Pond Siting Report

Philip Griffitts Senior Parkway Phase III

Prepared for Bay County Board of County Commissioners

From Clara Avenue to Chip Seal Parkway

Bay County, Florida

Financial Management Numbers: 442483-4-34-01 & 442483-4-34-02
ETDM Number: 14562

Prepared By:
Kimley-Horn & Associates, Inc.
120 Richard Jackson Blvd #230
Panama City Beach, FL 32407

May 2026

PROFESSIONAL ENGINEER CERTIFICATION

I hereby certify that I am a registered professional engineer in the State of Florida practicing with **Kimley-Horn and Associates, Inc.** and that I have supervised the preparation and approve the findings, opinions, conclusions, and technical advice hereby reported in:

REPORT: Pond Siting Report

PROJECT: Philip Griffitts Senior Parkway Phase III from Clara Avenue to Chip Seal Parkway

The following duly authorized engineering business performed the engineering work represented by this document:

Kimley-Horn & Associates, Inc.

120 Richard Jackson Blvd #230

Panama City Beach, FL 32407

Telephone: (850) 553-3522

FL Certificate of Authorization No. 696

This report contains calculations for hydrologic and hydraulic analysis for the above roadway improvement project. The information used to determine hydrologic and hydraulic parameters for the calculations was based on the best available information at the time of the analysis.

I acknowledge that the procedures and references used for this report and its calculations are standard to the practice of civil engineering as applied through professional judgement and experience.

THE OFFICIAL RECORD OF THIS REPORT IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

PREPARED BY: James C. Donahue

PE NUMBER: 98320

DATE:

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED. THE SIGNATURE MUST BE VERIFIED ON THE ELECTRONIC DOCUMENT.

Table of Contents

List of Figures

List of Tables

EXECUTIVE SUMMARY

Philip Griffitts Sr. (PGS) Parkway is a proposed new road approximately one mile north of US 98 (SR 30A/Panama City Beach Parkway) between SR 79 (N. Arnold Road) and Chip Seal Parkway. This report is for Phase III of the project which extends from Clara Avenue to Chip Seal Parkway in Panama City Beach, Bay County, Florida. The total distance of Phase III is approximately 5.1 miles.

This primarily east-west facility will provide a two-lane (major collector) roadway with 11-foot travel lanes, four to five-foot paved shoulders, curb and gutter, and a 10 to 12-foot shared-use path for most of the project length (**Figure 1**: Proposed Typical Section). The estimated right-of-way (ROW) width for the proposed project is 200 feet. The ROW is proposed to include extra width to accommodate several new utility lines for the City of Panama City Beach, to provide critical redundancy to the City's water and wastewater utility network.

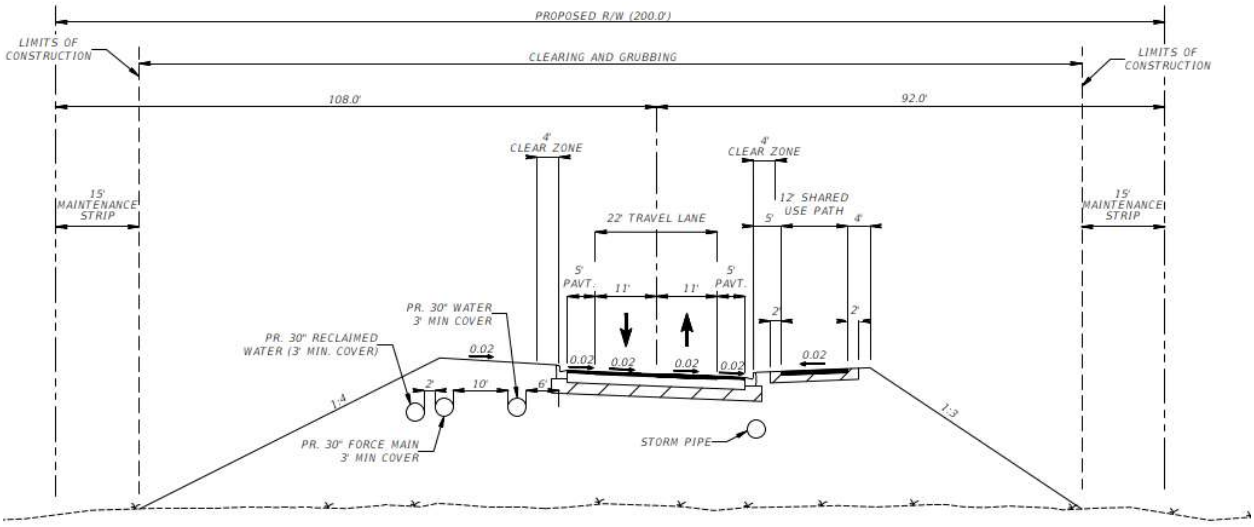


Figure 1: Proposed Typical Section

The analysis presented in this report identifies the stormwater management needs of the project. This report considers the estimated type, size, and conveyance requirements of each pond to determine potential pond locations. Criteria used in this evaluation includes the Northwest Florida Water Management District (NWFWMD) Applicant's Handbook Volume II, Bay County Land Development Regulations, and FDOT Drainage Design Guide and Manual. The PD&E Study associated with the project is anticipated to be completed and approved prior to the June 28, 2026 grandfathering deadline associated with Florida's New Stormwater Rule, as outlined in Chapter 62-330, Florida Administrative Code (F.A.C.). As such, the project is expected to remain subject to the existing first flush water quality treatment requirements in effect prior to the adoption of the new rule, and the included analysis of this report assumes that these existing water quality treatment rules will govern.

Because of the protected status of the Breakfast Point Mitigation Bank (BPMB), the two preferred alternative pond locations are located outside the conservation easement at the east and west ends of the project. Stormwater runoff across the project will be conveyed via a curb inlet and pipe collection system to minimize the proposed roadway footprint and corresponding wetland disturbance. The

Western Pond will be designed to discharge directly into West Bay, a tidally influenced waterbody, and thus discharge rates will not be held to water quantity standards. Because the Western Pond will function exclusively as a water quality pond, it is considerably smaller than the eastern pond which will be required to provide both water quality and water quantity storage. The third proposed pond, the Modified Homewood Suites Pond, will be constructed to replace the portion of the existing pond being impacted by the proposed corridor. All pond locations being considered were analyzed as wet-detention ponds. Stormwater runoff from the extensions of Alf Coleman, Clara Ave, and Longpoint Way which is unable to be routed to the proposed ponds because of elevation constraints will be addressed via compensating treatment/attenuation or with roadside swales.

The majority of the project is located within Federal Emergency Management Agency (FEMA) regulated Flood Zone A (floodplain elevation not established) and Flood Zone AE with floodplain elevations ranging from 8'-10' NAVD. A small portion of the project is located within Flood Zone X (0.2% annual chance flood hazard). There are no known regulated floodways within the project area. The following FEMA Flood Insurance Rate Maps (FIRM) contain the project area: 12005C0302J, 12005C0304J, 12005C0308J, 12005C0309J. Because the site sits directly adjacent to tidally influenced waters (West Bay), the flood elevations listed in the FEMA FIRM maps are based upon estimated tidal surge elevations. Because of this, project impacts to the existing FEMA floodplain are not expected to require volumetric compensation. Instead, cross drains throughout the project will be sized appropriately to convey the 100-year design storm event without causing adverse impacts to floodplain upstream (south) of the proposed corridor. In total, thirty-four (34) new cross drain culverts along the corridor are anticipated. Additional details of the cross drain analysis are provided in the Location Hydraulics Report (LHR) provided under separate cover.

Table 1: Pond Alternative Matrix

Pond Site	Wetland Impacts (ac)	Contamination Risk	Floodplain Hazard (ac)	Access Issues	Number of Property Owners	Pond Right-of-Way Area (ac)	Estimated Pond Option Construction Cost
Pond West-1	**7.9**	**Low**	**12.3**	**No**	**1**	**12.3**	**$1,895,931**
Pond West-2	**8.2**	**Low**	**12.8**	**No**	**1**	**12.8**	**$2,480,658**
Pond West-3	**10.9**	**Low**	**12.0**	**No**	**1**	**12.0**	**$4,179,228**
Pond East-1	**11.1**	**Low**	**20.6**	**No**	**1**	**21.3**	**$2,800,116**
Pond East-2	**11.9**	**Low**	**20.7**	**Yes**	**1**	**20.9**	**$5,885,251**
Pond East-3	**13.5**	**Low**	**20.8**	**Yes**	**1**	**20.9**	**$6,699,855**

Legend: **Preferred Alternative**

SECTION 1 – INTRODUCTION

The objective of this report is to determine the impacts of the stormwater management facilities that will be required for the extension of PGS Parkway Phase III from Clara Avenue to Chip Seal Parkway, approximately 5.1 miles. As part of the project, Alf Coleman Road, Clara Avenue, and Longpoint Way will be extended to the new PGS Parkway alignment. Each potential pond location was evaluated for right-of-way needs, environmental impacts, potential construction cost, construction feasibility, hydraulic preferability, and effectiveness for meeting water quality and quantity requirements. The majority of the project is located within unincorporated Bay County with a small portion on the western end of the project located within the limits of Panama City Beach. See **Figure 2** below for a location map with the preferred pond alternatives shown.

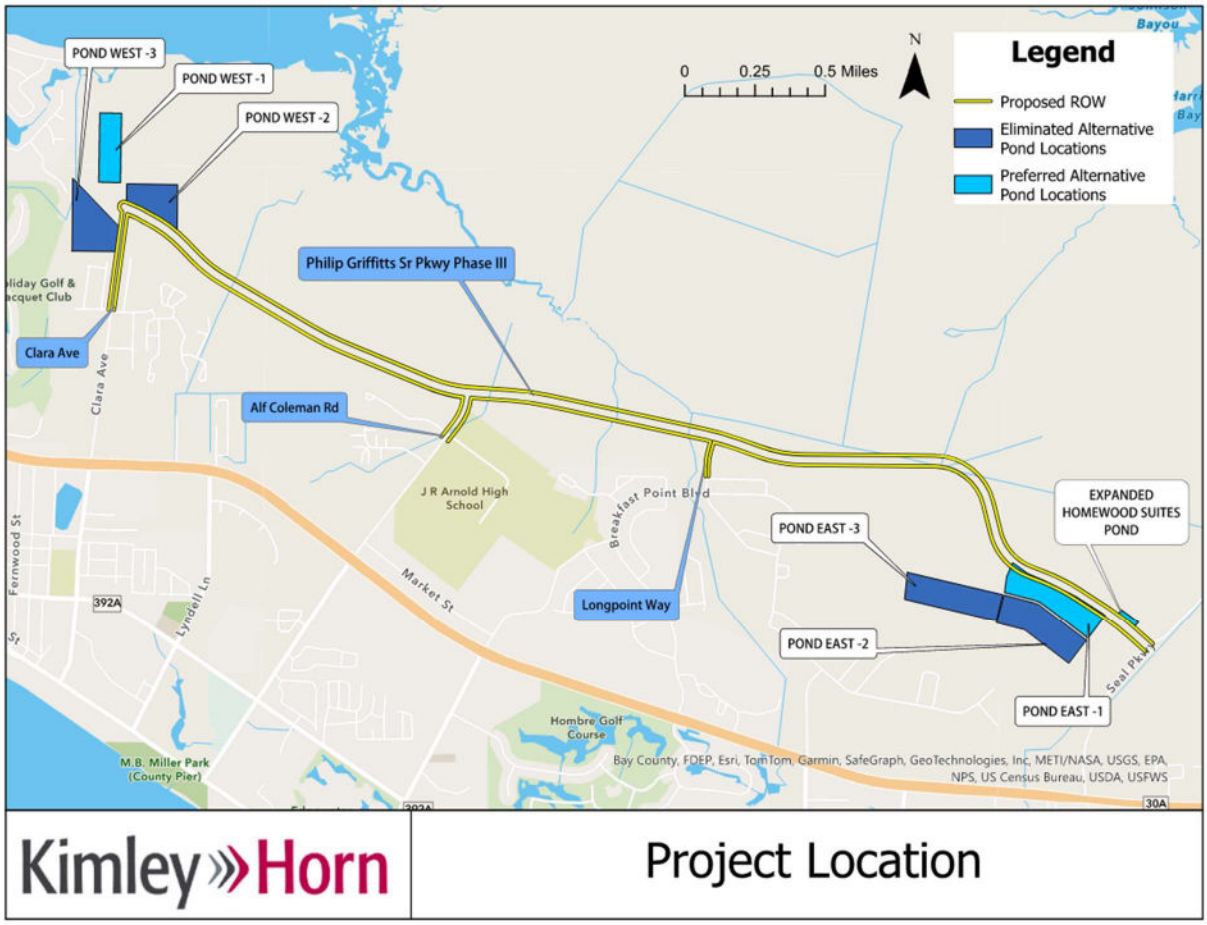


Figure 2: Project Location

SECTION 2 – PROJECT DESCRIPTION

PGS Parkway is a proposed new road approximately one mile north of US 98 (SR 30A/Panama City Beach Parkway) between SR 79 (N. Arnold Road) and Chip Seal Parkway. Phase III of the PGS Parkway extends from Clara Avenue to Chip Seal Parkway in Panama City Beach, Bay County, Florida (**Figure 2**: Project Location Map). The total distance of Phase III is approximately 5.1 miles.

This primarily east-west facility will provide a two-lane (major collector) roadway with 11-foot travel lanes, four to five-foot paved shoulders, curb and gutter, and a 10 to 12-foot shared-use path for most of the project length (**Figure 1**: Typical Section). The estimated right-of-way (ROW) width for the proposed project, including side slopes tying down to the existing grade, is 200 feet. The ROW is proposed to include extra width to accommodate several new utility lines for the City of Panama City Beach, to provide critical redundancy to the City's water and wastewater utility network.

The purpose of the PGS Parkway Phase III is to improve mobility in the study area by providing an alternative to US 98 (SR 30A/Panama City Beach Parkway) for local traffic; to enhance vehicular and pedestrian connectivity to J.R. Arnold High School, A. Gary Walsingham Academy, the Panama City Beach Publix Sports Park, and the Breakfast Point neighborhood; and to address safety concerns on US 98 (SR 30A/Panama City Beach Parkway) within the study limits by reducing congestion.

A secondary purpose is to enable risk reduction and resiliency of the transportation network by providing an alternate route that is constructed above the storm surge elevation in the coastal high hazard area.

The vertical datum used for this project is the North American Vertical Datum of 1988 (NAVD88). Based on the Vertical Datum Transformation tool from NOAA, the datum conversion from NGVD29 to NAVD88 is approximately (-) 0.49-ft, with NAVD88 being the lower of the two. All elevations presented in this report are in NAVD88, unless specified otherwise.

$$NAVD88 = NGVD29 - 0.49 \text{ ft}$$

SECTION 3 – DATA COLLECTION

A variety of data was collected to aid in analyzing the stormwater management facilities. Collected data includes the following:

As-built Drawings – As-builts drawings from adjacent Northwest Florida Water Management District (NWFWMD) Environmental Resource Permits (ERP)

LiDAR – Light Detection & Ranging (LiDAR) topographic elevation was acquired through NOAA (National Oceanic and Atmospheric) from 2020.

FEMA's Floodplain – FEMA floodplain boundary linework was downloaded from the official FEMA website to evaluate floodplain hazard.

Wetlands – Wetland boundary linework was downloaded from the National Wetland Inventory website and from the Bay County GIS database (2025) to perform a desktop analysis of wetland impacts.

Conservation Easements – Conservation Easements from the Bay County GIS database were used to perform a desktop analysis of wetland impacts.

Geotechnical Data – Soil data was obtained through the Natural Resources Conservation Service (NRCS) Web Soil Survey website. This data was used to determine soil types, hydrologic grouping, and estimated depth to seasonal water table. Refer to **Appendix A** for a Soils Exhibit.

Stormwater Models – The existing city-wide ICPR4 Panama City Beach model and FEMA SWMM model for the area was obtained from Bay County's drainage consultant, Gemini Engineering & Sciences, Inc. These models were used to help determine existing basin boundaries for the project.

Field Review – A site visit was conducted to verify the general conditions of the project site at accessible points adjacent to existing roadways. Pictures from this site visit can be found in **Appendix H**.

SECTION 4 – DESIGN CRITERIA

Typical Section

The proposed typical section for PGS Parkway was assumed to be the same for the three proposed Alternatives. The proposed typical section is shown in **Figure 1**. The typical section consists of 11-foot wide travel lanes (one in each direction), a 5-foot paved shoulder in both directions, a 12-foot shared use path on the south side of the road, and a grassed utility strip on the north side of the road. The proposed ROW width is 200-feet. While the Preliminary Engineering Report (PER) for the project does propose certain sections of the corridor to not have the 12-foot shared use path, it was assumed for this PSR that the entire PGS corridor would have a single typical section with the 12-foot shared use path for simplicity and to be conservative.

Horizontal Alignment

A comparative evaluation of three horizontal alternative alignments was evaluated to determine the best route in terms of engineering, socioeconomic, environmental, physical, traffic, and safety impacts, as well as potential cost for each of the Build Alternatives. Please see section 1.4 of the Preliminary Engineering Report (PER) for a discussion on how the preferred alternative was selected.

Vertical Alignment

Multiple factors were evaluated to determine the optimal vertical alignment including: tie-in elevations of connecting roadways, horizontal curve criteria, vertical curve criteria, sufficient base clearance, cross drains, wildlife crossings, roadway drainage collection system hydraulics, adjacent ponds, and anticipated surge elevations. Because of the project's proximity to coastal waters, the vertical profile of the roadway was set at a minimum elevation higher than the anticipated storm surge from the 100-year storm event. 100-year storm elevations can be found in the FDOT Design Storm Surge Hydrographs Executive Summary Table 1, Recommended Peak Storm Surge Heights. Anticipated surge elevations were gathered from FEMA maps in the area. Please see **Appendix B** for an exhibit showing FEMA surge elevations.

Right-of-Way

Roadway Corridor Right-of-Way:

The proposed right-of-way for the roadway corridor reflects the width necessary for two (2) 11-foot travel lanes, two (2) five-foot shoulders, one (1) 12-foot multi-use path, a grass utility strip, grass tie-down slopes, and a 15-foot flat grass maintenance strip adjacent to the north and south right-of-way line. Additionally, segments requiring left and right turn lanes for proposed intersection connections will

require additional right-of-way. The proposed right-of-way will need to be acquired via acquisition or eminent domain.

