Erosion Mitigation

Team Site Walk Report
August 2023





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Documentation Reviewed:

Pond Depth and Sediment Survey Report, June 27, 2023 by Magnolia Fisheries
Erosion Repair Proposal, March 2019, KC Landscaping

Site Walk – July 29, 2023

This report is the result of the site walk and discussions amongst team members.

Highlights of the **Pond Depth and Sediment Survey** that was conducted in late June 2023 include:

- *"By design, all urban storm-water ponds will periodically need to be dredged. The frequency of dredging will vary depending on the amount of exposed soil in the watershed, construction activities, erosion rates, and the amount of aquatic plant/algae growth. In general, ponds should be dredged whenever sediment fill exceeds 30% of the permanent pond volume. In most cases, this is every 15-20 years. Therefore, reserve funds should always be set aside for renovation measures."*

- *"A general rule of thumb is that ponds should reach 3-4 feet deep as quickly as possible from the shoreline on a 3:1 slope. Maximum depth should be a minimum of 8-10 feet. This reduces sunlight penetration to the bottom where algae and aquatic weeds begin their growth. Sediment builds up and increases the likelihood that fountains and submersible pumps will clog; thereby increasing long term maintenance and repair costs."*

The table below taken from the **Pond Depth and Sediment Survey** indicates that our ponds have excessive sediment fill and water depth is substantially lower than recommendations.

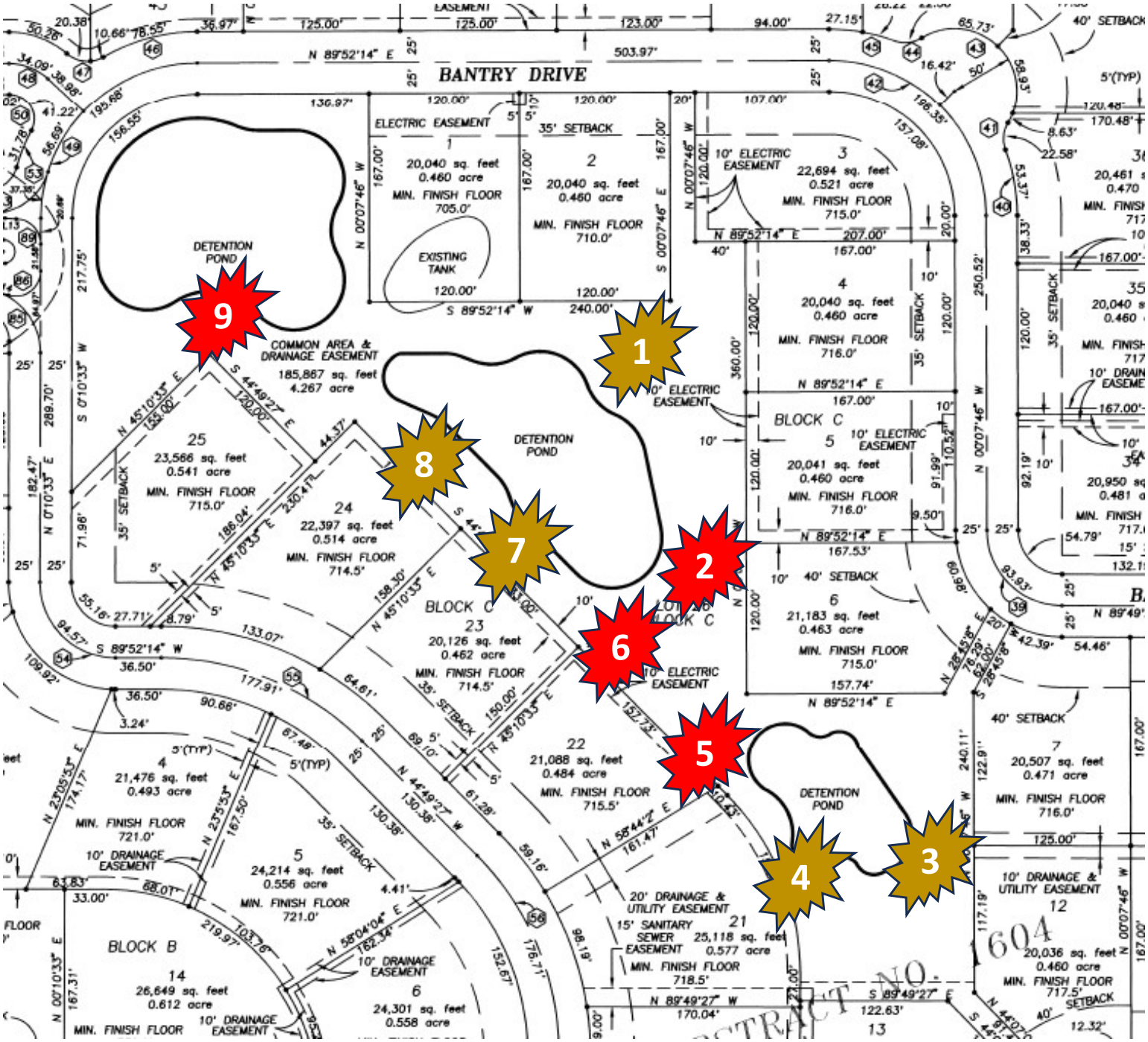
Metrics	Top Pond	Middle Pond	Lower Pond
Survey Area of Pond	0.35 acres	0.47 acres	0.32 acres
Current Water Volume	1.09 acre-feet	1.28 acre-feet	1.13 acre-feet
Maximum Water Depth	6.00 feet	5.20 feet	7.00 feet
Mean Water Depth	3.12 feet	2.73 feet	3.54 feet
Maximum Sediment Depth	4.30 feet	3.60 feet	3.90 feet
Mean Sediment Depth	1.32 feet	1.45 feet	1.27 feet
Percent Sediment Fill	30%	35%	26%
Water Volume Lost to Sediment Fill	151,884 gallons	222,575 gallons	132,293 gallons
Total Volume of Sediment (in situ)	752 cubic yards	1,102 cubic yards	655 cubic yards

