AtkinsRéalis

Miccosukee Greenway Flooding Evaluation – Final Report

Leon County Public Works Department

LEON

FLORIDA'S CAPITAL COUNTY

December 8, 2025

Executive Summary

The Miccosukee Canopy Road Greenway (the Greenway) has experienced increased flooding, beginning in April 2024, resulting in restricted access for vehicles and Greenway users. AtkinsRéalis has been contracted by the Leon County Public Works Department to perform an investigation into potential causes of the flooding and recommendations to restore access and use of the Greenway.

Figure 1, below, shows the location of the Greenway and **Figure 2**, on the next page, show the location of the flooding being studied in this report:

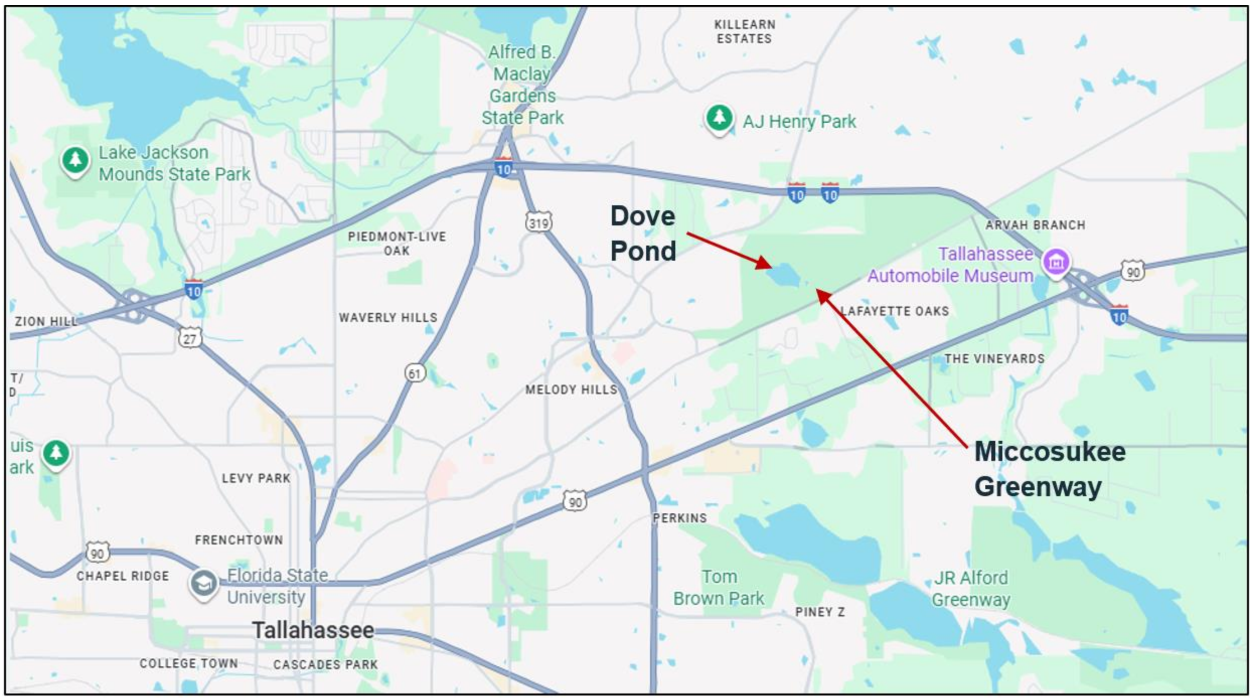

Figure 1: Miccosukee Greenway Location Map

Figure 2: Area of Greenway Flooding Concern Being Studied in this Report

To investigate the cause of the flooding, AtkinsRéalis reviewed the data listed below:

1. Dove Pond Dam Emergency Action Plan - 2021
2. Canopy Stormwater Facility Master Plan – 2010
3. City of Tallahassee Permit for the Dove Pond Regional Stormwater Pond - 2012
4. City of Tallahassee Permit Modification - 2023
5. Post, Buckley, Schue, and Jernigan Regional Modeling Report – 2011
6. NRCS Soil Survey
7. Historical Aerial Photographs

Based on the above data, and field investigations, this report concludes that the flooding is not caused by surface water discharges from Dove Pond, but rather from (1) direct runoff from adjacent land not reflected in the SFMP modeling, (2) seepage through the Dove Pond earthen dam, (3) leakage of the valves in the dam outfall structure, and/or (4) clogging of the natural percolation in the Greenway Wetland due to siltation in the area.

To remedy this flooding, the actions below are recommended to Leon County:

SFMP Model Basin Surface Water Flows to the Greenway Wetland

Prior to the County investing in flood remediation measures at the Greenway, AtkinsRéalis recommends using the available SFMP stormwater model to perform a targeted modeling effort focusing specifically on the Greenway Wetland.

Investigation into Dove Pond Dam Operation & Functionality

Step 1

Confirm the functionality and status of the structures through the dam:

a. 24” gate valve located in the 24” RCP
b. 6” float valve is operating at appropriate elevations
c. 6” gate valve in the 6” DIP

Inspection of the gate valves and floats on the pipe through the dam should be a simple, no-cost request by Leon County to the Dove Pond Community Development District (maintaining agency for the dam). If inspection of the gate and float valves determines that a valve is stuck open or leaking, repairs should be pursued, and the performance of the area should be monitored to determine if further action is necessary.

Step 2

If the gate and float valves appear to be constructed and functioning properly, engage a Geotechnical Engineer to investigate if additional seepage is occurring through the dam. The expected cost for an in-depth geotechnical investigation is $75,000 to $100,000.

Improvement of Groundwater Infiltration at the Greenway Wetland

Two (2) recommendations are listed below for the improvement of groundwater infiltration:

1. In the future, when the wetland area goes dry, visually confirm if siltation has occurred to prevent the wetland area from natural recovery to the groundwater. If so, scrape or remove the siltation and plant wetland grasses whose root systems might help open the soil structure to restore percolation. Leon County maintenance could perform this effort, should the County decide to pursue removal of siltation.
2. If a geotechnical investigation in the wetland area immediately downstream of the dam identifies a reasonably transmissive soil layer, construct a series of sand chimneys or dry well drains, elevated to allow inflow at the desired normal water elevation of the Greenway Wetland. The cost of constructing the dry wells is estimated to be $59,500 per dry well.

Improvements to Restore Greenway Usage

If flooding continues within the Greenway Wetland, boardwalks may be installed to elevate users above the flooding. Assuming a 10-ft wide boardwalk with handrailings at a cost of $700 – $1,500 per linear foot, the boardwalk cost is estimated to range from approximately $1 - $2 million. However, until the integrity of the dam is confirmed, usage of the area immediately downstream of the dam should not be encouraged by adding trail amenities such as a boardwalk.

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1. Background

The Miccosukee Canopy Road Greenway has experienced increased flooding, beginning in April 2024, resulting in restricted access for vehicles and Greenway users. AtkinsRéalis has been contracted to perform an investigation into potential causes of the flooding and recommendations to restore access and use of the Greenway.

Figure 3, below, shows the location of the Greenway and **Figure 4** shows the location of the flooding being studied in this report.

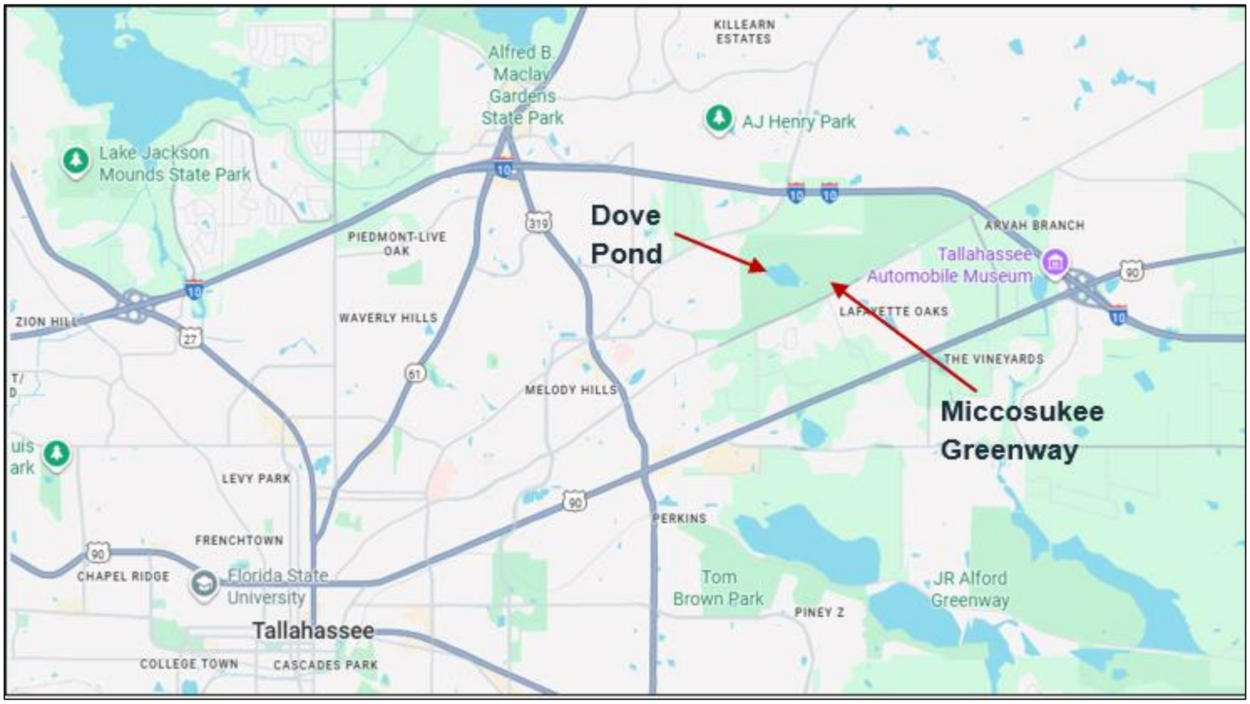

Figure 3: Miccosukee Greenway Location Map

Figure 4: Area of Greenway Flooding Concern Being Studied in this Report

This report documents data collection, data analysis, field review observations, conclusions from the investigations, and recommendations for further actions by Leon County to address the flooding concerns.

2. Data Collection

In researching the cause of the flooding identified in **Figure 4** above, AtkinsRéalis examined the documentation described in this section of this report and discussed findings with Leon County on August 13, 2025. That meeting is documented in the *Task 1 – Data Collection Memo* sent to Ms. Anna Padilla, Leon County Public Works Department, and included as **Appendix A** of this report. Key findings from relevant data sources are discussed below.

2.1 Dove Pond Dam Emergency Action Plan

The Emergency Action Plan (EAP), dated 8/26/2021, provided a history of the historical flooding concerns and efforts taken by local agencies to address the issues.

