

# REPLACEMENT RESERVE REPORT FY 2017 WATERFORD CONDOMINIUM



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WATERFORD CONDOMINIUM

Community Management by:

**COMSOURCE MANAGEMENT**

Mr. Dan Lowery

3414 Morningwood Drive  
Olney, MD 20832  
301-924-7355

Consultant:

**millerdodson** | Capital  
ASSOCIATES Reserve  
Consultants

929 West Street, Suite 310  
Annapolis, MD 21401  
410.268.0479  
800.850.2835

[www.mdareserves.com](http://www.mdareserves.com)

**millerdodson** | Capital  
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# REPLACEMENT RESERVE REPORT

## WATERFORD CONDOMINIUM

KENSINGTON, MARYLAND  
Revised October 25, 2016



**Scope.** The Waterford is a condominium community located in Kensington, Maryland. The Waterford was constructed in 1963. The community consists of one high-rise building with a total of 149 units. The survey examined the common elements of the property, including:

- Asphalt drive and parking.
- Concrete sidewalks, curb, and gutter.
- Retaining walls, fencing, and railings.
- Swimming pool.
- Building exteriors and common interior areas.

**Level of Service.** This study has been performed as a Level II Update, With Site Visit/On-Site Review as defined under the National Reserve Study Standards that have been adopted by the Community Associations Institute. As such, the component inventory is based on the study that was performed by Miller - Dodson on August 6, 2012. This information was adjusted to reflect changes to the inventory that were provided by the community manager, and the quantities were adjusted accordingly from field measurement and/or quantity takeoffs from to-scale drawings. The condition of all commonly owned components was ascertained from a site visit and the visual inspection of each component by the Analyst. The life expectancy and the value of components are provided based in part on these observations. The fund status and funding plan have been derived from analysis of this data.

### Section A

#### Replacement Reserve Analysis

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To aid in the understanding of this report and its concepts and practices, on our web site, we have developed [videos](#) addressing frequently asked topics. In addition, there are posted [links](#) covering a variety of subjects under the resources page of our web site at [mdareserves.com](http://mdareserves.com).

**Purpose.** The purpose of this Replacement Reserve Study is to provide The Waterford (hereinafter called the Association) with an inventory of the common community facilities and infrastructure components that require periodic replacement. The Study includes a general view of the condition of these items and an effective financial plan to fund projected periodic replacements.

- **Inventory of Items Owned by the Association.** Section B lists the Projected Replacements of the commonly owned items that require periodic replacement using funding from Replacement Reserves. The Replacement Reserve Inventory also provides information about excluded items, which are items whose replacements are not scheduled for funding from Replacement Reserves.
- **Condition of Items Owned by the Association.** Section B includes our estimates of the normal economic life and the remaining economic life for the projected replacements. Section C provides a year-by-year listing of the projected replacements. Section D provides additional detail for items that are unique or deserving of attention because of their condition or the manner in which they have been treated in this study.
- **Financial Plan.** The Association has a fiduciary responsibility to protect the appearance, value, and safety of the property and it is therefore essential the Association have a financial plan that provides funding for the projected replacements. In conformance with American Institute of Certified Public Accountant guidelines, Section A, Replacement Reserve Analysis evaluates the current funding of Replacement Reserves as reported by the Association and recommends annual funding of Replacement Reserves by the Cash Flow Method. Section A, Replacement Reserve Analysis includes graphic and tabular presentations of the Association's current funding and the recommended funding based on the Cash Flow Method. An Executive Summary of these calculations is provided on Page A1. The alternative Component Method of funding is provided in the Appendix.

**Basis.** The data contained in this Replacement Reserve Study is based upon the following:

- The Request for Proposal submitted and executed by the Association.
- Miller - Dodson performed a visual evaluation on June 6, 2016 to determine a remaining useful life and replacement cost for the commonly owned elements of this facility.
- This study contains additional recommendations to address inflation for the Cash Flow Method only. For this recommendation, Miller - Dodson uses the Producers Price Index (PPI), which gauges inflation in manufacturing and construction. Please see page A5 for further details.

**To-Scale Drawings.** Site and building plans were not used in the development of this study. We recommend the Association assemble and maintain a library of site and building plans of the entire facility. Record drawings should be scanned into an electronic format for safe storage and ease of distribution. Upon request for a nominal fee, Miller - Dodson can provide scanning services.

**Current Funding.** This reserve study has been prepared for Fiscal Year 2017 covering the period from January 1, 2017 to December 31, 2017. The Replacement Reserves on deposit as of April 2016 are reported to be \$349,820. The planned contribution for the fiscal year is \$590,868. This results in a Reserve Fund balance at the start of the fiscal year as follows:

April 2016 balance	\$349,820
Eight months contribution	393,912
Planned projects	(191,000)
Loan payments	(251,784)
FY 2017 opening balance	\$300,948

The balance and contribution figures have been supplied by the property management agent and confirmation or audit of these figures is beyond the scope of the study. For the purposes of this study, it is assumed that the annual contribution will be deposited at the end of each month.

**Acknowledgement.** Miller - Dodson Associates would like to acknowledge the assistance and input of Mr. Dan Lowery. Mr. Lowery provided very helpful insight into the current operations at the property.

**Analyst's Credentials.** This study has been performed by James E. Piper, who holds a Bachelors Degree and a Masters Degree in Mechanical Engineering from the University of Akron and a PhD from the University of Maryland. Dr. Piper is a Registered Professional Engineer in the State of Maryland, and the author of articles and books on the subject of the condition assessment of facilities. He has over 20 years experience in the evaluation and the management of the physical plant of the University of Maryland. He is currently a Reserve Specialist (RS) for Miller-Dodson Associates.

Respectfully submitted,



James Piper  
Reserve Specialist

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## EXECUTIVE SUMMARY

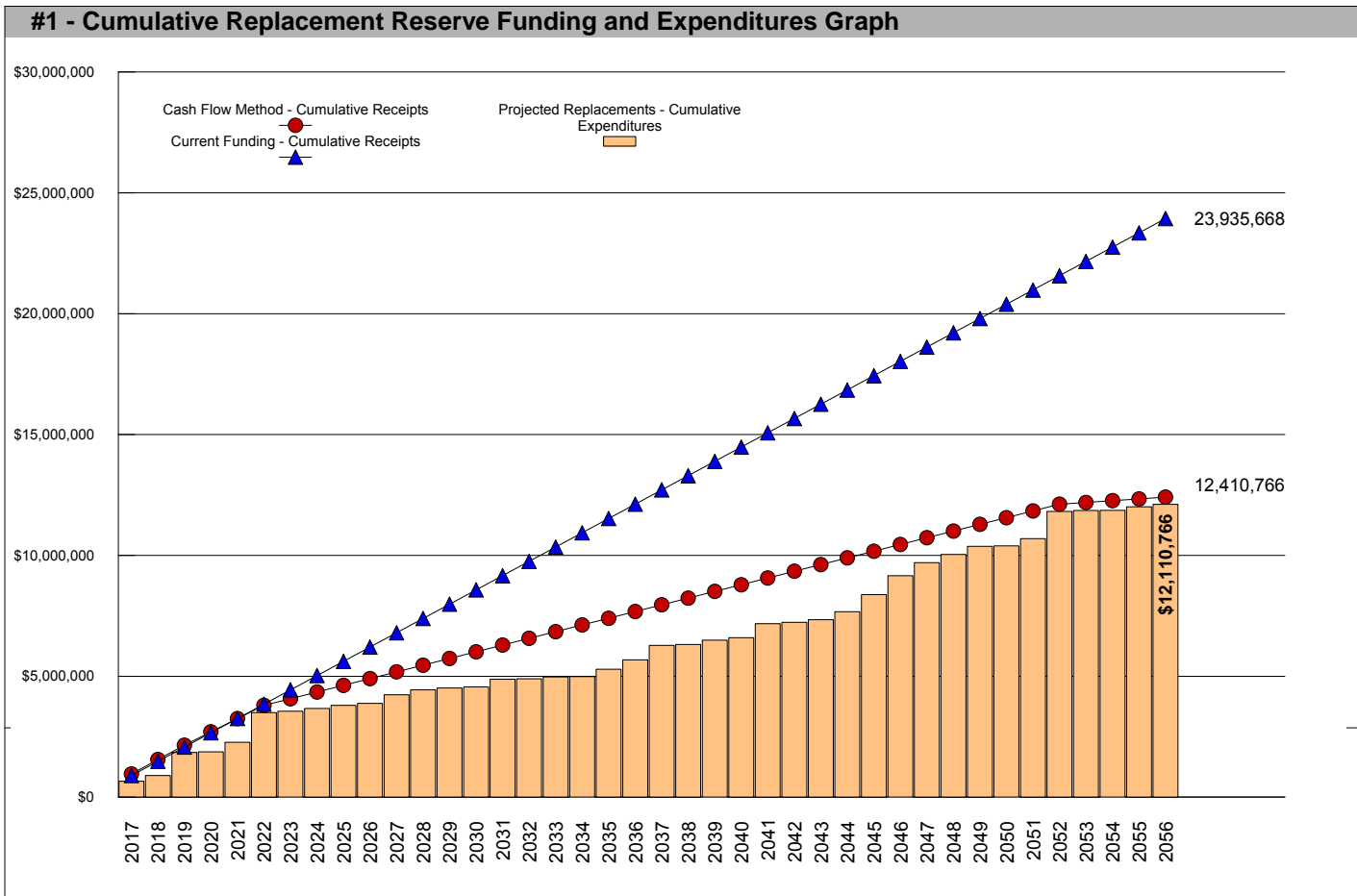
The Waterford Condominium Replacement Reserve Analysis uses the Cash Flow Method (CFM) to calculate Replacement Reserve funding for the periodic replacement of the 127 Projected Replacements identified in the Replacement Reserve Inventory.

### **\$659,955** RECOMMENDED REPLACEMENT RESERVE FUNDING FOR THE STUDY YEAR, 2017

\$369.10 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.

Waterford Condominium reports a Starting Balance of \$300,948 and Annual Funding totaling \$590,868. Current funding is adequate to fund the \$12,110,766 of Projected Replacements scheduled in the Replacement Reserve Inventory over the 40-year Study Period. See Page A3 for a more detailed evaluation.



The Current Funding Objective as calculated by the Component Method (Fully Funded) is \$3,828,814 making the reserve account 7.9% funded. See the Appendix for more information on this method.

10/25/16. Changed starting balance.

## REPLACEMENT RESERVE ANALYSIS - GENERAL INFORMATION

The Waterford Condominium Replacement Reserve Analysis calculations of recommended funding of Replacement Reserves by the Cash Flow Method and the evaluation of the Current Funding are based upon the same Study Year, Study Period, Beginning Balance, Replacement Reserve Inventory and Level of Service.

### 2017 STUDY YEAR

The Association reports that their accounting year begins on January 1, and the Study Year, the first year evaluated by the Replacement Reserve Analysis, begins on January 1, 2017.

### 40 Years STUDY PERIOD

The Replacement Reserve Analysis evaluates the funding of Replacement Reserves over a 40-year Study Period.

### \$300,948 STARTING BALANCE

The Association reports Replacement Reserves on Deposit totaling \$300,948 at the start of the Study Year.

### Level Two LEVEL OF SERVICE

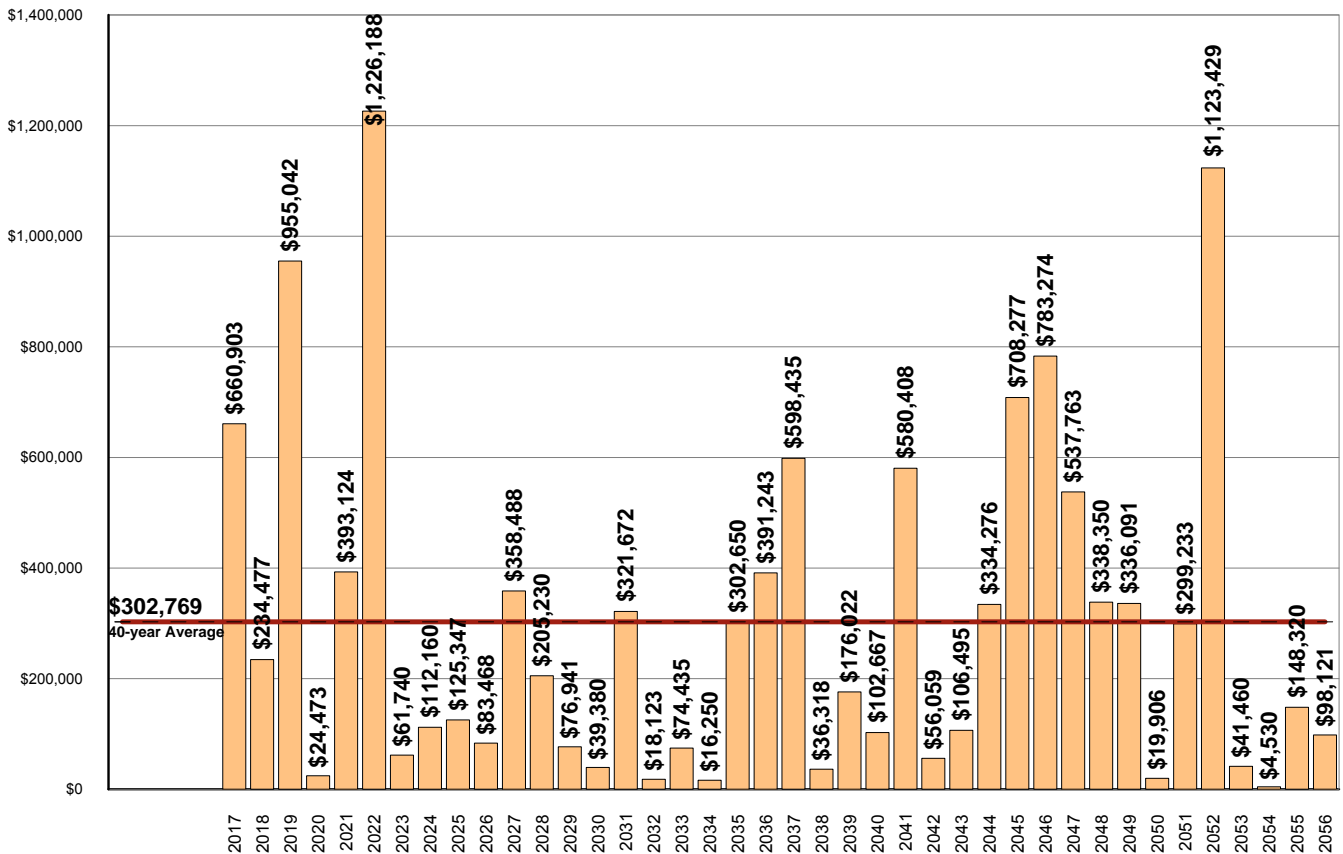
The Replacement Reserve Inventory has been developed in compliance with the National Reserve Study Standards for a Level Two Study, as defined by the Community Associations Institute (CAI).

### \$12,110,766 REPLACEMENT RESERVE INVENTORY - PROJECTED REPLACEMENTS

The Waterford Condominium Replacement Reserve Inventory identifies 127 items that will require periodic replacement, that are to be funded from Replacement Reserves. We estimate the cost of these replacements will be \$12,110,766 over the 40-year Study Period. The Projected Replacements are divided into 18 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 \$302,769. Section C provides a year by year Calendar of these expenditures.





## UPDATING

### UPDATING OF THE FUNDING PLAN

The Association has a responsibility to review the Funding Plan annually. The review should include a comparison and evaluation of actual reserve funding with recommended levels shown on Page A4 and A5. The Projected Replacements listed on Page C2 should be compared with any replacements accomplished and funded from Replacement Reserves. Discrepancies should be evaluated and if necessary, the Reserve Study should be updated or a new study commissioned. We recommend annual increases in replacement reserve funding to account for the impact of inflation. Inflation Adjusted Funding is discussed on Page A5.

### UPDATING OF THE REPLACEMENT RESERVE STUDY

At a minimum, the Replacement Reserve Study should be professionally updated every three to five years or after completion of a major replacement project. Updating should also be considered if during the annual review of the Funding Plan, discrepancies are noted between projected and actual reserve funding or replacement costs. Updating may also be necessary if there is a meaningful discrepancy between the actual inflation rate and the inflation rate used for the Inflation Adjusted Funding of Replacement Reserves on Page A5.

### ANNUAL EXPENDITURES AND CURRENT FUNDING

The annual expenditures that comprise the \$12,110,766 of Projected Expenditures over the 40-year Study Period and the impact of the Association continuing to fund Replacement Reserves at the current level are detailed in Table 3.

<b>#3 - Table of Annual Expenditures and Current Funding Data - Years 1 through 40</b>										
Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Starting Balance	\$300,948									
Projected Replacements	(\$660,903)	(\$234,477)	(\$955,042)	(\$24,473)	(\$393,124)	(\$1,226,188)	(\$61,740)	(\$112,160)	(\$125,347)	(\$83,468)
Annual Deposit	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868
End of Year Balance	\$230,913	\$587,304	\$223,131	\$789,525	\$987,270	\$351,950	\$881,078	\$1,359,786	\$1,825,307	\$2,332,707
Cumulative Expenditures	(\$660,903)	(\$895,380)	(\$1,850,421)	(\$1,874,895)	(\$2,268,018)	(\$3,494,206)	(\$3,555,946)	(\$3,668,106)	(\$3,793,453)	(\$3,876,921)
Cumulative Receipts	\$891,816	\$1,482,684	\$2,073,552	\$2,664,420	\$3,255,288	\$3,846,156	\$4,437,024	\$5,027,892	\$5,618,760	\$6,209,628
Year	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Projected Replacements	(\$358,488)	(\$205,230)	(\$76,941)	(\$39,380)	(\$321,672)	(\$18,123)	(\$74,435)	(\$16,250)	(\$302,650)	(\$391,243)
Annual Deposit	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868
End of Year Balance	\$2,565,087	\$2,950,725	\$3,464,652	\$4,016,140	\$4,285,336	\$4,858,081	\$5,374,514	\$5,949,132	\$6,237,350	\$6,436,975
Cumulative Expenditures	(\$4,235,409)	(\$4,440,639)	(\$4,517,580)	(\$4,556,960)	(\$4,878,632)	(\$4,896,755)	(\$4,971,190)	(\$4,987,440)	(\$5,290,090)	(\$5,681,333)
Cumulative Receipts	\$6,800,496	\$7,391,364	\$7,982,232	\$8,573,100	\$9,163,968	\$9,754,836	\$10,345,704	\$10,936,572	\$11,527,440	\$12,118,308
Year	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Projected Replacements	(\$598,435)	(\$36,318)	(\$176,022)	(\$102,667)	(\$580,408)	(\$56,059)	(\$106,495)	(\$334,276)	(\$708,277)	(\$783,274)
Annual Deposit	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868
End of Year Balance	\$6,429,408	\$6,983,958	\$7,398,805	\$7,887,006	\$7,897,466	\$8,432,275	\$8,916,648	\$9,173,240	\$9,055,831	\$8,863,425
Cumulative Expenditures	(\$6,279,768)	(\$6,316,086)	(\$6,492,107)	(\$6,594,774)	(\$7,175,182)	(\$7,231,241)	(\$7,337,736)	(\$7,672,012)	(\$8,380,289)	(\$9,163,563)
Cumulative Receipts	\$12,709,176	\$13,300,044	\$13,890,912	\$14,481,780	\$15,072,648	\$15,663,516	\$16,254,384	\$16,845,252	\$17,436,120	\$18,026,988
Year	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056
Projected Replacements	(\$537,763)	(\$338,350)	(\$336,091)	(\$19,906)	(\$299,233)	(\$1,123,429)	(\$41,460)	(\$4,530)	(\$148,320)	(\$98,121)
Annual Deposit	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868	\$590,868
End of Year Balance	\$8,916,529	\$9,169,047	\$9,423,824	\$9,994,786	\$10,286,421	\$9,753,861	\$10,303,269	\$10,889,607	\$11,332,155	\$11,824,902
Cumulative Expenditures	(\$9,701,327)	(\$10,039,677)	(\$10,375,768)	(\$10,395,674)	(\$10,694,907)	(\$11,818,335)	(\$11,859,795)	(\$11,864,325)	(\$12,012,645)	(\$12,110,766)
Cumulative Receipts	\$18,617,856	\$19,208,724	\$19,799,592	\$20,390,460	\$20,981,328	\$21,572,196	\$22,163,064	\$22,753,932	\$23,344,800	\$23,935,668

### EVALUATION OF CURRENT FUNDING

The evaluation of Current Funding (Starting Balance of \$300,948 & annual funding of \$590,868), is done in today's dollars with no adjustments for inflation or interest earned on Replacement Reserves. The evaluation assumes Replacement Reserves will only be used for the 127 Projected Replacements identified in the Replacement Reserve Inventory and that the Association will continue Annual Funding of \$590,868 throughout the 40-year Study Period.

Annual Funding of \$590,868 is approximately 90 percent of the \$659,955 recommended Annual Funding calculated by the Cash Flow Method for 2017, the Study Year.

Evaluation of the 127 Projected Replacements calculates an average annual expenditure over the next 40 years of \$302,769. Annual funding of \$590,868 is 195 percent of the average annual expenditure.

In summary, Current Funding as reported by the Association and outlined above provides timely and adequate funding for the \$12,110,766 of Projected Replacements scheduled in the Replacement Reserve Inventory over the 40-year Study Period.

