

Hazen



City of Cooper City Vulnerability Assessment Final Public Outreach Meeting

June 10, 2025

Agenda

- ☑ Introductions
- ☑ Project Overview
- ☑ Data Collection
- ☑ Exposure Analysis
- ☑ Sensitivity Analysis and Results
- ☑ Questions and Comments
- ☑ Next Steps and Adjournment





Introductions

Introduction/Roles and Responsibilities



Cooper City Project Team:

- Jennifer McMahon – Project Manager, Deputy City Manager
- Akin Ozaydin – Utilities Director/ City Engineer
- Lina Moreno – Utilities Coordinator
- Renee Wilson – Grant Coordinator
- Michael Cobelo - Director of Communications/Public Information Officer



Hazen Team:

- Erin Guby – Project Manager
- Kylee Sylvia – Project Support
- Sam Rende – Project Support
- Janeen Wietgreffe – Project Director
- Guillermo Regalado – Project Advisor



Project Overview

Resilient Florida Grant Program Intent

F.S. 380.093 - Resilient Florida Grant Program; comprehensive statewide flood vulnerability and sea level rise data set and assessment; Statewide Flooding and Sea Level Rise Resilience Plan; regional resilience entities-

Resilient Florida Grant Program:



Objective: Provide grants to local counties and municipalities to help fund:

1. **Community resilience planning**, including data collection and plan amendments.
2. **Vulnerability assessments** that identify risks for inland and coastal flooding and sea level rise.
3. Development of projects and policies to **prepare communities for threats** from flooding and sea level rise.
4. **Preconstruction activities** for projects to be submitted for inclusion in the Statewide Flooding and Sea Level Rise Resilience Plan

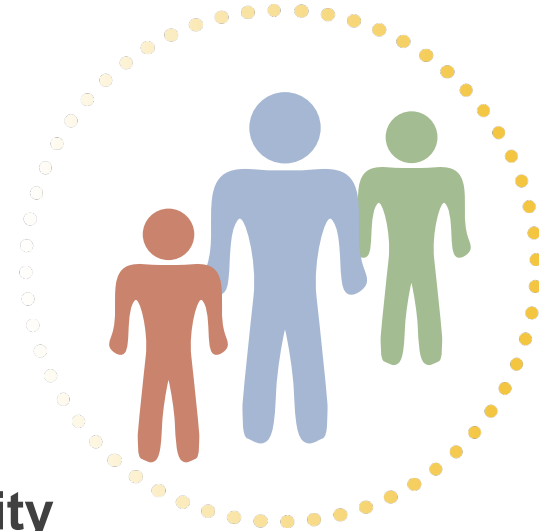


The VA addresses both Exposure and Sensitivity



Exposure

Presence of
assets in harm



Sensitivity

The degree to which
asset is affected by a threat

Goal

Understand the risk of flooding for the Community's critical and regional significant assets.



