

SURVEYORS REPORT

1. PROJECT INFORMATION

- 1.1. Firm: WGI, Inc. Licensed Business (LB) 7055
- **1.2.** Client: Kimley-Horn and Associates, Inc. (Kimley-Horn)
- **1.3. Project Name:** "Larry Kiker Preserve, Bonita Springs, Lee County, Florida"
 - **1.3.1.** WGI project No. 03217639.00
- **1.4.** County Road: Various areas in the Village of Estero and Bonita Springs east and west of Interstate 75.
- **1.5. General Project Limits:** The main Preserve site generally abuts the Village of Estero limits, is east of Interstate 75 and south of Corkscrew Road as shown on "Exhibit 1".
- **1.6.** Survey Date: Start date: December 17, 2021

End date: August 31, 2022

Field Books: Char. Co. Misc. 1, Pages 56, 57, 60 – 62, 64, 67, & 68; Char. Co. Misc. 2, Page 35; Char. Co. Misc. 6, Pages 9 – 11; RM 3, Pages 26 & 29; and Lee Co. Misc. 11,

Page 13.

- **1.7. Units of measure:** U.S. Survey foot
- 1.8. Revisions:

1.8.1. None

Project Location

The project includes (3) focus areas: The preserve property, cross-section locations in flow ways throughout Estero, and the Halfway Creek Flow way. These three (3) areas are generally shown on "Exhibit 2". Within the preserve property, the work effort included locating upland/wetland lines, locating seasonal high-water marks, and a boundary survey.

SURVEY TASKS

WGI was tasked with establishing horizontal and vertical survey control, obtaining cross-sections, locating upland-wetland lines, obtaining seasonal high-water marks, and providing a boundary survey. Task details follow:

- <u>Cross-sections of flow-ways along I-75 and within the limits of the Village of Estero</u> 31 cross-sections were surveyed at locations specified by Kimley-Horn for use in stormwater modeling. These surveys included the channel limits from top of bank and slopes from back of house to back or house or limits of the flow way. Digital photographs showing the upstream and downstream conditions from the cross-sections were obtained. The target relative vertical accuracy for this elevation data was +/- 0.30'. The detailed locations of the cross-sections are shown on "Exhibit 3".
- <u>Bathymetry/cross-sections along Halfway Creek</u> Bathymetric and cross-section data was collected at 37 locations along the underwater portions and bank of Half-way Creek for use in stormwater modeling. The target relative vertical accuracy for this elevation data was +/- 0.30'. The detailed locations of the bathymetric and cross-section data collection sites are shown on "Exhibit 4".
- <u>Larry Kiker Preserve Property</u> Within the Preserve property outlined and shown on "Exhibit 1" and "Exhibit 2" the following tasks were included:
 - Upland/Wetland areas were flagged by Kimley-Horn environmental staff and survey located horizontally by WGI field staff. The target relative horizontal accuracy for these flagged areas was +/- 1'. The general areas are shown on "Exhibit 5".
 - 25 seasonal high-water marks were set by Kimley-Horn environmental staff and surveyed by WGI field staff. The approximate locations of these marks are shown on "Exhibit 6".

 A boundary survey was produced of the Preserve property as shown on "Exhibit 7". The survey included locating and mapping perimeter occupation near the boundary lines and substantial, visible interior improvements that were observed.

DELIVERABLES TO KIMLEY-HORN

The above outlined tasks were delivered to Kimley-Horn in the following installments:

- Cross-sections of flow-ways along I-75 and within the limits of the Village of Estero
 - Deliverables on 2/8/2022

Method of delivery: Via email from Adam Cole, S.I.T. to SAI and Kimley-Horn

Google Earth file/File Name: Larry Kiker Cross Sections.kmz

Microsoft Excel/File Name: Cross Section Final.xls

o Deliverables on 6/7/2022

Method of delivery: Via SharePoint upload to SAI by Adam Cole, S.I.T. File formats/File Name:

