

14. WATER

- A. **Describe the existing hydrologic conditions (both ground and surface water) on and abutting the site, including identification and discussion of any potential aquifer recharge areas. Please identify and describe any Outstanding Florida Waters, Wild and Scenic Rivers, Florida Aquatic Preserves or Florida Class I or II Waters that occur within, abutting or downstream of the site.**

There are no existing surface waters within or abutting the project site. The nearest surface waters are the L-31N and C-1W canals, which occur approximately 1.2 miles to the west and 0.6 miles to the east of the property, respectively. The locations of these two canals relative to the project site are shown on Map 14-1.

The nearest Outstanding Florida Water (OFW) is Everglades National Park, the eastern edge of which is approximately 2.5 miles west of the property. Biscayne National Park is another OFW that is located approximately 9.5 miles east of the site. The locations of the OFWs are shown on Map 14-2. There are no Wild and Scenic Rivers nor Class I or II surface waters within the vicinity of the project area, nor in this part of south Florida.

The location of the subject property in relation to the precipitation recharge areas for the Biscayne Aquifer is shown in Map 14-3. The site occurs within the 42-60" annual recharge zone.

The average October (high) and May (low) groundwater levels projected to the year 2040 are shown in Maps 14-4 and 14-5, respectively. This raster dataset was obtained from the Miami-Dade County Open Data Hub (last updated February 5, 2025) and is intended to provide a baseline of future October and May groundwater levels for the year 2040, representing the future end of the wet and dry season groundwater levels, respectively, if sea level rise would not occur (i.e., baseline conditions). The average groundwater elevations are provided in the NAVD88 datum and are based on the results of the U.S. Geological Survey (USGS) groundwater model for Miami-Dade – Urban Miami-Dade (UMD), used to predict groundwater levels for year 2040, without sea level rise for comparison purposes. The comparison raster datasets are shown in Maps 14-6 and 14-7, which provide an estimate of average future (2040) groundwater levels during the months of October and May, respectively. These rasters were developed to represent future end of the wet and dry season groundwater levels for planning purposes, considering sea level rise above the baseline conditions. The average groundwater elevations (in NAVD88) are based on the USGS groundwater model for Miami-Dade–UMD considering sea level rise above baseline conditions, using the NRCIII forecast to assume an increase of 1.0 ft from a year 2009 -0.9ft mean sea-level to a 2040 0.1ft NAVD88. From the raster datasets, elevation contours were created on half-foot intervals, which indicate groundwater levels of 3.5-4.0ft and 4.0-4.5ft in May and October, respectively, for baseline conditions at the site. The “with sea level rise” dataset for October reveals an eastern shift of the 4.0ft contour relative to the subject property.

- B. Describe, in terms of appropriate water quality parameters, the existing ground and surface water quality conditions on and abutting the site. (The appropriate parameters and methodology should be agreed to by the regional planning council and other reviewing agencies at the pre-application conference stage.)**

The existing ground and surface water quality conditions on and abutting the site can be best quantified using water quality data from nearby monitoring stations. The data available at the Miami-Dade County Open Data Hub included a GIS dataset of the Public Ground Water Samples Result, which represents the laboratory results from groundwater samples collected from a network of monitoring wells, as part of the long-term surface water and groundwater quality monitoring program conducted county-wide by Miami Dade County DERM. The closest monitoring well locations to the site are G-596 and G-1362/G-1362A, which occur approximately 2.2 miles to the west and 1.3 miles southeast of the property, respectively, as shown in Map 14-8. The following Table 14-1 provides a summary of sample results for appropriate water quality parameters at each of the nearby monitoring stations. Descriptive statistics include the count, mean and standard deviation of the available sample results.

C. Describe the measures which will be used to mitigate (or avoid where possible) potential adverse effects upon ground and surface water quality, including any resources identified in Sub question A.

The stormwater management master plan provides for onsite retention of stormwater with no offsite discharge to prevent any adverse effects on surface waters beyond the limits of the proposed development. The proposed drainage improvements, including swales, retention ponds, and exfiltration trenches, allow for stormwater treatment to improve water quality before it is returned to the ground water table. The proposed stormwater management master plan has been developed in accordance with DERM and SFWMD requirements

D. Responses to Review Agency Requirements Detailed in the Agreement to Delete Questions, Appendix A

- 1. The Applicant indicated that the hydrology at its City Park site was evaluated using existing SFWMD groundwater well data. The Applicant chose South Florida Water Management District's Well S338_T as the most representative. Well S338_T data was used to calculate short and long hydroperiods to compare existing ground elevations.**

The initial hydrology analysis was conducted using SFWMD groundwater data to determine typical seasonal fluctuations within the site vicinity. The S338_T data indicated that groundwater elevations would not allow for conditions of inundation or saturation to exist onsite given the topography. The data analysis was provided to DERM and the SFWMD in support of the jurisdictional wetland determinations.

- 2. The Applicant noted that the City Park site was inspected on February 9, 2022, to confirm site conditions and verify groundwater elevations.**

In addition to the initial groundwater data analysis, onsite measurements of the distance to water (DTW) were taken within several irrigation wells located along the eastern edge of the property. The locations of the onsite irrigation wells at which such DTW measurements were taken are shown on Map G.