- *"There are two major sources of pond sediment. Disturbed soil is carried by storm-water runoff across impermeable surfaces such as rooftops, streets, and parking lots. Most of this material enters the nearest body of water and is deposited on the pond bottom when runoff velocity slows. Organic matter is the other contributor. Organic or soft sediment is caused by the annual growth and decay cycle of plankton, algae, aquatic, weeds, leaves, and grass clippings."*

During the site walk, the Team identified several areas around each of the ponds where erosion control and mitigation measures required attention. These areas were prioritized as follows:

Priority Areas requiring immediate attention represent potential safety hazards and were showing clear evidence for causing destruction to physical infrastructure – sidewalks, trees and plantings and underground piping. These areas include **2, 5, 6, & 9 on map**

Near Term Areas requiring attention in the next 1-3 years were considered potentially less hazardous and less destructive to physical infrastructure. These areas include **1, 3, 4, 7 & 8 on map**


BANTRY DRIVE
N 89°52'14" E
503.97'
S 89°52'14" W
240.00'
ELECTRIC EASEMENT
35' SETBACK
DETENTION POND
EXISTING TANK
COMMON AREA & DRAINAGE EASEMENT
185,867 sq. feet
4.267 acre
BLOCK C
BLOCK B
1
20,040 sq. feet
0.460 acre
MIN. FINISH FLOOR
705.0'
2
20,040 sq. feet
0.460 acre
MIN. FINISH FLOOR
710.0'
3
22,694 sq. feet
0.521 acre
MIN. FINISH FLOOR
715.0'
4
20,040 sq. feet
0.460 acre
MIN. FINISH FLOOR
716.0'
5
20,041 sq. feet
0.460 acre
MIN. FINISH FLOOR
716.0'
6
21,183 sq. feet
0.463 acre
MIN. FINISH FLOOR
715.0'
7
20,507 sq. feet
0.471 acre
MIN. FINISH FLOOR
716.0'
21
25,118 sq. feet
0.577 acre
MIN. FINISH FLOOR
718.5'
22
21,088 sq. feet
0.484 acre
MIN. FINISH FLOOR
715.5'
23
20,126 sq. feet
0.462 acre
MIN. FINISH FLOOR
714.5'
24
22,397 sq. feet
0.514 acre
MIN. FINISH FLOOR
714.5'
25
23,566 sq. feet
0.541 acre
MIN. FINISH FLOOR
715.0'
4
21,476 sq. feet
0.493 acre
MIN. FINISH FLOOR
721.0'
5
24,214 sq. feet
0.556 acre
MIN. FINISH FLOOR
721.0'
6
24,301 sq. feet
0.558 acre
14
26,649 sq. feet
0.612 acre
12
20,036 sq. feet
0.460 acre
MIN. FINISH FLOOR
717.5'
13
1
2
3
4
5
6
7
8
9

Priority Attention Areas

9 – Southwest Upper Pond Area

Photos are of both sides of sidewalk that shows the effects of run-off from water travelling underground from the Kinsale Drive area then washing up to the surface then travel on the surface down to the lower pond. This area drops off steeply exposing sidewalk underpinnings. Also represents safety (tripping) hazard.

Potential Solution: Excavate and install french drains on the outer side of the sidewalk, bringing system under the sidewalk then down the slope to drain into the lower pond. Construct stone retainer wall on pond side several feet away from and adjacent to sidewalk in order to level-off the area.

Priority Attention Areas

2 – Southeast Middle Pond Area

Photos are of the area on pond side of sidewalk that drops off steeply exposing sidewalk underpinnings. Erosion caused by water collecting from adjacent homes and common areas. Also represents safety (tripping) hazard.

Potential Solution: Construct stone retainer wall on pond side several feet away from and adjacent to sidewalk in order to level-off the area. This area could potentially serve as a future seating/viewing area once constructed.

Priority Attention Areas

5 – Northwest Upper Pond Area



Photos are of the area on pond side of sidewalk that shows a former attempt to prevent erosion using river rock. This area drops off steeply exposing sidewalk underpinnings. Represents safety (tripping) hazard.

Potential Solution: Install large boulder rocks (similar to boulders already in this area) to build up to near level. Fill with stratified layers of large to small sized crushed stone (bottom to top). This area could potentially serve as a future seating/viewing area once constructed.

Priority Attention Areas

6 – Southwest Middle Pond Area

Photos are of the area on pond side of sidewalk that shows a former attempt to prevent erosion using river rock and wood boards. This area drops off steeply exposing sidewalk underpinnings. Represents safety (tripping) hazard.

Potential Solution: Install large boulder rocks (similar to boulders already in this area) to build up to near level. Fill with stratified layers of large to small sized crush stone (bottom to top). This area could potentially serve as a future seating/viewing area once constructed.

Near Term Attention Areas

1 – East Middle Pond

3 – South Side Upper Pond

Need Photo

4 – Southwest Side Upper Pond

Near Term Attention Areas

7 – West side Middle Pond

8 – West side Middle Pond

Priority Area and Next Steps

Priority of Priority Areas – in order of work performance:

1. **Area 9 – Southwest Upper Pond Area**
2. **Arear 2 – Southeast Middle Pond Area**
3. **Area 5 – Northwest Upper Pond Area**
4. **Area 6 – Southwest Middle Pond Area**

Next steps include soliciting solutions and proposals from several contractors including:

- Dredging specialist
- Current and former landscape and maintenance firms
- Civil contractors for retainer walls, french drains and rock work