agenda

Lakes & Waterways Advisory Board

November 13, 2018 12:00 noon

Chief Beary Community Room, 2nd floor
500 N. Virginia Ave. • Winter Park, Florida

1 administrative

a. Approve October 9, 2018, Meeting Minutes

2 action items

Shoreline Permit Applications:

- SAP 18-22, Request of Rafael and Aisha Manor for approval to construct a boathouse/dock at 689 Balmoral Rd
- SAP 18-23, Request of Robert Kunzweiler for approval to construct a boathouse/dock at 2000 Lake Dr.

- Review Buoy Plan/Map

3 reports

- Lake Management – Amy Giannotti
- Sustainability – Vanessa Balta Cook
- Stormwater Management – Don Marcotte
- WP Police Lakes Patrol – Jeff Hershone
- City of Maitland Update – John Bryant

4 new business

- Citizen Comments
- White Paper – Winter Park's Waterways-A Delicate and Intricate System – Cameron DeChurch
- New Ideas

5 adjourn

Next meeting date – December 11, 2018

appeals & assistance

"If a person decides to appeal any decision made by the Commission with respect to any matter consider meeting or hearing, he/she will need a record of the proceedings, and that, for such purpose, he/she may nee that a verbatim record of the proceedings is made, which record includes the testimony and evidence upo appeal is to be based." (F. S. 286.0105).

"Persons with disabilities needing assistance to participate in any of these proceedings should contact the Office (407-599-3277) at least 48 hours in advance of the meeting."

CITY OF WINTER PARK
LAKES AND WATERWAYS ADVISORY BOARD

Regular Meeting
500 N. Virginia Ave
Beary Community Room

October 9, 2018
12:00 pm

MINUTES

Present: Amy Byrd, Steve DiClemente, Jack Goggin, David Moorhead, Drew Havron

Absent: Doug Marks, John Minton, Tom Smith

City of Winter Park Staff: Troy Attaway, Public Works Dir., Don Marcotte, Asst. Public Works Dir/Stormwater Engineer: Amy Giannotti, Lakes; Sgt Jeff Hershone, Police Dept.; Vanessa Balta-Cook, Sustainability, Jeff Briggs, Building Dept., Debbie Wilkerson, Recording Secretary

City of Maitland Staff: John Bryant

Guests:

CALL TO ORDER. Chm. Steve DiClemente called the Lakes and Waterways Advisory Board to order at 12:00 pm.

o

administration

Citizen Comments - None

Approval of Minutes
Mr. Goggin moved to approve the September 11, 2018, meeting minutes as presented, seconded by Dr. Moorhead, motion carried unanimously with a 5-0 vote.

action items

Shoreline Applications:

SAP 18-16 — **Request of Lake Virginia Condo Assoc. for approval to construct a dock 690 Osceola Ave. on Lake Virginia (revised)**
Ms. Giannotti provided details of this request. A revegetation plan was submitted and approved. The seawall application was withdrawn. The dock was redesigned to meet recommended changes. Staff is recommending approval. Ms. Giannotti responded to questions. Dr. Moorhead moved to approve application, pending variance approval, seconded by Mr. Havron, motion carried unanimously by a vote of 5-0.

SAP 18-21 — **Request of William and Tamra Leary for approval to construct a boathouse/dock at 1100 Palmer Ave on Lake Osceola.**
Ms. Giannotti provided details of this request. Applicant presented alternate construction plans to scale back the boathouse to match what is there now. Mr. William Leary, 1100 Palmer Ave., applicant responded to questions. Staff is recommending approval. After discussion, Mr. Havron moved to approve the application, pending variance approval, seconded by Dr. Moorhead, motion carried unanimously by a vote of 5-0.

Mr. Bridges presented a revised ordinance that will steamline the review process for replacing

docks and boathouses for property owners. The new ordinance would eliminate Lakes Board review on existing boathouses that meet code. Mr. Briggs explained the applications that the Lakes Board would continue to see would be for new boathouses or boathouses changing location. Mr. Briggs responded to questions. After discussion, the Board consensus was to approve the proposed revised ordinance.

reports

Lakes Patrol – WP Police- September
Sgt. Hershone provided safety statistics for the month of September.

Stormwater Management - Don Marcotte
Mr. Marcotte presented a PowerPoint presentation that included details of the Arbor Park Canal Dredging, Winter Park Racquetball Outfall and Golf Course Parking Lot. He responded to questions.

Sustainability

- Watershed Cleanup on Lk Killarney October 20.

Lake Management – Amy Giannotti

- Treated water hyacinth, hydrilla, duckweek and pondweed on several lakes
- Staff attended and received Stormwater Operator 2 certifications – education related to technologies and measures that protect surface water from pollution.
- Lakes Division assumed responsibility of drainwells on Killarney from Orange County, official transfer of management pending.
- Hydrilla samples were sent to University of Georgia to test for toxic blue-green algae that is fatal to birds and other higher predators in the food chain; condition in birds is called Avian Vacuolar Myelinopathy (AVM)
- Repaired/re-leveled the fountain at Lake Midget
- Repairing canal walls on the chain.
- Residents on the Chain received a letter explaining City's eelgrass pick up procedures.
- Daily boat lunch fee is **live** now on the City's Lakes page. Enforcement will begin on October 15.
- FWC Test the Waters Fishing Tourney held October 6.
- Eagle Scout Sterling Anderson has completed the install of duck boxes at Lk Knowles.
- Next Watershed Cleanup – Lake Killarney - Saturday, October 20. Staging area is 450 Harper Street (the little building at MLK Park just north of Rollins softball field).
- Lake Sue resident Meeting November 8
- Winter Park Boat Parade returns December 15
- 2019 Cleanup Dates
    - Lakes Berry/Spier – January 19
    - Lakes Mizell/Sylvan/Osceola – April 6
    - Lakes Bell/Wildness – September 7
    - Lakes Sue/Chelton – November 9

City of Maitland – John Bryant
Mr. Bryant provided an update on Maitland activities.

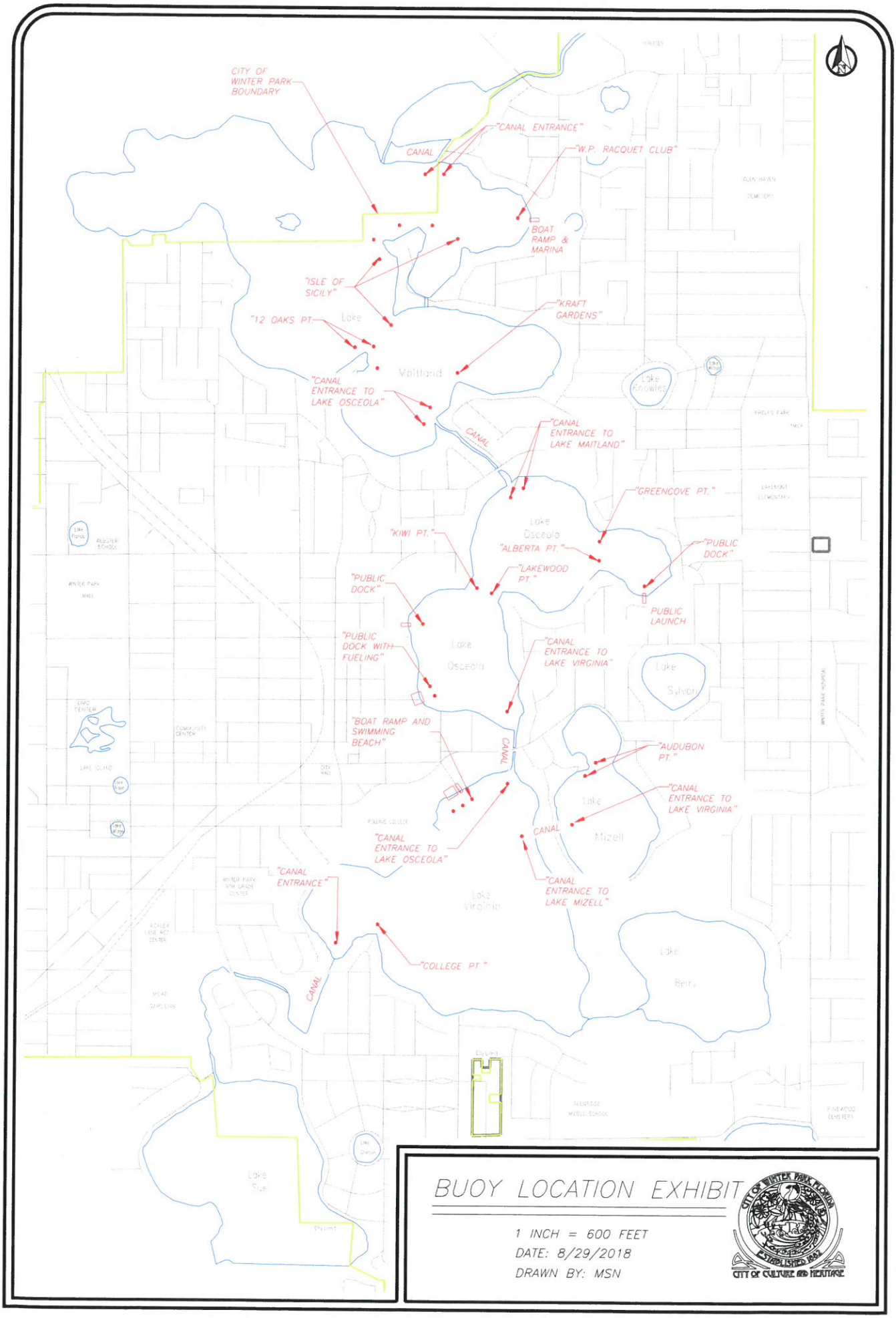
New Ideas
Dr. Moorhead introduced for discussion the code inconsistencies in boat sizes in Winter Park code. Sgt Hershone commented that he is in contact with the FWC regarding whether a municipality can restrict boat sizes on state waters. Discussion ensued. No action at this time.

Meeting adjourned at 12:46 p.m. Next meeting November 13, 2018.

