

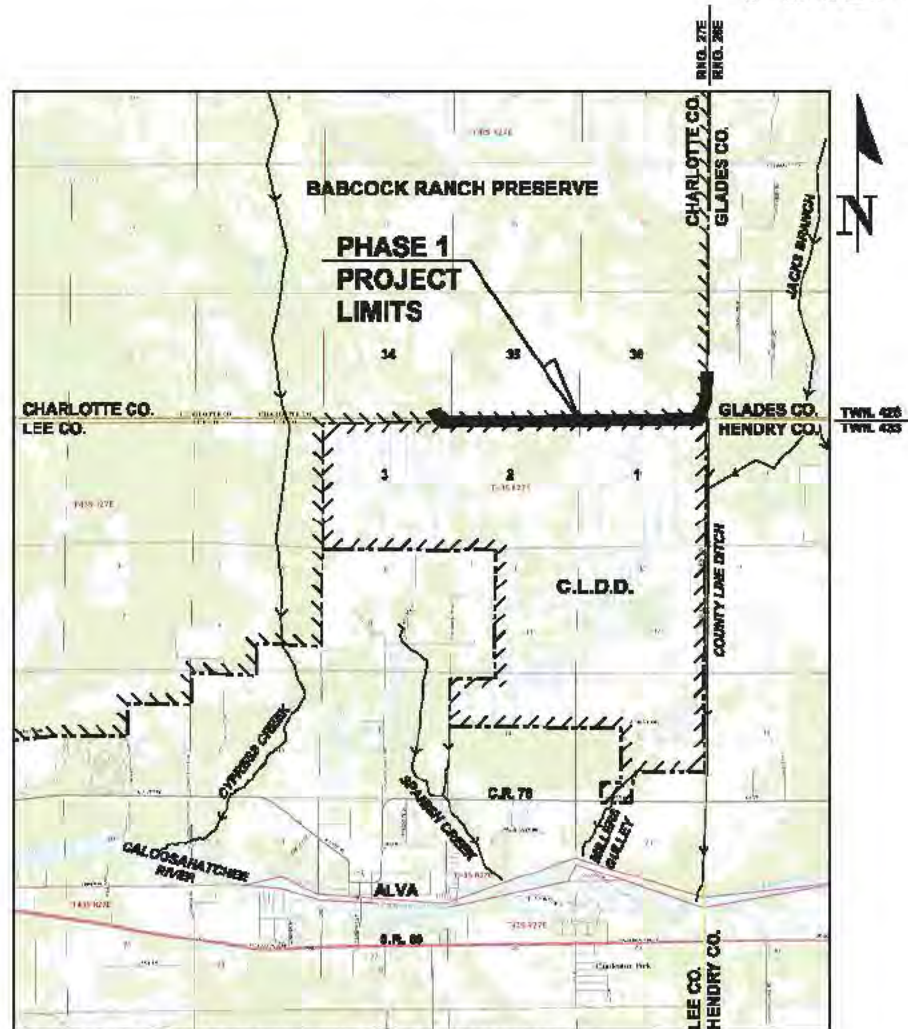
# COUNTY LINE DRAINAGE DISTRICT (C.L.D.D.) - BABCOCK RANCH PRESERVE (B.R.P.) DISPERSED WATER STORAGE PHASE 1 IMPROVEMENTS

PREPARED FOR  
COUNTY LINE DRAINAGE DISTRICT

IN COOPERATION WITH  
FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES  
AND FLORIDA FOREST SERVICE

CHARLOTTE COUNTY  
AND LEE COUNTY, FLORIDA

JULY 2016



USGS QUAD MAPS: ALVA, QJGA, TELEGRAPH SWAMP AND TELEGRAPH SWAMP SE, FL 2016  
NOT TO SCALE

### LOCATION MAP

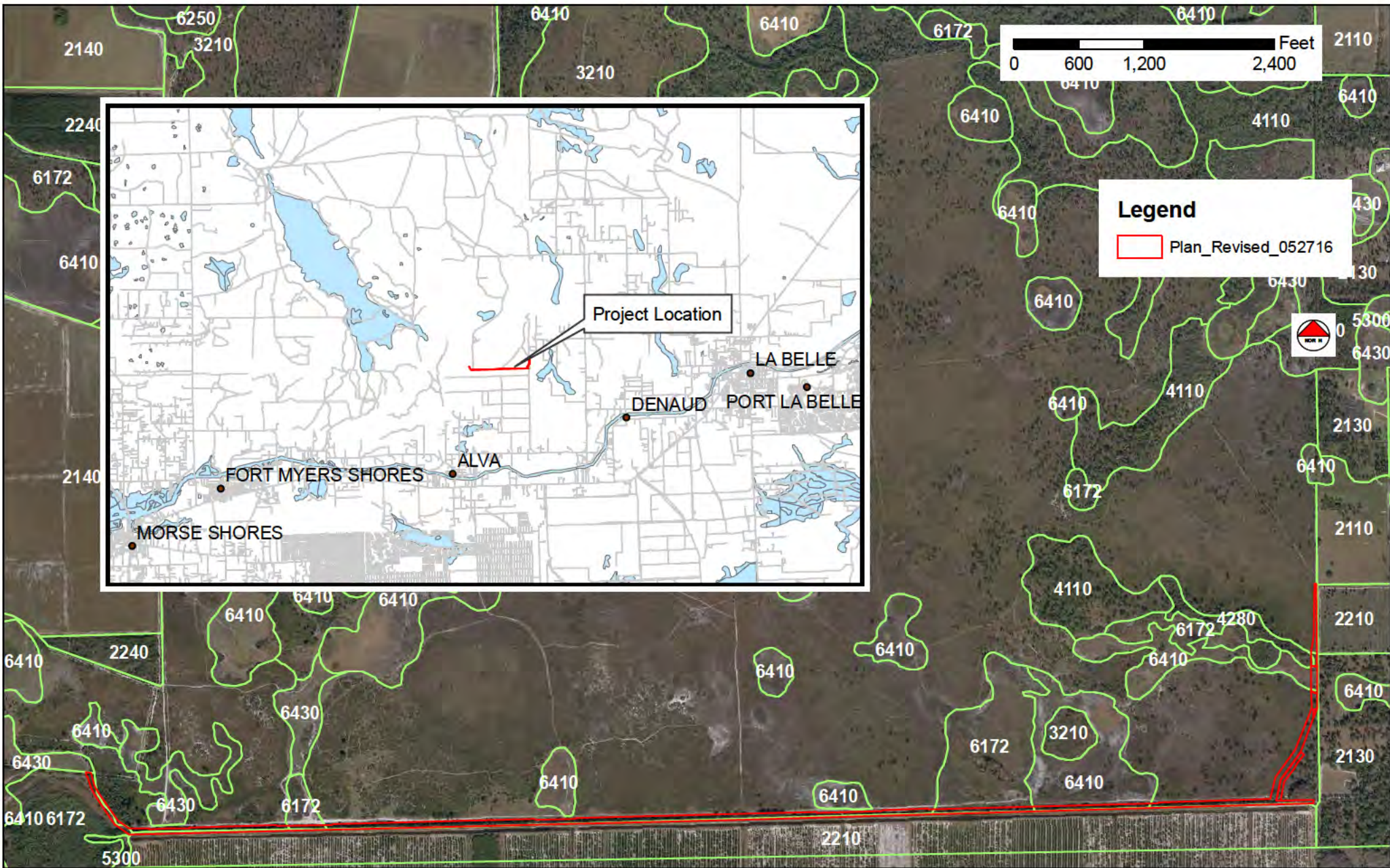
834, 836 & 838, T42N, R27E 81, 82 & 83, T43N, R27E  
CHARLOTTE COUNTY, FLORIDA LEE COUNTY, FLORIDA

### SHEET INDEX:

- 1 COVER SHEET & LOCATION MAP
- 2 OVERALL PLAN & TYPICAL SECTIONS
- 3 - 6 PLAN SHEETS
- 7 DETAILS

PREPARED BY: <b>Grandusky, Lamb and Associates, LLC</b> Water Resources and Environmental Consultants 8426 Waterway Drive West Palm Beach, Florida 33406 Ph. 561-388-8219 Certificate of Authorization No. 31802	C.L.D.D. - B.R.P. DISPERSED WATER STORAGE PHASE 1 IMPROVEMENTS <b>COVER</b>	
	DATE: JULY 2016	SHEET No. 1 OF 7





BKI, Inc.  
 Consulting Ecologists  
 225 Fifth Avenue, Suite 2  
 Indialantic, Florida 32903  
 321-951-7964