Key Findings: From the EAP, Appendix F, Background and History of Flood Reduction Measures in the Tri-Basin Area:

Because of extensive flooding which occurred in 1994, Leon County commissioned a comprehensive stormwater drainage analysis of the area encompassed by the Welaunee Closed Basin, the Lafayette Oaks Closed Basin, and the Pedrick Closed Basin, collectively known as the Tri-Basin Area. This study came to be known as the Tri-Basin Study (TBS) and in 1999 Leon County adopted recommendations from the study for specific structural improvements to help alleviate flooding.

The recommended improvements included:

1) Construction of a regional stormwater facility at Pedrick Road and Mahan Drive, *2) Reopening of an outfall pipe from the Lafayette Oaks Pond and purchasing those properties most severely flooded, and*

3) Construction of a regional stormwater facility on Welaunee Property upstream of Lafayette Oaks to hold back stormwater flow from the north.

Improvements 1) and 2) have been implemented. The dam associated with the Dove Pond Regional Stormwater Facility is Improvement 3) and is the subject of this EAP.

In 2002, a Critical Area Plan (CAP) for the Welaunee property was approved by the City Commission of Tallahassee, the Leon County Commission, and the Florida Department of Community Affairs. The CAP is a conceptual plan for the development of the property under review. The key stormwater component of the CAP, with the specific goal of reducing downstream flooding, was the Dove Pond Dam and Regional Stormwater Facility.

In 2006, CNL Real Estate & Development Corporation (CNL), the current property owner, began pursuing a plan for the development of the subject property.

In October 2008 the Leon County Commission adopted a Joint Project Agreement (JPA) with CNL in which the County agreed to be the applicant for a Linear Infrastructure Variance to be submitted to the City of Tallahassee to permit construction of the dam. A letter attached to the JPA summarized the benefits, based on the stormwater model, to downstream areas which have been impacted by flooding.

2.2 Canopy Stormwater Facility Master Plan (SFMP) – 2010

The SFMP consists of three (3) volumes and an update:

- Volume 1 of 3, Western Basin Areas, September 2010, Moore Bass Consulting
- Volume 2 of 3, Eastern Basin Areas, September 2009, Moore Bass Consulting
- Volume 3 of 3, Maps and Exhibits for All Basin Areas, September 2009, Moore Bass Consulting
- Stormwater Facilities Master Plan Update, August 2018, Greenman-Pedersen, Inc.

Key Findings: The analyses support that, with the construction of the Dove Pond Dam, surface water flows are contained within Dove Pond for storms up to and including the 100-year storm for all durations up to 240-hours, and for 1964 and 1994 year-long continuous simulations.

2.3 City of Tallahassee Permit #TEM180090 for Dove Pond Regional Stormwater Management Facility

In 2019, after the construction of the dam, Dove Pond was permitted as a regional stormwater facility under City of Tallahassee environmental permit TEM180090. AtkinsRéalis reviewed the narrative, construction plans, as-builts, capacity accounting record, geotechnical report, operation and maintenance plan, and other permit documents associated with the permitting effort.

Key Findings: Construction plans showing the configuration of the dam are included in **Appendix B,** with the following structures to allow for the hydration of the Greenway Wetland, as shown in **Figure 5,** below:

a. 24” gate valve located in the 24” RCP – intended to drain Dove Pond when needed for maintenance.
b. 6” float valve built to keep the downstream wetlands hydrated.
c. 6” gate valve in the 6” DIP – built to be able to maintain the float valve.

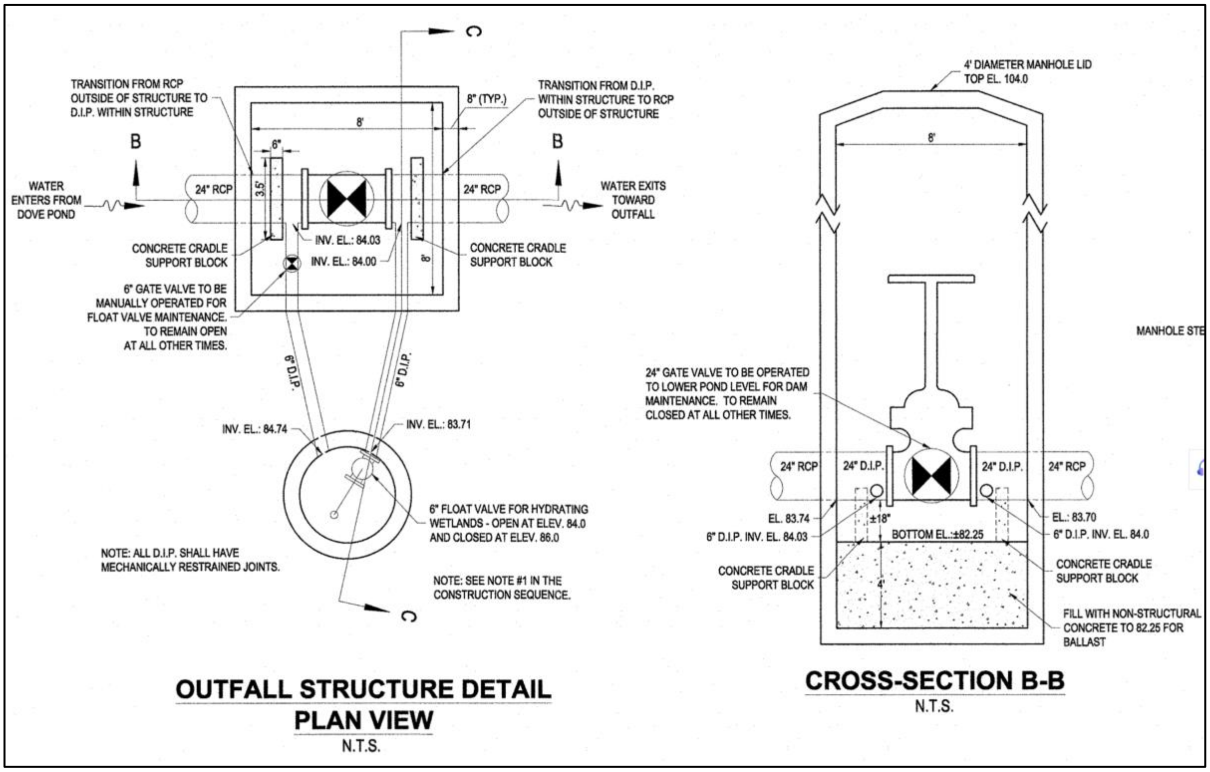

Figure 5: Schematic of Discharge Pipe and Valves through Dove Pond Dam

2.4 City of Tallahassee Permit Modification

In 2022, on behalf of CNL, Moore Bass Consulting submitted a permit modification application, field infiltration data, and an updated stormwater model to the City to request the approval of higher infiltration rates for Dove Pond. The purpose of the modification was to allow for the construction of an additional 64.23 acres of impervious area above the approved capacity accounting record with no structural modifications to the system. City staff did not find sufficient justification for the proposed increased infiltration rates, and as of the date of this report, the permit modification has not been issued. Documentation of the infiltration rates are shown in **Table 1** on the next page, and the City’s comments are located in **Appendix C**.

Key findings: Infiltration rates from the permit modification application are summarized below.

Table 1: Original vs Proposed Stormwater Modeling Infiltration Rates for Dove Pond

Dove Pond Elevations (ft-NAVD)	Original ICPRv3 Model Infiltration Rates (in/day)	Proposed XPSWMM Model Infiltration Rates (in/day)
77	0.25	0.25
78-86	0.40	0.50
87-100	0.42-0.57	0.80

2.5 2011 Post, Buckley, Schuh, and Jernigan (PBS&J) Regional Modeling Report

The extent of the 2011 PBS&J study encompassed the Welaunee Toe East portion of the Welaunee Critical Area Plan (CAP) as shown below in **Figure 6**. As a part of the CAP, a Stormwater Facilities Master Plan (SFMP) had to be approved prior to approval of a Planned Unit Development Concept Plan. The intent of the PBS&J study was to provide an outline for the future design of backbone stormwater facilities on the property.

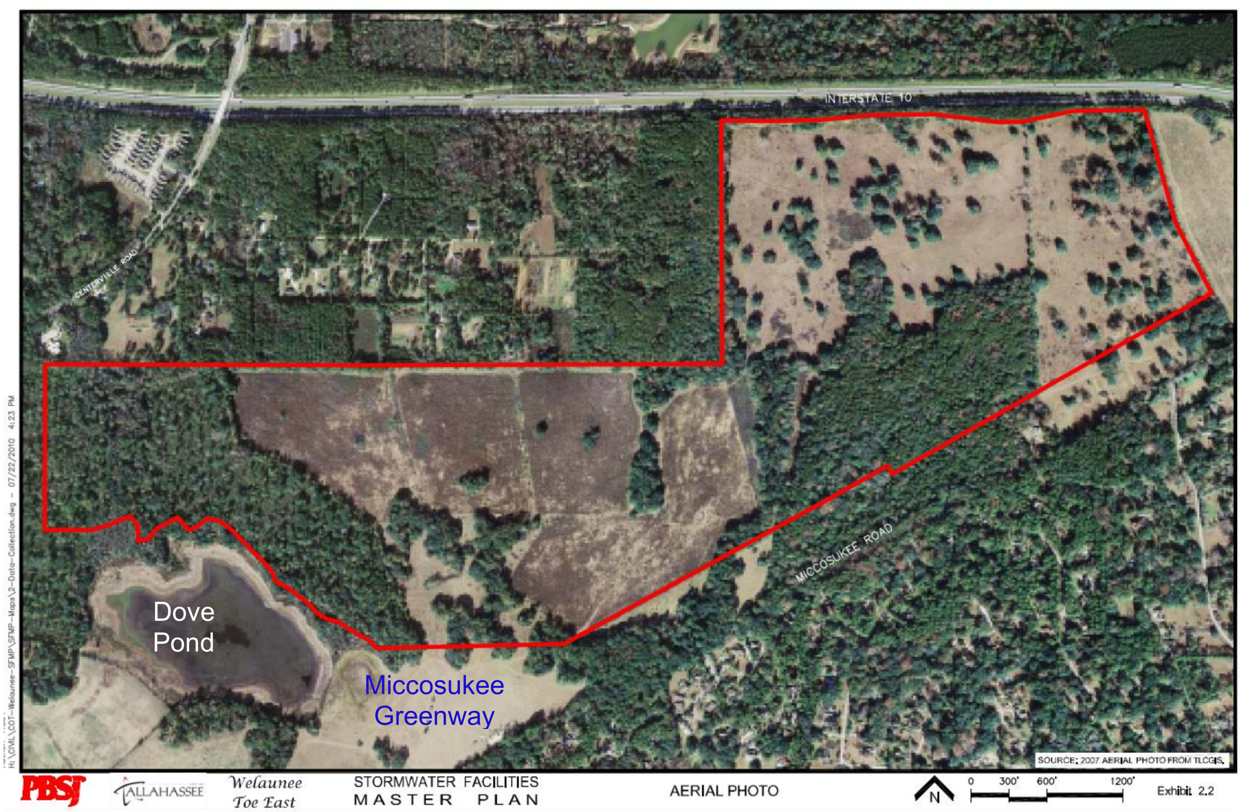

Figure 6: Focus Area of the PBJ&J Study Area

The study looked at the drainage of future planned development and included a portion of the "toe" of the drainage basin flowing to the area of flooding concern, as shown in **Figure 7**, below:

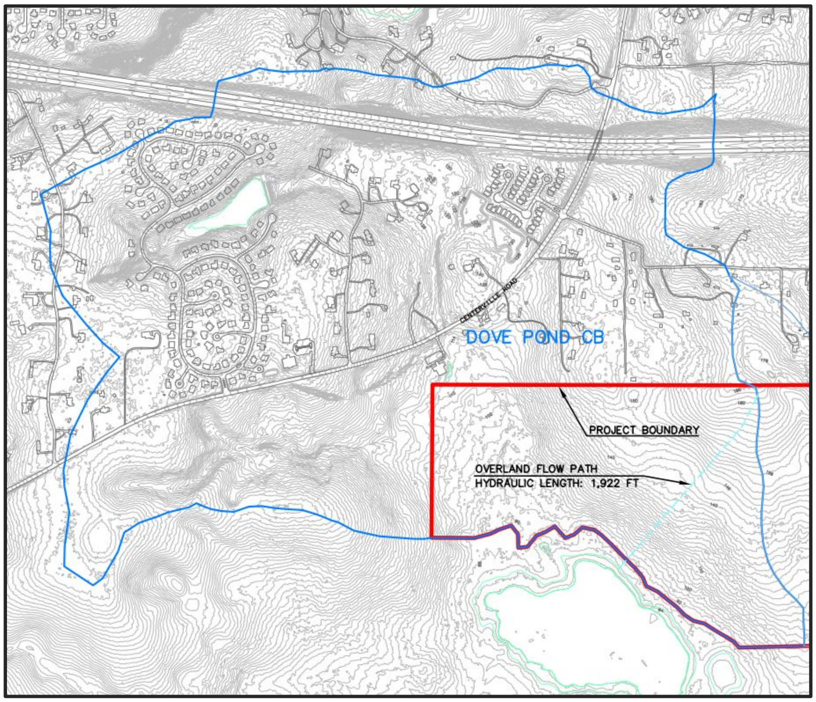

Figure 7: Drainage Subbasins in the 2011 PBS&J Regional Study

Key Findings: The scope of the PBS&J study did not encompass enough of the study area to provide relevant information to this flood investigation.

2.6 NRCS Soil Survey Information

The NRCS soil survey information is shown in **Appendix D**. The soils in the area immediately downstream of the Dove Pond Dam are predominantly A-2-4 loamy sands and are expected to be low in percolation.

2.7 Historical Aerial Photographs

Historical aerials are available from both FDOT and Google Earth and are included in **Appendix E.** The aerials show that both Dove Pond and the downstream wetland experience highly variable water levels.

2.8 Field Review

A field review was conducted on July 31, 2025, by AtkinsRéalis staff. Pictures from the field review are provided in **6.Appendix** F. Field review/observations are based on limited above-ground/ground-level observations and did not include any underground/underwater observations.

Notes from the field review are as follows:

a. Dam appears to be in good condition: healthy vegetation, no areas of noticeable erosion, retaining wall in good shape, well-maintained.

b. No evidence of seepage was observed, such as active boils or flow paths from previous boils.

c. No evidence of rafted debris was observed along the spillway slope or within the spillway, but some general leaf litter was located at the bottom of the concrete spillway leading down to the wetland area.

d. Stagnant water at the bottom of the concrete spillway presented a bad odor. Water at this location appeared to be more turbid than in Dove Pond.

3. Data Analysis and Conclusions

Critical data evidence, discussed in the previous **Section 2**, **Data Collection**, is analyzed in this section. AtkinsRéalis examined three (3) possible sources of the observed flooding downstream of the Dove Pond Dam, including:

1. Surface Water Flows Upstream of Dove Pond
2. SFMP Model Basin Surface Water Flows to the Greenway Wetland
3. Potential Seepage through the Dove Pond Dam

3.1 Surface Water Flows Upstream of Dove Pond

This section analyzes whether or not surface water flow from the Canopy development could be the cause of flooding at the Greenway Wetland flooding by comparing modeled stages in the Canopy Stormwater Facility Master Plan (SFMP) – 2010 to the actual rainfall and runoff conditions at the dam in early 2024. In principle, if *surface water flows* from the Canopy development were the cause of the Greenway Wetland flooding, then the dam spillway should have activated with flows coming from Dove Pond after April 2024, the timeframe of observed chronic flooding at the Greenway Wetland.

Daily rainfall at the Greenway was measured from 2017 to 2024 by the NWFWMD at the Limoges Dr. rainfall station, located immediately adjacent to the Greenway as shown in **Figure 8**, below:

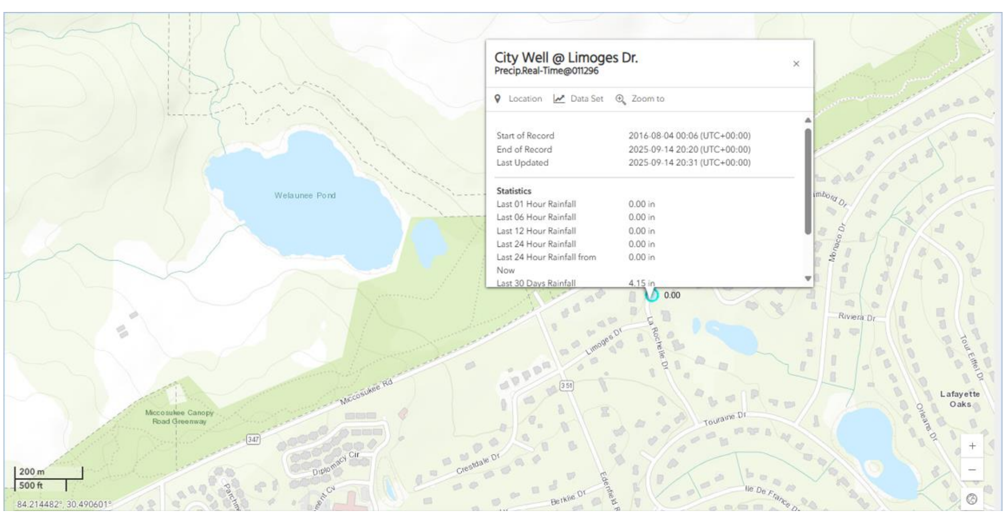

Figure 8: NWFWMD Rainfall Station No. 011296 – City Well at Limoges Dr. (NWFWMD Hydrologic Data WebPortal)

Annual rainfall totals from the Limoges Dr. rainfall station are shown in **Figure 9**, below:

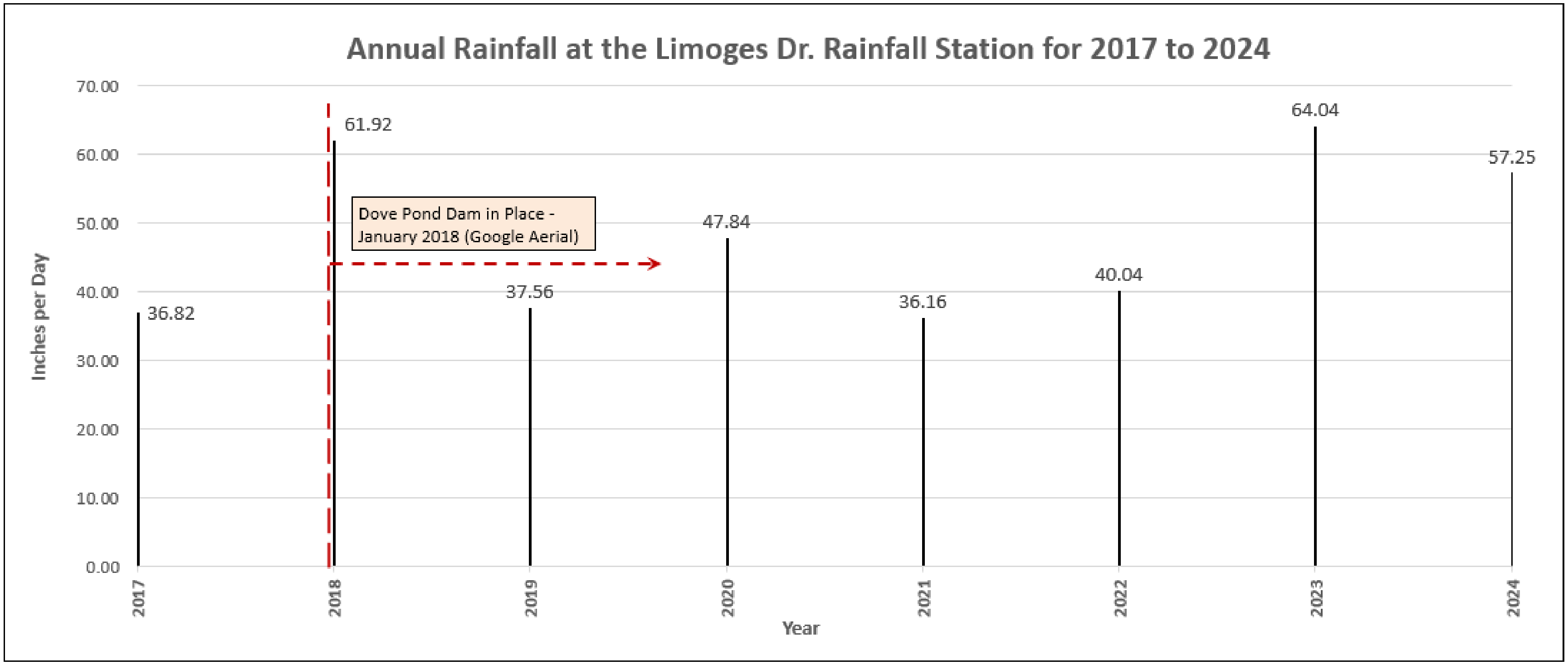

Figure 9: Annual Tallahassee Rainfall from 2017 to 2024 (NWFWMD Hydrologic Data WebPortal, Limoges Dr.**)**

The average annual rainfall at Limoges Dr. station from 2017 to 2024 – which includes the timeframe during which flooding was noted at the Greenway Wetland - was approximately 48" and the maximum annual rainfall during that time period was 64.04", which occurred in calendar year 2023.

The SFMP proposed condition model analyzed the 1964 and 1994 continuous annual simulations and the 100-yr, 10 day design storm, all of which exceed the maximum annual rainfall from 2017 to 2024. The annual rainfall in 1964 is, by far, the maximum annual rainfall on record, producing much higher modelled stages in Dove Pond than the 100-year, 10-day design event, and yet still did not activate the dam spillway. Present day conditions at the Greenway have not experienced rainfall near or exceeding the modelled events listed in **Table 2.**

Table 2: Summary of Critical Modeling and Overflow Elevations at Dove Pond Dam

Simulation (Calendar Year or Design Event)	Total Annual Rainfall (in)	Initial Stage Dove Pond (ft-NAVD)	Peak Stage Dove Pond (ft-NAVD)	Spillway Overflow Elevation (ft-NAVD)
1964	104.18	86.0	99.85	100.0*
1994	89.79	86.0	96.82	100.0*
100-yr, 10-Day	17.00	88.5	92.68	100.0*

*Per as-built survey (**6.Appendix B**)

As can be noted from **Figure 10**, below, no significant rainfall events have occurred, during the timeframe when flooding was observed in the Greenway Wetland, other than the 2-day event on April 11 - 12, 2024.