- 3. The hydrologic conditions within the subject property and immediate vicinity were analyzed using available groundwater elevation data from the DBHYDRO data portal maintained by the SFWMD. As specified in Rule 62-340.550, F.A.C (Wetland Hydrology), reliable hydrologic records can be used to indicate whether inundation or saturation occurs during conditions that represent long-term hydrologic conditions. An additional assessment shall be conducted to analyze the available data to determine historical patterns of regular and periodic inundation at the site, if any. The groundwater elevation data within the site vicinity shall be evaluated**

for the available periods of record and additional well locations can also be assessed. The GIS analysis of available LiDAR data shall be conducted to create classifications of onsite topography according to the established hydroperiod elevation criteria for desired inundation and saturation conditions, as defined in 62-340.200, F.A.C. The availability of instantaneous time series data from the DBHYDRO data portal shall also be utilized to evaluate the concurrence of water table measurements within onsite irrigation wells with the recorded time series data. The comparison of data points shall allow for calibration of real-time vicinity data to onsite groundwater elevation measurements. The accuracy of the DBHYDRO groundwater data as representative of the onsite hydrology can therefore be determined.

The DTW measurements taken at several onsite irrigation wells indicated that the groundwater table is typically at a depth of at least 4ft below the ground surface. This groundwater elevation is consistent with the soil type description and further supportive of the non-wetland conditions onsite.

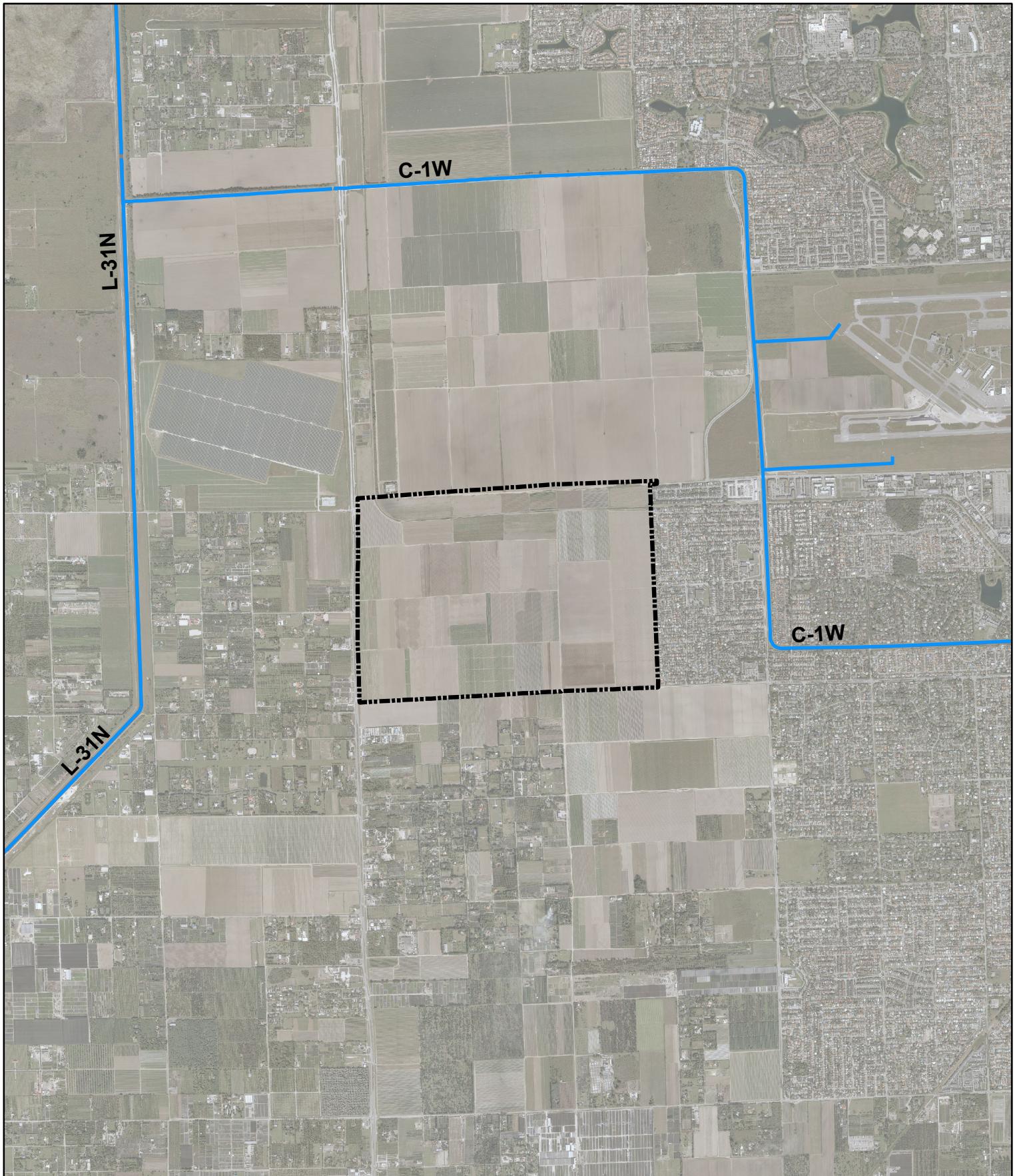
Given the results of the jurisdictional determinations, additional analysis of site topography and hydrology via LiDAR and DBHYDRO groundwater data would not be warranted. The potential for conditions of saturation or inundation to exist onsite is not apparent.