Name: Location Map  
 Project: Babcock Water Storage  
 Project No.: 15006  
 Source: FDEP, SFWMD Land Use Map (2008)  
 Note: All boundaries and locations are approximate

Figure  
 1



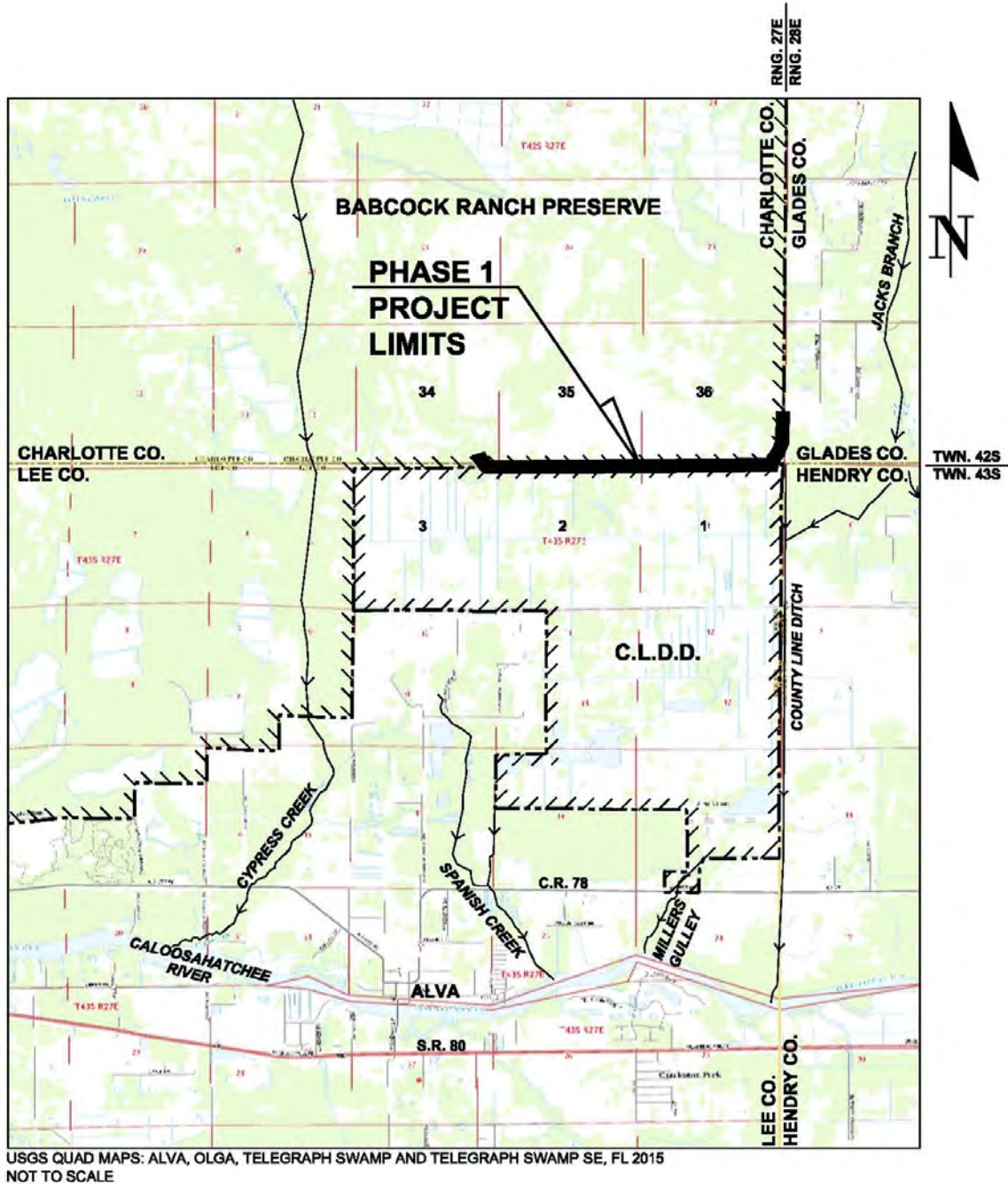


Figure 1. CLDD-BRP Dispersed Water Storage Project Location Map.

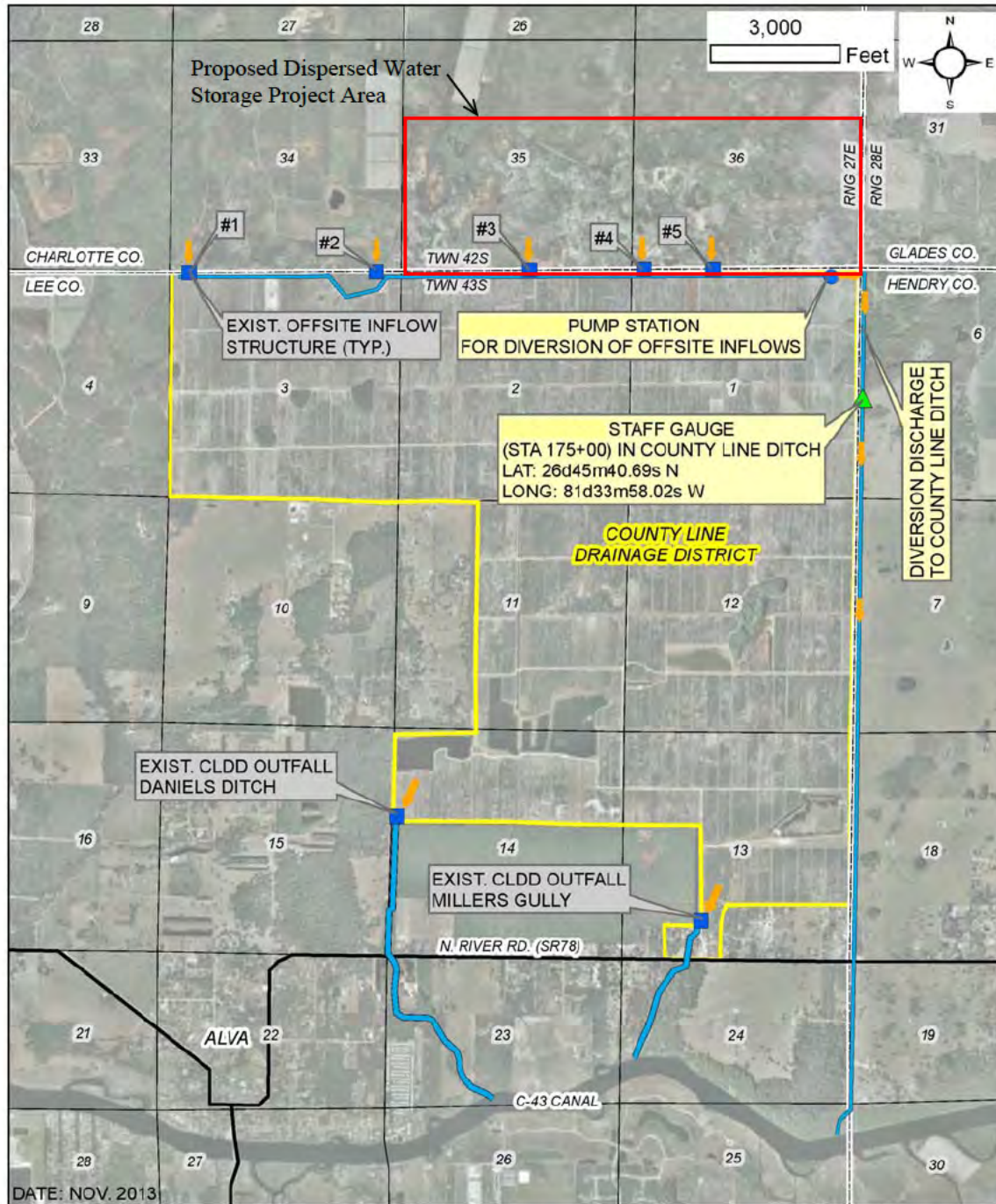
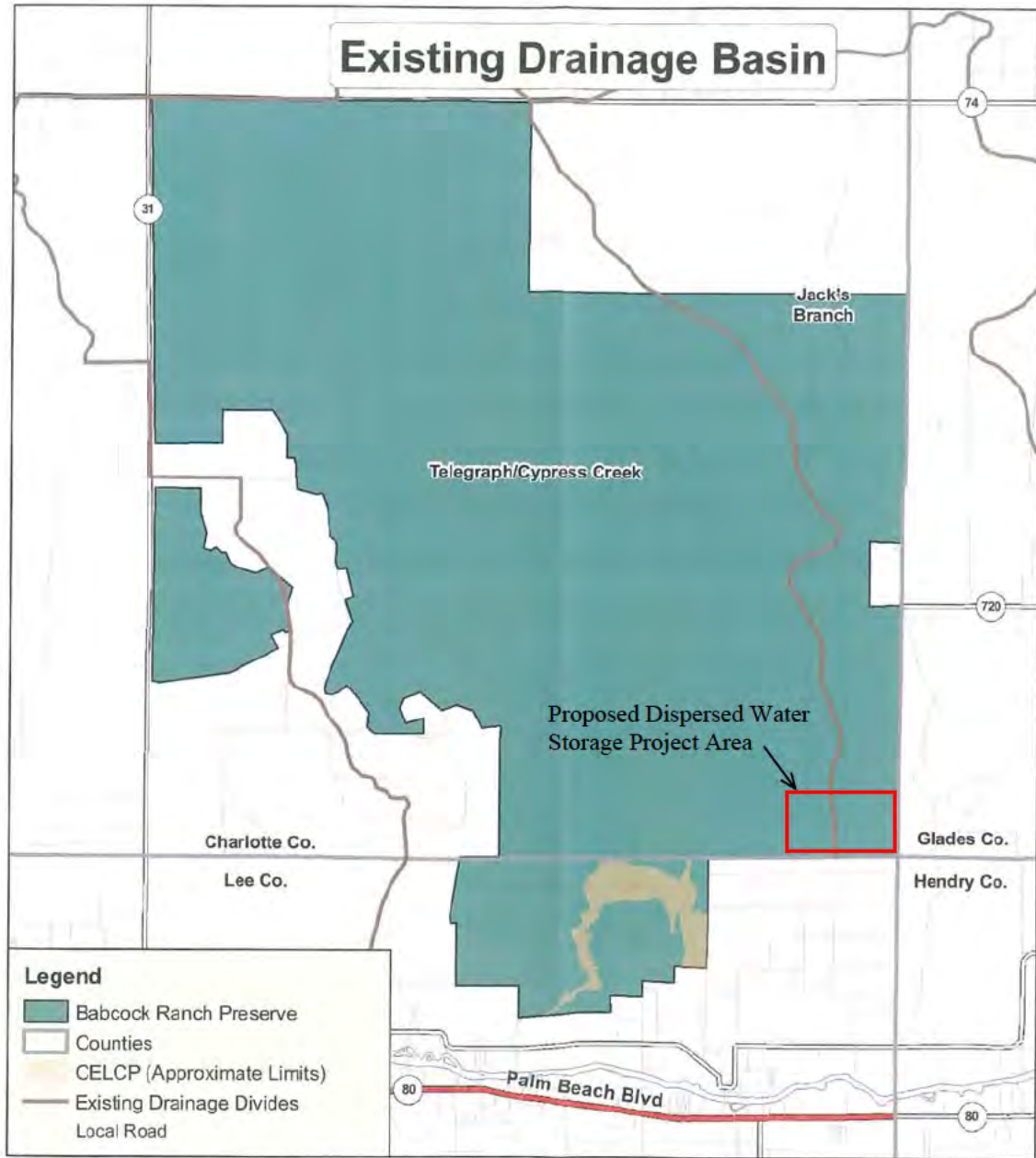