.jpg, .pdf, and .HEIC, various names for each

cross-section

- Bathymetry/Cross-sections along Halfway Creek
 - o The above deliveries on 2/8/2022 & 6/7/2022 included the Halfway Creek topography.
- Larry Kiker Preserve Property -
 - Delivery of Upland/Wetland Survey on 4/11/2022
 - Method of delivery: Via email from Paul Raskin to Jeff Hemphill, et al

 AutoCAD file/File Name: 7639 00 – Larry Kiker Preserve – Upland and

Seasonal High Wetland Delineation.dwg

- Delivery of Seasonal High-Water Marks on 4/11/2022 and included in the above upland/wetland survey AutoCAD file. This included 15 locations within the property.
- Delivery of 10 additional Seasonal High-Water Marks on 9/13/2022

Method of delivery: Via email from Carlos Gutierrez, PSM to Jeff Hemphill

and other staff at Kimley-Horn

 Google Earth file/File Name: high water marks.kmz CSV file/File Name: high water marks.csv

Delivery of the preliminary Boundary Survey was made on 8/12/2022

Method of delivery: Via email from Jeffrey Cooner, PSM to Alyssa Ford and

other staff at Kimley-Horn

 AutoCAD file/File Name: PSR WF- 7639 00 - Boundary FS.dwg Google Earth file/File Name: PSR WF- 7639 00 – Boundary FS.kmz

PSR WF-7639_00 - Boundary_FS-V-2 AND 3.pdf Adobe file/File Name:

 This survey report will be revised once the final signed and sealed boundary survey is provided. It is estimated that the final survey will be provided by mid-November 2022 via a digitally signed and sealed survey files.

2. **METHODOLOGY**

2.1. Cross-sections of flow-ways along I-75 and within the limits of the Village of Estero

Kimley-Horn through their subconsultant Singhofen & Associates, Inc. provided the approximate locations of the required flow-way locations for stormwater modeling shown on "Exhibit 3".

- o WGI survey field staff mobilized and performed reconnaissance at each site to establish the final location of each cross-section. The cross-sections were labeled XS 1 through XS 30.
- Criteria used to establish each cross-section final location was:
 - A typical representation of the flow-way cross-section.
 - Ease of access to the site from public roads.

- Availability of open sky to use GPS.
- o The following procedure was used to establish horizontal and vertical control at each location:
 - At each cross-section location two control points were set. In most cases the control point type was a 5/8" iron rod with plastic cap bearing the stamping LB7055 (SIRC 5/8 LB 7055). At a few locations metal nails with disks bearing the stamping LB 7055 (SMD LB7055) were set in hard surfaces.
 - At the beginning and end of sessions to establish control published NGS marks were observed to assure proper operation of the GPS equipment and verify RTK GPS horizontal and vertical results. See Section 3, Project Control and Section 4, Control Sources below.
 - A Spectra SP 80 GPS receiver was used to collect the GPS measurements.
 - At each set control mark (SIRC & SMD) two RTK GPS sessions were made, 3 minutes in length, consisting of approximately 180 measurements. An average of these measurements yielded the horizontal and vertical values (x, y, z) of each session. The horizontal and vertical results of each session were then compared with the following protocol:
 - If the comparison of the horizontal and vertical data pairs of the two sessions was within +/- 0.1', then the sessions were averaged and accepted.
 - If the comparison of the horizontal and vertical data pairs of the two sessions was greater than +/- 0.1', then additional sessions were performed until the results were within +/- 0.1'.
- The following procedure was used to obtain information at each cross-section location:
 - Where RTK GPS signal reception had sufficient integrity, RTK GPS topographic shots were taken along each cross-section at elevation breaks to accurately define the cross-section from natural ground on one side of the cross-section to natural ground on the other side of the cross-section.
 - Where RTK GPS signal reception could not be reliably used, cross-section elevations were obtained using conventional spirit leveling and a level rod.
 - For both RTK GPS and conventionally obtained elevations, checks were made to the two on-site control points.
 - The horizontal and vertical data for each control point and the cross-sections was then processed and entered in a spread sheet. "Exhibit 8" shows an example of the spread sheet data for cross-sections 1 through 3.
 - Digital photographs were taken of the upstream and of the downstream flow-way conditions. "Exhibit 9" shows example photographs for cross-section 2.