Stormwater Management Facility Right-Of-Way: The proposed right-of-way necessary for the preferred pond alternatives will consist of approximately 12.3-acres for the West Pond, 21.3-acres for the East Pond, and 1.1-acres for the Expanded Homewood Suites Pond.

Stormwater Management

The design of proposed Stormwater Management Facilities (SMF) will comply with the standards set forth by NWFWMD, FDOT, and Bay County. A new Individual Environmental Resource Permit (ERP) with NWFWMD will be required for the project in the design phase.

New Stormwater Water Quality Standards

Because the PD&E study for this project began prior to the effective date of the new stormwater water quality standards (June 28, 2024) and is anticipated to be completed before June 28, 2026 (two-years after the effective date), this project is not subject to the new performance criteria outlined in Section 8.3 of the revised ERP Applicant's Handbook Volume I. The project will be required to meet the first-flush volumetric treatment stormwater quality requirements in place prior to the June 28, 2024 effective date. The following paragraphs outline that criteria.

Water Quality Criteria

Standard treatment measures will be provided per section 8.2 of the NWFWMD Environmental Resource Permit Applicant's Handbook Volume II (AH. Vol. II), effective October 1, 2013. A wet detention treatment system shall treat one inch of runoff from the contributing area.

Additionally, because the project discharges to an Outstanding Florida Waters (OFW), St. Andrew's Aquatic Preserve, the project will be required to provide an additional 50% of both the required treatment and permanent pool volumes per Section 8.12. OR pre-treatment of stormwater prior to entering the wet detention pond.

Water Quantity Criteria

Northwest Florida Water Management District:

Because the project is located near tidally influenced waters, certain SMF alternatives were able to assume a tidal discharge point. Per Section 3.3(c) of NWFWMD Applicant Handbook Vol. II, peak discharge attenuation is not limited to pre-development conditions for SMF that discharge to tidally influenced waterways. NWFWMD considers any water way that is characterized by a repeatable monthly average tide range of more than 0.1 feet to be tidally influenced.

For SMF alternatives that were not able to discharge to tidally influenced waterways, Section 3.3 applies which states that the post development peak discharge rate must not exceed the pre-development peak discharge rate for the 25-year/24-hour and 2-year/24-hour design storm events using the NRCS type III rainfall distribution and antecedent moisture condition II.

Because the project area is located within an "open" basin, meaning there is a positive conveyance path for stormwater runoff to reach the ocean, pre vs post volumetric requirements are not required.

FDOT

Per FDOT standards, the post development peak discharge rate must not exceed the pre-development peak discharge rate for the 3, 5, 10, 25, 50, and 100-year frequency storm events with 1, 2, 4, 8, 24, and 72-hour duration events evaluated for each.

Additionally, a minimum 1-ft of freeboard is required between the design highwater (DHW) and inside berm elevation in ponds for the critical duration storm event up to the 100-year design frequency.

Bay County

Per Chapter 24 of the Bay County Land Development Code, all stormwater management facilities shall at a minimum provide attenuation for the 25-year frequency storm event of critical duration with FDOT 1, 2, 4, 8, and 24-hr duration rainfall distributions. For areas where upstream or downstream flooding has been previously identified, the 100-yr critical design storm frequency governs.

Floodplain Compensation Criteria

Per Section 3.4 of NWFWMD AH. Vol. II., Floodways and floodplains, and levels of flood flows or velocities of adjacent streams, impoundments or other water courses must not be altered to adversely impact the off-site storage and conveyance capabilities of the water resource. Projects that alter existing conveyance systems (such as rerouting an existing ditch) must not adversely affect existing conveyance capabilities. Also, the applicant shall provide reasonable assurance that proposed velocities are non-erosive or that erosion control measures (such as riprap and concrete lined channels) are sufficient to safely convey the flow.

Pond Geometry Criteria

All proposed ponds will be required to meet the geometric and dimensional requirements of Section 2 and Section 8 of the NWFWMD AH. Vol. II and 2025 FDOT Drainage Manual which requires the following:

a) Width and Length – The average length to width ratio of the pond must be at least 2:1.
b) Depth – A maximum depth of 12 feet and a mean depth between 2 and 8 feet is required for wet ponds.
c) Side Slopes – All retention or detention areas should have stabilized side slopes no steeper than 4H:1V out to a depth of two feet below the control elevation. Littoral zones (if used) must be 6:1 or flatter.
d) For wet detention systems, the bottom elevation of the ponds must be at least six (6) feet below the control elevation to minimize aquatic growth per the FDOT Drainage Manual.
e) Maintenance Berm – Ponds must have a minimum of 20-feet of horizontal clearance between the edge of the control elevation and the right-of-way line. A 15-foot maintenance berm with side slopes 1:8 or flatter is required around the perimeter of proposed ponds. The inside edge of the maintenance berm towards the pond must have a radius of 30-feet or greater and be a minimum of 1-foot above the design highwater elevation of the pond.
f) Permanent Pool Volume – The pond must be sized to meet the water quality requirements of the following sections of NWFWMD AH. Vol. II: Section 5.2, requiring 50% additional volume for basins draining to an OFW; Section 8.5, which states that the volume must be sufficient to provide a 14-

day residence time based upon average wet season rainfall; and Section 8.6, specifying that an additional 50% permanent pool volume will be required if the littoral zone requirements listed within the section are not met.

g) Freeboard – At least one foot of freeboard between the maximum design high water elevation and the inside edge of the maintenance berm is required. For linear treatment swales the minimum freeboard is 0.5 feet.

SECTION 5 – ENVIRONMENTAL LOOK AROUND

During the design phase, a Environmental Look Around (ELA) meeting will be conducted with applicable regulatory agency staff to discuss the stormwater needs of the project, design, and permitting approaches that benefit the watershed and minimize environmental impacts.

SECTION 6 – EXISTING & PROPOSED POND CONDITIONS

6.1 Existing Drainage Conditions

The majority of the project corridor is located within the jurisdictional boundaries of Bay County with a small portion of the western end of the project falling within the boundaries of Panama City Beach. The project is located within the Northwest Florida Water Management District (NWFWMD). Existing land cover across the site is primarily forested wetlands and a large portion of the project will bisect the existing BPMB. Stormwater runoff in the area drains south to north via, overland flow, swales, wetlands, and a handful of larger canals. Thirty-eight (38) existing drainage basins adjacent to the project were analyzed within the project limits. These are summarized in **Table 2** in the proceeding text. Refer to **Appendix C** for basin and watershed maps.

2020 Light Detection and Ranging (LiDAR) elevations used in the delineation of basins were sourced from the National Oceanic and Atmospheric Administration (NOAA). In addition to this data, field visits, and permitted information sourced from NWFWMD for adjacent developments were used where applicable.

Floodplain

The majority of the project is located within Federal Emergency Management Agency (FEMA) regulated Flood Zone A (floodplain elevation not established), and Flood Zone AE with floodplain elevations ranging from 8’-10’ (NAVD). A small portion of the project is located within Flood Zone X (0.2% annual chance flood hazard). There are no known regulated floodways within the project area. The following FEMA Flood Insurance Rate Maps (FIRM) contain the project area: 12005C0302J, 12005C0304J, 12005C0308J, 12005C0309J. Because the site sits directly adjacent to tidally influenced waters (West Bay), the flood elevations listed in the FEMA FIRM maps are based upon estimated tidal surge elevations.

Watersheds

The extents of the project fall within the following Water Body Identification (WBID) codes created and maintained by the Florida Department of Environmental Protection (FDEP). Existing basins B001-B007 are located in the ICWW Watershed (WBID #1008). Existing basins B007-B019, AC0103A, AC0103, AC0201, AC0210, BB03000, BP5, and AC0102 are located in the Botheration Bayou Watershed (WBID #1099).

Existing basins B019-B021 are located in the Basin Bayou Watershed (WBID #1092). Existing basins B021-B029 are located in the Harrison Bayou Watershed (WBID #1105). Existing basins B028-B032 are located in the Unnamed Bayou Watershed (WBID #1119). All existing basins are considered open basins. The ultimate outfall for all basins is West Bay (WBID #1061A).

Table 2: Existing Basins Summary

Basin Number	From Station	To Station	Open Basin?	Flood Zone(s) and BFE if applicable	Watershed	WBID
B001	44+66	54+38	Y	X & AE (9')	Intercoastal Waterway (ICWW)	1008
B002	54+38	54+82	Y	X & AE (8' to 9')	ICWW	1008
B003	54+82	104+97	Y	X & AE (8' to 9')	ICWW	1008
B004	40+21	110+62	Y	X & AE (8' to 9')	ICWW	1008
B005	110+62	117+14	Y	X & AE (8' to 9')	ICWW	1008
B006	117+14	120+58	Y	X & AE (8' to 9')	ICWW	1008
B007	120+58	126+73	Y	X & AE (8' to 9')	ICWW, Botheration Bayou	1008, 1099
B008	126+73	134+33	Y	A & X & AE (8' to 9')	Botheration Bayou	1099
B009	134+33	145+30	Y	A & X	Botheration Bayou	1099
B010	145+30	159+00	Y	A & X & AE (8')	Botheration Bayou	1099
B011	159+00	171+67	Y	X & AE (8')	Botheration Bayou	1099
B012	171+67	176+22	Y	AE (8')	Botheration Bayou	1099
AC0102	176+22	182+76	Y	X & AE (8' to 9')	Botheration Bayou	1099
B013	182+76	193+48	Y	X & AE (8' to 10')	Botheration Bayou	1099

Basin Number	From Station	To Station	Open Basin?	Flood Zone(s) and BFE[1] if applicable	Watershed	WBID
B014	193+48	207+02	Y	X & AE (8' to 10')	Botheration Bayou	1099
B015	207+02	219+09	Y	X & AE (9' to 10')	Botheration Bayou	1099
B016	219+09	219+94	Y	AE (9' to 10')	Botheration Bayou	1099
B017	219+94	231+96	Y	AE (9' to 10')	Botheration Bayou	1099
B018	231+96	233+62	Y	AE (9')	Botheration Bayou	1099
B019	233+62	247+12	Y	AE (9')	Botheration Bayou, Basin Bayou	1099, 1092
B020	247+12	257+51	Y	AE (9')	Basin Bayou	1092
B021	257+51	263+63	Y	X & AE (8' to 9')	Basin Bayou, Harrison Bayou	1092, 1105
B022	263+63	271+53	Y	A & X & AE (8' to 9')	Harrison Bayou	1105
B023	271+53	283+00	Y	AE (8' to 9')	Harrison Bayou	1105
B024	283+00	283+34	Y	X & AE (8' to 9')	Harrison Bayou	1105
B025	283+34	287+40	Y	X & AE (8')	Harrison Bayou	1105
B026	287+40	300+00	Y	X & AE (8')	Harrison Bayou	1105
B027	300+00	302+80	Y	A & X & AE (8')	Harrison Bayou	1105
B028	302+80	311+35	Y	A & X	Harrison Bayou, Unnamed Bayou	1105, 1119
B029	311+35	316+08	Y	A & X	Harrison Bayou, Unnamed Bayou	1105, 1119
B030	316+08	316+52	Y	A & X	Unnamed Bayou	1119
B031	316+52	320+18	Y	A & X	Unnamed Bayou	1119
B032	320+18	321+37	Y	A & X	Unnamed Bayou	1119

BB03000	222+40	228+65	Y	AE (8' to 9')	Botheration Bayou	1099
BB03060	227+25	233+28	Y	AE (9')	Botheration Bayou	1099
BP5	221+36	242+78	Y	A & X & AE (8' to 9')	Botheration Bayou	1099
AC0103A	171+85	174+72	Y	X & AE (8')	Botheration Bayou	1099
AC0103	167+70	174+98	Y	X & AE	Botheration Bayou	1099

6.2 – Proposed Drainage Conditions

Because of the protected status of the BPMB (Figure in **Appendix C**), all pond locations evaluated are located outside the conservation easement at the east and west ends of the project. Consequently, the project was split into two basins in the proposed condition, West Basin and East Basin. Stormwater runoff across the project will be conveyed via a curbed inlet and pipe collection system to minimize the proposed roadway footprint and corresponding wetland disturbance. The Western Pond will be designed to discharge directly into West Bay, a tidally influenced waterbody, and thus discharge rates will not be held to water quantity standards. Because the Western Pond will function exclusively as a water quality pond, it is considerably smaller than the eastern pond which will be required to provide both water quality and water quantity storage. A third proposed pond, the Modified Homewood Suites Pond, will be constructed to replace the portion of the existing pond being impacted by the proposed corridor. This modified pond will continue to serve the Homewood Suites Development as originally designed. This pond will not accept runoff from the proposed PGS Parkway Corridor. All three ponds being proposed will function as wet-detention ponds. The location of outfalls in proposed conditions is based on pond location. Offsite stormwater will continue its historical path through cross drains, with offsite stormwater bypassing the proposed basins via an offsite drainage ditch and cross drains. In order to account for unknowns that may be encountered during design, estimated treatment and attenuation volumes were stacked within the proposed pond alternative calculations to provide an additional level of conservatism. Refer to Pond Calculations in **Appendix D** and Pre and Post Development Drainage Maps in **Appendix C** for the pond locations.

West Basin

The proposed West Basin will include the proposed West Pond area, Clara Avenue extension from STA. 37+75 to STA. 59+75, the Alf Coleman extension from STA. 71+75 to STA. 79+75, and PGS Parkway from approximately STA. 101+00 to STA. 210+00. Typical sections for all extension roads and PGS Parkway can be found in **Appendix E.** The outfall for the West Basin pond is anticipated to discharge directly into West Bay.

East Basin

The proposed East Basin will include the proposed East Pond area, Longpoint Way intersection from STA. 90+65 to STA. 97+10, and PGS Parkway from approximately STA. 210+00 to STA 321+00. The outfall for the East Basin pond is anticipated to discharge on the north side of PGS Parkway into a proposed cross drain at approximately STA. 284+00 to match pre-development conditions.

Homewood Suites Pond

The modifed Homewood Suites Pond basin will continue to function as designed in existing conditions. The pond will be expanded on the east side to compensate for the volumetric impact to the southern portion of the existing pond. Impacted inflow pipes will be adjusted as required to maintain existing flows into the pond.

Profile

Because of the BPMB, evaluated pond locations were relegated to the eastern and western ends of the project (outside the conservation easement). Because of this, the length of the eastern and western basins is relatively long. A high-level hydraulic grade line (HGL) analysis was conducted to ensure that a pipe conveyance system could successfully transfer runoff to the ponds and meet FDOT HGL requirements for the 5-year storm event. Because of the tidal surge requirements, the proposed roadway profile will, at a minimum, need to be constructed at an elevation between 11’-12' (NAVD) for the majority of the project. Based on the preliminary HGL analysis conducted, the profile may need to be raised an additional 2’-3' above the minimum surge elevation (11’-12' NAVD) near the center of the project. This additional profile elevation, in combination with up-sized pipes was shown to provide adequate hydraulic grade line clearance for this approach. Because the ponds on the eastern and western ends of the project were similar in location, the additional fill required to raise the profile to meet HGL requirements was not considered as part of the evaluation when comparing between pond sites.

Water Quality

The ultimate outfall for both West and East Basins will be West Bay (WBID #1061A) which flows into St. Andrew’s Bay (WBID #1061B, 1061C, 1061E), and finally into the Gulf of Mexico (WBID #8014).

The Florida Department of Environmental Protection’s (FDEP) Comprehensive Verified List of Impaired Waterbodies (February, 2025) lists the following downstream waterbodies as being impaired: West Bay (WBID #1061A) for Fecal Coliform, St. Andrew’s Bay North and Middle Segments (WBID #1061B, 1061C) for Enterococci. At the time of this report, there were no directly downstream waterbodies listed for nitrogen or phosphorus impairments. St. Andrew’s Bay is classified as a FDEP Outstanding Florida Waters (OFW). OFW are waters of the state deemed worthy of special protection because of their natural attributes. Watersheds that directly drain into or are a direct tributary of an OFW are held to elevated water quality treatment standards. Because of this, it is anticipated that an additional 50% treatment volume and 50% Permanent Pool volume will be required for both proposed ponds.

Permitting

A new Individual Environmental Resource Permit (ERP) will be required for the project in the design phase. A pre-application meeting with NWFWMD and FDOT will be paramount in the design process of this project to verify the assumed design criteria.

Drainage Patterns

Collection swales and cross drains will be constructed as needed along the project to maintain existing drainage patterns for offsite runoff flowing south to north through the corridor. For the West Basin, runoff generated from the roadway, sidewalk and multi-use path will be collected and routed to the Western Pond which will discharge directly into West Bay. For the East basin the same approach will be used except that the Eastern Pond will be designed to provide stormwater quantity attenuation. The post discharge rate will be equal or less than the pre development discharge rate for the basin directly adjacent to the proposed pond. For both the East and West basins, the runoff from the proposed roadway tie-down slopes will continue to match existing flow patterns. The landcover of the elevated roadway tie-down slopes is expected to generate equal or less runoff than the existing landcover (woods, soil type D). The net result of this landcover change will result in a post development runoff rate that is equal or less than the pre development runoff rate for all receiving basins in the proposed condition. Calculations for the side slope runoff analysis can be found in **Appendix D**. **Table 3** below summarizes changes to basin parameters as a result of the proposed roadway and preferred pond location. No adverse impacts are anticipated to existing landscapes or adjoining land uses.

Table 3: Pre and Post Development Basin Parameters (for attenuation)

Basin	Pre Area	Post Area	Pre Development CN	Post Development CN
West	N/A	70.9	N/A	N/A
East	34.8	51.5	77.0	90.3

Please see **Appendix D** for estimated CN calculations and proposed pond storage calculations.

Operation of Proposed Facilities and Special Maintenance Requirements

All proposed stormwater management facilities evaluated as part of this report are expected to function as normal wet detention ponds and normal maintenance activities should be anticipated. Pond alternatives West 3, East 2, and East 3 may require a pond liner. If a pond liner is required, regular inspection of the pond liner, in addition to normal routine stormwater inspections, should be conducted to ensure the future ponds function as designed throughout their design life.