### CASH FLOW METHOD FUNDING

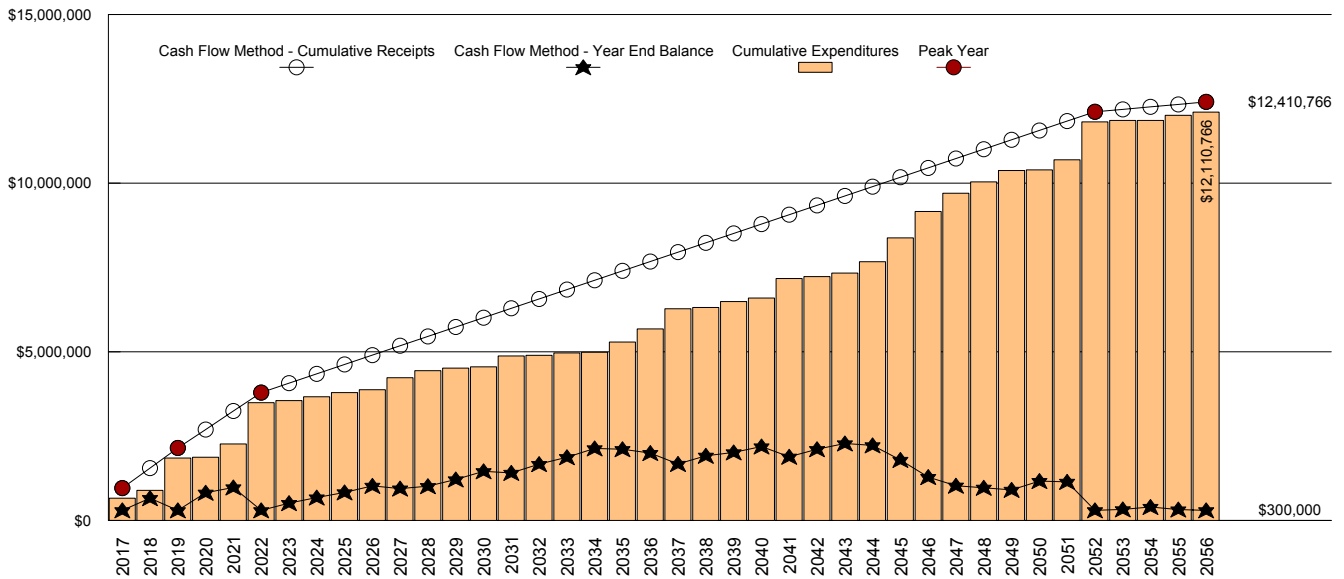
**\$659,955** RECOMMENDED REPLACEMENT RESERVE FUNDING FOR 2017

\$369.10 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 2017 with Replacement Reserves on Deposit dropping to the Minimum Balance after the completion of \$660,903 of replacements in the Study Year, 2017. Recommended funding declines from \$659,955 in 2017 to \$594,759 in 2018. Peak Years are identified in Chart 4 and Table 5.
- **Minimum Balance.** The calculations assume a Minimum Balance of \$300,000 in Replacement Reserves. This is approx. 12 months of average expenditures based on the \$302,769, 40-year average annual expenditure.
- **Cash Flow Method Study Period.** Cash Flow Method calculates funding for \$12,110,766 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.

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



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

Year	1st Peak - 2017	2018	2nd Peak - 2019	2020	2021	3rd Peak - 2022	2023	2024	2025	2026
Starting Balance	\$300,948									
Projected Replacements	(\$660,903)	(\$234,477)	(\$955,042)	(\$24,473)	(\$393,124)	(\$1,226,188)	(\$61,740)	(\$112,160)	(\$125,347)	(\$83,468)
Annual Deposit	\$659,955	\$594,759	\$594,759	\$547,928	\$547,928	\$547,928	\$277,467	\$277,467	\$277,467	\$277,467
End of Year Balance	\$300,000	\$660,282	\$300,000	\$823,455	\$978,260	\$300,000	\$515,727	\$681,034	\$833,154	\$1,027,154
Cumulative Expenditures	\$660,903	\$895,380	\$1,850,421	\$1,874,895	\$2,268,018	\$3,494,206	\$3,555,946	\$3,668,106	\$3,793,453	\$3,876,921
Cumulative Receipts	\$960,903	\$1,555,662	\$2,150,421	\$2,698,349	\$3,246,278	\$3,794,206	\$4,071,673	\$4,349,140	\$4,626,607	\$4,904,075
Year	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Projected Replacements	(\$358,488)	(\$205,230)	(\$76,941)	(\$39,380)	(\$321,672)	(\$18,123)	(\$74,435)	(\$16,250)	(\$302,650)	(\$391,243)
Annual Deposit	\$277,468	\$277,468	\$277,468	\$277,468	\$277,469	\$277,469	\$277,469	\$277,470	\$277,470	\$277,471
End of Year Balance	\$946,133	\$1,018,371	\$1,218,898	\$1,456,987	\$1,412,784	\$1,672,130	\$1,875,164	\$2,136,384	\$2,111,204	\$1,997,432
Cumulative Expenditures	(\$4,235,409)	(\$4,440,639)	(\$4,517,580)	(\$4,556,960)	(\$4,878,632)	(\$4,896,755)	(\$4,971,190)	(\$4,987,440)	(\$5,290,090)	(\$5,681,333)
Cumulative Receipts	\$5,181,542	\$5,459,010	\$5,736,478	\$6,013,947	\$6,291,415	\$6,568,884	\$6,846,354	\$7,123,824	\$7,401,294	\$7,678,764
Year	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Projected Replacements	(\$598,435)	(\$36,318)	(\$176,022)	(\$102,667)	(\$580,408)	(\$56,059)	(\$106,495)	(\$334,276)	(\$708,277)	(\$783,274)
Annual Deposit	\$277,471	\$277,471	\$277,472	\$277,472	\$277,472	\$277,473	\$277,473	\$277,473	\$277,474	\$277,474
End of Year Balance	\$1,676,467	\$1,917,621	\$2,019,071	\$2,193,876	\$1,890,941	\$2,112,355	\$2,283,333	\$2,226,530	\$1,795,727	\$1,289,926
Cumulative Expenditures	(\$6,279,768)	(\$6,316,086)	(\$6,492,107)	(\$6,594,774)	(\$7,175,182)	(\$7,231,241)	(\$7,337,736)	(\$7,672,012)	(\$8,380,289)	(\$9,163,563)
Cumulative Receipts	\$7,956,235	\$8,233,707	\$8,511,179	\$8,788,651	\$9,066,123	\$9,343,596	\$9,621,069	\$9,898,542	\$10,176,016	\$10,453,490
Year	2047	2048	2049	2050	4th Peak - 2052	2053	2054	2055	5th Peak - 2056	
Projected Replacements	(\$537,763)	(\$338,350)	(\$336,091)	(\$19,906)	(\$299,233)	(\$1,123,429)	(\$41,460)	(\$4,530)	(\$148,320)	(\$98,121)
Annual Deposit	\$277,474	\$277,474	\$277,474	\$277,474	\$277,474	\$277,474	\$73,108	\$73,108	\$73,108	\$73,108
End of Year Balance	\$1,029,637	\$968,761	\$910,145	\$1,167,713	\$1,145,954	\$300,000	\$331,648	\$400,225	\$325,013	\$300,000
Cumulative Expenditures	(\$9,701,327)	(\$10,039,677)	(\$10,375,768)	(\$10,395,674)	(\$10,694,907)	(\$11,818,335)	(\$11,859,795)	(\$11,864,325)	(\$12,012,645)	(\$12,110,766)
Cumulative Receipts	\$10,730,964	\$11,008,438	\$11,285,912	\$11,563,387	\$11,840,861	\$12,118,335	\$12,191,443	\$12,264,551	\$12,337,658	\$12,410,766

## 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 believe 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.

### **\$659,955** 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.

### **\$626,523** 2018 - INFLATION ADJUSTED FUNDING

A new analysis calculates 2018 funding based on three assumptions;

- Replacement Reserves on Deposit totaling \$300,000 on January 1, 2018.
- All 2017 Projected Replacements listed on Page C2 accomplished at a cost to Replacement Reserves less than \$660,903.
- Construction Cost Inflation of 4.50 percent in 2017.

The \$626,523 inflation adjusted funding in 2018 is a 5.34 percent increase over the non-inflation adjusted 2018 funding of \$594,759.

### **\$681,434** 2019 - INFLATION ADJUSTED FUNDING

A new analysis calculates 2019 funding based on three assumptions;

- Replacement Reserves on Deposit totaling \$681,495 on January 1, 2019.
- All 2018 Projected Replacements listed on Page C2 accomplished at a cost to Replacement Reserves less than \$245,028.
- Construction Cost Inflation of 4.50 percent in 2018.

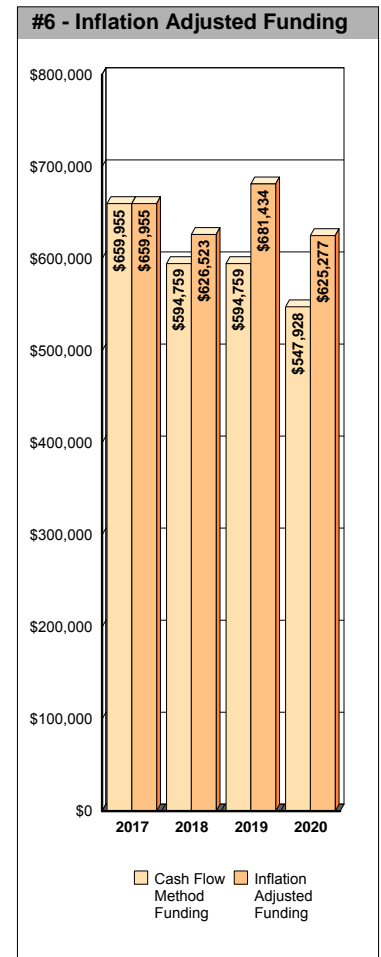
The \$681,434 inflation adjusted funding in 2019 is a 14.57 percent increase over the non-inflation adjusted 2019 funding of \$594,759.

### **\$625,277** 2020 - INFLATION ADJUSTED FUNDING

A new analysis calculates 2020 funding based on three assumptions;

- Replacement Reserves on Deposit totaling \$320,000 on January 1, 2020.
- All 2019 Projected Replacements listed on Page C2 accomplished at a cost to Replacement Reserves less than \$1,042,929.
- Construction Cost Inflation of 4.50 percent in 2019.

The \$625,277 inflation adjusted funding in 2020 is a 14.12 percent increase over the non-inflation adjusted funding of \$547,928.



## YEAR FIVE & BEYOND

The inflation adjusted funding calculations outlined above are not intended to be a substitute for periodic evaluation of common elements by an experienced Reserve Analyst. Industry Standards, lender requirements, and many state and local statutes require a Replacement Reserve Study be professionally updated every 3 to 5 years.

## INFLATION ADJUSTMENT

Prior to approving a budget based upon the 2018, 2019 and 2020 inflation adjusted funding calculations above, the 4.50 percent base rate of inflation used in our calculations should be compared to rates published by the Bureau of Labor Statistics. If there is a significant discrepancy (over 1 percent), contact Miller Dodson + Associates prior to using the Inflation Adjusted Funding.

## INTEREST ON RESERVES

The recommended funding calculations do not account for interest earned on Replacement Reserves.

In 2017, based on a 1.00 percent interest rate, we estimate the Association may earn \$3,005 on an average balance of \$300,474, \$4,907 on an average balance of \$490,748 in 2018, and \$5,007 on \$500,748 in 2019. The Association may elect to attribute 100 percent of the earned interest to Reserves, resulting in a reduction in the 2017 funding from \$659,955 to \$656,950 (a 0.46 percent reduction), \$626,523 to \$621,616 in 2018 (a 0.78 percent reduction), and \$681,434 to \$676,427 in 2019 (a 0.73 percent reduction).

## REPLACEMENT RESERVE STUDY - SUPPLEMENTAL COMMENTS

- Waterford Condominium has 149 units. The type of property is a condominium association.
- The Cash Flow Method calculates the minimum annual funding necessary to prevent Replacement Reserves from dropping below the Minimum Balance. Failure to fund at least the recommended levels may result in funding not being available for the Projected Replacements listed in the Replacement Reserve Inventory.
- The accuracy of the Replacement Reserve Analysis is dependent upon expenditures from Replacement Reserves being made ONLY for the 127 Projected Replacements specifically listed in the Replacement Reserve Inventory. The inclusion/exclusion of items from the Replacement Reserve Inventory is discussed on Page B1.

## REPLACEMENT RESERVE INVENTORY GENERAL INFORMATION

Waterford Condominium - Replacement Reserve Inventory identifies 175 items. Two types of items are identified, Projected Replacements and Excluded Items:

- **PROJECTED REPLACEMENTS.** 127 of the items are Projected Replacements and the periodic replacements of these items are scheduled for funding from Replacement Reserves. The Projected Replacements have an estimated one-time replacement cost of \$6,676,001. Replacements totaling \$12,110,766 are scheduled in the Replacement Reserve Inventory over the 40-year Study Period.

Projected Replacements are the replacement of commonly-owned physical assets that require periodic replacement and whose replacement is to be funded from Replacement Reserves.

- **EXCLUDED ITEMS.** 48 of the items are Excluded Items, and expenditures for these items are NOT scheduled for funding from Replacement Reserves. The accuracy of the calculations made in the Replacement Reserve Analysis is dependent on expenditures NOT being made for Excluded Items. The Excluded Items are listed in the Replacement Reserve Inventory to identify specific items and categories of items that are not to be funded from Replacement Reserves. There are multiple categories of items that are typically excluded from funding by Replacement Reserves, including but not limited to:

**Tax Code.** The United States Tax Code grants very favorable tax status to Replacement Reserves, conditioned on expenditures being made within certain guidelines. These guidelines typically exclude maintenance activities, minor repairs and capital improvements.

**Value.** Items with a replacement cost of less than \$1,000 and/or a normal economic life of less than 3 years are typically excluded from funding from Replacement Reserves. This exclusion should reflect Association policy on the administration of Replacement Reserves. If the Association has selected an alternative level, it will be noted in the Replacement Reserve Inventory - General Comments on Page B2.

**Long-lived Items.** Items that when properly maintained, can be assumed to have a life equal to the property as a whole, are typically excluded from the Replacement Reserve Inventory.

**Unit improvements.** Items owned by a single unit and where the items serve a single unit are generally assumed to be the responsibility of that unit, not the Association.

**Other non-common improvements.** Items owned by the local government, public and private utility companies, the United States Postal Service, Master Associations, state and local highway authorities, etc., may be installed on property that is owned by the Association. These types of items are generally not the responsibility of the Association and are excluded from the Replacement Reserve Inventory.

The rationale for the exclusion of an item from funding by Replacement Reserves is discussed in more detail in the 'Comments' sections of the Section B - Replacement Reserve Inventory.

- **CATEGORIES.** The 175 items included in the Waterford Condominium Replacement Reserve Inventory are divided into 18 major categories. Each category is printed on a separate page, Pages B3 to B19.
- **LEVEL OF SERVICE.** This Replacement Reserve Inventory has been developed in compliance with the standards established for a Level Two - Update (with site visit and on-site review), as defined by the National Reserve Study Standards, established in 1998 by Community Associations Institute, which states:

*Level II Studies are based entirely on the component inventory from a prior study. This information is adjusted to reflect changes to the inventory that are provided by the Association, and the quantities are adjusted accordingly from field measurement and/or quantity takeoffs from to-scale drawings that are made available to us. The condition of all components is ascertained from a site visit and the visual inspection of each component by the analyst. The Remaining Economic Life and replacement cost of components are provided based in part on these observations. The fund status and Funding Plan are derived from analysis of this data.*

## REPLACEMENT RESERVE INVENTORY - GENERAL INFORMATION (cont'd)

- **INVENTORY DATA.** Each of the 127 Projected Replacements listed in the Replacement Reserve Inventory includes the following data:

Item Number. The Item Number is assigned sequentially and is intended for identification purposes only.

Item Description. We have identified each item included in the Inventory. Additional information may be included in the Comments section at the bottom of each page of the Inventory.

Units. We have used standard abbreviations to identify the number of units including SF-square feet, LF-lineal feet, SY-square yard, LS-lump sum, EA-each, and PR-pair. Non-standard abbreviations are noted in the Comments section at the bottom of the page.

Number of Units. The methods used to develop the quantities are discussed in "Level of Service" above.

Unit Replacement Cost. We use four sources to develop the unit cost data shown in the Inventory; actual replacement cost data provided by the client, information provided by local contractors and suppliers, industry standard estimating manuals, and a cost database we have developed based upon our detailed interviews with contractors and service providers who are specialists in their respective lines of work.

Normal Economic Life (Yrs). The number of years that a new and properly installed item should be expected to remain in service.

Remaining Economic Life (Yrs). The estimated number of years before an item will need to be replaced. In "normal" conditions, this could be calculated by subtracting the age of the item from the Normal Economic Life of the item, but only rarely do physical assets age "normally". Some items may have longer or shorter lives depending on many factors such as environment, initial quality of the item, maintenance, etc.

Total Replacement Cost. This is calculated by multiplying the Unit Replacement Cost by the Number of Units.

Each of the 48 Excluded Items includes the Item Description, Units, and Number of Units. Many of the Excluded Items are listed as a 'Lump Sum' with a quantity of 1. For the Excluded Items, this indicates that all of the items identified by the 'Item Description' are excluded from funding by Replacement Reserves.

- **REVIEW OF EXPENDITURES.** This Replacement Reserve Study should be reviewed by an accounting professional representing the Association prior to implementation.
- **PARTIAL FUNDING.** Items may have been included in the Replacement Reserve Inventory at less than 100 percent of their full quantity and/or replacement cost. This is done on items that will never be replaced in their entirety, but which may require periodic replacements over an extended period of time. The assumptions that provide the basis for any partial funding are noted in the Comments section.
- **REMAINING ECONOMIC LIFE GREATER THAN 40 YEARS.** The calculations do not include funding for initial replacements beyond 40 years. These replacements are included in this Study for tracking and evaluation. They should be included for funding in future Studies, when they enter the 40-year window.

**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	Concrete flatwork, 6%	sf	393	\$9.10	6	3	\$3,576
2	Concrete curb & gutter, 6%	lf	200	\$35.50	6	6	\$7,100
3	Asphalt pavement	sf	72,984	\$1.65	20	4	\$120,424
4	Sealcoat asphalt	sf	72,984	\$0.20	5	9	\$14,597
5	Asphalt patching, 5%	sf	3,649	\$3.00	5	9	\$10,948
6	Cooling tower enclosure	lf	96	\$21.80	20	13	\$2,093
7	Site lighting	ea	31	\$2,260.00	25	1	\$70,060
8	Fountain structure	sf	2,635	\$38.00	40	7	\$100,130
9	Fountain waterproofing	sf	2,635	\$12.00	10	2	\$31,620
10	Fountain stone tuckpointing	sf	406	\$10.00	20	6	\$4,060
11	Fountain pump, 1.5 hp	ea	1	\$1,200.00	10	5	\$1,200
12	Fountain filter	ea	1	\$1,500.00	20	5	\$1,500
13	Stone patio, reset	sf	1,512	\$8.00	10	4	\$12,096
14	Concrete retaining wall repairs, 10%	sf	387	\$35.00	15	4	\$13,545
15	Chain link fence, 5'	lf	830	\$13.50	20	9	\$11,205
16	Chain link fence, 6'	lf	512	\$15.00	20	14	\$7,680
17	Picnic tables	ea	4	\$550.00	15	3	\$2,200
18	Wood benches	ea	6	\$475.00	15	3	\$2,850
19	Catch basins & curb inlets	ea	1	\$5,500.00	10	3	\$5,500
SITE COMPONENTS - Replacement Costs - Subtotal							\$422,383

**SITE COMPONENTS**

**COMMENTS**

- We have assumed that the Association will replace the asphalt pavement by the installation of a 2 inch thick overlay. The pavement will need to be milled prior to the installation of the overlay. Milling and the cost of minor repairs (5 to 10 percent of the total area) to the base materials and bearing soils beneath the pavement are included in the cost shown above.
- There are eight catch basins and curb inlets. We have assumed that one will require rebuilding every ten years.
- 10/25/16. Changed cost of site lighting.

**BUILDING EXTERIOR  
PROJECTED REPLACEMENTS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
20	East roof, inverted	sf	6,510	\$25.00	30	19	\$162,750
21	West roof, rubber	sf	6,882	\$27.75	25	24	\$190,976
22	Center roof. rubber & pavers	sf	5,890	\$27.75	30	19	\$163,448
23	Elevator room roof, rubber	sf	528	\$27.75	20	10	\$14,652
24	Swimming pool area roof	sf	3,576	\$27.75	25	5	\$99,234
25	Aluminum railing	lf	120	\$70.00	30	19	\$8,400
26	Downspouts	lf	1,300	\$12.50	30	17	\$16,250
27	Brick tuckpointing, 10%	sf	1,229	\$18.90	20	11	\$23,230
28	Exterior doors, single	ea	8	\$950.00	25	6	\$7,600
29	Exterior doors, double	ea	1	\$1,600.00	25	6	\$1,600
30	Metal roll-up door	ea	1	\$1,700.00	30	27	\$1,700
31	Stair area windows	sf	1,008	\$42.80	40	9	\$43,142
32	Balcony restorations	ls	1	\$75,000.00	15	8	\$75,000
33	Balcony rout & grout	ls	1	\$17,000.00	2	none	\$17,000
34	Balcony coating	sf	53,125	\$3.50	10	4	\$185,938
35	Balcony railing	lf	10,625	\$70.00	40	29	\$743,750
36	Balcony block privacy screens	sf	8,205	\$7.00	50	16	\$57,435

BUILDING EXTERIOR - Replacement Costs - Subtotal \$1,812,104

**BUILDING EXTERIOR  
COMMENTS**

- 10/25/16. Changed cost of rubber roof.



**BUILDING EXTERIOR  
PROJECTED REPLACEMENTS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
37	Entrance portico roof	sf	1,359	\$9.00	20	none	\$12,231
38	Entrance portico EIFS seal	sf	1,965	\$5.00	10	none	\$9,825
39	Entrance portico EIFS repairs	sf	1,965	\$12.60	10	none	\$24,759
40	Entrance portico metal benches	ea	2	\$550.00	15	6	\$1,100
41	Entrance portico metal railing	lf	22	\$70.00	30	19	\$1,540
42	Entrance portico light fixtures	ea	37	\$75.00	25	4	\$2,775
43	Column rebuild, garage	ls	1	\$82,280.00	40	20	\$82,280

BUILDING EXTERIOR - Replacement Costs - Subtotal \$134,510

**BUILDING EXTERIOR  
COMMENTS**

Blank area for comments.