Data Collection

Critical Asset Summary – City of Cooper City



Transportation Assets and Evacuation Routes

Major Roadways

City Owned Roadways



Critical Infrastructure

Wastewater Lift Stations

Raw Water Wells

Communications Facility

Wastewater Treatment Facility

Drinking Water Facility

Water Storage Tanks

Disaster Debris Management Site



Critical Community and Emergency Facilities

Schools

Community Centers

Disaster Recovery Centers

Emergency Operation Centers

Fire Station

Law Enforcement Facility

Local Government Facilities



Natural, Cultural, and Historical Resources

Parks

Flood Scenarios

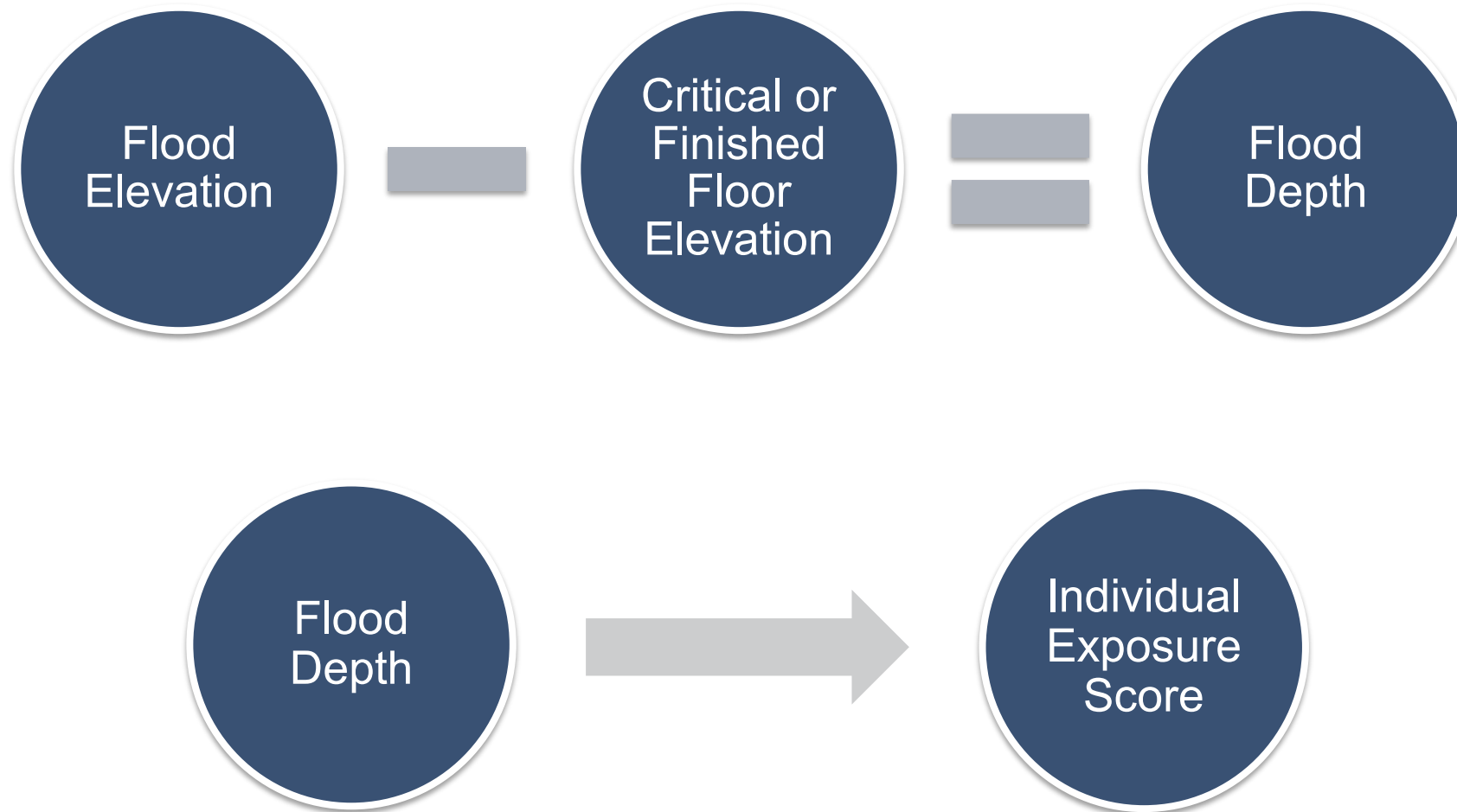
Available through Broward County MIKE SHE – MIKE HYDRO Model

Scenario No.	Rainfall	Sea Level Rise Projection	Planning Horizon	Tidal Condition
VA-3	100-year	N/A	2021 - Current	Normal High Tide
VA-6	100-year	2017 NOAA Intermediate Low	2040	
VA-9	100-year	2017 NOAA Intermediate High		
VA-12	100-year	2017 NOAA Intermediate Low	2070	
VA-15	100-year	2017 NOAA Intermediate High		
VA-18	100-year	N/A	2021 - Current	Storm Surge (Cat 5)
VA-21	100-year	2017 NOAA Intermediate Low	2040	
VA-24	100-year	2017 NOAA Intermediate High		
VA-27	100-year	2017 NOAA Intermediate Low	2070	
VA-30	100-year	2017 NOAA Intermediate High		



Exposure Analysis

Exposure Analysis – Methodology



Exposure Analysis – Methodology



Flood Scenarios

Scenario No.	Rainfall	Sea Level Rise Projection	Planning Horizon	Tidal Condition	Overall Weight
VA-3	100-year	N/A	2021 - Current	Normal High Tide	30%
VA-6	100-year	2017 NOAA Intermediate Low	2040		13.5%
VA-9	100-year	2017 NOAA Intermediate High			13.5%
VA-12	100-year	2017 NOAA Intermediate Low	2070		9%
VA-15	100-year	2017 NOAA Intermediate High			9%
VA-18	100-year	N/A	2021 - Current	Storm Surge (Cat 5)	10%
VA-21	100-year	2017 NOAA Intermediate Low	2040		4.5%
VA-24	100-year	2017 NOAA Intermediate High			4.5%
VA-27	100-year	2017 NOAA Intermediate Low	2070		3%
VA-30	100-year	2017 NOAA Intermediate High			3%
					100%

Exposure Analysis – Water Intrusion Factor

An additional factor was added to critical asset structures that have experienced historical flooding or water intrusion from heavy rain events



Water Intrusion Factor Score	Description	Critical Assets Applied
2	Structure is prone to experiencing minimal water intrusion during previous rainfall event	• City’s Wastewater Treatment Plant Utilities Building (EOC) • BSO Fire Station 28
3	Structure has experienced significant water intrusion during previous rainfall event	• BSO Law Cooper City District 16 (EOC)