Table 14-1
Water Quality Parameters

Table 14-1: Water Quality Parameters

Parameter	Units	G-1362			G-1362A			G-596		
		Count	Mean	Std. Dev.	Count	Mean	Std. Dev.	Count	Mean	Std. Dev.
Physical										
Hardness	mg/L	3	295.667	13.868	2	202.500	12.021	6	270.667	21.068
pH	-	2	7.150	0.071	18	7.422	0.741	21	7.138	0.428
Total Dissolved Solids	mg/L	4	442.250	27.330	18	312.111	31.216	23	357.565	78.553
Chloride	mg/L	4	36.750	1.287	18	37.844	3.219	23	39.774	7.652
Turbidity	NTU	4	0.975	0.670	18	3.622	2.492	23	1.287	0.969
Nutrients										
Ammonia-N	mg/L	4	0.010	0.000	18	4.349	4.336	23	0.277	0.326
Nitrate-Nitrite (NOX)	mg/L	4	5.120	0.376	17	0.592	0.858	23	0.009	0.003
Total Organic Carbon	mg/L	4	2.175	0.287	18	2.467	0.431	23	7.461	0.967
Total Phosphorus	mg/L	4	0.023	0.018	17	0.350	0.251	22	0.020	0.018
TKN	mg/L	4	0.340	0.174	18	4.382	4.060	23	0.690	0.362
Metals										
Arsenic	ug/L	4	4.000	0.000	18	6.000	1.372	23	5.609	1.543
Barium	ug/L	4	15.300	2.090	18	63.589	29.110	23	18.817	1.292
Cadmium	ug/L	4	0.300	0.000	18	1.506	0.720	23	1.696	0.816
Chromium	ug/L	4	0.700	0.000	18	2.011	2.088	23	1.374	0.627
Copper	ug/L	4	1.275	1.150	18	2.456	1.503	23	1.930	1.480
Magnesium	mg/L	4	5.260	0.125	18	4.756	0.969	23	4.381	0.522
Mercury	ug/L	4	0.003	0.000	18	0.008	0.020	23	0.007	0.018
Nickel	ug/L	4	1.900	0.200	18	4.000	1.455	23	3.443	1.524
Zinc	ug/L	4	11.425	1.289	18	15.389	5.972	23	12.417	2.998
Lead	ug/L	4	3.025	0.050	18	3.000	0.000	23	3.004	0.021