Figure 2. Map of CLDD drainage system. The approximate limits of the proposed water storage project are shown in red.





**Figure 3. Map of BRP and existing drainage basins (source: Map 10 from Babcock Ranch Preserve Hydrological Analysis Final Report prepared by Environmental Consulting & Technology, Inc. circa 2009 for the Florida Division of Forestry). The approximate limits of the proposed water storage project are shown in red.**

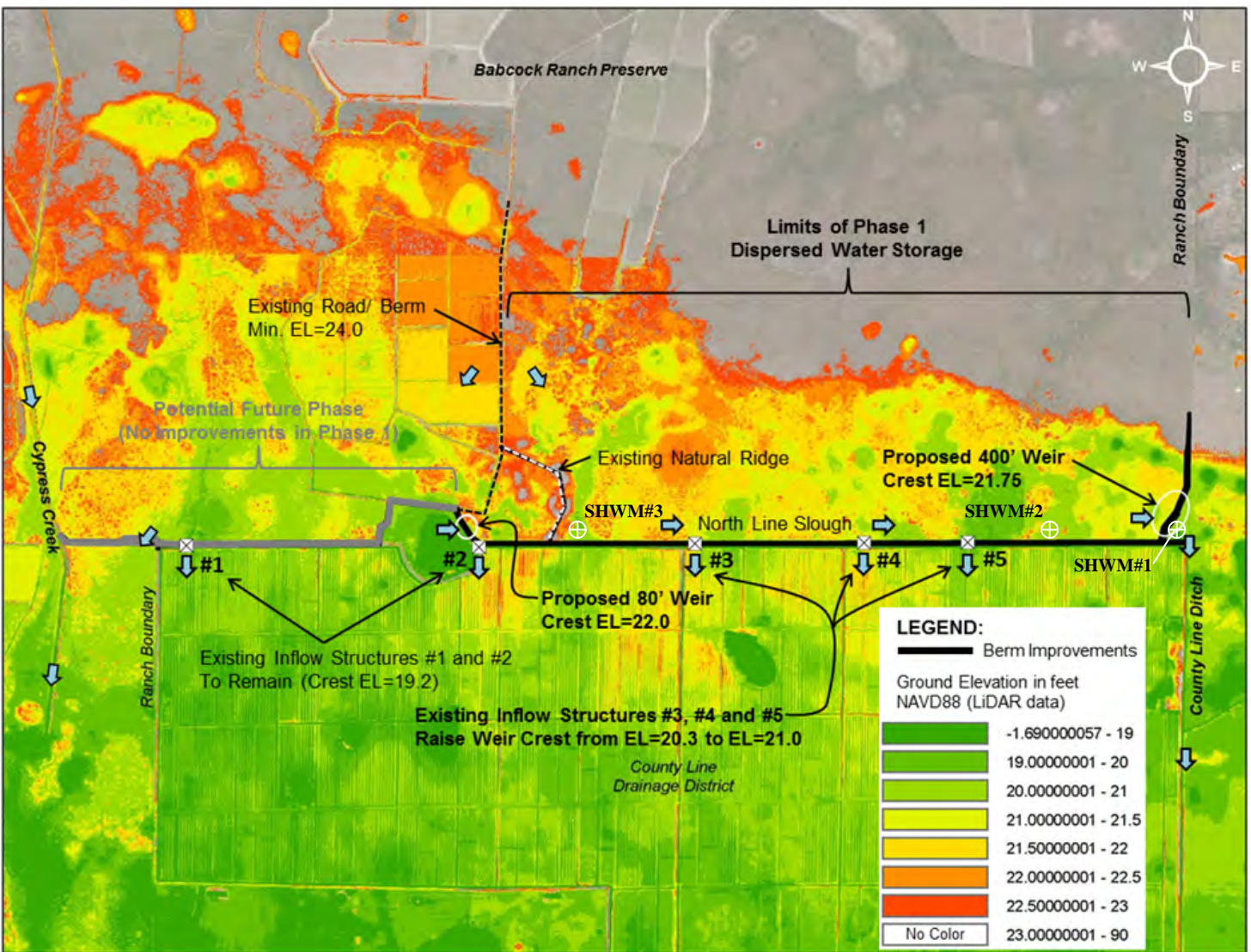
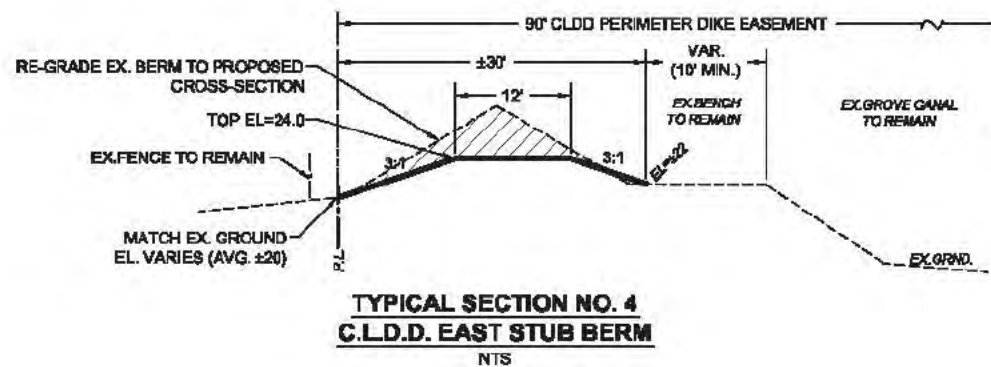
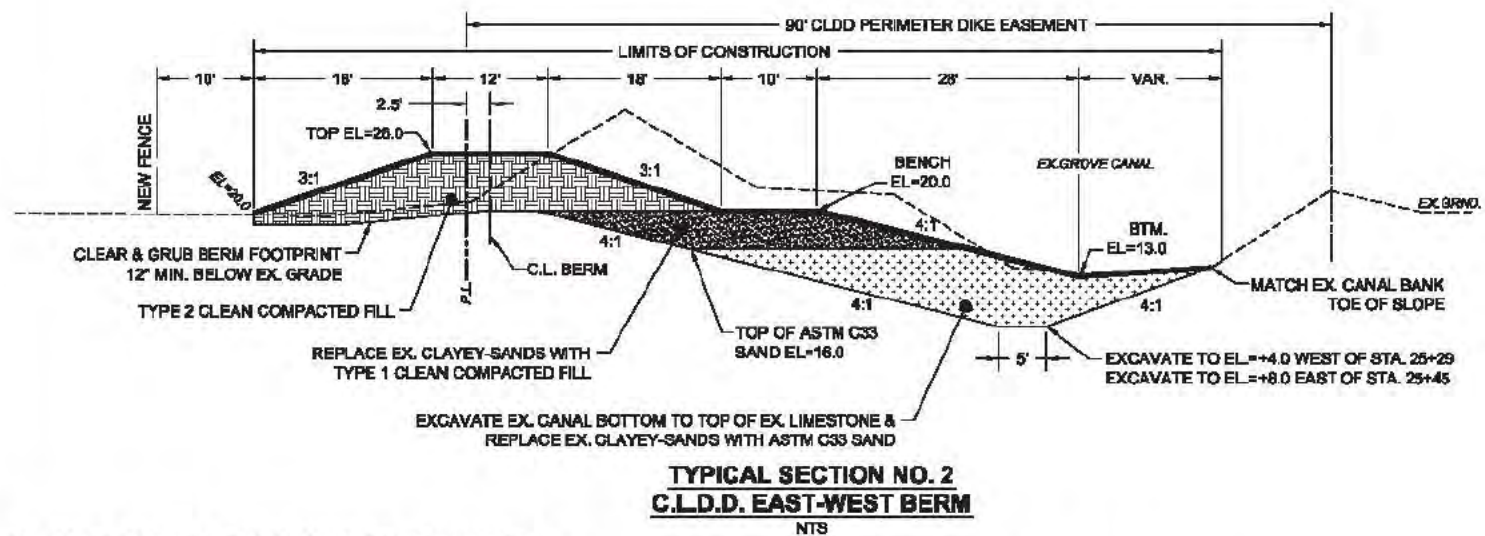
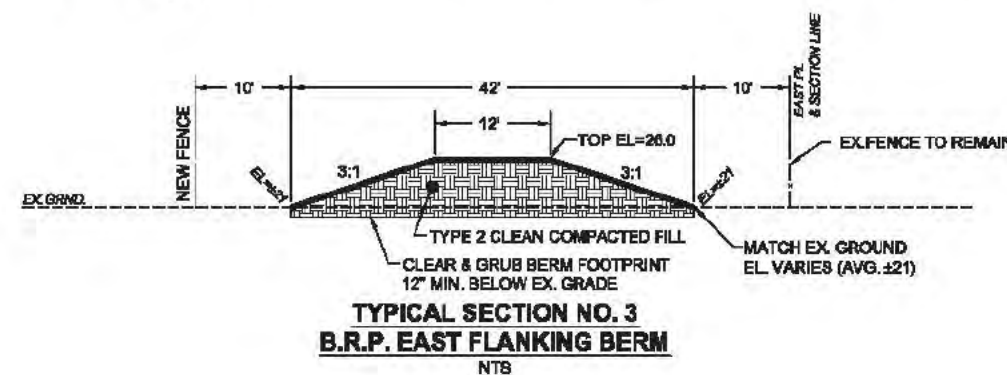
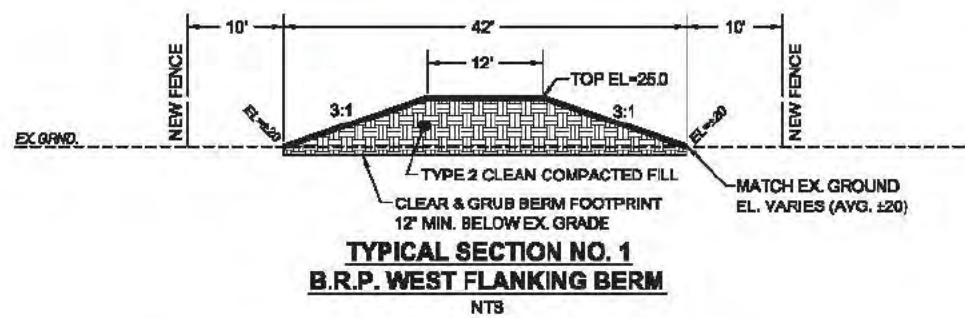
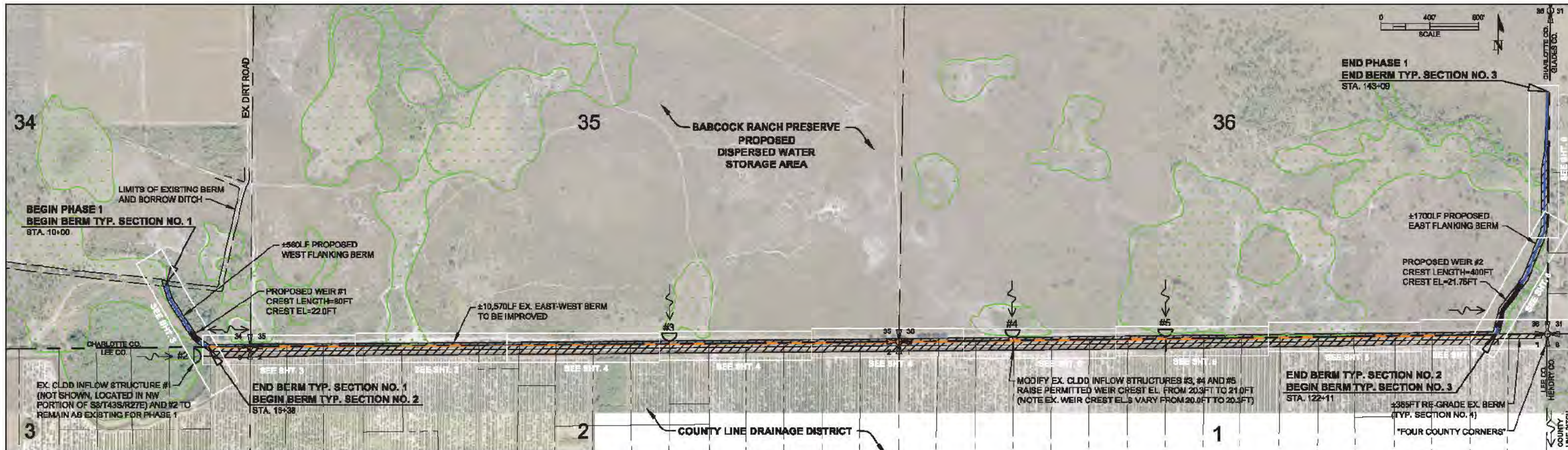


Figure 4. Schematic of Proposed Dispersed Water Storage Project.