Potential Impacts to Endangered Species and Wildlife Habitats

Please see *Philip Griffitts, Sr. Parkway, Phase III Natural Resources Evaluation (NRE) Technical Memorandum* and *Philip Griffitts, Sr. Parkway, Phase III Project Environmental Impact Report (PEIR)* for more information concerning potential impacts to endangered species and wildlife habitats.

Potential Hazardous Waste Concerns

No existing contamination sites are located within the project extents according to the FDEP Contamination Locator Map. Please see *Philip Griffitts, Sr. Parkway, Phase III Project Environmental Impact Report (PEIR)* and *Philip Griffitts, Sr. Parkway, Phase III Preliminary Engineering Report* for more information concerning potential hazardous waste concerns.

Potential Impacts to Cultural Resources

Please see *Philip Griffitts, Sr. Parkway, Phase II Cultural Resources Assessment Survey (CRAS)* for information relating to potential impacts to cultural resources.

Potential Impacts to Utilities

No known existing utilities were identified within any pond alternative.

Potential Impacts to Existing Landscapes and Adjoining Uses

Potential pond options are not anticipated to adversely affect existing landscapes or adjoining uses because of the rural nature of the project.

Aesthetic Effects and Landscaping Opportunities

No aesthetic effects or landscaping opportunities were identified as part of this study.

Cost

Because the required amount of right-of-way was negligible between all alternatives, right-of-way costs were not included in the comparison. It should be noted, however, because Pond West 3 is located within an irregular shaped parcel, the northwest remnant of the parcel will likely be undevelopable and would need to be acquired as part of right-of-way acquisition. The northwest portion of the Pond West 3 property is entirely covered in wetlands and is assumed to have minimal developable value. Because of this, the additional cost of right-of-way for this parcel was assumed to be negligible when compared to the other two western pond options. It should also be noted that wetland impact costs were not included in the opinion of probable cost for pond alternatives. An opinion of probable cost for each pond alternative can be found in **Appendix F**.

SECTION 7 – FLOODPLAIN

The majority of the project is located within FEMA regulated Flood Zone A (floodplain elevation not established) and Flood Zone AE with floodplain elevations ranging from 8’-10’ (NAVD). A small portion of the project is located within Flood Zone X (0.2% annual chance flood hazard). There are no known regulated floodways within the project area. The following FEMA Flood Insurance Rate Maps (FIRM) contain the project area: 12005C0302J, 12005C0304J, 12005C0308J, 12005C0309J. Because the site sits directly adjacent to tidally influenced waters (West Bay), the flood elevations listed in the FEMA FIRM maps are based upon estimated huricane surge elevations. **Figures 3** and **4** depict FEMA Flood Hazard Zones and Estimated Tidal Surge Zones respectively.

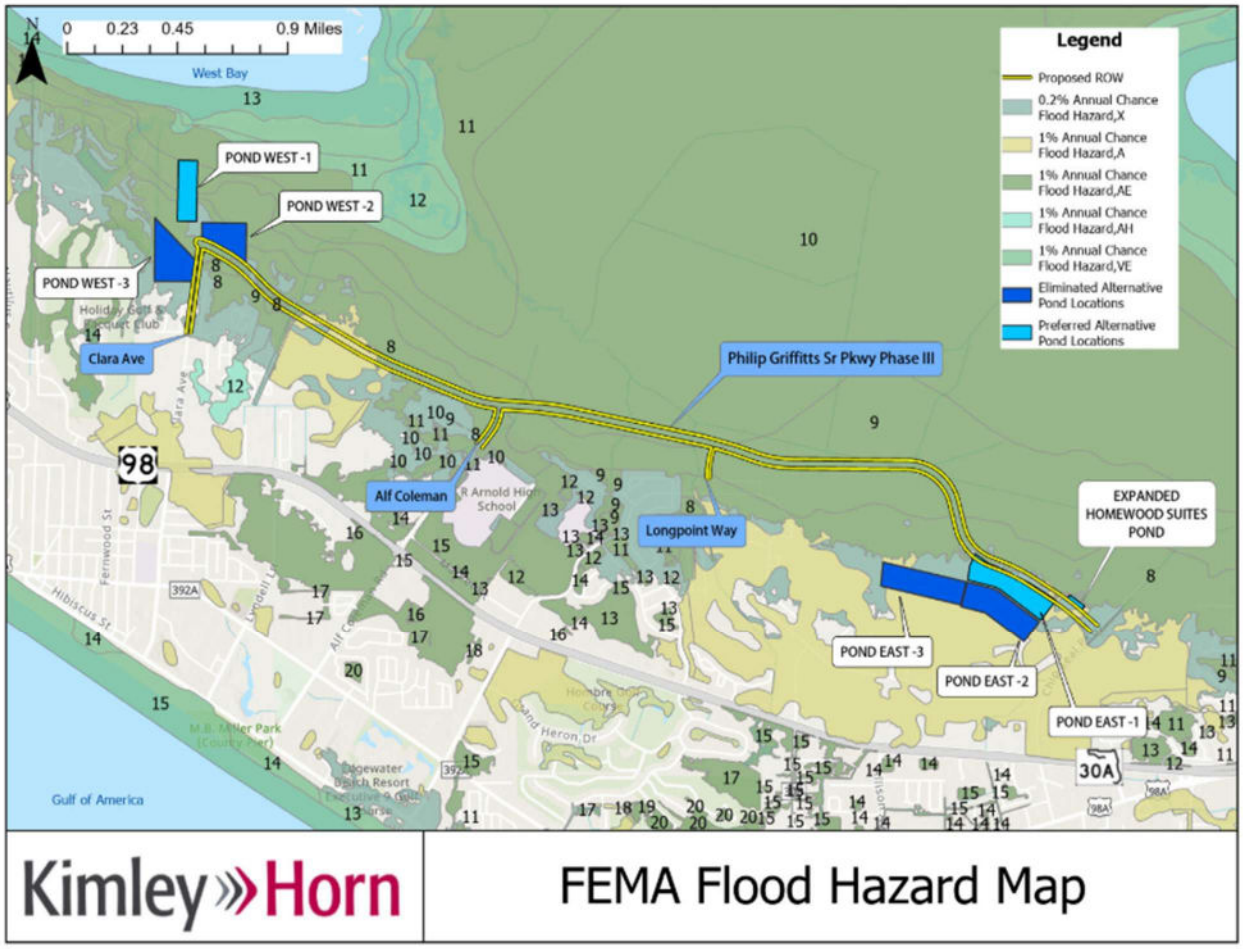


Figure 3: FEMA Flood Hazard Map

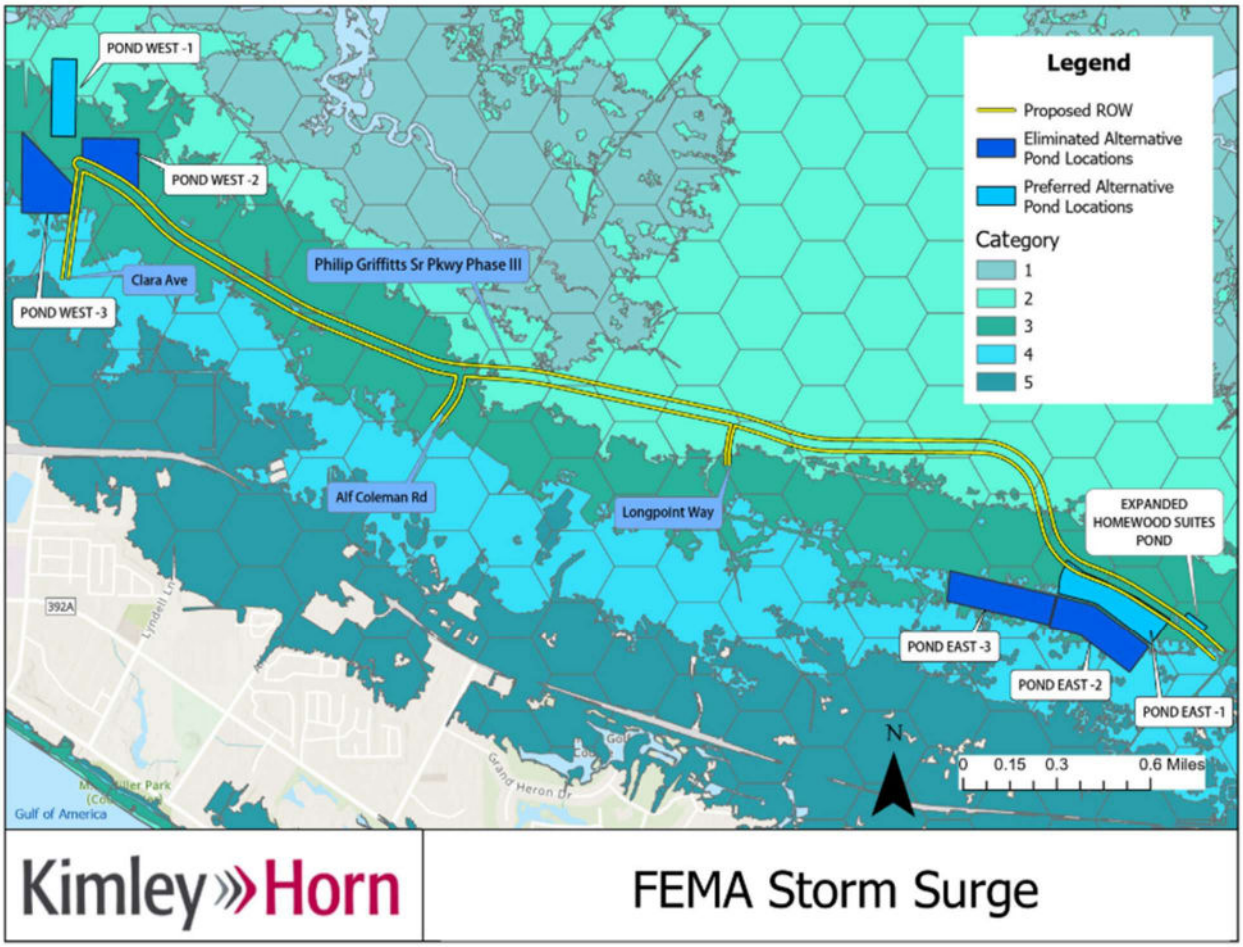


Figure 4: FEMA Storm Surge Map

As can be seen by **Figure 4**, the entirety of the project is located within a FEMA designated hurricane surge zone. Because of this, project impacts to the existing FEMA floodplain are not expected to require volumetric compensation. Instead, cross drains throughout the project will be sized appropriately to convey the 100-year design storm event without causing adverse impacts to floodplain upstream (south) of the proposed corridor. In total, thirty-four (34) new cross drains along the corridor are anticipated. Additional details of the cross drain analysis are provided in the Location Hydraulics Report (LHR) for this project.

SECTION 8 – WETLAND IMPACTS

Per the Natural Resources Evaluation (NRE), ecological communities within the project corridor include freshwater wetlands (roughly 60% of the project area), upland forest and upland prairie habitats. A large portion of the corridor occurs within the limits of the BPMB, a state and federal permitted site that generates wetland credits to offset impacts elsewhere within the regional watershed. Anticipated impacts to the mitigation bank as well as to existing conservation easements are addressed in the NRE report for this project.

The NRE also summarizes and addresses potential effects on state and federal protected species, with the conclusion that there will be no effect, no adverse effect or may affect but not likely to affect protected species. There are no proposed pond locations within the existing BPMB.

SECTION 9 – PROPOSED STORM WATER PONDS

There are two (2) stormwater management systems proposed for the project and one (1) pond which will be modified to mitigate for roadway impacts. Three alternatives were evaluated for pond locations in each basin. One typical section for PGS Parkway was assumed for the calculations, shown in **Appendix E.** Detailed pond exhibits are provided in **Appendix G.**

Pond West-1 (Preferred Alternative)

The proposed West Pond is located to the northwest of the Clara Avenue and PGS Parkway intersection. The stormwater management facility will function as a wet detention pond with a control structure on the northeast bank. The outfall pipe for the pond will run north along Clara Avenue and discharge into West Bay. Because the ultimate outfall is West Bay, a tidally influenced waterbody, discharge rates are not regulated by NWFWMD and thus volumetric requirements of the pond will be exclusively driven by water quality needs. The pond resides entirely within parcel #32733-000-000. Based on the alignment of the proposed roadway and the area needs of the pond, approximately 25% of the existing parcel would need to be acquired for the pond construction. The parcel resides entirely outside of the existing BPMB, but will require impacts to approximately 7.9-acres of existing wetlands. The right-of-way needs for this option would be approximately 12.3-acres. This option was selected because:

- The rectangular geometric configuration of the pond allows the outfall to start closer to West Bay and thus reduce the needed length of an outfall pipe along Clara Avenue. The estimated length of the outfall system is the lowest of the three alternatives at approximately 1,100 LF.
- The relatively low existing ground elevation of the pond in relation to West Pond 3 will produce a lower tailwater condition for the proposed roadway collection system. This lower tailwater will ensure that the required profile height of the proposed roadway will be minimized and thus reduce on the cost of fill and wetland impacts for the roadway corridor.
- This option has the fewest acres of wetland impacts of the three alternatives. This provides ecological and financial benefit.
- The impact to the existing parcel will be only a partial impact. The remnant parcel will sufficiently size and shape to still be usable for future development.
- The rectangular geometry of the proposed pond results in a volumetrically efficient pond which requires less land area for the same amount of storage when compared to the other two pond alternatives.

Pond West-2 (Eliminated Alternative)

The Pond West-2 alternative is located to the northeast of the Clara Avenue and PGS Parkway intersection. The stormwater management facility would function as a wet detention pond with a control structure on the northwest bank. With this configuration, a new outfall pipe would be required to run north along the existing Clara Avenue right-of-way to West Bay. The approximate length of this outfall system would be approximately 2,500 LF. Because the ultimate outfall is West Bay, a tidally influenced waterbody, discharge rates would not be regulated by NWFWMD and thus volumetric requirements of the pond would be driven exclusively by water quality needs. The pond would reside entirely within the eastern

portion of parcel #33996-000-000. Based on the alignment of the proposed roadway and the area needs of the pond, the entire eastern portion of the parcel would need to be acquired if this option was selected. The pond would reside outside of the existing BPMB, but would require approximately 8.2-acres of wetland impacts. This option would require a longer outfall ditch or pipe when compared to preferred alternative Pond West-1. The right-of-way needs for this pond option would be approximately 12.8-acres.

Pond West-3 (Eliminated Alternative)

The Pond West-3 alternative is located to the southwest of the Clara Avenue and PGS Parkway intersection. The stormwater management facility would function as a wet detention pond with a control structure on the northeast bank. Because the eventual outfall would be West Bay, a tidally influenced waterbody, discharge rates are not regulated by NWFWMD and thus volumetric requirements of the pond will be exclusively driven by water quality needs. The total length of this outfall system would be approximately 3,100 LF. The pond would reside entirely within the western portion of parcel #33996-000-000. Based on existing ground elevation at the pond site and the proposed roadway profile, this pond would likely require a liner if selected. The pond would reside outside of the existing BPMB, but would require approximately 12.0-acres of wetland impacts. This option would require the longest outfall system when compared to the other two alternatives. Based on the alignment of the proposed roadway, the area needs of the pond, the irregular shape of the northwest remnant parcel, and the presence of wetlands in the northwest remnant parcel, the entire western portion of the subject parcel south of the power easement would likely need to be acquired if this option was selected. This would result in a total right-of-way take of approximately 18.3-acres.

Pond East-1 (Preferred Alternative)

The proposed Pond East-1 is located just east of the BPMB on the south side of the proposed PGS Parkway between STA. 292+00 and 312+00. The pond is being proposed as a wet detention stormwater management facility. The approximate length of the outfall system will be 1,000 LF and will outfall into an existing canal at approximately STA. 284+00. The pond will reside within parcels #27542-000-000 and #27536-000-000. Both parcels are currently owned by the same owner and requires only a portion of each parcel for the proposed pond. The pond location resides entirely outside of the existing BPMP, but will require impacts to approximately 11.1-acres of existing wetlands. The right-of-way needs for this option would be approximately 21.3-acres. This option was selected because:

- It requires the shortest amount of infall and outfall pipes for the stormwater collection system.
- Has the lowest estimated Seasonal High Groundwater Table Elevation of the three alternatives and does not require a pond liner

Pond East-2 (Eliminated Alternative)

The Pond East-2 alternative is located just east of the BPMB on the south side of the proposed PGS Parkway between STA. 292+00 and 312+00. The pond would function as a wet detention stormwater management facility. The approximate combined length of the infall and outfall system would be 2,000 LF and would outfall into an existing canal at approximately STA. 284+00. The pond, like Pond East-1, would reside within parcels #27542-000-000 and #27536-000-000. Both parcels are currently owned by the same owner and requires only a portion of each parcel for the proposed pond. The pond location resides entirely outside of the existing BPMB but would require impacts to approximately 11.9-acres of existing wetlands. The right-of-way needs for this option would be approximately 20.9-acres. This option

is very similar to Pond East-1 option except it is pushed farther south. The reasons that Pond East-1 is preferred relative to this option are:

- Increased pond infall/outfall length when compared to Pond East-1
- The relatively higher ground elevation of the pond in relation to alternative Pond East-1 will likely require a pond liner
- Will require an easement for access and infall/outfall pipes

Pond East-3 (Eliminated Alternative)

The Pond East-3 alternative is located just south of the BPMB on the south side of the proposed PGS Parkway between STA. 260+00 and 294+00. The pond would function as a wet detention stormwater management facility. Because the pond is located relatively far from the proposed corridor, this pond configuration would require an extended infall and outfall system. The total length of the infall and outfall systems would be approximately 3,700 LF and would outfall into an existing canal at approximately STA. 283+00. The pond would reside entirely within parcel #27542-000-000. The owner of the parcels is the same as the other two alternatives. The pond would only require a portion of the parcel for the proposed pond. The pond location resides entirely outside of the existing BPMB but would require impacts to approximately 13.5-acres of existing wetlands. The right-of-way needs for this option would be approximately 20.9-acres. This option is very similar to Pond East-1 option except it is pushed farther south and to the west. The reasons that Pond East-1 is preferred relative to this option are:

- Increased pond infall/outfall length when compared to Pond East-1
- The relatively higher ground elevation of the pond in relation to alternative Pond East-1 will likely require a pond liner
- Will require an easement for access and infall/outfall pipes

Pond Comparison

The following impact evaluation matrix was developed to compare the estimated benefits and drawbacks with each alternative for both roadway basins.