**BUILDING INTERIOR  
PROJECTED REPLACEMENTS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
44	Corridor carpet	sf	19,638	\$11.46	10	none	\$225,051
45	Corridor ceiling lights	ea	212	\$85.00	25	none	\$18,020
46	Corridor exit lights	ea	44	\$80.00	25	6	\$3,520
47	Trash room tile floor	sf	768	\$3.75	20	3	\$2,880
48	Trash room light	ea	12	\$75.00	25	8	\$900
49	Trash chute door	ea	12	\$650.00	25	2	\$7,800
50	Ceiling tile	sf	223	\$3.50	20	2	\$781
51	Lobby level floor tile	sf	672	\$30.00	25	none	\$20,160
52	Lobby carpet	sf	1,554	\$22.52	10	none	\$34,996
53	Lobby furnishings	ls	1	\$5,000.00	20	none	\$5,000
54	Lobby renovation	ls	1	\$145,000.00	20	none	\$145,000
55	Mailboxes	ea	156	\$85.00	30	6	\$13,260
56	Lobby fancoil units	ea	3	\$2,200.00	25	2	\$6,600
57	Lobby desk	ls	1	\$8,500.00	25	none	\$8,500
58	Lobby recessed ceiling lights	ea	26	\$75.00	25	none	\$1,950
59	Stair light fixtures	ea	72	\$65.00	20	3	\$4,680
<b>BUILDING INTERIOR - Replacement Costs - Subtotal</b>							<b>\$499,098</b>

**BUILDING INTERIOR  
COMMENTS**

- 10/25/16. Deleted corridor furnishings. Changed cost of carpet. Added lobby renovation.
- 02/28/17. Changed cost of carpet and lobby renovation.

**BUILDING INTERIOR  
 PROJECTED REPLACEMENTS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
60	Office carpet	sf	252	\$7.00	10	none	\$1,764
61	Office furniture	ls	1	\$5,500.00	20	none	\$5,500
62	Computer	ea	1	\$1,500.00	5	3	\$1,500
63	Library carpet	sf	234	\$5.50	10	3	\$1,287
64	Library ceiling tile	sf	202	\$3.50	20	8	\$707
65	Laundry room flooring	sf	512	\$4.00	20	1	\$2,048
66	Laundry room ceiling tile	sf	384	\$4.15	20	1	\$1,594
67	Laundry room light fixtures	ea	7	\$125.00	25	1	\$875
68	Laundry room exhaust fan	ls	1	\$2,500.00	30	1	\$2,500

BUILDING INTERIOR - Replacement Costs - Subtotal \$17,775

**BUILDING INTERIOR  
 COMMENTS**

Empty space for comments.

**PENTHOUSE  
PROJECTED REPLACEMENTS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
69	Penthouse exterior furniture	ls	1	\$3,500.00	15	4	\$3,500
70	Penthouse carpet	sf	1,046	\$9.00	10	4	\$9,414
71	Penthouse ceiling tile	sf	1,119	\$3.50	20	4	\$3,917
72	Penthouse windows	sf	497	\$42.80	40	10	\$21,272
73	Penthouse glass sliders	ea	2	\$1,965.00	30	10	\$3,930
74	Penthouse ceiling lights	ea	27	\$75.00	25	5	\$2,025
75	Penthouse indoor furniture	ls	1	\$8,000.00	20	none	\$8,000
76	Penthouse folding tables & chairs	ls	1	\$3,000.00	15	6	\$3,000
77	Penthouse kitchen vinyl floor	sf	67	\$3.30	20	12	\$221
78	Penthouse kitchen cabinets	lf	12	\$340.00	20	2	\$4,080
79	Penthouse kitchen countertop	sf	46	\$35.00	20	10	\$1,610
80	Penthouse kitchen appliances	ls	1	\$3,000.00	20	2	\$3,000
81	Penthouse HVAC	ls	1	\$8,500.00	24	2	\$8,500
82	Penthouse restroom ceramic floor tile	sf	208	\$32.50	20	none	\$6,760
83	Penthouse restroom wall tile	sf	312	\$32.50	20	none	\$10,140
84	Penthouse restrool ceramic tile shower	ea	2	\$1,500.00	20	none	\$3,000
85	Penthouse restroom fixtures	ls	1	\$3,500.00	20	none	\$3,500
<b>PENTHOUSE - Replacement Costs - Subtotal</b>							<b>\$95,868</b>

**PENTHOUSE  
COMMENTS**

- 10/25/16. Deleted TV.

**MECHANICAL EQUIPMENT  
PROJECTED REPLACEMENTS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
86	Cooling tower, 300 ton	ea	1	\$57,000.00	25	14	\$57,000
87	Cooling tower fan motor	ea	1	\$2,500.00	12	2	\$2,500
88	Cooling tower VFD	ea	1	\$4,500.00	25	14	\$4,500
89	Scroll chiller, 300 ton	ea	2	\$112,000.00	25	18	\$224,000
90	Boiler, 6,000 mbh	ea	2	\$85,000.00	40	11	\$170,000
91	Boiler retube	ls	2	\$18,000.00	20	2	\$36,000
92	Condenser water pump, 20 hp	ea	1	\$8,000.00	30	2	\$8,000
93	Standby pump, 30 hp	ea	1	\$9,500.00	30	2	\$9,500
94	Chilled/heating water pump, 40 hp	ea	1	\$11,000.00	30	21	\$11,000
95	Chilled/heating water pump, 20 hp	ea	1	\$8,000.00	30	2	\$8,000
96	Heat exchanger	ea	1	\$12,000.00	30	4	\$12,000
97	Expansion tank	ea	2	\$6,000.00	30	11	\$12,000
98	Domestic water boiler, 1,200 mbh	ea	1	\$12,000.00	20	18	\$12,000
99	Standpipe booster pump	ea	1	\$8,000.00	30	24	\$8,000
100	Domestic water pipe reline	ea	149	\$4,430.00	30	28	\$660,070
101	HVAC Piping, replace	ea	149	\$7,500.00	30	5	\$1,117,500
102	Trash compactor	ea	1	\$14,000.00	20	1	\$14,000
103	Airflow remediation	ls	1	\$95,000.00	30	none	\$95,000
<b>MECHANICAL EQUIPMENT - Replacement Costs - Subtotal</b>							<b>\$2,461,070</b>

**MECHANICAL EQUIPMENT  
COMMENTS**

- 10/25/16. Changed cost of HVAC piping replace.
  
- 02/28/17. Added airflow remediation.

**ELEVATORS**  
**PROJECTED REPLACEMENTS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
104	Elevator machinery	ea	3	\$59,100.00	40	2	\$177,300
105	Elevator cabs & doors	ls	3	\$80,250.00	30	2	\$240,750
106	Elevator controls	ea	3	\$88,200.00	25	2	\$264,600
107	Elevator interior	ea	3	\$6,500.00	10	2	\$19,500
108	Elevator equipment room HVAC	ea	1	\$21,000.00	20	18	\$21,000

ELEVATORS - Replacement Costs - Subtotal \$723,150

**ELEVATORS**  
**COMMENTS**

- 02/28/17. Changed remaining life of elevator components.

**ELECTRICAL EQUIPMENT  
PROJECTED REPLACEMENTS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
109	Primary switchgear	ls	1	\$149,000.00	50	31	\$149,000
110	Generator, 300 kw	ls	1	\$120,000.00	30	1	\$120,000
111	Automatic transfer switch	ea	3	\$7,800.00	30	1	\$23,400
112	Fire alarm panel	ls	1	\$50,000.00	25	2	\$50,000
113	Energy management system	ls	1	\$15,000.00	20	18	\$15,000
114	Security system	ls	1	\$20,000.00	20	2	\$20,000
115	Entry system	ls	1	\$29,000.00	15	13	\$29,000

ELECTRICAL EQUIPMENT - Replacement Costs - Subtotal \$406,400

**ELECTRICAL EQUIPMENT  
COMMENTS**

- The community is planning to upgrade the 25 kW generator to one with a rating of 300 kW.
- 02/28/17. Changed cost and remaining life of generator. Changed remaining life of transfer switch,

**SWIMMING POOL  
 PROJECTED REPLACEMENTS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
116	Swimming pool steel structure	sf	648	\$40.00	45	8	\$25,920
117	Swimming pool fiberglass finish	sf	648	\$5.60	5	none	\$3,629
118	Swimming pool waterline tile	lf	108	\$10.35	15	none	\$1,118
119	Swimming pool coping	lf	108	\$40.00	15	8	\$4,320
120	Swimming pool filter/chlorinator	ls	1	\$3,500.00	20	6	\$3,500
121	Swimming pool pump, 3/4 hp	ea	1	\$1,100.00	10	5	\$1,100
122	Swimming pool furniture	ls	1	\$7,500.00	8	7	\$7,500
123	Swimming pool plastic matting	sf	3,576	\$3.50	15	4	\$12,516
124	Swimming pool fence, 6'	lf	302	\$15.00	15	7	\$4,530

SWIMMING POOL - Replacement Costs - Subtotal \$64,133

**SWIMMING POOL  
 COMMENTS**



**PARKING GARAGE  
 PROJECTED REPLACEMENTS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
125	Garage ceiling tile	sf	6,602	\$5.50	20	2	\$36,311
126	Garage lights	ea	17	\$100.00	20	2	\$1,700
127	Snow blower	ea	1	\$1,500.00	10	2	\$1,500

PARKING GARAGE - Replacement Costs - Subtotal \$39,511

**PARKING GARAGE  
 COMMENTS**

Empty area for comments.

**VALUATION EXCLUSIONS**

**EXCLUDED ITEMS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
	Miscellaneous signage	ls	1				EXCLUDED
	Bollard/access control devices	ls	1				EXCLUDED
	Hose bib	ls	1				EXCLUDED
	Handrail	ls	1				EXCLUDED
	Fire extinguisher cabinet	ls	1				EXCLUDED
	Sprinkler head	ls	1				EXCLUDED
	Signage	ls	1				EXCLUDED
	Interior door unit	ls	1				EXCLUDED
	Electric heaters	ls	1				EXCLUDED

**VALUATION EXCLUSIONS**

**COMMENTS**

- Valuation Exclusions. For ease of administration of the Replacement Reserves and to reflect accurately how Replacement Reserves are administered, items with a dollar value less than \$1,000.00 have not been scheduled for funding from Replacement Reserves. Examples of items excluded from funding by Replacement Reserves by this standard are listed above.
  
- The list above exemplifies exclusions by the cited standard(s) and is not intended to be comprehensive.

**LONG-LIFE EXCLUSIONS**  
**EXCLUDED ITEMS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
	Exterior brick veneer	ls	1				EXCLUDED
	Building foundation(s)	ls	1				EXCLUDED
	Concrete floor slabs (interior)	ls	1				EXCLUDED
	Wall, floor, & roof structure	ls	1				EXCLUDED
	Common element electrical services	ls	1				EXCLUDED
	Water piping at common facilities	ls	1				EXCLUDED
	Waste piping at common facilities	ls	1				EXCLUDED
	Electrical wiring	ls	1				EXCLUDED
	Trash chute	ls	1				EXCLUDED
	Stainless steel pool fixtures	ls	1				EXCLUDED

**LONG-LIFE EXCLUSIONS**  
**COMMENTS**

- Long Life Exclusions. Components that when properly maintained, can be assumed to have a life equal to the property as a whole, are normally excluded from the Replacement Reserve Inventory. Examples of items excluded from funding by Replacement Reserves by this standard are listed above.
- Exterior masonry is generally assumed to have an unlimited economic life but periodic repointing is required and we have included this for funding in the Replacement Reserve Inventory.
- The list above exemplifies exclusions by the cited standard(s) and is not intended to be comprehensive.

**UNIT IMPROVEMENTS EXCLUSIONS**

**EXCLUDED ITEMS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
	Domestic water pipes serving one unit	Is	1				EXCLUDED
	Sanitary sewers serving one unit	Is	1				EXCLUDED
	Electrical wiring serving one unit	Is	1				EXCLUDED
	Gas service serving one unit	Is	1				EXCLUDED
	Cable TV service serving one unit	Is	1				EXCLUDED
	Telephone service serving one unit	Is	1				EXCLUDED
	Unit windows & balcony doors	Is	1				EXCLUDED
	Unit interior	Is	1				EXCLUDED

**UNIT IMPROVEMENTS EXCLUSIONS**

**COMMENTS**

- Unit improvement Exclusions. We understand that the elements of the project that relate to a single unit are the responsibility of that unit owner. Examples of items excluded from funding by Replacement Reserves by this standard are listed above.
  
- The list above exemplifies exclusions by the cited standard(s) and is not intended to be comprehensive.

**UTILITY EXCLUSIONS**

**EXCLUDED ITEMS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
	Primary electric feeds	ls	1				EXCLUDED
	Electric transformers	ls	1				EXCLUDED
	Sanitary sewers	ls	1				EXCLUDED
	Cable TV systems and structures	ls	1				EXCLUDED
	Telephone cables and structures	ls	1				EXCLUDED
	Gas mains and meters	ls	1				EXCLUDED
	Water mains and meters	ls	1				EXCLUDED

**UTILITY EXCLUSIONS**

**COMMENTS**

- Utility Exclusions. Many improvements owned by utility companies are on property owned by the Association. We have assumed that repair, maintenance, and replacements of these components will be done at the expense of the appropriate utility company. Examples of items excluded from funding Replacement Reserves by this standard are listed above.
  
- The list above exemplifies exclusions by the cited standard(s) and is not intended to be comprehensive.

**MAINTENANCE AND REPAIR EXCLUSIONS**

**EXCLUDED ITEMS**

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
	Cleaning of asphalt pavement	ls	1				EXCLUDED
	Crack sealing of asphalt pavement	ls	1				EXCLUDED
	Painting of curbs	ls	1				EXCLUDED
	Striping of parking spaces	ls	1				EXCLUDED
	Numbering of parking spaces	ls	1				EXCLUDED
	Landscaping and site grading	ls	1				EXCLUDED
	Exterior painting	ls	1				EXCLUDED
	Interior painting	ls	1				EXCLUDED
	Janitorial service	ls	1				EXCLUDED
	Repair services	ls	1				EXCLUDED
	Partial replacements	ls	1				EXCLUDED
	Capital improvements	ls	1				EXCLUDED

**MAINTENANCE AND REPAIR EXCLUSIONS**

**COMMENTS**

- Maintenance activities, one-time-only repairs, and capital improvements. These activities are NOT appropriately funded from Replacement Reserves. The inclusion of such component in the Replacement Reserve Inventory could jeopardize the special tax status of ALL Replacement Reserves, exposing the Association to significant tax liabilities. We recommend that the Board of Directors discuss these exclusions and Revenue Ruling 75-370 with a Certified Public Accountant.
- Examples of items excluded from funding by Replacement Reserves by this standard are listed above.
- The list above exemplifies exclusions by the cited standard(s) and is not intended to be comprehensive.

**GOVERNMENT EXCLUSIONS**  
 EXCLUDED ITEMS

ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NORMAL ECONOMIC LIFE (YRS)	REMAINING ECONOMIC LIFE (YRS)	REPLACEMENT COST (\$)
	Government, roadways & parking	ls	1				EXCLUDED
	Government, sidewalks & curbs	ls	1				EXCLUDED

**GOVERNMENT EXCLUSIONS**  
 COMMENTS

- Government Exclusions. We have assumed that some of the improvements installed on property owned by the Association will be maintained by the state, county, or local government, or other association or other responsible entity. Examples of items excluded from funding by Replacement Reserves by this standard are listed above.
- Excluded right-of-ways, including LIST ROADS, and adjacent properties.
- The list above exemplifies exclusions by the cited standard(s) and is not intended to be comprehensive.

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## PROJECTED ANNUAL REPLACEMENTS GENERAL INFORMATION

CALENDAR OF ANNUAL REPLACEMENTS. The 127 Projected Replacements in the Waterford Condominium Replacement Reserve Inventory whose replacement is scheduled to be funded from Replacement Reserves are broken down on a year-by-year basis, beginning on Page C2.

### REPLACEMENT RESERVE ANALYSIS AND INVENTORY POLICIES, PROCEDURES, AND ADMINISTRATION

- **REVISIONS.** Revisions will be made to the Replacement Reserve Analysis and Replacement Reserve Inventory in accordance with the written instructions of the Board of Directors. No additional charge is incurred for the first revision, if requested in writing within three months of the date of the Replacement Reserve Study. It is our policy to provide revisions in electronic (Adobe PDF) format only.
- **TAX CODE.** The United States Tax Code grants favorable tax status to a common interest development (CID) meeting certain guidelines for their Replacement Reserve. If a CID files their taxes as a 'Corporation' on Form 1120 (IRC Section 277), these guidelines typically require maintenance activities, partial replacements, minor replacements, capital improvements, and one-time only replacements to be excluded from Reserves. A CID cannot co-mingle planning for maintenance activities with capital replacement activities in the Reserves (Revenue Ruling 75-370). Funds for maintenance activities and capital replacements activities must be held in separate accounts. If a CID files taxes as an "Exempt Homeowners Association" using Form 1120H (IRC Section 528), the CID does not have to segregate these activities. However, because the CID may elect to change their method of filing from year to year within the Study Period, we advise using the more restrictive approach. We further recommend that the CID consult with their Accountant and consider creating separate and independent accounts and reserves for large maintenance items, such as painting.
- **CONFLICT OF INTEREST.** Neither Miller - Dodson Associates nor the Reserve Analyst has any prior or existing relationship with this Association which would represent a real or perceived conflict of interest.
- **RELIANCE ON DATA PROVIDED BY THE CLIENT.** Information provided by an official representative of the Association regarding financial, physical conditions, quality, or historical issues is deemed reliable.
- **INTENT.** This Replacement Reserve Study is a reflection of the information provided by the Association and the visual evaluations of the Analyst. It has been prepared for the sole use of the Association and is not for the purpose of performing an audit, quality/forensic analyses, or background checks of historical records.
- **PREVIOUS REPLACEMENTS.** Information provided to Miller - Dodson Associates regarding prior replacements is considered to be accurate and reliable. Our visual evaluation is not a project audit or quality inspection.
- **EXPERIENCE WITH FUTURE REPLACEMENTS.** The Calendar of Annual Projected Replacements, lists replacements we have projected to occur over the next thirty years, begins on Page C2. Actual experience in replacing the items may differ significantly from the cost estimates and time frames shown because of conditions beyond our control. These differences may be caused by maintenance practices, inflation, variations in pricing and market conditions, future technological developments, regulatory actions, acts of God, and luck. Some items may function normally during our visual evaluation and then fail without notice.
- **REVIEW OF THE REPLACEMENT RESERVE STUDY.** For this study to be effective, it should be reviewed by the Waterford Condominium Board of Directors, those responsible for the management of the items included in the Replacement Reserve Inventory, and the accounting professionals employed by the Association.

**PROJECTED REPLACEMENTS - YEARS 1 TO 6**

2017 - STUDY YEAR			2018 - YEAR 2			2019 - YEAR 3		
Item		\$	Item		\$	Item		\$
33	Balcony rout & grout	\$17,000	7	Site lighting	\$70,060	9	Fountain waterproofing	\$31,620
37	Entrance portico roof	\$12,231	65	Laundry room flooring	\$2,048	33	Balcony rout & grout	\$17,000
38	Entrance portico EIFS seal	\$9,825	66	Laundry room ceiling tile	\$1,594	49	Trash chute door	\$7,800
39	Entrance portico EIFS repair	\$24,759	67	Laundry room light fixtures	\$875	50	Ceiling tile	\$781
44	Corridor carpet	\$225,051	68	Laundry room exhaust fan	\$2,500	56	Lobby fancoil units	\$6,600
45	Corridor ceiling lights	\$18,020	102	Trash compactor	\$14,000	78	Penthouse kitchen cabinets	\$4,080
51	Lobby level floor tile	\$20,160	110	Generator, 300 kw	\$120,000	80	Penthouse kitchen appliance	\$3,000
52	Lobby carpet	\$34,996	111	Automatic transfer switch	\$23,400	81	Penthouse HVAC	\$8,500
53	Lobby furnishings	\$5,000				87	Cooling tower fan motor	\$2,500
54	Lobby renovation	\$145,000				91	Boiler retube	\$36,000
57	Lobby desk	\$8,500				92	Condenser water pump, 20 l	\$8,000
58	Lobby recessed ceiling light	\$1,950				93	Standby pump, 30 hp	\$9,500
60	Office carpet	\$1,764				95	Chilled/heating water pump,	\$8,000
61	Office furniture	\$5,500				104	Elevator machinery	\$177,300
75	Penthouse indoor furniture	\$8,000				105	Elevator cabs & doors	\$240,750
82	Penthouse restroom ceramic	\$6,760				106	Elevator controls	\$264,600
83	Penthouse restroom wall tile	\$10,140				107	Elevator interior	\$19,500
84	Penthouse restrool ceramic	\$3,000				112	Fire alarm panel	\$50,000
85	Penthouse restroom fixtures	\$3,500				114	Security system	\$20,000
103	Airflow remediation	\$95,000				125	Garage ceiling tile	\$36,311
117	Swimming pool fiberglass fir	\$3,629				126	Garage lights	\$1,700
118	Swimming pool waterline tile	\$1,118				127	Snow blower	\$1,500
Total Scheduled Replacements		\$660,903	Total Scheduled Replacements		\$234,477	Total Scheduled Replacements		\$955,042
2020 - YEAR 4			2021 - YEAR 5			2022 - YEAR 6		
Item		\$	Item		\$	Item		\$
1	Concrete flatwork, 6%	\$3,576	3	Asphalt pavement	\$120,424	11	Fountain pump, 1.5 hp	\$1,200
17	Picnic tables	\$2,200	13	Stone patio, reset	\$12,096	12	Fountain filter	\$1,500
18	Wood benches	\$2,850	14	Concrete retaining wall repa	\$13,545	24	Swimming pool area roof	\$99,234
19	Catch basins & curb inlets	\$5,500	33	Balcony rout & grout	\$17,000	74	Penthouse ceiling lights	\$2,025
47	Trash room tile floor	\$2,880	34	Balcony coating	\$185,938	101	HVAC Piping, replace	\$1,117,500
59	Stair light fixtures	\$4,680	42	Entrance portico light fixture	\$2,775	117	Swimming pool fiberglass fir	\$3,629
62	Computer	\$1,500	69	Penthouse exterior furniture	\$3,500	121	Swimming pool pump, 3/4 h	\$1,100
63	Library carpet	\$1,287	70	Penthouse carpet	\$9,414			
			71	Penthouse ceiling tile	\$3,917			
			96	Heat exchanger	\$12,000			
			123	Swimming pool plastic matti	\$12,516			
Total Scheduled Replacements		\$24,473	Total Scheduled Replacements		\$393,124	Total Scheduled Replacements		\$1,226,188

