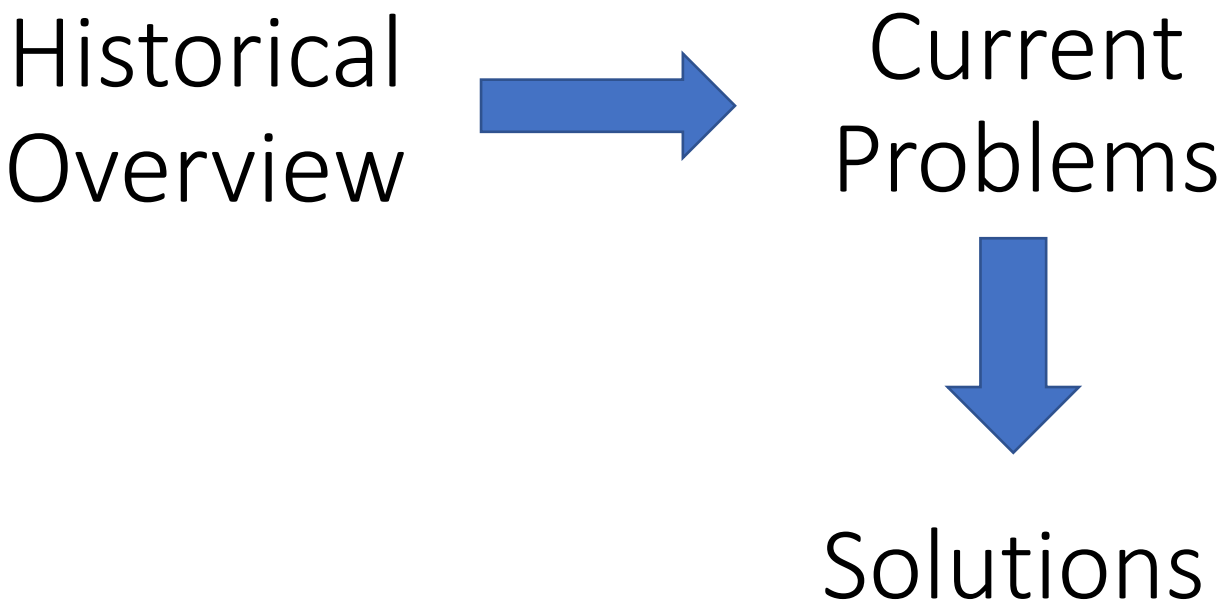
Sierra Ranches Wetland Preserve
Davie, Broward County, Florida, USA



Overview of Sierra Ranches

- New single family homes community with 79 homes (first occupancy ~May/June 2021) developed by Lennar Corporation, the second largest homebuilder in the US

- Located in Davie, Florida, Broward County, Miami Metropolitan area

- ~89 acres total area with 2 waterbodies:
  - a 6.5 acre lake, and
  - ~24 acre drainage, retention and flowage pond that also has a man-made constructed wetland in it

- Earliest plans for Sierra Ranches are dated 2003 with 62 homes and a smaller wetland onsite created by a company called Home Dynamics Corporation with Goldisach as the Environmental Consultants

- Plans are refreshed in 2006 by the same promoters as above

- In 2015-18, the project is reworked by another company called Amzak Sierra Ranches HD (apparently with the same individual promoter) with a different environmental consultant (EW Consultants). One of the two approved engineering companies for the Central Broward Water Control District (Craven Thomas and Associates) reworks the engineering aspects of the project, which is cross-checked and reviewed by another CBWCD approved engineering company, RJ Behar

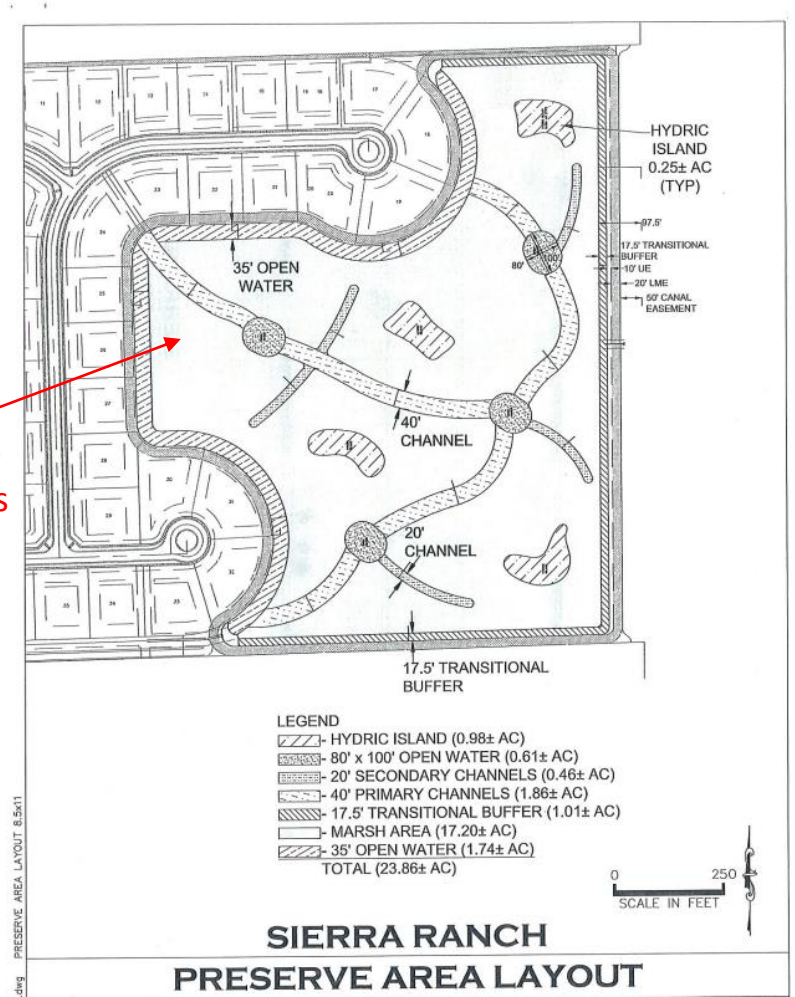
- The 2015-18 reworked project has more homes – 79 (a 27% increase) with a disproportionally larger wetland area of 23.8 acres (63% increase), presumably because onsite costs to add plants is lower than buying plants in offsite mitigation banks

How does the Preserve Physically look?
80% will be covered with plants over the next two years
Water channels shown on the next page must be substantially intact in perpetuity

Inspection photo from South Florida Water Management District (SFWMD), Sep 15, 2023

Sierra Ranches Preserve is an engineered body
It has an water channels cut into it around residential lots that are also connected to deep water channels that lead to the outfall at the east end. Controlled discharge takes place into canal N17 over a weir, inverted baffle and through a 48” pipe via gravity

This will get redesigned once the open water channels around residential lots are brought to CBWCD depth code and redesigned for long-term engineering stability



Planting Plan:

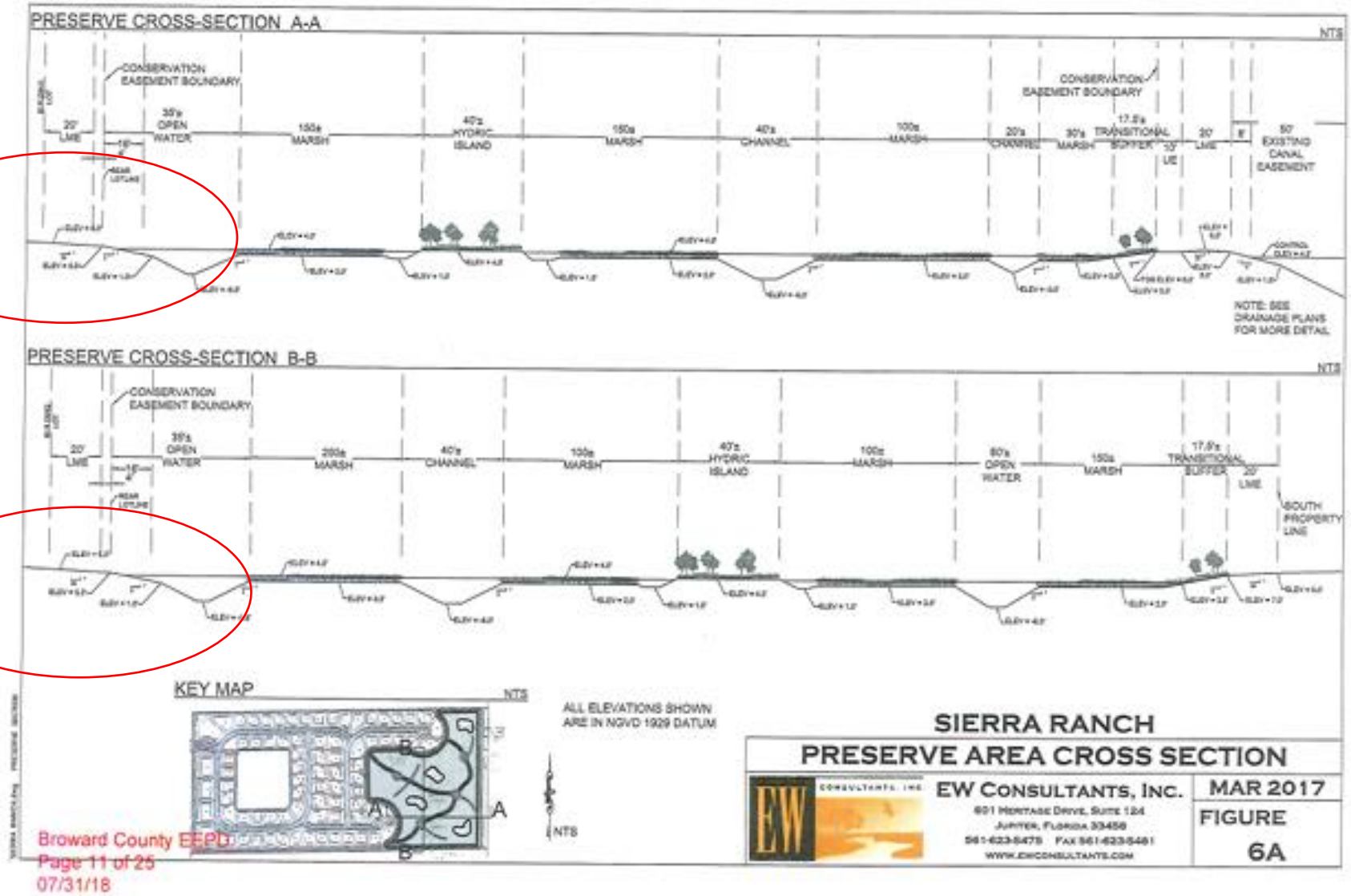
Common Name	Species	Size	Density	Quantity
Marsh (elevation 1.0 to 2.0 NGVD) 17.4 acres				
Pickerelweed	*Pontedaria cordata*	bare-root	3' oc	6,500
Duck potato	*Sagittaria latifolia*	bare-root	3' oc	6,000
Knotted spikerush	*Eleocharis interstincta*	bare-root	3' oc	12,000
Alligator flag	*Thalia geniculata*	bare-root	3' oc	6,000
Blue flag iris	*Iris virginica*	bare-root	3' oc	6,000
Beak rush	*Rhynchospora microcarpa*	bare-root	3' oc	6,000
Maidencane	*Panicum hemitomon*	bare-root	3' oc	8,000
Soft rush	*Juncus effuses*	bare-root	3' oc	12,000
Sawgrass	*Cladium jamaicense*	bare-root	3' oc	15,000
Soft stem bulrush	*Scirpus validus*	bare-root	3' oc	10,000
Giant bulrush	*Scirpus* spp.	bare-root	3' oc	10,000
Hydric Tree Islands (elevation 2.5 to 4.5 NGVD) 1.0 acre				
Dahoon holly	*Ilex cassine*	10 gallon	10'oc	126
Red maple	*Acer rubrum*	10 gallon	10' oc	126
Red bay	*Persea borbonia*	7 gallon	10' oc	126
Pond apple	*Annona glabra*	7 gallon	10' oc	126
Wax myrtle	*Myrica cerifera*	3 gallon	5' oc	1,010
Coco plum	*Chrysobalanus icaco*	3 gallon	5' oc	1,010
Sand cordgrass	*Spartina bakeri*	1 gallon	3' oc	2,800
Fakahatchee grass	*Tripsacum floridanum*	1 gallon	3' oc	2,800
Transitional Buffer (elevation 3.5 to 7.0 NGVD) 1.0 acre				
Slash pine	*Pinus elliottii*	10 gallon	10'oc	450
Cabbage palm	*Sabal palmetto*	10-12'	10'oc	160
Firebush	*Hamelia patens*	7 gallon	5'oc	815
Coco plum	*Chrysobalanus icaco*	3 gallon	5' oc	815
Wax myrtle	*Myrica cerifera*	3 gallon	5' oc	815
Sand cordgrass	*Spartina bakeri*	1 gallon	3' oc	3,390
Fakahatchee grass	*Tripsacum floridanum*	1 gallon	3' oc	3,390

Original planting plan. Some substitutions have been approved that are not reflected in this plan.