Respectfully submitted,

Debbie Wilkerson

Debbie Wilkerson, Recording Secretary


CITY OF WINTER PARK BOUNDARY
"CANAL ENTRANCE"
CANAL
"W.P. RACQUET CLUB"
BOAT RAMP & MARINA
"ISLE OF SICILY"
"12 OAKS PT."
"KRAFT GARDENS"
Lake Maitland
"CANAL ENTRANCE TO LAKE OSCEOLA"
Lake Knowles
"CANAL ENTRANCE TO LAKE MAITLAND"
CANAL
"GREENCOVE PT."
Lake Osceola
"KIWI PT."
"ALBERTA PT."
"PUBLIC DOCK"
"LAKEWOOD PT."
"PUBLIC DOCK"
PUBLIC LAUNCH
"PUBLIC DOCK WITH FUELING"
Lake Osceola
"CANAL ENTRANCE TO LAKE VIRGINIA"
Lake Sylvan
"BOAT RAMP AND SWIMMING BEACH"
CANAL
"AUDUBON PT."
"CANAL ENTRANCE TO LAKE VIRGINIA"
Lake Mizell
CANAL
"CANAL ENTRANCE TO LAKE OSCEOLA"
"CANAL ENTRANCE"
"CANAL ENTRANCE TO LAKE MIZELL"
Lake Virginia
"COLLEGE PT."
CANAL
Lake Berry
Lake Sue
BUOY LOCATION EXHIBIT
1 INCH = 600 FEET
DATE: 8/29/2018
DRAWN BY: MSN
CITY OF WINTER PARK, FLORIDA
ESTABLISHED 1885
CITY OF CULTURE AND HERITAGE

Shoreline Alteration Permit Staff Report (Dock/Boathouse)

Application #: 18-22 **Waterbody:** Lake Berry (OHW 69.4') **Date:** 11/7/2018

Applicant name and site address:
Rafael and Aisha Manon, 689 Balmoral Road, Winter Park, Florida 32789

Contractor:
Ron Tegeler, Creative Deck & Dock, 636 Butler Street, Windermere, Florida, 34786

Canal Boathouse Parameter	Proposed	Allowed	Variance yes/no/n.a.
Total Area (sq. feet)	595	600 max.	no
Length from OHW (feet)	30	30	no
Height of Roof (feet above deck)	11	11 max.	no
Height of Deck (feet above OHW)	1.5	2 max.	no
Side Yard Setback(s) (feet)	10	10 min.*	no
Meets Vegetation Criteria?		Only 50% can be cleared	

* Side yard setback may be reduced to 5 feet without a variance if a signed letter of no objection is obtained from the affected adjacent property owner. Letter of no objection received and included in packet.

Comments:

At the time of this staff report it has not been determined that the applicant meets vegetation criteria.

Staff Recommendation:

Approval upon staff confirmation of compliance with vegetation criteria.

Reviewed By: Amy L. Giannotti & Wayland B. Paxman

Amt: $ 75
Check#: 2067
Date: 10/9/18
SAP#: 10-22

CITY OF WINTER PARK
LAKES DIVISION
SHORELINE ALTERATION PERMIT APPLICATION

General Instructions: To request approval of a Shoreline Alteration Permit Application complete this application and submit to Public Works Department (500 N. Virginia Ave., Winter Park, FL 32789) along with the applicable fee and all additional information necessary for public hearing before the Lakes & Waterways Advisory Board. All required must be submitted with application. **Two complete sets of the application and plans are required**. (Signed and sealed plans are **NOT** required for the Shoreline Alteration Permit)

DEADLINE IS THE SECOND TUESDAY OF EACH MONTH FOR HEARING IN THE FOLLOWING MONTH.

☐ **DOCK ONLY ($50)** ☑ **BOATHOUSE & DOCK ($75)** ☐ **SEAWALL/REVETMENT ($100)**

OWNER (name & address)

Rafael and Aisha Manon
689 Balmoral Road
Winter Park, FL 32789
Phone: (407) 808-9404
Email: CuadrasA@gmail.com

CONTRACTOR (name & address)

Ron Tegeler - Creative Deck & Dock
636 Butler Street
Windermere, FL 34786
Phone: (407) 450-4241
Email: sheilacichra@gmail.com

PROPERTY
Street Address :(if different):

689 Balmoral Road

Name of lake, canal or stream:

Lake Berry

Is the property under contract for purchase or lease? ☐ Yes ☑ No
Is the contract for purchase or lease contingent upon approval of this application? ☐ Yes ☑ No

If the applicant is NOT the owner, attach a copy of the purchase or lease contract or option on the property, or a letter signed by the owner of record authorizing the applicant to act as agent for the owner. This information is requested to establish the legal status of the applicant and will be held in confidence, except as the information pertains to the zoning application

PARCEL NO: 08-22-30-4133-01-120 **(same as tax ID number of Orange Co. property tax records)**

Legal Description: Provide complete and accurate legal description below including Plat Book and Page Number OR attach a copy of the legal description to this application.

Lot 12, Block A, Kenilworth Shores, Section Six as per Plat Book V, page 111

Applications must include sketches showing the plan review (top) and profile (side) of the proposed structure and all relevant dimensions that demonstrate compliances with applicable codes (see rules summary on permitting web page). For revetments or seawalls the proposed, finished slope must be clearly shown and may not be steeper than 3:1 (horizontal: vertical)

Please note that any properties that do not meet the current shoreline vegetation standards (50 feet or 50% rule), must be revegetated before a shoreline alteration permit will be issued.

It is important for the waterfront property owner to understand that there may be a substantial amount of maintenance and expense required to maintain the new re-vegetated site and to keep it free of unwanted exotic vegetation.

This permit satisfies the requirements of the City of Winter Park Shoreline Protection Ordinance only. Additional permits may be required by the Florida Department of Environmental Protection or Florida Fish & Wildlife Conservation Commission. It is the responsibility of the permittee and their contractor to ensure that all necessary permits are obtained. The City assumes no responsibility for fines or other actions resulting from the permittee's failure to obtain all required permits or approvals.

SEAWALL/REVETMENTS (only)

Project Description: _____

Reason for Request: _____

_____

Explain Hardship if Permit Not Granted: _____

_____

Dock Parameter	Proposed	Allowed	Variance yes/no/n.a.
Total Area (sq. feet)	595 sq.ft.	600 max.	no
Length from OHW (feet)	30'	30'*	
Height of Roof (feet above deck)	11'	11 max.	
Height of Deck (feet above OHW)	1.5'	2 max.	
Enclosures?	no	80 ft² max. (no plumbing/water allowed)	
Side Yard Setback(s) (feet)	10' and 45'	10 min.**	
Meets Vegetation Criteria?	yes (I think)	Only 50% can be cleared	

Revised 8/10/17

Applicant is required to complete the table above.
*Lake Killarney has a **50' maximum allowed length from NHWE.**
**Side yard setback may be reduced to 5 feet without a variance if a signed letter of no objection is obtained from the affected adjacent property owner.

I certify that, to the best of my knowledge and belief, all information supplied with this application is true and accurate, and that I am:

- ☐ the owner of the property described herein
- ☐ a party to an agreement for purchase or lease of this property
- ☑ an agent for the owner or purchaser/lessee of this property

Signature _____ Date 10/09/2018

SHORELINE ALTERANTION APPROAVAL IS REQUIRED PRIOR TO SUBMITTING FOR A BUILDING PERMIT

DO NOT WRITE BELOW LINE

☐ **APPROVED** ☐ **DISAPPROVED**

LAKE AND WATERWAYS ADVISORY BOARD MEETING: _____ VOTE: _____

I, Rafael R. Manon, owner of 689 Balmoral Road, in the City of Winter Park, hereby grant permission to Sheila Cichra of Streamline Permitting, Inc. to act as my agent in obtaining all permits associated with the construction of our dock and boathouse.

(Signature) 10/10/18 (Date)

Rafael R. Manon

(Print Name)

ACKNOWLEDGEMENT:

STATE OF FLORIDA

COUNTY OF Orange

The foregoing instrument was acknowledged before me this 10th day of October 2018, by Rafael R. Manon.

(NOTARY SEAL) Notary Public State of Florida Lalaine Llorin Carroll My Commission FF 189980 Expires 03/06/2019

(Signature of Notary Public - State of Florida)

Personally Known ✓ OR Produced Identification _____

Type of Identification Produced

_____

Boundary Survey

Legal Description:

Lot 12, Block A, KENILWORTH SHORES SECTION SIX, according to the Plat thereof as recorded in Plat Book V, Page 111, Public Records of Orange County, Florida.

Flood Zone: X/AE Panel: 0255 F
Community Number : 12095C Date: 9/25/2009

CERTIFIED TO:
Rafael R. Manon & Aisha Cuadras Manon Seacoast National Bank
Sunbelt Title Agency Title Resources Guaranty Company

MANON SITE PLAN
689 BALMORAL ROAD
WINTER PARK, FL 32789

-Benchmark Information-
Orange County Datum Elevation: 93.7288'
Designation-S1028013 Found 2 1/2" Brass Orange County Control Disc at the top of a concrete curb inlet on the North East corner of Whitehall Drive and Lakemont Avenue, and at the South West corner of address 1901 Whitehall Drive.
(Elevations are based upon NAVD 88 Datum)

-Site Benchmark Information-
#1
Set "X" Cut in Curb Elevation: 83.82'
#2
Set Nail and Disc in Curb Elevation: 84.92'