- LEGEND**
- APPROX. WETLAND LIMITS (SEE NOTE 1)
  - PHASE 1 PROJECT LIMITS
  - EX. CLDD INFLOW STRUCTURE (CULVERT WITH FLASHBOARD RISER)
  - DRAINAGE FLOW DIRECTION
  - PROPOSED EAST-WEST BERM
  - PROPOSED FLANKING BERM
  - COUNTY LINE DRAINAGE DISTRICT
  - BABCOCK RANCH PRESERVE
  - EL. = ELEVATION
  - EX. = EXISTING
  - P.I. = POINT OF INTERSECTION
  - P.L. = PROPERTY LINE
  - RT. = RIGHT
  - LT. = LEFT
  - CAP. = CORRUGATED ALUMINUM PIPE
  - NTS = NOT TO SCALE

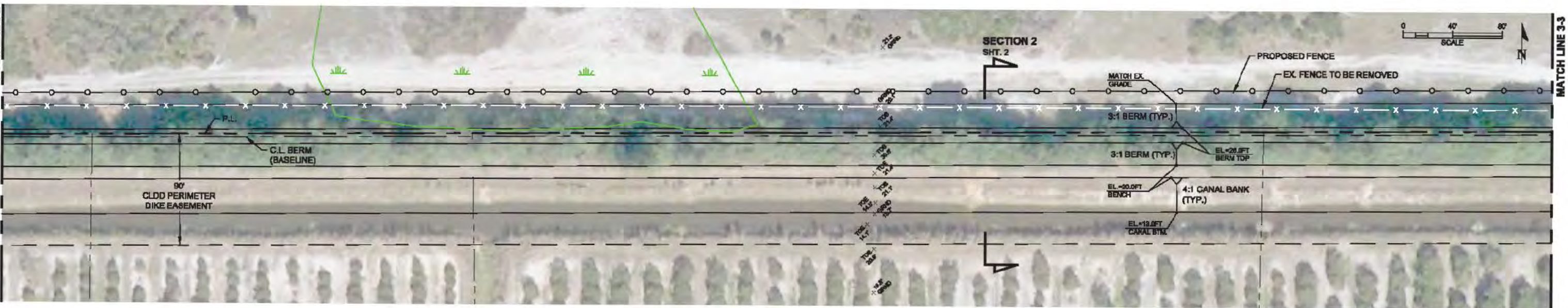
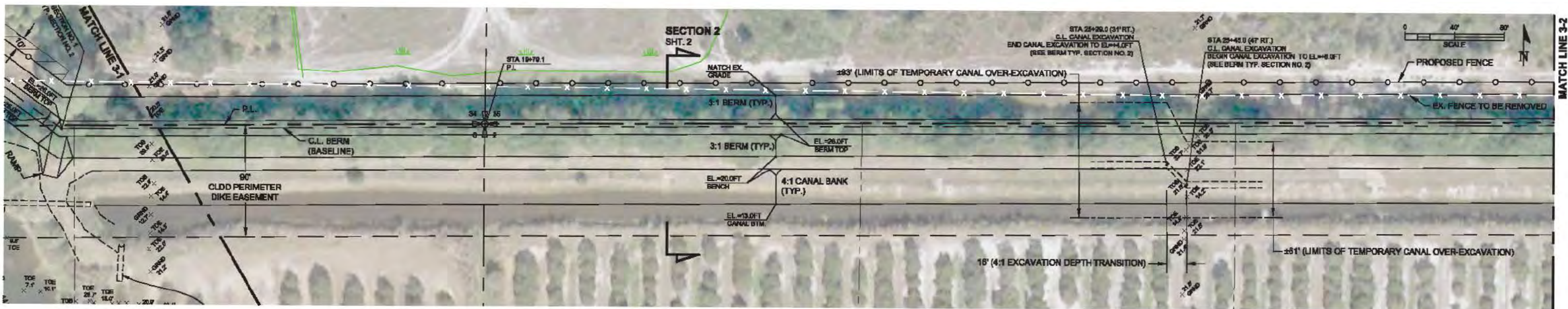
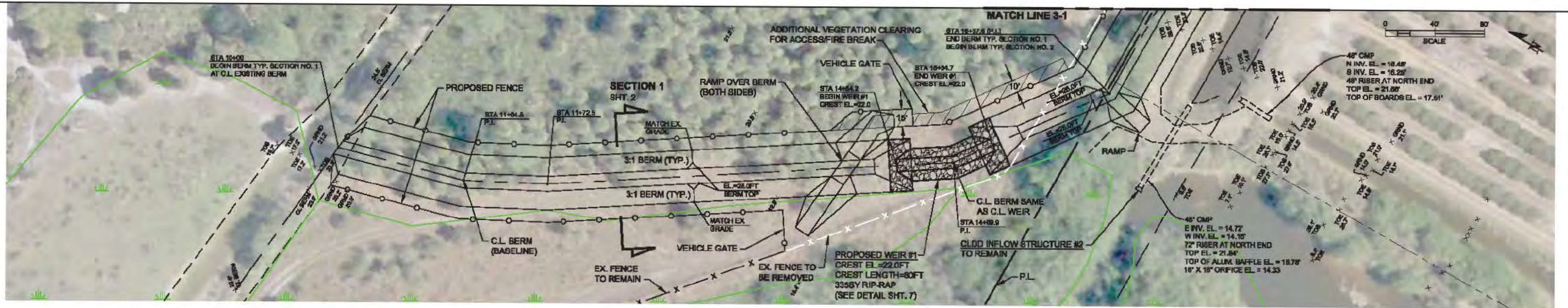
- NOTES**
1. WETLAND LIMITS PER 2004 SFWMD FLUCCS MAPPING, ADJUSTED BY BKI, INC. ADJACENT TO PROPOSED IMPROVEMENTS.
  2. PROPOSED BERM ACCESS RAMPS SHALL HAVE A 12FT WIDE DRIVING SURFACE WITH 10:1 SLOPE AND 3:1 SIDE FILL SLOPES (SEE PLAN SHEETS FOR RAMP LOCATIONS).
  3. ALL DISTURBED AREAS SHALL BE GRASSED (BAHIA).
  4. PROPOSED FENCE SHALL BE BARBED WIRE AND WOOD POST PER FLORIDA FOREST SERVICE SPECIFICATIONS. EXISTING FENCE MATERIAL IDENTIFIED AS 'TO BE REMOVED' SHALL BE DISPOSED OF PROPERLY.
  5. CONTRACTOR SHALL PILE AND BURN ALL VEGETATION CLEARED FROM BERM ALIGNMENT.
  6. ELEVATIONS REFERENCE NAVD83 IN FEET.
  7. TOPOGRAPHIC SURVEY INFORMATION SHOWN HEREON FROM BOUNDARY AND TOPOGRAPHIC SURVEY PREPARED BY CARDNO, LAST REVISED 5/10/16 (PROJECT NO. 160305).
  8. AERIAL PHOTOGRAPH FROM FDOT DATED 2014.

**BERM FILL MATERIAL & COMPACTION REQUIREMENTS**

1. BELOW EL. 16FT (WET SEASON WATER TABLE) FILL SHALL BE ASTM C33 SAND; THIS FILL MATERIAL MAY BE PLACED IN THE WET.
2. TYPE 1 FILL (FROM EL. 18FT TO 20FT) SHALL CONSIST OF SANDS OR SAND-GRAVEL MIXTURES (ASTM D2487) WITH A MAX. SIZE OF 1 INCH, MAX. 2% ORGANIC MATTER, AND MAX. 10% PASSING No. 200 SIEVE. EXISTING EXCAVATED SOILS FROM STRATUM 1 ARE ANTICIPATED TO MEET THIS CRITERIA. FILL SHALL BE PLACED IN MAX. 12 INCH LIFTS COMPACTED TO AT LEAST 95% OF THE ASTM D1557 MAX. DRY DENSITY. MAX. 24" ALLOWABLE DEPTH FOR INITIAL LIFT PLACED AT THE WATER TABLE (UPPER 12 INCH SHALL MEET COMPACTION CRITERIA).
3. TYPE 2 FILL (ABOVE EL. 20FT) SHALL BE SAME AS TYPE 1 FILL MATERIAL, OR FILL MAY CONSIST OF EXISTING EXCAVATED MATERIAL FROM STRATUM 2 (CLAYEY-SANDS) OR STRATUM 3 (WEATHERED LIMESTONE) WITH A MAX. SIZE OF 1 INCH AND MAX. 2% ORGANIC MATTER.
4. REFER TO GEOTECHNICAL ENGINEERING REPORT PREPARED BY TERRACON CONSULTANTS, INC. DATED 6/16/16 (PROJECT NO. HD155031) FOR SOIL BORING RESULTS AND DESCRIPTION OF SOIL STRATUMS.