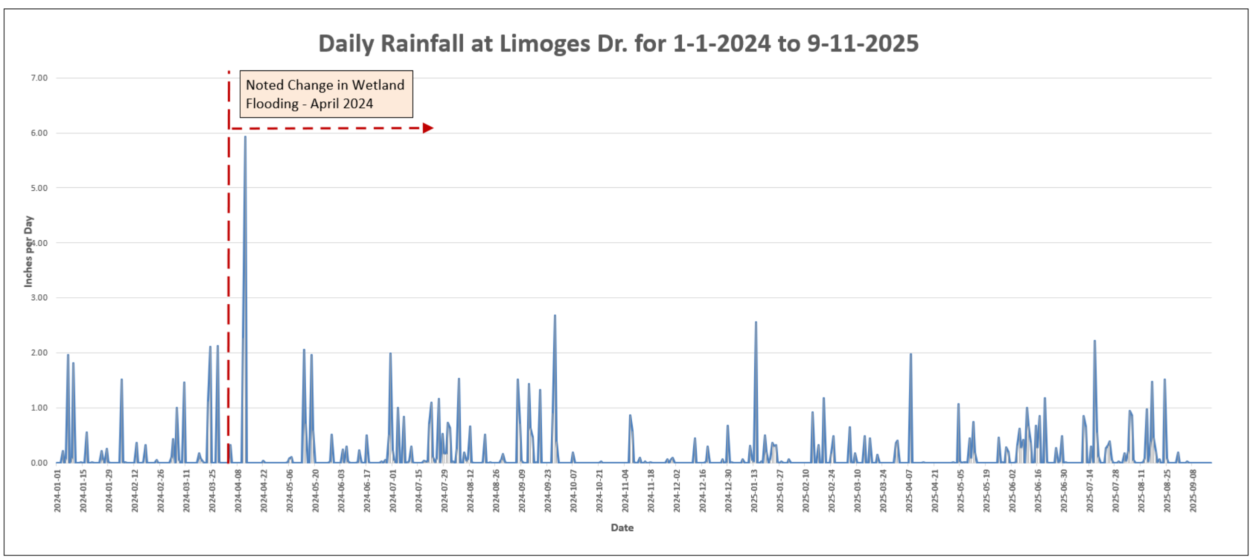

Figure 10: Daily Rainfall at Limoges Dr. from 1-1-24 to 9-11-25 (Source: NWFWMD Hydrologic Data WebPortal,)

The measured rainfall from April 11 – 12 totaled 8.19" and, if one assumes that that rainfall occurred within a 24-hour period, the measured April 11 – 12 rainfall interpolates to an 18-year rainfall event, using NOAA Atlas 14 Florida rainfall frequencies for the Limoges Dr. Station.

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Conclusion

Based on the SFMP modeling results, the above rainfall data, and that there are no visual observations of Dove Pond spillway's being engaged since the construction of the dam, we may reasonably conclude that the observed flooding at the Greenway Wetland is ***not*** *attributable to surface water flows from the Canopy development upstream of the Dove Pond Dam.*

3.2 SFMP Model Basin Surface Water Flows to the Greenway Wetland

Examination of the SFMP modeling revealed findings that could provide a better understanding of the Greenway flooding. These findings are divided into discussions on the modeling of the predevelopment condition, calibration of the SFMP model, and post development modeling.

From **Figure 11**, below, and for purposes of this report, a "flooded condition" is defined as flooding between elevation 86-89 ft-NAVD, which is when trail use is restricted. Flooding at elevation 86 ft-NAVD restricts use of the northern trail adjacent to the Greenway Wetland, and at elevation 89 ft-NAVD, the Greenway trail southwest of the Edenfield parking lot is impacted.

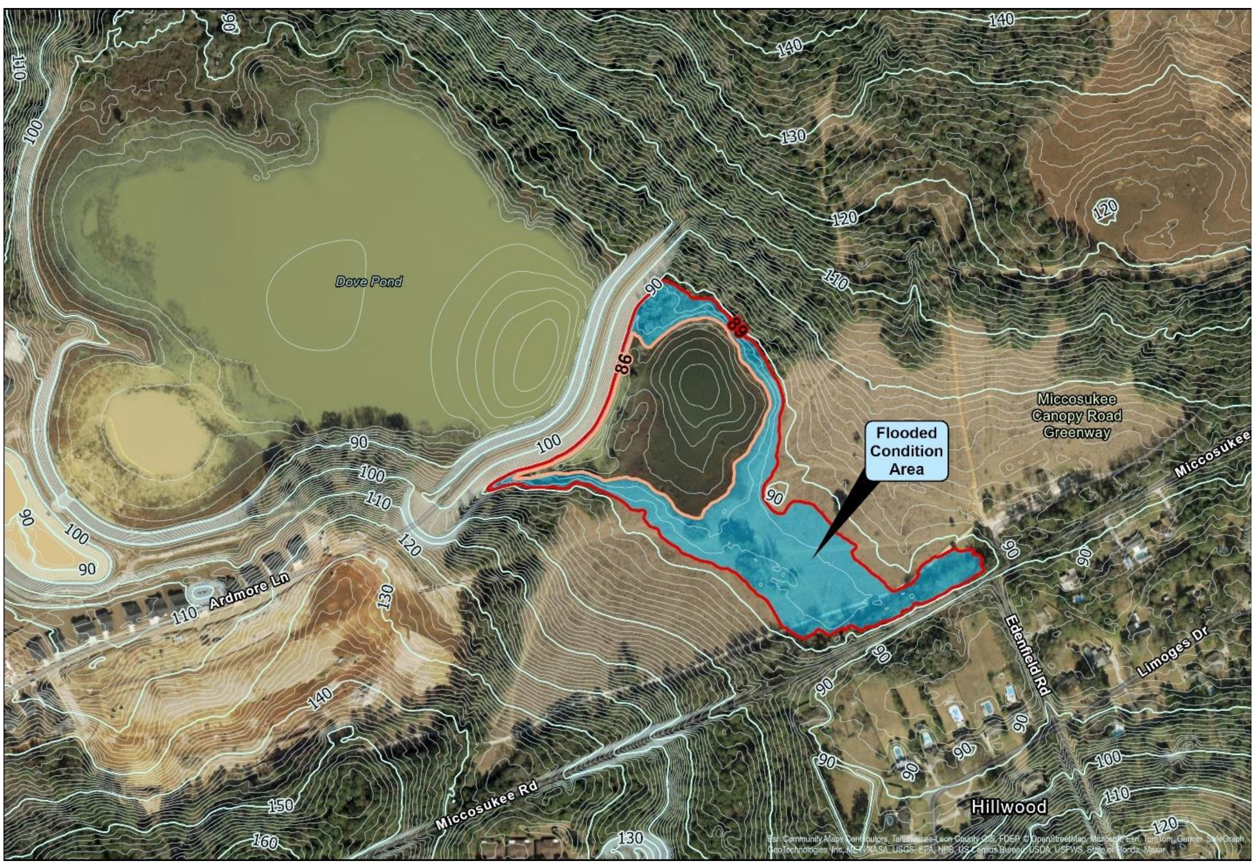


Figure 11: Delineation of Flooded Conditions at the Greenway Wetland (Contours in ft-NAVD)

3.2.1 Predevelopment Conditions

In the predevelopment model, Dove Pond (N70) includes both the pond and the downstream wetland as illustrated in **Figure 12**, with the ICPR storage shown in **Figure 13**, below:

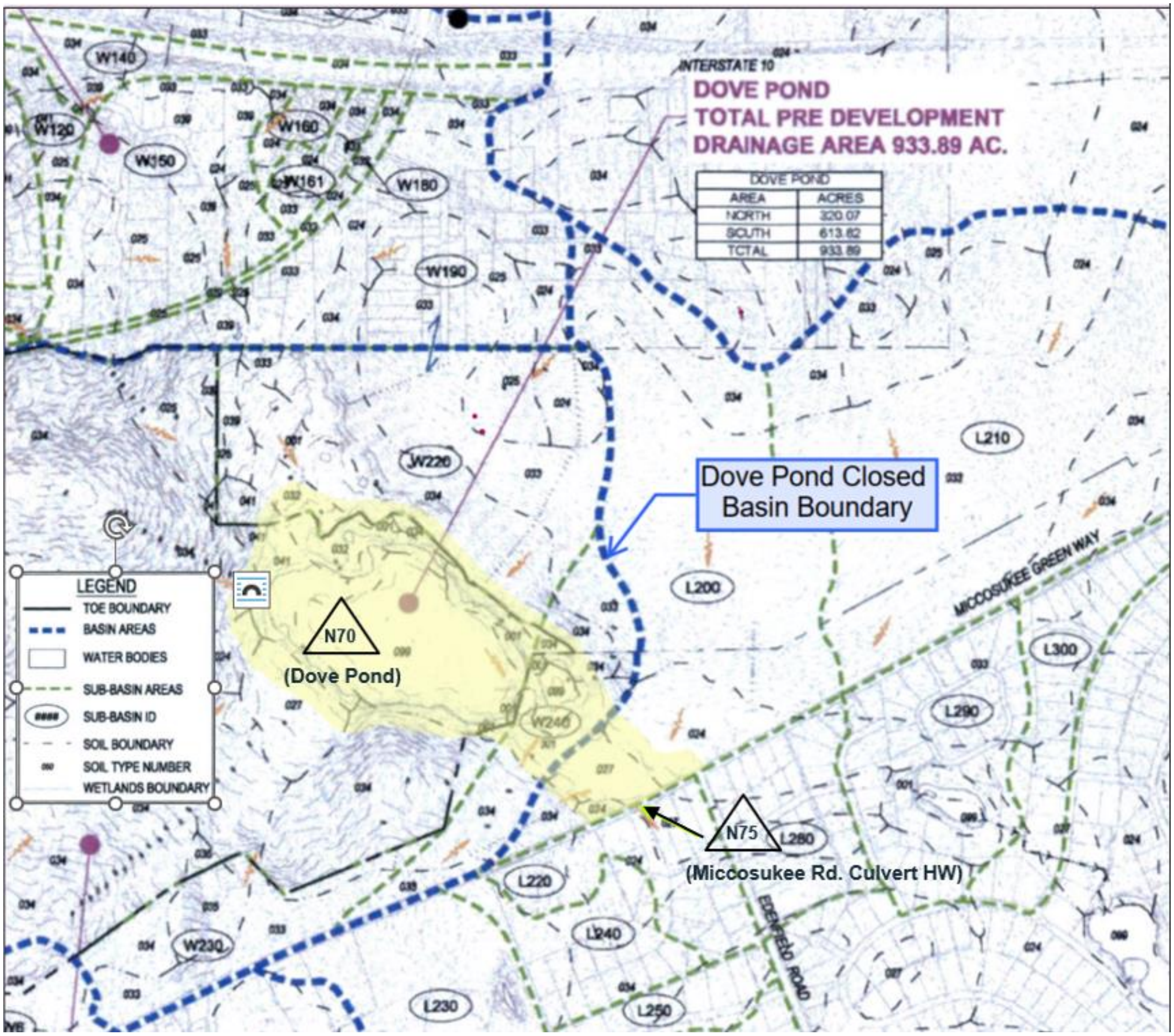


Figure 12: Graphic of Storage in Predevelopment Dove Pond - Node N70 (SFMP, Volume 3, with additional labels)