Table 1: Pond Alternative Matrix

Pond Site	Wetland Impacts (ac)	Contamination Risk	Floodplain Hazard (ac)	Access Issues	Number of Property Owners	Pond Right-of-Way Area (ac)	Opinion of Probable Pond Construction Cost
Pond West-1	**7.9**	**Low**	**12.3**	**No**	**1**	**12.3**	**$1,895,931**
Pond West-2	**8.2**	**Low**	**12.8**	**No**	**1**	**12.8**	**$2,480,658**
Pond West-3	**10.9**	**Low**	**12.0**	**No**	**1**	**12.0**	**$4,179,228**
Pond East-1	**11.1**	**Low**	**20.6**	**No**	**1**	**21.3**	**$2,800,116**
Pond East-2	**11.9**	**Low**	**20.7**	**Yes**	**1**	**20.9**	**$5,885,251**
Pond East-3	**13.5**	**Low**	**20.8**	**Yes**	**1**	**20.9**	**$6,699,855**
Legend:	**Preferred Alternative**						

SECTION 10 – CONCLUSIONS

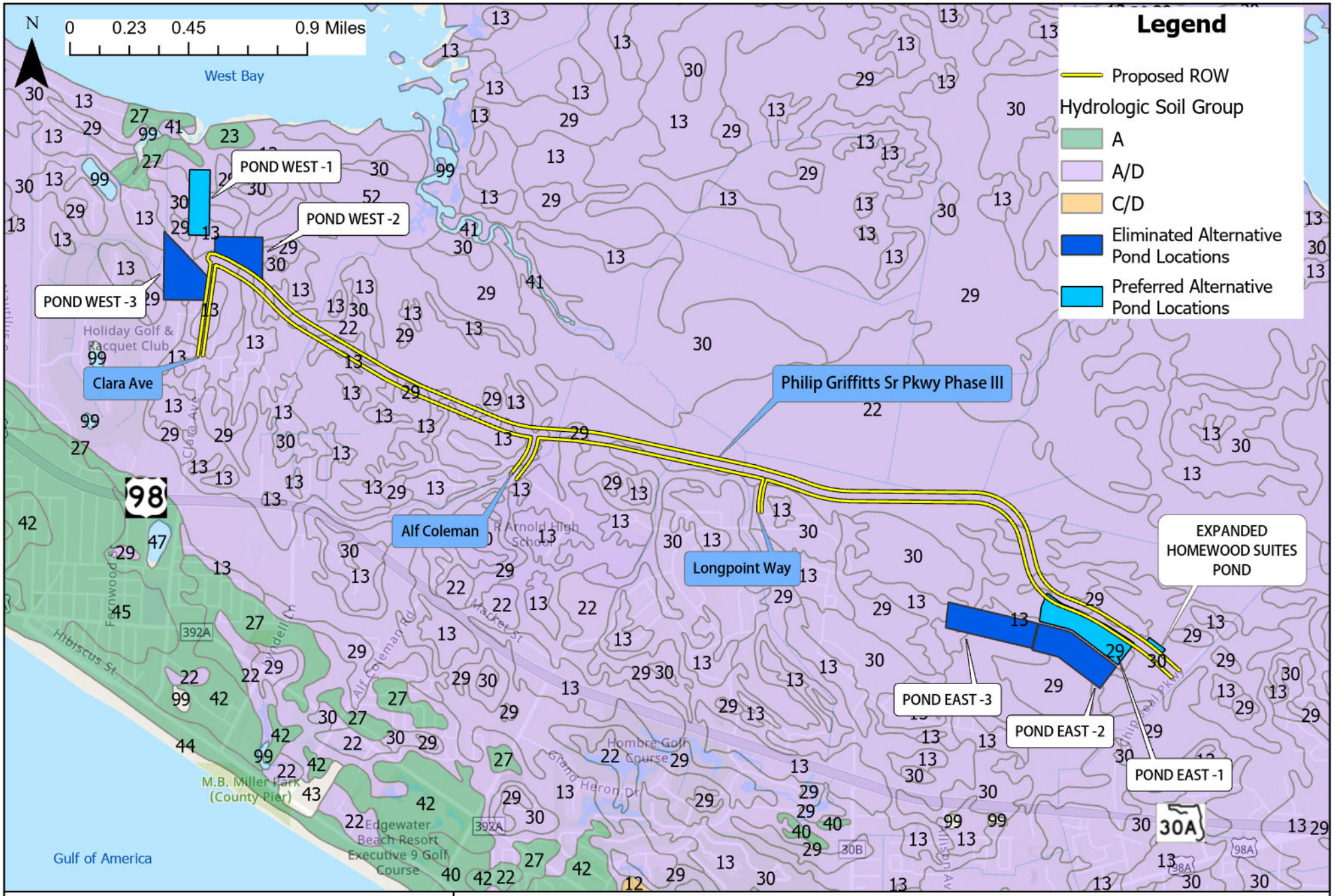
Multiple locations were evaluated for potential stormwater management facilities for the proposed PGS Parkway project. Preferred alternatives were selected based on environmental impacts, preferred hydraulics, topography, estimated average depth to the groundwater table, required right-of-way, and potential construction costs. The preferred alternatives for the project were determined to be Pond West-1 for the western basin and Pond East-1 for the eastern basin. Basin delineation can be found in **Appendix C**. Because of the limited options to expand the existing Homewood Suites pond, only one option was considered.

SECTION 11 – REFERENCES

1. FDOT Drainage Design Guide, 2024
2. FDOT Drainage Manual, 2025
3. NWFWMD Applicants Handbook Volume I, 2023
4. NWFWMD Applicant's Handbook Volume II, Oct. 1st, 2013
5. NWFWMD Applicant's Handbook Volume II, 2023
6. FDOT Project Development & Environment Manual, 2024
7. FDOT Storm Surge Hydrographs for the Florida Coast Executive Summary, 2003

APPENDICES

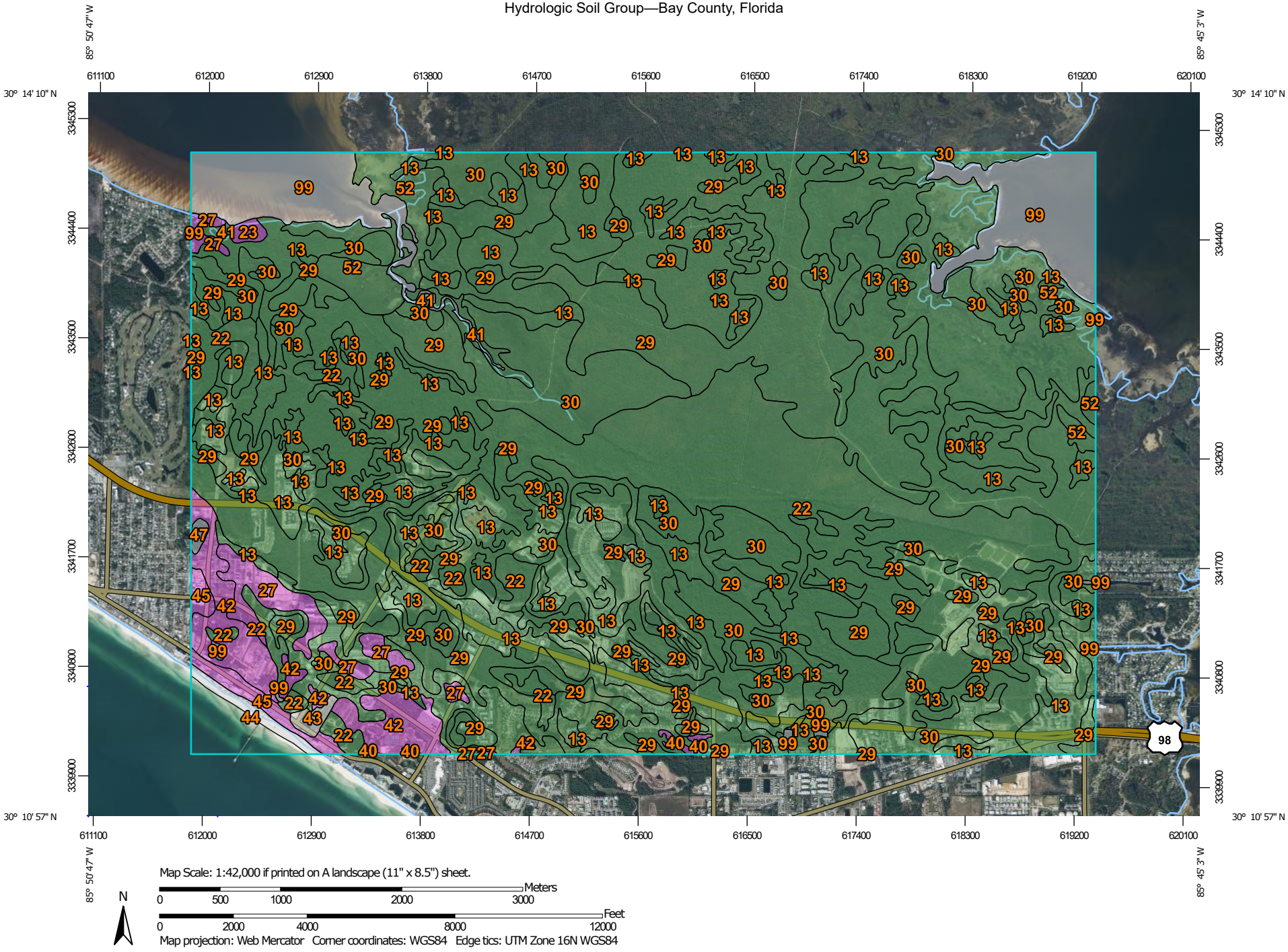
Appendix A – Soil Information



Kimley»Horn

Soils Map

Hydrologic Soil Group—Bay County, Florida



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bay County, Florida
Survey Area Data: Version 22, Sep 1, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 2, 2020—Dec 8, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
13	Leon sand, 0 to 2 percent slopes	A/D	1,651.4	18.0%
22	Pamlico-Dorovan complex	A/D	1,227.2	13.4%
23	Chipley sand, 0 to 5 percent slopes	A	11.2	0.1%
27	Mandarin sand, 0 to 2 percent slopes	A	117.2	1.3%
29	Rutlege sand, 0 to 2 percent slopes	A/D	1,608.5	17.6%
30	Pottsburg-Pottsburg, wet, sand, 0 to 2 percent slopes	A/D	2,969.0	32.4%
40	Arents, 0 to 5 percent slopes	A	9.9	0.1%
41	Direго muck	A/D	36.3	0.4%
42	Resota fine sand, 0 to 5 percent slopes	A	197.7	2.2%
43	Urban land		14.9	0.2%
44	Beaches		26.7	0.3%
45	Kureb sand, 0 to 5 percent slopes	A	54.1	0.6%
47	Pits		7.0	0.1%
52	Bayvi loamy sand	A/D	672.7	7.3%
99	Water		481.6	5.3%
Totals for Area of Interest			**9,162.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

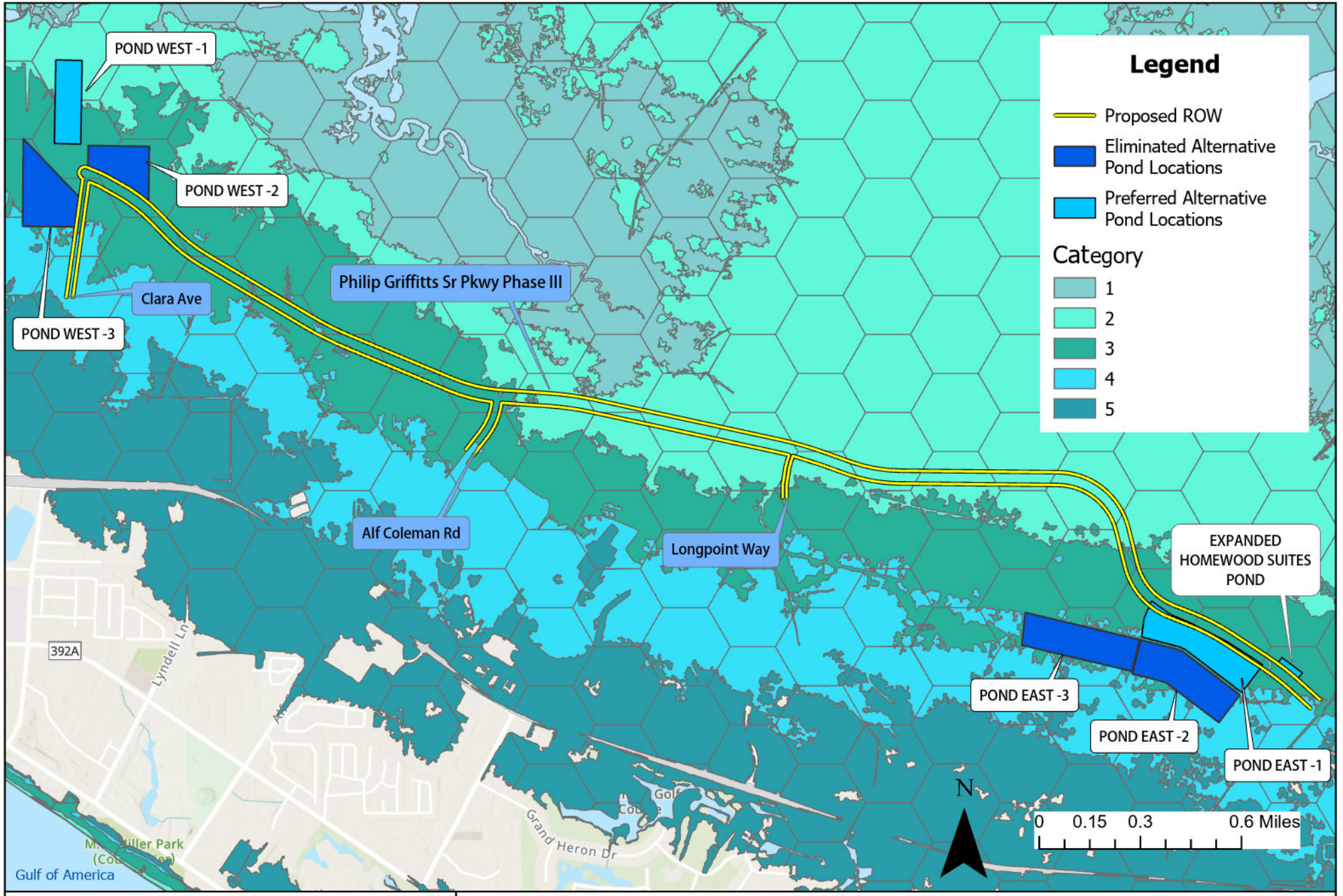
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