**PROJECTED REPLACEMENTS - YEARS 7 TO 12**

2023 - YEAR 7			2024 - YEAR 8			2025 - YEAR 9		
Item		\$	Item		\$	Item		\$
2	Concrete curb & gutter, 6%	\$7,100	8	Fountain structure	\$100,130	32	Balcony restorations	\$75,000
10	Fountain stone tuckpointing	\$4,060	122	Swimming pool furniture	\$7,500	33	Balcony rout & grout	\$17,000
28	Exterior doors, single	\$7,600	124	Swimming pool fence, 6'	\$4,530	48	Trash room light	\$900
29	Exterior doors, double	\$1,600				62	Computer	\$1,500
33	Balcony rout & grout	\$17,000				64	Library ceiling tile	\$707
40	Entrance portico metal benc	\$1,100				116	Swimming pool steel structu	\$25,920
46	Corridor exit lights	\$3,520				119	Swimming pool coping	\$4,320
55	Mailboxes	\$13,260						
76	Penthouse folding tables & c	\$3,000						
120	Swimming pool filter/chlorine	\$3,500						
Total Scheduled Replacements		\$61,740	Total Scheduled Replacements		\$112,160	Total Scheduled Replacements		\$125,347
2026 - YEAR 10			2027 - YEAR 11			2028 - YEAR 12		
Item		\$	Item		\$	Item		\$
1	Concrete flatwork, 6%	\$3,576	23	Elevator room roof, rubber	\$14,652	27	Brick tuckpointing, 10%	\$23,230
4	Sealcoat asphalt	\$14,597	33	Balcony rout & grout	\$17,000	90	Boiler, 6,000 mbh	\$170,000
5	Asphalt patching, 5%	\$10,948	38	Entrance portico EIFS seal	\$9,825	97	Expansion tank	\$12,000
15	Chain link fence, 5'	\$11,205	39	Entrance portico EIFS repair	\$24,759			
31	Stair area windows	\$43,142	44	Corridor carpet	\$225,051			
			52	Lobby carpet	\$34,996			
			60	Office carpet	\$1,764			
			72	Penthouse windows	\$21,272			
			73	Penthouse glass sliders	\$3,930			
			79	Penthouse kitchen counterc	\$1,610			
			117	Swimming pool fiberglass fir	\$3,629			
Total Scheduled Replacements		\$83,468	Total Scheduled Replacements		\$358,488	All Replacements not listed		\$205,230





**PROJECTED REPLACEMENTS - YEARS 25 TO 30**

2041 - YEAR 25			2042 - YEAR 26			2043 - YEAR 27		
Item		\$	Item		\$	Item		\$
2	Concrete curb & gutter, 6%	\$7,100	11	Fountain pump, 1.5 hp	\$1,200	7	Site lighting	\$70,060
3	Asphalt pavement	\$120,424	12	Fountain filter	\$1,500	10	Fountain stone tuckpointing	\$4,060
4	Sealcoat asphalt	\$14,597	45	Corridor ceiling lights	\$18,020	33	Balcony rout & grout	\$17,000
5	Asphalt patching, 5%	\$10,948	51	Lobby level floor tile	\$20,160	67	Laundry room light fixtures	\$875
13	Stone patio, reset	\$12,096	57	Lobby desk	\$8,500	81	Penthouse HVAC	\$8,500
21	West roof, rubber	\$190,976	58	Lobby recessed ceiling light	\$1,950	87	Cooling tower fan motor	\$2,500
33	Balcony rout & grout	\$17,000	117	Swimming pool fiberglass fir	\$3,629	120	Swimming pool filter/chlorinat	\$3,500
34	Balcony coating	\$185,938	121	Swimming pool pump, 3/4 hp	\$1,100			
70	Penthouse carpet	\$9,414						
71	Penthouse ceiling tile	\$3,917						
99	Standpipe booster pump	\$8,000						
Total Scheduled Replacements		\$580,408	Total Scheduled Replacements		\$56,059	Total Scheduled Replacements		\$106,495
2044 - YEAR 28			2045 - YEAR 29			2046 - YEAR 30		
Item		\$	Item		\$	Item		\$
1	Concrete flatwork, 6%	\$3,576	33	Balcony rout & grout	\$17,000	4	Sealcoat asphalt	\$14,597
30	Metal roll-up door	\$1,700	62	Computer	\$1,500	5	Asphalt patching, 5%	\$10,948
49	Trash chute door	\$7,800	64	Library ceiling tile	\$707	15	Chain link fence, 5'	\$11,205
56	Lobby fancoil units	\$6,600	100	Domestic water pipe reline	\$660,070	35	Balcony railing	\$743,750
106	Elevator controls	\$264,600	115	Entry system	\$29,000	42	Entrance portico light fixture	\$2,775
112	Fire alarm panel	\$50,000						
Total Scheduled Replacements		\$334,276	Total Scheduled Replacements		\$708,277	Total Scheduled Replacements		\$783,274

**PROJECTED REPLACEMENTS - YEARS 31 TO 36**

2047 - YEAR 31			2048 - YEAR 32			2049 - YEAR 33		
Item		\$	Item		\$	Item		\$
2	Concrete curb & gutter, 6%	\$7,100	27	Brick tuckpointing, 10%	\$23,230	9	Fountain waterproofing	\$31,620
23	Elevator room roof, rubber	\$14,652	28	Exterior doors, single	\$7,600	33	Balcony rout & grout	\$17,000
24	Swimming pool area roof	\$99,234	29	Exterior doors, double	\$1,600	77	Penthouse kitchen vinyl floo	\$221
33	Balcony rout & grout	\$17,000	46	Corridor exit lights	\$3,520	92	Condenser water pump, 20 l	\$8,000
38	Entrance portico EIFS seal	\$9,825	68	Laundry room exhaust fan	\$2,500	93	Standby pump, 30 hp	\$9,500
39	Entrance portico EIFS repair	\$24,759	109	Primary switchgear	\$149,000	95	Chilled/heating water pump,	\$8,000
44	Corridor carpet	\$225,051	110	Generator, 300 kw	\$120,000	105	Elevator cabs & doors	\$240,750
52	Lobby carpet	\$34,996	111	Automatic transfer switch	\$23,400	107	Elevator interior	\$19,500
60	Office carpet	\$1,764	122	Swimming pool furniture	\$7,500	127	Snow blower	\$1,500
74	Penthouse ceiling lights	\$2,025						
79	Penthouse kitchen counterc	\$1,610						
103	Airflow remediation	\$95,000						
117	Swimming pool fiberglass fir	\$3,629						
118	Swimming pool waterline tile	\$1,118						
Total Scheduled Replacements		\$537,763	Total Scheduled Replacements		\$338,350	Total Scheduled Replacements		\$336,091
2050 - YEAR 34			2051 - YEAR 35			2052 - YEAR 36		
Item		\$	Item		\$	Item		\$
1	Concrete flatwork, 6%	\$3,576	4	Sealcoat asphalt	\$14,597	11	Fountain pump, 1.5 hp	\$1,200
6	Cooling tower enclosure	\$2,093	5	Asphalt patching, 5%	\$10,948	101	HVAC Piping, replace	\$1,117,500
17	Picnic tables	\$2,200	13	Stone patio, reset	\$12,096	117	Swimming pool fiberglass fir	\$3,629
18	Wood benches	\$2,850	14	Concrete retaining wall repa	\$13,545	121	Swimming pool pump, 3/4 h	\$1,100
19	Catch basins & curb inlets	\$5,500	16	Chain link fence, 6'	\$7,680			
48	Trash room light	\$900	33	Balcony rout & grout	\$17,000			
62	Computer	\$1,500	34	Balcony coating	\$185,938			
63	Library carpet	\$1,287	69	Penthouse exterior furniture	\$3,500			
			70	Penthouse carpet	\$9,414			
			96	Heat exchanger	\$12,000			
			123	Swimming pool plastic matti	\$12,516			
Total Scheduled Replacements		\$19,906	All Replacements not listed		\$299,233	Total Scheduled Replacements		\$1,123,429

**PROJECTED REPLACEMENTS - YEARS 37 TO 42**

Item	2053 - YEAR 37	\$	Item	2054 - YEAR 38	\$	Item	2055 - YEAR 39	\$
2	Concrete curb & gutter, 6%	\$7,100	124	Swimming pool fence, 6'	\$4,530	32	Balcony restorations	\$75,000
33	Balcony rout & grout	\$17,000				33	Balcony rout & grout	\$17,000
40	Entrance portico metal benc	\$1,100				62	Computer	\$1,500
55	Mailboxes	\$13,260				87	Cooling tower fan motor	\$2,500
76	Penthouse folding tables & c	\$3,000				98	Domestic water boiler, 1,200	\$12,000
						108	Elevator equipment room H\	\$21,000
						113	Energy management systerr	\$15,000
						119	Swimming pool coping	\$4,320
Total Scheduled Replacements		\$41,460	Total Scheduled Replacements		\$4,530	Total Scheduled Replacements		\$148,320

Item	2056 - YEAR 40	\$	Item	2057 (beyond Study Period)	\$	Item	2058 (beyond Study Period)	\$
1	Concrete flatwork, 6%	\$3,576	33	Balcony rout & grout	\$17,000	65	Laundry room flooring	\$2,048
4	Sealcoat asphalt	\$14,597	37	Entrance portico roof	\$12,231	66	Laundry room ceiling tile	\$1,594
5	Asphalt patching, 5%	\$10,948	38	Entrance portico EIFS seal	\$9,825	97	Expansion tank	\$12,000
86	Cooling tower, 300 ton	\$57,000	39	Entrance portico EIFS repair	\$24,759	102	Trash compactor	\$14,000
88	Cooling tower VFD	\$4,500	44	Corridor carpet	\$225,051			
122	Swimming pool furniture	\$7,500	52	Lobby carpet	\$34,996			
			53	Lobby furnishings	\$5,000			
			54	Lobby renovation	\$145,000			
			60	Office carpet	\$1,764			
			61	Office furniture	\$5,500			
			73	Penthouse glass sliders	\$3,930			
			75	Penthouse indoor furniture	\$8,000			
			82	Penthouse restroom ceramic	\$6,760			
			83	Penthouse restroom wall tile	\$10,140			
			84	Penthouse restrool ceramic	\$3,000			
			85	Penthouse restroom fixtures	\$3,500			
			117	Swimming pool fiberglass fir	\$3,629			
Total Scheduled Replacements		\$98,121	Total Scheduled Replacements		\$520,085	Total Scheduled Replacements		\$29,642



## CONDITION ASSESSMENT

**General Comments.** Miller - Dodson Associates conducted a Reserve Study at The Waterford in June 2016. The Waterford is in above average condition for a condominium community constructed in 1963. A review of the Replacement Reserve Inventory will show that we are anticipating most of the components achieving their normal economic lives.

The following comments pertain to the larger, more significant components in the Replacement Reserve Inventory and to those items that are unique or deserving of attention because of their condition or the manner in which they have been treated in the Replacement Reserve Analysis or Inventory.

### General Condition Statements.

**Excellent.** 100% to 90% of Normal Economic Life expected, with no appreciable wear or defects.

**Good.** 90% to 60% of Normal Economic Life expected, minor wear or cosmetic defects found. Normal maintenance should be expected. If performed properly, normal maintenance may increase the useful life of a component. Otherwise, the component is wearing normally.

**Fair.** 60% to 30% of Normal Economic Life expected, moderate wear with defects found. Repair actions should be taken to extend the life of the component or to correct repairable defects and distress. Otherwise, the component is wearing normally.

**Marginal.** 30% to 10% of Normal Economic Life expected, with moderate to significant wear or distress found. Repair actions are expected to be cost effective for localized issues, but normal wear and use are evident. The component is reaching the end of the Normal Economic Life.

**Poor.** 10% to 0% of Normal Economic Life expected, with significant distress and wear. Left unattended, additional damage to underlying structures is likely to occur. Further maintenance is unlikely to be cost effective.

## SITE COMPONENTS

**Concrete Flatwork.** The concrete flatwork includes the community sidewalks and road aprons. The Association maintains an inventory of approximately 6,550 square feet of concrete flatwork. The overall condition of the concrete flatwork is good.

The standards we used for recommending replacement are as follows:

1. Trip hazard, 0.5 inch height difference.
2. Severe cracking.
3. Severe spalling
4. Uneven riser heights on steps.
5. Steps with risers in excess of 8.25 inches.

Because it is highly unlikely that all of the community's concrete components will fail and require replacement in the period of the study, we have programmed funds for the replacement of 60% of the inventory and spread those funds over a 60-year timeframe to reflect the incremental nature of this work. This approach assumes a failure rate of 1% per year.

**Curb and Gutter.** The Association maintains an inventory of 3,333 linear feet of concrete curb and gutter. All components have been well maintained and are in excellent condition. Any problems noted are in the form of minor cracks, spalling or settlement that can be repaired by continued periodic replacement of broken sections.

Because it is highly unlikely that all of the community's concrete curb and gutter sections will fail and require replacement in the period of the study, we have programmed funds for the replacement of 60 percent of the inventory and spread those funds over a 60-year timeframe to reflect the incremental nature of this work. This approach assumes a failure rate of one percent per year.

**Asphalt Pavement.** The site includes asphalt pavement for vehicle access and parking. In general, the asphalt pavement is in fair condition with multiple areas of defects. The Association maintains an inventory of 72,984 square feet of asphalt pavement

The defects noted include the following:

- **Open Cracks.** There are multiple locations where open cracks are allowing water to penetrate to the asphalt base and the bearing soils beneath the pavement. This water will erode the base accelerating the deterioration of the asphalt pavement. If the cracks have allowed the deterioration of the base materials and the bearing soil, the damaged areas should be removed and replaced. All other cracks should be cleaned and filled.
- **Alligating.** There are multiple locations where the asphalt has developed a pattern of cracking known as alligating. Alligating is the result of an unstable base under the asphalt. Shifting in the base causes the asphalt to crack and shift, forming the cracks that resemble the skin of an alligator. Once these cracks extend through the asphalt, they will allow water to penetrate to the base, accelerating the rate of deterioration. The only solution is to remove the defective asphalt and compact the base before new asphalt is installed.
- **Potholes.** There are a number of locations where potholes have formed as the result of the failure of the underlying base material or the surface material. Repair will require removal of the asphalt and base material, installation and compaction of new base material, and resurfacing with asphalt.
- **Depressions.** There are areas where the asphalt surface is depressed due to deformation in the surface or underlying layers. These depressions may continue to grow with exposure to traffic. Water ponding was noted in several of these areas. Repair will require removal of the asphalt and base material, installation and compaction of new base material, and resurfacing with asphalt.
- **Tree Root Damage.** There are locations where roots from trees planted near the asphalt surface have pushed up through the asphalt, causing cracks and heaving. Repair of these areas will require removal of the asphalt and the tree roots.



Photo 1 - Cracking & alligating, typical



Photo 2 - Deteriorated asphalt

As a rule of thumb, asphalt should be overlaid when approximately five percent of the surface area has become cracked or has failed. The normal service life of asphalt pavement is typically 18 to 20 years.

In order to maintain the condition of the pavement throughout the community and to ensure the longest life of the asphalt, we recommend a systematic and comprehensive maintenance program that includes:

- **Crack Sealing.** All cracks should be sealed with an appropriate sealing compound to prevent water infiltration through the asphalt compound into the base. This repair should be done annually. This is an entirely different process from the seal coating discussed below. Crack sealing is normally considered a maintenance activity and is not funded from Reserves. Areas of extensive cracking or deterioration that cannot be made watertight by crack sealing should be cut out and patched.
- **Cleaning.** Long-term exposure to oil or gas breaks down asphalt. Because this asphalt pavement is generally not used for long-term parking, it is unlikely that frequent cleaning will be necessary. When necessary, spill areas should be cleaned, or if deterioration has penetrated the asphalt, patched. This is a maintenance activity, and we have assumed that it will not be funded from Reserves.
- **Seal Coating.** The asphalt should be seal coated every three to five years. For this maintenance activity to be effective in extending the life of the asphalt, the crack sealing and cleaning of the asphalt as discussed above should be completed first.

Pricing used in the study is based on a recent contract for a two-inch overlay and reflects the current local market.

**Asphalt Seal Coat.** We recommend seal coating the asphalt every five years in order to protect and extend the life of the asphalt.

Asphalt pavement is a combination of rock, sand, and liquid asphalt. With time and exposure to sunlight, UV radiation breaks down the asphalt sufficiently to allow loosening of the sand and stone, and erosion of the top surface of the pavement. The first sign of this deterioration is the gradual change in the color of the asphalt from black to gray. As this deterioration continues, the surface of the asphalt takes on a rough appearance. The sun's UV radiation also causes the pavement to lose flexibility. This loss of flexibility causes the pavement to become brittle, crack, and break.

Salt, petroleum products, and other chemicals also damage the asphalt pavement by dissolving directly into the asphalt, softening its structure.

Before applying the seal coat, the asphalt must be cleaned and areas damaged by petroleum products treated so that the seal coat can properly adhere to the asphalt. Additionally, all cracks in the asphalt must be cleaned out and filled to prevent the penetration of water to the base material under the asphalt.

Seal coating the asphalt on a regular basis provides a barrier between these elements and the asphalt material. Seal coating materials are typically a coal tar emulsion or other similar material that is highly resistant to water, gas and oil, salt, other chemicals, and UV radiation.

Most seal coating materials cure sufficiently in 24 hours to allow normal traffic flow.

**Cooling Tower Enclosure.** The building's cooling tower is located on ground level at the rear of the building. The tower is enclosed in a wood fence. The fence is in good condition.



Photo 3 - Cooling tower enclosure

**Site Lighting.** The Association is responsible for the operation of the community's drive and walkway lights. The lighting system was not on at the time of our site visit. We understand that the lighting system is in fair to poor operating condition. It is recommended that the Association consider replacing the system with one that uses LED fixtures to reduce both maintenance and operating costs. Fixtures will have to be carefully selected to provide adequate illumination coverage given the number of trees on the property.



Photo 4 - Site light fixture

**Fountain.** The Association maintains a decorative fountain at the front of the property. The fountain has a concrete structure and is surfaced along its perimeter with stone. The fountain is lined with a waterproof coating. A 1.5 horsepower pump powers the fountain. All components are in good condition.

**Stone Pavers.** The community maintains an inventory of approximately 1,512 square feet of stone pavers that are part of the community's sidewalks. The overall condition of these pavers is good, with no significant deficiencies. With time and exposure to traffic, it can be expected that portions of the pavers will settle or become damaged.



Photo 5 - Pavers

**Concrete Retaining Wall.** The community has a concrete retaining wall that it maintains along the west side of the entrance drive. The total concrete retaining wall inventory is approximately 3,870 square feet. We have assumed that sections of this wall will be replaced on an as necessary basis.

**Chain Link Fencing.** The Association maintains an inventory of 830 linear feet of five foot high chain link fencing, and 512 linear feet of six-foot high chain link fence. The overall condition of the fencing is good with only a limited number of deficiencies, such as light corrosion or damaged fence posts.



Photo 6 - Retaining wall fence

**Catch Basins and Curb Inlets.** The storm water system includes a number of catch basins and curb inlets that are designed to collect storm water from the streets and parking areas and direct it into the storm water system.

While these items are long life items, soil movement can result in displacement of the structure. Openings between the inlets and the surrounding pavement and other surfaces can result in erosion and settlement of the pavement surrounding the curb inlet. This movement results in additional settlement and erosion. Uncorrected, the entire catch basin or curb inlet will require replacement or rebuilding.



Photo 7 - Catch basin

Not all items will require rebuilding or replacement at the same time. Therefore, we have included funding in the Reserve Analysis for repairs on a periodic basis. We have assumed that one catch basin or curb inlet will require rebuilding or replacement every ten years.

## BUILDING EXTERIOR

**Inverted Roofing.** The building's east roof is an inverted or IRMA roof. IRMA roof construction places the roof membrane next to the roof deck. It is covered with rigid foam insulation and pavers for ballast. IRMA roofs typically have a service life of 25 years or more as long as the membrane and insulation are protected from foot traffic. The roof is in good condition with no noted defects. We have estimated the remaining useful life of the roofs based on the conditions seen at the site as well as the age of the roofs. We recommend that the roof be inspected twice each year for defects, and that any required repairs be made as soon as possible.

**Single-Ply Roofing.** The west section of roofing was being replaced at the time of our site visit. The remaining single-ply roof sections appear to be in good condition with no obvious signs of disrepair or ponding at this time. Although the membrane has a long life expectancy, these roofs will typically fail at the seams in the panels and around vents and other roof details. Because the rubber oxidizes over time the resealing of failed seams and joints has historically proven to be difficult, in that the oxidation inhibits the rebonding of the failed seams. Accordingly, we have included the replacement of the roof with a 20-year roof at an estimated cost of \$22 per square foot. We have estimated the remaining useful life of the roofs based on the conditions seen at the site as well as the age of the roofs. Because of the nature and age of the existing roof, we recommend the periodic inspection of the roof by a professional roofing consultant to detect early signs of failure.



Photo 8 - Inverted roof



Photo 9 - Roof section being replaced

**Brickwork.** The brickwork on the buildings is in good condition. Brick is usually considered to be a life of structure item and therefore excluded from reserve funding. Because weather and other conditions result in the slow deterioration of the mortar in the brick joints, we have included funding in the Reserve Analysis for tuckpointing.

Tuckpointing is the process of raking and cutting out damaged sections of mortar and replacing them with new mortar. When mortar joints become damaged, they allow water to gain access to the brick joints. Repeated freeze-thaw cycles gradually increase the damage to the mortar joints, allowing even more moisture into the brick joints. If allowed to progress sufficiently, the brick surfaces can spall or entire bricks can be loosened.