Name: N70 Dove Pond
Group: BASE
Type: Stage/Area

Base Flow(cfs): 0.000

Init Stage(ft): 88.100
Warn Stage(ft): 92.000

Dove Pond

Stage(ft)	Area(ac)
76.000	0.0000
77.000	0.2500
78.000	8.2200
79.000	14.8800
80.000	20.7100
81.000	25.5400
82.000	28.7500
83.000	31.2800
84.000	33.9900
86.000	46.0300
88.000	58.2000
90.000	73.4900
94.000	87.7800
96.000	102.5100

Figure 13: Predevelopment ICPR Stage-storage Table for N70 (SMFP, Volume 2)

From **Figure 14**, below, the predevelopment model predicts flooding of the Greenway Wetland area trails, as part of Dove Pond (N70), on most design events, regardless of duration, with flooding of the area between the wetland and the parking lot on many events for lesser storm event durations (≤24hr):

Dove Pond Basins
Existing Conditions
Node Max Report

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
N70	BASE	002yr-001hr	6.53	86.96	92.00	0.0004	2278018	0.80	1093.11	6.53	0.94
N70	BASE	002yr-002hr	8.00	87.12	92.00	0.0003	2320678	1.00	862.08	8.00	0.97
N70	BASE	002yr-004hr	10.00	86.64	92.00	0.0003	2192217	2.27	194.32	10.00	0.89
N70	BASE	002yr-008hr	14.00	86.84	92.00	0.0003	2246901	4.13	317.43	14.00	0.92
N70	BASE	002yr-024hr	29.99	86.41	92.00	0.0002	2131872	12.07	25.90	29.99	0.85
N70	BASE	005yr-001hr	8.00	87.41	92.00	0.0004	2397637	0.80	1634.97	8.00	1.03
N70	BASE	005yr-002hr	8.00	87.69	92.00	0.0005	2473866	0.97	1287.91	8.00	1.08
N70	BASE	005yr-004hr	10.00	87.47	92.00	0.0005	2415439	2.20	538.43	10.00	1.04
N70	BASE	005yr-008hr	14.00	87.88	92.00	0.0005	2521181	4.08	771.04	14.00	1.11
N70	BASE	005yr-024hr	30.00	86.61	92.00	0.0002	2183372	12.10	39.97	30.00	0.88
N70	BASE	010yr-001hr	8.00	87.79	92.00	0.0009	2497115	0.80	2071.24	8.00	1.09
N70	BASE	010yr-002hr	6.23	88.20	92.00	0.0008	2631276	0.97	1659.12	3.45	9.60
N70	BASE	010yr-004hr	10.00	88.07	92.00	0.0006	2579749	2.20	782.68	10.00	1.15
N70	BASE	010yr-008hr	10.12	88.39	92.00	0.0009	2697488	4.07	1009.77	9.85	6.62
N70	BASE	010yr-024hr	30.00	86.77	92.00	0.0003	2225825	12.13	50.83	30.00	0.91
N70	BASE	025yr-001hr	5.23	88.24	92.00	0.0011	2645130	0.80	2623.48	2.68	9.77
N70	BASE	025yr-002hr	5.29	88.79	92.00	0.0011	2837596	0.97	2103.71	3.75	10.30
N70	BASE	025yr-004hr	7.06	88.96	92.00	0.0009	2897648	2.20	1144.47	5.55	11.87
N70	BASE	025yr-008hr	9.13	89.23	92.00	0.0013	2998500	4.07	1410.31	9.02	14.23
N70	BASE	025yr-024hr	30.00	86.95	92.00	0.0004	2274648	12.10	72.95	30.00	0.94
N70	BASE	100yr-001hr	4.71	88.82	92.00	0.0014	2848187	0.80	3400.74	3.37	10.63
N70	BASE	100yr-002hr	4.98	89.82	92.00	0.0015	3220853	0.97	2916.16	3.89	19.74
N70	BASE	100yr-004hr	6.61	90.18	92.00	0.0012	3525576	2.20	1646.01	5.48	22.28
N70	BASE	100yr-008hr	8.70	90.27	92.00	0.0015	3596762	4.07	1927.31	8.26	22.27
N70	BASE	100yr-024hr	30.00	87.52	92.00	0.0005	2425147	12.08	140.53	30.00	1.04
N70	BASE	100yr-072hr	78.00	87.62	92.00	0.0006	2452975	60.00	81.16	78.00	1.06
N70	BASE	100yr-168hr	174.00	87.80	92.00	0.0006	2500798	160.00	47.27	174.00	1.09
N70	BASE	100yr-240hr	243.58	88.07	92.00	0.0006	2577026	184.00	58.94	243.58	1.15
N70	BASE	1964	4784.16	90.64	92.00	0.0013	4053556	4777.75	1679.70	4784.50	81.67
N70	BASE	1994	6594.10	88.89	92.00	0.0009	2873485	2943.25	806.44	6594.24	11.09

Figure 14: Predevelopment Maximum Modeled Conditions for Dove Pond (N70) (SMFP, Volume 2)

However, the authors of this report have been frequent users of the Miccosukee Greenway trails for approximately the last 20 years and have noted only limited flooding of the Greenway Wetland prior to 2024.

Conclusion

Predevelopment stages in Dove Pond (N70) appear elevated beyond historical observations.

Possible explanations for elevated predevelopment model stages are examined below:

3.2.1.1 Severing of the Dove Pond & Greenway Wetland Connection

In the predevelopment condition, the storage associated with Dove Pond and the Greenway Wetland is modeled as one storage node (N70) with 933.89 contributing acres from Dove Pond North and Dove Pond South. In the existing conditions before construction of the dam, there was an overland connection between Dove Pond and the Greenway Wetland at around elevation 84 ft. The construction of the Dove Pond Dam severed the connection between Dove Pond and the Greenway Wetland, however it is unclear how the two areas communicated during lesser duration storm events before the dam was constructed. Flow behavior between the two storage areas cannot be directly determined from the pre-development model because the entire area was modeled as one storage node, shown in **Figure 12.**

3.2.1.2 Basin L200

In the predevelopment condition, the storage area associated with Dove Pond (N70) transgresses the Dove Pond Closed Basin Boundary into Basin L200. However, the modeling network indicates all of Basin L200 loads directly to N75, the node just upstream of the 24" culvert under Miccosukee Road, as shown in **Figure 15**. In the model, N75 is assigned only minimal storage, as shown below in **Figure 15**, to provide numerical stability to the headwater of the culvert:

```
-----------------------------------------------------------------------------------------
     Name: N75                  Base Flow(cfs): 0.000          Init Stage(ft): 87.230
    Group: BASE                                                Warn Stage(ft): 90.350
     Type: Stage/Area

Upstream of Miccosukee Road

     Stage(ft)         Area(ac)
--------------- ---------------
        87.230          0.1000
        91.000          0.5000

-----------------------------------------------------------------------------------------
```

Figure 15: SFMP Predevelopment ICPR Model Storage in Node 75 (N75) (SFMP, Volume 2)

The boundary between basin W240 and L200 appears inaccurate as it approaches Miccosukee Road. This delineation is likely misrepresenting the storage available in L200, as it is accounted for within N70. This also misrepresents the volume of runoff reaching the Greenway Wetland, as a portion of L200 should be included with W240.

3.2.1.3 Calibration of the SFMP Model

Calibration of the predevelopment SFMP model was based on data from Tropical Storm Fay. The results of the final calibration are shown in **Figure 16** and **Figure 17**, below:

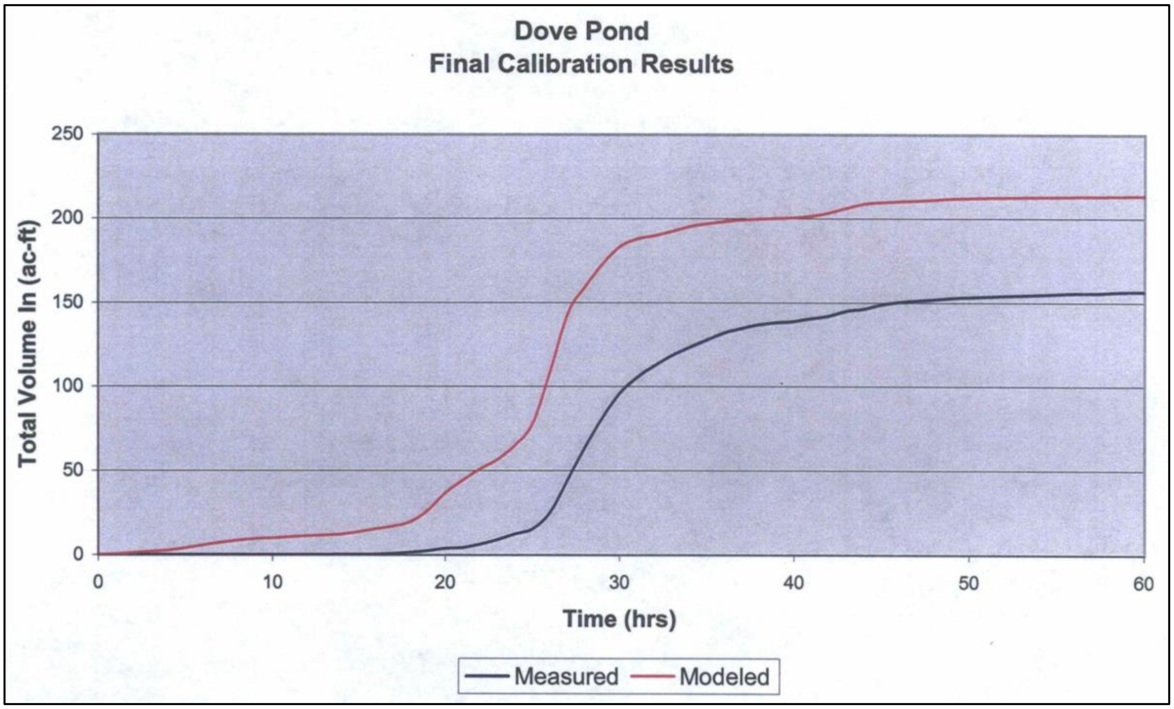


Figure 16: Runoff Volume Result of Final Calibration of the Predevelopment SFMP model (SFMP, Volume 2)

