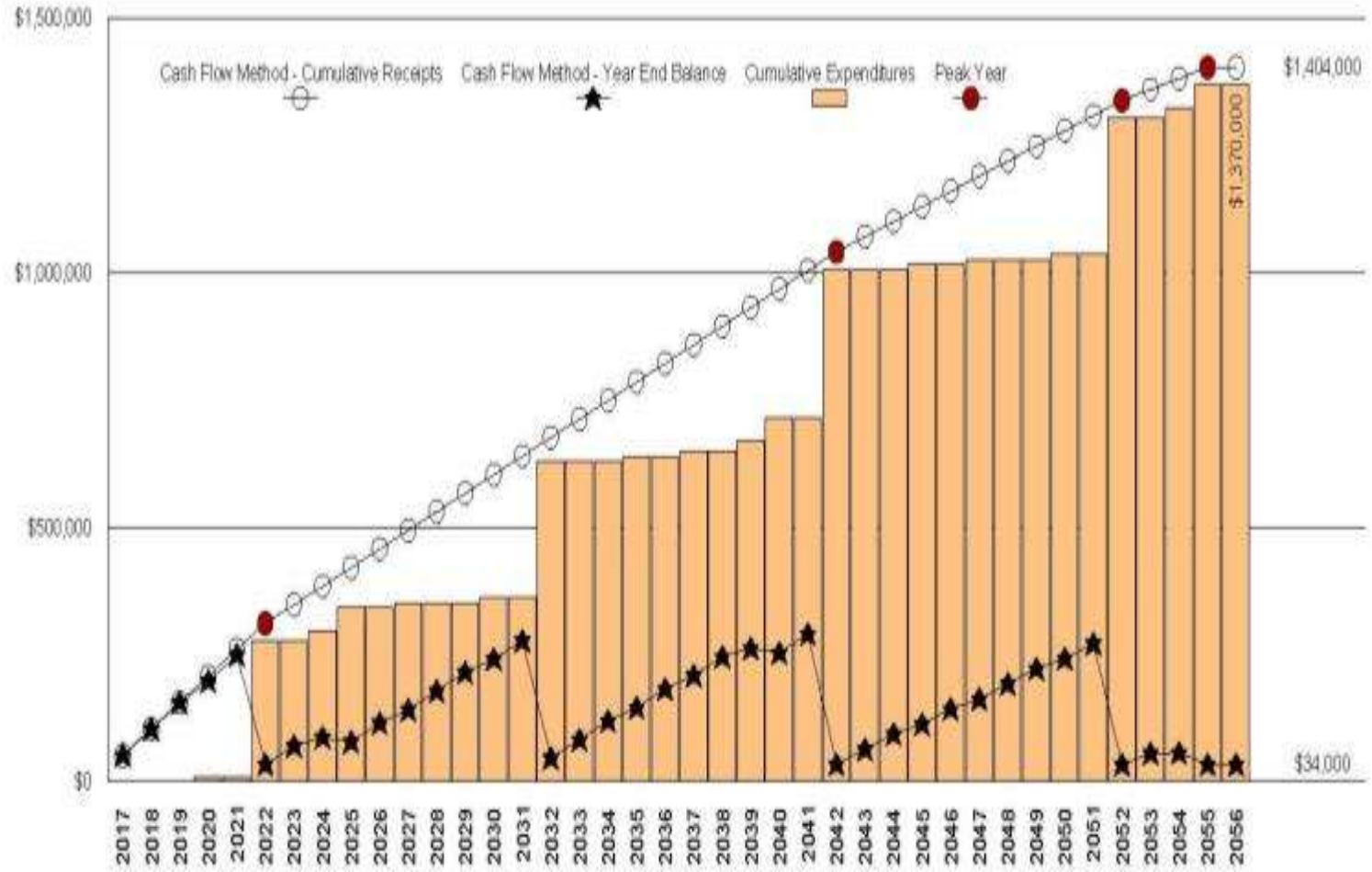
The TTC Pond Replacement Reserve Inventory identifies 9 items that will require periodic replacement, that are to be funded from Replacement Reserves. We estimate the cost of these replacements will be $1,370,000 over the 40-year Study Period. The Projected Replacements are divided into 2 major categories starting on Page B3. Pages B1-B2 provide detailed information on the Replacement Reserve Inventory.