Periodic tuckpointing limits the damage done by moisture penetration, maximizing the life of both the mortar and the bricks. For the Reserve Analysis, we have assumed that ten percent of the brick will require tuckpointing every 20 years once the brickwork is approximately 30 to 35 years old.

**Metal Exterior Doors.** The exterior doors are of metal construction. These doors are of unknown age and are in fair condition.

Metal doors and their frames are prone to damage from corrosion. To limit damage, doors and frames should be painted every five to six years.

The trash room overhead door was recently replaced and is in good condition.

**Common Area Windows.** We understand that the windows for the individual units are the responsibility of the unit owners. Therefore, we have included only those windows that are located in common areas in the reserve analysis. The average service life for windows of this type is 40 years. The windows are in fair condition.

**Concrete Balconies.** The building's concrete balconies are in good condition. We noted no significant defects. The balcony surfaces are coated.

Concrete balconies are prone to deterioration due to their exposure to the elements. This deterioration begins within the concrete and slowly progresses to the surface. By the time it becomes visible, the damage has been done and expensive remedial action is typically required.

The leading cause of concrete balcony deterioration is the corrosion of the reinforcing steel. Water penetrates the concrete surface or enters the concrete through the mounting holes for the railing. When it comes in contact with the reinforcing steel, the result is corrosion. As the steel corrodes, it expands, putting



Photo 10 - Typical balcony

pressure on the surrounding concrete. This pressure can result in cracks in the concrete and spalling of the concrete surface or edge of the concrete balcony. The rate of corrosion is influenced by such factors as the thickness of the concrete over the reinforcing steel, the rate of water infiltration, and the installation of carpet or other porous materials on the balcony.

We recommend that the Association implement a balcony inspection program to assess the condition of the balconies and identify defects while they are still minor. We also recommend that the Association apply an elastomeric coating to the concrete balcony surfaces every ten years.

**Entrance Portico.** The building includes a covered entrance of masonry construction with an EIFS exterior. Listed below are the major components of the entrance portico.

- Roof. There are signs that the portico roof is leaking. We recommend that it be evaluated by a roofing consultant.
- Exterior Insulation Finish System (EIFS). Exterior Wall Insulation and Finish System (EIFS), often incorrectly called synthetic stucco, is a lightweight, synthetic wall cladding system constructed from plastic foam insulation and several thin synthetic coatings.



Photo 11 - Portico

The EIFS was visually inspected. A number of were noted. EIFS systems have historically experienced problems resulting from faulty installation and inappropriate design details that trap moisture behind the weather barrier. These conditions have caused leaks and structural damage at other locations. Improper detailing can also cause surface cracking. These defects can only be found by close inspection from scaffolding and by removal of small sections of the material to test if moisture is present. This activity is beyond the scope of this study. We recommend periodic inspection of the building by a professional certified and equipped to conduct this type of inspection.

- Lighting. The ceiling mounted light fixtures are in fair condition. We noted corrosion on a number of the fixtures.

## BUILDING INTERIOR

**Corridors.** Listed below are the major corridor components that we have included in the Reserve Analysis:

- Carpet. The carpet in the building's corridors is in fair to poor condition. Commercial carpet of this construction in this type of application has a typical service life of seven to ten years.
- Light Fixtures. Corridor illumination is provided by ceiling mounted light fixtures. The fixtures use compact fluorescent lamps. The fixtures are in fair working condition and provide adequate lighting. Fixtures of this type have a typical service life of 25 years.



Photo 12 - Typical corridor

- Furnishings. We have included the furnishings from the corridors and elevator lobbies in the Reserve Analysis. We have assumed that the service life for the furniture is 15 years and that it will be replaced with similar items.

**Trash Rooms.** Each floor has a trash room that includes tile flooring, a trash chute door, and an overhead fluorescent light. The trash chute doors are approaching the end of their service lives.

**Entrance Lobby.** We understand that the Association is planning to complete a lobby renovation in the near future. We have included the following items from the building's entrance and lobby in the Reserve Analysis:

- **Carpet.** The carpet in the building's lobby is in poor condition. Commercial carpet of this construction in this type of application has a typical service life of seven to ten years.
- **Floor Tile.** The Association maintains an inventory of approximately 672 square feet of tile in the elevator lobby. The overall condition of the ceramic tile is good.
- **Furnishings.** We have included the furnishings from the lobby in the Reserve Analysis. We have assumed that the service life for the furniture is 20 years and that it will be replaced with similar items.
- **Mailboxes.** Although the mailboxes are in good operating conditions, they are considered to be undersized by today's standards.
- **Fan Coils.** The lobby has three fan coil units that are supplied with heating or cooling water from the building's central system. We have assumed a service life of 25 years for the fan coil units. The units are in fair condition.



Photo 13 - The lobby

**Office Area.** The office/reception desk is in poor condition and dated. We have included funding in the Reserve Analysis for replacement of the major components in this area.



Photo 14 - Reception desk & office

**Penthouse.** The building's penthouse includes a sitting area and a small kitchen/bar. While most of the components in the penthouse are in fair to good condition, they are dated. We have assumed that the entire area will be renovated in approximately three years. Listed below are the major components of the penthouse.

- **Carpet.** The carpet in the building's penthouse is in fair to poor condition. Commercial carpet of this construction in this type of application has a typical service life of seven to ten years.
- **Windows.** The penthouse windows and glass slider are single glazed units. While there is no indication that any of the units are leaking, upgrading them to dual glazed units will improve energy efficiency and comfort.
- **Furnishings.** We have included the furnishings from the penthouse in the Reserve Analysis. We have assumed that the service life for the furniture is 20 years and that it will be replaced with similar items.



- Restrooms. The restrooms located just outside of the entrance to the penthouse are in fair to good operating condition but are badly dated.



Photo 15 - Penthouse



Photo 16 - Penthouse restroom

## MECHANICAL & ELECTRICAL

**Cooling Tower.** The building has a central air conditioning system that generates and distributes chilled water to the individual units and other interior areas within the building. Heat from the system is rejected to the atmosphere through the cooling tower located on the north side of the building. The cooling tower is approximately seven years old and is in good condition. Cooling towers have a typical service life of 20 to 25 years. The tower was operating at the time of our site visit.

Cooling towers have a very large impact on the operating efficiency of a central air conditioning system. Therefore, it is important to follow a comprehensive maintenance program to keep the tower operating at peak efficiency. It is also good practice to replace the cooling tower when the building chiller is replaced.

We have also included items for replacement of the cooling tower fan's motor and the variable frequency drive controlling the tower fan's motor.

**Scroll Chillers.** Two banks of scroll chillers supply chilled water to the community. The chillers are approximately seven years old. Chillers of this type have a typical service life of 20 to 25 years. The chiller is in good operating condition. Our assessment of the condition of the chiller is based on the age of the chiller, the conditions seen during the site visit, the reported maintenance history of the chiller, and conversations with maintenance personnel.



Photo 17 - Scroll chillers

**Heating Boiler.** Heat to the building is supplied by a single, hot water boiler located in the basement mechanical room. The boiler is approximately 25 years old and is in good condition. Our assessment of the condition of the boiler is based on the age of the boiler, the conditions seen during the site visit, the reported maintenance history of the boiler, and conversations with maintenance personnel. Boilers of this type typically have a service life of 40 years.

When it becomes necessary to replace the central boiler, we recommend that the community consider installing a bank of smaller, modular boilers. The use of multiple boilers will allow the operators to stage their use to match heating requirements in the building and increase the overall operating efficiency of the heating system.

We have also included funding for the replacement of the boiler tubes.

**Circulation Pumps.** There are four pumps located in the central plant that circulate the building heating, chilled, and condenser water; a 20 and a 40 horsepower pump for heating and chilled water, 20 horsepower pumps for condenser water, and a 30 horsepower standby pump. A fifth pump is a standpipe booster pump.



Photo 18 - Heating boiler



Photo 19 - Typical circulation pump

**Heat Exchanger.** Domestic hot water is generated through the use of a plate-and-frame heat exchanger attached to the central boiler system during the heating season. We understand that the heat exchanger is in fair condition.

While heat exchangers are relatively low maintenance, long life items, eventually the buildup of scale on the heat exchanger surfaces or sludge in the tubes will reduce its operating efficiency. In addition, leaks can develop due to corrosion within the heat exchanger.

To protect the heat exchanger from fouling, sludge buildup, and leaks, it is recommended that the boiler water supplied to the heat exchanger undergo a chemical treatment program. Chemical treatment helps to eliminate the contaminants that cause scale and sludge, and to protect the interior surfaces from corrosion. In addition, the heat exchanger should be removed from service once every three to five years, cleaned, and inspected.



Photo 20 - Heat exchanger

**Domestic Hot Water Boiler.** Heat to the building's domestic hot water system is supplied by a single, hot water boiler. The boiler is approximately two years old and is in good condition. Our assessment of the condition of the boilers is based on the age of the boiler, the conditions seen during the site visit, the reported maintenance history of the boiler, and conversations with maintenance personnel. Boilers of this type typically have a service life of 20 years.

**Common Domestic Water Piping.** Copper water supply piping has been used throughout the building. As a result of changes in water chemistry that have been brought on by federal clean water legislation, copper piping has been developing pin hole leaks which leads to high maintenance costs and a significantly shorter normal service life. For further information about the problem and research that is being conducted, please see the WSSC link on our web site at <http://mdareserves.com/resources/links/building-system>. In addition, in some cases the pipe and fitting materials are of poor quality and pinhole leaks have been reported in as little as three years.

As a result of this problem, the piping will have to be replaced at some point in time. As a less expensive alternative to the extremely costly work of re-piping a building, systems have been developed to clean and to line the interior surfaces of water lines with an epoxy coating.

The time required for re-piping a facility can vary widely, and the estimation of the remaining economic life is highly speculative. Given the age of the facility, the Association should be aware of the various technologies available for pipe replacement and pipe lining. For additional information, please follow the Water Delivery Report link from our website. For budgeting purposes, an allowance of \$3,200 per unit every 50 years is included in this study for relining work.

To gain a better understanding of the condition of the facility's piping and water supply lines, we recommend having an evaluation of the piping performed. This evaluation should include an estimation of the remaining useful life of the piping systems, the condition of the water supply, and recommendations to maximize the remaining useful life of the facility's piping components.

We understand that the epoxy lining was added to the piping two years ago. We have assumed that it will be necessary to reline the pipes in another 28 years.

**HVAC System Piping.** We have included the HVAC system piping in the Reserve Analysis. While these systems have a long service life, their failure is a major expense to the Association. We have estimated the replacement cost for the building based on replacement costs for comparable buildings. We have assumed that an epoxy lining will be installed.

**Elevators.** The estimated cost of replacing the major components of the building elevators has been developed utilizing R.S. Means Construction Cost Data. These costs are included to reflect the obsolescence that occurs with elevator systems. Even though the systems may be functioning well at this time, parts for most mechanical control systems are becoming increasingly hard to find. Parts availability becomes a major consideration that forces a replacement decision. When this work is ultimately accomplished, the elevators will have to be brought into compliance with the latest safety code requirements. This work typically entails upgrading door operating mechanisms, replacing elevator call systems, and installation of emergency phones. A prudent amount has been included in anticipation of these problems.



Photo 21 - Elevator control relays

**Electrical Switchgear.** The electrical switchgear includes the primary distribution equipment, disconnects, relays, fuses, and circuit breakers for the facility. The primary electrical switchgear has been replaced. Electrical switchgear has a rated service life of 50 years or more. Electrical switchgear requires ongoing maintenance for proper operation and reliability.

The overall condition of the switchgear is good. We understand that replacement parts are still available for the equipment. As the switchgear continues to age, obtaining replacement parts can be expected to become more difficult. When parts no longer are available or when the condition of the switchgear deteriorates sufficiently, the Association will have to replace or upgrade the existing equipment. Therefore, we have included funding in the Reserve Analysis for upgrading the equipment when it is approximately 50 years old.



Photo 22 - Primary switchgear

**Emergency Generator.** The building is served by a 25 kW generator. The generator is estimated to be 20 years old and is in good condition. The generator supplies power to the building's corridor lighting, stairwell lighting, and one elevator. The estimated cost of replacing the generator has been developed utilizing R.S. Means Construction Cost Data.

Although the generator is in good condition, it is undersized for the application. The community is planning to replace the unit with a 300 kW unit.

**Fire Alarm Panel.** The building has a central fire alarm control unit that monitors the status and operational integrity of the building's fire safety components. The unit is obsolete and is in fair to poor operating condition.

Building fire alarm panels have a service life of approximately 20 years. While the panels may continue to operate well past this point, changes in fire safety technology and building fire safety codes tend to render them obsolete. In addition, manufacturers only support their systems for a limited period of time, typically 15 to 20 years, as the cost of maintaining the UL listing for older systems and technologies becomes cost prohibitive. After this time, it will be difficult to obtain replacement parts and service.

When it becomes necessary to upgrade the fire alarm panel, differences in the technologies used in the existing system and the new system may require replacement of the system's sensors and communication systems.

**Security System.** The building has a video-based security system with cameras installed at various locations in and around the building. The system records images on a hard drive.

The service life for systems of this type is 15 years. While many of the system's components may function well beyond that point, the community will experience difficulty obtaining replacement parts and service for the system. Most manufacturers do not support hardware or software beyond this timeframe.

**Building Access.** The building is an access-controlled facility with electrically operated doors activated by keypads and key fobs. The system includes a telephone entry panel.

Systems of this type typically have a service life of 15 years. Beyond that point, it becomes difficult to find replacement parts or companies that can service the system. Additionally, changes in technology help render the systems obsolete. For these reasons, we have assumed a service life of 15 years for the system.

## RECREATIONAL FACILITIES

**Swimming Pool.** The community operates an outdoor pool of steel and fiberglass construction. The pool deck is covered with plastic flooring. Listed below are the major components of the pool facilities:

- **Pool Shell.** The shell for the swimming pool is in good condition. Pool shells normally have a finite life of approximately 45 years. At that time it may not be necessary to replace the entire structure. However, it is prudent to anticipate a major expenditure for replacement of underground lines and sections of the pool. Based on our research, we have found it to be prudent to program \$40 per square foot of pool surface to cover these needs.
- **Whitecoat.** The pool whitecoat is in poor condition. We have assumed a service life of five years for the pool whitecoat.
- **Coping.** The pool is edged with masonry coping. The coping is in good condition.
- **Waterline Tile.** The waterline tile is in fair condition. We have assumed that the waterline tile will be replaced or restored when the pool is whitecoated.
- **Pump and Filter System.** The filter system is in good operating condition. We have assumed a service life of 20 years for the filter system, and 10 years for the pump.



Photo 23 - Swimming pool

## PARKING GARAGE

The parking garage is a single story garage located under a portion of the building. Listed below are the major components of the parking garage.

**Ceiling Tile.** The Association maintains an inventory of 6,602 square feet of insulated ceiling tile in the parking garage. The ceiling tile is in fair condition.

It is important that the integrity of this ceiling tile be maintained as it helps to insulate the above spaces and to protect piping installed above the tile. Any gaps or missing tile will allow cold air to penetrate the space above the tile, increasing heat loss from the conditioned space increasing the chances of freezing the piping above the tile. We recommend that the tile be inspected in the fall and after any work is completed in the space above the tile.



Photo 24 - Garage

**Lighting System.** The lighting system in the parking garage consists of high intensity discharge (HID) light fixtures. The overall condition of the lighting fixtures is good. We recommend the Association consider upgrading the system to LED fixtures. LED lamps will reduce energy use and maintenance requirements.

The system produces adequate lighting levels without glare.

This Condition Assessment is based upon our visual survey of the property. The sole purpose of the visual survey was an evaluation of the common elements of the property to ascertain the remaining useful life and the replacement costs of these common elements. Our evaluation assumed that all components met building code requirements in force at the time of construction. Our visual survey was conducted with care by experienced persons, but no warranty or guarantee is expressed or implied.

End of Condition Assessment

## CASH FLOW METHOD ACCOUNTING SUMMARY

This Waterford Condominium - Cash Flow Method Accounting Summary is an attachment to the Waterford Condominium - Replacement Reserve Study dated Revised February 28, 2017 and is for use by accounting and reserve professionals experienced in Association funding and accounting principles. This Summary consists of four reports, the 2017, 2018, and 2019 Cash Flow Method Category Funding Reports (3) and a Three-Year Replacement Funding Report.

- CASH FLOW METHOD CATEGORY FUNDING REPORT, 2017, 2018, and 2019. Each of the 127 Projected Replacements listed in the Waterford Condominium Replacement Reserve Inventory has been assigned to one of 11 categories. The following information is summarized by category in each report:
  - Normal Economic Life and Remaining Economic Life of the Projected Replacements.
  - Cost of all Scheduled Replacements in each category.
  - Replacement Reserves on Deposit allocated to the category at the beginning and end of the report period.
  - Cost of Projected Replacements in the report period.
  - Recommended Replacement Reserve Funding allocated to the category during the report period as calculated by the Cash Flow Method.
- THREE-YEAR REPLACEMENT FUNDING REPORT. This report details the allocation of the \$300,948 Beginning Balance (at the start of the Study Year) and the \$1,849,473 of additional Replacement Reserve Funding in 2017 through 2019 (as calculated in the Replacement Reserve Analysis) to each of the 127 Projected Replacements listed in the Replacement Reserve Inventory. These allocations have been made using Chronological Allocation, a method developed by Miller Dodson Associates, Inc., and discussed below. The calculated data includes:
  - Identification and estimated cost of each Projected Replacement scheduled in years 2017 through 2019.
  - Allocation of the \$300,948 Beginning Balance to the Projected Replacements by Chronological Allocation.
  - Allocation of the \$1,849,473 of additional Replacement Reserve Funding recommended in the Replacement Reserve Analysis in years 2017 through 2019, by Chronological Allocation.
- CHRONOLOGICAL ALLOCATION. Chronological Allocation assigns Replacement Reserves to Projected Replacements on a "first come, first serve" basis in keeping with the basic philosophy of the Cash Flow Method. The Chronological Allocation methodology is outlined below.
  - The first step is the allocation of the \$300,948 Beginning Balance to the Projected Replacements in the Study Year. Remaining unallocated funds are next allocated to the Projected Replacements in subsequent years in chronological order until the total of Projected Replacements in the next year is greater than the unallocated funds. Projected Replacements in this year are partially funded with each replacement receiving percentage funding. The percentage of funding is calculated by dividing the unallocated funds by the total of Projected Replacements in the partially funded year.

At Waterford Condominium the Beginning Balance funds 45.5% of Scheduled Replacements in the Study Year.
  - The next step is the allocation of the \$659,955 of 2017 Cash Flow Method Reserve Funding calculated in the Replacement Reserve Analysis. These funds are first allocated to fund the partially funded Projected Replacements and then to subsequent years in chronological order as outlined above.

At Waterford Condominium the Beginning Balance and the 2017 Replacement Reserve Funding, funds replacements through 2018 and partial funds (6.9%) replacements in 2019.
  - Allocations of the 2018 and 2019 Reserve Funding are done using the same methodology.
  - The Three-Year Replacement Funding Report details component by component allocations made by Chronological Allocation.

## 2017 - CASH FLOW METHOD CATEGORY FUNDING REPORT

Each of the 127 Projected Replacements included in the Waterford Condominium Replacement Reserve Inventory has been assigned to one of the 11 categories listed in TABLE CF1 below. This calculated data is a summary of data provided in the Three-Year Replacement Funding Report and Replacement Reserve Inventory. The accuracy of this data is dependent upon many factors including the following critical financial data:

- A Beginning Balance of \$300,948 as of the first day of the Study Year, January 1, 2017.
- Total reserve funding (including the Beginning Balance) of \$960,903 in the Study Year.
- No expenditures from Replacement Reserves other than those specifically listed in the Replacement Reserve Inventory.
- All Projected Replacements scheduled in the Replacement Reserve Inventory in 2017 being accomplished in 2017 at a cost of \$660,903.

If any of these critical factors are inaccurate, do not use the data and please contact Miller Dodson Associates to arrange for an update of the Replacement Reserve Study.

### 2017 - CASH FLOW METHOD CATEGORY FUNDING - TABLE CF1

CATEGORY	NORMAL ECONOMIC LIFE	REMAINING ECONOMIC LIFE	ESTIMATED REPLACEMENT COST	2017 BEGINNING BALANCE	2017 RESERVE FUNDING	2017 PROJECTED REPLACEMENTS	2017 END OF YEAR BALANCE
SITE COMPONENTS	5 to 40 years	1 to 14 years	\$422,383		\$72,229		\$72,229
BUILDING EXTERIOR	2 to 50 years	0 to 29 years	\$1,812,104	\$7,741	\$10,425	(\$17,000)	\$1,166
BUILDING EXTERIOR	10 to 40 years	0 to 20 years	\$134,510	\$21,318	\$25,497	(\$46,815)	
BUILDING INTERIOR	10 to 30 years	0 to 8 years	\$499,098	\$208,863	\$250,856	(\$458,678)	\$1,042
BUILDING INTERIOR	5 to 30 years	0 to 8 years	\$17,775	\$3,308	\$10,973	(\$7,264)	\$7,017
PENTHOUSE	10 to 40 years	0 to 12 years	\$95,868	\$14,298	\$18,171	(\$31,400)	\$1,069
MECHANICAL EQUIPMENT	12 to 40 years	0 to 28 years	\$2,461,070	\$43,259	\$70,132	(\$95,000)	\$18,391
ELEVATORS	10 to 40 years	2 to 18 years	\$723,150		\$48,173		\$48,173
ELECTRICAL EQUIPMENT	15 to 50 years	1 to 31 years	\$406,400		\$148,203		\$148,203
SWIMMING POOL	5 to 45 years	0 to 8 years	\$64,133	\$2,161	\$2,585	(\$4,747)	
PARKING GARAGE	10 to 20 years	2 years	\$39,511		\$2,711		\$2,711



## 2018 - CASH FLOW METHOD CATEGORY FUNDING REPORT

Each of the 127 Projected Replacements included in the Waterford Condominium Replacement Reserve Inventory has been assigned to one of the 11 categories listed in TABLE CF2 below. This calculated data is a summary of data provided in the Three-Year Replacement Funding Report and Replacement Reserve Inventory. The accuracy of this data is dependent upon many factors including the following critical financial data:

- Replacement Reserves on Deposit totaling \$300,000 on January 1, 2018.
- Total reserve funding (including the Beginning Balance) of \$1,555,662 from 2017 through 2018.
- No expenditures from Replacement Reserves other than those specifically listed in the Replacement Reserve Inventory.
- All Projected Replacements scheduled in the Replacement Reserve Inventory in 2018 being accomplished in 2018 at a cost of \$234,477.