*Revised: Added NHWL 12-16-15

Field Date: 10-28-13	Date Completed: 10-29-13
Drawn By: SP	File Number: IS-13887

-Legend-

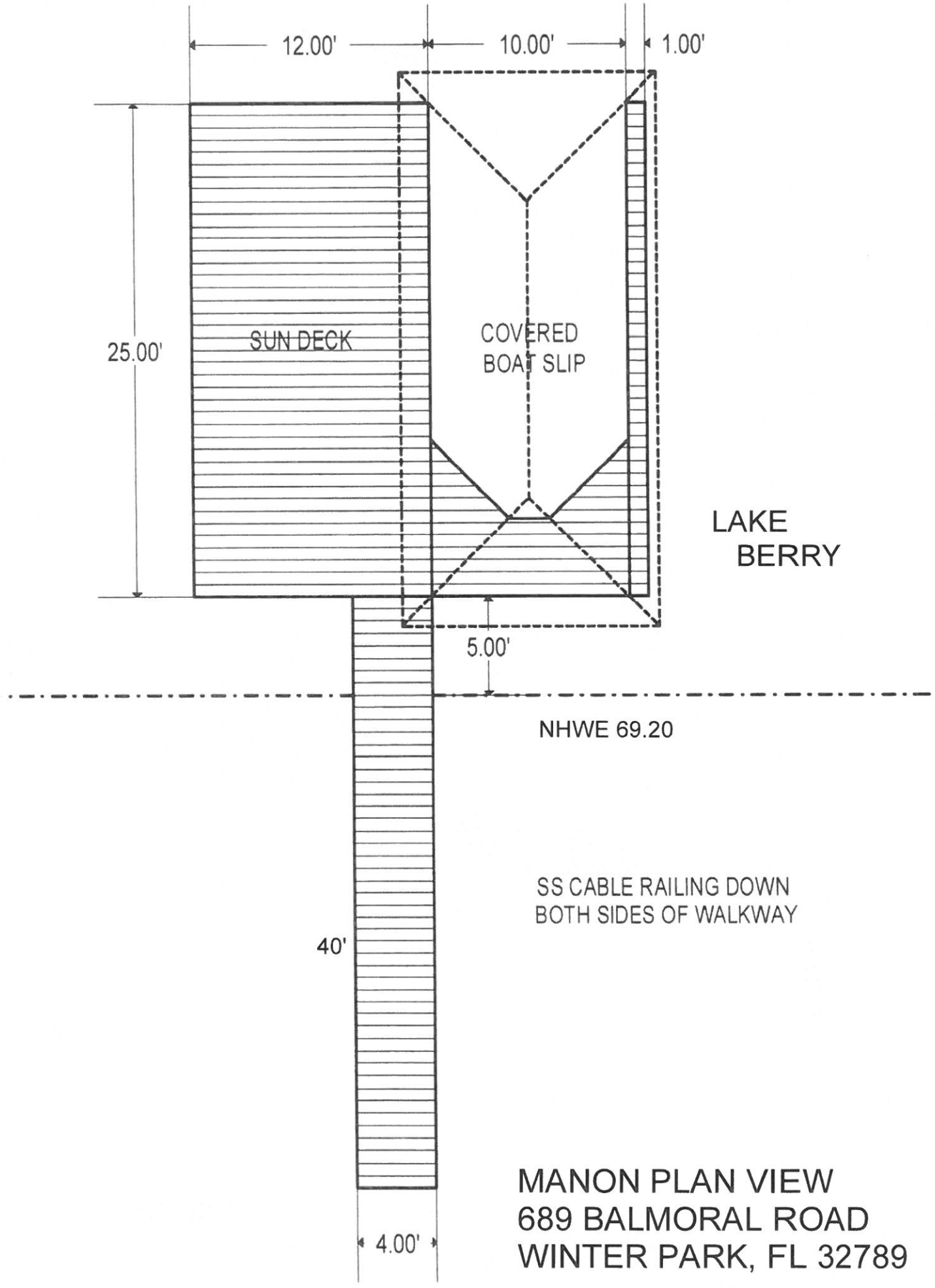
C	- Calculated	PC	- Point of Curvature
CL	- Centerline	Pg.	- Page
CB	- Concrete Block	PI	- Point of Intersection
CM	- Concrete Monument	P.O.B.	- Point of Beginning
Conc.	- Concrete	P.O.L.	- Point on Line
D	- Description	PP	- Power Pole
DE	- Drainage Easement	PRM	- Permanent Reference Monument
Esmt.	- Easement		
F.E.M.A.	- Federal Emergency Management Agency	PT	- Point of Tangency
		R	- Radius
FFE	- Finished Floor Elevation	Rad.	- Radial
Fnd.	- Found	R&C	- Raber & Cap
IP	- Iron Pipe	Rec.	- Recovered
L	- Length (Arc)	Rfd.	- Roofed
M	- Measured	Set	- Set ½" Rebar & Raber Cap "LB 7623"
N&D	- Nail & Disk		
NR	- Non-Radial	Typ.	- Typical
ORB	- Official Records Book	UE	- Utility Easement
P	- Plat	WM	- Water Meter
P.B.	- Plat Book	Δ	- Delta (Central Angle)
-O-	- Wood Fence	-O-	- Chain Link Fence

-Notes-
>Survey is Based upon the Legal Description Supplied by Client.
>Abutting Properties Deeds have NOT been Researched for Gaps, Overlaps and/or Hiatus.
>Subject to any Easements and/or Restrictions of Record.
>Bearing Basis shown hereon, is Assumed and Based upon the Line Denoted with a "BB".
>Building Ties are NOT to be used to reconstruct Property Lines.
>Fence Ownership is NOT determined.
>Roof Overhangs, Underground Utilities and/or Footers have NOT been located UNLESS otherwise noted.
>Septic Tanks and/or Drainfield locations are approximate and MUST be verified by appropriate Utility Location Companies.
>Use of This Survey for Purposes other than Intended, Without Written Verification, Will be at the User's Sole Risk and Without Liability to the Surveyor. Nothing Hereon shall be Construed to give ANY Rights or Benefits to Anyone Other than those Certified.
>Flood Zone Determination Shown Hereon is Given as a Courtesy, and is Subject to Final Approval by F.E.M.A. This Determination may be affected by Flood Factors and/or other Information NEITHER known by NOR given to this Surveying Company at the time of this Enclosure. Ireland & Associates Surveying Inc. and the signing surveyor assume NO Liability for the Accuracy of this Determination.

I hereby Certify that this Boundary Survey of the above Described Property is True and Correct to the Best of my Knowledge and Belief as recently Surveyed under my Direction on the Date Shown, Based on Information furnished to Me as Noted and Conforms to the Minimum Technical Standards for Land Surveying in the State of Florida in accordance with Chapter 61G17-6 Florida Administrative Codes, Pursuant to Section 472.027 Florida Statutes.

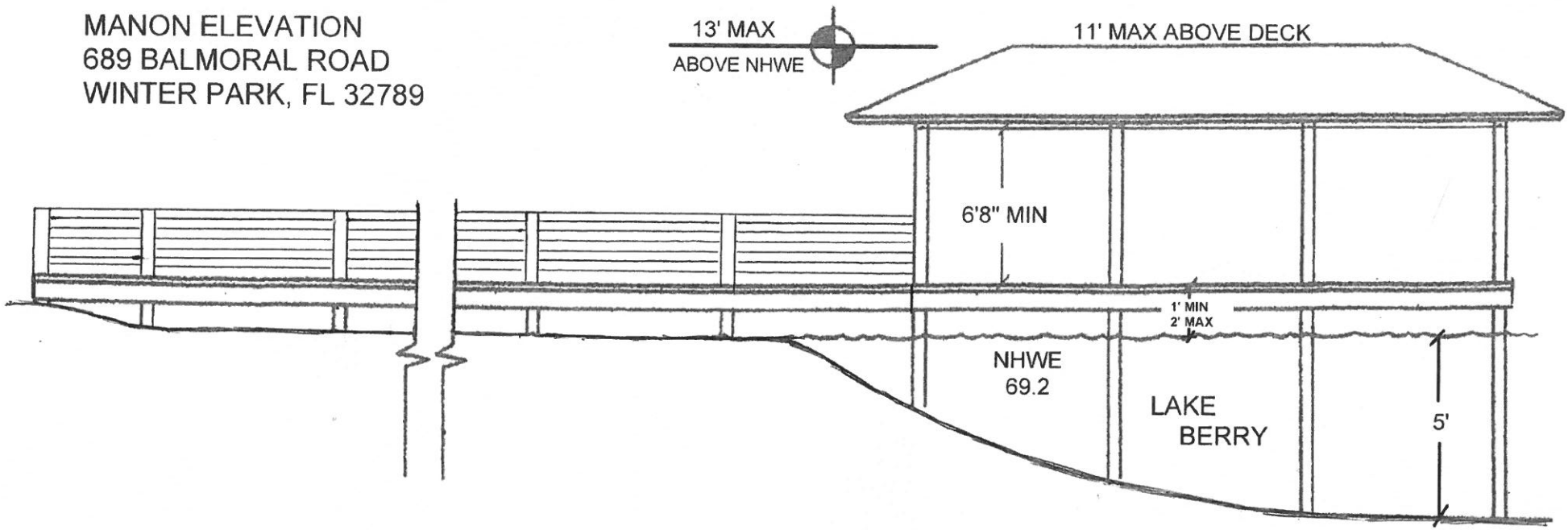
Patrick K. Ireland PSM 5637 LB 7623
This Survey is Intended ONLY for the use of Said Certified Parties.
This Survey NOT VALID UNLESS Signed and Embossed with Surveyor's Seal.

Ireland & Associates Surveying, Inc.
5725 Wayside Drive Suite 1002 Sanford, FL 32771
www.irelandsurveying.com
Office-407.678.3366 Fax-407.320.8165



MANON PLAN VIEW
689 BALMORAL ROAD
WINTER PARK, FL 32789

MANON ELEVATION
689 BALMORAL ROAD
WINTER PARK, FL 32789



Shoreline Alteration Permit Staff Report (Dock/Boathouse)

Application #: 18-23 **Waterbody:** Lake Killarney (82.0') **Date:** 11/1/2018

APPLICANT NAME AND SITE ADDRESS:
Robert & Kunzweiler, 2000 Lake Drive, Winter Park, FL 32789

Canal Boathouse Parameter	Proposed	Allowed	Variance yes/no/n.a.
Total Area (sq. feet)	264	550 max.	n/a
Length from OHW (feet)	11 approx.	n/a	n/a
Height of Roof (feet above deck)	11	11 max.	n/a
Height of Deck (feet above OHW)	2	2 max.	n/a
Side Yard Setback(s) (feet)	10	10 min.*	n/a
Meets Vegetation Criteria?	n/a	n/a	n/a

* Side yard setback may be reduced to 5 feet without a variance if a signed letter of no objection is obtained from the affected adjacent property owner. Letter of no objection received and included in packet.

