

PREPARED FOR:

**ASHBOURNE OWNERS
ASSOCIATION, INC.
CARY, NC**

**MANAGED BY:
CHARLESTON MANAGEMENT**

**DRAFT -
FOR REVIEW
PURPOSES ONLY**

AUGUST 29, 2019

**FULL RESERVE
STUDY**

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TABLE OF CONTENTS

INTRODUCTIONS	1
EXECUTIVE SUMMARY	2
PURPOSE & SCOPE	3
Standards of Reference	4
SOURCES OF INFORMATION	5
Date of Inspection	5
Interviews	5
Documents	5
Cost Estimates	5
DESCRIPTION	6
OBSERVATIONS	7
Site Improvements	7
Amenities	10
RESERVE FUND ANALYSIS	12
CONCLUSION & LIMITATIONS	14
Appendix A: Reserve Fund Projections	

INTRODUCTIONS

The Ashbourne Owners Association, Inc. authorized Giles Flythe Engineers to perform a Full Reserve Study for the Ashbourne community located in Cary, NC. The purpose of the reserve study is to assist the association in planning for future capital repair expenses. A reserve study is an important tool for an association to adequately fund capital reserve accounts through regular annual reserve contributions. Adequately funded capital reserve accounts reduce the need to defer capital repairs, collect special assessments or borrow funds for capital repair projects.

A community association typically has certain responsibilities as described in the association governing documents. These responsibilities often include maintaining common areas and other components. An association, as a non-profit organization, will typically have two general asset cash accounts including an operating account and a reserve account. The operating account is funded from regular budgeted assessments and is used to fund routine operating expenses that occur on a predictable cycle, typically monthly or up to annually. The reserve account is funded from regular contributions and is primarily used to fund non-annual capital repair expenses.

The focus of the reserve study is on the reserve account. We have projected capital repair expenses over a term of twenty years. The capital repair expenses are limited to those components for which the association is responsible for maintaining. Capital repair expense estimates include an expected useful life and remaining useful life of the components to develop a projected schedule for capital repairs over the term. After developing a schedule of capital repairs over the term, we completed a cash flow analysis forecasting reserve account balances over the term and provided funding recommendations as needed. Capital repair expense estimates and funding estimates are most reliable in the first portion of the term. Updating a reserve study every three to five years will mitigate the impacts of variation in repair costs, component wear, inflation and reserve funding over time.

Capital reserve funding recommendations are provided to address funding principles including providing sufficient funds required, a stable reserve contribution rate over the term, an equitable contribution rate over the term and fiscally responsible. The reserve study is intended to assist the association in developing budgeted reserve contributions.

The report includes a narrative section which describes the scope of the reserve study, a discussion of observations and capital repair allocations, a general description of capital repairs and a description of our cash flow analysis and funding recommendations. The report appendices include the capital reserve analysis with tables detailing an itemized list of capital repair expenses, an itemized list of expenses by year and our cash flow analysis. A photo log is provided and includes a representative sample of our observations. The report includes multiple sections with information presented in various forms and should, therefore, be read in its entirety.

EXECUTIVE SUMMARY

The Ashbourne Owners Association, Inc. is a single-family home community situated along Henmore Brook Drive and Creekhurst Place off of Ashbourne Ridge Drive in Cary, NC. Development of the community began in approximately 2016, and the homes were constructed between 2017 and 2019 Wake County Tax Records. The community includes a total of 90 single-family home lots.

The Association has responsibility for common area site improvements and amenities. The most significant site improvements include the drainage systems including three stormwater ponds, retaining walls, a mail center with parking area, and monument signage structures at the community entrances.

The common areas and site improvements are generally in good condition. Based on our evaluation, maintaining the current level of funding, while adequate, is **not** projected to maintain a positive balance through the term of this study. We have provided recommendations for annual reserve contribution schedules that provide sufficient funding to meet capital expenditure requirements in the next twenty years, in summary as follows:

- **Alternative 1:** Beginning in 2022, increase the annual reserve contribution by \$2,000 every other year through the end of the term. This alternative is projected to maintain a positive balance through the term of this study.
- **Alternative 2:** Beginning in 2021, increase the annual reserve contribution by 3.0% every year through the end of the term. This funding alternative is designed to offset an assumed inflation rate of 3.0%, and is projected to maintain a positive balance through the term of this study.

A more detailed analysis of the reserve fund has been provided in Appendix A.

Some significant expenditures are expected over the term of the study. Some of the more notable examples are listed below:

- Common area drainage repairs and improvements
- Dredge and repair stormwater ponds and associated stormwater control measures
- Common area improvement projects
- Long-term contingencies for repairs to retaining walls

Additional, less significant, capital expenditures are anticipated over the term of this study. Those items that will require repair or replacement are discussed later in this report.

PURPOSE & SCOPE

We have completed this study to estimate capital repair expenses the association is responsible for over the term of the study and provide a cash flow analysis and capital reserve funding plan. This study is intended to assist the association in determining the allocation requirements into the reserve fund which are projected to meet future anticipated capital expenditures for the community.

This report estimates capital repair expenses for the community twenty years into the future. Variations in capital repair expense forecasts due to the quality of maintenance, weather and other events may occur. Over time, age, premature deterioration, or other factors may necessitate the addition of assets into the reserve study. Additionally, fluctuations in material and labor costs beyond assumed inflation rates may also affect the accuracy of the forecasts. Therefore, a reserve study should be routinely updated, typically on a three to five-year cycle to provide the most accurate assessment of needs and financial obligations of the community.

This study has been performed according to the scope as generally defined by the Ashbourne Owners Association, Inc., Giles Flythe Engineers Inc., and the standards of the Community Associations Institute. The findings and recommendations are based on interviews with the community's management personnel; a review of available documents; and a limited visual inspection of the components maintained by the association.