**Map 14-1
Surface Waters**



Legend

 DRI Boundary  Canals



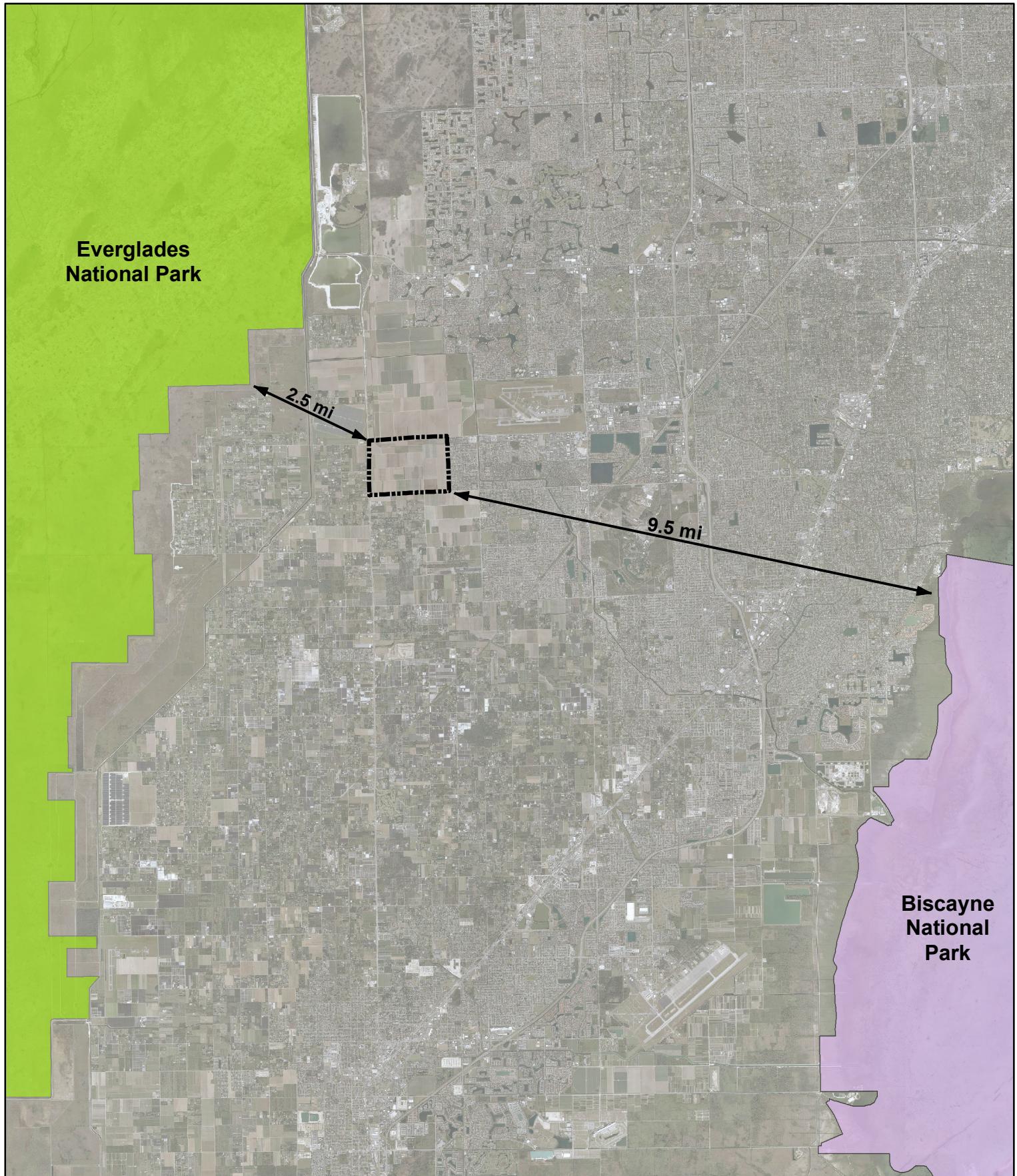
0 0.25 0.5 1 Miles

Map 14-1 Surface Waters

City Park
August 2025

Source: Miami-Dade County Open Data Hub

**Map 14-2
Outstanding Florida Waters**



Legend

DRI Boundary OFW Boundary

0 0.5 1 2 Miles

Everglades National Park