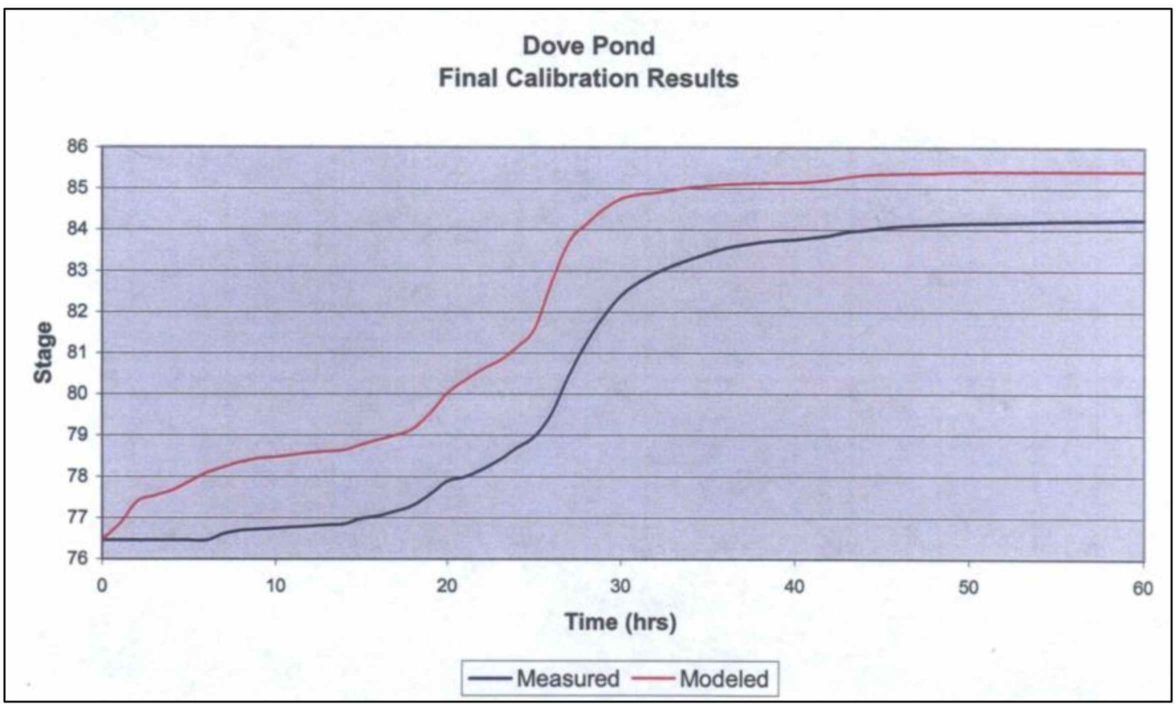


Figure 17: Stage Results of Final Calibration of the Predevelopment SFMP model (SFMP, Volume 2)

The SFMP, Volume 2, states the following with regards to the calibration efforts:

> *Although the design model calibrated well with Faye, the underproduction of runoff during the 1994 storm was a serious concern due to the volume sensitivity of the basin. At the onset of Fay, Leon County was at a yearly rainfall deficit of around 20 inches. This combined with a deficit of almost 30 inches for the previous two years resulted in exceptionally dry antecedent moisture conditions. This very dry AMC seems to have resulted in little or no runoff measured during the first 24 hours of Fay. Attempts to calibrate to the first 24 hours would result in a version of the model that underestimates runoff during normal antecedent moisture conditions. Modeling efforts then focused on calibrating closely to total volumes generated for Fay after hour 24.*
>
> *To compensate for the extreme AMC and minimal runoff volumes measured before hour 24 of Fay the following changes were made 1) Calculated TC's were exaggerated 4 times in developed areas and 8 times in undeveloped areas, 2) the peaking factor of 484 was reduced to 323 for developed areas and 256 for undeveloped areas, 3) DCI associated with Dove Pond was estimated at elevation 80. Parameters developed during this supplemental calibration stage are not representative of the normal conditions when a storm is likely to occur and are therefore not used for the design.*

This robust SMFP calibration effort focused on matching total runoff volumes for Tropical Storm Fay but could be overly conservative with regards to stages from lesser storm event durations. The graph in **Figure 17,** above, indicates modeled stages in Dove Pond are approximately 1.5-2.5 ft higher than measured results, which would cause the model to over-predict flooded conditions at the Greenway. Thus, increased pre-development model stages, beyond those normally observed at the Greenway, could be a result of the volume-focused calibration efforts.

3.2.2 Post Development Conditions

The post development model, which included the proposed Dove Pond Dam, added the Greenway Wetland as Node 71 (N71), with storage as illustrated in **Figure 18**, with ICPR storage shown in **Figure 19** and **Figure 20**, below:

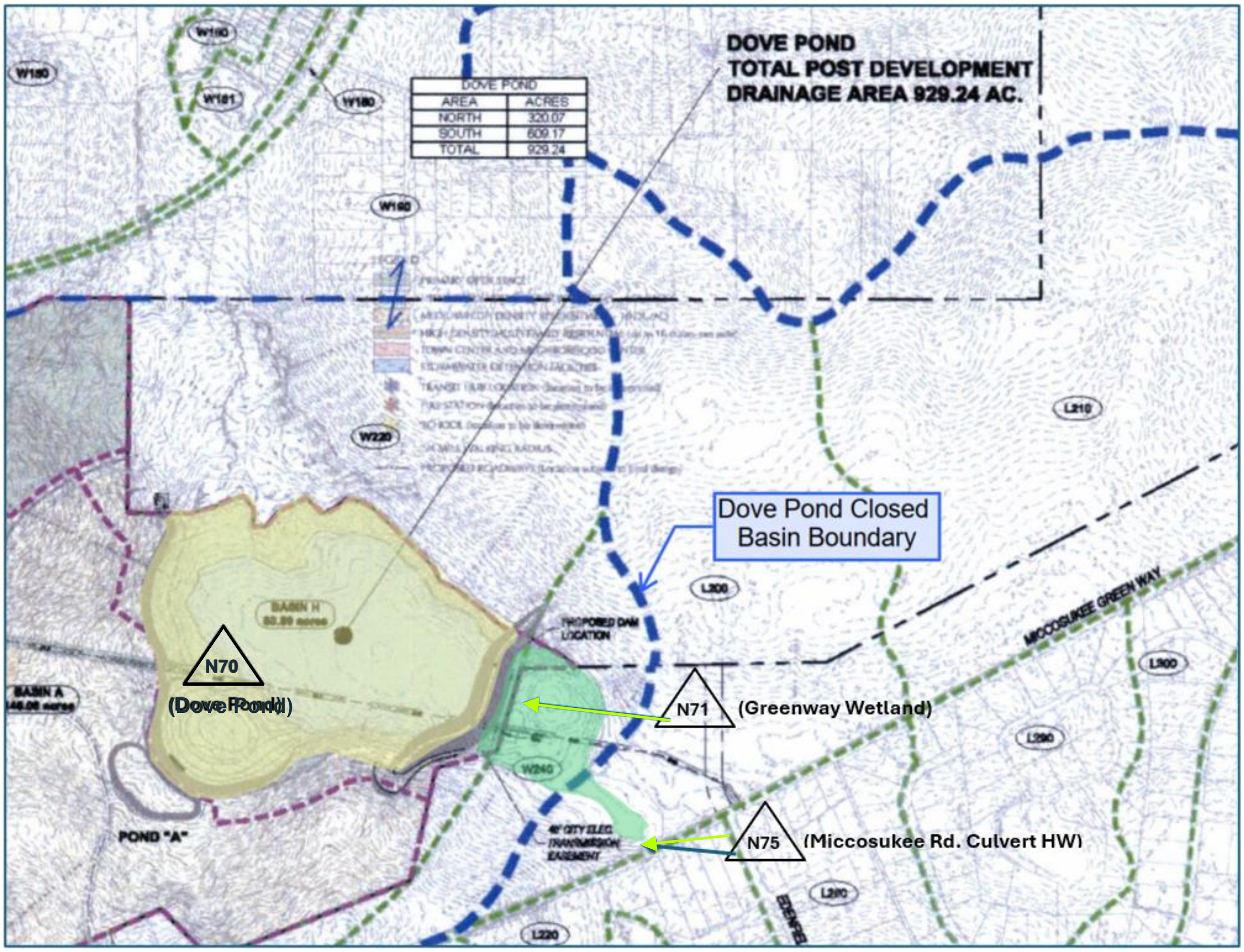


Figure 18: Post Development Basins and Nodes (SFMP, Volume 3)

Name: N70 Base Flow(cfs): 0.000 Init Stage(ft): 88.100
Group: BASE Warn Stage(ft): 104.000
Type: Stage/Area

Dove Pond Dam

Dove Pond

Stage(ft)	Area(ac)
76.000	0.0000
77.000	0.2500
78.000	7.7600
79.000	13.8700
80.000	19.3800
81.000	23.6300
82.000	26.8000
83.000	29.3000
84.000	31.8900
85.000	34.4900
86.000	37.2400
87.000	40.3500
88.000	54.1400
89.000	57.6100
90.000	60.7300
91.000	64.0600
92.000	66.7500
93.000	69.1300
94.000	71.2400
95.000	73.1600
96.000	75.9700
97.000	78.2800
98.000	81.1000
99.000	83.6000
100.000	85.9000
101.000	88.2900
102.000	90.6800
103.000	96.4400
104.000	100.6700

Figure 19: Post-development ICPR Storage for N70 (SFMP, Volume 2)

Name: N71 Base Flow(cfs): 0.000 Init Stage(ft): 80.000
Group: BASE Warn Stage(ft): 88.100
Type: Stage/Area

Small Depression within Greenway

Stage(ft)	Area(ac)
80.000	0.1200
81.000	0.6300
82.000	1.2200
83.000	1.9900
84.000	3.3800
85.000	5.9000
86.000	7.1500
87.000	8.6300
88.000	12.2300
89.000	15.4400
90.000	18.7300
91.000	21.7900
92.000	25.5300

Figure 20: Post-development ICPR Storage for N71 (SFMP, Volume 2)

Post development modeling results for Dove Pond (N70) and the Greenway Wetland (N71) in **Figure 21**, below, show that the Greenway Wetland stages predict flooding of the Greenway Wetland area trails on most design events, regardless of duration, with flooding of the area between the wetland and the parking lot on many events for lesser storm event durations (≤24hr):