The Cash Flow Method of calculating reserves has been utilized, whereby contributions to the reserve fund are designed to offset the variable annual expenditures. Funding alternates are recommended which are designed to achieve at minimum a Baseline Funding goal by maintaining a positive balance for the term of the study. We have also included a threshold funding goal which provides a minimum reserve account over the term. The minimum balance is typically calculated by determining the total over term forecasted expenses and dividing by the length of the term in years. This minimum threshold balance will help offset the risk of fluctuations in labor and material costs and component wear.

To determine which components should be included in this analysis, we used the following guidelines:

- The component must be maintained by the association.
- The component must have an estimated remaining useful life within the term of this study.
- The funding for the repair should be from the reserve account, not through an annual operating budget or other maintenance contracts.
- The cost of the capital repair must be significant enough to not be reasonably funded from an annual operating budget.

What is a reserve study?

A reserve study is a long-term capital budget planning tool which compares the current reserve fund of an organization to future capital repairs and replacements.

A reserve study is a tool to help identify and prepare for major repair and replacement projects for a community.

It is recommended that a reserve study be performed every five years to ensure that communities are saving the necessary funds for capital repairs and improvements.

Our process for completing the reserve study includes:

1. Reviewing information provided including governing documents, association financial statements, and information on previous or planned capital repairs.
2. Reviewing available information on the property as needed. This may include plat maps, tax records, historical aerial photographs, available site, and building plans.
3. Conducting a visual inspection of the property. This may include interviewing association representatives during the inspection.
4. Developing an inventory of components to be included in the reserve study.
5. Predicting their remaining service life and, approximating how frequently they will require repair or replacement.
6. Estimating repair or replacement costs (in 2019 dollars) for each capital item.
7. Develop a cash flow analysis adjusting for inflation and return on invested monies to determine the adequacy of current reserve funding plans.
8. Develop funding recommendations with specific reserve contribution recommendations for each year of the term.

The statements in this report are opinions about the present condition of the areas inspected within the community. Our inspection is limited to a visual ground level inspection and we did not remove any surface materials, perform any testing, or move any furnishings. This study is not an exhaustive technical evaluation or building code compliance review. For additional limitations, see Conclusion and Limitations.

Standards of Reference

The following definitions are provided as a standard of reference:

Excellent: Component or system is in “as new” condition, requiring no rehabilitation and should perform in accordance with expected performance.

Good: Component or system is sound and performing its function, although it may show signs of normal wear and tear. Some minor rehabilitation work may be required.

Fair: Component or system falls into one or more of the following categories: a) Evidence of previous repairs not in compliance with commonly accepted practice, b) Workmanship not in compliance with commonly accepted standards, c) Component or system is obsolete, d) Component or system approaching the end of expected performance. Repair or replacement is required to prevent further deterioration or to prolong expected life.

Poor: Component or system has either failed or cannot be relied upon to continue performing its original function as a result of having exceeded its expected performance, excessive deferred maintenance, or state of disrepair. The resent condition could contribute to or cause the deterioration of other adjoining elements or systems. Repair or replacement is required.

Adequate: A component or system is of a capacity that is defined as enough for what is required, sufficient, suitable, and/or conforms to standard construction practices.

SOURCES OF INFORMATION

Date of Inspection

Onsite inspection of the property occurred on August 16, 2019.

Interviews

We interviewed the following people in connection with this study:

- Lori Lanham – Community Manager, Charleston Management
- Sandeep Kulkarni – Board President

Documents

The following documents were made available to us and reviewed:

- Wake County tax records
- Recorded Plat Maps
- Weycroft Reserve Owners Association Governing Documents
- Association financial statements

Cost Estimates

- Our internal data files on similar projects
- Local contractor estimates for similar projects
- R.S. Means Construction Cost Estimating Data

DESCRIPTION

The Ashbourne Owners Association, Inc. is a single-family home community situated along Henmore Brook Drive and Creekhurst Place off of Ashbourne Ridge Drive in Cary, NC. Development of the community began in approximately 2016, and the homes were constructed between 2017 and 2019 Wake County Tax Records. The community includes a total of 90 single-family home lots.

The Association has responsibility for common area site improvements and amenities. The most significant site improvements include the drainage systems including three stormwater ponds, retaining walls, a mail center with parking area, and monument signage structures at the community entrances.

Stormwater drainage from the site flows via surface runoff into grassed swales and curb inlets which lead to an underground piping network which discharges into numerous stormwater control measures throughout the community. The stormwater ponds filter stormwater runoff into stream basins maintained by the local municipality.

The main community entrances are located at Ashbourne Ridge Drive off of High House Road. The entrances are flanked with brick veneer monument structures with community signage.

The community includes a system of segmental block masonry retaining walls to adjust for topographical changes, portions of which extend along the perimeters of the stormwater ponds.

OBSERVATIONS

The following key observations were made about the current condition of the more significant and costly common elements of the property:

Site Improvements

Stormwater drainage from the site flows via surface runoff into grassed and riprap armored swales and catch basins which lead to an underground piping network that discharges into various stormwater control measures (SCMs) throughout the community. The piping networks appear to be comprised primarily of concrete piping. Stormwater control measures include three wet ponds with associated components, including riprap armored inlets, earthen dams, and outlets structures which discharge through the earthen dams into stream basins which direct stormwater flow offsite.