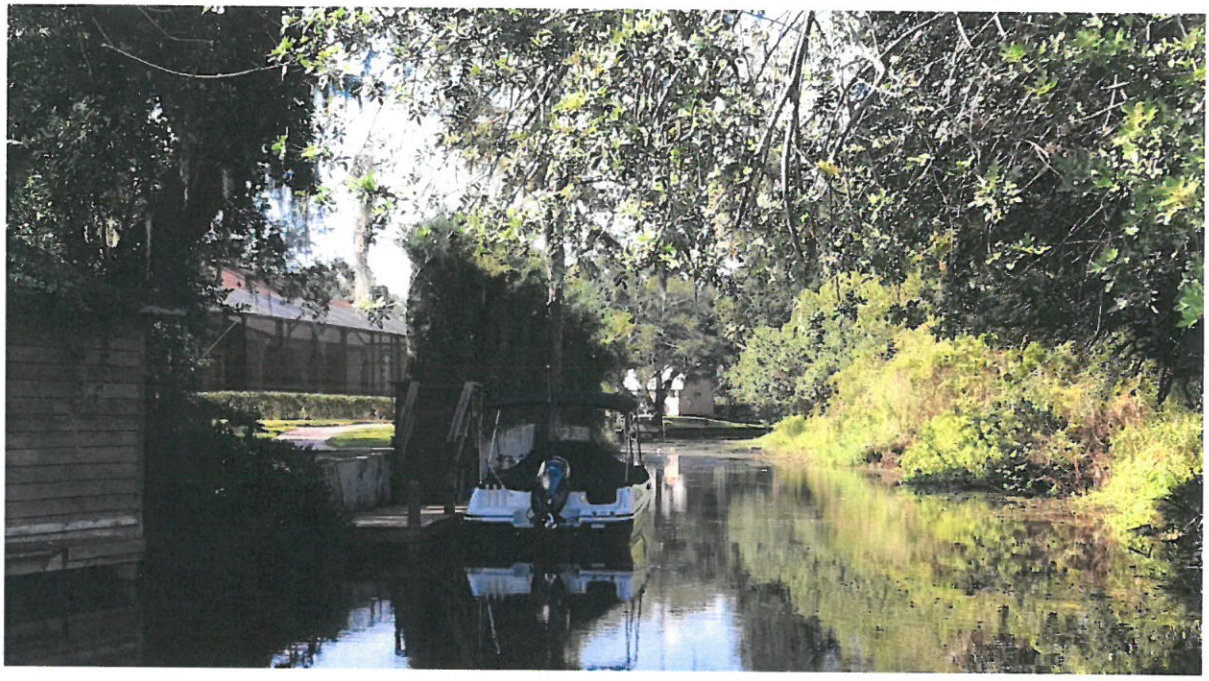
Comments:

None.

Staff Recommendation:

Approval.

Reviewed By: Amy L. Giannotti & Wayland B. Paxman



2000 Lake Drive

Amt: $_____
Check#:_____
Date: _____
SAP#:_____

CITY OF WINTER PARK
LAKES DIVISION
SHORELINE ALTERATION PERMIT APPLICATION

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DEADLINE IS THE SECOND TUESDAY OF EACH MONTH FOR HEARING IN THE FOLLOWING MONTH.

☐ **DOCK ONLY ($50)** ☑ **BOATHOUSE & DOCK ($75)** ☐ **SEAWALL/REVETMENT ($100)**

OWNER (name & address)

ROBERT & KUNZWEILER
2000 LAKE DR
WINTER PARK FL.

Phone: 321-303-6073

Email: TOPKUNZ@AOL.COM

CONTRACTOR (name & address)

MICHAEL CAIAZZA
7151 ROSE AVE
ORLANDO FL.

Phone: 407-532-9008-office
407-463-4712-cell

Email: MCAIAZZA@AOL.COM

PROPERTY
Street Address :(if different):

SAME

Name of lake, canal or stream:

CANAL-KILLARNEY

Is the property under contract for purchase or lease? ☐ Yes ☑ No
Is the contract for purchase or lease contingent upon approval of this application? ☐ Yes ☑ No

If the applicant is NOT the owner, attach a copy of the purchase or lease contract or option on the property, or a letter signed by the owner of record authorizing the applicant to act as agent for the owner. This information is requested to establish the legal status of the applicant and will be held in confidence, except as the information pertains to the zoning application

PARCEL NO: 01-22-29-0000-00-047 **(same as tax ID number of Orange Co. property tax records)**

Legal Description: Provide complete and accurate legal description below including Plat Book and Page Number OR attach a copy of the legal description to this application.

COMM W1/4 COR SEC N 2 DEG W 302.27 FT N 87 DEG E 154.51 FT S 69 DEG E 115.03 FT S 42 DEG E 672.16 FT N 37 DEG E 155 FT 224 FT FOR POB N 83 DEG W 56.64 FT NWLY ALONG CURVE 49.39 FT N 23 DEG W 86.11 FT E 149 FT S 84 DEG E 87.18 FT S 48 DE(PARK A/62) SEC 01-22-29

Applications must include sketches showing the plan review (top) and profile (side) of the proposed structure and all relevant dimensions that demonstrate compliances with applicable codes (see rules summary on permitting web page). For revetments or seawalls the proposed, finished slope must be clearly shown and may not be steeper than 3:1 (horizontal: vertical)

Please note that any properties that do not meet the current shoreline vegetation standards (50 feet or 50% rule), must be revegetated before a shoreline alteration permit will be issued.

It is important for the waterfront property owner to understand that there may be a substantial amount of maintenance and expense required to maintain the new re-vegetated site and to keep it free of unwanted exotic vegetation.

This permit satisfies the requirements of the City of Winter Park Shoreline Protection Ordinance only. Additional permits may be required by the Florida Department of Environmental Protection or Florida Fish & Wildlife Conservation Commission. It is the responsibility of the permittee and their contractor to ensure that all necessary permits are obtained. The City assumes no responsibility for fines or other actions resulting from the permittee's failure to obtain all required permits or approvals.

SEAWALL/REVETMENTS (only)

Project Description: _____

Reason for Request: _____

_____

Explain Hardship if Permit Not Granted: _____

_____

Dock Parameter	Proposed	Allowed	Variance yes/no/n.a.
Total Area (sq. feet)		600 max.	
Length from OHW (feet)	CANAL WALL 15.50	30'*	
Height of Roof (feet above deck)	10'	11 max.	
Height of Deck (feet above OHW)	2 FT	2 max.	
Enclosures?	N/A	80 ft² max. (no plumbing/water allowed)	
Side Yard Setback(s) (feet)	5'	10 min.**	
Meets Vegetation Criteria?	N/A	Only 50% can be cleared	

Applicant is required to complete the table above.
*Lake Killarney has a 50' maximum allowed length from NHWE.
**Side yard setback may be reduced to 5 feet without a variance if a signed letter of no objection is obtained from the affected adjacent property owner.

I certify that, to the best of my knowledge and belief, all information supplied with this application is true and accurate, and that I am:

- ☐ the owner of the property described herein
- ☐ a party to an agreement for purchase or lease of this property
- ☑ an agent for the owner or purchaser/lessee of this property

Signature _____ Date 11-2-18

SHORELINE ALTERANTION APPROAVAL IS REQUIRED PRIOR TO SUBMITTING FOR A BUILDING PERMIT

DO NOT WRITE BELOW LINE

☐ **APPROVED** ☐ **DISAPPROVED**

LAKE AND WATERWAYS ADVISORY BOARD MEETING: _____ VOTE: _____

RICK SINGH, CFA - ORANGE COUNTY PROPI

Searches | Sales Search | Results | Property Record Card | My Favorites

2000 Lake Dr < 01-22-29-0000-00-047 >

Name(s)
Kunzweiler Family Trust

Mailing Address On File
C/O Laura Ann Kunzweiler Trustee
2000 Lake Dr
Winter Park, FL 32789-2838
Incorrect Mailing Address?

Physical Street Address
2000 Lake Dr

Postal City and Zipcode
Winter Park, Fl 32789

Property Use
0103 - Single Fam Class III

Municipality
Winter Park

Property Features | Values, Exemptions and Taxes | Sales Analysis | Location Info

Historical Value and Tax Benefits

Has Homestead in

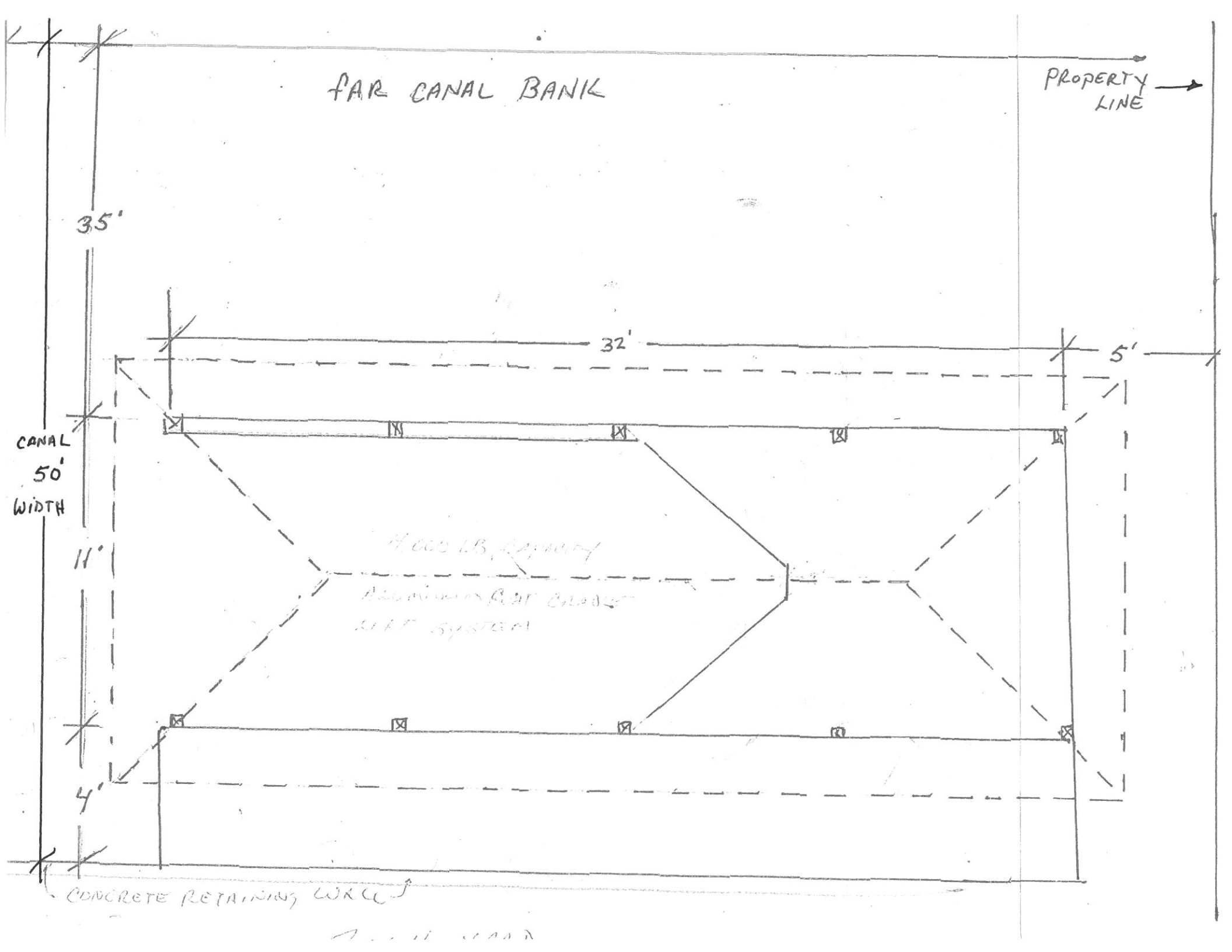
Tax Year Values	Land		Building(s)		Feature(s)		Market Value		Assess
2018 ✓ MKT	$235,000	+	$326,340	+	$51,500	=	$612,840	(19%)	**$493,872**
2017 ✓ MKT	$218,000	+	$238,698	+	$57,000	=	$513,698	(4.6%)	**$483,714**
2016 ✓ MKT	$200,000	+	$233,654	+	$57,500	=	$491,154	(4.4%)	**$473,765**
2015 ✓ MKT	$180,000	+	$232,472	+	$58,000	=	$470,472		**$470,472**