Conservation plan does not call for any plantings on residential shorelines or the open water buffer

No plantings

No plantings

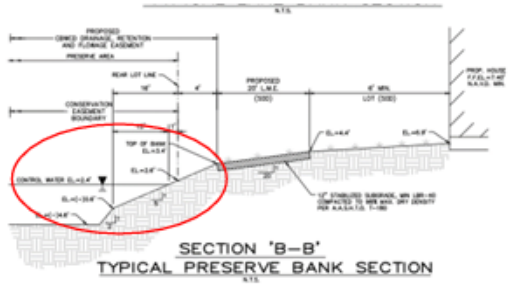


Engineering plan does not call for any plantings on residential shorelines or the open water buffer

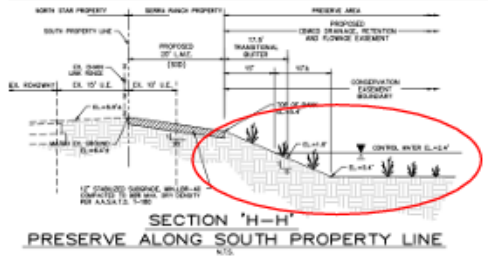
Picture 6: Snippets from the Engineering Plan

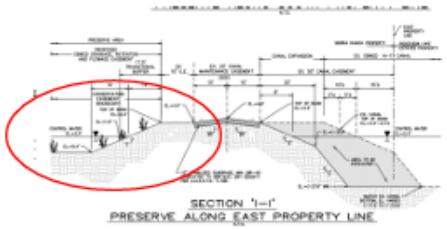
Filed as the Sierra Ranches Master Plan with the town of Davie showing the preserve bank close residential lots and transition buffers on the East, North and South Ends

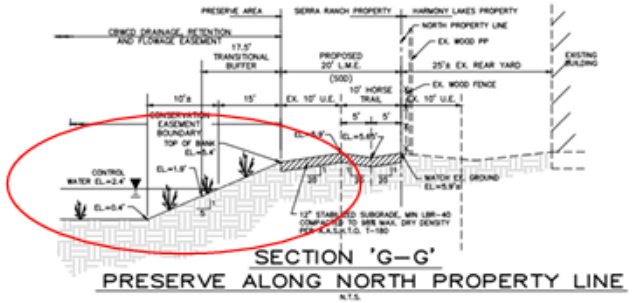
BELOW is the cross section of preserve bank close to residential plots (**no planting is shown here**)



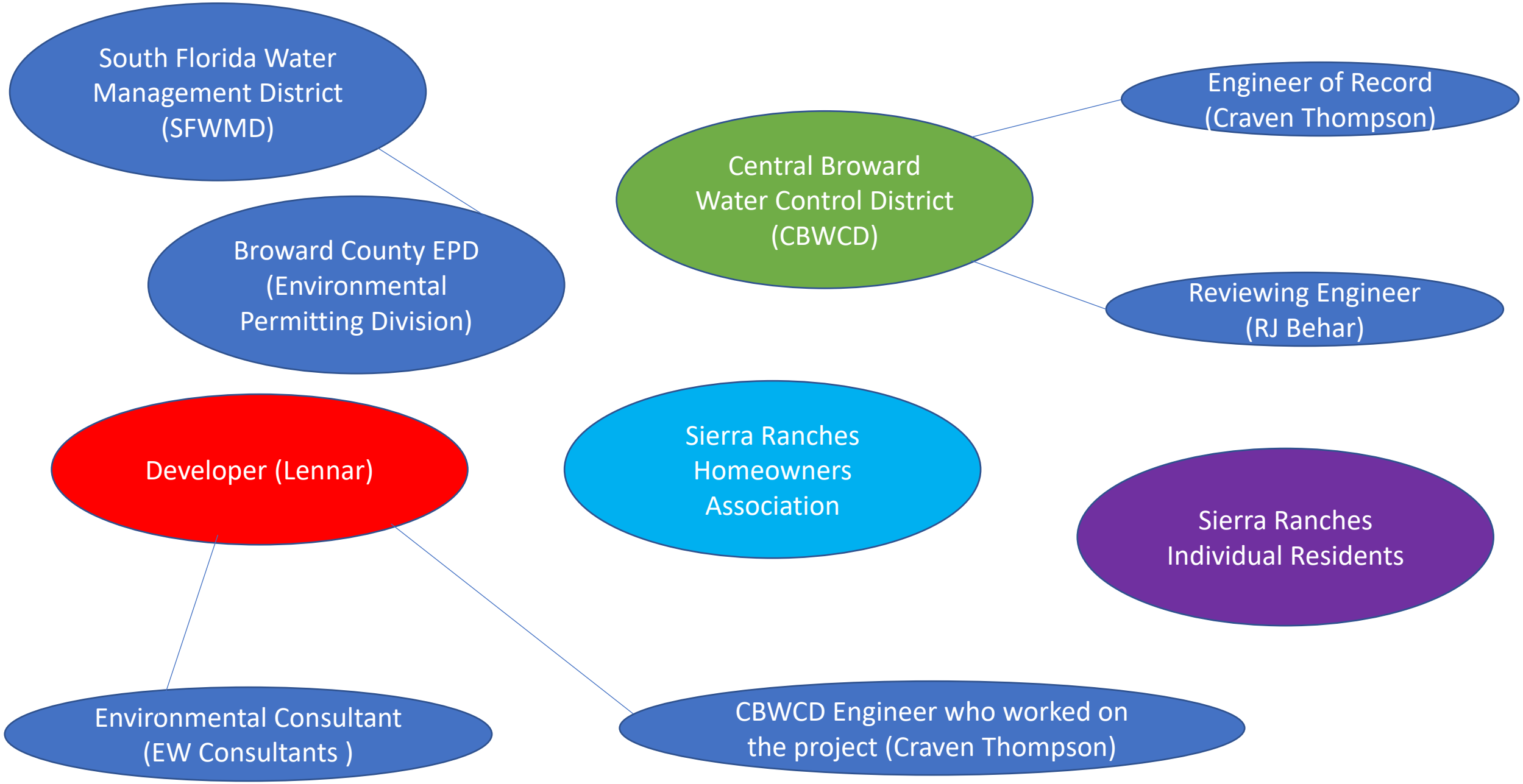
The next three cross sections are the **North, South and East ends of the preserve** away from residential lots and close to the neighboring plats (they show plantings consistent with the Environmental plans)







Who are all the players in this story?



What's the Problem?

- The problem is that the water channels around residential lots is not designed to regulated minimum depths (10 feet) for excavations required by the design standards of Central Broward Water Control Board, the political special district, that has jurisdiction over this stormwater flowage, drainage and retention body

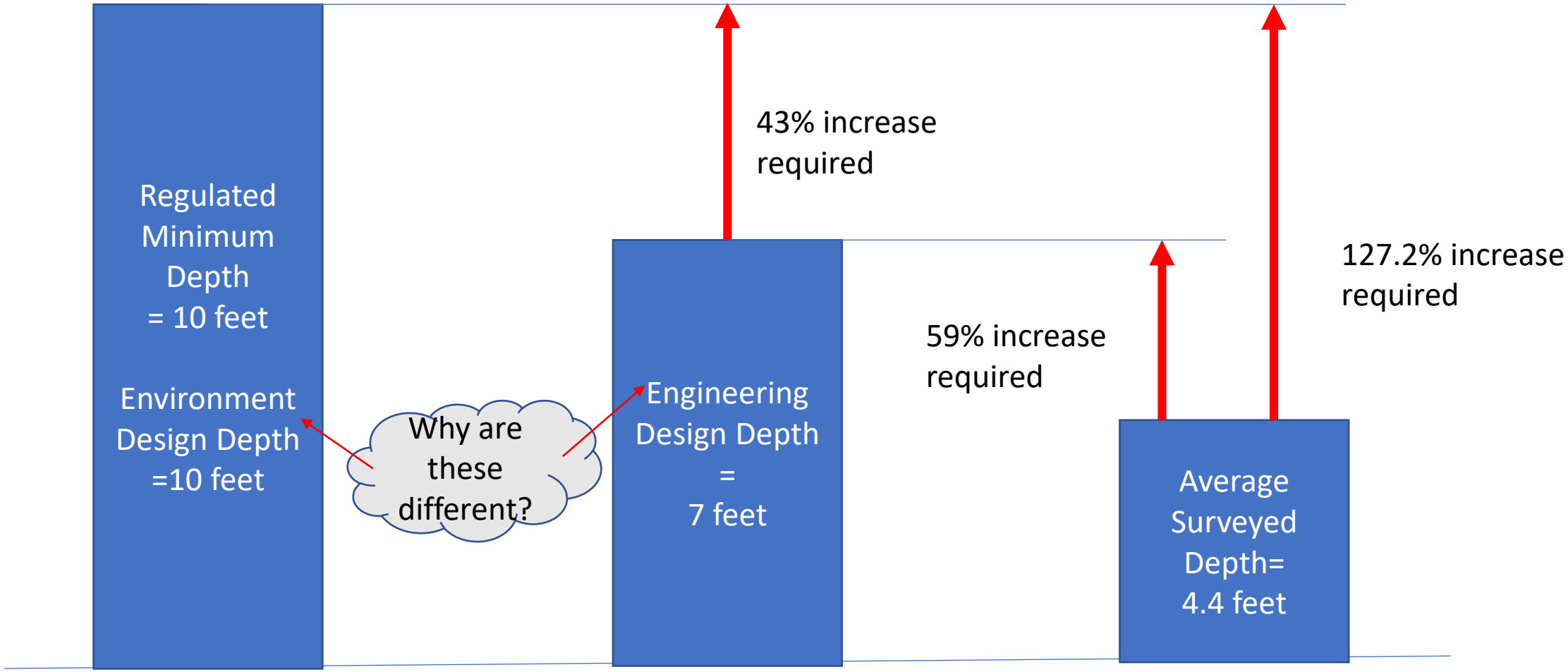
- These depth standards supersede any "flawed" permit that may be been issued on the project. In fact the permit contains conflicting information- the environment portion of the project shows a depth of 10 feet and the engineering portion of the permit (which was signed only in September 2023 way after construction date) shows a depth of 7 feet against regulation.

- Based on inspection of records, it also appears that in a rush to maximize the number of plants planted onsite vs. offsite, certain engineering compromises and sub-optimal design choices were made. Best engineering standards were not used.

- The consequences of these sub-optimal design choices and poor engineering have manifested in a catastrophic failure of water channels around residential lots as confirmed by measurements taken just two years after build
  - Average depth reduction of 37% and as much as 48% at the most catastrophic failure section
  - This has led to nuisance native and non-native wetland species proliferating through the open water channels around residential lots. They have not also been controlled via maintenance activities.

- The amount of dirt in the water channels due to slouging and post-construction defects is estimated to be enough to fill an almost 4 foot 9 inch diameter pipe 2190 linear feet long with dirt. That's a LOT!!!

Regulated Depth vs. Design Depth vs. Actual Sep ‘23 Depth



Proliferation of native and non-native nuisance species in the residential shorelines and open water buffer

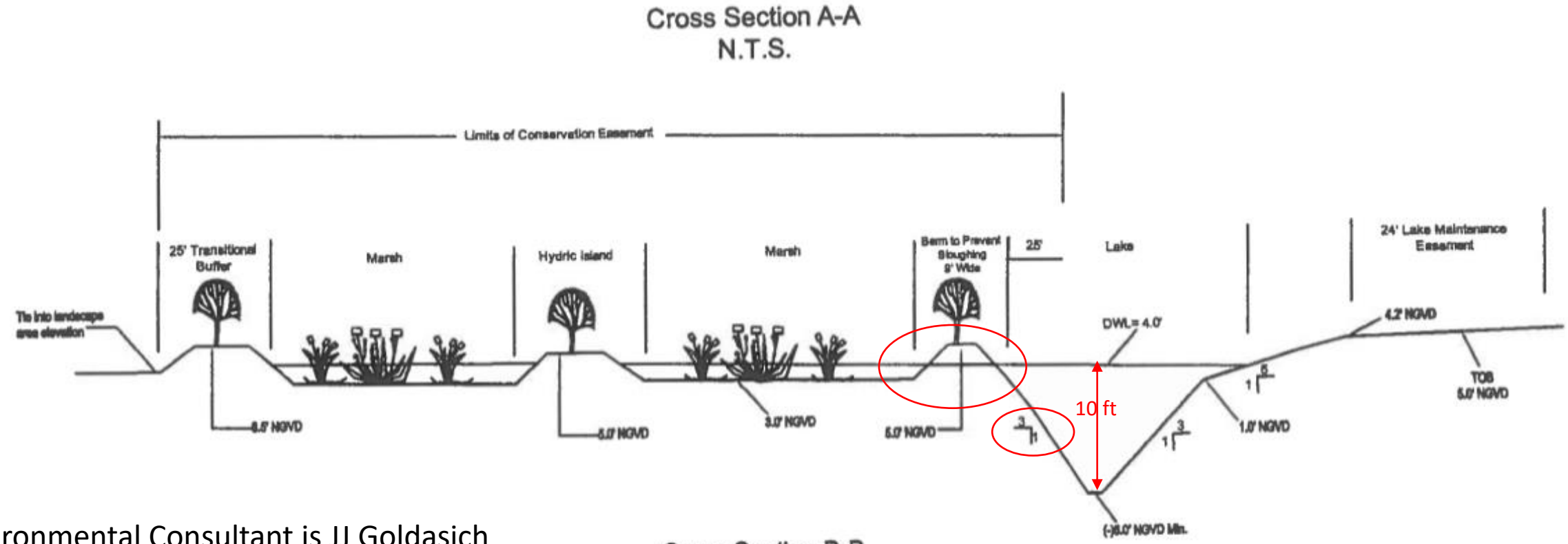
Water Buffer being completely taken over by spatterdocks, pickerelweed and spikerush – View south from boatramp

At Lot 20 there is no open water channel anymore at some points

An exotic species will never grow this big if regularly maintained

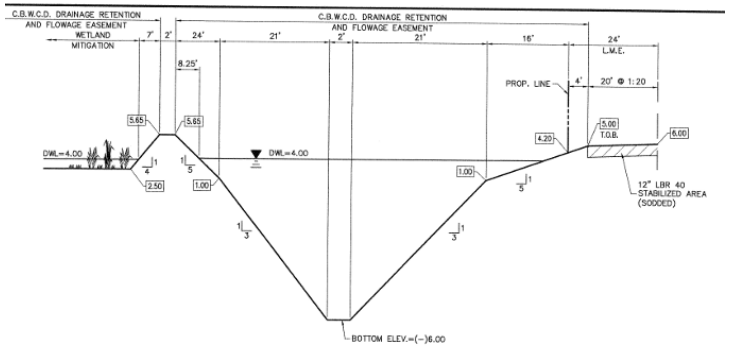
Spatterdocks dominating the open water buffer and the planted marsh beyond the 34 foot water buffer in front of Lots 26 and 27. Spatterdocks are native flow attenuating nuisance species that should not exist in a flowage channel and should be eliminated by early intervention.