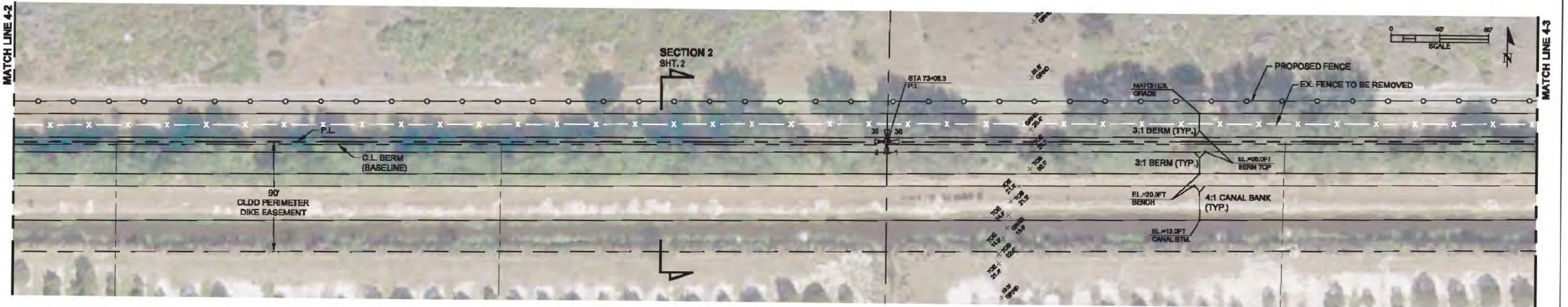
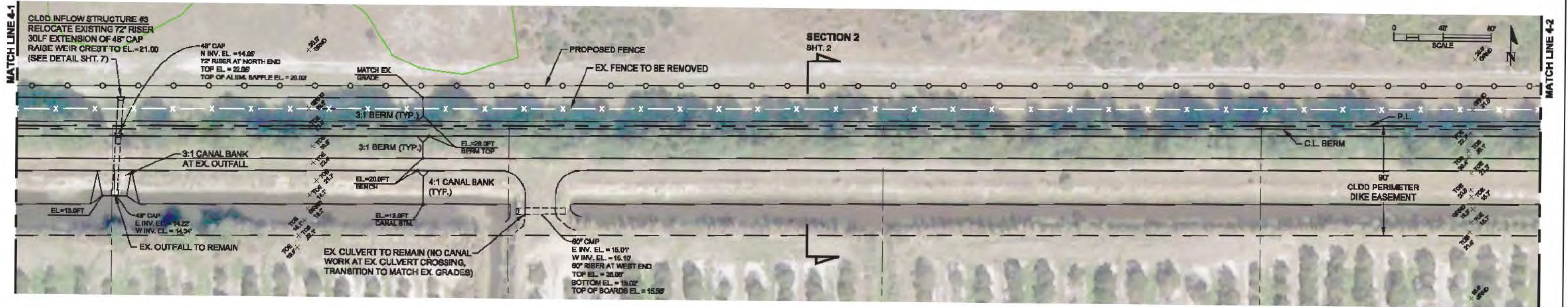
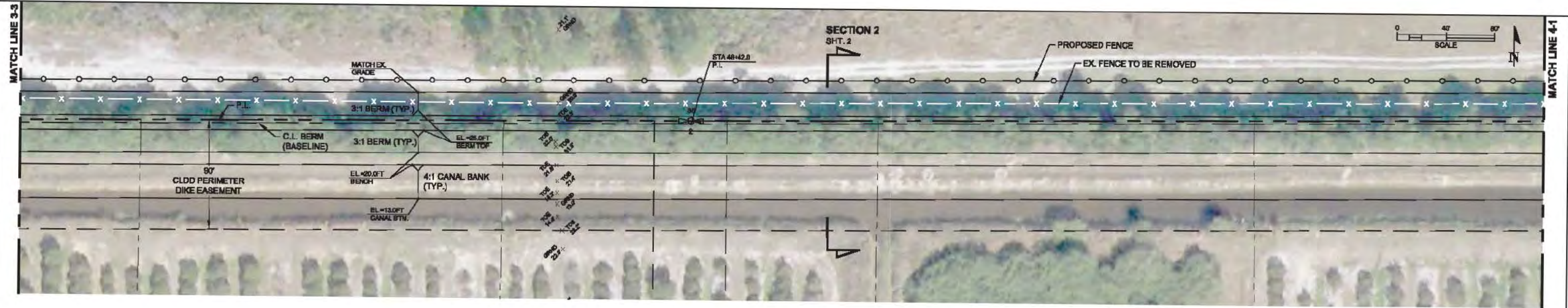
Kyle D. Grandusky, P.E. FL License No. 09596	PREPARED BY: <b>Grandusky, Lamb and Associates, LLC</b> Water Resources and Environmental Consultants 5126 Waterway Drive West Palm Beach, Florida 33406 PH. 561-366-8219 Certificate of Authorization No. 31802	C.L.D.D. - B.R.P. <b>DISPERSED WATER STORAGE          PHASE 1 IMPROVEMENTS          OVERALL PLAN</b>
	DATE: JULY 2016	SHEET No. 2 OF 7





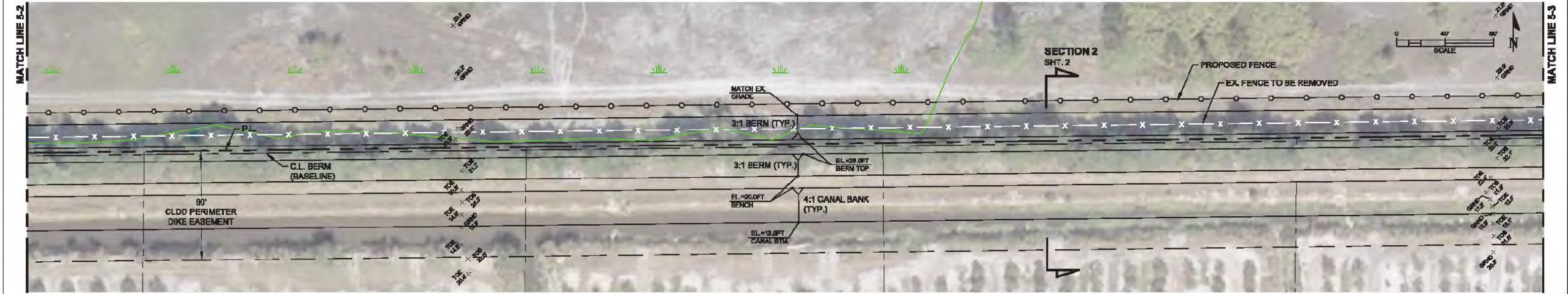
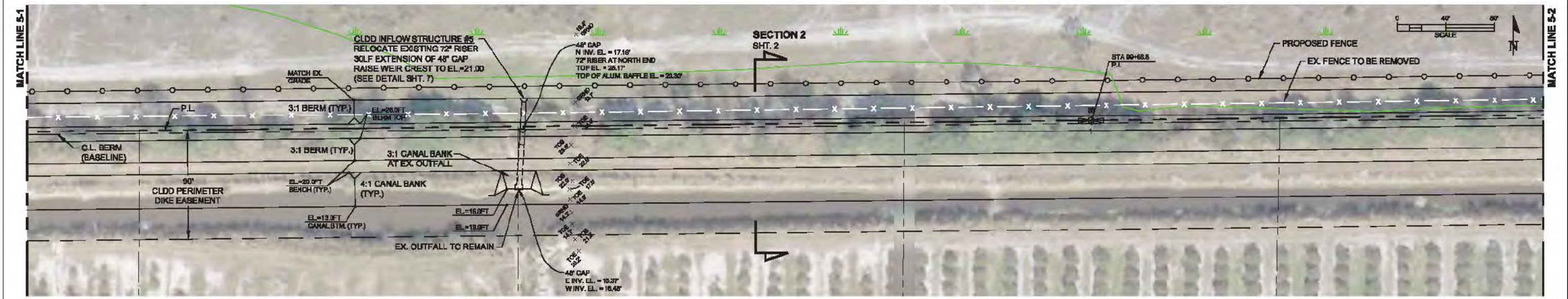
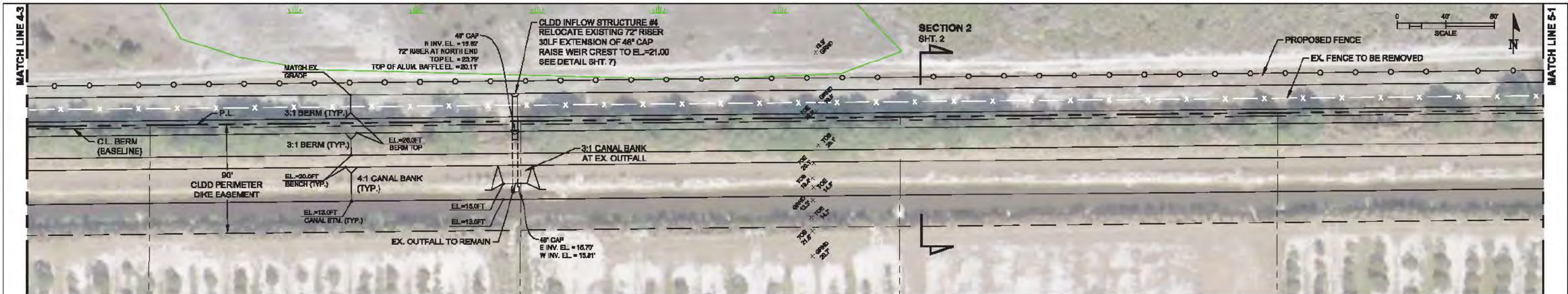
PREPARED BY: <b>Grandnicky, Lamb and Associates, LLC</b> Water Resource and Environmental Consultants 8426 Waverly Drive West Palm Beach, Florida 33406 Ph. 561-386-8219 Certificate of Authorization No. 31802	C.L.D.D. - B.R.P. <b>DISPERSED WATER STORAGE          PHASE 1 IMPROVEMENTS          PLAN</b>
	DATE: JULY 2018 SHEET No. <b>3 OF 7</b>