Tax Year Benefits	Original Homestead	Additional Hx	Other Exemptions	SOH Cap	Tax
2018 ✓ $ HX CAP	$25,000	$25,000	$0	$118,968	
2017 ✓ $ HX CAP	$25,000	$25,000	$0	$29,984	
2016 ✓ $ HX CAP	$25,000	$25,000	$0	$17,389	
2015 ✓ $ HX	$25,000	$25,000	$0	$0	

2018 Taxable Value and Certified Taxes

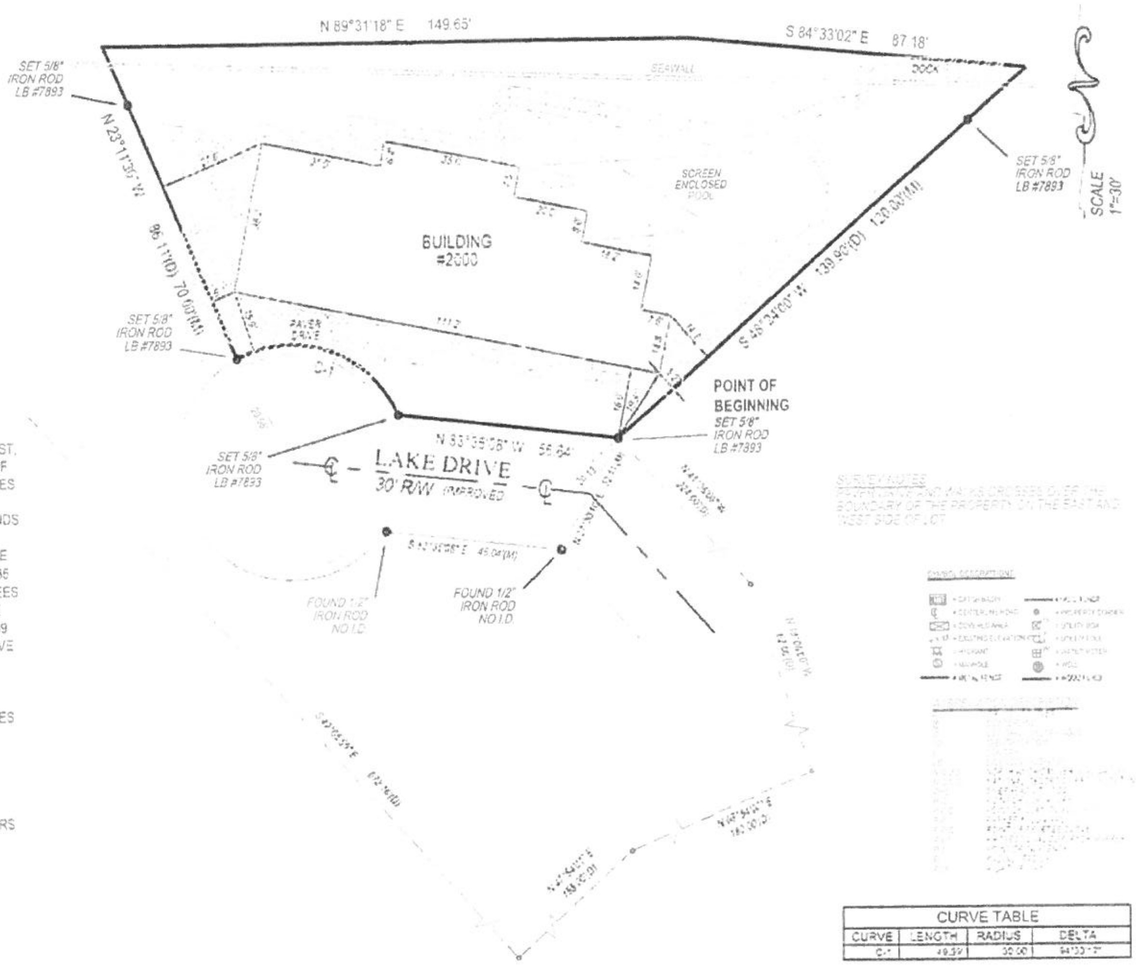
TAX YEAR | 2018 • 2017 • 2016 •

Taxing Authority	Assd Value	Exemption	Tax Value	Millage Rate		Taxe
Public Schools: By State Law (Rle)	$493,872	$25,000	$468,872	4.0510	(-4.05%)	**$1,899.4**
Public Schools: By Local Board	$493,872	$25,000	$468,872	3.2480	(0.00%)	**$1,522.9**
Orange County (General)	$493,872	$50,000	$443,872	4.4347	(0.00%)	**$1,968.4**
City Of Winter Park	$493,872	$50,000	$443,872	4.0923	(0.00%)	**$1,816.4**
City Of Winter Park Debt Service 2011	$493,872	$50,000	$443,872	0.1478	(-7.45%)	**$65.6**
City Of Winter Park Debt Service 2017	$493,872	$50,000	$443,872	0.3271	(-7.49%)	**$145.1**
St Johns Water Management District	$493,872	$50,000	$443,872	0.2562	(-5.95%)	**$113.7**
				16.5571		**$7,531.7**


FAR CANAL BANK
PROPERTY LINE
35'
32'
5'
CANAL 50' WIDTH
11'
4'
CONCRETE RETAINING WALL

PAGE 1 OF 1

BOUNDARY SURVEY



N 87°44'45" E 154.51'(D)

S 69°50'35" E 115.03'(D)

WEST LINE OF THE NORTHWEST 1/4 N 02°12'30" W 302.77'(D)

POINT OF COMMENCEMENT
FROM THE WEST 1/4 CORNER OF SECTION 1, TOWNSHIP 22 SOUTH, RANGE 22 EAST

LEGAL DESCRIPTION:
FROM THE WEST 1/4 CORNER OF SECTION 1, TOWNSHIP 22 SOUTH, RANGE 29 EAST, RUN NORTH 2 DEGREES 12 MINUTES WEST 302.77 FEET ALONG THE WEST LINE OF THE NORTHWEST 1/4 OF SAID SECTION 1, THENCE NORTH 87 DEGREES 44 MINUTES 45 SECONDS EAST 154.51 FEET; THENCE SOUTH 69 DEGREES 50 MINUTES 35 SECONDS EAST 115.03 FEET; THENCE SOUTH 42 DEGREES 05 MINUTES 59 SECONDS EAST 672.16 FEET; THENCE NORTH 47 DEGREES 54 MINUTES 01 SECONDS EAST 155.00 FEET; THENCE NORTH 66 DEGREES 54 MINUTES EAST 180.00 FEET; THENCE NORTH 16 DEGREES 06 MINUTES WEST 62 FEET; THENCE NORTH 41 DEGREES 35 MINUTES WEST 224.00 FEET TO POINT OF BEGINNING; THENCE NORTH 83 DEGREES 35 MINUTES 08 SECONDS WEST 56.64 FEET TO THE P.C. OF A 157.07 FOOT CURVE TO THE LEFT, HAVING A RADIUS OF 30 FEET AND AN INTERSECTION ANGLE OF 299 DEGREES 59 MINUTES THENCE NORTHWESTERLY ALONG THE ARC OF SAID CURVE 49.39 FEET, CHORD BEARING OF NORTH 70 DEGREES 45 MINUTES 37 SECONDS WEST AND A CHORD DISTANCE OF 44 FEET, THENCE NORTH 23 DEGREES 11 MINUTES 30 SECONDS WEST 56.11 FEET; THENCE NORTH 89 DEGREES 31 MINUTES 18 SECONDS EAST 149.65 FEET; THENCE SOUTH 84 DEGREES 33 MINUTES 02 SECONDS EAST 87.18 FEET; THENCE SOUTH 48 DEGREES 24 MINUTES WEST 140.00 FEET TO THE POINT OF BEGINNING, ORANGE COUNTY, FLORIDA

CERTIFIED TO:
LAURA KUNZWEILER; EDGEWATER TITLE COMPANY; FIRST AMERICAN TITLE INSURANCE COMPANY; HOMEBRIDGE FINANCIAL SERVICES, INC., ITS SUCCESSORS AND/OR ASSIGNS.

COMMUNITY NUMBER: 120179
PANEL: 0255
SUFFIX: F
FLOOD ZONE: X/AE
FIELD WORK: 8-23-2018

PROPERTY ADDRESS:
2000 LAKE DRIVE
WINTER PARK, FL 32789

SURVEY NUMBER: 339580

CLIENT FILE NUMBER: 706

CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C-1	49.39'	30.00'	94°33'1?"

GENERAL NOTES:

1) LEGAL DESCRIPTION PROVIDED BY OTHERS
2) THE LANDS SHOWN HEREON WERE NOT ABSTRACTED FOR EASEMENTS OR OTHER RECORDED ENCUMBRANCES NOT SHOWN ON THE PLAT
3) UNDERGROUND PORTIONS OF FOOTINGS, FOUNDATIONS OR OTHER IMPROVEMENTS WERE NOT LOCATED.
4) WALL TIES ARE TO THE FACE OF THE WALL AND ARE NOT TO BE USED TO RECONSTRUCT BOUNDARY LINES.
5) ONLY VISIBLE ENCROACHMENTS ARE LOCATED.
6) DIMENSIONS SHOWN HEREON ARE PLAT AND MEASURED UNLESS OTHERWISE NOTED
7) FENCE OWNERSHIP NOT DETERMINED
8) ELEVATIONS, IF SHOWN, ARE BASED ON N.G.V.D. 1929 DATUM, UNLESS OTHERWISE NOTED.
9) IN SOME INSTANCES, GRAPHIC REPRESENTATION HAVE BEEN EXAGGERATED TO MORE CLEARLY ILLUSTRATE RELATIONSHIPS BETWEEN PHYSICAL IMPROVEMENTS AND/OR LOT LINES. IN ALL CASES, DIMENSIONS SHALL CONTROL THE LOCATION OF THE IMPROVEMENTS OVER SCALED POSITIONS.