Multiple areas of minor to moderate drainage concerns were observed at the time of the inspection: erosion was noted at a riprap-armored drainage swale behind home lots 48/49 and 51/52; sediment accumulation and evidence of ponding water was observed in limited areas behind individually-owned home lots; erosion due to excess surface runoff was noted at the base of the aluminum fence behind lot 14 (this area exists within the HOA retaining wall access & maintenance easement); soil erosion was noted along the steeper slopes within the private drainage easement along the west side of the eastern cul-de-sac end of Creekhurst Place. We anticipate immediate concerns which exist within HOA common areas and access easements will be corrected by the developer as part of the transition to HOA ownership. We also note that drainage concerns which develop on the single-family home lots will likely not be the responsibility of the Association.

Over time, additional drainage concerns are likely to develop and require periodic repairs or improvements to ensure the drainage systems are appropriately functioning to discharge stormwater towards the appropriate control devices and management systems. Landscaped swales tend to accumulate sediment that settles out during storm events and will need to be periodically removed and re-graded. Erosion concerns are likely to develop in steeper slopes which would require stabilization repair. In addition, over time, small landscape drainage systems will likely need to be installed in flat areas of the community to address concerns. As the community ages, we would also recommend having portions of the private drainage infrastructure in the streets inspected with a video camera system, flushed, and repaired as necessary.

We have allocated funds for significant repairs to the drainage systems every 4 years beginning in 2023, assuming immediate concerns will be corrected by the developer. Drainage repairs would likely include minor repairs to stabilize areas of surface erosion, adding riprap or vegetation to stabilize exposed areas, creating positive slopes to drain, re-trenching and re-armoring landscaped swales, repairing/hydro-jetting buried common area stormwater piping and other drainage system improvements. These types of repairs can be moderate (re-trenching swales, flushing pipes), to very expensive (new underground pipe systems). We have included a moderate budget to help cover these costs, and we anticipate that any excess funds from each cycle would be used to prepare for larger-scale drainage improvement projects over term.

As part of the storm water management system, we observed three (3) stormwater wet ponds in the community. The wet ponds typically include reinforced concrete pipe inlets, earthen forebays, and concrete riser outlet structures which discharge through earthen dams. We understand the northern SCM has been converted to a permanent registered stormwater device. The two SCMs within the southern portion of the development have not yet been converted to permanent status, and work by the developer was ongoing at the time of the inspection.

Over time, some concerns may develop which could affect the function of the SCMs, including sediment accumulation within the pond forebays. As these conditions advance, we anticipate the need to repair these components as well as improve drainage and erosion control in the vicinity of the devices. As sediment accumulation advances, the components will lose capacity and may not function properly to collect and discharge stormwater at their design rates. The funds allocated for periodic drainage improvements discussed above include repairs to drainage and erosion control concerns as needed; however, less frequent large-scale repair or partial reconstruction projects will likely be required over term to ensure the outlet devices function properly. We have provided an allocation of funds at the end of the term to prepare for large-scale repairs to the SCMs. We assume any minor repairs would be performed as part of an annual SCM maintenance contract or funded from the budget for drainage improvements as needed.

To better predict sediment accumulation and dredging needs, the Association may consider periodic bathymetric / sediment mapping of the ponds. A baseline map of pond depths should be established followed by periodic remapping. This would allow a calculation of sediment deposit rates and pond volume reductions to more accurately forecast the need for future dredging.

We recommend the association maintain a contract for annual maintenance items for the stormwater control measures including inspections of the pond embankments, nuisance control, algae control, debris and litter removal, inlet and outlet maintenance and inspections. The HOA should ensure the stormwater control measures conform to all applicable regulations at all times. These types of regular maintenance items are commonly funded from the maintenance budget, and we have not included reserve funds for this annual maintenance expense.

The streets within the community are public and are therefore not the responsibility of the Association, however the Association is responsible for maintaining the asphalt paved parking areas adjacent to the mail centers. These sections of pavements appeared in generally good condition at the time of the inspection. Typically, we recommend the periodic application of an oil-resistant sealant to all asphalt paved surfaces. However, considering the small size of the parking areas, maintenance costs would be a relatively minimal expense which could be funded as needed from the annual maintenance budget.

Over time, the pavements will begin to show signs of deterioration and will likely require resurfacing. We anticipate the asphalt paving to have an estimated useful life of approximately 20 years, and we have allocated funds for resurfacing in 2039. Resurfacing would include milling around curb and gutter to maintain an adequate drainage profile, repairing areas of fatigue cracking/upheaval as needed and installing a new 2.5" to 2" thick layer of asphalt pavement over the existing paved areas.

Standard curb and gutter line the public streets and parking lot within the community. Over time, cracking and distress due to settlement is likely to develop, which would require periodic repairs. Curbing along the public streets is considered part of the public right-of-way, and is not the responsibility of the Association. Due to the minimal quantity of curbing aligning the private parking areas, we do not anticipate reserve funds would be required for the relatively minimal expense of sectional repairs.

Sections of segmental block retaining walls are installed in the community to adjust for topographical changes, including around the stormwater ponds. The walls varied in height, up to 15-feet tall. Some of the retaining walls are tiered systems, specifically along the southern end of the northernmost stormwater pond. The retaining walls should include geo-grid reinforcement extending behind the walls with a french drain type system installed behind the walls to reduce hydrostatic pressure. Assuming these systems are in place and well maintained, the retaining walls should have an expected useful life well beyond the term of this study. However, considering the quantity and height of the retaining walls in the community and the large eventual repair/replacement costs of the walls, we have provided an allocation of funds at the end of the term to prepare for long-term expenses. The allocated funds do not represent a full replacement value, but should be suitable to prepare for sectional repairs beyond the term of this study. We recommend the Association monitor the condition of the retaining walls for symptoms of structural concerns. The Association may consider conducting a geotechnical engineering evaluation to include slope stability monitoring of the soil materials behind the walls to better determine the need and extent of future wall repairs. Such a study may help to better estimate the end of term funding needed to prepare for significant repairs.