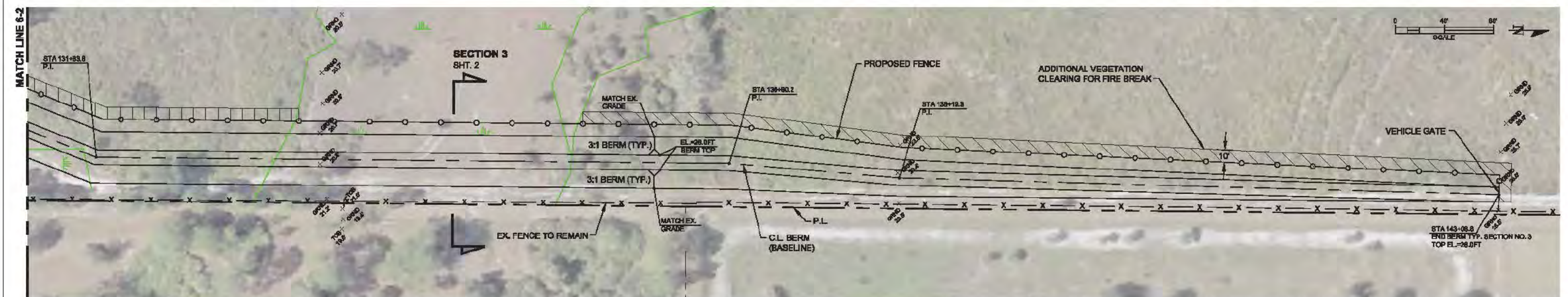
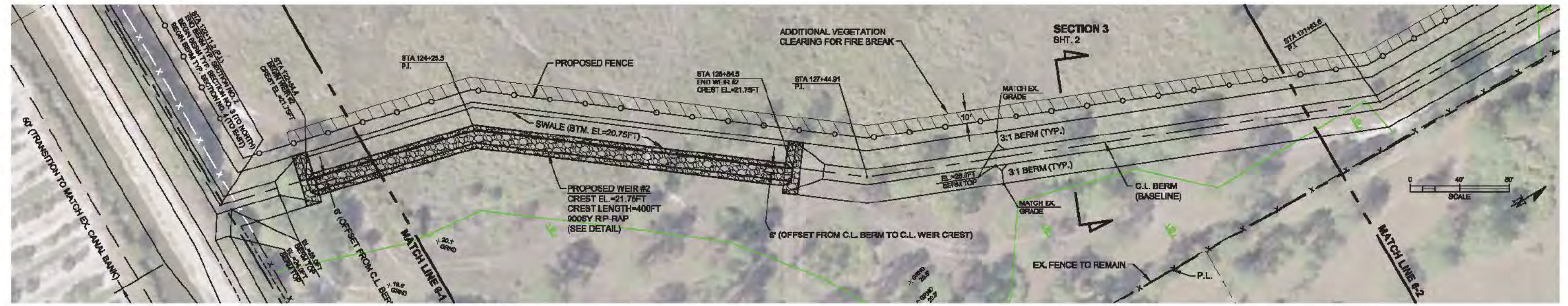
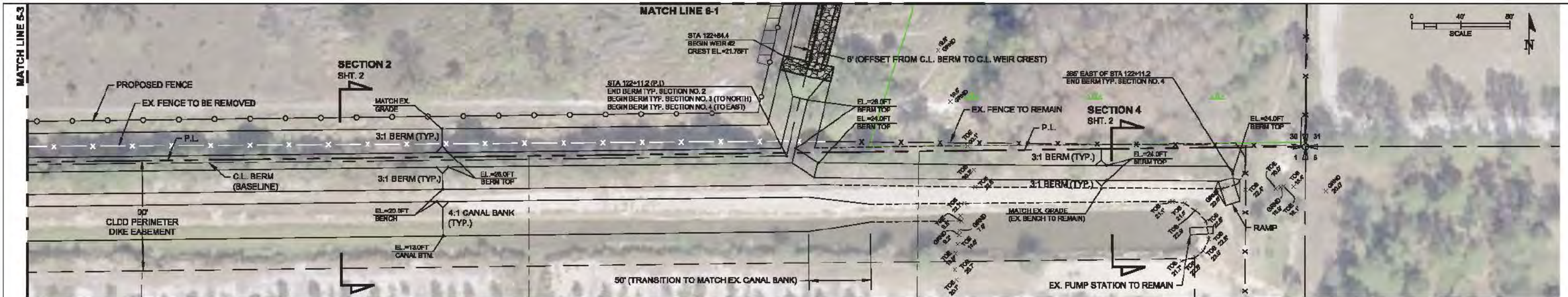
PREPARED BY: <b>Grandnicky, Lamb and Associates, LLC</b> Water Resources and Environmental Consultants 8425 Waterway Drive West Palm Beach, Florida 33406 Ph. 561-386-8219 Certificate of Authorization No. 31802	<b>C.L.D.D. - B.R.P.</b> <b>DISPERSED WATER STORAGE</b> <b>PHASE 1 IMPROVEMENTS</b> <b>PLAN</b>	
	DATE: JULY 2015	SHEET No. 4 OF 7





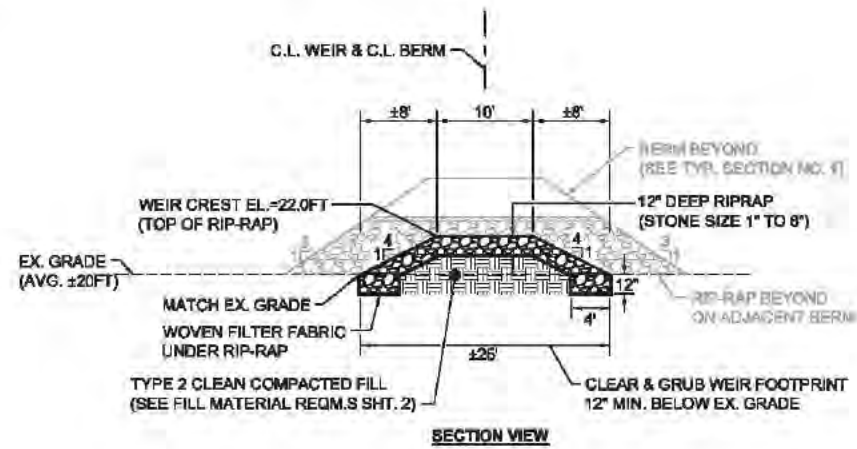
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	DATE: JULY 2018
KYIE D. GRANDUSKY, P.E. FL License No. 88385	SHEET No. <b>5 OF 7</b>



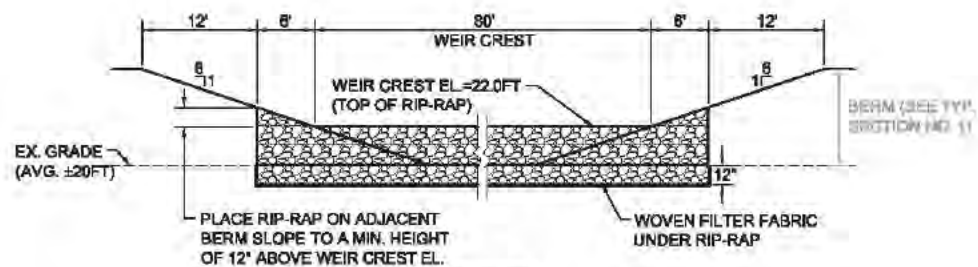


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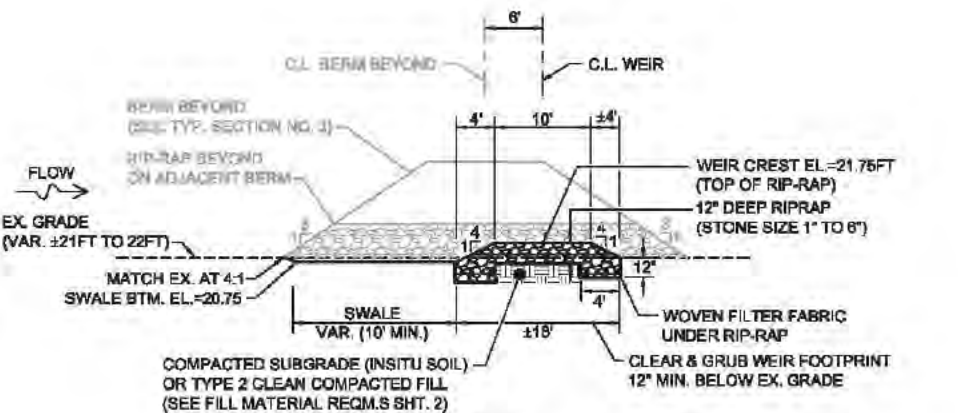