If any of these critical factors are inaccurate, do not use the data and please contact Miller Dodson Associates to arrange for an update of the Replacement Reserve Study.

2018 - CASH FLOW METHOD CATEGORY FUNDING - TABLE CF2							
CATEGORY	NORMAL ECONOMIC LIFE	REMAINING ECONOMIC LIFE	ESTIMATED REPLACEMENT COST	2018 BEGINNING BALANCE	2018 RESERVE FUNDING	2018 PROJECTED REPLACEMENTS	2018 END OF YEAR BALANCE
SITE COMPONENTS	5 to 40 years	0 to 13 years	\$422,383	\$72,229	\$19,692	(\$70,060)	\$21,861
BUILDING EXTERIOR	2 to 50 years	1 to 28 years	\$1,812,104	\$1,166	\$10,587		\$11,753
BUILDING EXTERIOR	10 to 40 years	3 to 19 years	\$134,510				
BUILDING INTERIOR	10 to 30 years	1 to 24 years	\$499,098	\$1,042	\$9,454		\$10,495
BUILDING INTERIOR	5 to 30 years	0 to 19 years	\$17,775	\$7,017		(\$7,017)	
PENTHOUSE	10 to 40 years	1 to 19 years	\$95,868	\$1,069	\$9,703		\$10,771
MECHANICAL EQUIPMENT	12 to 40 years	0 to 29 years	\$2,461,070	\$18,391	\$39,856	(\$14,000)	\$44,247
ELEVATORS	10 to 40 years	1 to 17 years	\$723,150	\$48,173	\$437,269		\$485,442
ELECTRICAL EQUIPMENT	15 to 50 years	0 to 30 years	\$406,400	\$148,203	\$43,593	(\$143,400)	\$48,396
SWIMMING POOL	5 to 45 years	3 to 14 years	\$64,133				
PARKING GARAGE	10 to 20 years	1 years	\$39,511	\$2,711	\$24,606		\$27,317

## 2019 - CASH FLOW METHOD CATEGORY FUNDING REPORT

Each of the 127 Projected Replacements included in the Waterford Condominium Replacement Reserve Inventory has been assigned to one of the 11 categories listed in TABLE CF3 below. This calculated data is a summary of data provided in the Three-Year Replacement Funding Report and Replacement Reserve Inventory. The accuracy of this data is dependent upon many factors including the following critical financial data:

- Replacement Reserves on Deposit totaling \$660,282 on January 1, 2019.
- Total Replacement Reserve funding (including the Beginning Balance) of \$2,150,421 from 2017 to 2019.
- No expenditures from Replacement Reserves other than those specifically listed in the Replacement Reserve Inventory.
- All Projected Replacements scheduled in the Replacement Reserve Inventory in 2019 being accomplished in 2019 at a cost of \$955,042.

If any of these critical factors are inaccurate, do not use the data and please contact Miller Dodson Associates to arrange for an update of the Replacement Reserve Study.

2019 - CASH FLOW METHOD CATEGORY FUNDING - TABLE CF3							
CATEGORY	NORMAL ECONOMIC LIFE	REMAINING ECONOMIC LIFE	ESTIMATED REPLACEMENT COST	2019 BEGINNING BALANCE	2019 RESERVE FUNDING	2019 PROJECTED REPLACEMENTS	2019 END OF YEAR BALANCE
SITE COMPONENTS	5 to 40 years	0 to 24 years	\$422,383	\$21,861	\$126,257	(\$31,620)	\$116,498
BUILDING EXTERIOR	2 to 50 years	0 to 27 years	\$1,812,104	\$11,753	\$147,479	(\$17,000)	\$142,232
BUILDING EXTERIOR	10 to 40 years	2 to 18 years	\$134,510		\$1,945		\$1,945
BUILDING INTERIOR	10 to 30 years	0 to 23 years	\$499,098	\$10,495	\$12,245	(\$15,181)	\$7,560
BUILDING INTERIOR	5 to 30 years	1 to 29 years	\$17,775		\$2,787		\$2,787
PENTHOUSE	10 to 40 years	0 to 18 years	\$95,868	\$10,771	\$16,604	(\$15,580)	\$11,796
MECHANICAL EQUIPMENT	12 to 40 years	0 to 28 years	\$2,461,070	\$44,247	\$28,163	(\$64,000)	\$8,410
ELEVATORS	10 to 40 years	0 to 16 years	\$723,150	\$485,442	\$216,708	(\$702,150)	
ELECTRICAL EQUIPMENT	15 to 50 years	0 to 29 years	\$406,400	\$48,396	\$21,604	(\$70,000)	\$0
SWIMMING POOL	5 to 45 years	2 to 13 years	\$64,133		\$8,772		\$8,772
PARKING GARAGE	10 to 20 years	0 years	\$39,511	\$27,317	\$12,194	(\$39,511)	

### CASH FLOW METHOD - THREE-YEAR REPLACEMENT FUNDING REPORT

TABLE CF4 below details the allocation of the \$300,948 Beginning Balance, as reported by the Association and the \$1,849,473 of Replacement Reserve Funding calculated by the Cash Flow Method from 2017 to 2019, to the 127 Projected Replacements listed in the Replacement Reserve Inventory. These allocations have been made by Chronological Allocation, a method developed by Miller Dodson Associates, Inc., and outlined on Page CF1. The accuracy of the allocations is dependent upon many factors including the following critical financial data:

- Replacement Reserves on Deposit totaling \$300,948 on January 1, 2017.
- Replacement Reserves on Deposit totaling \$300,000 on January 1, 2018.
- Replacement Reserves on Deposit totaling \$660,282 on January 1, 2019.
- Total Replacement Reserve funding (including the Beginning Balance) of \$2,150,421 from 2017 to 2019.
- No expenditures from Replacement Reserves other than those specifically listed in the Replacement Reserve Inventory.
- All Projected Replacements scheduled in the Replacement Reserve Inventory from 2017 to 2019 being accomplished as scheduled in the Replacement Reserve Inventory at a cost of \$1,850,421.

If any of these critical factors are inaccurate, do not use the data and please contact Miller Dodson Associates, Inc., to arrange for an update of the Replacement Reserve Study.

#### CASH FLOW METHOD - THREE-YEAR REPLACEMENT FUNDING - TABLE CF4

Item #	Description of Projected Replacement	Estimated Replacement Costs	Allocation of Beginning Balance	2017 Reserve Funding	2017 Projected Replacements	2017 End of Year Balance	2018 Reserve Funding	2018 Projected Replacements	2018 End of Year Balance	2019 Reserve Funding	2019 Projected Replacements	2019 End of Year Balance
SITE COMPONENTS												
1	Concrete flatwork, 6%	3,576								3,576		3,576
2	Concrete curb & gutter, 6%	7,100										
3	Asphalt pavement	120,424								84,401		84,401
4	Sealcoat asphalt	14,597										
5	Asphalt patching, 5%	10,948										
6	Cooling tower enclosure	2,093										
7	Site lighting	70,060		70,060		70,060		(70,060)				
8	Fountain structure	100,130										
9	Fountain waterproofing	31,620		2,169		2,169	19,692		21,861	9,759	(31,620)	
10	Fountain stone tuckpointing	4,060										
11	Fountain pump, 1.5 hp	1,200										
12	Fountain filter	1,500										
13	Stone patio, reset	12,096								8,478		8,478
14	Concrete retaining wall repairs, 10%	13,545								9,493		9,493
15	Chain link fence, 5'	11,205										
16	Chain link fence, 6'	7,680										
17	Picnic tables	2,200								2,200		2,200
18	Wood benches	2,850								2,850		2,850
19	Catch basins & curb inlets	5,500								5,500		5,500
BUILDING EXTERIOR												
20	East roof, inverted	162,750										
21	West roof, rubber	190,976										
22	Center roof, rubber & pavers	163,448										
23	Elevator room roof, rubber	14,652										
24	Swimming pool area roof	99,234										
25	Aluminum railing	8,400										
26	Downspouts	16,250										
27	Brick tuckpointing, 10%	23,230										
28	Exterior doors, single	7,600										
29	Exterior doors, double	1,600										
30	Metal roll-up door	1,700										
31	Stair area windows	43,142										
32	Balcony restorations	75,000										
33	Balcony rout & grout	17,000	7,741	10,425	(17,000)	1,166	10,587		11,753	17,162	(17,000)	11,915
34	Balcony coating	185,938								130,317		130,317
35	Balcony railing	743,750										
36	Balcony block privacy screens	57,435										
BUILDING EXTERIOR												
37	Entrance portico roof	12,231	5,569	6,662	(12,231)							
38	Entrance portico EIFS seal	9,825	4,474	5,351	(9,825)							
39	Entrance portico EIFS repairs	24,759	11,274	13,485	(24,759)							

**CASH FLOW METHOD - THREE-YEAR REPLACEMENT FUNDING - TABLE CF4 cont'd**

Item #	Description of Projected Replacement	Estimated Replacement Costs	Allocation of Beginning Balance	2017 Reserve Funding	2017 Projected Replacements	2017 End of Year Balance	2018 Reserve Funding	2018 Projected Replacements	2018 End of Year Balance	2019 Reserve Funding	2019 Projected Replacements	2019 End of Year Balance
40	Entrance portico metal benches	1,100										
41	Entrance portico metal railing	1,540										
42	Entrance portico light fixtures	2,775								1,945		1,945
43	Column rebuild, garage	82,280										
BUILDING INTERIOR												
44	Corridor carpet	225,051	102,479	122,572	(225,051)							
45	Corridor ceiling lights	18,020	8,206	9,814	(18,020)							
46	Corridor exit lights	3,520										
47	Trash room tile floor	2,880								2,880		2,880
48	Trash room light	900										
49	Trash chute door	7,800		535		535	4,858		5,393	2,407	(7,800)	
50	Ceiling tile	781		54		54	486		540	241	(781)	
51	Lobby level floor tile	20,160	9,180	10,980	(20,160)							
52	Lobby carpet	34,996	15,936	19,060	(34,996)							
53	Lobby furnishings	5,000	2,277	2,723	(5,000)							
54	Lobby renovation	145,000	66,027	78,973	(145,000)							
55	Mailboxes	13,260										
56	Lobby fancoil units	6,600		453		453	4,110		4,563	2,037	(6,600)	
57	Lobby desk	8,500	3,871	4,629	(8,500)							
58	Lobby recessed ceiling lights	1,950	888	1,062	(1,950)							
59	Stair light fixtures	4,680								4,680		4,680
BUILDING INTERIOR												
60	Office carpet	1,764	803	961	(1,764)							
61	Office furniture	5,500	2,504	2,996	(5,500)							
62	Computer	1,500								1,500		1,500
63	Library carpet	1,287								1,287		1,287
64	Library ceiling tile	707										
65	Laundry room flooring	2,048		2,048		2,048		(2,048)				
66	Laundry room ceiling tile	1,594		1,594		1,594		(1,594)				
67	Laundry room light fixtures	875		875		875		(875)				
68	Laundry room exhaust fan	2,500		2,500		2,500		(2,500)				
PENTHOUSE												
69	Penthouse exterior furniture	3,500								2,453		2,453
70	Penthouse carpet	9,414								6,598		6,598
71	Penthouse ceiling tile	3,917								2,745		2,745
72	Penthouse windows	21,272										
73	Penthouse glass sliders	3,930										
74	Penthouse ceiling lights	2,025										
75	Penthouse indoor furniture	8,000	3,643	4,357	(8,000)							
76	Penthouse folding tables & chairs	3,000										
77	Penthouse kitchen vinyl floor	221										
78	Penthouse kitchen cabinets	4,080		280		280	2,541		2,821	1,259	(4,080)	
79	Penthouse kitchen countertop	1,610										
80	Penthouse kitchen appliances	3,000		206		206	1,868		2,074	926	(3,000)	
81	Penthouse HVAC	8,500		583		583	5,293		5,877	2,623	(8,500)	
82	Penthouse restroom ceramic floor tile	6,760	3,078	3,682	(6,760)							
83	Penthouse restroom wall tile	10,140	4,617	5,523	(10,140)							
84	Penthouse restrool ceramic tile shower	3,000	1,366	1,634	(3,000)							
85	Penthouse restroom fixtures	3,500	1,594	1,906	(3,500)							
MECHANICAL EQUIPMENT												
86	Cooling tower, 300 ton	57,000										
87	Cooling tower fan motor	2,500		172		172	1,557		1,728	772	(2,500)	
88	Cooling tower VFD	4,500										
89	Scroll chiller, 300 ton	224,000										
90	Boiler, 6,000 mbh	170,000										
91	Boiler retube	36,000		2,470		2,470	22,419		24,889	11,111	(36,000)	
92	Condenser water pump, 20 hp	8,000		549		549	4,982		5,531	2,469	(8,000)	
93	Standby pump, 30 hp	9,500		652		652	5,916		6,568	2,932	(9,500)	
94	Chilled/heating water pump, 40 hp	11,000										
95	Chilled/heating water pump, 20 hp	8,000		549		549	4,982		5,531	2,469	(8,000)	
96	Heat exchanger	12,000								8,410		8,410
97	Expansion tank	12,000										
98	Domestic water boiler, 1,200 mbh	12,000										
99	Standpipe booster pump	8,000										
100	Domestic water pipe reline	660,070										
101	HVAC Piping, replace	1,117,500										
102	Trash compactor	14,000		14,000		14,000		(14,000)				
103	Airflow remediation	95,000	43,259	51,741	(95,000)							

**CASH FLOW METHOD - THREE-YEAR REPLACEMENT FUNDING - TABLE CF4 cont'd**

Item #	Description of Projected Replacement	Estimated Replacement Costs	Allocation of Beginning Balance	2017 Reserve Funding	2017 Projected Replacements	2017 End of Year Balance	2018 Reserve Funding	2018 Projected Replacements	2018 End of Year Balance	2019 Reserve Funding	2019 Projected Replacements	2019 End of Year Balance
ELEVATORS												
104	Elevator machinery	177,300		12,164		12,164	110,415		122,579	54,721	(177,300)	
105	Elevator cabs & doors	240,750		16,517		16,517	149,929		166,446	74,304	(240,750)	
106	Elevator controls	264,600		18,154		18,154	164,782		182,935	81,665	(264,600)	
107	Elevator interior	19,500		1,338		1,338	12,144		13,482	6,018	(19,500)	
108	Elevator equipment room HVAC	21,000										
ELECTRICAL EQUIPMENT												
109	Primary switchgear	149,000										
110	Generator, 300 kw	120,000		120,000		120,000		(120,000)				
111	Automatic transfer switch	23,400		23,400		23,400		(23,400)				
112	Fire alarm panel	50,000		3,430		3,430	31,138		34,568	15,432	(50,000)	
113	Energy management system	15,000										
114	Security system	20,000		1,372		1,372	12,455		13,827	6,173	(20,000)	
115	Entry system	29,000										
SWIMMING POOL												
116	Swimming pool steel structure	25,920										
117	Swimming pool fiberglass finish	3,629	1,652	1,976	(3,629)							
118	Swimming pool waterline tile	1,118	509	609	(1,118)							
119	Swimming pool coping	4,320										
120	Swimming pool filter/chlorinator	3,500										
121	Swimming pool pump, 3/4 hp	1,100										
122	Swimming pool furniture	7,500										
123	Swimming pool plastic matting	12,516								8,772		8,772
124	Swimming pool fence, 6'	4,530										
PARKING GARAGE												
125	Garage ceiling tile	36,311		2,491		2,491	22,613		25,104	11,207	(36,311)	
126	Garage lights	1,700		117		117	1,059		1,175	525	(1,700)	
127	Snow blower	1,500		103		103	934		1,037	463	(1,500)	

### COMPONENT METHOD



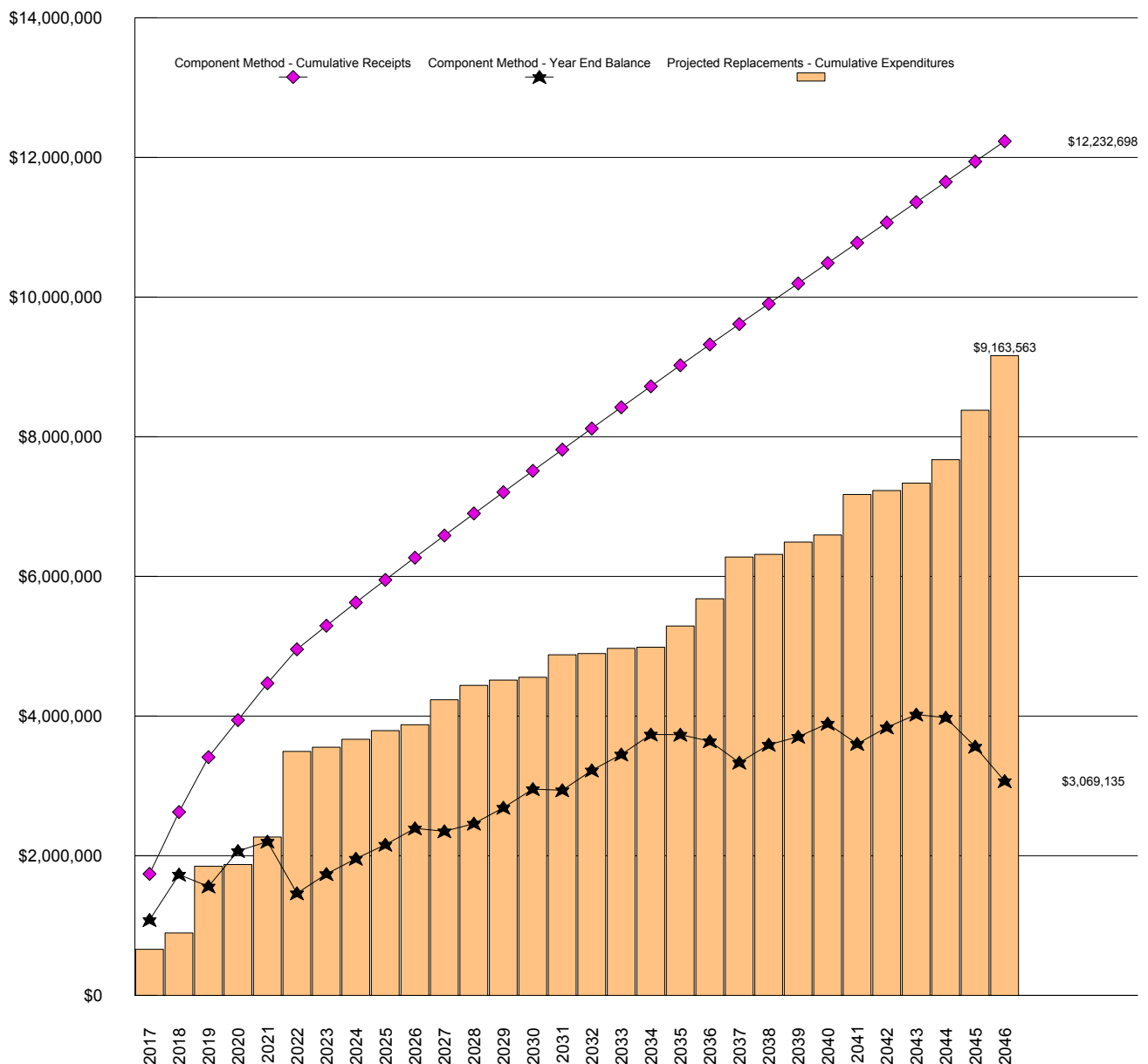
**\$1,440,391**

**COMPONENT METHOD RECOMMENDED ANNUAL FUNDING OF REPLACEMENT RESERVES IN THE STUDY YEAR, 2017.**

\$805.59 Per unit (average), recommended monthly funding of Replacement Reserves

General. The Component Method (also referred to as the Full Funded Method) is a very conservative mathematical model developed by HUD in the early 1980s. Each of the 127 Projected Replacements listed in the Replacement Reserve Inventory is treated as a separate account. The Beginning Balance is allocated to each of the individual accounts, as is all subsequent funding of Replacement Reserves. These funds are "locked" in these individual accounts and are not available to fund other Projected Replacements. The calculation of Recommended Annual Funding of Replacement Reserves is a multi-step process outlined in more detail on Page CM2.

**Component Method - Cumulative Receipts and Expenditures Graph**



**COMPONENT METHOD (cont'd)**

- **Current Funding Objective.** A Current Funding Objective is calculated for each of the Projected Replacements listed in the Replacement Reserve Inventory. Replacement Cost is divided by the Normal Economic Life to determine the nominal annual contribution. The Remaining Economic Life is then subtracted from the Normal Economic Life to calculate the number of years that the nominal annual contribution should have been made. The two values are then multiplied to determine the Current Funding Objective. This is repeated for each of the 127 Projected Replacements. The total, \$3,828,814, is the Current Funding Objective.

For an example, consider a very simple Replacement Reserve Inventory with one Projected Replacement, a fence with a \$1,000 Replacement Cost, a Normal Economic Life of 10 years, and a Remaining Economic Life of 2 years. A contribution to Replacement Reserves of \$100 (\$1,000 + 10 years) should have been made in each of the previous 8 years (10 years - 2 years). The result is a Current Funding Objective of \$800 (8 years x \$100 per year).

- **Funding Percentage.** The Funding Percentage is calculated by dividing the Beginning Balance (\$300,948) by the Current Funding Objective (\$3,828,814). At Waterford Condominium the Funding Percentage is 7.9%
- **Allocation of the Beginning Balance.** The Beginning Balance is divided among the 127 Projected Replacements in the Replacement Reserve Inventory. The Current Funding Objective for each Projected Replacement is multiplied by the Funding Percentage and these funds are then "locked" into the account of each item.

If we relate this calculation back to our fence example, it means that the Association has not accumulated \$800 in Reserves (the Funding Objective), but rather at 7.9 percent funded, there is \$63 in the account for the fence.