2003 plan reflect 10 feet excavation near residential lots, the presence of a hydric berm and less aggressive slopes of 1 foot drop for 3 feet horizontal in the water channel resulting in a larger open water channel

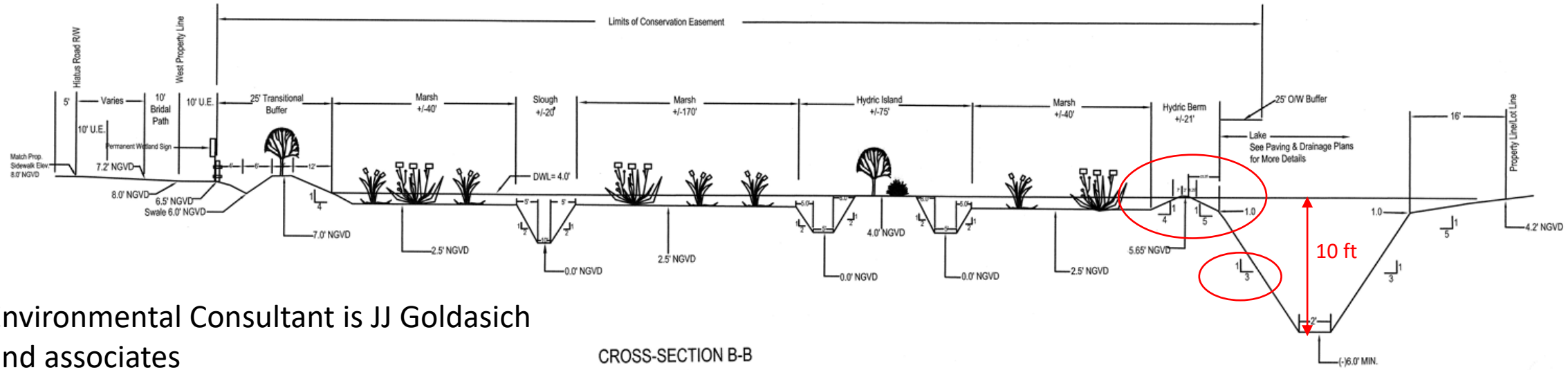


Environmental Consultant is JJ Goldasich and associates

2006 plan reflect 10 feet excavation near residential lots, the presence of a hydric berm and less aggressive slopes of 1 foot drop for 3 feet horizontal in the water channel resulting in a larger open water channel



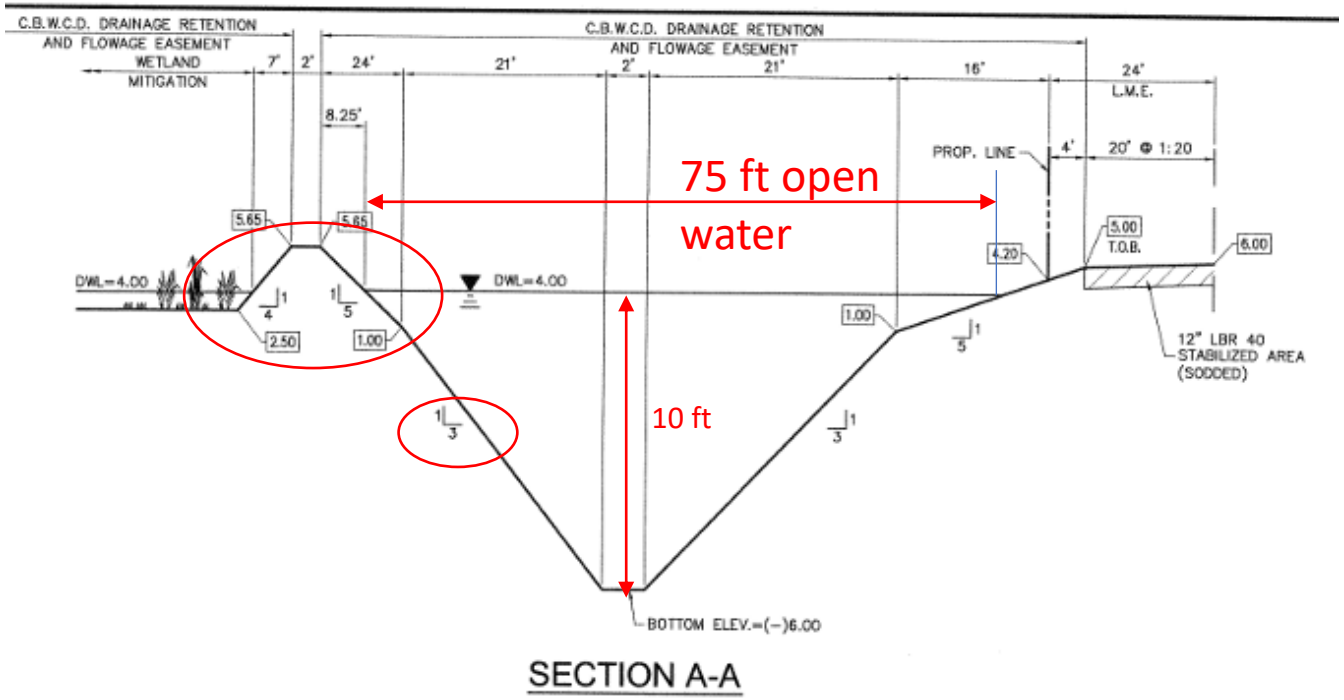
SECTION A-A



CROSS-SECTION B-B
N.T.S.

Environmental Consultant is JJ Goldasich and associates

2006 Details of the Open water channel around residential lots



SECTION A-A

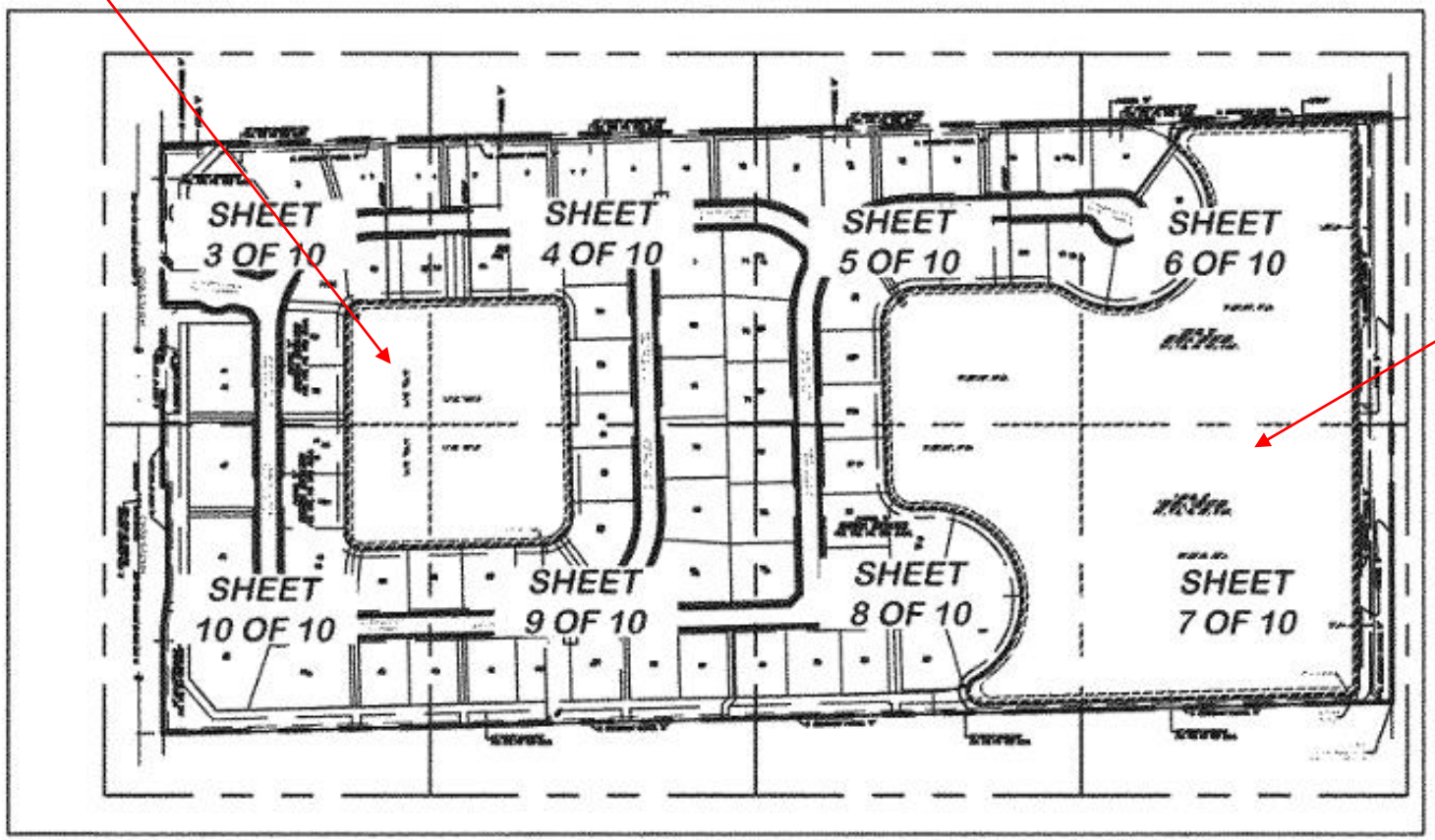
Environmental Consultant is JJ Goldasich and associates;
Engineer is SunTech Engineering

FOR: LENNAR HOMES, LLC

SKETCH AND DESCRIPTION
C.B.W.C.D. DRAINAGE, RETENTION & FLOWAGE EASEMENT

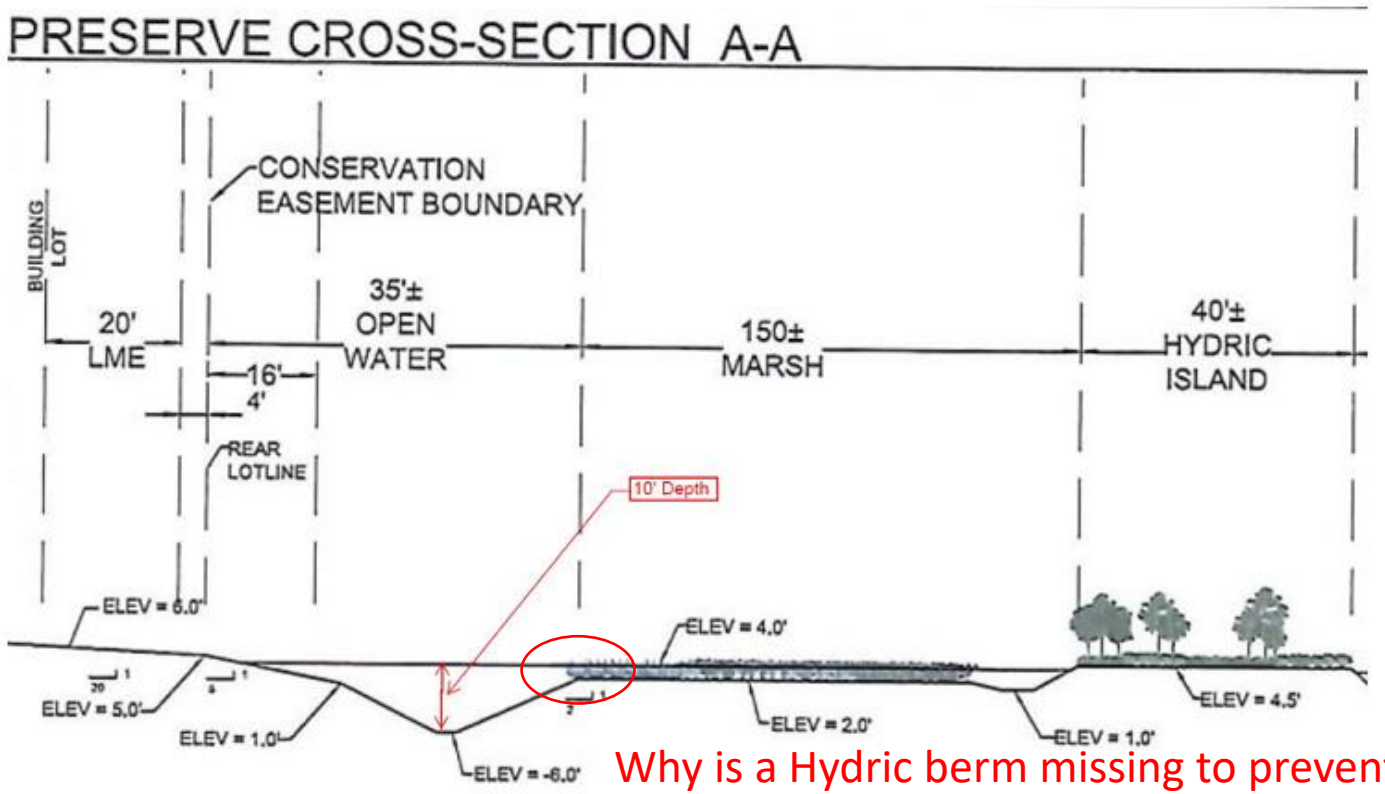
Lake

KEY MAP
(NOT TO SCALE)