Sensitivity Analysis and Results

Sensitivity Analysis – Methodology



Sensitivity Analysis Methodology – Roadway Criticality Factor

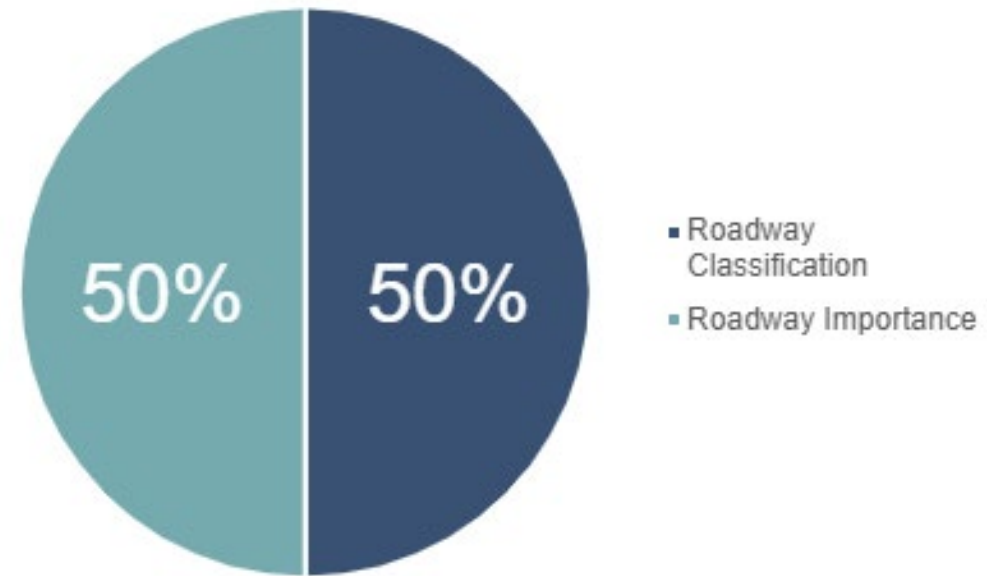
Roadway criticality factors are split into two categories

Roadway Importance

Criticality Factor	Value
Evacuation Route	5
All other Roads	1

Roadway Classification

Criticality Factor	Value
Principal Arterial	5
Minor Arterial	4
Major Collector	3
Minor Collector	2
Local	1



Sensitivity Analysis Methodology – Facility Structures and Parcels

Criticality Factors

Facility criticality factors are split into three categories

Criticality of Services

Assets are scored 1-5 based on the criticality of the services provided. 1 being low criticality and 5 being the highest criticality.

40% of Facility Criticality Factor

Level of Habitability

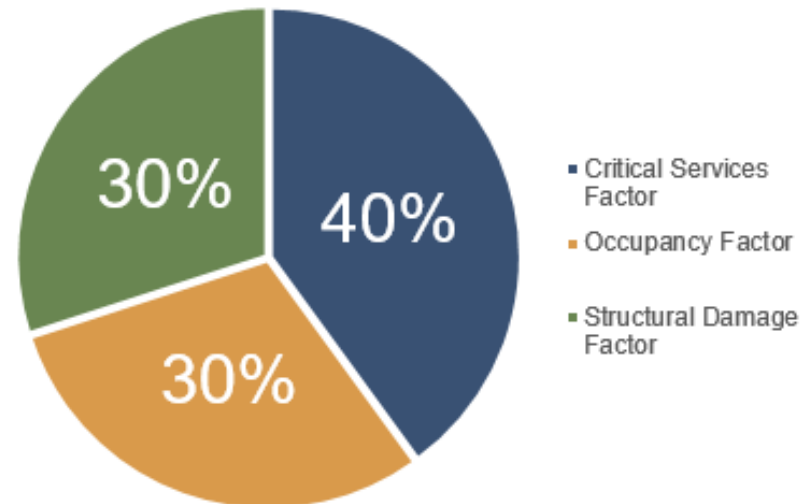
Assets are scored 1-5 based on the habitability of the asset. 1 being low habitability and 5 being the highest habitability.

30% of Facility Criticality Factor

Structural Damage Potential

Assets are scored either 1 or 5 based on the presence of structures, 1 for no structures and 5 for structures.

30% of Facility Criticality Factor



Sensitivity Analysis Results – Roadways Top 10

Asset Unique ID	Roadway Name	Roadway To	Roadway From	Exposure Score	Criticality Score	Sensitivity Score	Rank
415	SW 97th Ter	SW 97th Ter	SW 59th St	4.71	1.00	4.71	1
416	SW 99th Ln	SW 57th St	SW 59th St	4.58	1.00	4.58	2
413	SW 59th St	SW 99th Ln	SW 59th St	3.69	1.00	3.69	3
414	SW 90th Ave/Cooper Blvd	Griffin Rd	Stirling Rd/SW 60th St	3.14	1.00	3.14	4
402B	N Hiatus Rd	Stirling Rd/SW 60th St	Sheridan St	1.41	2.00	2.82	5
417	W Lake Blvd	S Flamingo Rd/SW 124th Ave	Stonebridge Pkwy	2.72	1.00	2.72	6
410	SW 118th Ave	Griffin Rd	Stirling Rd/SW 60th St	2.04	1.00	2.04	7
411	SW 49th St	S Flamingo Rd/SW 124th Ave	SW 49th St	1.33	1.00	1.33	8
412	SW 57th St	SW 100th Ave	SW 99th Ln	1.00	1.00	1.00	9
408A	Stirling Rd/SW 60th St	S Flamingo Rd/SW 124th Ave	N Hiatus Rd	0.35	2.50	0.88	10