2.2. Bathymetry/Cross-sections along Halfway Creek

WGI proposed a cross-section and bathymetry scheme for the sites shown on "Exhibit 4". Kimley-Horn through their subconsultant Singhofen & Associates, Inc. reviewed and approved the proposed topographic collection approach.

- WGI survey field staff mobilized and performed reconnaissance at each site to establish the final location of each cross-section. The cross-sections were labeled XS 31 through XS 68.
- The same selection criteria, GPS equipment, and procedures were used for the Halfway Creek topographic collection as was used for the topographic data collection in Section 2.1 above.
- "Exhibit 10" shows an example of the spread sheet data for cross-sections 58 through 60. "Exhibit
 11" shows example photographs for cross-sections 58 and 60.

2.3. Upland/Wetland Areas within the Larry Kiker Preserve Property

Kimley-Horn staff flagged the environmental areas shown on "Exhibit 5". The interior of the figures that resulted from connecting the flags were areas deemed to be uplands. Aerial based key maps showing the flagged areas were prepared by Kimley-Horn staff and provided to the WGI field staff to assist with the identification of the flagged areas within the property. These key maps provided the numbering sequence that was marked on the flags within each area.

- WGI survey field staff mobilized and performed reconnaissance at each flagged area and located each consecutively numbered flag. The environmental flags were consecutively labeled 2A-1, 2A-2, etc.
- o Bad Elf GPS Pro equipment was used to locate the flagged environmental areas.
- The survey position of each flag was mapped in AutoCAD.

2.4. Seasonal High-Water Marks

Kimley-Horn environmental staff identified and marked seasonal high-water marks in fifteen (15) locations throughout the preserve property. The marks were identified by nails and tabs with plastic flagging in trees. An example seasonal high-water mark is shown on "Exhibit 6-1". WGI field survey staff then used RTK GPS to collect horizontal positional data (State Plane Coordinates) and vertical data (Elevations) on each seasonal high-water mark. A minimum observation time of 60 seconds was used to collect the GPS measurements. The seasonal high-water marks and the horizontal and vertical information for each is contained in the chart shown on "Exhibit 6-2".

2.5. Boundary Survey

TITLE BASIS OF THE SURVEYED PARCEL:

The vesting deeds for the surveyed parcel are based on the following instruments –

- 2009 conveyance/Warranty Deed, Lee County Instrument #2009000313852. Parcel in Section 13, Township 47 South, Range 25 East and Easements in Section 24, Township 47 South, Range 25 East.
- 2017 conveyance/Quitclaim Deed, Lee County Instrument #2017000251346. Parcels in Sections 1, 2, 11, & 12 Township 47 South, Range 25 East; in Sections 5, 6, 7, & 8 Township 47 South, Range 26 East; and in Sections 25 & 36 Township 46 South, Range 25 East.
- Preliminary boundary survey information was provided on 8/12/2022 so that the boundary and other related line work could be included in the Kimley-Horn conceptual plans.

3. PROJECT CONTROL

- **3.1.** Horizontal Datum: The horizontal project datum is the Florida State Plane Coordinate System, West Zone, North American Datum of 1983, 2011 Adjustment (NAD83/2011). The control marks used for verifying the project horizontal control and topographic data collection are those Published Horizontal Control points listed in Section 3.3 below.
- **3.2. Vertical Datum:** The vertical datum is the North American Vertical Datum of 1988 (NAVD88). The benchmarks used for verifying the project vertical control and topographic data collection are those Published Vertical Control points listed in Section 5.1.4 of this report.
- 3.3. Methodology for Establishing Project Horizontal & Vertical Control: RTK GPS observations were made using the following FDOT FPRN continuously operating Stations: Site Code PNTA, System GLONASS longitude -81.992744, latitude 26.921040; Site Code NAPL, System GPS, longitude -81.776285, latitude 26.148640. GPS RTK observations were used to establish horizontal values on project control points (see examples on "Exhibit 8". The vertical values on these control points were established using GPS checks to NGS published control marks J779 and I75 81 A18 (see Section 4.1.4 below). The project control points are nails and disks or iron rods with caps stamped with LB 7055 and set in locations of convenance within or adjacent to the project task areas. The horizontal and vertical values on these project control points utilized a double occupation of at least 60 seconds each and averaged for the final values. If the difference between the initial two observations exceeded 0.15 feet a third observation was obtained. GPS Real Time Kinematic (methods) were used to verify the project control points by redundant ties to published horizontal and vertical control marks.