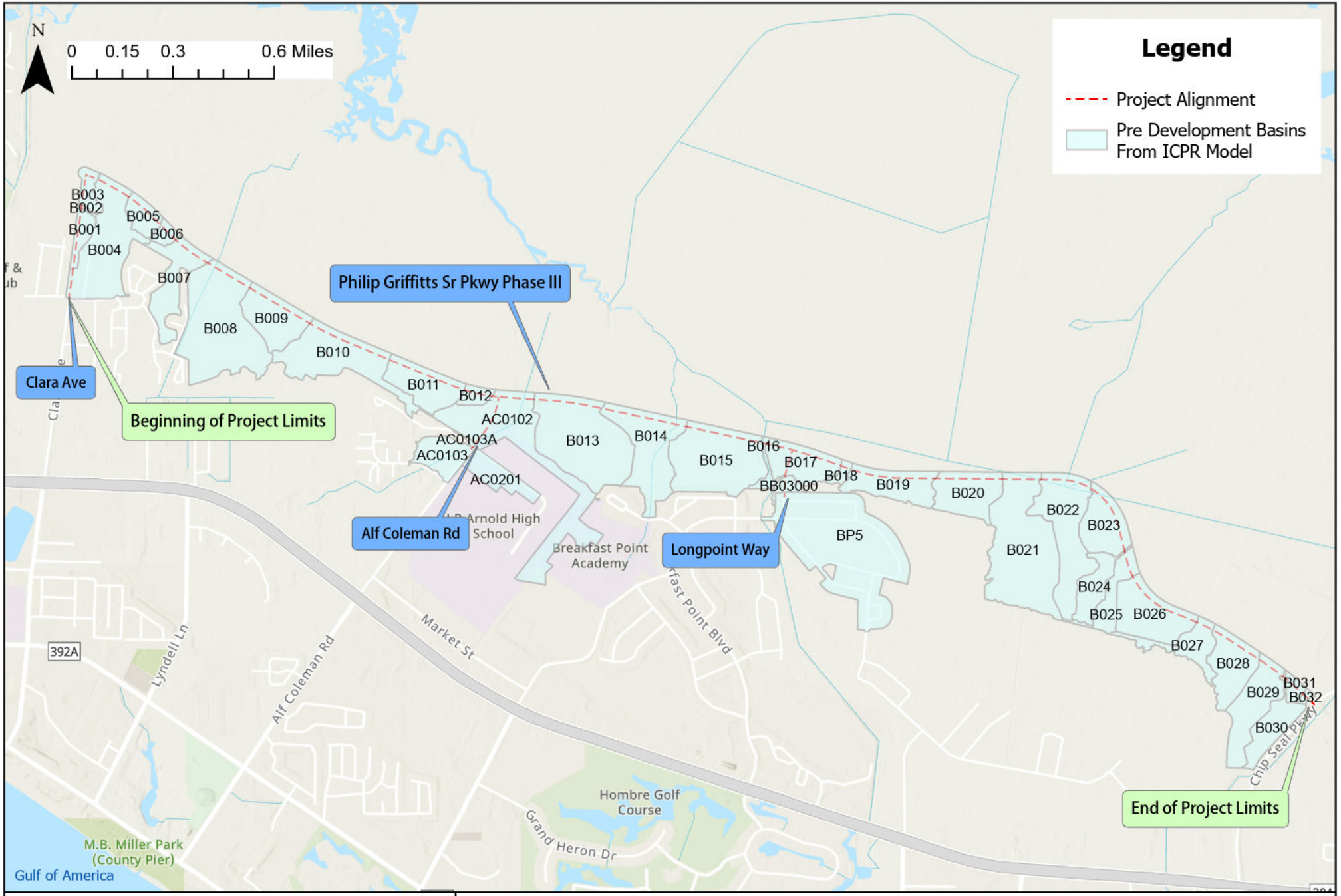
Appendix B – Storm Surge Map



Kimley»Horn

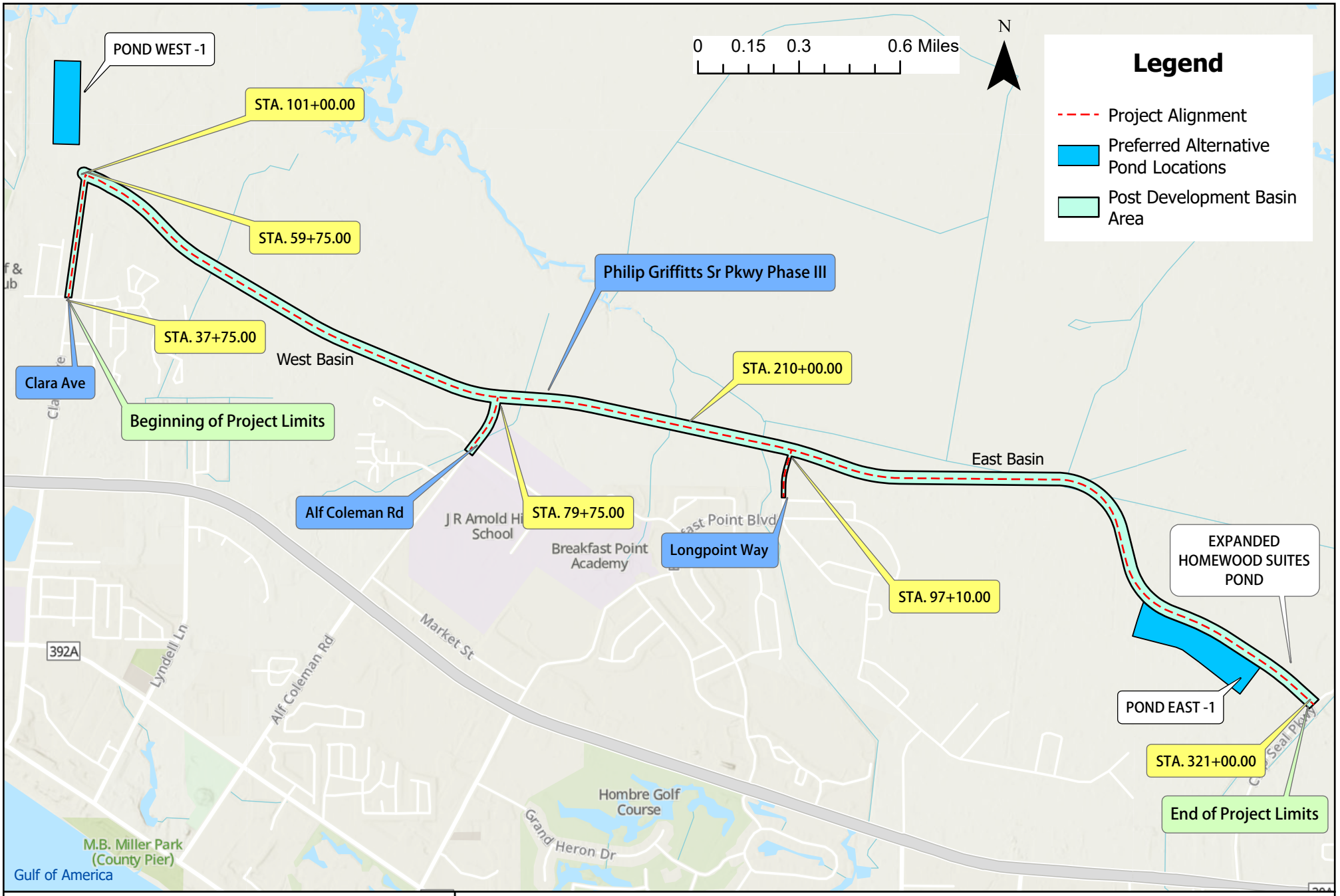
FEMA Storm Surge

Appendix C - Exhibits



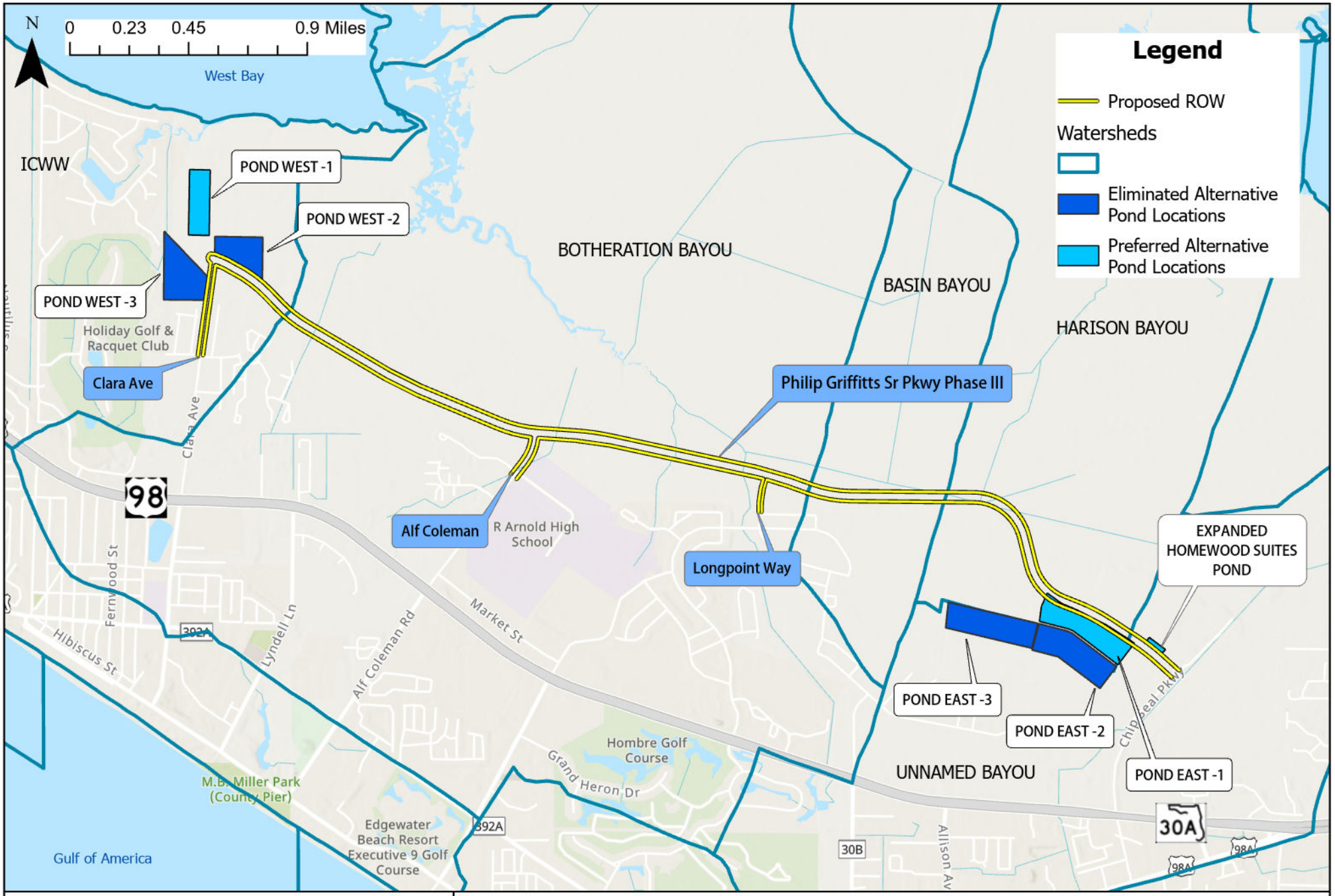
Kimley»Horn

Pre Development Map



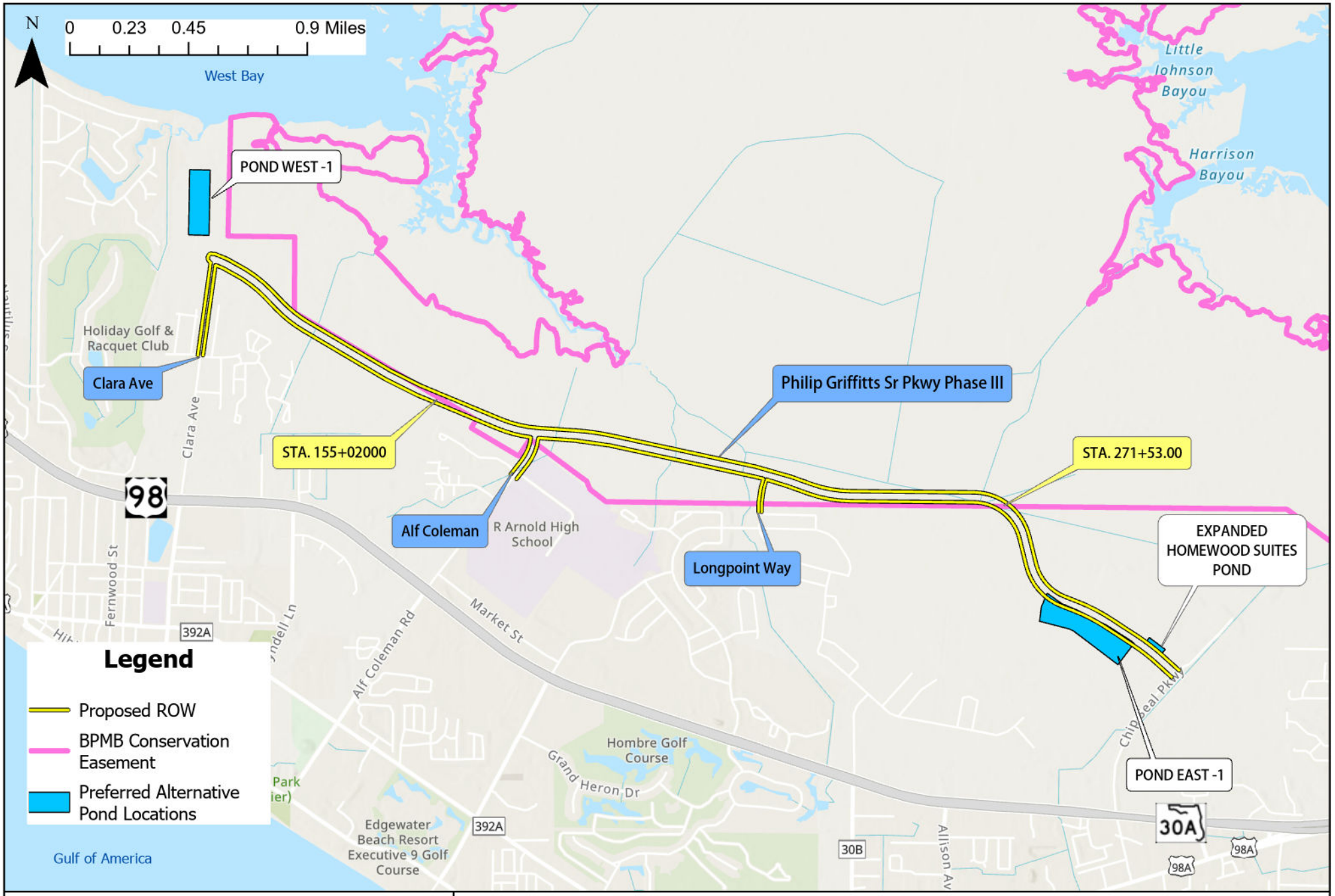
Kimley»Horn

Post Development Map



Kimley»Horn

Watershed Map



Kimley»Horn

BPMB Conservation Easement

Appendix D - Calculations

Pond: West Pond 1 (Wet Detention) Treatment Volume Calculation

Drainage Area =	70.89	Acres	
Treatment Volume Required =	1.5	Inch	1" + 0.5" (OFW)
Treatment Volume Required =	8.86	Acre-Feet	

Pond Size Estimation

Soil Data

NRCS Soils at Pond Site: 13 - Leon Sand; 29 - Rutledge Sand; 30 - Pottsburg

Average Depth to Seasonal High= 0.00 Ft (USGS Soil Survey & Aerials)

Pond Vertical Constraints

Roadway Edge of Pavement Low Elevation =	10.0	Feet
Average Existing Ground Elevation at Pond Site =	7.5	Feet
Seasonal High Water Table Elevation at Pond Site =	7.5	Feet
Available Depth for Treatment and Attenuation =	2.5	Feet
Actual Depth of Treatment and Attenuation =	1.0	Feet

Pond Elevations

Bottom of Treatment Volume Elevation =	7.5	Feet
Top of Treatment Volume Elevation =	8.5	Feet
Top of Attenuation Volume Elevation =	8.5	Feet
Proposed Bottom of Berm Elevation =	10.0	Feet
Proposed Top of Berm Elevation =	11.5	Feet

Pond Size

Square Dimension at Bottom of Treatment Depth =	620	Feet
Square Dimension at Top of Treatment Depth =	628	Feet
Square Dimension at Top of Attenuation Depth =	628	Feet
Square Dimension Bottom of Berm =	636	Feet
Square dimension at top berm =	666	Feet
Outside pond dimensions (including tie-down) =	698	Feet

Minimum Total Area Required = 12.30 Acres (10% SAFETY FACTOR)

Stage-Storage Calculation

Elevation (ft)	Area (sf)	Area (ac)	Incremental Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	REMARKS
7.50	384400	8.82	0	0	0.00	
8.50	394384	9.05	389392	389392	8.94	*Top of TV*
8.50	394384	9.05	0	389392	8.94	*Top of AV*
10.00	404496	9.29	599160	988552	22.69	*Bottom of Berm*

Required Treatment Volume =	8.86	Acre-Feet	
Provided Treatment Volume =	**8.94**	**Acre-Feet**	✓
Required Attenuation Volume =	0.00	Acre-Feet	Tidal Discharge
Provided Attenuation Volume =	**0.00**	**Acre-Feet**	

Pond: West Pond 2 (Wet Detention) Treatment Volume Calculation

Drainage Area =	71.42	Acres	
Treatment Volume Required =	1.5	Inch	1" + 0.5" (OFW)
Treatment Volume Required =	8.93	Acre-Feet	

Pond Size Estimation

Soil Data

NRCS Soils at Pond Site: 13 - Leon Sand
29 - Rutledge Sand
30 - Pottsburg

Average Depth to Seasonal High= 0.00 Ft (USGS Soil Survey & Aerials)

Pond Vertical Constraints

Roadway Edge of Pavement Low Elevation =	10.0	Feet
Average Existing Ground Elevation at Pond Site =	7.5	Feet
Seasonal High Water Table Elevation at Pond Site =	7.5	Feet
Available Depth for Treatment and Attenuation =	2.5	Feet
Actual Depth of Treatment and Attenuation =	1.0	Feet

Pond Elevations

Bottom of Treatment Volume Elevation =	7.5	Feet
Top of Treatment Volume Elevation =	8.5	Feet
Top of Attenuation Volume Elevation =	8.5	Feet
Proposed Bottom of Berm Elevation =	10.0	Feet
Proposed Top of Berm Elevation =	11.5	Feet

Pond Size

Square Dimension at Bottom of Treatment Depth =	635	Feet
Square Dimension at Top of Treatment Depth =	643	Feet
Square Dimension at Top of Attenuation Depth =	643	Feet
Square Dimension Bottom of Berm =	651	Feet
Square dimension at top berm =	681	Feet
Outside pond dimensions (including tie-down) =	713	Feet

Minimum Total Area Required = 12.84 Acres (10% SAFETY FACTOR)

Stage-Storage Calculation

Elevation	Area	Area	Incremental Volume	Total Volume	Total Volume	REMARKS
(ft)	(sf)	(ac)	(cf)	(cf)	(ac-ft)	
7.50	403225	9.26	0	0	0.00	
8.50	413449	9.49	408337	408337	9.37	*Top of TV*
8.50	413449	9.49	0	408337	9.37	*Top of AV*
10.00	423801	9.73	627938	1036275	23.79	*Bottom of Berm*

Required Treatment Volume =	8.93	Acre-Feet	
Provided Treatment Volume =	**9.37**	**Acre-Feet**	✓
Required Attenuation Volume =	0.00	Acre-Feet	Tidal Discharge
Provided Attenuation Volume =	**0.00**	**Acre-Feet**	

Pond: West Pond 3 (Wet Detention) Treatment Volume Calculation

Drainage Area =	70.61	Acres	
Treatment Volume Required =	1.5	Inch	1" + 0.5" (OFW)
Treatment Volume Required =	8.83	Acre-Feet	

Pond Size Estimation

Soil Data

NRCS Soils at Pond Site: 13 - Leon Sand
29 - Rutledge Sand
30 - Pottsburg

Average Depth to Seasonal High= 0.00 Ft (USGS Soil Survey & Aerials)

Pond Vertical Constraints

Roadway Edge of Pavement Low Elevation =	10.0	Feet	
Average Existing Ground Elevation at Pond Site =	8.5	Feet	
Seasonal High Water Table Elevation at Pond Site =	8.5	Feet	
Available Depth for Treatment and Attenuation =	1.5	Feet	
Actual Depth of Treatment and Attenuation =	1.0	Feet	

Pond Elevations

Bottom of Treatment Volume Elevation =	7.5	Feet	(Liner Required)
Top of Treatment Volume Elevation =	8.50	Feet	
Top of Attenuation Volume Elevation =	8.50	Feet	
Proposed Bottom of Berm Elevation =	10.00	Feet	
Proposed Top of Berm Elevation =	11.50	Feet	

Pond Size

Square Dimension at Bottom of Treatment Depth =	620	Feet	
Square Dimension at Top of Treatment Depth =	628	Feet	
Square Dimension at Top of Attenuation Depth =	628	Feet	
Square Dimension Bottom of Berm =	636	Feet	
Square dimension at top berm =	666	Feet	
Outside pond dimensions (including tie-down) =	690	Feet	
Minimum Total Area Required =	**12.02**	**Acres**	(10% SAFETY FACTOR)

Stage-Storage Calculation

Elevation	Area	Area	Incremental Volume	Total Volume	Total Volume	REMARKS
(ft)	(sf)	(ac)	(cf)	(cf)	(ac-ft)	
7.50	384400	8.82	0	0	0.00	
8.50	394384	9.05	389392	389392	8.94	*Top of TV*
8.50	394384	9.05	0	389392	8.94	*Top of AV*
10.00	404496	9.29	599160	988552	22.69	*Bottom of Berm*

Required Treatment Volume =	8.83	Acre-Feet	
Provided Treatment Volume =	**8.94**	**Acre-Feet**	✓
Required Attenuation Volume =	0.00	Acre-Feet	Tidal Discharge
Provided Attenuation Volume =	**0.00**	**Acre-Feet**	

Curve Number and Runoff Volume Calculation (FDOT 100YR/24HR)

Basin: East Basin 1

Pre-Condition Curve Number Calculation

Land Use Description	Soil Map Unit	Hydrologic Group	Area		CN	Product
Woods - Road	13,29,30	A/D	13.52	acres	77	1041
Woods - Pond Site			21.27	acres	77	1638
		Totals:	34.79	acres		2679

Pre-Condition Composite Curve Number: 77.0

Pre-Condition Runoff Volume Calculation

100-yr/24-hr Rainfall Depth (P) = 14.00 IN
CN = 77.0
Drainage Area (A) = 34.79 AC
Potential maximum retention after runoff begins (S) and S is:
(S) = (1000/CN)-10 = 2.99 IN
Runoff Depth (Q) = ((P-0.2S)^2)/(P+0.8S) = 10.96 IN
Pre-Condition Runoff Volume (V_{PRE}) = A x Q = 31.78 AC-FT

Post-Condition Curve Number Calculation

Total area includes runoff captured from STA 210+00 to STA 321+00 of PGS Parkway (200' R/W) and STA 90+65 to STA 97+10 of Longpoint Way (115' R/W).