Sensitivity Analysis Results – Roadways

Asset Unique ID	Roadway Name	Roadway To	Roadway From	Exposure Score	Criticality Score	Sensitivity Score	Rank
402A	S Hiatus Rd	SW 55th St	Stirling Rd/SW 60th St	0.81	1.00	0.81	11
404	NW 101st Ave/N Palm Ave	Stirling Rd/SW 60th St	Sheridan St	0.32	2.50	0.79	12
408B	Stirling Rd/SW 60th St	N Hiatus Rd	NW 101st Ave/N Palm Ave	0.20	2.50	0.50	13
406B	S Pine Island Rd	Stirling Rd/SW 60th St	Sheridan St	0.18	2.50	0.45	14
407B	Sheridan St	N Hiatus Rd	NW 101st Ave/N Palm Ave	0.11	3.00	0.34	15
409	SW 100th Ave	Griffin Rd	Stirling Rd/SW 60th St	0.06	2.50	0.15	16
408C	Stirling Rd/SW 60th St	NW 101st Ave/N Palm Ave	S Pine Island Rd	0.01	2.50	0.04	17
407D	Sheridan St	S Pine Island Rd	N University Dr	0.01	3.00	0.03	18
400	Cherry Rd/SW 106th Ave	Griffin Rd	Stirling Rd/SW 60th St	0.02	1.00	0.02	19
406A	S Pine Island Rd	Griffin Rd	Stirling Rd/SW 60th St	0.01	2.50	0.02	20

Sensitivity Analysis Results – Roadways

Asset Unique ID	Roadway Name	Roadway To	Roadway From	Exposure Score	Criticality Score	Sensitivity Score	Rank
401A	Griffin Rd	S Flamingo Rd/SW 124th Ave	SW 118th Ave	0.00	3.00	0.00	21
401B	Griffin Rd	SW 118th Ave	SW 100th Ave	0.00	3.00	0.00	21
401C	Griffin Rd	SW 100th Ave	S Pine Island Rd	0.00	3.00	0.00	21
403	N University Dr	Stirling Rd/SW 60th St	Sheridan St	0.00	3.00	0.00	21
405A	S Flamingo Rd/SW 124th Ave	Griffin Rd	Stirling Rd/SW 60th St	0.00	3.00	0.00	21
405B	S Flamingo Rd/SW 124th Ave	Stirling Rd/SW 60th St	Sheridan St	0.00	3.00	0.00	21
407A	Sheridan St	S Flamingo Rd/SW 124th Ave	N Hiatus Rd	0.00	3.00	0.00	21
407C	Sheridan St	NW 101st Ave/N Palm Ave	S Pine Island Rd	0.00	3.00	0.00	21
408D	Stirling Rd/SW 60th St	S Pine Island Rd	N University Dr	0.00	2.50	0.00	21

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Sensitivity Analysis Results – Lift Stations and Raw Water Wells - Top 10

Asset Unique ID	Lift Station Name	Exposure Score	Criticality Score	Sensitivity Score	Rank
144	LS-44	4.00	3.00	12.00	1
183	LS-83	3.73	3.00	11.19	2
117	LS-17	3.00	3.00	9.00	3
124	LS-24	3.00	3.00	9.00	3
131	LS-31	3.00	3.00	9.00	3
189	Raw Water Well No. 8	3.00	3.00	9.00	3
155	LS-55	1.37	5.00	6.85	7
101	LS-01	2.03	3.00	6.09	8
103	LS-03	2.03	3.00	6.09	8
115	LS-15	2.00	3.00	6.00	10

Sensitivity Analysis Results – Lift Stations and Raw Water Wells

Asset Unique ID	Lift Station Name	Exposure Score	Criticality Score	Sensitivity Score	Rank
115	LS-15	2.00	3.00	6.00	10
116	LS-16	2.00	3.00	6.00	10
119	LS-19	2.00	3.00	6.00	10
125	LS-25	2.00	3.00	6.00	10
126	LS-26	2.00	3.00	6.00	10
132	LS-32	2.00	3.00	6.00	10
139	LS-39	2.00	3.00	6.00	10
140	LS-40	2.00	3.00	6.00	10
148	LS-48	2.00	3.00	6.00	10
186	Raw Water Well No. 5	1.00	3.00	3.00	20
104	LS-04	1.00	3.00	3.00	20
109	LS-09	1.00	3.00	3.00	20
121	LS-21	1.00	3.00	3.00	20
123	LS-23	1.00	3.00	3.00	20
129	LS-29	1.00	3.00	3.00	20
136	LS-36	1.00	3.00	3.00	20
146	LS-46	1.00	3.00	3.00	20
160	LS-60	1.00	3.00	3.00	20
179	LS-79	1.00	3.00	3.00	20
187	Raw Water Well No. 6	2.00	3.00	6.00	20