3.4. Detailed Project Control Information:

Contained in the digital files identified in section above titled "DELIVERABLES TO KIMLEY-HORN".

3.5. Horizontal and vertical project control points: The horizontal and vertical control points established for this project are contained in the following digital file provided to Kimley-Horn on 2/8/2022: Cross_Section_Final.xls

4. CONTROL SOURCES

4.1. Project Survey Control

- **4.1.1.** For Project Control background and control set see Sections 3.1 through 3.5 above.
- **4.1.2.** The following stations were used as the basis for all RTK horizontal positions and topo shots: FDOT FPRN continuously operating Stations: Site Code PNTA and Site Code NAPL.
- **4.1.3.** Project Horizontal Control included verification using:

NGS Designation: I75 81 A18

NGS PID: AD5989

Horizontal Datum: North American Datum of 1983, (2011 Adjustment)

State Plane Coordinates:

Northing: 757,832.52 feet Easting: 730,464.02 feet

4.1.4. Project Vertical Control basis and verification used:

NGS Designation: I75 81 A18

NGS PID: AD5989

Vertical Datum: NAVD 1988Orthometric Height: 19.57 feet

NGS Designation: J 779NGS PID: DP9859

Vertical Datum: NAVD 1988Orthometric Height: 20.29 feet

NOTES

- **5.1.** PURPOSE OF THIS SURVEY: SEE ABOVE SECTION TITLED "TYPE OF SURVEY" AND SECTION 2.0.
- **5.2.** THE COORDINATES ARE BASED ON FLORIDA STATE PLANE COORDINATES, WEST ZONE, NORTH AMERICAN DATUM (NAD) OF 1983, ADJUSTMENT 2011. See above Section 3, Project Control and Section 4, Control Sources.
- 5.3. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- **5.4.** PROJECT UNITS: U.S. SURVEY FEET
- **5.5.** FIELD BOOK REFERENCES: See Section 1.6.
- **5.6.** DATE OF SURVEY: See Section 1.6
- **5.7.** IMPROVEMENTS WERE NOT LOCATED.
- **5.8.** THIS SURVEYOR'S REPORT ELECTRONICALLY SIGNED AND SEALED UNDER RULE 5J-17.062 F.A.C. IS INTENDED TO BE REVIEWED TOGETHER WITH ANY DIGITAL FILES REFERENCED HEREIN. SEE ABOVE SECTION TITLED "DELIVERABLES TO KIMLEY-HORN.
- 5.9. THE .DWG FILE, LAYERS AND POINT GROUPS WERE ESTABLISHED USING AUTODESK CIVIL 3D 2022.
- **5.10.** ALL SURVEY INFORMATION WAS OBTAINED UNDER THE DIRECT SUPERVISION OF A LICENSED FLORIDA PROFESSIONAL SURVEYOR AND MAPPER TO BE UTILIZED AS DATA IN SUPPORT OF PLANNING FOR THE LARRY KIKER PRESERVE PROJECT.
- 5.11. THE PROFESSIONAL SURVEYOR AND MAPPER OF RECORD IS:

JEFFREY C. COONER, P.S.M.

SURVEYOR LICENSE NUMBER 4052

WGI, Inc.

6310 TECHSTER BLVD., UNIT #1

FORT MYERS, FL 33966

CERTIFICATE OF AUTHORIZATION LB7055

6. ABBREVIATIONS

As shown below:

FDOT = Florida Department of Transportation FPRN = Florida Permanent Reference Network

GPS = Global Positioning System

No. = Number

PSM = Professional Surveyor and Mapper

RTK = Real Time Kinematic

SAI = Singhofen & Associates, Inc.