Dove Pond Basins
Proposed Conditions
Node Max Report

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
N70	BASE	002yr-001hr	8.00	89.47	104.00	0.0002	2574988	0.63	1177.69	8.00	1.27
N70	BASE	002yr-002hr	8.00	89.58	104.00	0.0002	2591368	0.83	991.44	8.00	1.28
N70	BASE	002yr-004hr	10.00	89.42	104.00	0.0003	2569593	2.03	361.80	10.00	1.26
N70	BASE	002yr-008hr	14.00	89.67	104.00	0.0002	2604075	4.03	452.79	14.00	1.28
N70	BASE	002yr-024hr	30.01	89.38	104.00	0.0004	2564187	12.00	54.63	30.01	1.26
N70	BASE	005yr-001hr	8.00	89.92	104.00	0.0003	2638077	0.63	1615.28	8.00	1.31
N70	BASE	005yr-002hr	8.00	90.11	104.00	0.0003	2664504	0.83	1352.63	8.00	1.33
N70	BASE	005yr-004hr	10.00	90.21	104.00	0.0005	2679315	2.53	737.61	10.00	1.34
N70	BASE	005yr-008hr	14.00	90.61	104.00	0.0005	2736871	4.02	1052.28	14.00	1.37
N70	BASE	005yr-024hr	30.00	89.72	104.00	0.0004	2610598	12.00	77.68	30.00	1.29
N70	BASE	010yr-001hr	8.00	90.31	104.00	0.0004	2693310	0.73	2202.15	8.00	1.35
N70	BASE	010yr-002hr	8.00	90.59	104.00	0.0004	2734550	0.88	1885.45	8.00	1.37
N70	BASE	010yr-004hr	10.00	90.77	104.00	0.0006	2761413	2.50	957.61	10.00	1.39
N70	BASE	010yr-008hr	14.00	91.15	104.00	0.0006	2811649	4.00	1289.92	14.00	1.42
N70	BASE	010yr-024hr	30.00	90.02	104.00	0.0005	2651765	12.00	94.22	30.00	1.32
N70	BASE	025yr-001hr	8.00	90.80	104.00	0.0006	2765081	0.70	2982.97	8.00	1.39
N70	BASE	025yr-002hr	8.00	91.17	104.00	0.0006	2814877	0.87	2567.84	8.00	1.43
N70	BASE	025yr-004hr	10.00	91.64	104.00	0.0008	2869665	2.07	1418.57	10.00	1.46
N70	BASE	025yr-008hr	14.00	92.07	104.00	0.0008	2918105	4.00	1670.45	14.00	1.50
N70	BASE	025yr-024hr	30.00	90.35	104.00	0.0006	2698734	12.00	133.23	30.00	1.35
N70	BASE	100yr-001hr	8.00	91.47	104.00	0.0008	2849406	0.67	3992.27	8.00	1.45
N70	BASE	100yr-002hr	8.00	92.24	104.00	0.0009	2937534	0.84	3555.90	8.00	1.51
N70	BASE	100yr-004hr	10.00	92.85	104.00	0.0012	3000744	2.03	1953.15	10.00	1.55
N70	BASE	100yr-008hr	14.00	93.26	104.00	0.0010	3039151	4.00	2154.40	14.00	1.58
N70	BASE	100yr-024hr	30.00	91.28	104.00	0.0009	2826427	12.00	350.10	30.00	1.44
N70	BASE	100yr-072hr	78.00	91.63	104.00	0.0011	2867456	60.00	163.85	78.00	1.46
N70	BASE	100yr-168hr	174.00	92.07	104.00	0.0007	2917661	160.00	89.18	174.00	1.50
N70	BASE	100yr-240hr	245.99	92.68	104.00	0.0011	2981315	183.99	124.76	245.99	1.54
N70	BASE	1964	8174.41	99.85	104.00	0.0012	3727547	4777.50	2148.49	8174.41	2.04
N70	BASE	1994	6835.25	96.82	104.00	0.0010	3392838	1440.75	1091.74	6835.25	1.82
N71	BASE	002yr-001hr	1.34	83.97	88.10	0.0013	150324	0.77	52.98	1.34	0.06
N71	BASE	002yr-002hr	2.13	84.48	88.10	0.0013	205451	0.97	40.02	2.15	0.51
N71	BASE	002yr-004hr	4.00	83.24	88.10	0.0011	102976	2.20	4.29	4.00	0.04
N71	BASE	002yr-008hr	8.00	83.79	88.10	0.0015	136140	4.13	9.57	8.00	0.05
N71	BASE	002yr-024hr	24.01	81.26	88.10	0.0003	35478	12.00	0.77	24.01	0.01
N71	BASE	005yr-001hr	1.33	84.71	88.10	0.0015	230327	0.77	81.53	1.36	0.72
N71	BASE	005yr-002hr	2.16	85.34	88.10	0.0014	280673	0.97	61.78	8.00	0.74
N71	BASE	005yr-004hr	4.01	84.99	88.10	0.0015	260605	2.17	21.18	4.05	0.98
N71	BASE	005yr-008hr	5.59	85.37	88.10	0.0014	282405	4.07	30.96	14.00	0.72
N71	BASE	005yr-024hr	24.01	81.51	88.10	0.0003	41954	12.00	1.04	24.01	0.02
N71	BASE	010yr-001hr	1.33	85.19	88.10	0.0018	272269	0.77	104.45	8.00	0.90
N71	BASE	010yr-002hr	2.21	86.01	88.10	0.0016	316922	0.97	80.70	8.00	0.12
N71	BASE	010yr-004hr	4.08	85.83	88.10	0.0016	307328	2.17	33.04	10.00	0.28
N71	BASE	010yr-008hr	8.00	86.03	88.10	0.0016	315111	4.07	42.39	8.00	0.12
N71	BASE	010yr-024hr	24.00	81.66	88.10	0.0003	45661	12.00	1.22	24.00	0.02
N71	BASE	025yr-001hr	1.35	85.72	88.10	0.0020	301117	0.77	133.33	8.00	0.39
N71	BASE	025yr-002hr	2.23	86.77	88.10	0.0019	366055	0.97	103.23	2.24	0.15
N71	BASE	025yr-004hr	4.13	87.00	88.10	0.0014	381743	2.17	50.56	4.14	0.16
N71	BASE	025yr-008hr	8.00	87.15	88.10	0.0022	401466	4.03	61.94	8.00	0.18
N71	BASE	025yr-024hr	24.00	81.78	88.10	0.0003	48790	12.00	1.38	24.00	0.02
N71	BASE	100yr-001hr	1.37	86.28	88.10	0.0021	334610	0.77	173.76	1.38	0.13
N71	BASE	100yr-002hr	2.27	87.86	88.10	0.0024	515289	0.97	144.17	2.28	0.25
N71	BASE	100yr-004hr	4.06	88.26	88.10	0.0014	575571	2.17	75.02	5.06	4.32
N71	BASE	100yr-008hr	6.22	88.24	88.10	0.0022	572639	4.03	86.05	8.47	4.11
N71	BASE	100yr-024hr	24.00	83.18	88.10	0.0013	99093	12.00	1.78	24.00	0.04
N71	BASE	100yr-072hr	72.01	82.26	88.10	0.0004	63219	57.40	1.09	72.01	0.02
N71	BASE	100yr-168hr	168.00	82.41	88.10	0.0003	68141	153.40	0.77	168.00	0.03
N71	BASE	100yr-240hr	239.99	82.42	88.10	0.0004	68543	177.50	0.96	239.99	0.03
N71	BASE	1964	4784.30	88.47	88.10	0.0017	605299	4777.50	79.67	4785.45	5.79
N71	BASE	1994	1442.58	86.06	88.10	0.0016	316874	2943.25	37.69	6636.87	0.99

Figure 21: Post development Modeling Results for Dove Pond (N70) and the Greenway Wetland (N71) (SFMP, Volume 2)

Again, the authors of this report have been frequent users of the Miccosukee Greenway trails for approximately the last 20 years, including after 2018 when the dam sequestered Dove Pond discharges, and have noted only limited flooding of the Greenway Wetland after the construction of the dam and prior to 2024.

Conclusion

Post development stages in the Greenway Wetland (N71) appear elevated beyond historical observations, storm of less than 24 hours durations.

Similar to the predevelopment condition, possible explanations for elevated post development model stages are examined below:

3.2.2.1 Dove Pond & Greenway Wetland Connection

In the post development condition, the Dove Pond Dam severs Dove Pond from the Greenway Wetland and they are modeled independently, with Dove Pond as N70, the Greenway Wetland as N71, and Basin W240 contributing directly to the Greenway Wetland (N71), instead of Dove Pond (N70). W240, and the *approximate* stage-storage area for N70 and N71, are shown as **Figure 18**. The assumed basin loadings and change in storage could have contributed to the difference between observed flooding and modeled results.

3.2.2.2 Basin L200

As in the predevelopment condition, the storage area associated with the Greenway Wetland (N71) transgresses the Dove Pond Closed Basin Boundary into Basin L200, but the modeling network indicates all of Basin L200 loads directly to N75, the node just upstream of the 24" culvert under Miccosukee Road, as shown in **Figure 18**, above. N75 is assigned only minimal storage to provide numerical stability to the headwater of the culvert, as shown in **Figure 22**, below:

```
------------------------------------------------------------------------------------
     Name: N75                 Base Flow(cfs): 0.000           Init Stage(ft): 87.230
    Group: BASE                                                Warn Stage(ft): 90.350
     Type: Stage/Area

Upstream of Miccosukee Road

      Stage(ft)          Area(ac)
 --------------- ---------------
          87.230          0.1000
          90.350          0.5000

------------------------------------------------------------------------------------
```

Figure 22: SFMP Post Development ICPR Model Storage in Node 75 (N75) (SFMP, Volume 2)

The boundary between basin W240 and L200 appears inaccurate as it approaches Miccosukee Road. This delineation is likely misrepresenting the storage available in L200, as it is accounted for within N70. This also misrepresents the volume of runoff reaching the Greenway Wetland, as a portion of L200 should be included with W240.

3.2.2.3 Calibration of the SFMP Model

The impacts to stage from the model calibration are likely still present but the levels of flooding from the multiple storms appear lower for the Greenway Wetland (N71) in the post development condition, as shown in **Figure 21**, further above. This could be due to the smaller drainage area (W240) and/or the reduced storage of N71.

3.2.3 Changes in Rainfall

This section examines rainfall patterns at the Greenway preceding the April 2024 flooding. While no causal factors were uncovered, records show a trend of below average rainfall in the years after dam construction, followed by average annual rainfall in 2023-2024. This could be why chronic flooding was not noted immediately after construction, but later, after April 2024, when average rainfall returned.

Annual, monthly, and daily historic rainfall totals at the Greenway are provided below for reference.