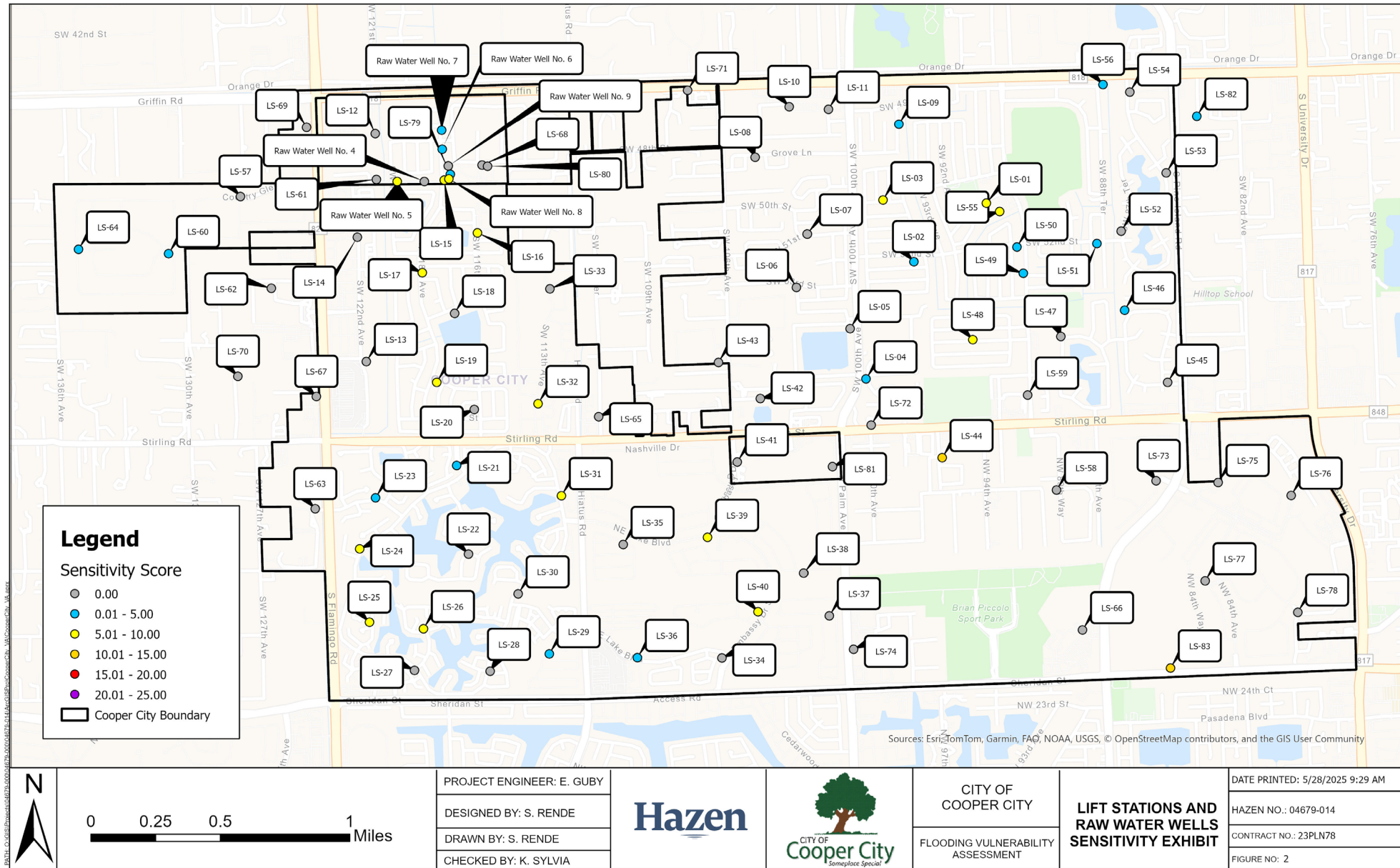
Asset Unique ID	Lift Station Name	Exposure Score	Criticality Score	Sensitivity Score	Rank
188	Raw Water Well No. 7	1.00	3.00	3.00	20
150	LS-50	0.09	3.00	0.27	31
149	LS-49	0.06	3.00	0.18	32
156	LS-56	0.06	3.00	0.18	32
182	LS-82	0.06	3.00	0.18	32
102	LS-02	0.03	3.00	0.09	35
151	LS-51	0.03	3.00	0.09	35
164	LS-64	0.03	3.00	0.09	35
105	LS-05	0.00	3.00	0.00	38
106	LS-06	0.00	3.00	0.00	38
107	LS-07	0.00	3.00	0.00	38
108	LS-08	0.00	3.00	0.00	38
110	LS-10	0.00	3.00	0.00	38
111	LS-11	0.00	3.00	0.00	38
112	LS-12	0.00	3.00	0.00	38
113	LS-13	0.00	3.00	0.00	38
114	LS-14	0.00	3.00	0.00	38
118	LS-18	0.00	3.00	0.00	38
120	LS-20	0.00	3.00	0.00	38
122	LS-22	0.00	3.00	0.00	38

Sensitivity Analysis Results – Lift Stations and Raw Water Wells

Asset Unique ID	Lift Station Name	Exposure Score	Criticality Score	Sensitivity Score	Rank
127	LS-27	0.00	3.00	0.00	38
128	LS-28	0.00	3.00	0.00	38
130	LS-30	0.00	3.00	0.00	38
133	LS-33	0.00	3.00	0.00	38
134	LS-34	0.00	3.00	0.00	38
135	LS-35	0.00	3.00	0.00	38
137	LS-37	0.00	3.00	0.00	38
138	LS-38	0.00	3.00	0.00	38
141	LS-41	0.00	3.00	0.00	38
142	LS-42	0.00	3.00	0.00	38
143	LS-43	0.00	3.00	0.00	38
145	LS-45	0.00	3.00	0.00	38
147	LS-47	0.00	3.00	0.00	38
152	LS-52	0.00	3.00	0.00	38
153	LS-53	0.00	3.00	0.00	38
154	LS-54	0.00	3.00	0.00	38
157	LS-57	0.00	3.00	0.00	38
158	LS-58	0.00	3.00	0.00	38
159	LS-59	0.00	3.00	0.00	38
161	LS-61	0.00	3.00	0.00	38