- **Annual Funding.** The Recommended Annual Funding of Replacement Reserves is then calculated for each Projected Replacement. The funds allocated to the account of the Projected Replacement are subtracted from the Replacement Cost. The result is then divided by the number of years until replacement, and the result is the annual funding for each of the Projected Replacements. The sum of these is \$1,440,391, the Component Method Recommended Annual Funding of Replacement Reserves in the Study Year (2017).

In our fence example, the \$63 in the account is subtracted from the \$1,000 Total Replacement Cost and divided by the 2 years that remain before replacement, resulting in an annual deposit of \$469. Next year, the deposit remains \$469, but in the third year, the fence is replaced and the annual funding adjusts to \$100.

- **Adjustment to the Component Method for interest and inflation.** The calculations in the Replacement Reserve Analysis do not account for interest earned on Replacement Reserves, inflation, or a constant annual increase in Annual Funding of Replacement Reserves. The Component Method is a very conservative method and if the Analysis is updated regularly, adequate funding will be maintained without the need for adjustments.

**Component Method Data - Years 1 through 30**

Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Beginning balance	\$300,948									
Recommended annual funding	\$1,440,391	\$885,444	\$785,329	\$531,673	\$528,145	\$485,962	\$336,553	\$333,244	\$323,774	\$318,304
Interest on reserves										
Expenditures	\$660,903	\$234,477	\$955,042	\$24,473	\$393,124	\$1,226,188	\$61,740	\$112,160	\$125,347	\$83,468
Year end balance	\$1,080,436	\$1,731,404	\$1,561,691	\$2,068,891	\$2,203,912	\$1,463,685	\$1,738,498	\$1,959,582	\$2,158,009	\$2,392,845
Cumulative Expenditures	\$660,903	\$895,380	\$1,850,421	\$1,874,895	\$2,268,018	\$3,494,206	\$3,555,946	\$3,668,106	\$3,793,453	\$3,876,921
Cumulative Receipts	\$1,741,339	\$2,626,784	\$3,412,113	\$3,943,785	\$4,471,930	\$4,957,891	\$5,294,444	\$5,627,688	\$5,951,462	\$6,269,766
Year	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Recommended annual funding	\$317,361	\$315,248	\$304,844	\$304,839	\$304,670	\$303,041	\$303,041	\$300,987	\$300,654	\$297,930
Interest on reserves										
Expenditures	\$358,488	\$205,230	\$76,941	\$39,380	\$321,672	\$18,123	\$74,435	\$16,250	\$302,650	\$391,243
Year end balance	\$2,351,718	\$2,461,736	\$2,689,639	\$2,955,098	\$2,938,096	\$3,223,015	\$3,451,621	\$3,736,357	\$3,734,361	\$3,641,049
Cumulative Expenditures	\$4,235,409	\$4,440,639	\$4,517,580	\$4,556,960	\$4,878,632	\$4,896,755	\$4,971,190	\$4,987,440	\$5,290,090	\$5,681,333
Cumulative Receipts	\$6,587,127	\$6,902,375	\$7,207,219	\$7,512,058	\$7,816,728	\$8,119,769	\$8,422,810	\$8,723,797	\$9,024,451	\$9,322,381
Year	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Recommended annual funding	\$292,768	\$291,054	\$290,931	\$290,931	\$290,931	\$290,882	\$290,882	\$290,882	\$290,878	\$290,179
Interest on reserves										
Expenditures	\$598,435	\$36,318	\$176,022	\$102,667	\$580,408	\$56,059	\$106,495	\$334,276	\$708,277	\$783,274
Year end balance	\$3,335,382	\$3,590,118	\$3,705,027	\$3,893,291	\$3,603,814	\$3,838,637	\$4,023,024	\$3,979,629	\$3,562,230	\$3,069,135
Cumulative Expenditures	\$6,279,768	\$6,316,086	\$6,492,107	\$6,594,774	\$7,175,182	\$7,231,241	\$7,337,736	\$7,672,012	\$8,380,289	\$9,163,563
Cumulative Receipts	\$9,615,150	\$9,906,204	\$10,197,134	\$10,488,065	\$10,778,996	\$11,069,878	\$11,360,759	\$11,651,641	\$11,942,519	\$12,232,698

## COMPONENT METHOD ACCOUNTING SUMMARY

This Waterford Condominium - Component Method Accounting Summary is an attachment to the Waterford Condominium - Replacement Reserve Study dated Revised February 28, 2017 and is for use by accounting and reserve professionals experienced in Association funding and accounting principles.

This Summary consists of four reports, the 2017, 2018, and 2019 Component Method Category Funding Reports (3) and a Three-Year Replacement Funding Report.

- COMPONENT METHOD CATEGORY FUNDING REPORT, 2017, 2018, and 2019. Each of the 127 Projected Replacements listed in the Waterford Condominium Replacement Reserve Inventory has been assigned to one of 11 categories. The following information is summarized by category in each report:
  - Normal Economic Life and Remaining Economic Life of the Projected Replacements.
  - Cost of all Scheduled Replacements in each category.
  - Replacement Reserves on Deposit allocated to the category at the beginning and end of the report period.
  - Cost of Projected Replacements in the report period.
  - Recommended Replacement Reserve Funding allocated to the category during the report period as calculated by the Component Method.
- THREE-YEAR REPLACEMENT FUNDING REPORT. This report details the allocation of the \$300,948 Beginning Balance (at the start of the Study Year) and the \$3,111,165 of additional Replacement Reserve funding from 2017 to 2019 (as calculated in the Replacement Reserve Analysis) to each of the 127 Projected Replacements listed in the Replacement Reserve Inventory. These allocations have been made using the Component Method as outlined in the Replacement Reserve Analysis. The calculated data includes:
  - Identification and estimated cost of each Projected Replacement schedule in years 2017 through 2019.
  - Allocation of the \$300,948 Beginning Balance to the Projected Replacements by the Component Method.
  - Allocation of the \$3,111,165 of additional Replacement Reserve Funding recommended in the Replacement Reserve Analysis in years 2017 through 2019, by the Component Method.



## 2017 - COMPONENT METHOD CATEGORY FUNDING REPORT

Each of the 127 Projected Replacements included in the Waterford Condominium Replacement Reserve Inventory has been assigned to one of the 11 categories listed in TABLE CM1 below. This calculated data is a summary of data provided in the Three-Year Replacement Funding Report and Replacement Reserve Inventory. The accuracy of this data is dependent upon many factors including the following critical financial data:

- A Beginning Balance of \$300,948 as of the first day of the Study Year, January 1, 2017.
- Total reserve funding (including the Beginning Balance) of \$1,741,339 in the Study Year.
- No expenditures from Replacement Reserves other than those specifically listed in the Replacement Reserve Inventory.
- All Projected Replacements scheduled in the Replacement Reserve Inventory in 2017 being accomplished in 2017 at a cost of \$660,903.

If any of these critical factors are inaccurate, do not use the data and please contact Miller Dodson Associates to arrange for an update of the Replacement Reserve Study.

**2017 - COMPONENT METHOD CATEGORY FUNDING - TABLE CM1**

CATEGORY	NORMAL ECONOMIC LIFE	REMAINING ECONOMIC LIFE	ESTIMATED REPLACEMENT COST	2017 BEGINNING BALANCE	2017 RESERVE FUNDING	2017 PROJECTED REPLACEMENTS	2017 END OF YEAR BALANCE
SITE COMPONENTS	5 to 40 years	1 to 14 years	\$422,383	\$22,999	\$91,386		\$114,385
BUILDING EXTERIOR	2 to 50 years	0 to 29 years	\$1,812,104	\$48,123	\$135,845	\$17,000	\$166,968
BUILDING EXTERIOR	10 to 40 years	0 to 20 years	\$134,510	\$7,013	\$47,653	\$46,815	\$7,850
BUILDING INTERIOR	10 to 30 years	0 to 8 years	\$499,098	\$38,620	\$431,457	\$458,678	\$11,399
BUILDING INTERIOR	5 to 30 years	0 to 8 years	\$17,775	\$1,190	\$10,700	\$7,264	\$4,626
PENTHOUSE	10 to 40 years	0 to 12 years	\$95,868	\$6,028	\$40,031	\$31,400	\$14,658
MECHANICAL EQUIPMENT	12 to 40 years	0 to 28 years	\$2,461,070	\$102,060	\$344,714	\$95,000	\$351,774
ELEVATORS	10 to 40 years	2 to 18 years	\$723,150	\$49,379	\$218,719		\$268,098
ELECTRICAL EQUIPMENT	15 to 50 years	1 to 31 years	\$406,400	\$19,742	\$95,547		\$115,288
SWIMMING POOL	5 to 45 years	0 to 8 years	\$64,133	\$3,174	\$12,044	\$4,747	\$10,472
PARKING GARAGE	10 to 20 years	2 years	\$39,511	\$2,622	\$12,296		\$14,918

## 2018 - COMPONENT METHOD CATEGORY FUNDING REPORT

Each of the 127 Projected Replacements included in the Waterford Condominium Replacement Reserve Inventory has been assigned to one of the 11 categories listed in TABLE CM2 below. This calculated data is a summary of data provided in the Three-Year Replacement Funding Report and Replacement Reserve Inventory. The accuracy of this data is dependent upon many factors including the following critical financial data:

- Replacement Reserves on Deposit totaling \$1,080,436 on January 1, 2018.
- Total reserve funding (including the Beginning Balance) of \$2,626,784 from 2017 through 2018.
- No expenditures from Replacement Reserves other than those specifically listed in the Replacement Reserve Inventory.
- All Projected Replacements scheduled in the Replacement Reserve Inventory in 2018 being accomplished in 2018 at a cost of \$234,477.

If any of these critical factors are inaccurate, do not use the data and please contact Miller Dodson Associates to arrange for an update of the Replacement Reserve Study.

**2018 - COMPONENT METHOD CATEGORY FUNDING - TABLE CM2**

CATEGORY	NORMAL ECONOMIC LIFE	REMAINING ECONOMIC LIFE	ESTIMATED REPLACEMENT COST	2018 BEGINNING BALANCE	2018 RESERVE FUNDING	2018 PROJECTED REPLACEMENTS	2018 END OF YEAR BALANCE
SITE COMPONENTS	5 to 40 years	0 to 13 years	\$422,383	\$114,385	\$91,386	\$70,060	\$135,711
BUILDING EXTERIOR	2 to 50 years	1 to 28 years	\$1,812,104	\$166,968	\$128,681		\$295,649
BUILDING EXTERIOR	10 to 40 years	3 to 19 years	\$134,510	\$7,850	\$8,587		\$16,438
BUILDING INTERIOR	10 to 30 years	1 to 24 years	\$499,098	\$11,399	\$44,281		\$55,680
BUILDING INTERIOR	5 to 30 years	0 to 19 years	\$17,775	\$4,626	\$4,458	\$7,017	\$2,068
PENTHOUSE	10 to 40 years	1 to 19 years	\$95,868	\$14,658	\$12,669		\$27,327
MECHANICAL EQUIPMENT	12 to 40 years	0 to 29 years	\$2,461,070	\$351,774	\$260,348	\$14,000	\$598,122
ELEVATORS	10 to 40 years	1 to 17 years	\$723,150	\$268,098	\$218,719		\$486,817
ELECTRICAL EQUIPMENT	15 to 50 years	0 to 30 years	\$406,400	\$115,288	\$95,547	\$143,400	\$67,435
SWIMMING POOL	5 to 45 years	3 to 14 years	\$64,133	\$10,472	\$8,471		\$18,943
PARKING GARAGE	10 to 20 years	1 years	\$39,511	\$14,918	\$12,296		\$27,215

## 2019 - COMPONENT METHOD CATEGORY FUNDING REPORT

Each of the 127 Projected Replacements included in the Waterford Condominium Replacement Reserve Inventory has been assigned to one of the 11 categories listed in TABLE CM3 below. This calculated data is a summary of data provided in the Three-Year Replacement Funding Report and Replacement Reserve Inventory. The accuracy of this data is dependent upon many factors including the following critical financial data:

- Replacement Reserves on Deposit totaling \$1,731,404 on January 1, 2019.
- Total Replacement Reserve funding (including the Beginning Balance) of \$3,412,113 from 2017 to 2019.
- No expenditures from Replacement Reserves other than those specifically listed in the Replacement Reserve Inventory.
- All Projected Replacements scheduled in the Replacement Reserve Inventory in 2019 being accomplished in 2019 at a cost of \$955,042.

If any of these critical factors are inaccurate, do not use the data and please contact Miller Dodson Associates to arrange for an update of the Replacement Reserve Study.

### 2019 - COMPONENT METHOD CATEGORY FUNDING - TABLE CM3

CATEGORY	NORMAL ECONOMIC LIFE	REMAINING ECONOMIC LIFE	ESTIMATED REPLACEMENT COST	2019 BEGINNING BALANCE	2019 RESERVE FUNDING	2019 PROJECTED REPLACEMENTS	2019 END OF YEAR BALANCE
SITE COMPONENTS	5 to 40 years	0 to 24 years	\$422,383	\$135,711	\$61,692	\$31,620	\$165,783
BUILDING EXTERIOR	2 to 50 years	0 to 27 years	\$1,812,104	\$295,649	\$128,681	\$17,000	\$407,330
BUILDING EXTERIOR	10 to 40 years	2 to 18 years	\$134,510	\$16,438	\$8,587		\$25,025
BUILDING INTERIOR	10 to 30 years	0 to 23 years	\$499,098	\$55,680	\$44,281	\$15,181	\$84,781
BUILDING INTERIOR	5 to 30 years	1 to 29 years	\$17,775	\$2,068	\$1,503		\$3,571
PENTHOUSE	10 to 40 years	0 to 18 years	\$95,868	\$27,327	\$12,669	\$15,580	\$24,416
MECHANICAL EQUIPMENT	12 to 40 years	0 to 28 years	\$2,461,070	\$598,122	\$254,543	\$64,000	\$788,665
ELEVATORS	10 to 40 years	0 to 16 years	\$723,150	\$486,817	\$218,719	\$702,150	\$3,385
ELECTRICAL EQUIPMENT	15 to 50 years	0 to 29 years	\$406,400	\$67,435	\$33,887	\$70,000	\$31,321
SWIMMING POOL	5 to 45 years	2 to 13 years	\$64,133	\$18,943	\$8,471		\$27,414
PARKING GARAGE	10 to 20 years	0 years	\$39,511	\$27,215	\$12,296	\$39,511	

### COMPONENT METHOD - THREE-YEAR REPLACEMENT FUNDING REPORT

TABLE CM4 below details the allocation of the \$300,948 Beginning Balance, as reported by the Association and the \$3,111,165 of Replacement Reserve Funding calculated by the Cash Flow Method from 2017 to 2019, to the 127 Projected Replacements listed in the Replacement Reserve Inventory. These allocations have been made by Chronological Allocation, a method developed by Miller Dodson Associates, Inc., and outlined on Page CF1. The accuracy of the allocations is dependent upon many factors including the following critical financial data:

- Replacement Reserves on Deposit totaling \$300,948 on January 1, 2017.
- Replacement Reserves on Deposit totaling \$1,080,436 on January 1, 2018.
- Replacement Reserves on Deposit totaling \$1,731,404 on January 1, 2019.
- Total Replacement Reserve funding (including the Beginning Balance) of \$3,412,113 from 2017 to 2019.
- No expenditures from Replacement Reserves other than those specifically listed in the Replacement Reserve Inventory.
- All Projected Replacements scheduled in the Replacement Reserve Inventory from 2017 to 2019 being accomplished as scheduled in the Replacement Reserve Inventory at a cost of \$1,850,421.

If any of these critical factors are inaccurate, do not use the data and please contact Miller Dodson Associates, Inc., to arrange for an update of the Replacement Reserve Study.

#### COMPONENT METHOD - THREE-YEAR REPLACEMENT FUNDING - TABLE CM4

Item #	Description of Projected Replacement	Estimated Replacement Costs	Allocation of Beginning Balance	2017 Reserve Funding	2017 Projected Replacements	2017 End of Year Balance	2018 Reserve Funding	2018 Projected Replacements	2018 End of Year Balance	2019 Reserve Funding	2019 Projected Replacements	2019 End of Year Balance
SITE COMPONENTS												
1	Concrete flatwork, 6%	3,576	94	871		964	871		1,835	871		2,706
2	Concrete curb & gutter, 6%	7,100		1,014		1,014	1,014		2,029	1,014		3,043
3	Asphalt pavement	120,424	7,099	22,665		29,764	22,665		52,429	22,665		75,094
4	Sealcoat asphalt	14,597		1,460		1,460	1,460		2,919	1,460		4,379
5	Asphalt patching, 5%	10,948		1,095		1,095	1,095		2,190	1,095		3,284
6	Cooling tower enclosure	2,093	49	146		195	146		341	146		487
7	Site lighting	70,060	5,066	32,497		37,563	32,497	(70,060)		2,802		2,802
8	Fountain structure	100,130	6,296	11,729		18,025	11,729		29,755	11,729		41,484
9	Fountain waterproofing	31,620	1,740	9,960		11,700	9,960		21,660	9,960	(31,620)	
10	Fountain stone tuckpointing	4,060	207	550		758	550		1,308	550		1,859
11	Fountain pump, 1.5 hp	1,200	38	194		231	194		425	194		619
12	Fountain filter	1,500	83	236		319	236		555	236		791
13	Stone patio, reset	12,096	475	2,324		2,800	2,324		5,124	2,324		7,448
14	Concrete retaining wall repairs, 10%	13,545	710	2,567		3,277	2,567		5,844	2,567		8,411
15	Chain link fence, 5'	11,205	440	1,076		1,517	1,076		2,593	1,076		3,670
16	Chain link fence, 6'	7,680	151	502		653	502		1,155	502		1,657
17	Picnic tables	2,200	127	518		645	518		1,163	518		1,682
18	Wood benches	2,850	164	671		836	671		1,507	671		2,179
19	Catch basins & curb inlets	5,500	259	1,310		1,570	1,310		2,880	1,310		4,190
BUILDING EXTERIOR												
20	East roof, inverted	162,750	4,264	7,924		12,188	7,924		20,113	7,924		28,037
21	West roof, rubber	190,976		7,639		7,639	7,639		15,278	7,639		22,917
22	Center roof, rubber & pavers	163,448	4,282	7,958		12,241	7,958		20,199	7,958		28,157
23	Elevator room roof, rubber	14,652	518	1,285		1,803	1,285		3,088	1,285		4,373
24	Swimming pool area roof	99,234	5,928	15,551		21,479	15,551		37,030	15,551		52,581
25	Aluminum railing	8,400	220	409		629	409		1,038	409		1,447
26	Downspouts	16,250	511	874		1,385	874		2,260	874		3,134
27	Brick tuckpointing, 10%	23,230	730	1,875		2,605	1,875		4,480	1,875		6,355
28	Exterior doors, single	7,600	430	1,024		1,454	1,024		2,479	1,024		3,503
29	Exterior doors, double	1,600	91	216		306	216		522	216		737
30	Metal roll-up door	1,700	9	60		69	60		130	60		190
31	Stair area windows	43,142	2,543	4,060		6,603	4,060		10,663	4,060		14,723
32	Balcony restorations	75,000	2,358	8,071		10,429	8,071		18,501	8,071		26,572
33	Balcony rout & grout	17,000	1,336	15,664	(17,000)		8,500		8,500	8,500	(17,000)	
34	Balcony coating	185,938	7,307	35,726		43,033	35,726		78,759	35,726		114,485
35	Balcony railing	743,750	14,615	24,305		38,919	24,305		63,224	24,305		87,528
36	Balcony block privacy screens	57,435	2,980	3,203		6,183	3,203		9,386	3,203		12,589
BUILDING EXTERIOR												
37	Entrance portico roof	12,231	961	11,270	(12,231)		612		612	612		1,223
38	Entrance portico EIFS seal	9,825	772	9,053	(9,825)		983		983	983		1,965
39	Entrance portico EIFS repairs	24,759	1,946	22,813	(24,759)		2,476		2,476	2,476		4,952