Preserve

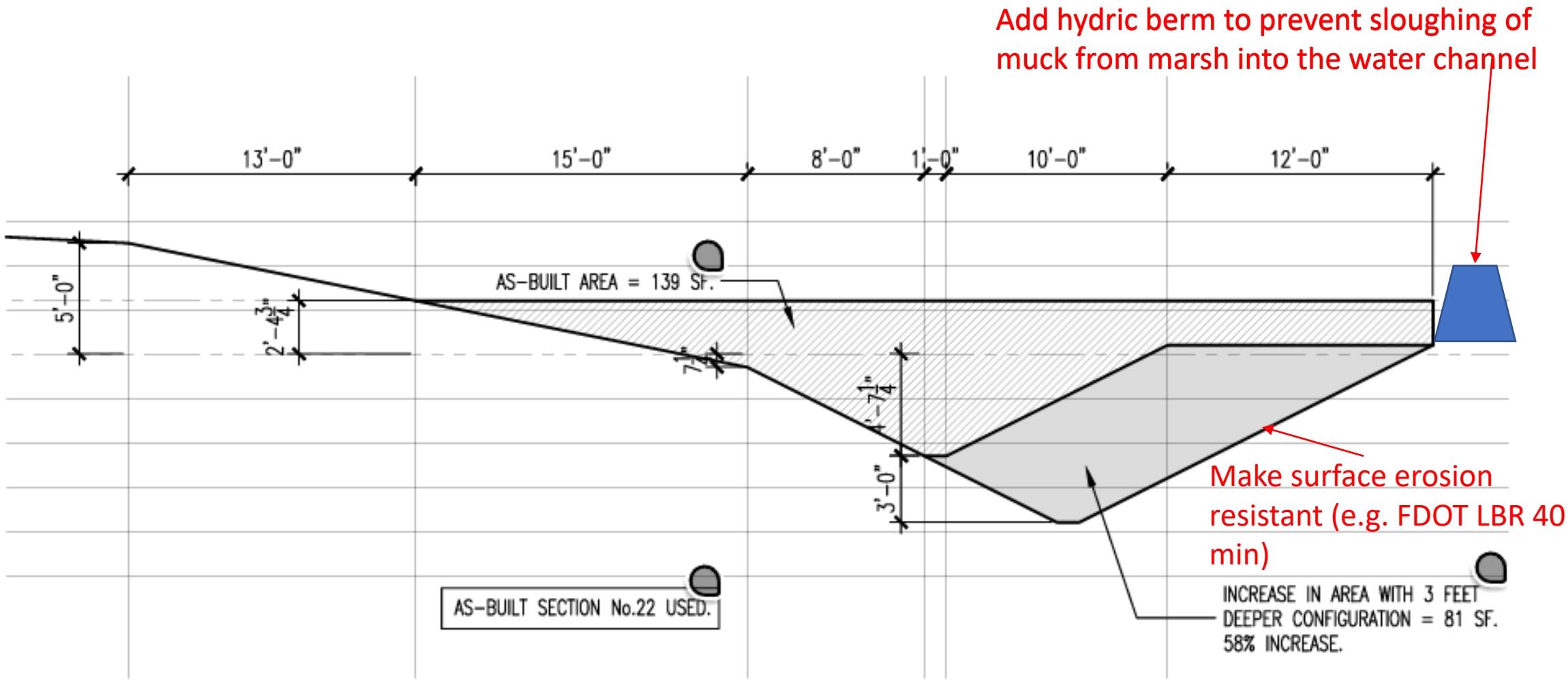
2018 Executed Environmental Plan showing 10 feet depth. CBWCD rules on grading will prevent this depth from being achieved if the Open water is artificially limited to 35 feet



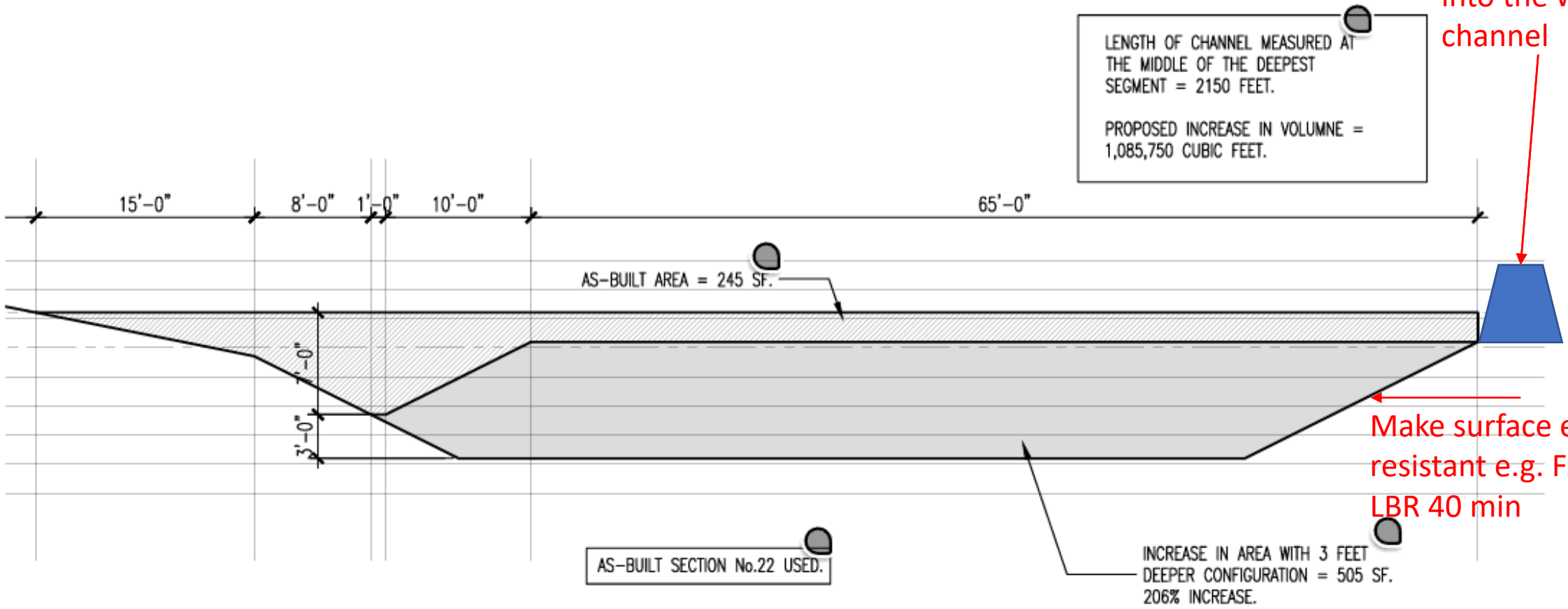
Why is a Hydric berm missing to prevent sloughing of open marsh muck into the open water flow channel?

Current Cross-Section from Wetland design plans (showing 10' Channel)

Impact of making channel deeper by 3 feet i.e. total 10 feet deep and maintaining V-section



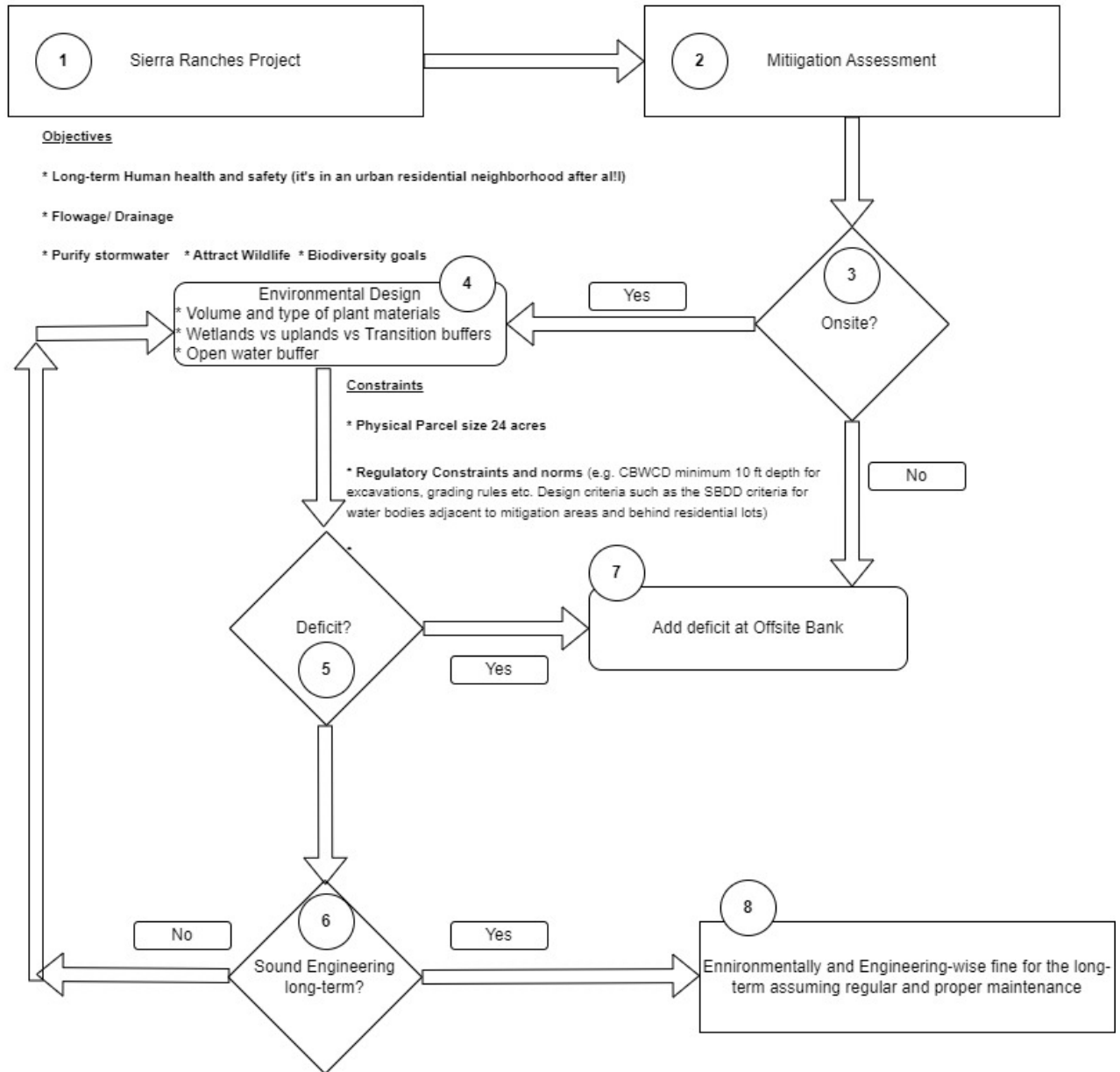
Impact of making channel deeper by 3 feet i.e. total 10 feet deep and using best practice trapezoidal channel



Add hydric berm to prevent sloughing of muck from marsh into the water channel

Make surface erosion resistant e.g. FDOT LBR 40 min

Iterative Design Process



How much mitigation was offsite? – Very little 3.01 ac
Most of it was crammed onsite- # of homes between 2003 and 2018 plans went up 27% but onsite mitigation went up 63%.
SFWMD has confirmed the developer primarily made the choice on how much was mitigated onsite (cheaper vs. offsite)

erp_staff_report.rdf

FINAL APPROVED BY
EXECUTIVE DIRECTOR
AUGUST 24, 2017

Last Date For Agency Action: October 14, 2017

INDIVIDUAL ENVIRONMENTAL RESOURCE PERMIT STAFF REPORT

Project Name: Sierra Ranch
Permit No.: 06-07569-P
Application No.: 141223-14
Application Type: Environmental Resource (New Construction/Operation)
Location: Broward County, S18/T50S/R41E
Permittee : Amzak International, Inc.
Operating Entity : Sierra Ranch Homeowners Association, Inc.
Project Area: 89.10 acres
Permit Area: 89.10 acres
Project Land Use: Residential
Drainage Basin: C-11 WEST
Receiving Body: CBWCD N-17 **Class:** CLASS III
Special Drainage District: Central Broward Water Control District