REVISIONS:

LB #7893
SERVING FLORIDA
6250 N. MILITARY TRAIL, SUTE 102
WEST PALM BEACH, FL 33407
PHONE (561) 640-4800
STATEWIDE PHONE (800) 226-4807
STATEWIDE FACSIMILE (800) 741-0576
WEBSITE: http://targetsurveying.net

TARGET SURVEYING, LLC

SURVEYORS CERTIFICATE:
I HEREBY CERTIFY THAT THIS BOUNDARY SURVEY IS A TRUE AND CORRECT REPRESENTATION OF A SURVEY PREPARED UNDER MY DIRECTION. NOT VALID WITHOUT A RAISED EMBOSSED SEAL AND SIGNATURE

Kenneth Osborne
Digitally signed by Kenneth Osborne
Date: 2018.08.29 13:50:27 -04'00'

(SIGNED) Osborne

KENNETH J OSBORNE
PROFESSIONAL SURVEYOR AND MAPPER #6415

Debbie Wilkerson

From: Cameron DeChurch
Sent: Monday, October 22, 2018 10:01 PM
To: Debbie Wilkerson; Troy R Attaway; Amy Giannotti
Subject: Report on Lake Water Quality
Attachments: White Paper_ _Winter Park's Waterways_ A Delicate and Intricate System_ by Cameron DeChurch.pdf

Dear Ms. Gioannotti, Mr. Attaway, & Ms. Wilkerson,

Please allow me to introduce myself, I am Cameron DeChurch, a longtime admirer of the Winter Park waterways. Since I was 7, I have been fishing in the lakes and ponds around the neighborhood. My friends and I have practically become experts of the bass around the Winter Park Chain of Lakes and Lake Knowles.

I am now a senior at Winter Park High School, and have been researching our local lakes for the past year as a component of my International Baccalaureate Extended Essay. It was a real joy to apply my reading, writing, math, and biology skills to learn more about three of my favorite places: Lake Knowles, Lake Wilbar, and Lake Maitland. My report is attached as a .pdf file.

I follow the reports and newsletters the city sends to residents. For example, there is always a lot of concern on my block about the Exotic Apple Snails exploding in numbers in and along the shores of Lake Knowles. (I promise my report is not about snails!) I did want to share with you my findings, in the event that they may be of some use to you. I also share my report as an opportunity to say "thank you" to each of you for the hard work that you put in that benefits so many children in our community. I plan to study Environmental Science in college. To be sure, we have some complex issues to solve! Preserving natural resources like our local waterways is a huge step towards doing that - when kids like me can grow up in an urban area still having a deep appreciation for nature - we are on our way to preventing ecosystem problems.

When not testing the waterways, I have also fostered an appreciation for our local waterways by co-founding the WPHS fishing club. Though we are just getting started, our group enjoys getting together on the WP lakes to teach the beginners proper fishing techniques. We are always looking for opportunities to get involved through volunteer work. When there are events (e.g., Snail Clean Up, Learn to Fish) or other waterway-related events that we can help out with, please let me know so that I can get our club members involved! I can be reached at camerondechurch@icloud.com.

Sincerely,
Cameron DeChurch
(Lake Knowles resident)

PS - Ms. Wilkerson, can you please share my email and report with the Lakes and Waterways Advisory Board?

Winter Park's Waterways: A Delicate and Intricate System

Cameron DeChurch
October 22, 2018

DeChurch, Cameron. "Winter Park's Waterways: A Delicate and Intricate System" *White Paper*. Winter Park High School, 22 October 2018.

October 22, 2018

Dear Member of the Winter Park Lakes and Waterways Advisory Board:

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Lake Knowles, 2013
Learning to Fish

Lake Wilbar, 2018
Water Testing

Lake Maitland, 2018
Homecoming

Cameron DeChurch
Winter Park High School
President, Fishing Club
Co-Captain, Men's Crew
Class of 2019

Winter Park's Waterways: A Delicate and Intricate System

Table of Contents:

Executive Summary:

Lakes are a valuable backbone of every ecosystem, and it is essential that their water remains clean. Chemical runoff can provide an excess of nutrients, causing vegetation and algae in these lakes to "boom". These plants take in all of the oxygen from the waterway and can suffocate the ecosystem. This phase is known as the "crash" and is often marked by very cloudy water, dead fish, and dead aquatic vegetation. In populated areas like Winter Park, chemicals from the abundant homes can easily run off into the lakes putting them at risk.

In my EE research, I identify which lakes are the most susceptible to algae blooms (a prominent issue in Central Florida's water bodies) and which factors have the greatest influence on them. In order to do this, I categorized the lakes based on their relative size. I tested each of 3 lakes for the following: pH, ammonia, phosphate, and nitrate. I did this once a week over the summer months (June and July) while noting temperature, humidity, etc.

I found that Lake Maitland, representing the larger lakes, had the best water quality with lower levels of phosphate and ammonia, and a pH of 7.94 (the optimum range is 7-9). The smaller lakes and ponds, represented by Lake Knowles and Wilbar, had the highest levels of phosphate and ammonia, thus having the poorest water quality and being at the greatest risk for algae blooms.

Introduction and Background:

Lakes are a valuable backbone of every ecosystem that provide a variety of ecosystem services. It is essential that this water remains clean as polluted water can be harmful to not only the aquatic organisms, but humans too.

Many lakes in Florida are very cyclical, meaning they follow a stage of progression where, in the beginning, fish and plants are very young. As the lake progresses through this cycle, the water remains clean and eventually the lake reaches a climax community where fish of all sizes are in healthy abundance and vegetation such as turtle grass is in abundance as well. However, over time, vegetation and algae in these lakes "boom", in other words, they may grow in excess. These plants take in all of the oxygen from the waterway and can suffocate the ecosystem. Most fish and even the plants themselves will die as a result. This phase is known as the "crash" and is often marked by very cloudy water, dead fish and dead aquatic vegetation. Whatever life didn't die from the lack of oxygen will most likely die from the lack of light as this dirty water from the algae boom provides a shield from the sun. Some plants such as cattails and lily pads are exempt from this since they gather their oxygen and sunlight from the outside air and sunlight above the water.

Chemicals, (such as nitrate and phosphate), and sewage from human waste can runoff into out local waterways. In well developed areas like Winter Park, chemicals from the homes can easily run off into the waterways. The presence of pollution and nutrients can cause excessive booms in vegetation growth and algae blooms which suffocate the water of essential oxygen and cause fish kills.

In Winter Park, this can be a major issue because there is a high abundance of homes in very close proximity to the waterways. Many homeowners use a variety of fertilizers and chemicals to maintain the cleanliness and beauty of their lawns. These chemicals often include nitrate and phosphate, two major culprits of these booms.

The city of Winter Park is full of lakes of various shapes and sizes. I have categorized all of them into 3 distinct categories: smaller ponds, smaller lakes of circular shape that look like sinkholes, and larger lakes. The only type of lake with homes directly on the water is the larger lakes; however, all 3 have homes in very close proximity to the water.

Aims of This Experiment:

In this experiment, I sought to identify which type of lake is most susceptible to these booms and crashes, and which factors have the greatest impact on this. By discovering which types of water bodies are the most susceptible, we will know which lakes to monitor more closely than others. By discovering which factors either have the biggest impact on water quality or are the biggest indicators of water quality, we will know what to look for and how to treat these lakes should they be on the verge of booming and crashing. Overall, my aim is to inform myself and others the best way to monitor and protect these beautiful bodies of water that are abundant throughout Winter Park.

Research Question:

Of the three designated types of waterways in Winter Park, which is the most susceptible to algae blooms and which factors (size, presence of homes, aeration pumps, etc.) impact or indicate the health of the ecosystem the most throughout the summer months?

Hypothesis:

Larger lakes, represented by Lake Maitland, will have the best water quality simply due to more water in the lake itself to flow and handle minor changes in chemical levels. The smallest bodies of water: the ponds, represented by Lake Wilbar, will have the worst water quality since there is significantly less water to flow and even minor fluctuations in the elements being tested could be devastating to their water quality.

Testing and Methods:

I tested the following lakes every week over the summer months, noting how the characteristics of each type of lake impact the water quality and progression of it and how it is impacted as the summer months progress. I tested every weekend for 8 weeks. The reason these waterways were tested on a weekly basis is because this will show how the water quality progresses throughout the summer. Gathering data one time about the water would only tell a small part of the story. A lake's water quality and health is not told by one point in time because it is dependent on how it fluctuates over time. Thus, the water was tested every week so that these fluctuations were noted. The degree of fluctuation during the key summer period provides important insight into my question of how susceptible each waterway is to the factors that lead to algae blooms.

For example, Lake A may have phosphate levels of 0.5 ppm and Lake B may have phosphate levels of 0.6 ppm. On this day, we are led to believe that Lake A is healthier in terms of phosphate. However, it is entirely possible that the previous weekend, Lake A had a phosphate level of 0 while Lake B had a phosphate level of 0.7 ppm. Thus, more information means more knowledge and insight. With both weeks in consideration, it appears that although Lake B may have higher levels, those levels are decreasing and this lake's water quality is moving in the right direction. However, Lake A may have lower levels of phosphate right now, but it is rapidly rising and ultimately, is more at risk of dying organisms as a result.