Land Use Description	Soil Map Unit	Hydrologic Group	Area		CN	Product
Impervious Roadway	--	--	12.79	acres	98	1254
Sod/Grass	13,29,30	A/D	17.41	acres	80	1393
		Subtotal:	30.20	acres		
Pond Impervious	--	--	15.06	acres	100	1506
Pond Pervious (grass)	13,29,30	A/D	6.21	acres	80	497
		Totals:	51.47	acres		4649

Post-Condition Composite Curve Number: 90.3

Post-Condition Runoff Volume Calculation

100-yr/24-hr Rainfall Depth (P) = 14.00 IN
CN = 90.3
Drainage Area (A) = 51.47 AC
Potential maximum retention after runoff begins (S) and S is:
(S) = 1000/CN-10 = 1.07 IN
Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 12.79 IN
Post-Condition Runoff Volume (V_{POST}) = A x Q = 54.87 AC-FT

Required Attenuation Volume = V_{POST} - V_{PRE} = 23.09 AC-FT

Pond: East Pond 1 (Wet Detention) Treatment Volume Calculation

Drainage Area =	72.23	Acres
Treatment Volume Required =	1.5	Inch
Treatment Volume Required =	9.03	Acre-Feet

Pond Size Estimation

Soil Data

NRCS Soils at Pond Site: 29 - Rutledge Sand
30 - Pottsburg

Average High Water Depth = 0.5 Ft (USGS and NOVA hand borings)

Pond Vertical Constraints

Roadway Edge of Pavement Low Elevation =	11.1	Feet
Average Existing Ground Elevation at Pond Site =	8.5	Feet
Seasonal High Water Table Elevation at Pond Site =	8.0	Feet
Available Depth for Treatment and Attenuation =	3.1	Feet
Actual Depth of Treatment and Attenuation =	2.1	Feet

Pond Elevations

Bottom of Treatment Volume Elevation =	8.0	Feet
Top of Treatment Volume Elevation =	8.6	Feet
Top of Attenuation Volume Elevation =	10.1	Feet
Proposed Bottom of Berm Elevation =	11.1	Feet
Proposed Top of Berm Elevation =	12.6	Feet

Pond Size

Square Dimension at Bottom of Treatment Depth =	810	Feet
Square Dimension at Top of Treatment Depth =	815	Feet
Square Dimension at Top of Attenuation Depth =	827	Feet
Square Dimension Bottom of Berm =	835	Feet
Square dimension at top berm =	865	Feet
Outside pond dimensions (including tie-down) =	898	Feet

Minimum Total Area Required = 21.27 Acres (10% SAFETY FACTOR)

Stage-Storage Calculation

Elevation (ft)	Area (sf)	Area (ac)	Incremental Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	REMARKS
8.00	656100	15.06	0	0	0.00	
8.60	663899	15.24	396000	396000	9.09	*Top of TV*
10.10	683598	15.69	1010623	1406623	32.29	*Top of AV*
11.10	696891	16.00	690245	2096867	48.14	*Bottom of Berm*

Required Treatment Volume =	9.03	Acre-Feet	
Provided Treatment Volume =	**9.09**	**Acre-Feet**	✓
Required Attenuation Volume =	23.09	Acre-Feet	
Provided Attenuation Volume =	**23.20**	**Acre-Feet**	✓

Curve Number and Runoff Volume Calculation (FDOT 100YR/24HR)

Basin: East Basin 2

Pre-Condition Curve Number Calculation

Land Use Description	Soil Map Unit	Hydrologic Group	Area		CN	Product
Woods - Road	13,29,30	A/D	13.52	acres	77	1041
Woods - Pond Site			20.89	acres	77	1609
		Totals:	34.41	acres		2650

Pre-Condition Composite Curve Number: 77.0

Pre-Condition Runoff Volume Calculation

100-yr/24-hr Rainfall Depth (P) = 14.00 IN
CN = 77.0
Drainage Area (A) = 34.41 AC
Potential maximum retention after runoff begins (S) and S is:
(S) = (1000/CN)-10 = 2.99 IN
Runoff Depth (Q) = ((P-0.2S)^2)/(P+0.8S) = 10.96 IN
Pre-Condition Runoff Volume (V_{PRE}) = A x Q = 31.43 AC-FT

Post-Condition Curve Number Calculation

Total area includes runoff captured from STA 210+00 to STA 321+00 of PGS Parkway (200' R/W) and STA 90+65 to STA 97+10 of Longpoint Way (115' R/W).

Land Use Description	Soil Map Unit	Hydrologic Group	Area		CN	Product
Impervious Roadway	--	--	12.79	acres	98	1254
Sod/Grass	13,29,30	A/D	17.41	acres	80	1393
		Subtotal:	30.20	acres		
Pond Impervious	--	--	15.06	acres	100	1506
Pond Pervious (grass)	13,29,30	A/D	5.83	acres	80	466
		Totals:	51.09	acres		4619

Post-Condition Composite Curve Number: 90.4

Post-Condition Runoff Volume Calculation

100-yr/24-hr Rainfall Depth (P) = 14.00 IN
CN = 90.4
Drainage Area (A) = 51.09 AC
Potential maximum retention after runoff begins (S) and S is:
(S) = 1000/CN-10 = 1.06 IN
Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 12.80 IN
Post-Condition Runoff Volume (V_{POST}) = A x Q = 54.51 AC-FT

Required Attenuation Volume = V_{POST} - V_{PRE} = 23.08 AC-FT

Pond: East Pond 2 (Wet Detention) Treatment Volume Calculation

Drainage Area =	71.86	Acres
Treatment Volume Required =	1.5	Inch
Treatment Volume Required =	8.98	Acre-Feet

Pond Size Estimation

Soil Data

NRCS Soils at Pond Site: 29 - Rutledge Sand
30 - Pottsburg

Average High Water Depth = 0.5 Ft (USGS and NOVA hand borings)

Pond Vertical Constraints

Roadway Edge of Pavement Low Elevation =	11.1	Feet
Average Existing Ground Elevation at Pond Site =	9.5	Feet
Seasonal High Water Table Elevation at Pond Site =	9.0	Feet
Available Depth for Treatment and Attenuation =	2.1	Feet
Actual Depth of Treatment and Attenuation =	2.1	Feet

Pond Elevations

Bottom of Treatment Volume Elevation =	8.0	Feet	(Liner Required)
Top of Treatment Volume Elevation =	8.6	Feet	
Top of Attenuation Volume Elevation =	10.1	Feet	
Proposed Bottom of Berm Elevation =	11.1	Feet	
Proposed Top of Berm Elevation =	12.6	Feet	

Pond Size

Square Dimension at Bottom of Treatment Depth =	810	Feet	
Square Dimension at Top of Treatment Depth =	815	Feet	
Square Dimension at Top of Attenuation Depth =	827	Feet	
Square Dimension Bottom of Berm =	835	Feet	
Square dimension at top berm =	865	Feet	
Outside pond dimensions (including tie-down) =	890	Feet	
Minimum Total Area Required =	**20.89**	**Acres**	(10% SAFETY FACTOR)

Stage-Storage Calculation

Elevation	Area	Area	Incremental Volume	Total Volume	Total Volume	REMARKS
(ft)	(sf)	(ac)	(cf)	(cf)	(ac-ft)	
8.00	656100	15.06	0	0	0.00	
8.60	663899	15.24	396000	396000	9.09	*Top of TV*
10.10	683598	15.69	1010623	1406623	32.29	*Top of AV*
11.10	696891	16.00	690245	2096867	48.14	*Bottom of Berm*

Required Treatment Volume =	8.98	Acre-Feet	
Provided Treatment Volume =	**9.09**	**Acre-Feet**	✓
Required Attenuation Volume =	23.08	Acre-Feet	
Provided Attenuation Volume =	**23.20**	**Acre-Feet**	✓

Curve Number and Runoff Volume Calculation (FDOT 100YR/24HR)

Basin: East Basin 3

Pre-Condition Curve Number Calculation

Land Use Description	Soil Map Unit	Hydrologic Group	Area		CN	Product
Woods - Road	13,29,30	A/D	13.52	acres	77	1041
Woods - Pond Site			20.89	acres	77	1609
		Totals:	34.41	acres		2650

Pre-Condition Composite Curve Number: 77.0

Pre-Condition Runoff Volume Calculation

100-yr/24-hr Rainfall Depth (P) = 14.00 IN
CN = 77.0
Drainage Area (A) = 34.41 AC
Potential maximum retention after runoff begins (S) and S is:
(S) = (1000/CN)-10 = 2.99 IN
Runoff Depth (Q) = ((P-0.2S)^2)/(P+0.8S) = 10.96 IN
Pre-Condition Runoff Volume (V_{PRE}) = A x Q = 31.43 AC-FT

Post-Condition Curve Number Calculation

Total area includes runoff captured from STA 210+00 to STA 321+00 of PGS Parkway (200' R/W) and STA 90+65 to STA 97+10 of Longpoint Way (115' R/W).

Land Use Description	Soil Map Unit	Hydrologic Group	Area		CN	Product
Impervious Roadway	--	--	12.79	acres	98	1254
Sod/Grass	13,29,30	A/D	17.41	acres	80	1393
		Subtotal:	30.20	acres		
Pond Impervious	--	--	15.06	acres	100	1506
Pond Pervious (grass)	13,29,30	A/D	5.83	acres	80	466
		Totals:	51.09	acres		4619

Post-Condition Composite Curve Number: 90.4

Post-Condition Runoff Volume Calculation

100-yr/24-hr Rainfall Depth (P) = 14.00 IN
CN = 90.4
Drainage Area (A) = 51.09 AC
Potential maximum retention after runoff begins (S) and S is:
(S) = 1000/CN-10 = 1.06 IN
Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 12.80 IN
Post-Condition Runoff Volume (V_{POST}) = A x Q = 54.51 AC-FT

Required Attenuation Volume = V_{POST} - V_{PRE} = 23.08 AC-FT

Pond: East Pond 3 (Wet Detention) Treatment Volume Calculation

Drainage Area =	71.86	Acres
Treatment Volume Required =	1.5	Inch
Treatment Volume Required =	8.98	Acre-Feet

Pond Size Estimation

Soil Data

NRCS Soils at Pond Site:	13 - Leon Sand	
	22 - Pamlico-Dorovan	
	29 - Rutledge Sand	
Average High Water Depth =	0.5 Ft	(USGS and NOVA hand borings)

Pond Vertical Constraints

Roadway Edge of Pavement Low Elevation =	11.1	Feet
Average Existing Ground Elevation at Pond Site =	9.5	Feet
Seasonal High Water Table Elevation at Pond Site =	9.0	Feet
Available Depth for Treatment and Attenuation =	2.1	Feet
Actual Depth of Treatment and Attenuation =	2.1	Feet

Pond Elevations

Bottom of Treatment Volume Elevation =	8.0	Feet	(Liner Required)
Top of Treatment Volume Elevation =	8.6	Feet	
Top of Attenuation Volume Elevation =	10.1	Feet	
Proposed Bottom of Berm Elevation =	11.1	Feet	
Proposed Top of Berm Elevation =	12.6	Feet	

Pond Size

Square Dimension at Bottom of Treatment Depth =	810	Feet	
Square Dimension at Top of Treatment Depth =	815	Feet	
Square Dimension at Top of Attenuation Depth =	827	Feet	
Square Dimension Bottom of Berm =	835	Feet	
Square dimension at top berm =	865	Feet	
Outside pond dimensions (including tie-down) =	890	Feet	
Minimum Total Area Required =	**20.89**	**Acres**	(10% SAFETY FACTOR)

Stage-Storage Calculation

Elevation	Area	Area	Incremental Volume	Total Volume	Total Volume	REMARKS
(ft)	(sf)	(ac)	(cf)	(cf)	(ac-ft)	
8.00	656100	15.06	0	0	0.00	
8.60	663899	15.24	396000	396000	9.09	*Top of TV*
10.10	683598	15.69	1010623	1406623	32.29	*Top of AV*
11.10	696891	16.00	690245	2096867	48.14	*Bottom of Berm*

Required Treatment Volume =	8.98	Acre-Feet	
Provided Treatment Volume =	**9.09**	**Acre-Feet**	✓
Required Attenuation Volume =	23.08	Acre-Feet	
Provided Attenuation Volume =	**23.20**	**Acre-Feet**	✓

Curve Number and Runoff Volume Calculation (FDOT 100YR/24HR)

Basin: Tie-Down Slopes (For PGS Typical Section)

Pre-Condition Curve Number Calculation

2-acres is intended to represent a unit analysis of 200LF ROW

Land Use Description	Soil Map Unit	Hydrologic Group	Area		CN	Product
Woods	13,29,30	A/D	2.00	acres	77	154
		Totals:	2.00	acres		154
		Pre-Condition Composite Curve Number:	77.0			

Pre-Condition Runoff Volume Calculation

100-yr/24-hr Rainfall Depth (P) = 14.00 IN
CN = 77.0
Drainage Area (A) = 2.00 AC
Potential maximum retention after runoff begins (S) and S is:
(S) = (1000/CN)-10 = 2.99 IN
Runoff Depth (Q) = ((P-0.2S)^2)/(P+0.8S) = 10.96 IN
Pre-Condition Runoff Volume (V_{PRE}) = A x Q = 1.83 AC-FT

Post-Condition Curve Number Calculation

1.2-acres is intended to represent a unit analysis of 120LF of ROW not being collected by roadway drainage system

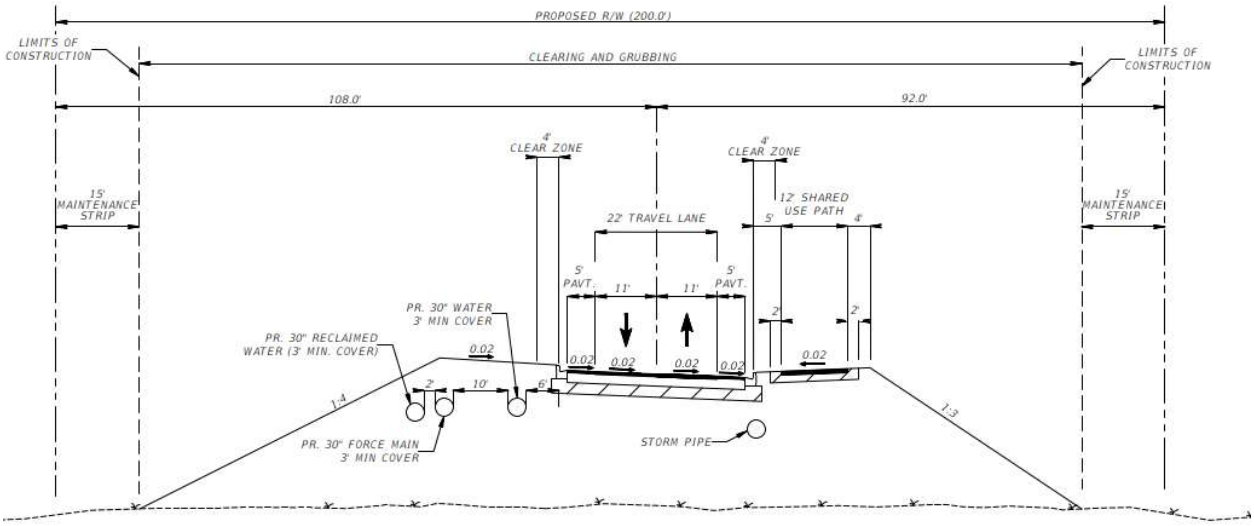
Land Use Description	Soil Map Unit	Hydrologic Group	Area		CN	Product
Sod/Grass	13,29,30	A	1.20	acres	80	96
		Totals:	1.20	acres		96
		Post-Condition Composite Curve Number:	80.0			