#2 - Annual Expenditures for Projected Replacements Graph

This graph shows annual expenditures for Projected Replacements over the 40-year Study Period. The red line shows the average annual expenditure of $34,250. Section C provides a year by year Calender of these expenditures.



#4 - Cash Flow Method - Graph of Cumulative Receipts and Expenditures - Years 1 through 40



CASH FLOW METHOD FUNDING

$51,917 **RECOMMENDED REPLACEMENT RESERVE FUNDING FOR 2017**

$4,326.39 Per unit (average), minimum monthly funding of Replacement Reserves

Recommended Replacement Reserve Funding has been calculated using the Cash Flow Method (also called the Straight Line or Threshold Method). This method calculates a constant annual funding between peaks in cumulative expenditures, while maintaining a Minimum Balance (threshold) in the Peak Years.

- Peak Years. The First Peak Year occurs in 2022 with Replacement Reserves on Deposit dropping to the Minimum Balance after the completion of $277,500 of replacements from 2017 to 2022. Recommended funding declines from $51,917 in 2022 to $36,499 in 2023. Peak Years are identified in Chart 4 and Table 5.
- Minimum Balance. The calculations assume a Minimum Balance of $34,000 in Replacement Reserves. This is approx. 12 months of average expenditures based on the $34,250, 40-year average annual expenditure.
- Cash Flow Method Study Period. Cash Flow Method calculates funding for $1,370,000 of expenditures over the 40-year Study Period. It does not include funding for any projects beyond 2056 and in 2056, the end of year balance will always be the Minimum Balance.

#5 - Cash Flow Method - Table of Receipts & Expenditures - Years 1 through 40

Year	2017	2018	2019	2020	2021	1st Peak - 2022	2023	2024	2025	2026
Starting Balance										
Projected Replacements				($10,000)		($267,500)		($20,000)	($45,000)	
Annual Deposit	$51,917	$51,917	$51,917	$51,917	$51,917	$51,917	$36,499	$36,499	$36,499	$36,499
End of Year Balance	$51,917	$103,833	$155,750	$197,667	$249,583	$34,000	$70,499	$86,997	$78,496	$114,995
Cumulative Expenditures				$10,000	$10,000	$277,500	$277,500	$297,500	$342,500	$342,500
Cumulative Receipts	$51,917	$103,833	$155,750	$207,667	$259,583	$311,500	$347,999	$384,497	$420,996	$457,495

Year	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Projected Replacements	($10,000)			($10,000)		($267,500)			($10,000)	
Annual Deposit	$36,499	$36,499	$36,499	$36,500	$36,500	$36,500	$36,500	$36,500	$36,501	$36,501
End of Year Balance	$141,494	$177,993	$214,492	$240,992	$277,492	$46,492	$82,992	$119,492	$145,993	$182,494
Cumulative Expenditures	($352,500)	($352,500)	($352,500)	($362,500)	($362,500)	($630,000)	($630,000)	($630,000)	($640,000)	($640,000)
Cumulative Receipts	$493,994	$530,493	$566,992	$603,492	$639,992	$676,492	$712,992	$749,492	$785,993	$822,494

Year	2037	2038	2039	2040	2041	2nd Peak - 2042	2043	2044	2045	2046
Projected Replacements	($10,000)		($20,000)	($45,000)		($282,500)			($10,000)	
Annual Deposit	$36,501	$36,501	$36,501	$36,501	$36,501	$36,501	$29,750	$29,750	$29,750	$29,750
End of Year Balance	$208,994	$245,495	$261,987	$253,488	$289,989	$34,000	$63,750	$93,500	$113,250	$143,000
Cumulative Expenditures	($650,000)	($650,000)	($670,000)	($715,000)	($715,000)	($1,007,500)	($1,007,500)	($1,007,500)	($1,017,500)	($1,017,500)
Cumulative Receipts	$858,994	$895,495	$931,997	$968,498	$1,004,999	$1,041,500	$1,071,250	$1,101,000	$1,130,750	$1,160,500