SECTION VIEW

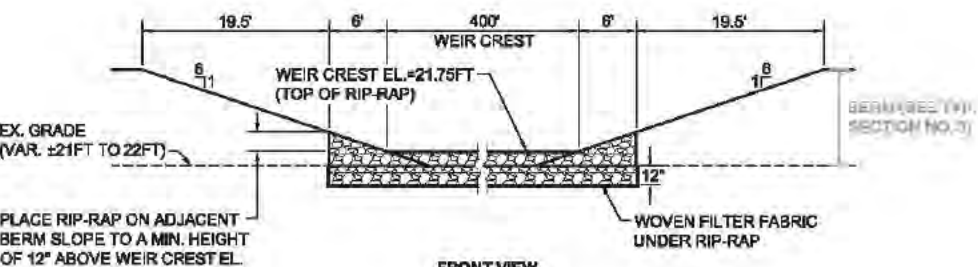


FRONT VIEW

**WEIR #1**  
**(B.R.P. WEST FLANKING BERM)**  
NTS

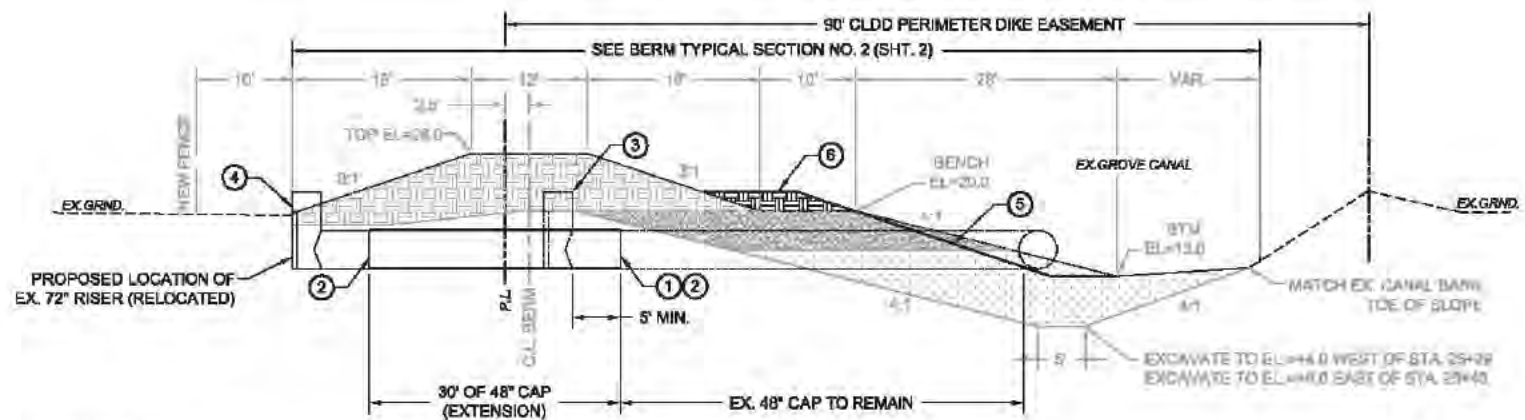


SECTION VIEW  
(LOOKING NORTH)



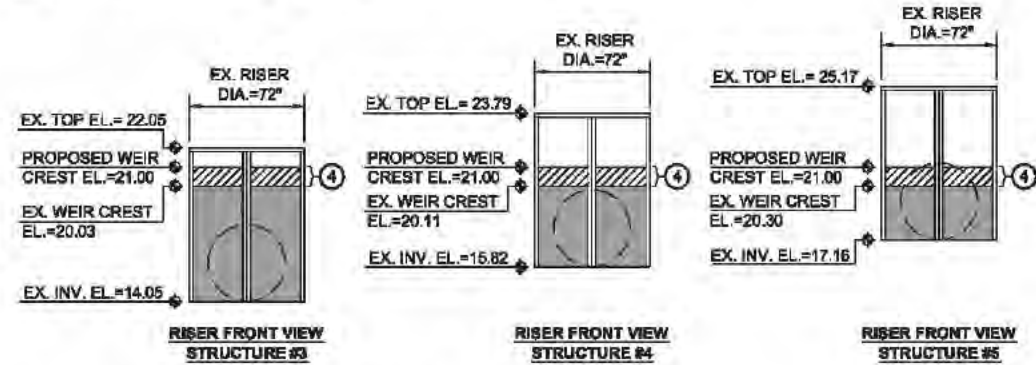
FRONT VIEW

**WEIR #2**  
**(B.R.P. EAST FLANKING BERM)**  
NTS

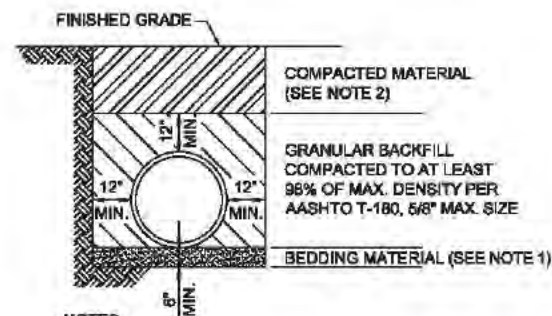


**MODIFICATION NOTES**

- ① SAWCUT NEAT EX. 48" CAP
- ② CONNECT 48" CAP EXTENSION TO EX. 48" CAP WITH BAND/NEOPRENE GASKET AND FILTER FABRIC WRAP AROUND JOINT
- ③ RELOCATE EX. 72" RISER WITH 48" CAP STUB TO PROPOSED LOCATION (SET TO MATCH EX. RISER TOP EL.)
- ④ EXTEND HEIGHT OF EX. 1/4" THICK ALUMINUM WEIR PLATE TO EL. 21.00 FT; BOLT 1/4" THICK ALUMINUM PLATE EXTENSION TO RISER FRAME AND SEAL EDGES
- ⑤ 3:1 CANAL BANK AT EX. 48" CAP FROM TOP OF BANK DOWN TO EX. PIPE INVERT EL., THEN SLOPE 4:1 DOWN TO CANAL BTM.
- ⑥ INCREASE BENCH EL. AS NEEDED TO PROVIDE 24" MIN. COVER OVER EX. 48" CAP



**MODIFICATION OF C.L.D.D. INFLOW STRUCTURES #3, #4 AND #5**  
NTS



**NOTES:**

1. BEDDING MATERIAL SHALL CONSIST OF IN-SITU GRANULAR MATERIAL (MIN. 98% COMPACTION PER AASHTO T-180) OR WASHED AND GRADED LIMESTONE 3/8" - 7/8" SIZE WITH EQUAL OR GREATER STRUCTURAL ADEQUACY AS EXISTING.
2. REMAINING BACKFILL, BASE AND SURFACE MATERIAL TO BE PLACED AND COMPACTED TO AT LEAST 98% OF MAX. DENSITY PER AASHTO T-180, 12" MAX. LIFTS (AT LEAST 90% OF MAX. DENSITY FOR NON-TRAFFIC AREAS).
3. BACKFILL AND IN-SITU BEDDING MATERIALS SHALL BE FREE OF UNSUITABLE MATERIALS SUCH AS LARGE ROCK, MUCK AND DEBRIS.
4. THE PIPE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH APPROPRIATE COMPACTION UNDER THE PIPE HAUNCHES.
5. THE PIPE SHALL BE PLACED IN A DRY TRENCH.

**CULVERT TRENCHING**

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	DATE: JULY 2016 SHEET No. 7 OF 7