Post-Condition Runoff Volume Calculation

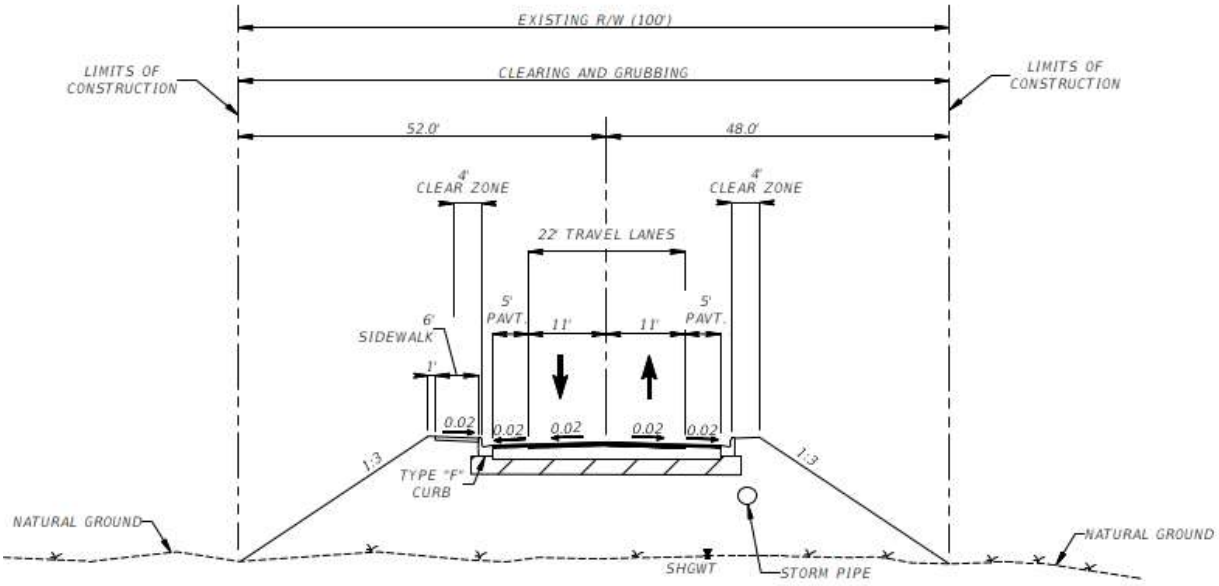
100-yr/24-hr Rainfall Depth (P) = 14.00 IN
CN = 80.0
Drainage Area (A) = 1.20 AC
Potential maximum retention after runoff begins (S) and S is:
(S) = 1000/CN-10 = 2.50 IN
Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 11.39 IN
Post-Condition Runoff Volume (V_{POST}) = A x Q = 1.14 AC-FT

Required Attenuation Volume = V_{POST} - V_{PRE} = 0.00 AC-FT

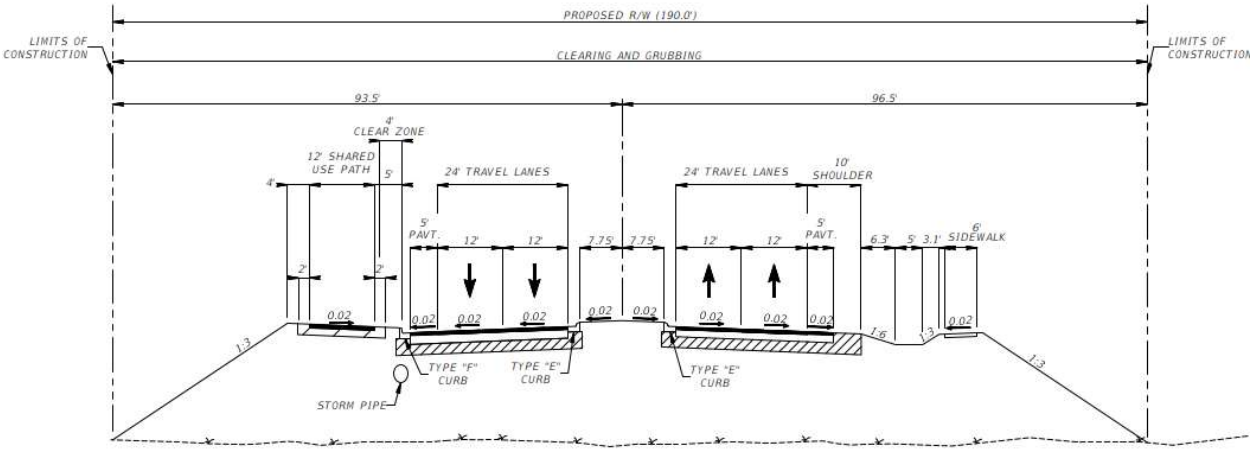
Appendix E – Typical Sections



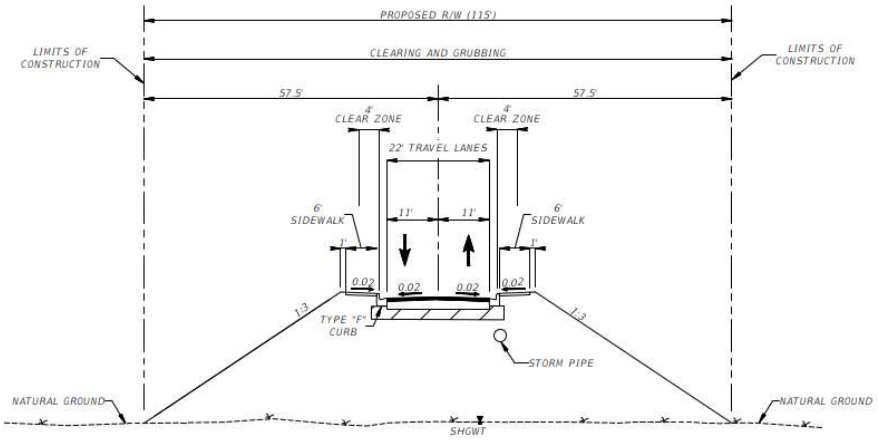
Proposed PGS Parkway Ph. 3 Typical Section



Clara Avenue Extension Typical Section



Alf Coleman Road Extension Typical Section



Longpoint Way Extension Typical Section

Appendix F – Opinion of Probable Cost

OPINION OF POTENTIAL CONSTRUCTION COSTS

Pond West-1

EARTHWORK

	VOLUME	UNIT COST	
POND FILL:	9643 cy	$14.25	embankment
POND EXCAVATION:	102746 cy	$9.52	regular excavation
TOTAL COST:		$1,115,552	

CLEARING AND GRUBBING

POND R/W AREA:	12.30 ac	Parcel area req for pond
COST PER ACRE:	$22,366.00	
TOTAL COST:	$275,172	

POND SOD QUANTITIES

POND R/W AREA:	
POND WATER AREA:	
TOTAL SOD AREA:	3.48 ac
COST PER SY:	$4.46
TOTAL COST:	$75,089

POND FENCING QUANTITIES

POND R/W PERMITER:	
COST PER FT (TYPE B):	$0.00
20-FT CANILEVER GATE:	0
COST PER EA:	$0.00
TOTAL COST:	$0

ADDITIONAL POND STORMDRAIN QUANTITES

	QUANTITY	UNIT COST	COST	
CONTROL STRUCTURE:	1	$12,682	$12,682	(assumed Type D, J Bot <10')
INFALL MES:	1	$10,000	$10,000	(assumed 54" pipe)
OUTFALL PIPE (LF):	1100	$317	$348,700	(assumed 42" pipe)
MANHOLES:	4	$14,684	$58,736	(assumed J-8). One manhole per 300LF
		TOTAL:	$430,118	

TOTAL CONSTRUCTION COSTS:	**$1,895,931**

1.) Cut/Fill Qtys from PSR pond calculation sheets

2.) Unit cost pulled from FDOT Market Area Moving Averages for Area 1 and 12-month state-wide averages; Pulled 9/12/25

3.) Fill calculated using the XS area of the berm multiplied by the perimeter length of the pond calculated at the top of berm

4.) Excavation area calculated using average end area method between bottom of pond and average existing ground elevation. 8' depth below SHWT was assumed.

OPINION OF POTENTIAL CONSTRUCTION COSTS
Pond West-2

EARTHWORK

	VOLUME	UNIT COST	
POND FILL:	9850 cy	$14.25	embankment
POND EXCAVATION:	108039 cy	$9.52	regular excavation
TOTAL COST:		$1,168,897	

CLEARING AND GRUBBING

POND R/W AREA:	12.84 ac	Parcel area req for pond
COST PER ACRE:	$22,366.00	
TOTAL COST:	$287,126	

POND SOD QUANTITIES

POND R/W AREA:	
POND WATER AREA:	
TOTAL SOD AREA:	3.58 ac
COST PER SY:	$4.46
TOTAL COST:	$77,297

POND FENCING QUANTITIES

POND R/W PERMITER:	
COST PER FT (TYPE B):	$0.00
20-FT CANILEVER GATE:	0
COST PER EA:	$0.00
TOTAL COST:	$0

ADDITIONAL POND STORMDRAIN QUANTITES

	QUANTITY	UNIT COST	COST	
CONTROL STRUCTURE:	1	$12,682	$12,682	(assumed Type D, J Bot <10')
INFALL MES:	1	$10,000	$10,000	(assumed 54" pipe)
OUTFALL PIPE (LF):	2500	$317	$792,500	(assumed 42" pipe)
MANHOLES:	9	$14,684	$132,156	(assumed J-8). One manhole per 300LF
		TOTAL:	$947,338	

TOTAL CONSTRUCTION COSTS:	**$2,480,658**

1.) Cut/Fill Qtys from PSR pond calculation sheets

2.) Unit cost pulled from FDOT Market Area Moving Averages for Area 1 and 12-month state-wide averages; Pulled 9/12/25

3.) Fill calculated using the XS area of the berm multiplied by the perimeter length of the pond calculated at the top of berm

4.) Excavation area calculated using average end area method between bottom of pond and average existing ground elevation. 8' depth below SHWT was assumed.

OPINION OF POTENTIAL CONSTRUCTION COSTS
Pond West-3

EARTHWORK

	VOLUME	UNIT COST	
POND FILL:	5750 cy	$14.25	embankment
POND EXCAVATION:	104225 cy	$9.52	regular excavation
TOTAL COST:		$1,074,161	

CLEARING AND GRUBBING

POND R/W AREA:	12.02 ac	Parcel area req for pond
COST PER ACRE:	$22,366.00	
TOTAL COST:	$268,900	

POND SOD QUANTITIES

POND R/W AREA:	
POND WATER AREA:	
TOTAL SOD AREA:	3.20 ac
COST PER SY:	$4.46
TOTAL COST:	$69,036

POND FENCING QUANTITIES

POND R/W PERMITER:	
COST PER FT (TYPE B):	$0.00
20-FT CANILEVER GATE:	0
COST PER EA:	$0.00
TOTAL COST:	$0

ADDITIONAL POND STORMDRAIN QUANTITES

	QUANTITY	UNIT COST	COST	
CONTROL STRUCTURE:	1	$12,682	$12,682	(assumed Type D, J Bot <10')
INFALL MES:	1	$10,000	$10,000	(assumed 54" pipe)
OUTFALL PIPE (LF):	3100	$317	$982,700	(assumed 42" pipe)
MANHOLES:	11	$14,684	$161,524	(assumed J-8). One manhole per 300LF
		TOTAL:	$1,166,906	

MISC. POND ITEMS

	QUANTITY	UNIT COST	COST	
POND LINER (SY):	58190	$27.50	$1,600,225	(assumed to equal area of pond r/w area)
		TOTAL:	$1,600,225	

TOTAL CONSTRUCTION COSTS:	**$4,179,228**

1.) Cut/Fill Qtys from PSR pond calculation sheets

2.) Unit cost pulled from FDOT Market Area Moving Averages for Area 1 and 12-month state-wide averages; Pulled 9/12/25

3.) Fill calculated using the XS area of the berm multiplied by the perimeter length of the pond calculated at the top of berm

4.) Excavation area calculated using average end area method between bottom of pond and average existing ground elevation. 8' depth below SHWT was assumed.

OPINION OF POTENTIAL CONSTRUCTION COSTS
Pond East-1

EARTHWORK

	VOLUME	UNIT COST	
POND FILL:	12951 cy	$14.25	embankment
POND EXCAVATION:	180609 cy	$9.52	regular excavation
TOTAL COST:		$1,903,947	

CLEARING AND GRUBBING

POND R/W AREA:	21.27 ac	Parcel area req for pond
COST PER ACRE:	$22,366.00	
TOTAL COST:	$475,734	

POND SOD QUANTITIES

POND R/W AREA:	
POND WATER AREA:	
TOTAL SOD AREA:	6.21 ac
COST PER SY:	$4.46
TOTAL COST:	$134,017

POND FENCING QUANTITIES

POND R/W PERMITER:	
COST PER FT (TYPE B):	$0.00
20-FT CANILEVER GATE:	0
COST PER EA:	$0.00
TOTAL COST:	$0

ADDITIONAL POND STORMDRAIN QUANTITES

	QUANTITY	UNIT COST	COST	
CONTROL STRUCTURE:	1	$12,682	$12,682	Type D, DT Bot <10'
INFALL MES:	1	$10,000	$10,000	(assumed 54" pipe)
OUTFALL PIPE (LF):	1000	$205	$205,000	(assumed 30" pipe)
MANHOLES:	4	$14,684	$58,736	(assumed J-8). One manhole per 300LF
		TOTAL:	$286,418	

TOTAL CONSTRUCTION COSTS:	**$2,800,116**

1.) Cut/Fill Qtys from PSR pond calculation sheets

2.) Unit cost pulled from FDOT Market Area Moving Averages for Area 1 and 12-month state-wide averages; Pulled 9/12/25

3.) Fill calculated using the XS area of the berm multiplied by the perimeter length of the pond calculated at the top of berm

4.) Excavation area calculated using average end area method between bottom of pond and average existing ground elevation. 8' depth below SHWT was assumed.

OPINION OF POTENTIAL CONSTRUCTION COSTS
Pond East-2

EARTHWORK

	VOLUME	UNIT COST	
POND FILL:	7854 cy	$14.25	embankment
POND EXCAVATION:	182548 cy	$9.52	regular excavation
TOTAL COST:		$1,849,771	

CLEARING AND GRUBBING

POND R/W AREA:	20.89 ac	Parcel area req for pond
COST PER ACRE:	$22,366.00	
TOTAL COST:	$467,291	

POND SOD QUANTITIES

POND R/W AREA:	
POND WATER AREA:	
TOTAL SOD AREA:	5.83 ac
COST PER SY:	$4.46
TOTAL COST:	$125,869

POND FENCING QUANTITIES

POND R/W PERMITER:	
COST PER FT (TYPE B):	$0.00
20-FT CANILEVER GATE:	0
COST PER EA:	$0.00
TOTAL COST:	$0

ADDITIONAL POND STORMDRAIN QUANTITES

	QUANTITY	UNIT COST	COST	
CONTROL STRUCTURE:	1	$12,682	$12,682	Type D, DT Bot <10'
INFALL MES:	1	$10,000	$10,000	(assumed 54" pipe)
INFALL PIPE (LF):	500	$457	$228,500	(assumed 54" pipe)
OUTFALL PIPE (LF):	1500	$205	$307,500	(assumed 30" pipe)
MANHOLES:	7	$14,684	$102,788	(assumed J-8). One manhole per 300LF
		TOTAL:	$661,470	

MISC. POND ITEMS

	QUANTITY	UNIT COST	COST	
POND LINER (SY):	101122	$27.50	$2,780,850	(assumed to equal area of pond r/w area)
		TOTAL:	$2,780,850	

TOTAL CONSTRUCTION COSTS:	**$5,885,251**

1.) Cut/Fill Qtys from PSR pond calculation sheets

2.) Unit cost pulled from FDOT Market Area Moving Averages for Area 1 and 12-month state-wide averages; Pulled 9/12/25

3.) Fill calculated using the XS area of the berm multiplied by the perimeter length of the pond calculated at the top of berm

4.) Excavation area calculated using average end area method between bottom of pond and average existing ground elevation. 8' depth below SHWT was assumed.

OPINION OF POTENTIAL CONSTRUCTION COSTS

Pond East-3

EARTHWORK

	VOLUME	UNIT COST	
POND FILL:	7854 cy	$14.25	embankment
POND EXCAVATION:	182548 cy	$9.52	regular excavation
TOTAL COST:		$1,849,771	

CLEARING AND GRUBBING

POND R/W AREA:	20.89 ac	Parcel area req for pond
COST PER ACRE:	$22,366.00	
TOTAL COST:	$467,291	

POND SOD QUANTITIES

POND R/W AREA:	
POND WATER AREA:	
TOTAL SOD AREA:	5.83 ac
COST PER SY:	$4.46
TOTAL COST:	$125,869

POND FENCING QUANTITIES

POND R/W PERMITER:	
COST PER FT (TYPE B):	$0.00
20-FT CANILEVER GATE:	0
COST PER EA:	$0.00
TOTAL COST:	$0

ADDITIONAL POND STORMDRAIN QUANTITES

	QUANTITY	UNIT COST	COST	
CONTROL STRUCTURE:	1	$12,682	$12,682	Type D, DT Bot <10'
INFALL MES:	1	$10,000	$10,000	(assumed 54" pipe)
INFALL PIPE (LF):	2000	$457	$914,000	(assumed 54" pipe); infall on NW side of pond
OUTFALL PIPE (LF):	1700	$205	$348,500	(assumed 30" pipe)
MANHOLES:	13	$14,684	$190,892	(assumed J-8). One manhole per 300LF
		TOTAL:	$1,476,074	

MISC. POND ITEMS

	QUANTITY	UNIT COST	COST	
POND LINER (SY):	101122	$27.50	$2,780,850	(assumed to equal area of pond r/w area)
		TOTAL:	$2,780,850	