SHWL 1, etc. = Seasonal High Water Line Mark Number 1 SIRC 5/8 LB 7055 = Set 5/8" Iron Rod with Cap stamped LB 7055

SIRC 5/8 LB 7055 GPS/TRAV = Set 5/8" Iron Rod with Cap stamped LB 7055 GPS/TRAV

S.I.T. = Surveyor In Training or Survey Intern

SMD LB 7055 = Set Magnetic Nail and Disk stamped LB 7055

XS 1, etc. = Cross-section 1

WL 2A, etc. = Upland/Wetland Flag 2A

7. **CERTIFICATION**

Certification: (1) This survey meets the applicable requirements of the Florida Standards of Practice as contained in Chapter 5J-17.050 through 5J-17.053 of the Florida Administrative Code, pursuant to section 472.027 of the Florida Statues. (2) This report is not valid without the digital signature and digital seal of the Florida Surveyor and Mapper in responsible charge. (3) Additions or deletions to this data by anyone other than the signing party are prohibited without written consent of the signing party. (4) This report stands together with the digital submittal this project, digitally signed and sealed under rule 5J-17.0062 FAC, and neither is complete or valid without the other. (5) Quality Control (QC) was conducted on this project and found to meet specifications.

Professional Surveyor and Mapper in Responsible Charge:

Digitally signed by Jeffrey Jeffrey C

C Cooner

Date: 2022.11.02 10:01:53 Cooner

-04'00'

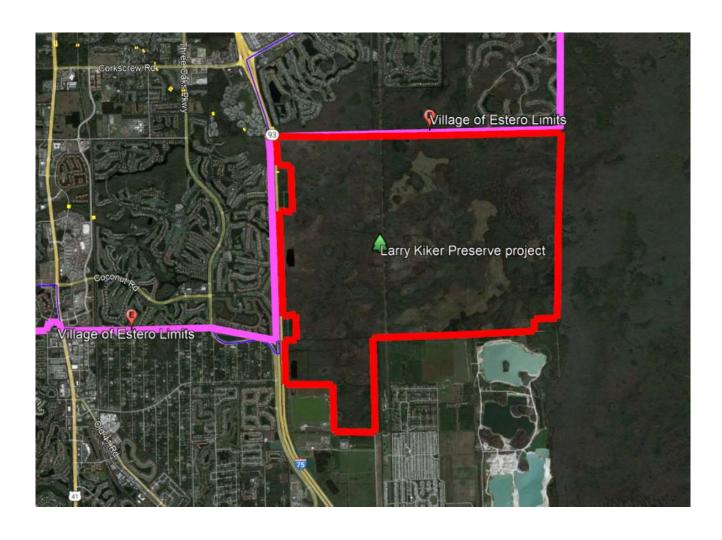
Jeffrey C. Cooner

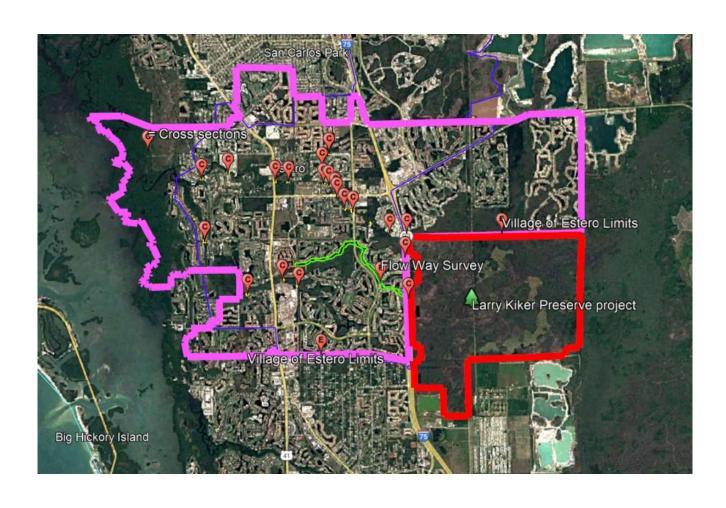
Florida Professional Surveyor and Mapper