Anodized aluminum fencing is installed along the tops of many of the retaining walls throughout the community. The fencing appeared to be in generally good/new condition. We assume minor repairs to the fencing would be funded from an annual maintenance budget as needed. We do not anticipate full replacement of the fencing will be required over the term, however larger-scale sectional repairs and painting will likely be required approximately every 12-15 years. Considering the quantity of fencing in the community, we have budgeted for painting and repairs to approximately 50% of the aluminum fencing every 8 years beginning in 2026.

PVC privacy fencing is installed along sections of the community aligning High House Road, and appeared in generally good condition with no significant damages noted. This type fencing material is susceptible to damages over term due to landscaping work, and may also exhibit fading and minor cracking due to exposure. We have included funds to replace approximately 50% of the site PVC fencing every 10 years beginning in 2028.

Brick veneer monument structures are installed at each community entrance. The monuments include community signage comprised of painted composite metal backing and raised powder-coated lettering, and are accented with lantern-style light fixtures. Small irrigation systems service the landscaping areas around the monuments. We do not anticipate large-scale replacement projects of the monuments, however periodic refurbishment may be periodically required, including replacement of the raised lettering, repairs or replacement of the light fixtures, and minor tuckpoint repairs to the brick structures. We have included an allocation of funds every 10 years beginning in 2028. We have also included funds for repairs to the common area landscape irrigation systems on a similar 10-year cycle beginning in 2028. Repairs would likely include

replacement of timers, controllers, valves and transformers as needed. We anticipate lesser/minor repairs to sprinkler system piping and head replacement would be funded from the annual maintenance budget.

During our on-site inspection, board members indicated plans to implement community improvement projects within the common areas. The projects discussed included installation of a pond fountain feature within the northernmost stormwater pond, expansion of the common area behind the mail center, a landscaping improvement project behind the northernmost stormwater pond (including installation of a walking trail with pedestrian bridge extending from Henmore Brook Drive), and installation of a recreation area with access trail extending from the western end of Creekhurst Place to the common open space west of Lot 69.

Because plans for these projects have not yet been developed, it is difficult to forecast the costs associated with these common area improvements. At the request of the board, we have included general funding allocations for these four projects as separate line items in our cash flow analysis, in the following years:

Install pond aeration or fountain feature: 2021

Expand common area behind mail center: 2023

Landscape improvement project behind northernmost stormwater pond: 2025

Install recreation area in common open space west of Lot 69: 2028

Amenities

A mail center is located near the northern entrance to the community. This is a wood-framed building with painted fiber cement siding, adhered stone veneer, vinyl ceiling panels and an asphalt shingle roof.

To maintain a clean and bright appearance, and to protect the exterior components of the structure, the painted surfaces will require periodic re-painting. Due to the minimal quantity of painted components, we do not anticipate this project will be a significant cost, and will be funded as needed from the annual maintenance budget.

The roof over the mail center is comprised of architectural grade asphaltic fiberglass shingles. This type of roofing shingle has an expected useful life of approximately 20-25 years prior to full replacement. We strongly recommend that any re-roofing project closely follow procedures outlined by the National Roofing Contractors Association's *Roofing and Waterproofing Manual*. A re-roofing sequence should include removal of the existing roofing material, replacement of any inadequate roof sheathing, replacement of any damaged flashing, and replacement of drip edge components. We have included funds to replace the mail center roof in 2039.

The mail center includes a total of eight mailbox inserts. Similarly, a mailbox station within the southern portion of the community includes two pedestal-mounted mailbox kiosks. The mailbox inserts and pedestal-mounted kiosks appeared in generally good condition, and have an expected useful life of approximately 20 years. Due to frequent/daily use, mailbox hinges and locking mechanisms will begin to wear and will require

replacement over term. These components typically have an expected useful life of approximately 20 years, and we have included funds to replace the pedestal-mounted mailbox structures in 2039.

The mail center includes coated metal picnic tables and fixed benches, which appeared in new condition. These components should have a useful life of approximately 15 years prior to full replacement, and we have included funds as such in 2034.

RESERVE FUND ANALYSIS

We have performed a cash flow analysis projecting balances in the reserve account over the term of this study. We have included estimated capital repair expenses detailed in the first several pages of Appendix A. We have included tables and graphs depicting current funding levels along with recommended funding alternatives.

The financial projections include an assumed inflation rate of 3.0% and an assumed average return on invested funds of 1.5%. The inflation rate adjustment is noted at the bottom of the annual expense page and the return on invested funds is noted in the existing funding level and funding alternative cash flow tables.

The software utilized to analyze the reserve funds was developed by Giles Flythe Engineers, Inc. in cooperation with a technology consultancy. The software and our analysis system have been extensively reviewed by leading community association and non-profit certified public accountants.

The capital repairs listed were derived from the initial request for proposal, discussions with association representatives, our informal review of governing documents and our site inspection. The association should confirm that the items listed are, in fact, the responsibility of the association and appropriate to fund from the reserve account.

Appendix A includes the following:

1. The Project Summary page that lists pertinent details specific to the association, the terms of the analysis and summarizes total over term expenses and recommended threshold balance.
2. The Expense Projection page that itemizes the capital repairs by category, illustrates our cost estimating by unit and provides estimated useful life and remaining useful life of each item.
3. The Annual Expense Projection pages that populate the capital repairs over the term of the study. This page includes a total adjusted for inflation at the bottom of the pages.
4. The Itemized Funding Analysis page provides a summary of the capital expenditures over the term and a graph breaking down the portion of the capital repairs into each category – Site Improvements, Building Exterior, Building Interior, Mechanical/Electrical/Plumbing Systems and Amenities.
5. The Current Funding Projection page provides a table and graph illustrating our cash flow analysis assuming the association maintains the current level of reserve contributions over the term of this study. The table includes projected reserve account balances, contributions, return on invested funds and capital repair expenses for each year of the term of this study.
6. The Funding Alternative pages each provide a table and graph illustrating our cash flow analysis assuming the association implements one of our funding recommendations detailed below.