Year	2047	2048	2049	2050	2051	3rd Peak - 2052	2053	2054	4th Peak - 2055	2056
Projected Replacements	($10,000)			($10,000)		($267,500)		($20,000)	($45,000)	
Annual Deposit	$29,750	$29,750	$29,750	$29,750	$29,750	$29,750	$21,667	$21,667	$21,667	
End of Year Balance	$162,750	$192,500	$222,250	$242,000	$271,750	$34,000	$55,667	$57,333	$34,000	$34,000
Cumulative Expenditures	($1,027,500)	($1,027,500)	($1,027,500)	($1,037,500)	($1,037,500)	($1,305,000)	($1,305,000)	($1,325,000)	($1,370,000)	($1,370,000)
Cumulative Receipts	$1,190,250	$1,220,000	$1,249,750	$1,279,500	$1,309,250	$1,339,000	$1,360,667	$1,382,333	$1,404,000	$1,404,000

INFLATION ADJUSTED FUNDING

The Cash Flow Method calculations on Page A4 have been done in today's dollars with no adjustment for inflation. At Miller + Dodson, we belive that long-term inflation forecasting is effective at demonstrating the power of compounding, not at calculating appropriate funding levels for Replacement Reserves. We have developed this proprietary model to estimate the short-term impact of inflation on Replacement Reserve funding.

$51,917 | 2017 - CASH FLOW METHOD RECOMMENDED FUNDING

The 2017 Study Year calculations have been made using current replacement costs (see Page B2), modified by the Analyst for any project specific conditions.

$53,704 | 2018 - INFLATION ADJUSTED FUNDING

A new analysis calculates 2018 funding based on three assumptions;

- Replacement Reserves on Deposit totaling $51,917 on January 1, 2018.
- No Expenditures from Replacement Reserves in 2017.
- Construction Cost Inflation of 2.50 percent in 2017.

The $53,704 inflation adjusted funding in 2018 is a 3.44 percent increase over the non-inflation adjusted 2018 funding of $51,917.

$55,982 | 2019 - INFLATION ADJUSTED FUNDING

A new analysis calculates 2019 funding based on three assumptions;

- Replacement Reserves on Deposit totaling $105,621 on January 1, 2019.
- No Expenditures from Replacement Reserves in 2018.
- Construction Cost Inflation of 2.50 percent in 2018.

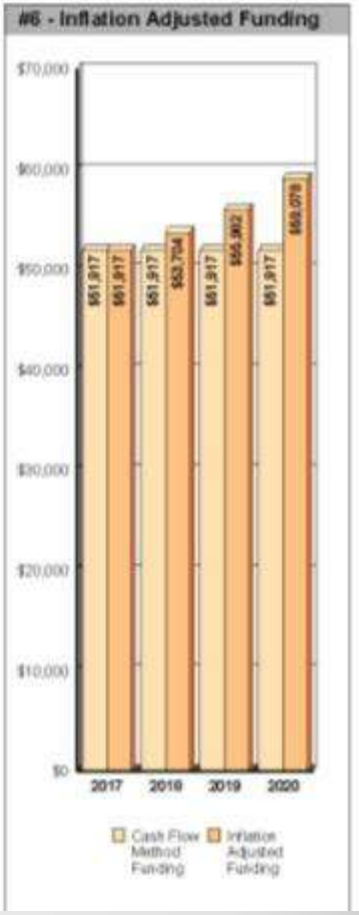
The $55,982 inflation adjusted funding in 2019 is a 7.83 percent increase over the non-inflation adjusted 2019 funding of $51,917.

$59,078 | 2020 - INFLATION ADJUSTED FUNDING

A new analysis calculates 2020 funding based on three assumptions;

- Replacement Reserves on Deposit totaling $161,603 on January 1, 2020.
- No Expenditures from Replacement Reserves in 2019.
- Construction Cost Inflation of 2.50 percent in 2019.

The $59,078 inflation adjusted funding in 2020 is a 13.79 percent increase over the non-inflation adjusted funding of $51,917.



questions

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