Total Acres Wetland Onsite:	69.20	
Total Acres Wetland Preserved Onsite:	20.30	
Total Acres Impacted Onsite :	48.90	
Total Acres Presv/Mit Compensation Onsite:	23.86	
Offsite Mitigation Credits-Mit.Bank:	3.01	F.P.L. Everglades Mitigation Bank

Conservation Easement To District : Yes
Sovereign Submerged Lands: No

	2003 Plan	2018 Plan	% Increase
Promoter	Home Dyamics	Amzak (new incarnation of Home Dynamics)	
# of homes	62	79	27.4%
Wetland Area Total (acres)	14.66	23.86	62.8%
Marsh Portion of Wetland (acres)	10.14	17.2	69.6%
All plantings in preserve including hydric islands and transition buffers (acres)	11.72	19.19	63.7%

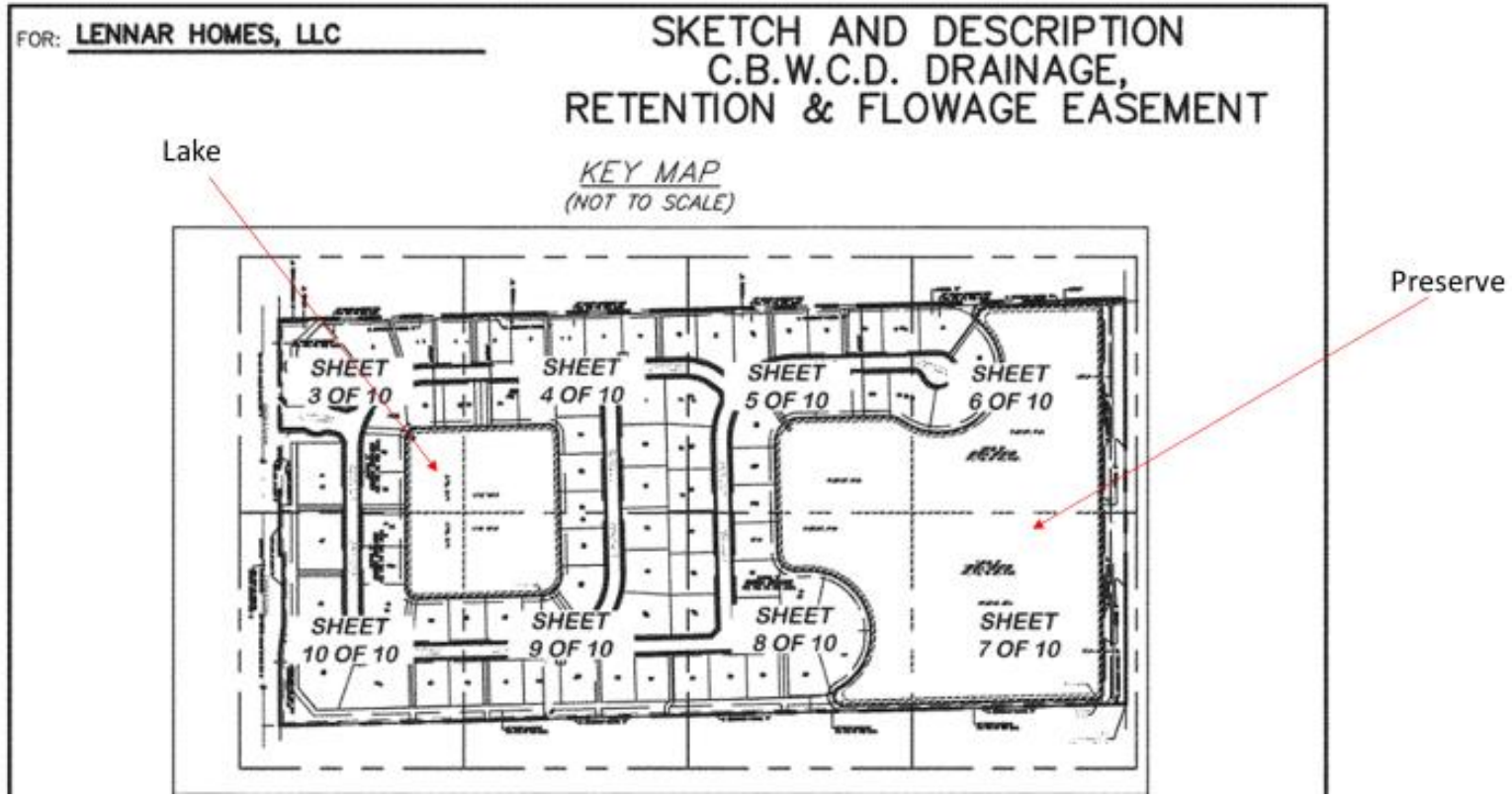
What is the equivalent littoral area that needs to be planted per CBWCD regulations?

20ft x perimeter (preserve+inside lake) for storm water purification = how many acres of littoral plantings?

20’ x (4720 LF + 1950 LF) = 133,400 SF (or ~3.0 Acres) even if there was no onsite mitigation.

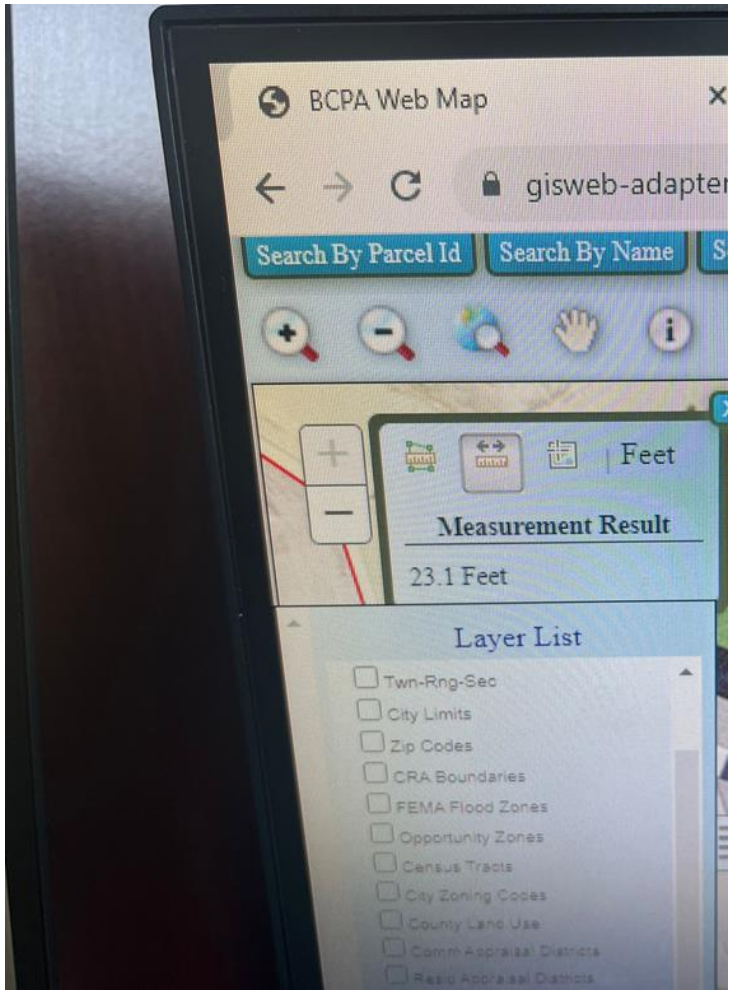
Can be concentrated on one of the edges of the lake, preserve or in the middle of the preserve? **YES**

Currently in the transition buffers, marsh and hydric islands. Start counting from the East end of the preserve.



The Curious case of Lot #20

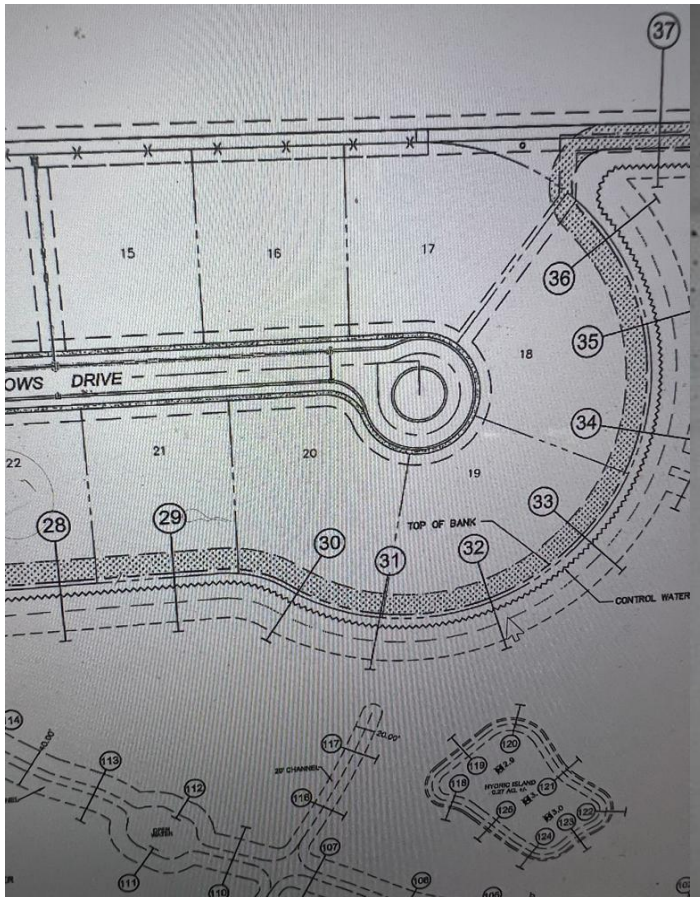
Satellite Image apparently suggests 23 feet open water channel width which is over 10 feet shorter span of open water vs the as builts that show 34 feet the same year (how is that possible?)

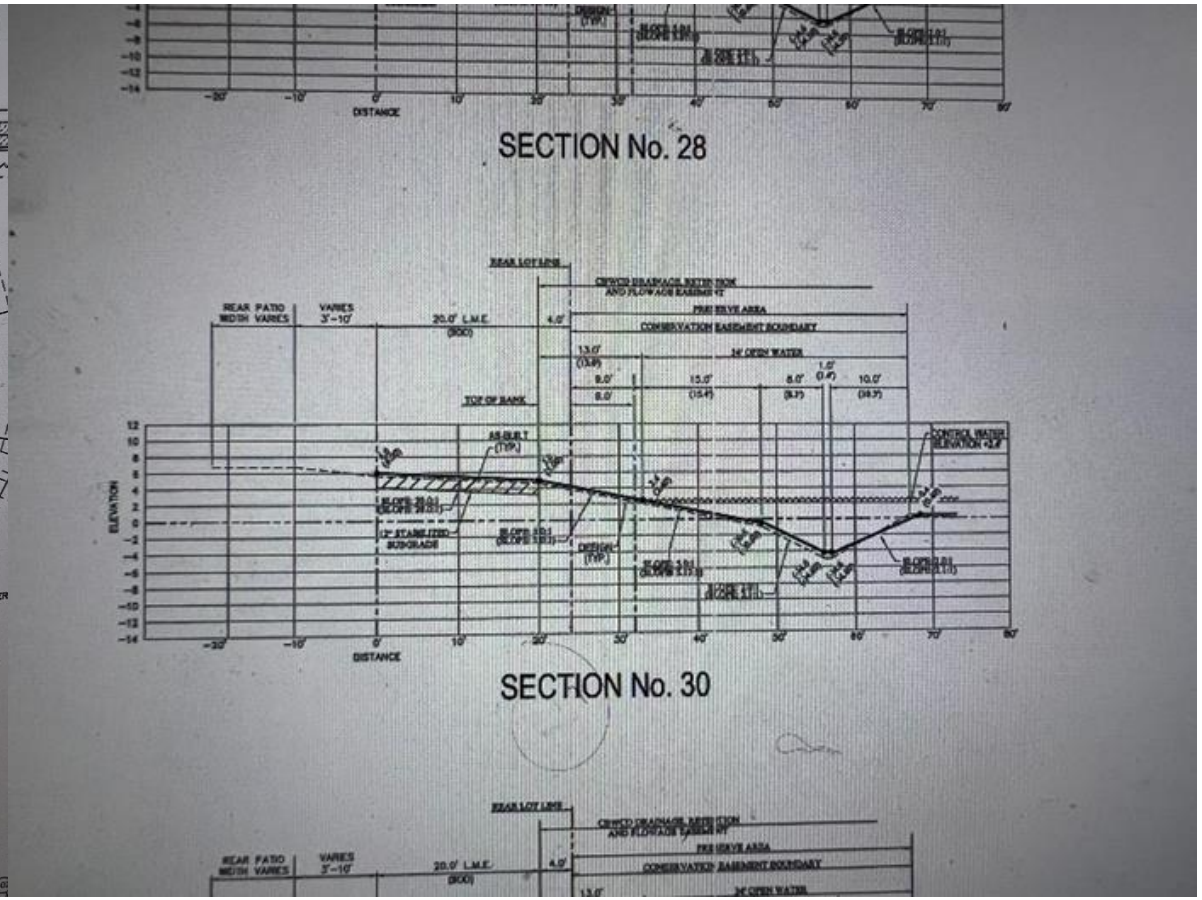


Shallow marsh portion is identified with dark shade in satellite image of water

The Curious case of Lot #20

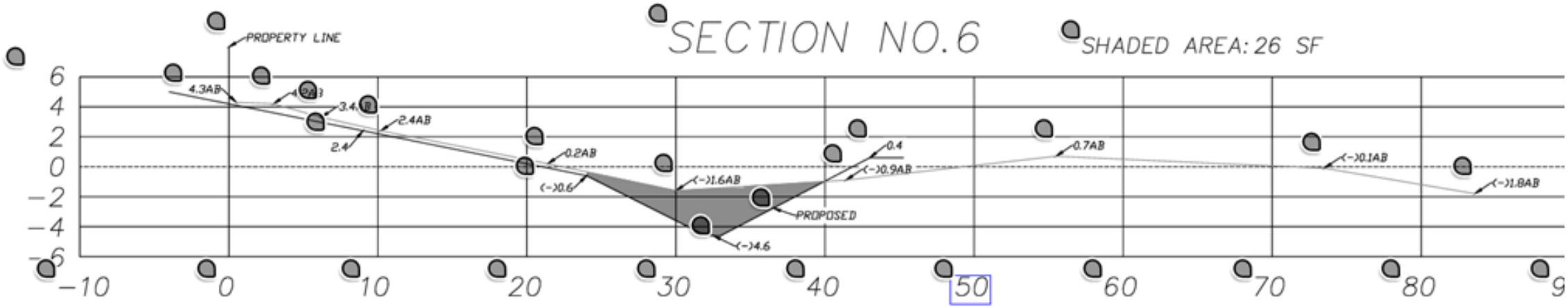
As built data from developer in 2021





The Curious case of Lot #20

Data from September 2023 shows the deepest point is 4 feet vs. 7 feet, an almost 43% decrease