Current Reserve Funding Rate: \$17,760 per year

Current Reserve Balance: \$50,818 (Projected 2020 starting balance)

Note that based on our cash flow analysis, maintaining the current funding level over term is not projected to maintain a positive/healthy balance over the term.

We have included recommended funding alternatives to your current reserve-funding program and recommend that the board adopt an alternative that best reflects the objectives of the community. Our funding recommendations are as follows:

- **Alternative 1:** Beginning in 2022, increase the annual reserve contribution by \$2,000 every other year through the end of the term. This alternative is projected to maintain a positive balance through the term of this study.
- **Alternative 2:** Beginning in 2021, increase the annual reserve contribution by 3.0% every year through the end of the term. This funding alternative is designed to offset an assumed inflation rate of 3.0%, and is projected to maintain a positive balance through the term of this study.

The reserve study is focused on the capital reserve account and budgeted contributions to reserves. The recommendations above are solely attributed to the annual reserve contributions. The association likely has many line items in the annual operating budget that should also be periodically adjusted as part of an annual budgeting process.

The capital repair/replacement cost estimates we have developed are based on 2019 dollars. Our reserve study does include an adjustment for inflation and an assumed rate of return on invested funds.

CONCLUSION & LIMITATIONS

We have provided reserve funding recommendations based on our analysis of the association-maintained components, estimated capital repair costs over the term and the current funding levels. Further detail of the reserve fund analysis is provided in Appendix A.

The physical analysis portion of this reserve study was completed through a limited visual inspection. The visual inspection was completed from ground level unless otherwise specified. The visual inspection is generally limited to readily accessible and visible common areas that would likely require capital repair activities over the term. Note that this inspection does not include removing surface materials, excavation or any testing. The inspection does not include riparian buffers or other protected common areas. Buried utility components and other concealed components were not inspected as part of this analysis and we cannot be responsible for the condition of components not inspected.

The observations described in this study are valid on the date of the investigation and have been made under the conditions noted in the report. We prepared this study for the exclusive use of Ashbourne Owners Association, Inc. No other party should rely on the information in this report without consent. If another individual or party relies on this study, they shall indemnify and hold Giles Flythe Engineers Inc. harmless for any damages, losses, or expenses they may incur as a result of its use. This study is not to be considered a warranty of condition, and no warranty is implied. The appendices are an integral part of this report and must be included in any review.

Members of the Giles Flythe Engineers team working on this reserve study are not members of, or otherwise associated with the association. Giles Flythe Engineers has disclosed any other involvement with the association that could result in conflicts of interest.

Information provided by the representatives of the association regarding financial, physical, quantity, or historical issues, will be deemed reliable by Giles Flythe Engineers. The reserve balance presented in the Reserve Study is based upon information provided and was not audited. Information provided about reserve projects will be considered reliable. Any on-site inspection should not be considered a project audit or quality inspection. Giles Flythe Engineers is not aware of any additional material issues which, if not disclosed, would cause a distortion of the association's situation.

This reserve study is partially a reflection of information provided to us. The reserve study is assembled for the association's use and is not intended to be used for the purpose of performing an audit, quality/forensic analyses or background checks of historical records. Further, this study should not be considered a building code compliance analysis. The purpose of this study is to provide the association with a financial tool and is not to be considered an exhaustive technical or engineering evaluation which would consist of a broader scope of work.

We have provided estimated costs of capital repairs. These costs are based on our general knowledge of the construction industry. We have relied on standard sources as needed, such as Means Building Construction Cost Data and estimates reviewed by Giles Flythe Engineers on similar projects. We have performed no design work or other engineering analysis as part of this study, nor have we obtained competitive quotations or estimates from contractors. Actual repair costs can vary due to a variety of factors. We cannot be responsible for the specific cost estimates provided.

If you have any questions about this reserve study, please feel free to contact us. Thank you for the opportunity to serve you.

Respectfully submitted,

Andrew D. Crook, PE
Project Engineer
Giles Flythe Engineers, Inc.

Kevin R. Giles, RS
Project Manager
Giles Flythe Engineers, Inc.

APPENDIX A: RESERVE FUND PROJECTIONS

PROJECT SUMMARY

Ashbourne Owners Association

City/state location: Cary, NC

Date of inspection: 8/16/2019

Number of units: 90

Term of study (years): 20

Beginning Year of Term 2020

Estimated starting reserve account balance: \$50,818

Current annual reserve contribution rate: \$17,760

Assumed inflation rate: 3.00%

Assumed rate of return on invested funds: 1.50%

Total over term capital expenditure (un-inflated): \$361,820

Total over term capital expenditure with inflation: \$557,048

Reccomended threshold reserve balance:(Average annual capital expenditure) \$27,852