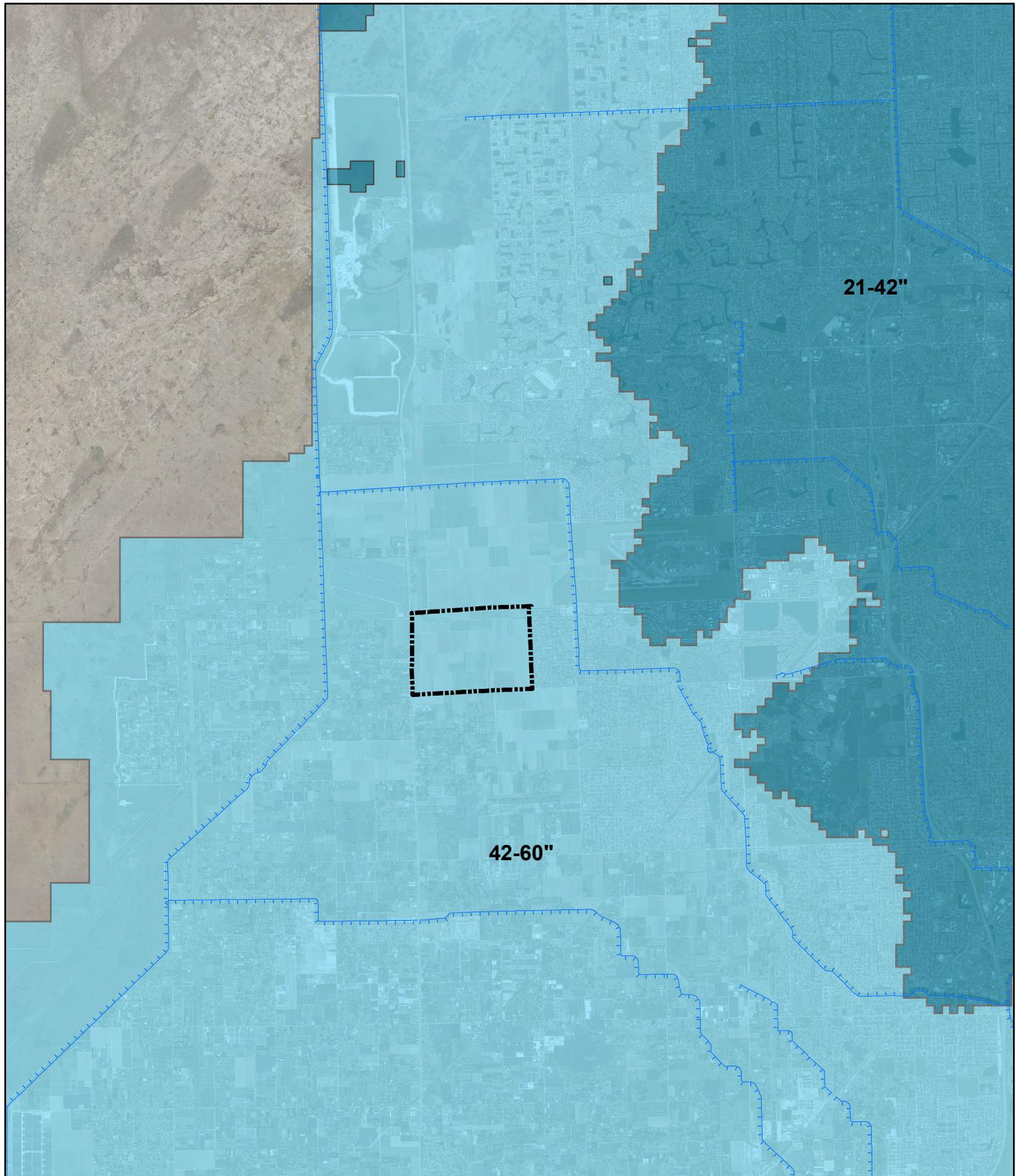
Biscayne National Park

Map 14-2
Outstanding Florida Waters

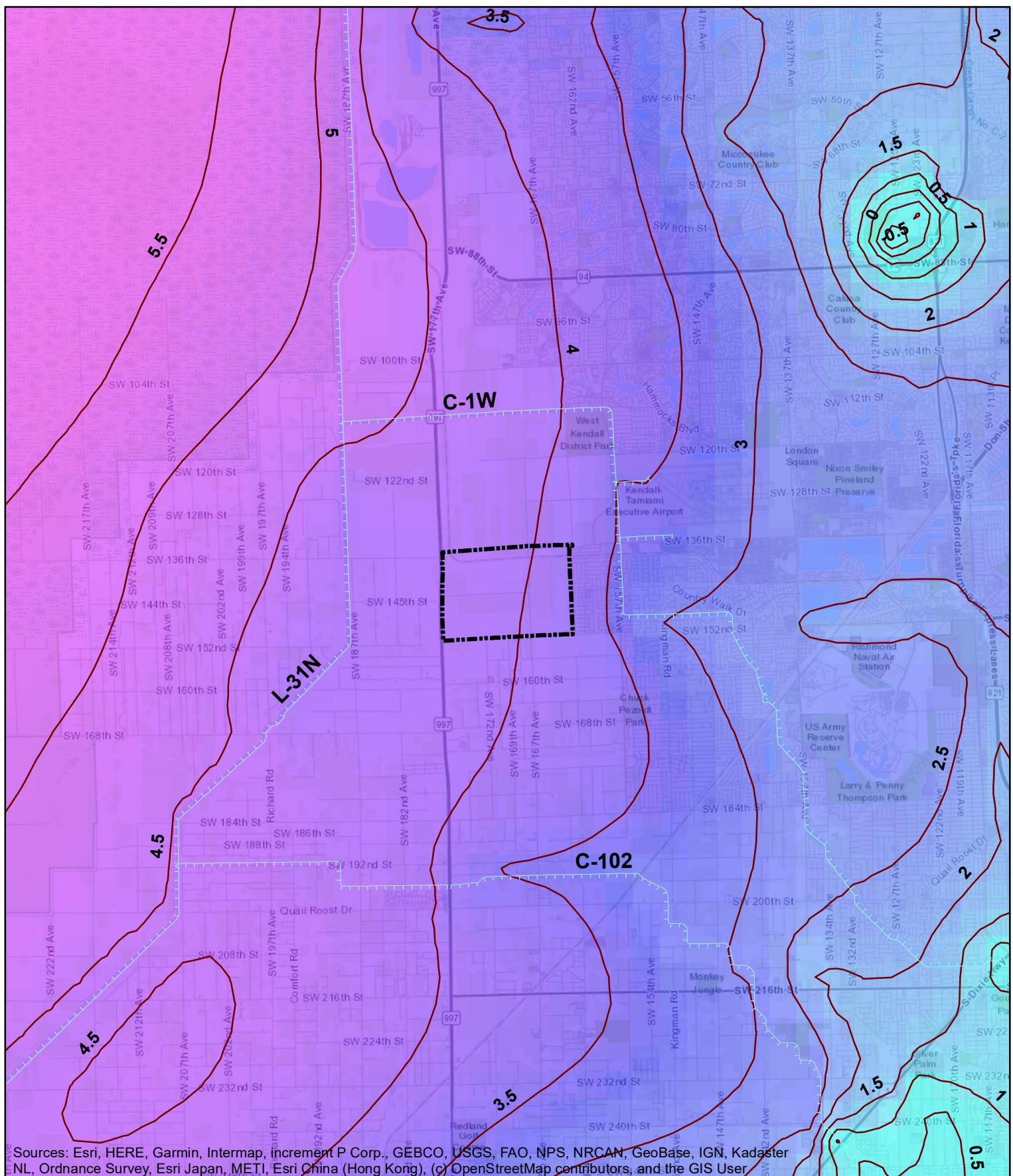
City Park
August 2025

Source: Miami-Dade County Open Data Hub

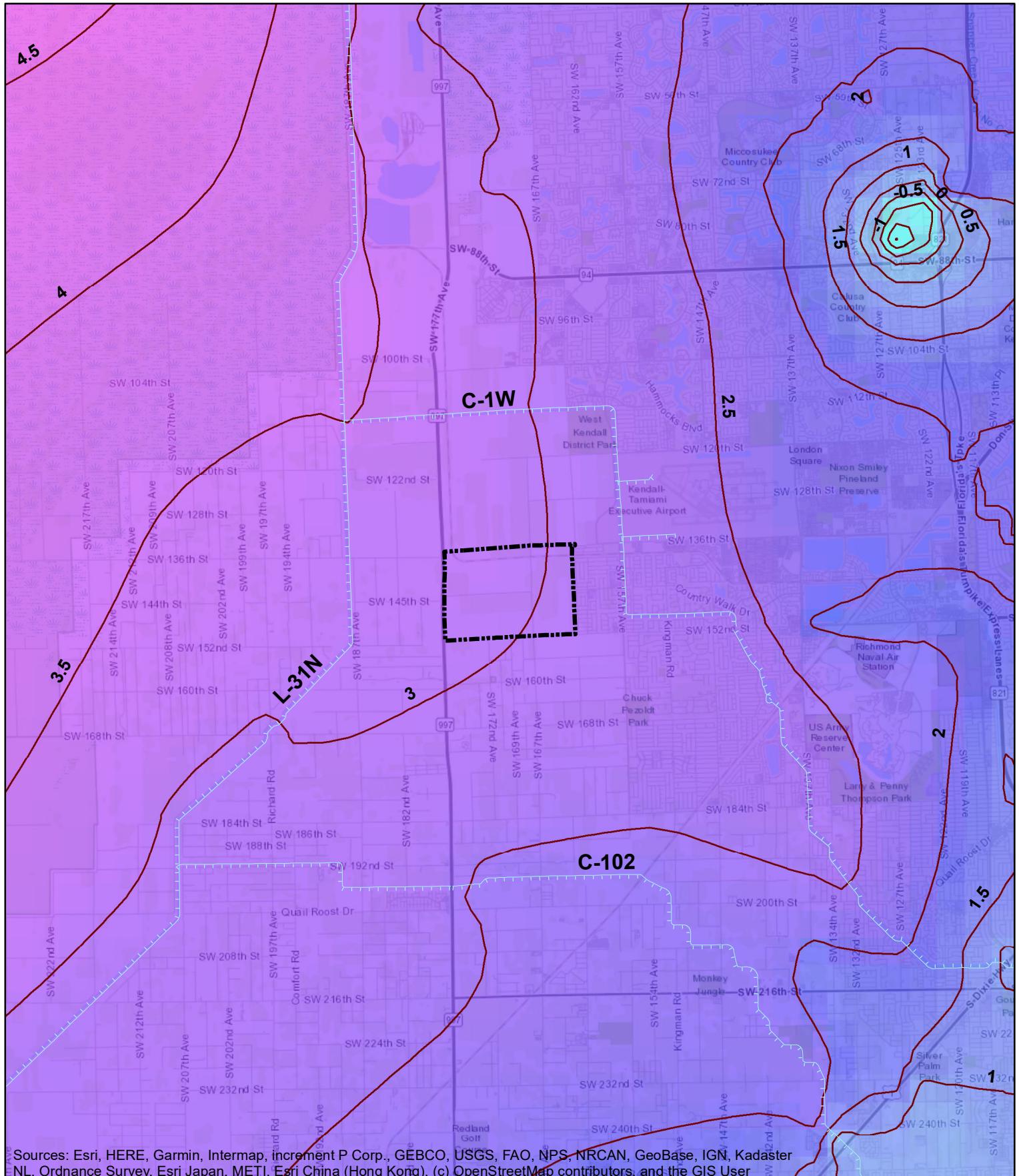
Map 14-3
Biscayne Aquifer Recharge Zones

**Legend****DRI Boundary****Canals****Precipitation Recharge Areas****21" - 42"****42" - 60"****Map 14-3
Biscayne Aquifer Recharge Zones****City Park
August 2025****0 0.5 1 2 Miles****Source: Miami-Dade County Open Data Hub**

**Map 14-4
Groundwater - Oct. 2040 (Baseline Conditions)**



**Map 14-5
Groundwater - May 2040 (Baseline Conditions)**



Legend



DRI Boundary

Primary Canals

Groundwater Level (NAVD88)