What does a good well maintained preserve look like?
Well-maintained residential shorelines, clear open water buffer with no wetland plantings and regularly maintained.

Picture 4: Current neighbor's old home in Estancia Pembroke Pines showing well-maintained shorelines and water buffer in a preserve with marsh visually similar to the Sierra Ranches Preserve

Same norm for residential shoreline and water buffer maintenance exists in five other communities resident, Sunil Menon visited.

Hydric Berm exists in this project in CBWCD/ SFWMD's jurisdiction and keeps wetland plantings in its area where they flourish. Look at the cleanliness of the open water buffer!

Clarifying who has jurisdiction over the open water buffer and the shoreline, and how it should be maintained

The open water buffer close to residential lots primary authority having jurisdiction is the **Central Broward Water Control District (CBWCD)** as confirmed by three authorities. And flowage is the primary function of this channel, in addition to other functions such as having a barrier between residential lots and the conservation area.

a. July 21, 2023: From Sarah Pereira, Inspector from Police Code Enforcement department of the Town of Davie: ***"I did speak with Chief Engineering Inspector, he confirmed that Central Broward Water Control District would be the one to enforce the issues you asked about yesterday with the 35 feet of open water, plants and 6 foot drop off. "***

b. September 11, 2023: From Natalie Cole, SFWMD: "***Maintenance of spatterdock within the 35-foot open water buffer/flowage easement should be determined by the CBWCD, as it is their flowage easement.”***

c. September 20, 2023: When Ashley Foster (acting district manager of CBWCD), Hans Murzi (reviewer from RJ Behar) and Chad Edwards (Engineer of Record for Sierra Ranches from Craven Thomspon) walked the preserve with Sunil Menon and his independent engineers, Pillar Consultants in mid-September, they commented that the wetland species should not exist on the shorelines or in the open water buffer and that they should be regularly maintained per the CBWCD Maintenance Contract that Lennar (and by inheritance the HOA) has signed

Snippet of the Maintenance agreement of the CBWCD Drainage, Retention and Flowage Easement (the whole preserve) between CBWCD and Lennar (and by inheritance the HOA) is shown on the next page

What is abundantly clear from 3 different authorities is that the 35 foot water buffer including shorelines is CBWCD's flowage easement

Even if SFWMD's Conservation Easement conflicts with CBWCD's flowage easement, CBWCD's flowage easement will be the prevailing jurisdiction. The reason is that flowage is the primary function of the 35 foot water buffer in addition to a physical separation between the explicit conservation area (i.e. marsh of the Sierra Ranches preserve) and the residential lots.

There is no conservation function planned in the Sierra Ranches Residential shorelines or in the open water buffer as both the executed conservation plans and the engineering diagrams reveal. Therefore, any vegetation, native or non-native must be regularly removed to prevent them from reaching nuisance levels and impede with flowage or depth reduction over time as dead species shallow out water channels, causing flooding, safety and health hazards. Public policy leans towards long-term human health and safety over all else.

3

Sierra Ranch

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Broward County Commission
10 Page(s)
Mtg Doc Stamps: $0.00
Int Tax $0.00
#3

MAINTENANCE AGREEMENT

THIS AGREEMENT made and entered into this 7th day of October 2019 by and between CENTRAL BROWARD WATER CONTROL DISTRICT a political subdivision of the State of Florida, hereinafter referred to as "The District," and Lennar Homes, a LLC qualified to do business in the State of Florida hereinafter referred to as "The Developer".

RECITAL

A. The District is a political subdivision of the State of Florida charged with the responsibility of effecting drainage within its geographical boundaries.

B. The Developer is a Florida LLC developing that project known as, SIERRA RANCH, which development is situated entirely within the geographical boundaries of the District.

C. As a part of the development of SIERRA RANCH intends to install lakes, canals, underground storage and treatments systems, dry retention/detention areas, drainage pipes and other types of water courses for storm water management including floodplain storage, conveyance and treatment.

D. The District requires that such storm water facilities be properly maintained and the Developer has agreed to effect such maintenance and the parties desire to reduce such agreement to writing.

NOW, THEREFORE, in consideration of the mutual promises each to the other running, and other good and valuable consideration, the parties agree as

TREATMENT quantitatively described in Exhibit "B" attached hereto. Said Exhibit "B" shall be prepared by a registered Professional Engineer in the State of Florida.

C. That "good condition" shall be that standard of care and maintenance as may be established from time to time by the District and shall be deemed to include, but not limited to, the control of weeds and other nuisance and invasive vegetation, control of erosion, and the maintenance of slopes, depth, aquatic vegetation, sodded slopes, and percolation capacity of seepage areas.

D. That the District will have the right and authority to enter upon and cross over the property described on Exhibit "A" hereto for the purpose of inspecting the storm water facilities, and in the event that the District determines that the maintenance of said storm water facilities do not meet the standards established by the District, notice will be given by the District, to the Developer and the Developer will be given a period of 15 days from and after the mailing of such notice within which to remedy such defect or obtain from the District, in writing, an extension, for good cause shown, of the time within which to remedy such defect, failing either of the foregoing, the District may, at its option, correct such defect for and on behalf of the developer.

E. That in the event that the District is required to perform such maintenance on behalf of the Developer, then and in such event, the District shall be deemed to have a lien against the Developer's property, which lien will be inferior only to any existing first mortgage then encumbering said property, ad valorem taxes, and such other liens, impositions and assessments as may be given priority by applicable statues, and said liens shall be for all reasonable costs incurred by the District together with interest thereon computed at 18 percent (18%) per annum. Any lien pursuant to this paragraph shall be effective upon recording in the Broward County Public Records. In the further event that the District is required to foreclose its lien, the and in such event, the District will be entitled additionally to receive its reasonable attorney fees and costs expended in connection with such foreclosure or collection procedure.

F. The Developer has acquired the stormwater management permits as required by the District and acknowledges that said permits shall be renewed every five years from the date the permit is issued pursuant to the

If any wetland planting was placed in the water along the residential lots, where is the variance showing this exception was granted? And where is an indemnification letter?

However good anyone claims certain species might be, there is no planting plan in the water near the residential lots nor in the open water buffer. And as such these should be killed by herbicide application when nascent so that they do not become unmanageable problems.

Breaking Bad: Native Aquatic Plants Gone Rogue and the Invasive Species That Inspire Them

Lyn A. Gettys[1]

ADDITIONAL INDEX WORDS. aggressive growth, alien species, exotic plants, introduced species, invasive species, monocultures, weedy plants

SUMMARY. Conventional wisdom suggests that native aquatic plants have evolved to fill a specific ecological niche, and that their growth is regulated by environmental conditions or the presence of natural enemies that limit the distribution or abundance of the species. However, it is becoming obvious that native species are not always well-behaved and can develop populations that quickly reach nuisance levels that require management to avoid negative ecological impacts. This work summarizes information presented at the American Society for Horticultural Science Invasive Plants Research Professional Interest Group Workshops in 2017 and 2018, and it highlights the phenomenon of species that are considered both native and invasive in the aquatic ecosystems of Florida. These "natives gone rogue" are compared with the introduced species they mimic, and the consequences of excessive aquatic plant growth, regardless of the origin of the species, are described.

Non-native invasive species pose a significant threat to aquatic ecosystems and can disrupt the use of invaded systems. For example, alien plants often outcompete indigenous flora and form monocultures that cannot be used by native fauna, which require a diverse habitat to thrive (Dibble et al., 1996; Jeppesen et al., 1998; Madsen, 2014). In addition to reducing the

for native flora (Madsen, 2014). Exotic trees may produce dense canopies that reduce the amount of light available for photosynthesis by understory plants. A similar situation occurs in aquatic ecosystems; rapid growth and expansion by floating [e.g., waterhyacinth (*Eichhornia crassipes*)], floating-leaved [e.g., crested floatingheart (*Nymphoides cristata*)], and canopy-forming submersed [e.g., hydrilla

blocking the air–water interface, and suppressing light penetration. Additionally, the dense underwater architecture created by the long petioles clogs the water column and interferes with flow, which makes it difficult to quickly move stormwater and increases the likelihood of flooding. Crested floatingheart and its congener yellow floatingheart (*Nymphoides peltata*) were added to the Florida Noxious Weed List in 2014; therefore, it is illegal to possess, collect, transport, cultivate, or import these species without a permit (Florida Department of State, 2014). Florida is suffering from crested floatingheart infestations, which have become firmly established; furthermore, crested floatingheart is considered a significant aquatic weed in South Carolina, where it was first reported in the wild in 2006 (Westbrook and McCord, 2010).

Floating-leaved aggressive native plants: yellow waterlily (*Nymphaea mexicana*) and spatterdock [*Nuphar lutea* (synonym *N. advena*)]

The floating-leaved aquatic species yellow waterlily (also called mexican waterlily) and spatterdock (also called cow-lily or yellow pondlily) have growth habits similar to that of crested floatingheart, although they are most often found in shallower water than crested floatingheart. Both species are native to North America and can develop large, dense populations that require management efforts to lessen negative impacts to anthropocentric and ecosystem services. For example, yellow waterlily was intentionally planted at Orlando Wetlands Park (Christmas, FL), which is a 1220-acre constructed wetland that processes as much as 35 million gallons of wastewater per day from the City of Orlando and surrounding communities (City of Orlando, n.d.). Approximately 2.3 million aquatic plants were used to vegetate the waters of the park, and yellow waterlily was included due to its native status and its ability to serve as a food source and refuge for ducks and other waterfowl. However, this species has greatly expanded its population size within the park, and the dense floating leaves prevent light penetration into the water column. This suppresses the growth of submersed vegetation, which plays an important role in nutrient load reduction as water moves through the wetland (M. Sees, personal communication). Nuisance-level populations of yellow waterlily are not unique to Florida. For example, the USDA (n.d.) classifies the species as native to California, but it is also listed as a noxious weed in California (California Department of Food and Agriculture, n.d.).

Spatterdock, which has submersed, floating, and emergent leaves that are held as much as 8 inches above the surface of the water, usually colonizes areas where water depths are 6 ft or less. The species is often included in aquatic restoration and habitat enhancement plans because it provides valuable ecosystem services such as creating fish habitats, stabilizing substrates, and mitigating nutrients (Slagle and Allen, 2018). Spatterdock has petioles that are much broader (diameter, up to 0.75 inches) than those of yellow waterlily or crested floatingheart (diameter, 0.25 inches); these petioles, along with the submersed leaves (Schoelynck et al., 2014), can cause substantial water flow attenuation in shallow systems. Wennerberg (2004) reported that the species "…may become weedy in some regions or habitats and may displace desirable vegetation if not properly managed." Haberland (2016) echoed this sentiment and stated that spatterdock's rapid growth in nutrient-rich waterbodies could result in complete surface coverage in a few years. For example, the FWC treated more than 1600 acres of spatterdock between 2013 and 2018 (Florida Fish and Wildlife Conservation Commission, 2014, 2015, 2016, 2017, 2018).

Submersed invasive exotic plant: hydrilla

There are two biotypes of hydrilla: monoecious (plants bearing separate pistillate and staminate flowers on the same plant) and dioecious (plants bearing either pistillate or staminate flowers). The monoecious biotype, which is thought to be a Korean native (Madeira et al., 1997), prefers temperate climates and is mostly found in North Carolina and northward in the United States (True-Meadows et al.,

itats for aquatic fauna (Shilling and Haller, 1989).