EXPENSE ESTIMATES

Capital Item Description	Quantity	Unit	Unit Cost	Total Cost Per Cycle	Estimated Useful Life (years)	Estimated Remaining Life (years)	Notes
Site Improvements							
Common area drainage repairs and improvements	1	LS	\$8,000.00	\$8,000	4	3	
Dredge stormwater ponds and repair associated Stormwater Control Measures	1	LS	\$40,000.00	\$40,000	20	19	
Resurface asphalt parking lots	310	SY	\$22.00	\$6,820	20	19	
Long-term allocation for repairs to site retaining walls	1	LS	\$130,000.00	\$130,000	50	19	
Paint / repair sections of aluminum fencing	1,000	LF	\$15.00	\$15,000	8	6	Approx. 50% every 8 years
Replace PVC privacy fencing	450	LF	\$15.00	\$6,750	10	8	Approx. 50% every 10 years
Repair / refurbish entrance monument structures	4	EA	\$2,000.00	\$8,000	10	8	
Repair / replace components of landscape irrigation system	1	LS	\$5,000.00	\$5,000	10	8	
Install pond fountain feature, replace over term	1	LS	\$4,000.00	\$4,000	8	1	2021 funding increased for initial installation
Expand common area behind mail center	1	LS	\$10,000.00	\$10,000	0	3	
Landscape improvement project behind northernmost stormwater pond	1	LS	\$30,000.00	\$30,000	0	5	With pedestrian trail/bridge
Install recreation area in common open space west of Lot 69	1	LS	\$10,000.00	\$10,000	0	8	
Building Exterior							
N/A	1	LS	\$0.00	\$0	1	0	
Building Interior							
N/A	1	LS	\$0.00	\$0	1	0	
Mechanical, Electrical, Plumbing Systems							
N/A	1	LS	\$0.00	\$0	1	0	
Amenities							
Replace mail center roof	1	LS	\$3,000.00	\$3,000	20	19	
Replace common area benches, tables etc.	1	LS	\$2,500.00	\$2,500	15	14	
Other							
N/A	1	LS	\$0.00	\$0	1	0	

SY: Square Yard SF: Square Feet LF: Linear Feet SQ: Roofing Square
EA: Each LS: Lump Sum SYS: System

ANNUAL EXPENSE PROJECTION

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Site Improvements										
Common area drainage repairs and improvements				\$8,000				\$8,000		
Dredge stormwater ponds and repair associated Stormwater Control Measures										
Resurface asphalt parking lots										
Long-term allocation for repairs to site retaining walls										
Paint / repair sections of aluminum fencing							\$15,000			
Replace PVC privacy fencing									\$6,750	
Repair / refurbish entrance monument structures									\$8,000	
Repair / replace components of landscape irrigation system									\$5,000	
Install pond fountain feature & replace over term		\$12,000								\$4,000
Expand common area behind mail center				\$10,000						
Landscape improvement project behind northernmost stormwater pond						\$30,000				
Install recreation area in common open space west of Lot 69									\$10,000	
Building Exterior										
N/A										
Building Interior										
N/A										
Mechanical, Electrical, Plumbing Systems										
N/A										
Amenities										
Replace mail center roof										
Replace common area benches, tables etc.										
Other										
N/A										
Totals	\$0	\$12,000	\$0	\$18,000	\$0	\$30,000	\$15,000	\$8,000	\$29,750	\$4,000
Totals including inflation:	\$0	\$12,360	\$0	\$19,669	\$0	\$34,778	\$17,911	\$9,839	\$37,686	\$5,219

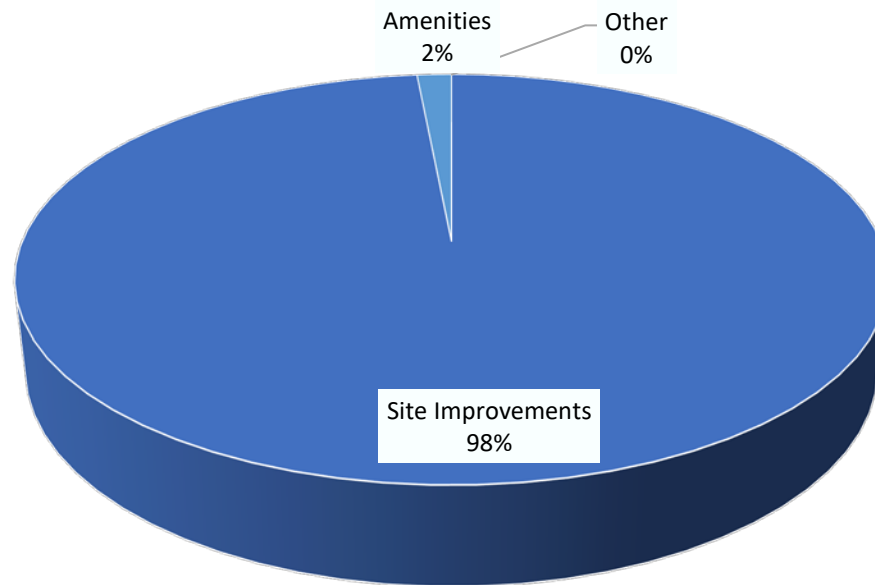
ANNUAL EXPENSE PROJECTION

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Site Improvements										
Common area drainage repairs and improvements		\$8,000				\$8,000				\$8,000
Dredge stormwater ponds and repair associated Stormwater Control Measures										\$40,000
Resurface asphalt parking lots										\$6,820
Long-term allocation for repairs to site retaining walls										\$130,000
Paint / repair sections of aluminum fencing					\$15,000					
Replace PVC privacy fencing									\$6,750	
Repair / refurbish entrance monument structures									\$8,000	
Repair / replace components of landscape irrigation system									\$5,000	
Install pond fountain feature, replace over term								\$4,000		
Expand common area behind mail center										
Landscape improvement project behind northernmost stormwater pond										
Install recreation area in common open space west of Lot 69										
Building Exterior										
N/A										
Building Interior										
N/A										
Mechanical, Electrical, Plumbing Systems										
N/A										
Amenities										
Replace mail center roof										\$3,000
Replace common area benches, tables etc.					\$2,500					
Other										
N/A										
Totals	\$0	\$8,000	\$0	\$0	\$17,500	\$8,000	\$0	\$4,000	\$19,750	\$187,820
Totals including inflation:	\$0	\$11,074	\$0	\$0	\$26,470	\$12,464	\$0	\$6,611	\$33,623	\$329,344