Contours

High : 4.869

Miles

Low : -1.86



0

0.5

1

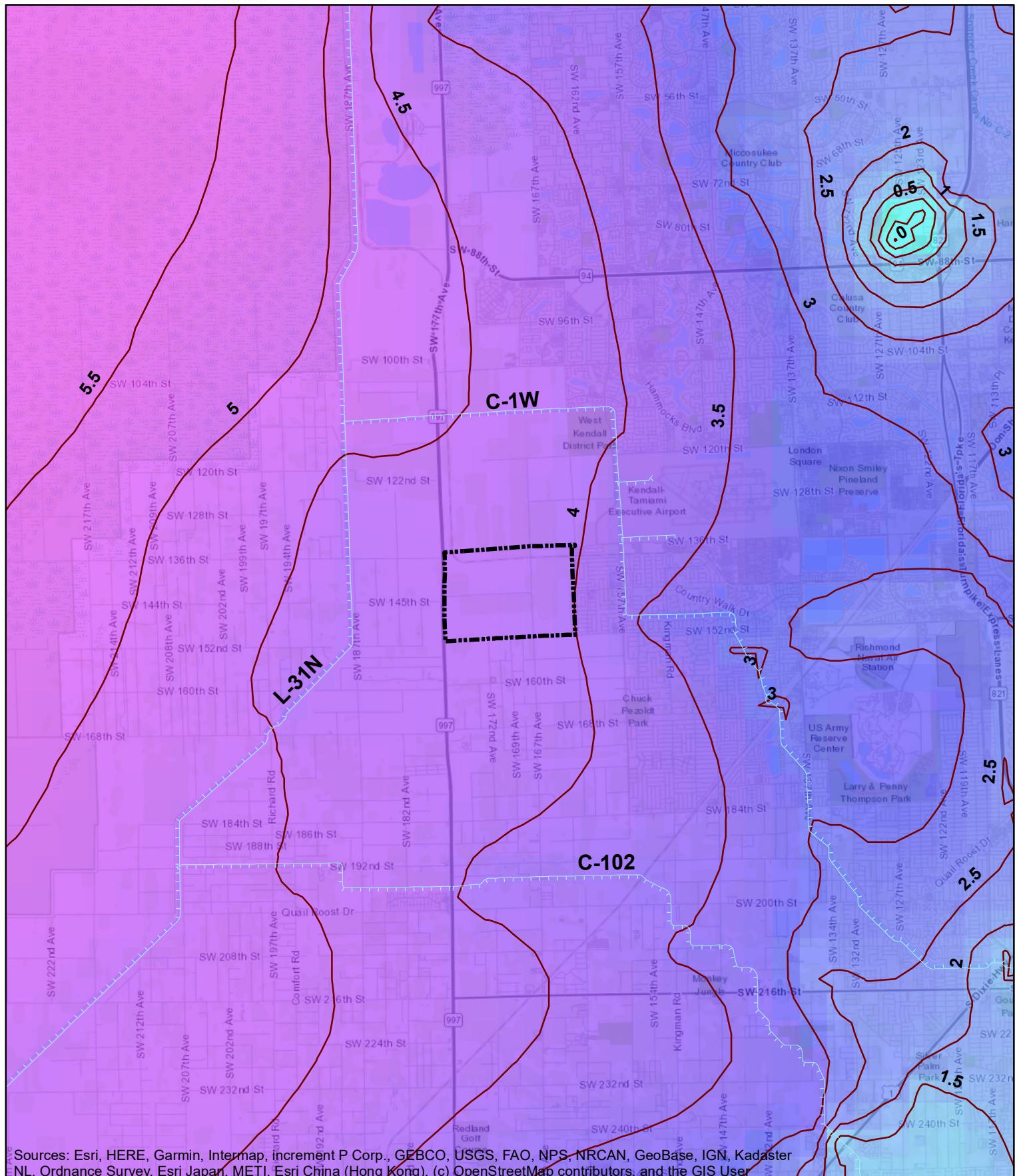
2

Map 14-5
Groundwater - May 2040 (Baseline Conditions)

City Park
 August 2025

Source: Miami-Dade County Open Data Hub

Map 14-6
Groundwater – Oct. 2040 (With Sea Level Rise)



Legend



DRI Boundary

Primary Canals



Contours

Groundwater Level (NAVD88)

High : 5.94
 Low : -0.69

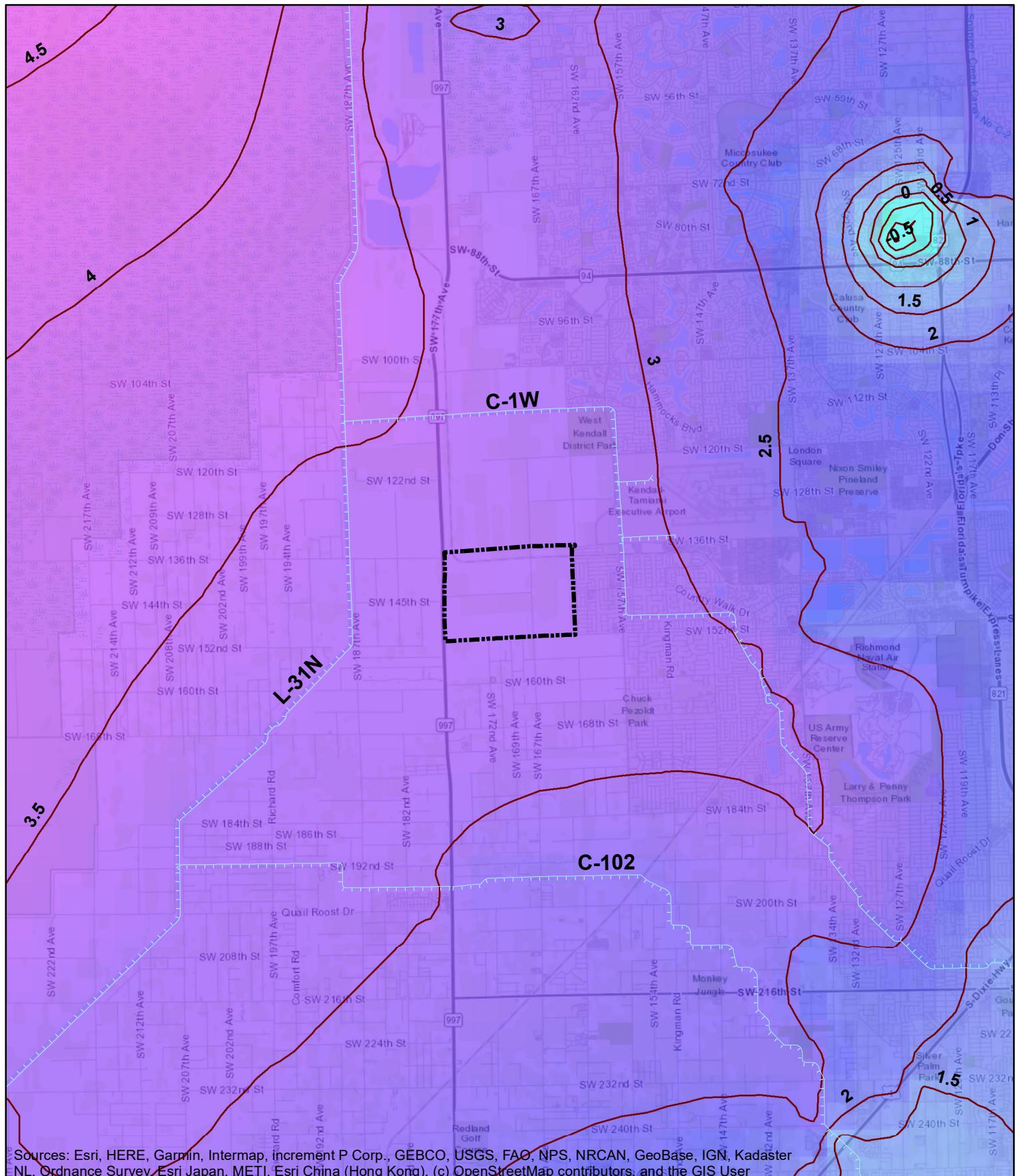
Map 14-6

Groundwater - Oct. 2040
 (With Sea Level Rise)