Asset Unique ID	Lift Station Name	Exposure Score	Criticality Score	Sensitivity Score	Rank
162	LS-62	0.00	3.00	0.00	38
163	LS-63	0.00	3.00	0.00	38
165	LS-65	0.00	3.00	0.00	38
166	LS-66	0.00	3.00	0.00	38
167	LS-67	0.00	3.00	0.00	38
168	LS-68	0.00	3.00	0.00	38
169	LS-69	0.00	3.00	0.00	38
170	LS-70	0.00	3.00	0.00	38
171	LS-71	0.00	3.00	0.00	38
172	LS-72	0.00	3.00	0.00	38
173	LS-73	0.00	3.00	0.00	38
174	LS-74	0.00	3.00	0.00	38
175	LS-75	0.00	3.00	0.00	38
176	LS-76	0.00	3.00	0.00	38
177	LS-77	0.00	3.00	0.00	38
178	LS-78	0.00	3.00	0.00	38
180	LS-80	0.00	3.00	0.00	38
181	LS-81	0.00	3.00	0.00	38
185	Raw Water Well No. 4	0.00	3.00	0.00	38
190	Raw Water Well No. 9	0.00	3.00	0.00	38

Sensitivity Analysis Results – Lift Station and Raw Water Wells



Sensitivity Analysis Results – Critical Asset Structures - Top 7

Asset Unique ID	Structure Name	Exposure Score	Water Intrusion Factor	Criticality Score	Sensitivity Score	Rank
192	0.5 MG Water Storage Tank	4.00	0.00	3.80	15.20	1
221	BSO Law Cooper City District 16	0.00	3.00	4.70	14.10	2
193	1.0 MG Water Storage Tank	3.00	0.00	3.80	11.40	3
222	BSO Station 28	0.00	2.00	5.00	10.00	4
220	Cooper City WWTP Utilities Building	0.00	2.00	4.70	9.40	5
203	Cooper City Elementary School	1.00	0.00	4.00	4.00	6
223	Cooper City City Hall	0.03	0.00	4.70	0.14	7

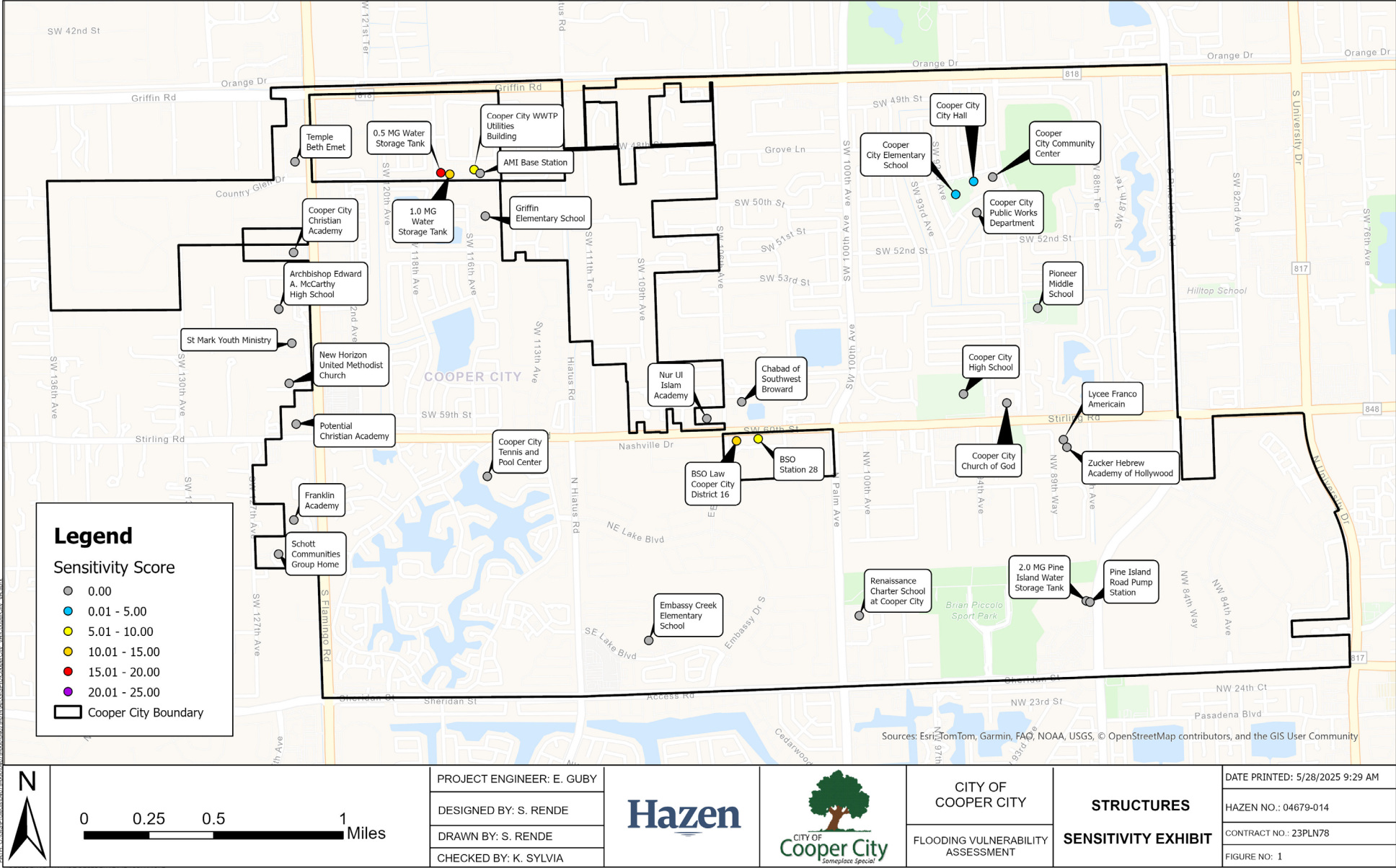
Sensitivity Analysis Results – Critical Asset Structures