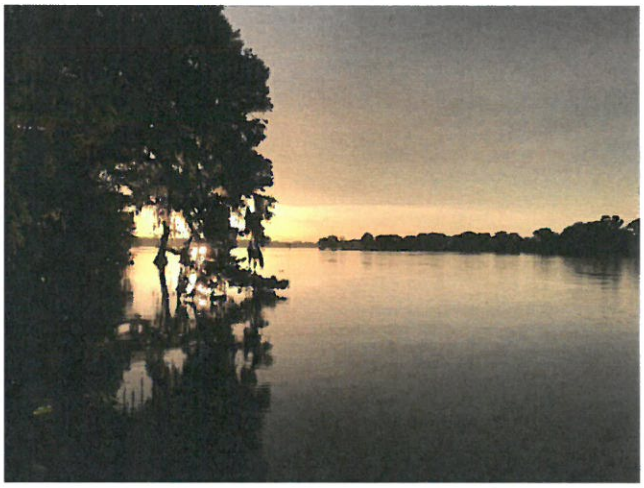
In addition, I chose to conduct this study during the summer months because this is the period of time when algae blooms are most likely to occur. These hotter months are usually when the culmination of chemicals and algae become the most apparent. This 8 week period demonstrates both the water quality at 8 specific points in time for these water bodies and also the water quality as it fluctuated over time. Altogether, this gives a very detailed display of the water quality of these lakes, indicating not only their water quality levels, but how dynamic those levels are during the summer weeks.

In order to examine the effect of lake size and management practices on water quality, I have selected an exemplar of each of three types of lakes. The following are my sample lakes:

Lake Wilbar: Very small pond with dark, dirty water. Aeration pumps in the middle of the lake. Homes are not directly on the lake.

Lake Knowles: Small lake. Very clean water. No aeration pumps. Homes are not directly on the lake. Leaf traps throughout the lake in attempt to keep the water clean.

Lake Maitland: Larger lake. Very clean water. No aeration pumps. Homes are directly on it. Part of a chain of lakes.



In each of these lakes, I tested for nitrate, phosphate, pH, ammonia, temperature, and also collected qualitative data through my observations and notes. These factors show the chemicals in the water, the temperature of the water, and ultimately, the quality of the water.

Excessively high temperatures typically enable colonies of bacteria and insects to boom whereas water with excessively low temperatures runs the risk of killing any life that is not prepared. In Florida, most organisms are accustomed to a fine balance between these two extremes. Taking the water and air temperature on a weekly basis helps me identify how this element impacts water quality.

I also tested the pH of each of these water bodies. An overabundance of algae will typically cause an increase in the pH (more basic), which can be harmful to organisms (NOAA's National Ocean Service Education). Water that is too acidic will also kill many life forms. So,

again, a delicate balance between too acidic and too basic is needed for these aquatic ecosystems to thrive.

This next portion of the testing is not a balance of two extremes. However, it is potentially the most fine and delicate. The presence of nitrate, phosphate, and ammonia in the water indicate the presence of chemicals and are a major cause of booms in vegetation, and ultimately, the crash of an ecosystem. These levels of chemicals indicate the risk that these water bodies have of developing algae blooms due to human impacts.

Materials:

- Camera (to photograph the water before and after testing)
- Pen and paper to record observations (qualitative data)
- Weather.com (to obtain air temperature and humidity)
- Thermometer (to measure the water temperature)
- Timer (lake testing requires solutions to be mixed for specific time increments)
- Pond Master Testing Kit (to perform the lake testing)
    I. 4 test tubes
    II. Liquid Solutions for pH, ammonia, nitrate, and phosphate
    III. Color chart to determine the levels/concentrations of each substance in the water samples.
    IV. Instructions for the testing

Raw Data:

Table 1. Raw Data on Response Variables for Each Lake				
Lake Knowles				
Date	**pH**	**Ammonia**	**Nitrite**	**Phosphate**
June 16	8	0	0	0.25
June 23	7	0.125	0	0.25
June 30	7	0.125	0	0.25
July 7	7	0	0	0.25
July 15	7.25	0	0	0.25
July 22	6.5	0.125	0	0.3
July 29	6.75	0	0	0.125
August 5	6.75	0.125	0	0.25
August 12	6.75	0.125	0	0.25
Minimum	6.50	0.00	0.00	0.125
Maximum	8.00	0.13	0.00	0.3
Average	7.00	0.07	0.00	0.24
Lake Wilbar				
June 16	6.75	0.05	0	0.125
June 23	8.5	0	0	0.25
June 30	7	0.125	0	0.25
July 7	7	0.125	0	0.25
July 15	6.75	0.125	0	0.125
July 22	7	0.125	0	0.35
July 29	6.75	0	0	0.125
August 5	6.5	0.125	0	0.25
August 12	7.5	0.125	0	0.25
Minimum	6.50	0.00	0.00	0.125
Maximum	8.50	0.13	0.00	0.35
Average	7.08	0.09	0.00	0.22
Lake Maitland				
June 16	9	0.025	0	0.125
June 23	9	0	0	0.25

June 30	8.5	0	0	0.3
July 7	7.5	0	0	0.35
July 15	8.5	0	0	0.25
July 22	7	0.125	0	0.35
July 29	7.25	0	0	0.25
August 5	7.5	0	0	0.125
August 12	7.25	0	0	0
Minimum	7.00	0.00	0.00	0
Maximum	9.00	0.13	0.00	0.35
Average	7.94	0.02	0.00	0.22

Field Notes:

June 16, 2018, 5:05 pm: Very calm. Storm approaching.
Lake Knowles: The water is fairly clear, with little to no ripples disturbing the water's surface. Feels very warm to touch.
Lake Wilbar: The water has a reddish-brown tint. Also very calm.
Lake Maitland: Feels significantly cooler. The clearest water of the 3 lakes, slightly more ripples as the lake is larger and the wind could get momentum.

June 23, 2018, 7:45 pm: Very calm with a light drizzle of rain amidst glass calm water.
Lake Knowles: The water feels very hot, clearer than last week.
Lake Wilbar: Still very dark water.
Lake Maitland: Feels much cooler. Still very clear.

June 30, 2018, 7:00 pm: Rainy and cloudy for most of the day.
Lake Knowles: Water feels significantly cooler.
Lake Wilbar: Still murky, also cooler.
Lake Maitland: Still clear, also cooler but not as much in comparison to the other 2 lakes.

July 7, 2018, 7:10 pm: Partly cloudy with storms in the afternoon.
Lake Knowles: Still much cooler than early to mid June, water clarity around the same.
Lake Wilbar: Feels warmer than the past tests, water is still murky.
Lake Maitland: Water feels around the same with its usual high level of clarity.

July 15, 2018, 1:40 pm: Very hot, bright sun with little cloud cover.

Lake Knowles: Very clear, hot water. Weeds and muck but no surface residue. Plenty of wind moving the water.
Lake Wilbar: Water is hot with muck and weeds everywhere. Green mist/algae residue sitting on the surface. Very calm and stagnant water.
Lake Maitland: Water is warm and clear. Plenty of boat wakes and wind moving the water.

July 22, 2018, 8:15 pm: Mostly cloudy and afternoon storms.
Lake Knowles: Much cooler than last week, similar clarity.
Lake Wilbar: Water is much cooler, still contains vegetation and muck.
Lake Maitland: Much cooler water with its usual clarity.

July 29, 2018, 5:05 pm: Tested right before a huge thunderstorm.
Lake Knowles: Fairly windy, clear, and warm water.
Lake Wilbar: Stagnant warm water with surface residue.
Lake Maitland: Much cooler water than the other 2 lakes, very windy.

August 5, 2018, 7:15 pm: Little cloud cover and bright sunset.
Lake Knowles: Relatively calm and very clear water with a plethora of bream and minnows by the shore.
Lake Wilbar: Much clearer than last week, heap of muck at the surface.
Lake Maitland: Coolest water of the 3, clear with some wind disturbance.

August 12, 2018, 3:08 pm: Fair amount of clouds but still very warm.
Lake Knowles: Moderate wind disturbance, still very clear.
Lake Wilbar: Very hot water, with an abundance of muck and surface residue in the stagnant water.
Lake Maitland: Much cooler, very clear with bream and minnows all upon the shoreline waters.

Data Analysis:

For pH, the optimal level for the most abundant life is between 7 and 9. Lakes that receive a lot of rain, particularly acid rain, may be lower. Lakes with limestone tend to handle acid rain better than those without. All lakes being tested were within this range of 7 to 9, which indicates good water quality. Lake Maitland had an average pH of 7.94 throughout the summer months. Lake Wilbar's average pH was 7.08 and Lake Knowles had an average pH of 7. Lake Knowles is at the most risk of dropping below the optimum pH level. This can be explained by the amount of drainage and water flow that goes into Lake Knowles. When it rains profusely, the excess water from Lake Wilbar and the streets flows into lake Knowles. This means that Lake Knowles receives the most of this rain (which is more acidic, usually 5-6) and explains why it would have the lowest pH.

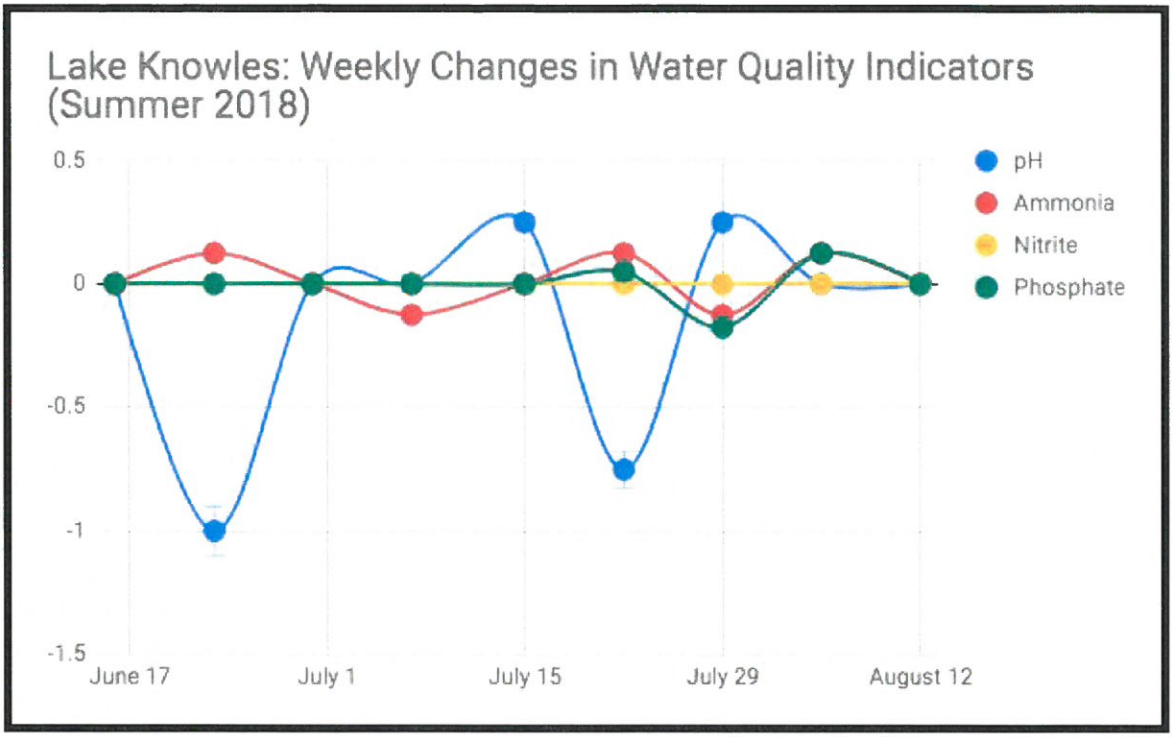
For Ammonia, lower levels are better as ammonia is toxic to aquatic life. Plants are more resilient than animals, and invertebrates are more tolerant than fish (Water Research Center). Lake Wilbar had the highest average ammonia level of 0.09 ppm, Lake Knowles had the middle which was 0.07 ppm, and Lake Maitland had the lowest which was 0.02 ppm. The USEPA generally recommends ammonia levels to be no more than 0.02 ppm. Lake Maitland meets this requirement as it's average ammonia level was 0.2 which is at the limit. Lake Wilbar and Knowles, however, are at more risk. Fertilizers and household products are some of the major sources of ammonia, which is interesting because our two lakes at the most risk do not have homes directly on them while the lake with the lowest ammonia levels does have homes directly on it.