EXPENSE SUMMARY

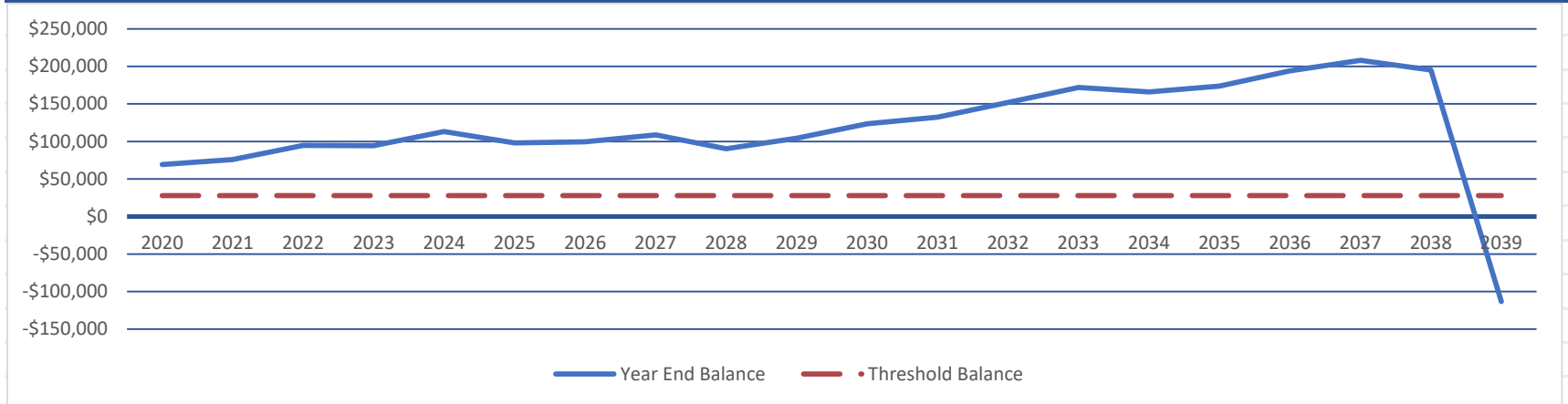
Total over term capital expenditure (un-inflated)	\$361,820
Total over term capital expenditure with inflation:	\$557,048
Average estimated annual capital expenditure with inflation:	\$27,852
Current Reserve Account Balance	\$50,818
Full Funding Balance	\$96,458
Percent Funded	52.68%

Breakdown of Total Costs by Type



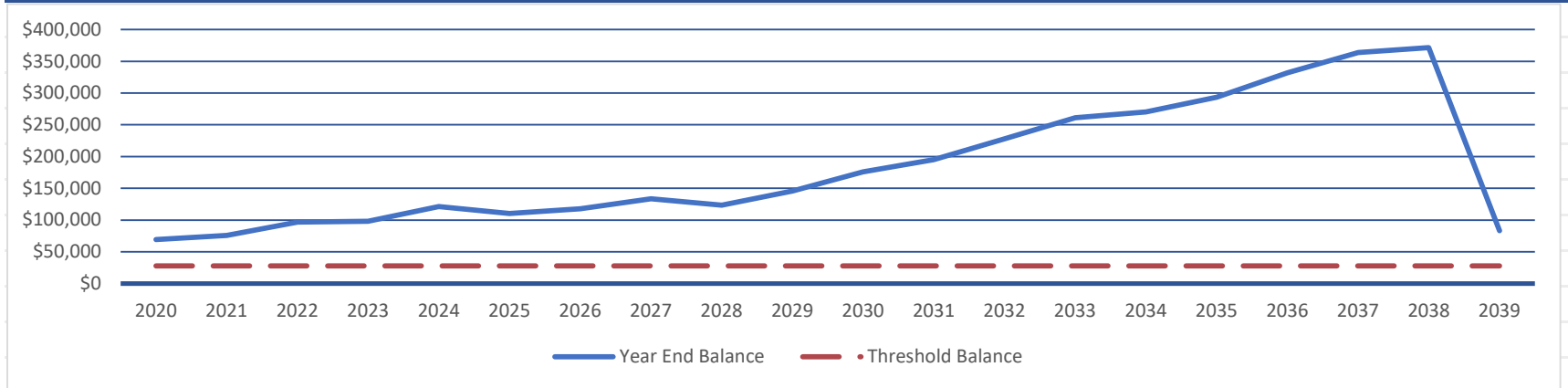
Current Funding Analysis

Year	Starting Balance	Reserve Account Contribution	Average Per Unit/Month	Return on Investments	Repair Expenses	Special Assessments	Year End Balance
2020	\$50,818	\$17,760	\$16.44	\$762	\$0	\$0	\$69,341
2021	\$69,341	\$17,760	\$16.44	\$1,040	\$12,360	\$0	\$75,781
2022	\$75,781	\$17,760	\$16.44	\$1,137	\$0	\$0	\$94,677
2023	\$94,677	\$17,760	\$16.44	\$1,420	\$19,669	\$0	\$94,189
2024	\$94,189	\$17,760	\$16.44	\$1,413	\$0	\$0	\$113,361
2025	\$113,361	\$17,760	\$16.44	\$1,700	\$34,778	\$0	\$98,044
2026	\$98,044	\$17,760	\$16.44	\$1,471	\$17,911	\$0	\$99,363
2027	\$99,363	\$17,760	\$16.44	\$1,490	\$9,839	\$0	\$108,775
2028	\$108,775	\$17,760	\$16.44	\$1,632	\$37,686	\$0	\$90,480
2029	\$90,480	\$17,760	\$16.44	\$1,357	\$5,219	\$0	\$104,378
2030	\$104,378	\$17,760	\$16.44	\$1,566	\$0	\$0	\$123,704
2031	\$123,704	\$17,760	\$16.44	\$1,856	\$11,074	\$0	\$132,246
2032	\$132,246	\$17,760	\$16.44	\$1,984	\$0	\$0	\$151,989
2033	\$151,989	\$17,760	\$16.44	\$2,280	\$0	\$0	\$172,029
2034	\$172,029	\$17,760	\$16.44	\$2,580	\$26,470	\$0	\$165,899
2035	\$165,899	\$17,760	\$16.44	\$2,488	\$12,464	\$0	\$173,684
2036	\$173,684	\$17,760	\$16.44	\$2,605	\$0	\$0	\$194,049
2037	\$194,049	\$17,760	\$16.44	\$2,911	\$6,611	\$0	\$208,109
2038	\$208,109	\$17,760	\$16.44	\$3,122	\$33,623	\$0	\$195,367
2039	\$195,367	\$17,760	\$16.44	\$2,931	\$329,344	\$0	-\$113,286