Asset Unique ID	Structure Name	Exposure Score	Water Intrusion Factor	Criticality Score	Sensitivity Score	Rank
191	2.0 MG Pine Island Water Storage Tank	0.00	0.00	3.80	0.00	8.00
194	Pine Island Road Pump Station	0.00	0.00	3.80	0.00	8.00
195	AMI Base Station	0.00	0.00	2.20	0.00	8.00
200	Archbishop Edward A. McCarthy High School	0.00	0.00	4.00	0.00	8.00
201	Chabad of Southwest Broward	0.00	0.00	4.00	0.00	8.00
202	Cooper City Christian Academy	0.00	0.00	4.00	0.00	8.00
204	Cooper City High School	0.00	0.00	4.00	0.00	8.00
205	Embassy Creek Elementary School	0.00	0.00	4.00	0.00	8.00
206	Franklin Academy	0.00	0.00	4.00	0.00	8.00
207	Griffin Elementary School	0.00	0.00	4.00	0.00	8.00
208	Lycee Franco Americain	0.00	0.00	4.00	0.00	8.00
209	New Horizon United Methodist Church	0.00	0.00	4.00	0.00	8.00

Sensitivity Analysis Results – Critical Asset Structures

Asset Unique ID	Structure Name	Exposure Score	Water Intrusion Factor	Criticality Score	Sensitivity Score	Rank
210	Nur UI Islam Academy	0.00	0.00	4.00	0.00	8.00
211	Pioneer Middle School	0.00	0.00	4.00	0.00	8.00
212	Potential Christian Academy	0.00	0.00	4.00	0.00	8.00
213	Renaissance Charter School at Cooper City	0.00	0.00	4.00	0.00	8.00
214	Schott Communities Group Home	0.00	0.00	4.00	0.00	8.00
215	St Mark Youth Ministry	0.00	0.00	4.70	0.00	8.00
216	Temple Beth Emet	0.00	0.00	4.00	0.00	8.00
217	Zucker Hebrew Academy of Hollywood	0.00	0.00	2.90	0.00	8.00
218	Cooper City Community Center	0.00	0.00	4.70	0.00	8.00
219	Cooper City Church of God	0.00	0.00	3.00	0.00	8.00
224	Cooper City Public Works Department	0.00	0.00	2.90	0.00	8.00

Sensitivity Analysis Results – Structures



Sensitivity Analysis Results – Critical Asset Parcels - Top 10

Asset Unique ID	Parcel Name	Exposure Score	Criticality Factor	Sensitivity Score	Rank
184	George A. Haughney Water Treatment Plant	2.03	4.40	8.93	1
100	Cooper City Wastewater Treatment Plant	0.87	4.40	3.85	2
196	Homes Of Forest Lakes Park	2.43	1.00	2.43	3
313	Brian Piccolo Park	1.31	1.80	2.36	4
301	Pine Lake Park	2.30	1.00	2.30	5
307	Chase Park	2.29	1.00	2.29	6
317	Dawn Park	2.28	1.00	2.28	7
319	Stirling Palm Park	1.80	1.00	1.80	8
312	Forest Lake Park	1.66	1.00	1.66	9
306	Coopers Point Park	1.48	1.00	1.48	10

Sensitivity Analysis Results – Critical Asset Parcels

Asset Unique ID	Parcel Name	Exposure Score	Criticality Factor	Sensitivity Score	Rank
302	Christie Schafale Park	1.48	1.00	1.48	11
311	Flamingo West Park	1.25	1.00	1.25	12
318	Poinciana Park	1.22	1.00	1.22	13
300	Bill Lips Sports Complex	0.87	1.00	0.87	14
303	Colony Park	0.85	1.00	0.85	15
322	Ted Ferone Park	0.84	1.00	0.84	16
320	Suellen H. Fardelmann Sports Complex	0.83	1.00	0.83	17
316	Natalie's Cove Park	0.80	1.00	0.80	18
323	Pioneer Middle School Park	0.79	1.00	0.79	19
309	Ellie Kozak Park	0.63	1.00	0.63	20
304	Cooper City Memorial Park/Tot Lot	0.56	1.00	0.56	21
314	Jerry Morgan Park	0.40	1.00	0.40	22
315	Michael "City Mike" Riordan Park	0.17	1.00	0.17	23
321	Tamarind Park	0.09	1.00	0.09	24
308	Diamond Head Park	0.08	1.00	0.08	25
310	Encore Park	0.05	1.00	0.05	26

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Top Overall Critical Assets

Structures and Parcels

- BSO Law Cooper City District 16
- BSO Station 28
- Cooper City WWTP Utilities Building
- George A. Haughney Water Treatment Plant
- Cooper City Elementary School
- Cooper City Wastewater Treatment Plant
- Homes Of Forest Lakes Park
- Brian Piccolo Park
- Pine Lake Park
- Chase Park
- Dawn Park