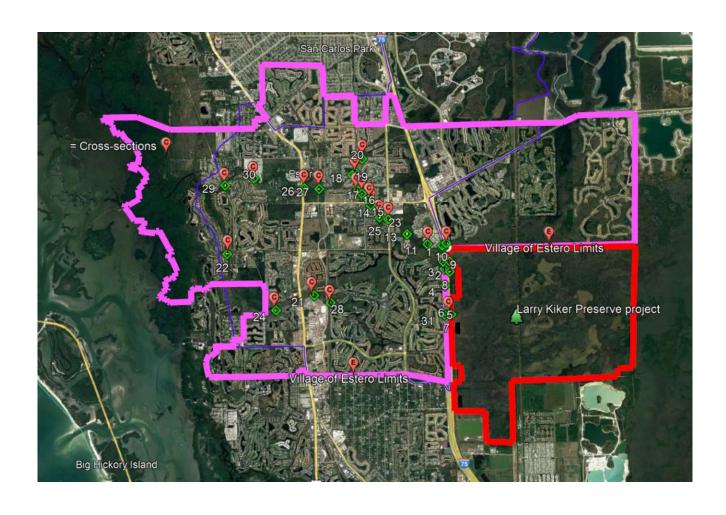
License Number 4052

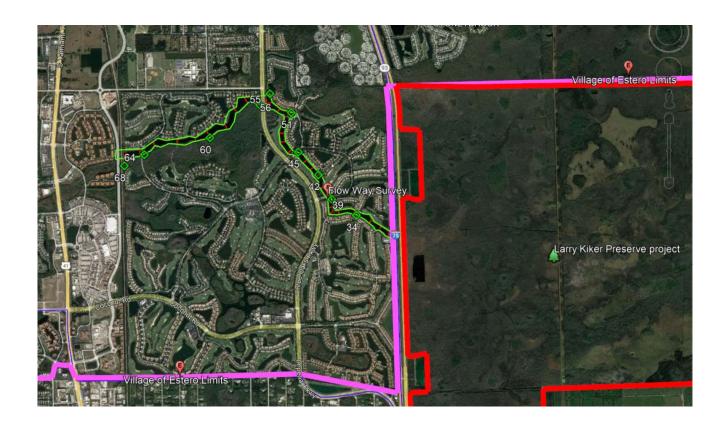


For the Firm of: WGI, Inc. LB 7055 Corporate Address: 2035 Vista Parkway West Palm Beach, FL 33411











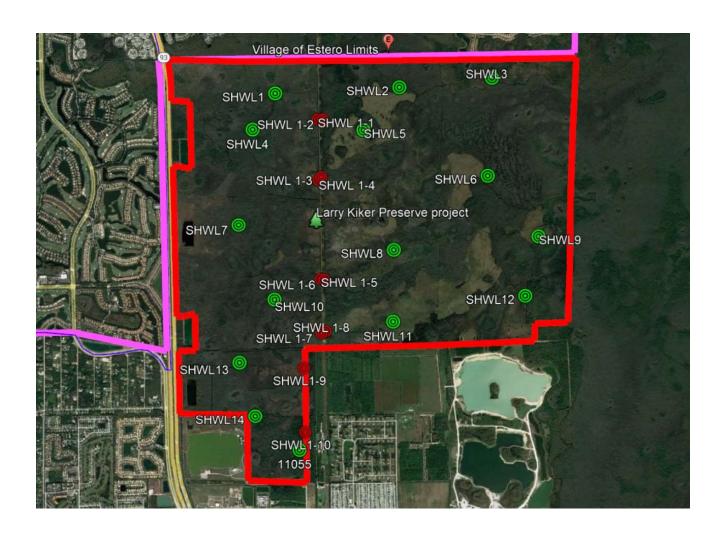
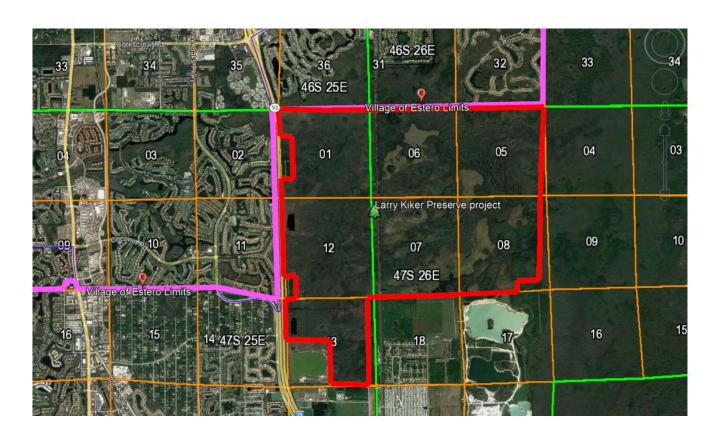