Littoral aggressive native plants: pickerelweed (*Pontederia cordata*), broadleaf arrowhead (*Sagittaria latifolia*), and lanceleaf arrowhead (*Sagittaria lancifolia*)

Pickerelweed, broadleaf arrowhead, and lanceleaf arrowhead are native to North America; like torpedograss, they inhabit shorelines and littoral regions of aquatic systems. Similar to the native submersed plants

rarely white) sessile flowers, each with a yellow "eyespot" ringed in white (Gettys, 2005). Broadleaf arrowhead and lanceleaf arrowhead have white three-petal pedicellate flowers with a yellow center that are borne singly or in clusters on long peduncles (Moore et al., 2015). These three species are beneficial in many situations; however, under the right circumstances they can develop nuisance-level populations and cause problems similar to those described for torpedograss. They disrupt the movement of stormwater and interfere with recreational activities, particularly by blocking access to boat ramps and other points of entry to a water resource. Pickerelweed, broadleaf arrowhead, and lanceleaf arrowhead do not form floating mats, but they can be highly competitive and crowd other littoral zone species, thus creating monocultures that serve as poor habitats for aquatic fauna.

Conclusions

Non-native plants can threaten ecosystems by outcompeting native plants, reducing species richness, altering abiotic factors, and interfering with anthropocentric interests such as crop production. Aquatic ecosystems are especially vulnerable to invasion by exotic plants that have exuberant growth and can create risks to human health, clog irrigation intakes, interfere with recreation, and inhibit water movement. It is widely accepted that introduced species pose significant risks when they invade our waters, but little thought has been given to the phenomenon of native species that sometimes grow excessively and form nuisance-level populations that can cause the same disruptions historically associated with non-native plants. Several factors may contribute to aggressive growth of native species, including climate change, altered abiotic factors, and competition release resulting from targeted management of introduced invasive species. Although most management efforts focus on invasive exotic plants such as water hyacinth, crested floatingheart, hydrilla, and torpedograss, it is clear that aquatic resource managers should be poised to face new challenges from "natives gone rogue" as our weed populations shift from exclusively invasive non-native species to include aggressive indigenous plants.

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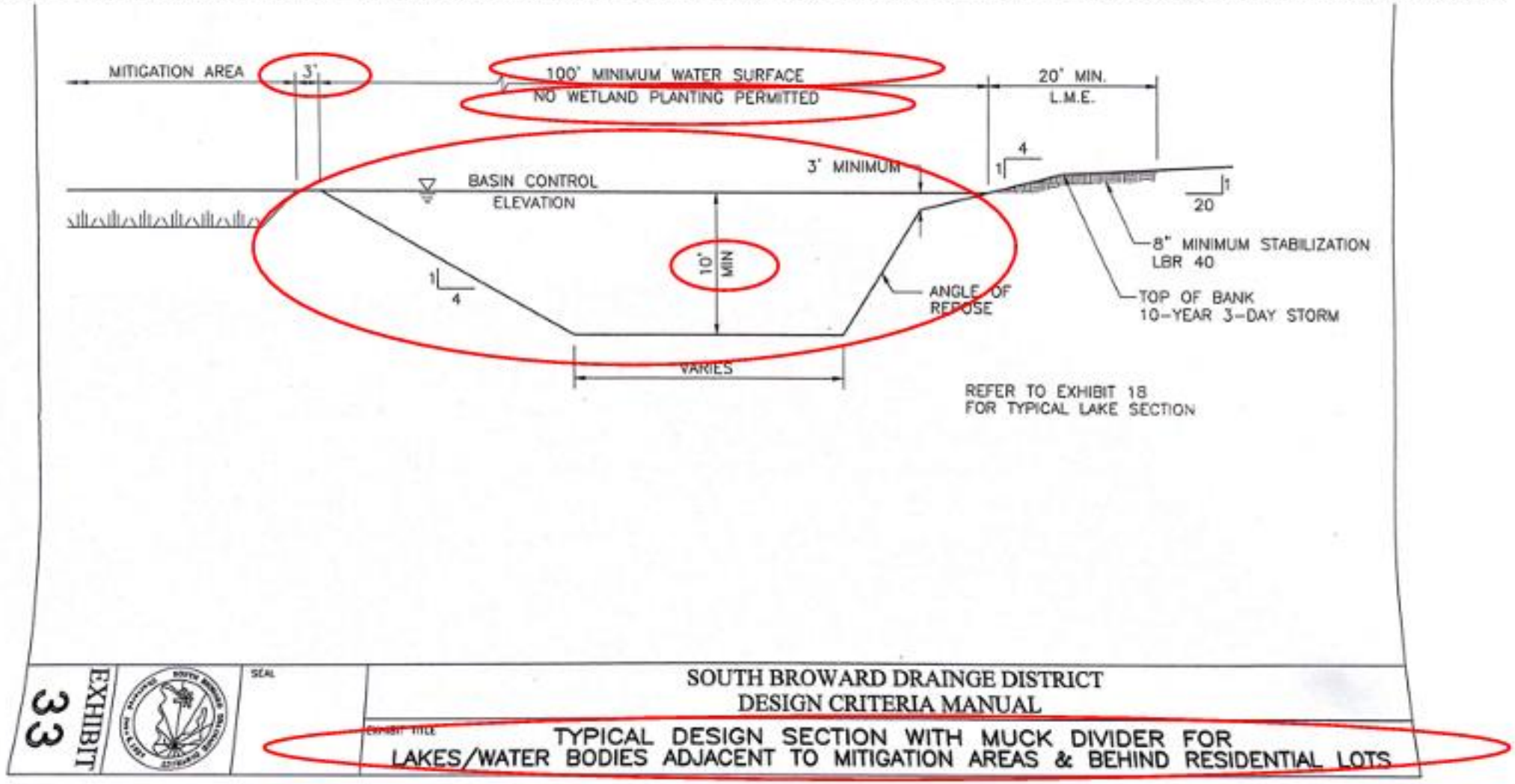
Standards from adjacent district show no wetland plantings in residential shoreline or open water

They also show a divider/ hydric berm

Picture 1: Exhibit 33 and 34 from the South Broward Drainage District Stormwater management design manual



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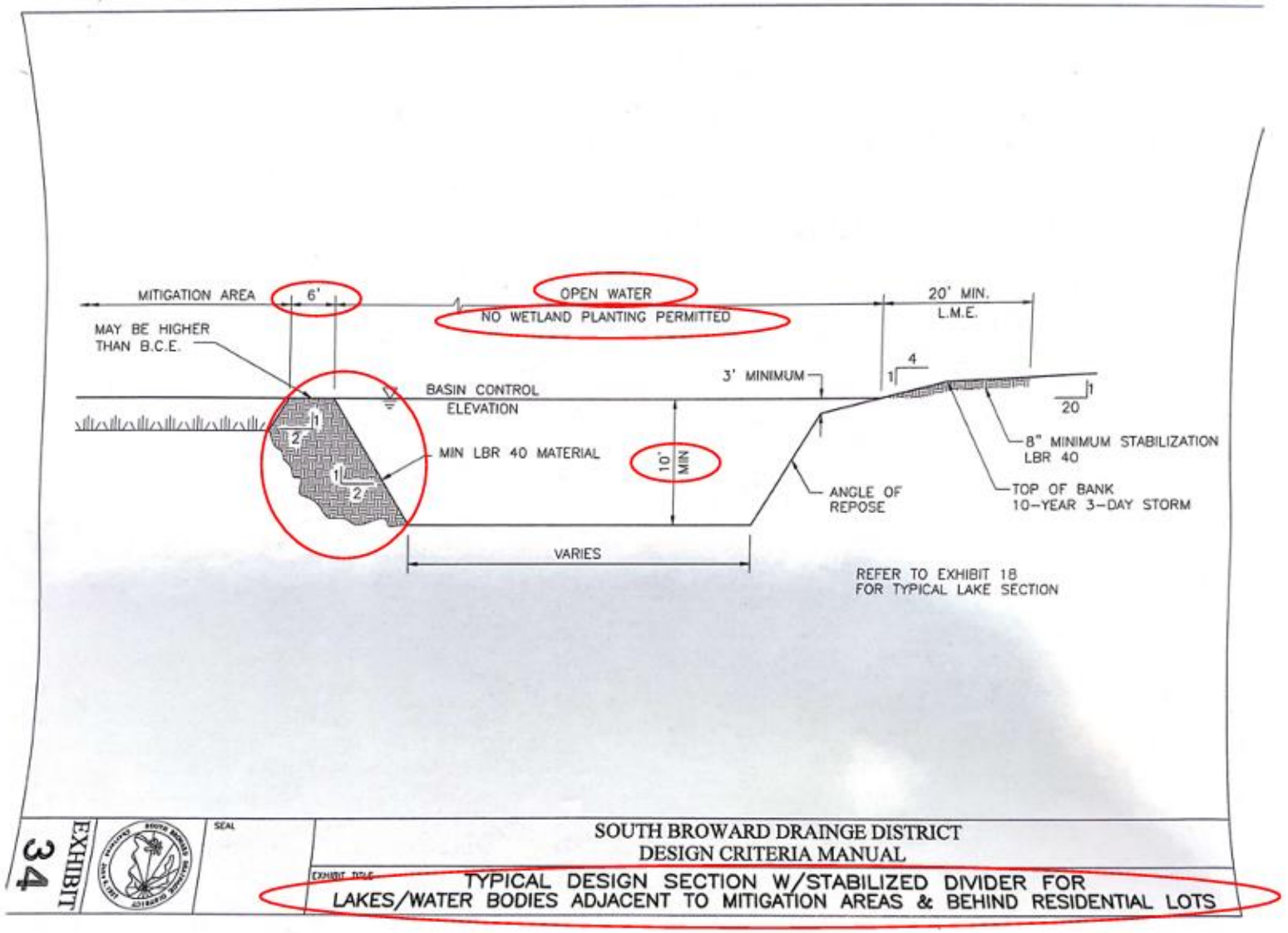


So in conclusion

"Should I as an individual Sierra Ranches resident who is aware of all the problems, really accept a Preserve that is FLAWED due to NOT following code, NOT following best engineering standards, having post-construction catastrophic failure, leading to potential increased maintenance costs and lack of fidelity with plans?

Something that could affect my family's long-term health, safety and economic well being, and those of other residents and future generations in perpetuity?"

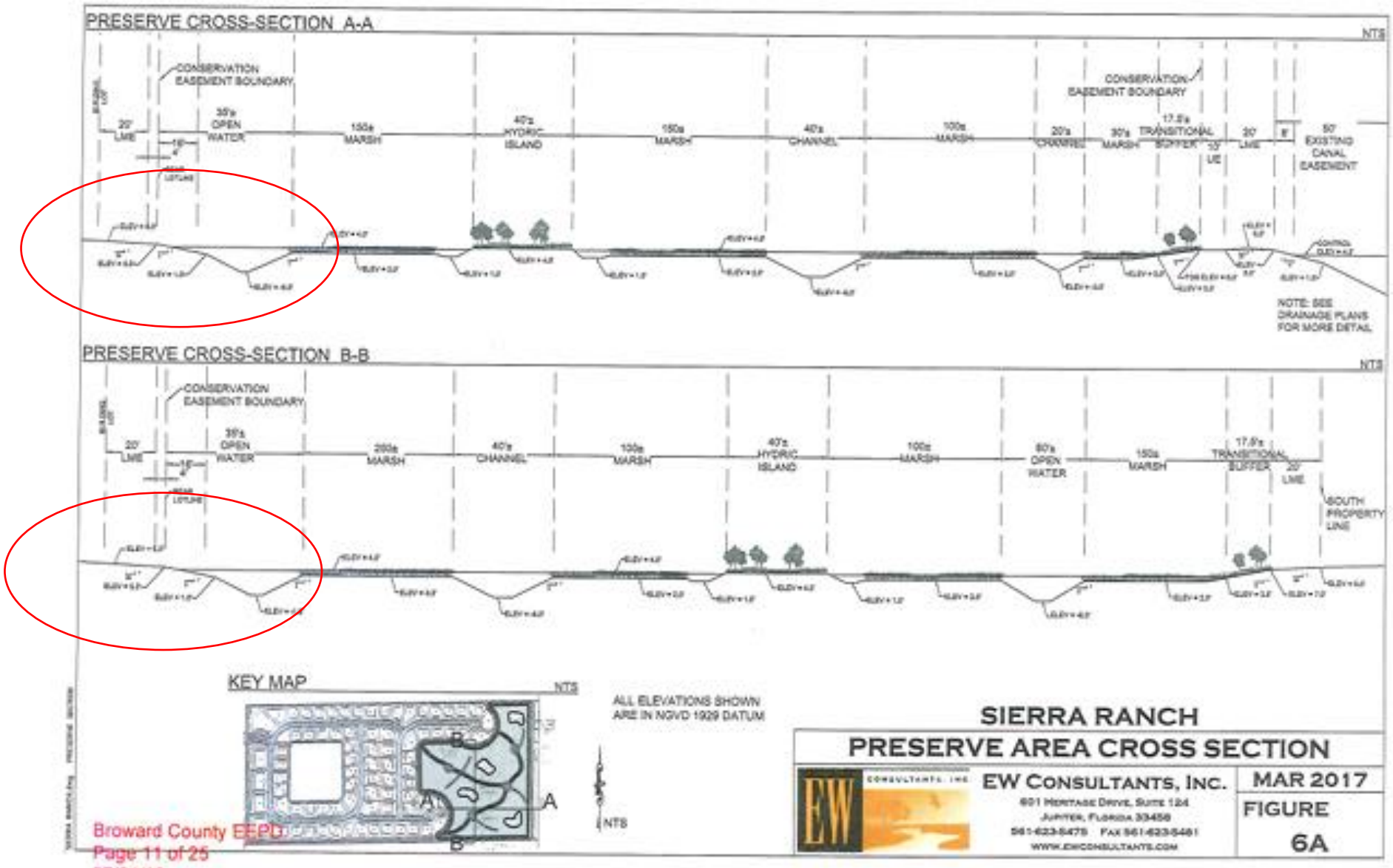
Thank you!