LS and Water Wells

- LS-31
- LS-44
- LS-83
- LS-17
- LS-24
- LS-31

Roadways

- SW 97th Terrace
 - From SW 97th Ter to SW 59th St
- SW 99th Lane
 - From SW 57th St to SW 59th St
- SW 59th Street
 - From SW 99th Ln to SW 59th St
- SW 90th Avenue/Cooper Blvd
 - From Griffin Road to Stirling Rd/SW 60th St
- N Hiatus Road
 - From Stirling Rd/SW 60th St to Sheridan St

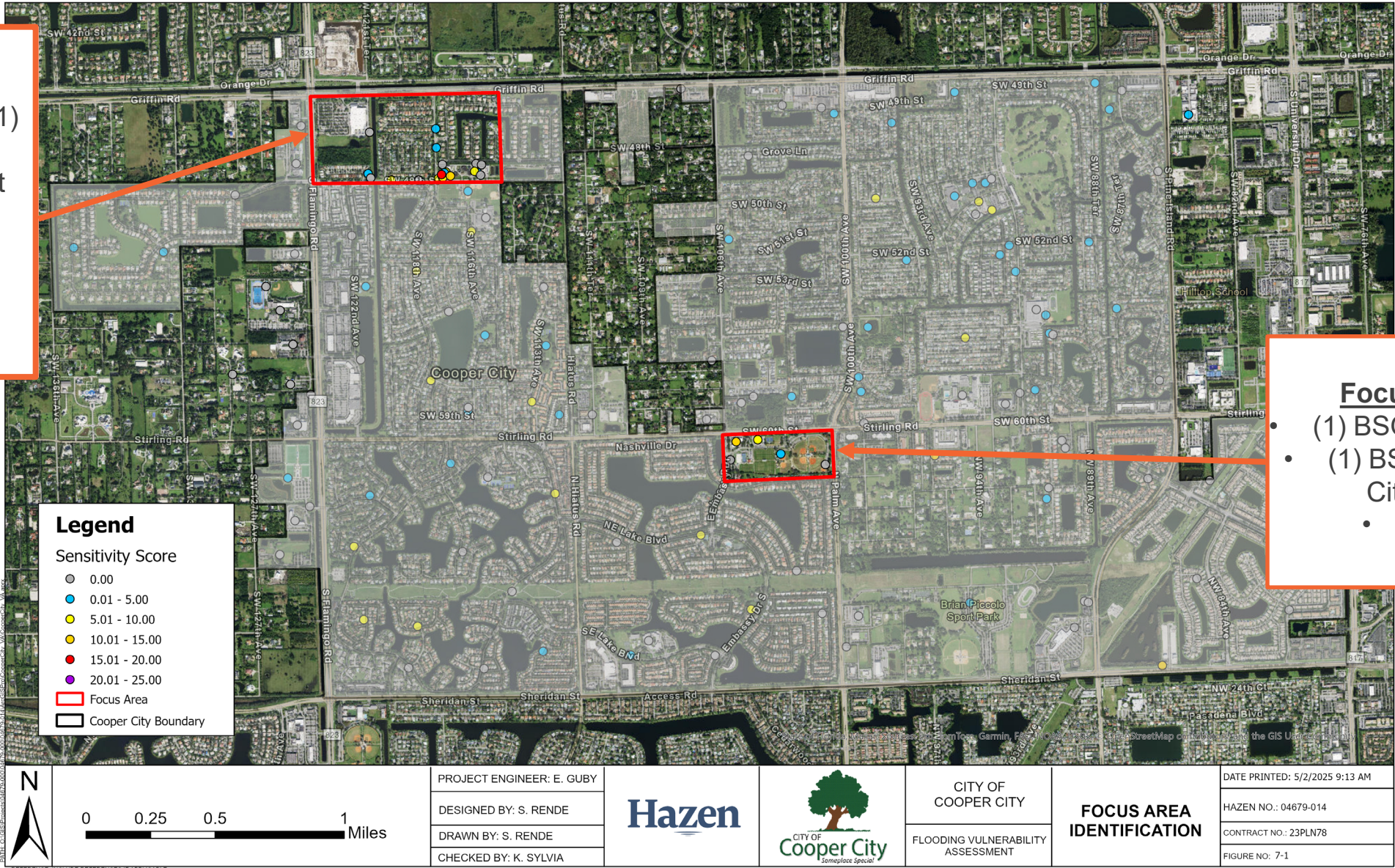
Focus Area Identification

Focus Area #1

- (1) Water and (1) Wastewater Treatment Plant
- (2) Lift Stations
- (3) Raw Water Wells
- (1) Park

Focus Area #2

- (1) BSO Fire Station 28
- (1) BSO Law Cooper City District 16
- (1) Park





Comments and Questions

Next Steps

- Final Vulnerability Assessment Report submission to FDEP by **June 30, 2025**, with Resilient Florida Grant Checklist
- City may apply for grants that support the development of projects, plans, and policies that allow communities to **prepare for threats** from flooding and sea level rise.
- Suggested Types of Projects
 - Raising of critical infrastructure
 - Flood Mitigation projects
 - Drainage Improvement projects
 - Improvements to historically flooded buildings BSO Station 28, BSO Law Cooper City District 16, Cooper City WWTP Utilities Building

Thank You!

If you have any further questions or comments, please reach out to Erin Guby at eguby@hazenandsawyer.com

Hazen