EXHIBIT 6 – 1



EXHIBIT 6 – 2

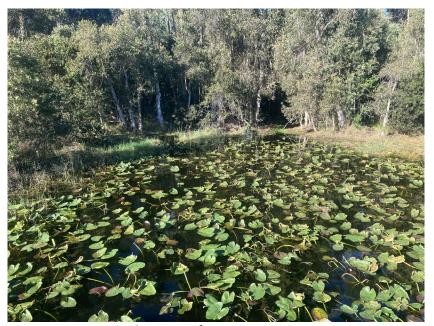
Point No.	Northing	Easting	Elevation	Designation
11071	757285.3	734654.8	15.7	SHWL1
11094	756280.3	736319.3	15.0	SHWL1B
11068	757533.6	739530.8	16.1	SHWL2
11093	756287.0	736534.4	15.2	SHWL2B
11069	757907.5	743164.8	15.8	SHWL3
11092	754017.6	736473.6	15.1	SHWL3B
11072	755874.8	733774.3	15.4	SHWL4
11091	753892.0	736395.8	15.4	SHWL4B
11079	755862.5	738123.3	16.1	SHWL5
11090	750057.6	736452.2	14.4	SHWL5B
11067	754093.9	743006.5	16.4	SHWL6
11089	750006.5	736620.5	14.4	SHWL6B
11078	752142.0	733229.5	15.3	SHWL7
11088	747915.8	736474.3	14.6	SHWL7B
11070	751178.0	739326.0	14.9	SHWL8
11087	747982.5	736673.1	14.8	SHWL8B
11066	751715.0	745025.1	16.2	SHWL9
11086	746558.1	735790.4	14.6	SHWL9B
11077	749231.9	734646.4	15.3	SHWL10
11085	744048.3	735847.9	14.8	SHWL10B
11064	748380.4	739302.6	16.5	SHWL11
11080	749392.5	744507.5	15.9	SHWL12
11057	746769.3	733275.0	15.4	SHWL13
11056	744675.6	733898.3	15.1	SHWL14
11055	743358.3	735642.7	15.3	SHWL15