Funding Alternative 1 - Step Funding Increases Every Other Year

Year	Starting Balance	Reserve Account Contribution	Average Per Unit/Month	Return on Investments	Repair Expenses	Special Assessments	Year End Balance
2020	\$50,818	\$17,760	\$16.44	\$762	\$0	\$0	\$69,341
2021	\$69,341	\$17,760	\$16.44	\$1,040	\$12,360	\$0	\$75,781
2022	\$75,781	\$19,760	\$18.30	\$1,137	\$0	\$0	\$96,677
2023	\$96,677	\$19,760	\$18.30	\$1,450	\$19,669	\$0	\$98,219
2024	\$98,219	\$21,760	\$20.15	\$1,473	\$0	\$0	\$121,452
2025	\$121,452	\$21,760	\$20.15	\$1,822	\$34,778	\$0	\$110,255
2026	\$110,255	\$23,760	\$22.00	\$1,654	\$17,911	\$0	\$117,758
2027	\$117,758	\$23,760	\$22.00	\$1,766	\$9,839	\$0	\$133,446
2028	\$133,446	\$25,760	\$23.85	\$2,002	\$37,686	\$0	\$123,521
2029	\$123,521	\$25,760	\$23.85	\$1,853	\$5,219	\$0	\$145,915
2030	\$145,915	\$27,760	\$25.70	\$2,189	\$0	\$0	\$175,863
2031	\$175,863	\$27,760	\$25.70	\$2,638	\$11,074	\$0	\$195,188
2032	\$195,188	\$29,760	\$27.56	\$2,928	\$0	\$0	\$227,875
2033	\$227,875	\$29,760	\$27.56	\$3,418	\$0	\$0	\$261,054
2034	\$261,054	\$31,760	\$29.41	\$3,916	\$26,470	\$0	\$270,259
2035	\$270,259	\$31,760	\$29.41	\$4,054	\$12,464	\$0	\$293,609
2036	\$293,609	\$33,760	\$31.26	\$4,404	\$0	\$0	\$331,773
2037	\$331,773	\$33,760	\$31.26	\$4,977	\$6,611	\$0	\$363,898
2038	\$363,898	\$35,760	\$33.11	\$5,458	\$33,623	\$0	\$371,494
2039	\$371,494	\$35,760	\$33.11	\$5,572	\$329,344	\$0	\$83,483



Funding Alternative 2 - Escalating Funding at 3.0% Annually

Year	Starting Balance	Reserve Account Contribution	Average Per Unit/Month	Return on Investments	Repair Expenses	Special Assessments	Year End Balance
2020	\$50,818	\$17,760	\$16.44	\$762	\$0	\$0	\$69,341
2021	\$69,341	\$18,293	\$16.94	\$1,040	\$12,360	\$0	\$76,314
2022	\$76,314	\$18,842	\$17.45	\$1,145	\$0	\$0	\$96,300
2023	\$96,300	\$19,407	\$17.97	\$1,444	\$19,669	\$0	\$97,482
2024	\$97,482	\$19,989	\$18.51	\$1,462	\$0	\$0	\$118,933
2025	\$118,933	\$20,589	\$19.06	\$1,784	\$34,778	\$0	\$106,528
2026	\$106,528	\$21,206	\$19.64	\$1,598	\$17,911	\$0	\$111,421
2027	\$111,421	\$21,843	\$20.22	\$1,671	\$9,839	\$0	\$125,096
2028	\$125,096	\$22,498	\$20.83	\$1,876	\$37,686	\$0	\$111,784
2029	\$111,784	\$23,173	\$21.46	\$1,677	\$5,219	\$0	\$131,415
2030	\$131,415	\$23,868	\$22.10	\$1,971	\$0	\$0	\$157,254
2031	\$157,254	\$24,584	\$22.76	\$2,359	\$11,074	\$0	\$173,123
2032	\$173,123	\$25,322	\$23.45	\$2,597	\$0	\$0	\$201,041
2033	\$201,041	\$26,081	\$24.15	\$3,016	\$0	\$0	\$230,138
2034	\$230,138	\$26,864	\$24.87	\$3,452	\$26,470	\$0	\$233,983
2035	\$233,983	\$27,670	\$25.62	\$3,510	\$12,464	\$0	\$252,699
2036	\$252,699	\$28,500	\$26.39	\$3,790	\$0	\$0	\$284,989
2037	\$284,989	\$29,355	\$27.18	\$4,275	\$6,611	\$0	\$312,007
2038	\$312,007	\$30,235	\$28.00	\$4,680	\$33,623	\$0	\$313,299
2039	\$313,299	\$31,142	\$28.84	\$4,699	\$329,344	\$0	\$19,797