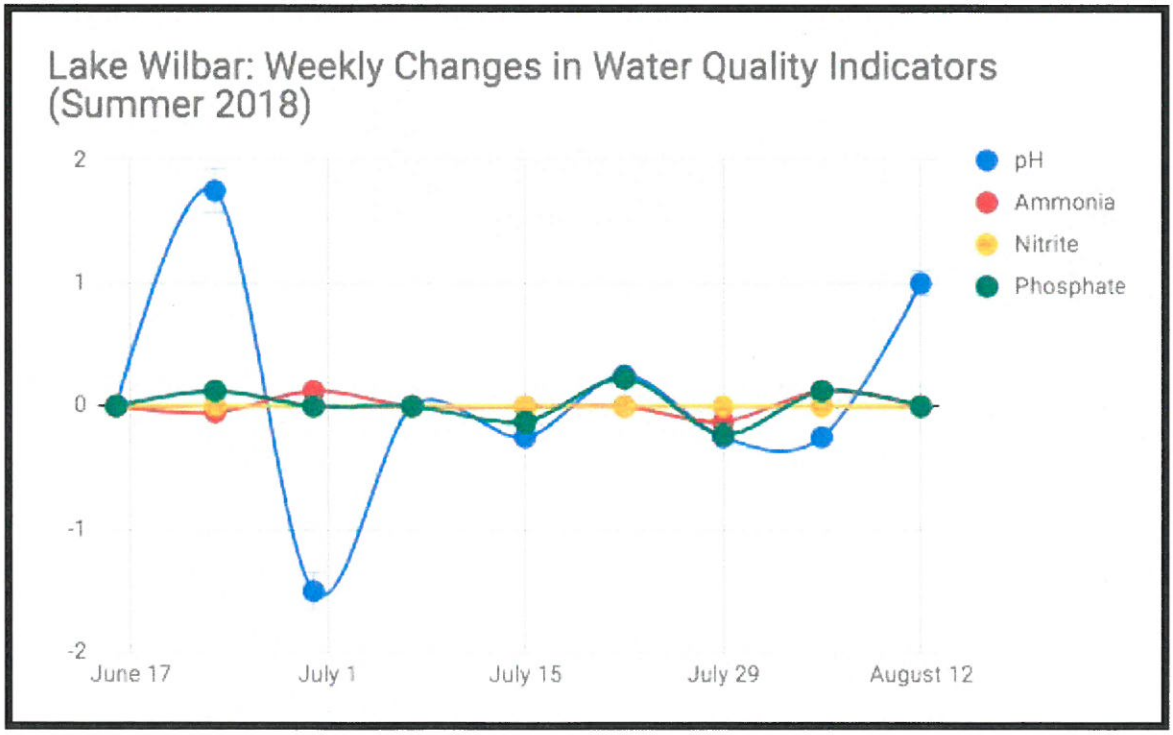
All lakes had nitrite levels of zero throughout the entirety of the summer testing. This indicates very good water quality in this aspect of the testing.

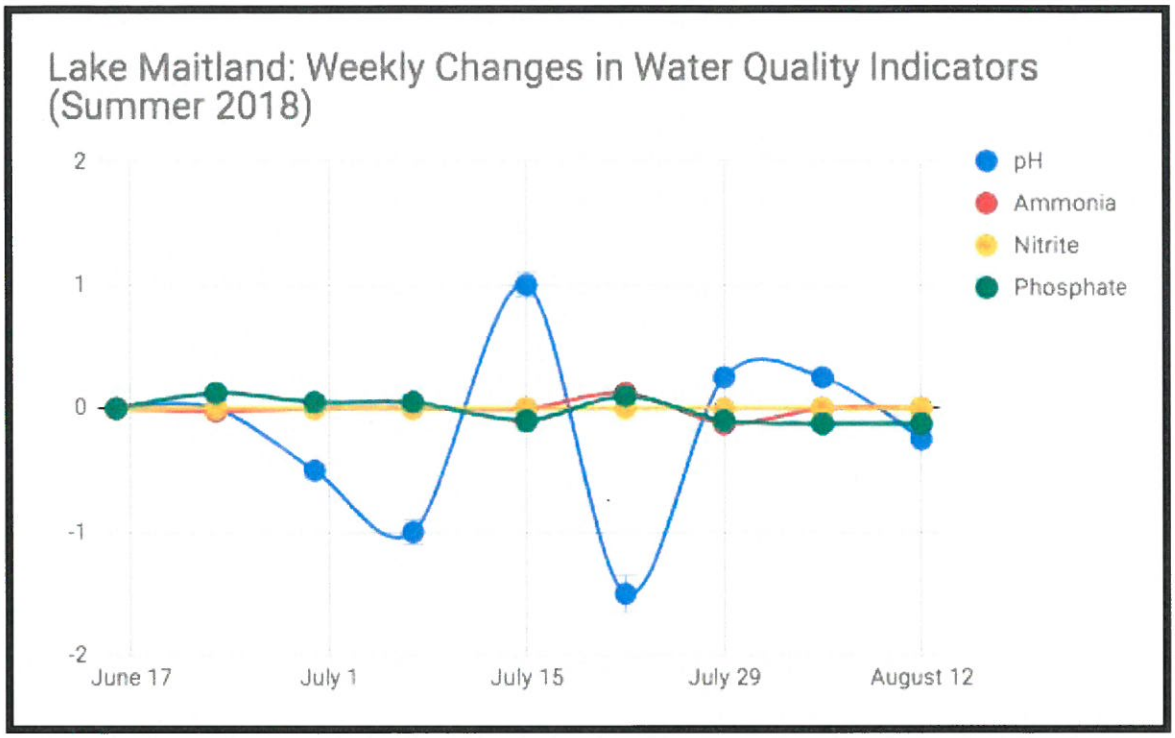
For Phosphate, ideal levels are 0.05 ppm or less. At 1 ppm, conditions are favorable for algae growth and at 2 or 3, an excess of algae is probable. Lake Knowles had the highest average phosphate level of 0.24, which isn't ideal, but also isn't favorable for an algae bloom. Lake Maitland was in the middle with an average of 0.22 ppm and Lake Wilbar also had 0.22 ppm (slightly lower when not rounded). All of these levels are safe and below the levels that favor algae overgrowth, but are above the ideal phosphate levels.

Changes in Water Quality:

The three graphs below plot the changes in each of the four water quality indicators over the 9 weeks of formal observation. To compute these charts, I set the first week to zero, because it is the baseline, and then subtracted each subsequent week's observed value from the previous week's value. In this way, the charts below show the week to week variation in each indicator for each of the three lakes.


Lake Knowles: Weekly Changes in Water Quality Indicators (Summer 2018)
0.5
0
-0.5
-1
-1.5
June 17
July 1
July 15
July 29
August 12
pH
Ammonia
Nitrite
Phosphate


Lake Wilbar: Weekly Changes in Water Quality Indicators (Summer 2018)
2
1
0
-1
-2
June 17
July 1
July 15
July 29
August 12
pH
Ammonia
Nitrite
Phosphate



Conclusion:

The hypothesis predicted that Lake Wilbar, representing the smaller lakes and ponds, would have the poorest water quality. Lake Wilbar is a small pond with little to no water flow, allowing runoff and chemicals to sit and build up in the water. Larger lakes such as Lake Maitland, on the other hand, have wave action and a canal system. The hypothesis therefore also predicted that the constant movement of water in Lake Maitland would disperse unwanted chemicals and allow for fair water quality. Lastly, Lake Knowles (in between the two in terms of size) was predicted to be in between the two in water quality.

The hypothesis was supported by the data. Lake Wilbar had the highest level of ammonia, which was 0.09 ppm. This is still very low, but nonetheless the highest. In terms of phosphate, Lake Knowles had the highest with 0.24 ppm. This again is very low, but was the highest of the three lakes. In terms of pH, Lake Maitland had the highest pH of 7.94, the closest to the middle of the optimum pH range of 7-9. Thus, Lake Maitland appears to have the best water quality of the 3 water bodies.

There are some values and limitations with this study. Some values and strengths are in the extensive data and background research information gathered in this study. The temperature and humidity were recorded on every test date and a variety of water quality indicators were recorded, giving a more holistic view of the water quality. Some limitations are that the water

was not tested at the exact same time each test date. There may be some small variability due to the time of day differences.

With this in mind, the study should not be viewed as the end all, be all, but rather as piece in the large puzzle to understanding Earth's vast waterways. Getting an idea of local lakes by thoroughly testing representative samples is an effective and efficient way to do so. Knowing that Winter Park's lakes are healthy shows that the methods put in place by the City are effective. However, it is also crucial to understand which lakes are the most at risk. Smaller lakes with less water flow seem to be more at risk of higher levels of ammonia and as a result, worse water quality. Although all of the lakes tested showed great water quality and indicated little vulnerability to algal blooms, the lakes at greater risk seem to be the smaller lakes and ponds such as Knowles and Wilbar.

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