City Park
 August 2025

Source: Miami-Dade County Open Data Hub

Map 14-7
Groundwater - May 2040 (With Sea Level Rise)



Legend

DRI Boundary

Primary Canals C

Groundwater Level (NAVD88)

- High : 4.87

10 of 10

1

0 0.5 1

2 Contours

■ Miles

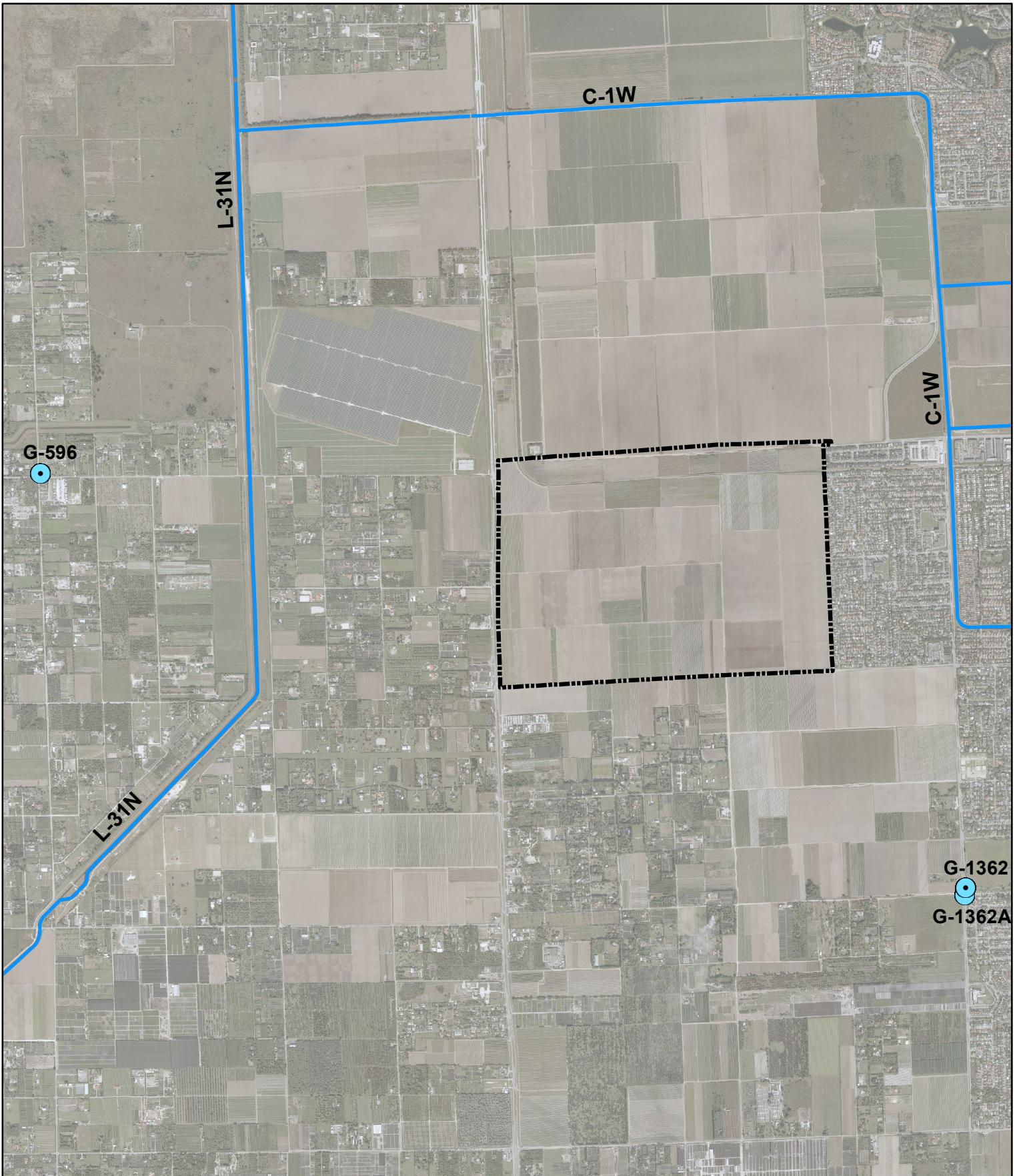
Map 14-7

Groundwater - May 2040 (With Sea Level Rise)

City Park
August 2025

Source: Miami-Dade County Open Data Hub

**Map 14-8
Water Quality Stations**



Legend

DRI Boundary Canals Stations



0 0.25 0.5

1 Miles

Map 14-8

Water Quality Stations

City Park
August 2025

Source: Miami-Dade County Open Data Hub