Back up Slides

Conservation plan does not call for any plantings on residential shorelines or the open water buffer

No plantings

No plantings

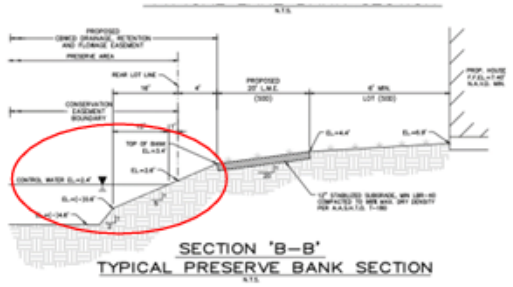


Engineering plan does not call for any plantings on residential shorelines or the open water buffer

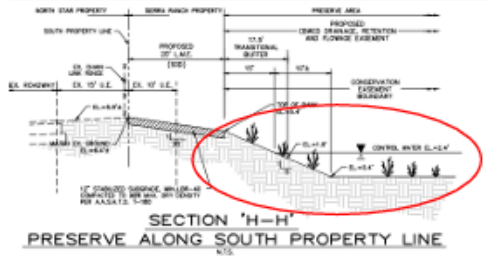
Picture 6: Snippets from the Engineering Plan

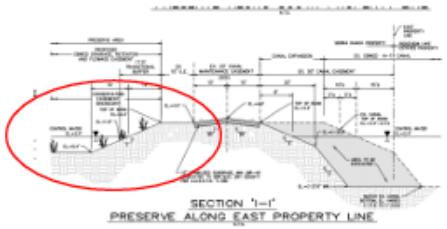
Filed as the Sierra Ranches Master Plan with the town of Davie showing the preserve bank close residential lots and transition buffers on the East, North and South Ends

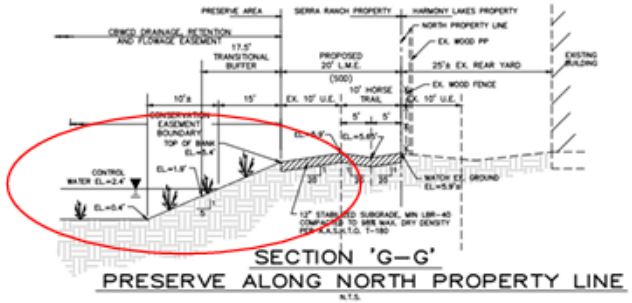
BELOW is the cross section of preserve bank close to residential plots (**no planting is shown here**)



The next three cross sections are the **North, South and East ends of the preserve** away from residential lots and close to the neighboring plats (they show plantings consistent with the Environmental plans)



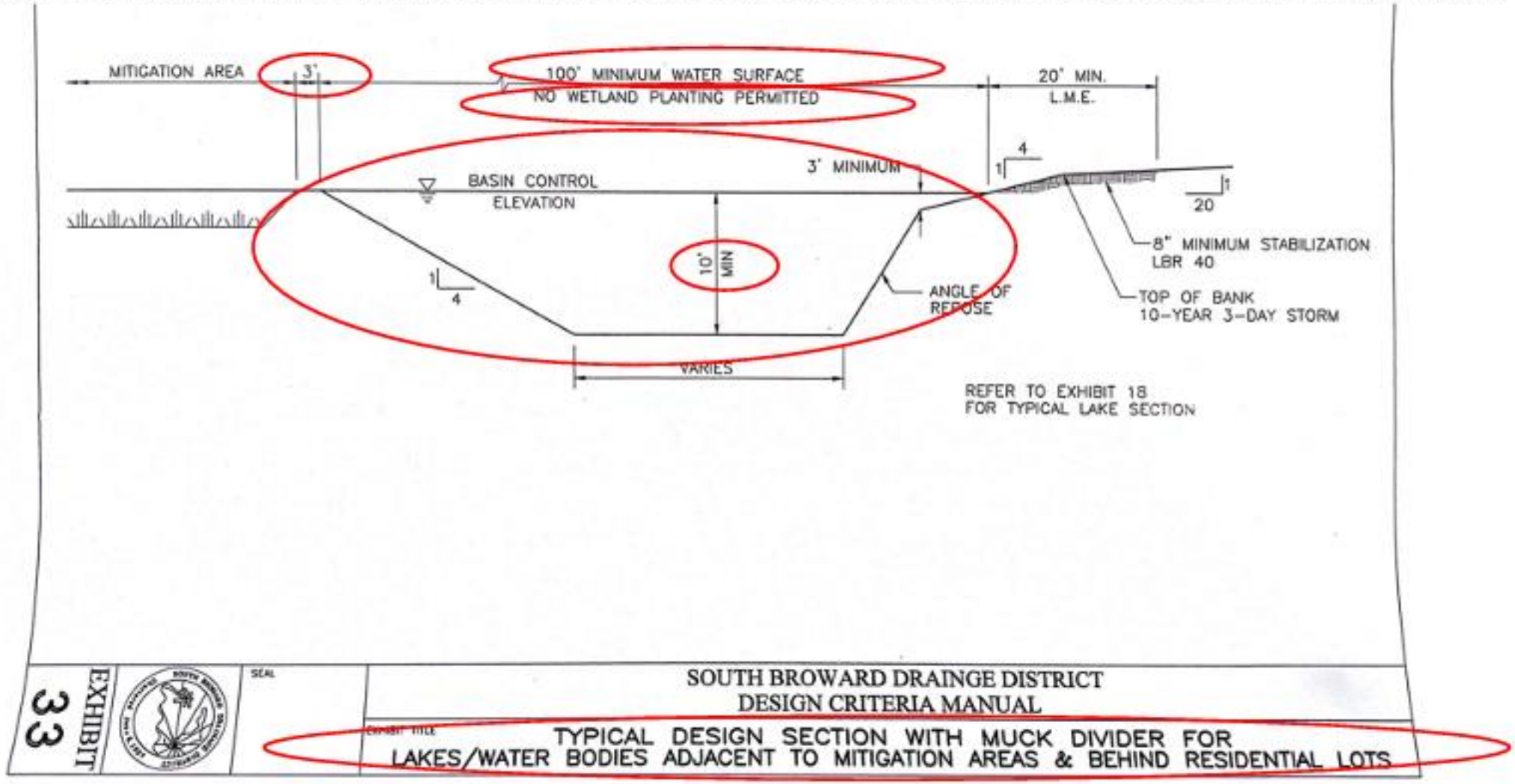




Standards from adjacent district show no wetland plantings in residential shoreline or open water

They also show a divider/ hydric berm

Picture 1: Exhibit 33 and 34 from the South Broward Drainage District Stormwater management design manual



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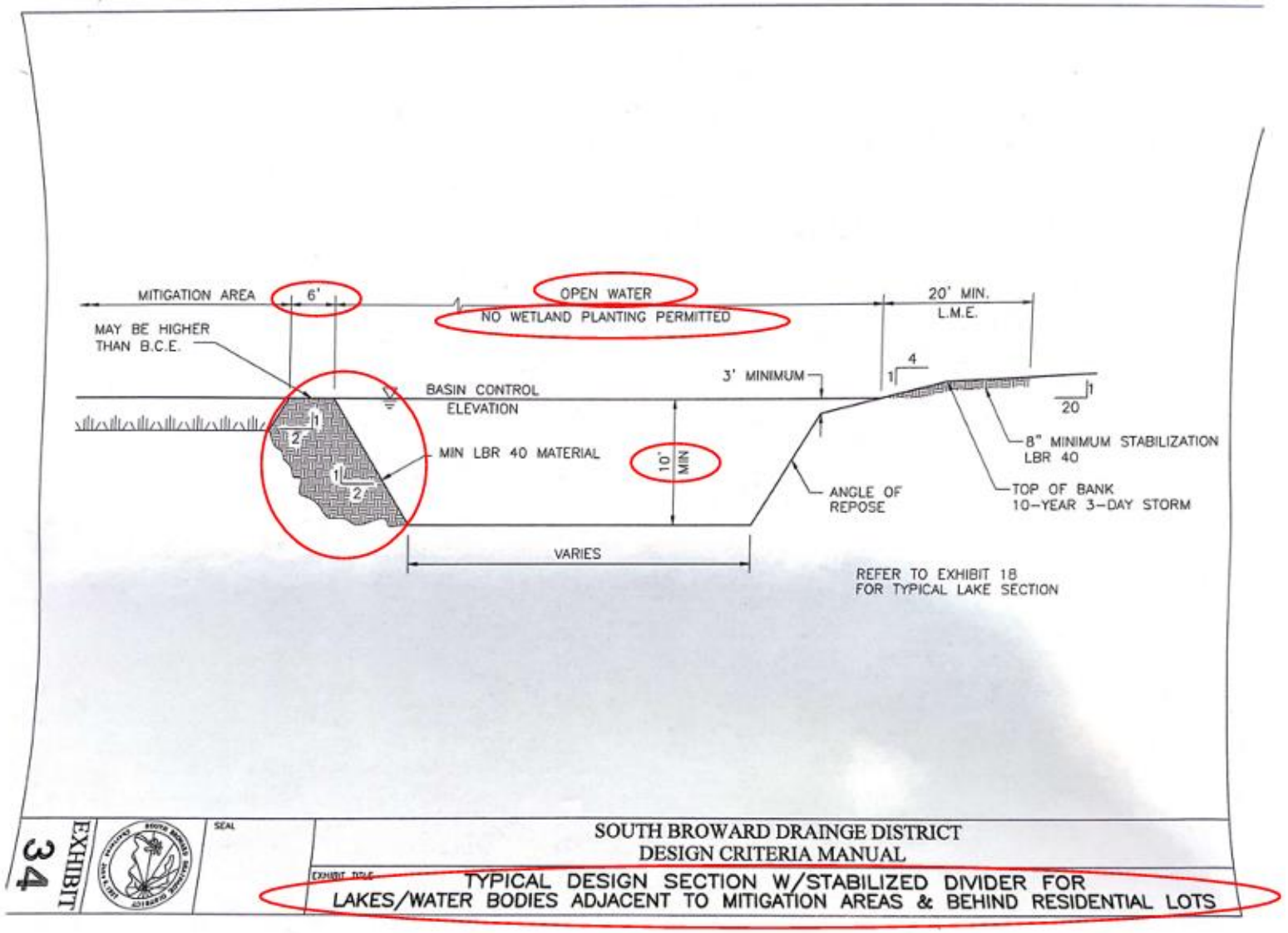

2003 Mitigation Plan

SIERRA RANCH

Onsite Wetland Mitigation Plan

The onsite wetland mitigation plan involves the enhancement of a total of 14.66 acres. The mitigation consists of two areas on the west side of the property. The two areas will consist of a total of 10.14 acres of marsh at elevation 3.0' NGVD, 1.25 acres of hydric islands at elevation 5.0' NGVD and 0.33 acres of hydric berm on the east side at elevation 5.0' NGVD to prevent sloughing of marsh soils into the lake area. Buffers will consist of transitional areas on the north, south, and west sides at elevation 6.5' NGVD, and an openwater buffer on the east side. The marsh area will be planted with herbaceous wetland species. The hydric islands and transitional buffers will be planted with native wetland tree and shrub species. Aquatic wetland species will be planted in the openwater area. Construction of the mitigation area includes lowering of the ground elevations by scraping the surface soils, removal of the underlying limestone and rock as necessary and stockpiling muck soils to be placed back in the top foot of the mitigation area for planting.

The wetland mitigation will be initiated 90 days after issuance of all necessary permits and licenses. The specific mitigation sequence will begin with the removal of the suitable soils and screening for future wetland soil. All unsuitable debris and exotic vegetation will be removed and disposed of in an appropriate manner. The mitigation area subsurface soils will be lowered to suitable wetland elevations. The suitable wetland soils will then be replaced and graded to achieve a habitat of marshes, hydric islands, transitional berms, and openwater area. Suitable wetland vegetation will be installed following permitting agency review of the graded wetland area.

The Baseline Mitigation Area Monitoring Report will be conducted prior to the removal of the upland and/or exotic vegetation and before beginning mitigation area work. Site visits will be initiated with permitting agency staff during the clearing and grading phase of the project so that the final design and wetland planting parameters may be discussed in the field.

It is anticipated that the wetland mitigation creation efforts will begin during June 2004 with the removal of the upland and/or exotic vegetation debris and surface soils. Wetland mitigation area earthwork will continue for approximately two (2) months wherein the ground elevations will be lowered as necessary to the proposed wetland mitigation elevation of 1.0' to 6.5' NGVD

Following completion of the wetland mitigation area earthwork, an as-built survey of the area will be generated and reviewed for