CROSS SECTIONS				CONTROL POINTS						
POINT	NORTHING E	EASTING	ELEVATION	DESCRIPTION	PHOTOS	POINT	NOTHING	EASTING	ELEVATION	DESCRIPTION
10505	758786.034	729928.293	17.431	XS1	Photos\XS 1 N.HEIC	10788	758629.482	729974.384	17.364	SIRC 5/8 LB7055 XS 1
10506	758801.188	729962.013	18.744	XS1	Photos\XS 1 S.HEIC	10789	758763.941	729968.962	17.667	SIRC 5/8 LB7055 XS 1
10507	758804.028	729975.668	11.900	XS1						
10508	758806.829	729981.027	11.388	XS1						
10509	758807.522	729988.003	10.545	XS1						
10510	758805.960	729992.868	11.077	XS1						
10511	758805.021	729988.791	11.270	TOP WATER XS 1						
10512	758805.108	729998.125	11.447	XS1						
10513	758807.919	730005.005	12.031	XS1						
10514	758810.134	730010.877	14.214	XS1						
10515	758814.254	730030.005	14.565	XS1						
10516	758817.025	730056.986	15.445	XS1						
10517	757478.733	730201.349	12.623	TOP WATER XS 2	Photos\XS 2 E.HEIC	10790	757551.509	730199.513	18.954	SIRC 5/8 LB7055 XS 2
10518	757401.300	730158.502	14.039	XS2	Photos\XS 2 W.HEIC	1079:	757421.721	730190.585	15.776	SIRC 5/8 LB7055 XS 2
10519	757426.867	730160.751	13.836	XS2						
10520	757446.625	730163.125	13.548	XS2						
10521	757455.996	730163.403	12.774	XS2						
10522	757459.896	730163.277	11.438	XS2						
10523	757460.813	730162.871	10.215	XS2						
10524	757474.345	730162.888	8.791	XS2						
10525	757489.811	730164.852	9.529	XS2						
10526	757496.467	730165.008	11.646	XS2						
10527	757498.995	730164.593	12.820	XS2						
10528	757514.186	730164.713	13.736	XS2						
10529	757529.751	730167.218	14.277	XS2						
10530	757551.592	730168.521	14.163	XS2						
10531	757574.402	730168.311	14.114	XS2						
10532	756699.916	730246.129	18.494	XS3	Photos\XS 3 N #1.HEIC	10793	756685.632	730227.087	18.751	SIRC 5/8 LB7055 XS 3
10533	756698.770	730233.199	17.917	XS3	Photos\XS 3 N #3.HEIC	10793	756791.374	730222.259	19.371	SIRC 5/8 LB7055 XS 3
10534	756697.901	730225.448	18.605	XS3	Photos\XS 3 S #2.HEIC					
10535	756697.561	730217.346	16.647	XS3	Photos\XS 3 S #4.HEIC					
10536	756697.559	730207.572	14.307	XS3						
10537	756697.138	730199.133	13.913	XS3						
10538	756695.932	730174.704	13.657	XS3						
10539	756695.043	730167.990	14.271	XS3						
10540	756695.573	730160.214	16.715	XS3						
10541	756694.764	730146.284	21.016	XS3						
10542	756694.143	730137.873	23.660	XS3						



Looking East from cross-section 2



Looking West from cross-section 2

TAIO	NORTHING	EASTING	ELEVATION	DESCRIPTION	PHOTOS	POIN	NOTHING	EASTING	ELEVATION	DESCRIPTION
11033	757862.528	724446.634	16.221	XS BNK	XS 58					
11034	757854.869	724453.820	12.149	XS WEDG	Photos\58.PDF					
11035	757843.666	724462.233	9.836	XS GND						
11036	757821.494	724493.741	0.624	XS GND						
11037	757773.391	724548.510	0.981	XS GND						
11038	757726.448	724543.785	7.332	XS GND						
11039	757715.532	724539.739	11.886	XS WEDG						
11040	757711.501	724538.885	13.815	XS BNK						
11041	757055.673	724179.949	13.889	XS BNK	XS 59					
11042	757062.207	724182.364	12.144	XS WEDG	Photos\59.PDF					
11043	757073.715	724178.656	8.230	XS GND						
11044	757099.978	724155.411	1.213	XS GND						
11045	757144.699	724128.499	1.242	XS GND						
11046	757196.729	724091.501	4.104	XS GND						
11047	757212.442	724077.270	10.426	XS GND						
11048	757218.541	724070.616	12.145	XS WEDG						
11049	757236.050	724065.592	16.761	XS BNK						
11050	756794.537	723510.358	13.506	XS BNK	XS 60					
11051	756803.574	723507.083	12.263	XS WEDG	Photos\60.PDF					
11052	756814.740	723494.402	6.016	XS GND						
11053	756848.795	723477.445	0.606	XS GND						
11054	756902.333	723434.155	-0.309	XS GND						
11055	756944.595	723397.817	6.430	XS GND						
11056	756953.255	723385.218	9.967	XS GND						
11057	756958.730	723378.277	11.880	XS WEDG						
11058	756970.494	723371.362	16.079	XS BNK						



Cross-section 58



Cross-section 60