TOTAL CONSTRUCTION COSTS:	**$6,699,855**

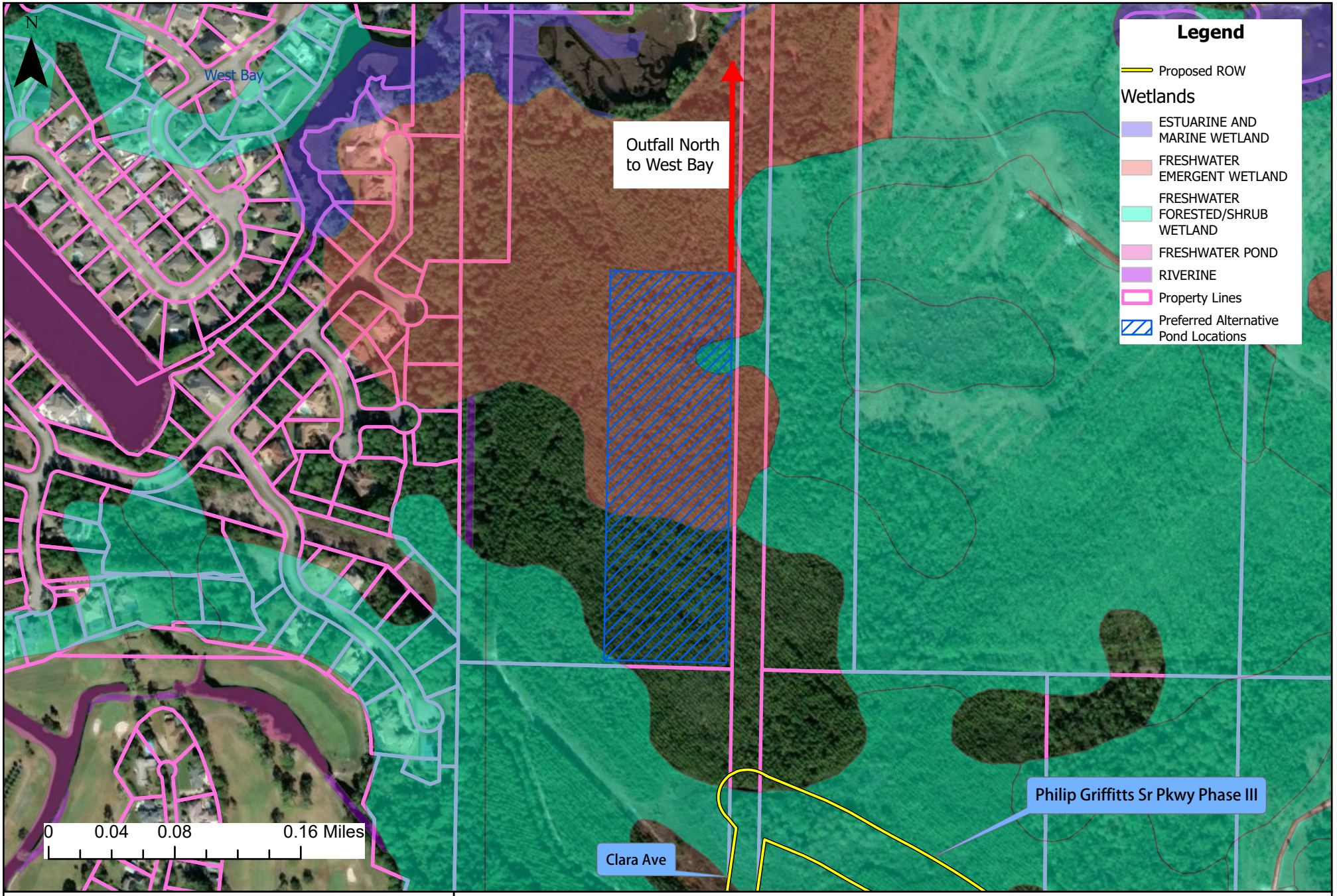
1.) Cut/Fill Qtys from PSR pond calculation sheets

2.) Unit cost pulled from FDOT Market Area Moving Averages for Area 1 and 12-month state-wide averages; Pulled 9/12/25

3.) Fill calculated using the XS area of the berm multiplied by the perimeter length of the pond calculated at the top of berm

4.) Excavation area calculated using average end area method between bottom of pond and average existing ground elevation. 8' depth below SHWT was assumed.

Appendix G – Pond Alternatives

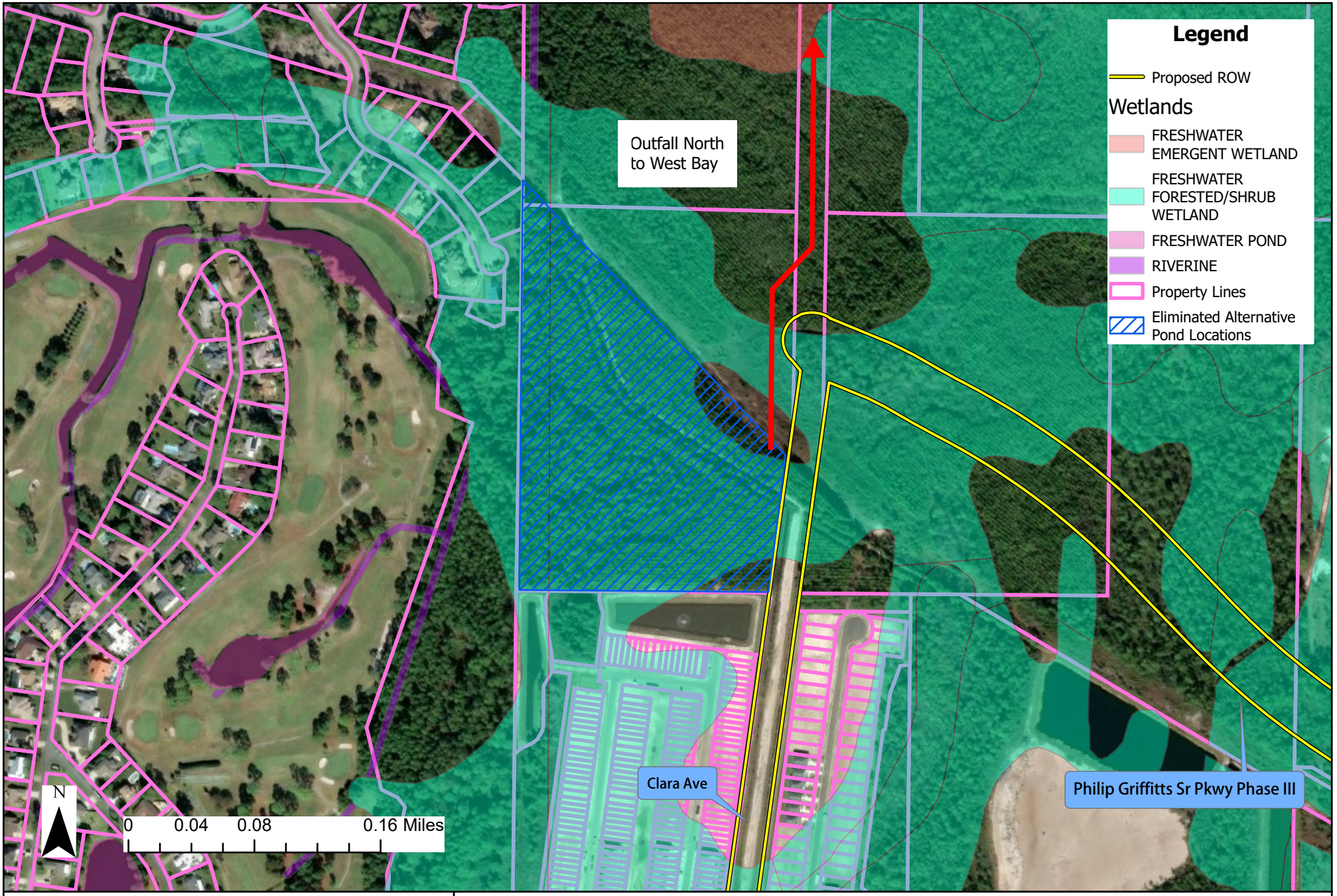


Kimley»Horn

Pond West -1

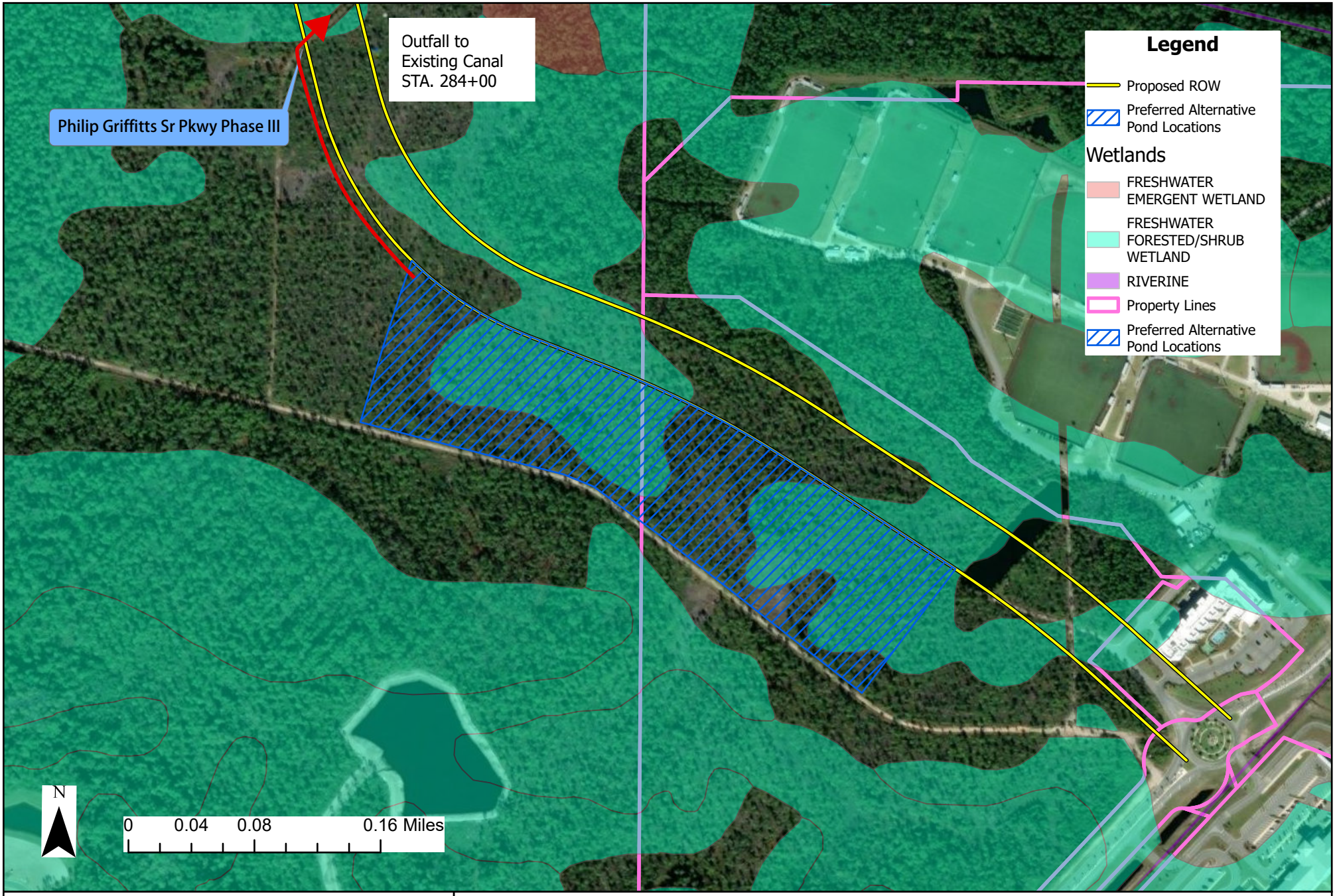
Kimley»Horn

Pond West -2



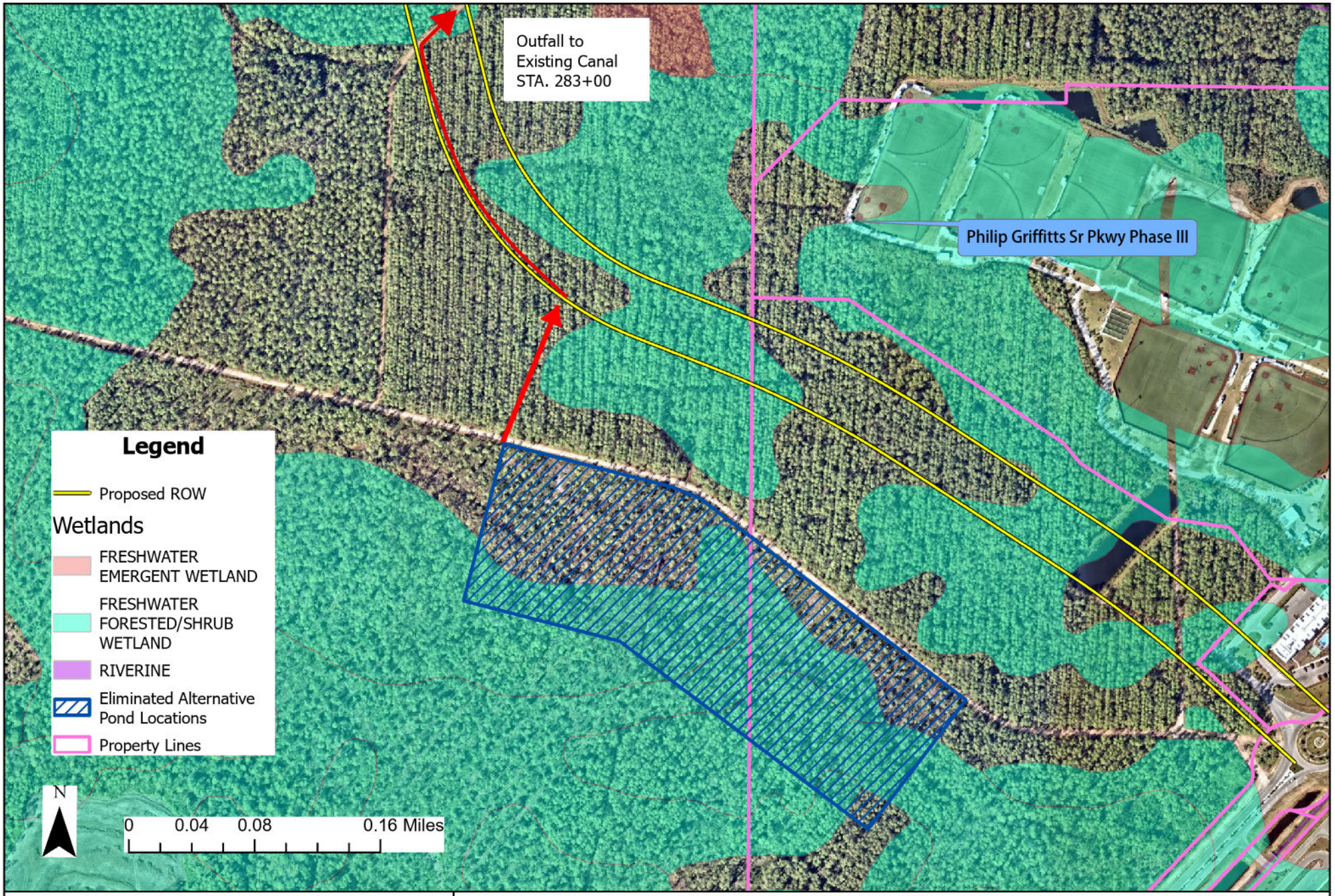
Kimley»Horn

Pond West -3



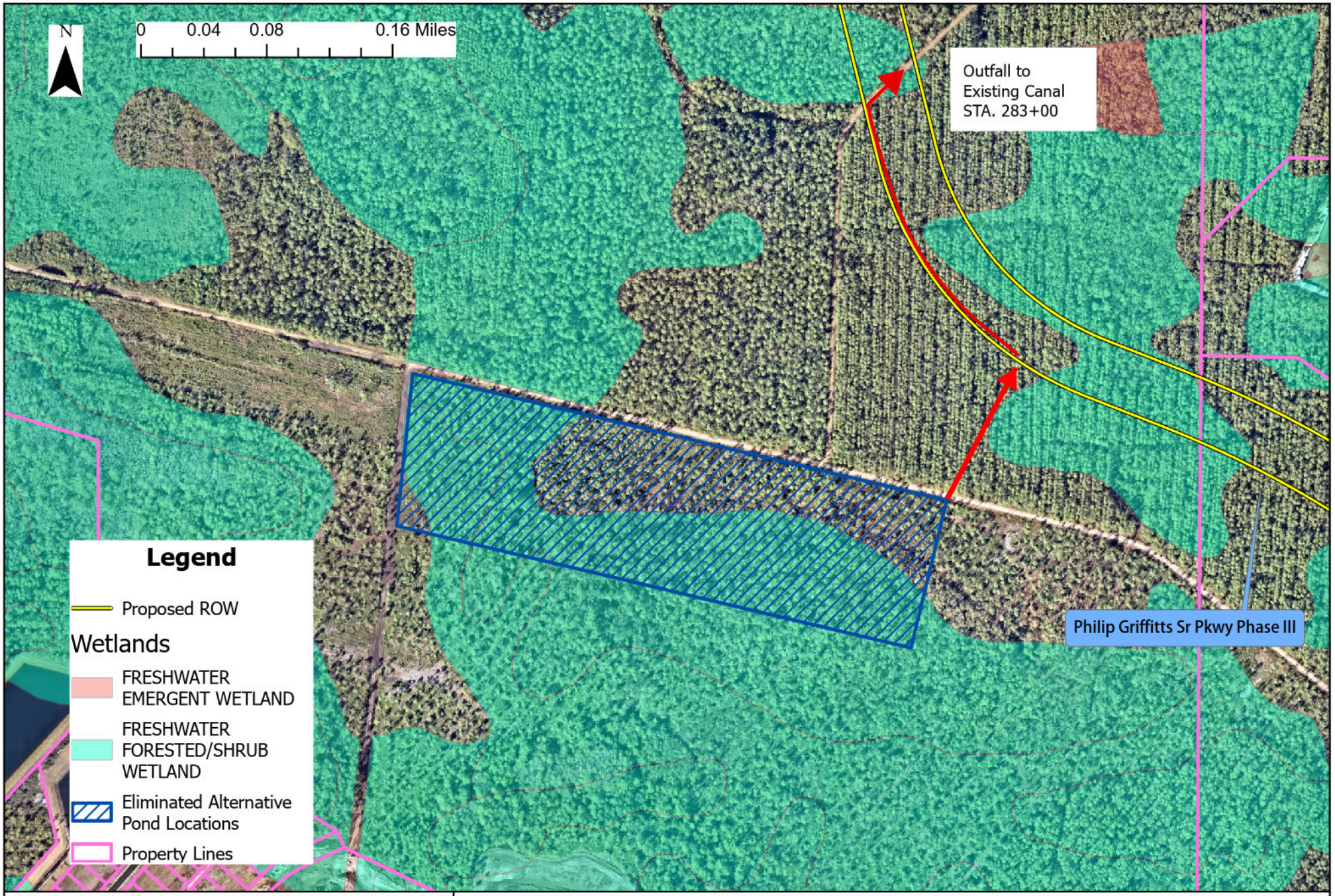
Kimley»Horn

Pond East -1



Kimley»Horn

Pond East -2



Kimley»Horn

Pond East -3

Appendix H – Field Review