COMPONENT METHOD - THREE-YEAR REPLACEMENT FUNDING - TABLE CM4 cont'd													
Item #	Description of Projected Replacement	Estimated Replacement Costs	Allocation of Beginning Balance	2017 Reserve Funding	2017 Projected Replacements	2017 End of Year Balance	2018 Reserve Funding	2018 Projected Replacements	2018 End of Year Balance	2019 Reserve Funding	2019 Projected Replacements	2019 End of Year Balance	2019 End of Year Balance
40	Entrance portico metal benches	1,100	46	151		197	151		347	151		498	
41	Entrance portico metal railing	1,540	40	75		115	75		190	75		265	
42	Entrance portico light fixtures	2,775	174	520		695	520		1,215	520		1,735	
43	Column rebuild, garage	82,280	3,072	3,772		6,844	3,772		10,616	3,772		14,387	
BUILDING INTERIOR													
44	Corridor carpet	225,051	17,689	207,362	(225,051)		22,505		22,505	22,505		45,010	
45	Corridor ceiling lights	18,020	1,416	16,604	(18,020)		721		721	721		1,442	
46	Corridor exit lights	3,520	199	474		674	474		1,148	474		1,622	
47	Trash room tile floor	2,880	181	675		856	675		1,531	675		2,205	
48	Trash room light	900	45	95		140	95		235	95		330	
49	Trash chute door	7,800	540	2,420		2,960	2,420		5,380	2,420	(7,800)		
50	Ceiling tile	781	52	243		295	243		538	243	(781)		
51	Lobby level floor tile	20,160	1,585	18,575	(20,160)		806		806	806		1,613	
52	Lobby carpet	34,996	2,751	32,245	(34,996)		3,500		3,500	3,500		6,999	
53	Lobby furnishings	5,000	393	4,607	(5,000)		250		250	250		500	
54	Lobby renovation	145,000	11,397	133,603	(145,000)		7,250		7,250	7,250		14,500	
55	Mailboxes	13,260	799	1,780		2,579	1,780		4,359	1,780		6,139	
56	Lobby fancoil units	6,600	457	2,048		2,504	2,048		4,552	2,048	(6,600)		
57	Lobby desk	8,500	668	7,832	(8,500)		340		340	340		680	
58	Lobby recessed ceiling lights	1,950	153	1,797	(1,950)		78		78	78		156	
59	Stair light fixtures	4,680	294	1,096		1,391	1,096		2,487	1,096		3,584	
BUILDING INTERIOR													
60	Office carpet	1,764	139	1,625	(1,764)		176		176	176		353	
61	Office furniture	5,500	432	5,068	(5,500)		275		275	275		550	
62	Computer	1,500	24	369		393	369		762	369		1,131	
63	Library carpet	1,287	61	307		367	307		674	307		980	
64	Library ceiling tile	707	31	75		106	75		181	75		256	
65	Laundry room flooring	2,048	145	952		1,096	952	(2,048)		102		102	
66	Laundry room ceiling tile	1,594	113	740		853	740	(1,594)		80		80	
67	Laundry room light fixtures	875	63	406		469	406	(875)		35		35	
68	Laundry room exhaust fan	2,500	183	1,158		1,342	1,158	(2,500)		83		83	
PENTHOUSE													
69	Penthouse exterior furniture	3,500	183	663		847	663		1,510	663		2,173	
70	Penthouse carpet	9,414	370	1,809		2,179	1,809		3,988	1,809		5,796	
71	Penthouse ceiling tile	3,917	231	737		968	737		1,705	737		2,442	
72	Penthouse windows	21,272	1,212	1,824		3,036	1,824		4,859	1,824		6,683	
73	Penthouse glass sliders	3,930	196	339		535	339		875	339		1,214	
74	Penthouse ceiling lights	2,025	121	317		438	317		756	317		1,073	
75	Penthouse indoor furniture	8,000	629	7,371	(8,000)		400		400	400		800	
76	Penthouse folding tables & chairs	3,000	126	411		536	411		947	411		1,358	
77	Penthouse kitchen vinyl floor	221	6	17		23	17		39	17		56	
78	Penthouse kitchen cabinets	4,080	273	1,269		1,542	1,269		2,811	1,269	(4,080)		
79	Penthouse kitchen countertop	1,610	57	141		198	141		339	141		481	
80	Penthouse kitchen appliances	3,000	200	933		1,134	933		2,067	933	(3,000)		
81	Penthouse HVAC	8,500	585	2,638		3,223	2,638		5,862	2,638	(8,500)		
82	Penthouse restroom ceramic floor tile	6,760	531	6,229	(6,760)		338		338	338		676	
83	Penthouse restroom wall tile	10,140	797	9,343	(10,140)		507		507	507		1,014	
84	Penthouse restrool ceramic tile shower	3,000	236	2,764	(3,000)		150		150	150		300	
85	Penthouse restroom fixtures	3,500	275	3,225	(3,500)		175		175	175		350	
MECHANICAL EQUIPMENT													
86	Cooling tower, 300 ton	57,000	1,792	3,681		5,473	3,681		9,153	3,681		12,834	
87	Cooling tower fan motor	2,500	147	784		932	784		1,716	784	(2,500)		
88	Cooling tower VFD	4,500	141	291		432	291		723	291		1,013	
89	Scroll chiller, 300 ton	224,000	4,226	11,567		15,793	11,567		27,360	11,567		38,927	
90	Boiler, 6,000 mbh	170,000	9,354	13,387		22,741	13,387		36,128	13,387		49,515	
91	Boiler retube	36,000	2,405	11,198		13,603	11,198		24,802	11,198	(36,000)		
92	Condenser water pump, 20 hp	8,000	566	566		3,044	2,478		5,522	2,478	(8,000)		
93	Standby pump, 30 hp	9,500	672	2,943		3,615	2,943		6,557	2,943	(9,500)		
94	Chilled/heating water pump, 40 hp	11,000	231	490		720	490		1,210	490		1,699	
95	Chilled/heating water pump, 20 hp	8,000	566	2,478		3,044	2,478		5,522	2,478	(8,000)		
96	Heat exchanger	12,000	786	2,243		3,029	2,243		5,272	2,243		7,514	
97	Expansion tank	12,000	566	953		1,519	953		2,472	953		3,424	
98	Domestic water boiler, 1,200 mbh	12,000	47	629		676	629		1,305	629		1,934	
99	Standpipe booster pump	8,000	105	316		421	316		736	316		1,052	
100	Domestic water pipe reline	660,070	1,729	22,701		24,431	22,701		47,132	22,701		69,834	
101	HVAC Piping, replace	1,117,500	70,269	174,538		244,808	174,538		419,346	174,538		593,885	
102	Trash compactor	14,000	990	6,505		7,495	6,505	(14,000)		700		700	
103	Airflow remediation	95,000	7,467	87,533	(95,000)		3,167		3,167	3,167		6,333	

**COMPONENT METHOD - THREE-YEAR REPLACEMENT FUNDING - TABLE CM4 cont'd**

Item #	Description of Projected Replacement	Estimated Replacement Costs	Allocation of Beginning Balance	2017 Reserve Funding	2017 Projected Replacements	2017 End of Year Balance	2018 Reserve Funding	2018 Projected Replacements	2018 End of Year Balance	2019 Reserve Funding	2019 Projected Replacements	2019 End of Year Balance
<b>ELEVATORS</b>												
104	Elevator machinery	177,300	12,891	54,803		67,694	54,803		122,497	54,803	(177,300)	
105	Elevator cabs & doors	240,750	17,031	74,573		91,604	74,573		166,177	74,573	(240,750)	
106	Elevator controls	264,600	18,302	82,099		100,401	82,099		182,501	82,099	(264,600)	
107	Elevator interior	19,500	1,073	6,142		7,215	6,142		13,358	6,142	(19,500)	
108	Elevator equipment room HVAC	21,000	83	1,101		1,183	1,101		2,284	1,101		3,385
<b>ELECTRICAL EQUIPMENT</b>												
109	Primary switchgear	149,000	4,216	4,524		8,741	4,524		13,265	4,524		17,790
110	Generator, 300 kw	120,000	8,803	55,598		64,402	55,598	(120,000)		4,000		4,000
111	Automatic transfer switch	23,400	1,717	10,842		12,558	10,842	(23,400)		780		780
112	Fire alarm panel	50,000	3,458	15,514		18,972	15,514		34,486	15,514	(50,000)	
113	Energy management system	15,000	59	786		845	786		1,632	786		2,418
114	Security system	20,000	1,336	6,221		7,557	6,221		13,779	6,221	(20,000)	
115	Entry system	29,000	152	2,061		2,213	2,061		4,273	2,061		6,334
<b>SWIMMING POOL</b>												
116	Swimming pool steel structure	25,920	1,630	2,699		4,329	2,699		7,028	2,699		9,727
117	Swimming pool fiberglass finish	3,629	285	3,344	(3,629)	0	726		726	726		1,452
118	Swimming pool waterline tile	1,118	88	1,030	(1,118)		75		75	75		149
119	Swimming pool coping	4,320	136	465		601	465		1,066	465		1,531
120	Swimming pool filter/chlorinator	3,500	179	474		653	474		1,128	474		1,602
121	Swimming pool pump, 3/4 hp	1,100	35	178		212	178		390	178		567
122	Swimming pool furniture	7,500		938		938	938		1,875	938		2,813
123	Swimming pool plastic matting	12,516	656	2,372		3,028	2,372		5,400	2,372		7,772
124	Swimming pool fence, 6'	4,530	166	545		712	545		1,257	545		1,803
<b>PARKING GARAGE</b>												
125	Garage ceiling tile	36,311	2,426	11,295		13,721	11,295		25,016	11,295	(36,311)	
126	Garage lights	1,700	114	529		642	529		1,171	529	(1,700)	
127	Snow blower	1,500	83	472		555	472		1,028	472	(1,500)	

## 1. COMMON INTEREST DEVELOPMENTS - AN OVERVIEW

Over the past 40 years, the responsibility for community facilities and infrastructure around many of our homes has shifted from the local government to Community Associations. Thirty years ago, a typical new town house abutted a public street on the front and a public alley on the rear. Open space was provided by a nearby public park and recreational facilities were purchased ala carte from privately owned country clubs, swim clubs, tennis clubs, and gymnasiums. Today, 60% of all new residential construction, i.e. townhouses, single-family homes, condominiums, and cooperatives, is in Common Interest Developments (CID). In a CID, a homeowner is bound to a Community Association that owns, maintains, and is responsible for periodic replacements of various components that may include the roads, curbs, sidewalks, playgrounds, streetlights, recreational facilities, and other community facilities and infrastructure.

The growth of Community Associations has been explosive. In 1965, there were only 500 Community Associations in the United States. According to the 1990 U.S. Census, there were 130,000 Community Associations. Community Associations Institute (CAI), a national trade association, estimates there were more than 200,000 Community Associations in the year 2000, and that the number of Community Associations will continue to multiply.

The shift of responsibility for billions of dollars of community facilities and infrastructure from the local government and private sector to Community Associations has generated new and unanticipated problems. Although Community Associations have succeeded in solving many short-term problems, many Associations have failed to properly plan for the tremendous expenses of replacing community facilities and infrastructure components. When inadequate replacement reserve funding results in less than timely replacements of failing components, home owners are exposed to the burden of special assessments, major increases in Association fees, and a decline in property values.

## 2. REPLACEMENT RESERVE STUDY

The purpose of a Replacement Reserve Study is to provide the Association with an inventory of the common community facilities and infrastructure components that require periodic replacement, a general view of the condition of these components, and an effective financial plan to fund projected periodic replacements. The Replacement Reserve Study consists of the following:

- Replacement Reserve Study Introduction. The introduction provides a description of the property, reviews the intent of the Replacement Reserve Study, and lists documents and site evaluations upon which the Replacement Reserve Study is based.
- Section A Replacement Reserve Analysis. Many components owned by the Association have a limited life and require periodic replacement. Therefore, it is essential the Association have a financial plan that provides funding for the timely replacement of these components in order to protect the safety, appearance, and value of the community. In conformance with American Institute of Certified Public Accountant guidelines, a Replacement Reserve Analysis evaluates the current funding of Replacement Reserves as reported by the Association and recommends annual funding of Replacement Reserves by two generally accepted accounting methods; the Cash Flow Method and the Component Method. Miller - Dodson provides a replacement reserve recommendation based on the Cash Flow Method in Section A, and the Component Method in the Appendix of the report.
- Section B Replacement Reserve Inventory. The Replacement Reserve Inventory lists the commonly owned components within the community that require periodic replacement using funding from Replacement Reserves. The Replacement Reserve Inventory also provides information about components excluded from the Replacement Reserve Inventory whose replacement is not scheduled for funding from Replacement Reserves.

Replacement Reserve Inventory includes estimates of the normal economic life and the remaining economic life for those components whose replacement is scheduled for funding from Replacement Reserves.

- Section C Projected Annual Replacements. The Calendar of Projected Annual Replacements provides a year-by-year listing of the Projected Replacements based on the data in the Replacement Reserve Inventory.
- Section D Condition Assessment. Several of the items listed in the Replacement Reserve Inventory are discussed in more detail. The Condition Assessment includes a narrative and photographs that document conditions at the property observed during our visual evaluation.
- The Appendix is provided as an attachment to the Replacement Reserve Study. Additional attachments may include supplemental photographs to document conditions at the property and additional information specific to the property cited in the Conditions Assessment (i.e. Consumer Product Safety Commission, Handbook for Public Playground Safety, information on segmental retaining walls, manufacturer recommendations for asphalt shingles or siding, etc). The Appendix also includes the Accounting Summary for the Cash Flow Method and the Component Method.

### 3. METHODS OF ANALYSIS

The Replacement Reserve industry generally recognizes two different methods of accounting for Replacement Reserve Analysis. Due to the difference in accounting methodologies, these methods lead to different calculated values for the Minimum Annual Contribution to the Reserves. The results of both methods are presented in this report. The Association should obtain the advice of its accounting professional as to which method is more appropriate for the Association. The two methods are:

- **Cash Flow Method.** The Cash Flow Method is sometimes referred to as the "Pooling Method." It calculates the minimum constant annual contribution to reserves (Minimum Annual Deposit) required to meet projected expenditures without allowing total reserves on hand to fall below the specified minimum level in any year.

First, the Minimum Recommended Reserve Level to be Held on Account is determined based on the age, condition, and replacement cost of the individual components. The mathematical model then allocates the estimated replacement costs to the future years in which they are projected to occur. Based on these expenditures, it then calculates the minimum constant yearly contribution (Minimum Annual Deposit) to the reserves necessary to keep the reserve balance at the end of each year above the Minimum Recommended Reserve Level to be Held on Account. The Cash Flow Analysis assumes that the Association will have authority to use all of the reserves on hand for replacements as the need occurs. This method usually results in a Minimum Annual Deposit that is less than that arrived at by the Component Method.

- **Component Method.** This method is a time tested mathematical model developed by HUD in the early 1980s, but has been generally relegated to a few States that require it by law. For the vast majority of Miller - Dodson's clients, this method is not used.

The Component Method treats each item in the replacement schedule as an individual line item budget. Generally, the Minimum Annual Contribution to Reserves is higher when calculated by the Component Method. The mathematical model for this method works as follows:

First, the total Current Objective is calculated, which is the reserve amount that would have accumulated had all of the items on the schedule been funded from initial construction at their current replacement costs. Next, the Reserves Currently on Deposit (as reported by the Association) are distributed to the components in the schedule in proportion to the Current Objective. The Minimum Annual Deposit for each component is equal to the Estimated Replacement Cost, minus the Reserves on Hand, divided by the years of life remaining.

### 4. REPLACEMENT RESERVE STUDY DATA

- **Identification of Reserve Components.** The Reserve Analyst has only two methods of identifying Reserve Components; (1) information provided by the Association and (2) observations made at the site. It is important that the Reserve Analyst be provided with all available information detailing the components owned by the Association. It is our policy to request such information prior to bidding on a project and to meet with the individuals responsible for maintaining the community after acceptance of our proposal. After completion of the Study, the Study should be reviewed by the Board of Directors, individuals responsible for maintaining the community, and the Association's accounting professionals. We are dependent upon the Association for correct information, documentation, and drawings.
- **Unit Costs.** Unit costs are developed using nationally published standards and estimating guides and are adjusted by state or region. In some instances, recent data received in the course of our work is used to modify these figures.

Contractor proposals or actual cost experience may be available as part of the Association records. This is useful information, which should be incorporated into your report. Please bring any such available data to our attention, preferably before the report is commenced.

- **Replacement vs. Repair and Maintenance.** A Replacement Reserve Study addresses the required funding for Capital Replacement Expenditures. This should not be confused with operational costs or cost of repairs or maintenance.



## 5. DEFINITIONS

**Adjusted Cash Flow Analysis.** Cash flow analysis adjusted to take into account annual cost increases due to inflation and interest earned on invested reserves. In this method, the annual contribution is assumed to grow annually at the inflation rate.

**Annual Deposit if Reserves Were Fully Funded.** Shown on the Summary Sheet A1 in the Component Method summary, this would be the amount of the Annual Deposit needed if the Reserves Currently on Deposit were equal to the Total Current Objective.

**Cash Flow Analysis.** See Cash Flow Method, above.

**Component Analysis.** See Component Method, above.

**Contingency.** An allowance for unexpected requirements. Roughly the same as the Minimum Recommended Reserve Level to be Held on Account used in the Cash Flow Method of analysis.

**Critical Year.** In the Cash Flow Method, a year in which the reserves on hand are projected to fall to the established minimum level. See Minimum Recommended Reserve Level to be Held on Account.

**Current Objective.** This is the reserve amount that would have accumulated had the item been funded from initial construction at its current replacement cost. It is equal to the estimated replacement cost divided by the estimated economic life, times the number of years expended (the difference between the Estimated Economic Life and the Estimated Life Left). The Total Current Objective can be thought of as the amount of reserves the Association should now have on hand based on the sum of all of the Current Objectives.

**Cyclic Replacement Item.** A component item that typically begins to fail after an initial period (Estimated Initial Replacement), but which will be replaced in increments over a number of years (the Estimated Replacement Cycle). The Reserve Analysis program divides the number of years in the Estimated Replacement Cycle into five equal increments. It then allocates the Estimated Replacement Cost equally over those five increments. (As distinguished from Normal Replacement Items, see below)

**Estimated Economic Life.** Used in the Normal Replacement Schedules. This represents the industry average number of years that a new item should be expected to last until it has to be replaced. This figure is sometimes modified by climate, region, or original construction conditions.

**Estimated Economic Life Left.** Used in the Normal Replacement Schedules. Number of years until the item is expected to need replacement. Normally, this number would be considered to be the difference between the Estimated Economic Life and the age of the item. However, this number must be modified to reflect maintenance practice, climate, original construction and quality, or other conditions. For the purpose of this report, this number is determined by the Reserve Analyst based on the present condition of the item relative to the actual age.

**Estimated Initial Replacement.** For a Cyclic Replacement Item (see above), the number of years until the replacement cycle is expected to begin.

**Estimated Replacement Cycle.** For a Cyclic Replacement Item, the number of years over which the remainder of the component's replacement occurs.

**Minimum Annual Deposit.** Shown on the Summary Sheet A1. The calculated requirement for annual contribution to reserves as calculated by the Cash Flow Method (see above).

**Minimum Deposit in the Study Year.** Shown on the Summary Sheet A1. The calculated requirement for contribution to reserves in the study year as calculated by the Component Method (see above).

**Minimum Recommended Reserve Level to be Held on Account.** Shown on the Summary Sheet A1, this number is used in the Cash Flow Method only. This is the prescribed level below which the reserves will not be allowed to fall in any year. This amount is determined based on the age, condition, and replacement cost of the individual components. This number is normally given as a percentage of the total Estimated Replacement Cost of all reserve components.

**Normal Replacement Item.** A component of the property that, after an expected economic life, is replaced in its entirety. (As distinguished from Cyclic Replacement Items, see above.)

Normal Replacement Schedules. The list of Normal Replacement Items by category or location. These items appear on pages designated.

Number of Years of the Study. The numbers of years into the future for which expenditures are projected and reserve levels calculated. This number should be large enough to include the projected replacement of every item on the schedule, at least once. This study covers a 40-year period.

One Time Deposit Required to Fully Fund Reserves. Shown on the Summary Sheet A1 in the Component Method summary, this is the difference between the Total Current Objective and the Reserves Currently on Deposit.

Reserves Currently on Deposit. Shown on the Summary Sheet A1, this is the amount of accumulated reserves as reported by the Association in the current year.

Reserves on Hand. Shown in the Cyclic Replacement and Normal Replacement Schedules, this is the amount of reserves allocated to each component item in the Cyclic or Normal Replacement schedules. This figure is based on the ratio of Reserves Currently on Deposit divided by the total Current Objective.

Replacement Reserve Study. An analysis of all of the components of the common property of the Association for which a need for replacement should be anticipated within the economic life of the property as a whole. The analysis involves estimation for each component of its estimated Replacement Cost, Estimated Economic Life, and Estimated Life Left. The objective of the study is to calculate a recommended annual contribution to the Association's Replacement Reserve Fund.

Total Replacement Cost. Shown on the Summary Sheet A1, this is total of the Estimated Replacement Costs for all items on the schedule if they were to be replaced once.

Unit Replacement Cost. Estimated replacement cost for a single unit of a given item on the schedule.

Unit (of Measure). Non-standard abbreviations are defined on the page of the Replacement Reserve Inventory where the item appears. The following standard abbreviations are used in this report:

EA: each    FT: feet    LS: lump sum    PR: pair    SF: square feet    SY: square yard

What is a Reserve Study?  
Who are we?



<http://bcove.me/nc0o69t7>

What kind of property uses a Reserve Study?  
Who are our clients?



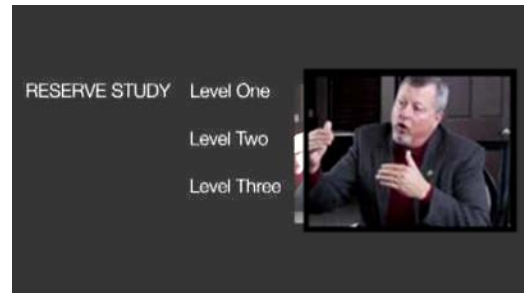
<http://bcove.me/stt373hj>

Who conducts a Reserve Study?  
Reserve Specialist (RS) what does this mean?



<http://bcove.me/81ch7kjt>

When should a Reserve Study be updated?  
What are the different types of Reserve Studies?



<http://bcove.me/ixis1yxm>

What is in a Reserve Study and what is out?  
Improvement vs Component, is there a difference?



<http://bcove.me/81ch7kjt>

What is my role as a Community Manager?  
Will the report help me explain Reserves to my



<http://bcove.me/fazwdk3h>

clients?

What is my role as a Board Member?  
Will a Reserve Study meet my community's needs?



<http://bcove.me/n6nwnktv>

Community dues, how can a Reserve Study help?  
Will a study help keep my property competitive?



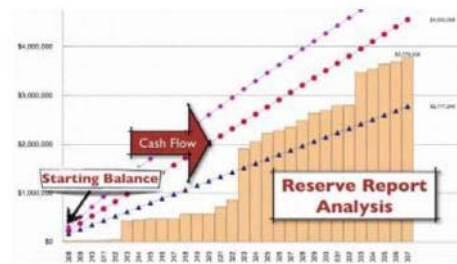
<http://bcove.me/2vfih1tz>

How do I read the report?  
Will I have a say in what the report contains?



<http://bcove.me/wb2fugb1>

Where do the numbers come from?  
Cumulative expenditures and funding, what?



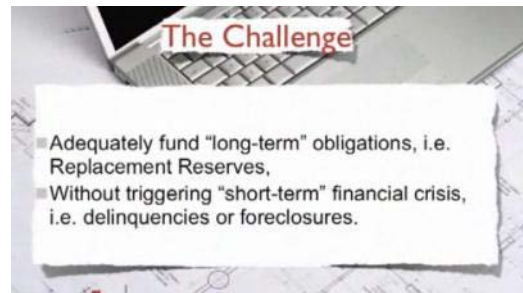
<http://bcove.me/7buer3n8>

How are interest and inflation addressed?  
What should we look at when considering inflation?



<http://bcove.me/s2tmtj9b>

A community needs more help, where do we go?  
What is a Strategic Funding Plan?



<http://bcove.me/iqul31vq>