Figure 47 shows Dove Pond Dam functionally constructed by January 2018, but flooding was not reported until April of 2024. This could be attributable to below average annual rainfall in Leon County in the years after dam construction in January 2018 as shown in **Figure 23**, below:

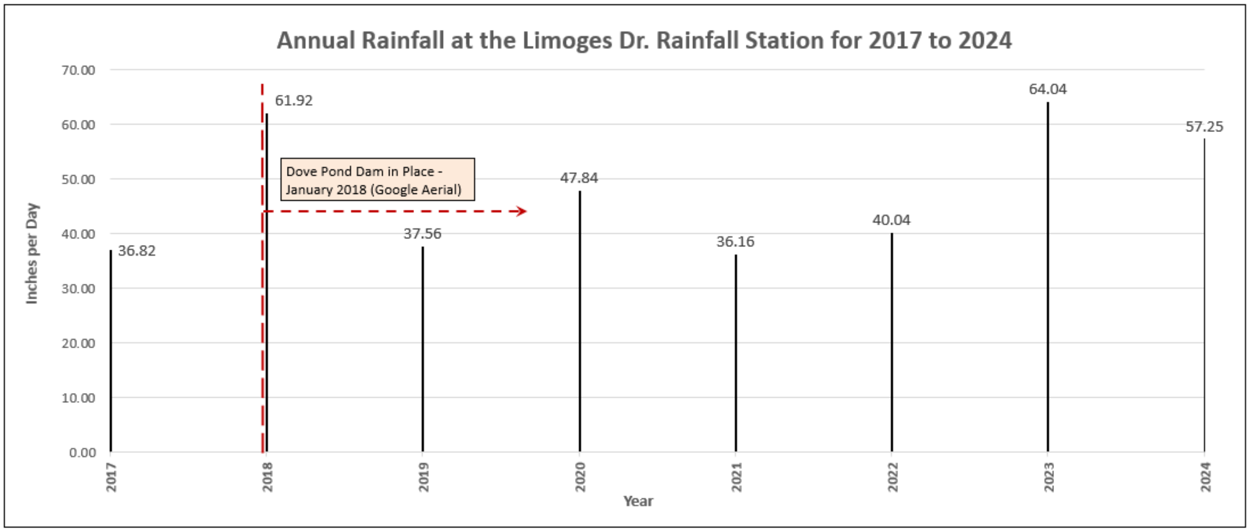


Figure 23: Annual Rainfall at Limoges Dr. from 2017 – 2024 ([Data - NWFWMD Hydrologic Data WebPortal]**)**

Figure 24, below, is a graph of daily rainfall totals for Limoges Dr. from 1-1-2018 to 9-11-2025, showing a lack of heavy rainfall events in the period after construction to present day; **Figure 25**, further below, shows the same data summarized monthly.

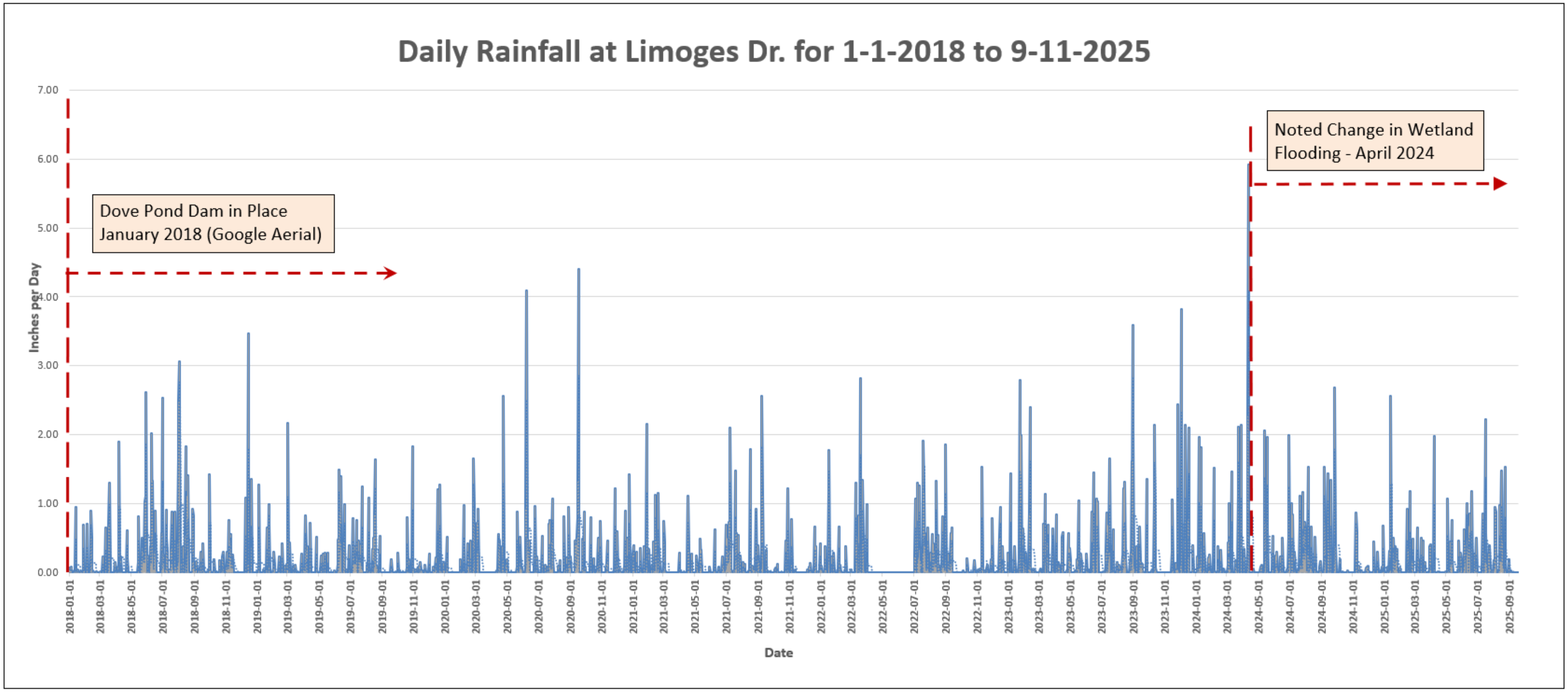


Figure 24: Daily Rainfall at Limoges from 1-1-2018 to 9-11-2025 ([Data - NWFWMD Hydrologic Data WebPortal]())

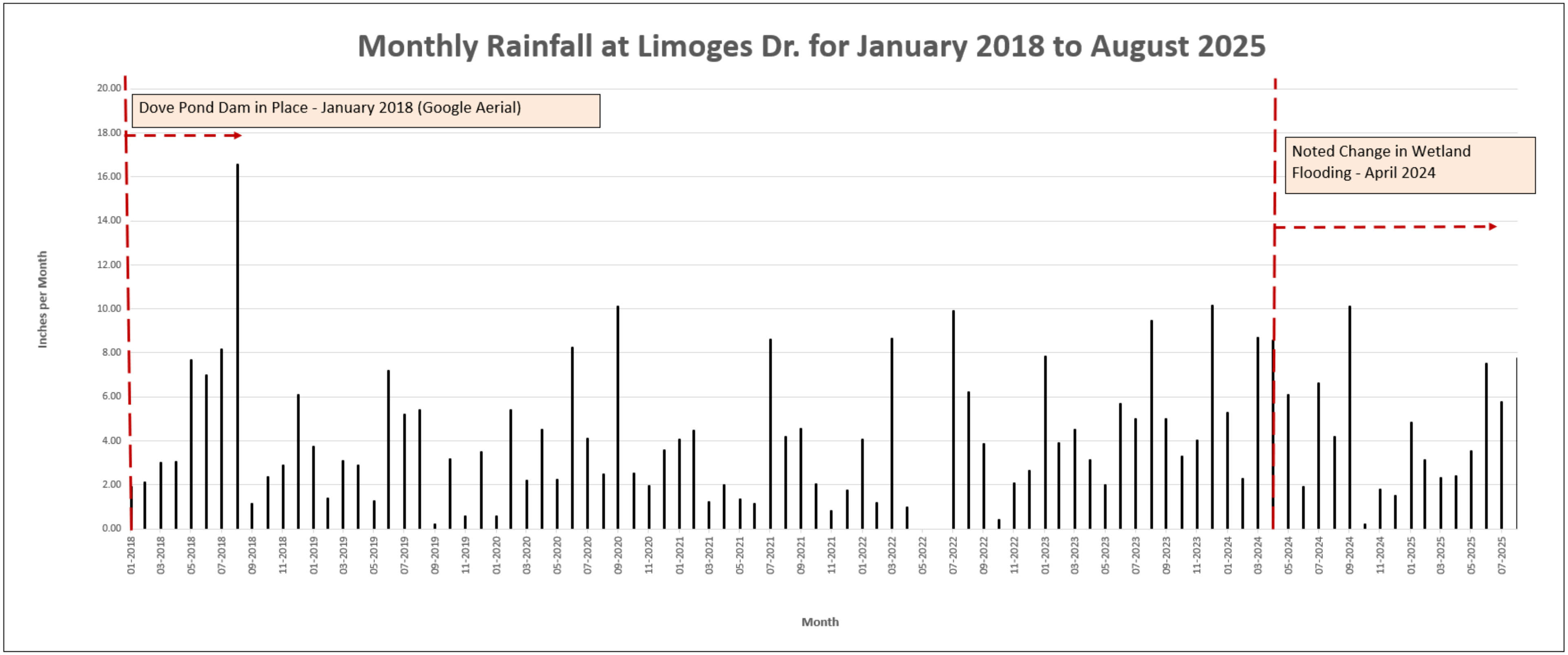


Figure 25: Monthly Rainfall at Limoges Dr. from January 2018 to August 2025 (Data - NWFWMD Hydrologic Data WebPortal)

3.3 Potential Seepage through the Dove Pond Dam

Figure 26, below, shows what appears to be turbid water immediately downstream of the dam:

Figure 26: Close up of Figure 50: Google Earth Aerial – January 2024, with Picture Properties Adjusted

The above observation of turbid water adjacent to the Dove Pond Dam could be evidence of active seepage at the dam.

While the field infiltration data submitted by Moore Bass as part of the City of Tallahassee Permit Modification was “insufficient justification” to meet permitting thresholds, initial field data suggests that infiltration field measurements do differ from design values and merit further investigation. Higher infiltration rates within Dove Pond could be attributable to seepage through one (or more) of the valve structures or the dam itself.

4. Recommendations

Recommendations are discussed below in order of priority and are divided into the four (4) categories:

1. Development of targeted model for the Greenway Wetland.
2. Investigation into Dove Pond Dam Operation & Functionality

3. Improvement of Groundwater Infiltration at the Greenway Wetland
4. Improvements to Restore Greenway Usage

4.1 Development of Targeted Model for the Greenway Wetland

How the Greenway Wetland stages are impacted by the combination of the model calibration, the severed connection to Dove Pond, and the under-representation of Basin L200 is unclear. Prior to the County investing in flood remediation measures at the Greenway, AtkinsRéalis recommends using the available SFMP stormwater model to perform a targeted modeling effort focusing specifically on the Greenway Wetland (N71). This effort should also include changed conditions to elevate the Greenway trail southwest of the Edenfield parking area and upstream of the 24” culvert under Miccosukee Road (**Photograph 1**, below) and any changes to Basin L200 resulting from the Welaunee Road Extension.

Photograph 1: Greenway Trail South of the Edenfield Parking Area

4.2 Investigation into Dove Pond Dam Functionality and Seepage

AtkinsRéalis recommends a two-tiered approach to investigating the possibility of unwanted flow coming through the dam structure into the Greenway Wetland:

Step 1

Confirm the functionality and status of the structures through the dam, as previously shown in **Figure 5**:

a. 24" gate valve located in the 24" RCP
b. 6" float valve is operating at appropriate elevations
c. 6" gate valve in the 6" DIP

If inspection of the gate and float valves determines that a valve is stuck open or leaking, repairs should be pursued, and the performance of the area should be monitored to determine if further action is necessary.

Step 2

If the gate and float valves appear to be constructed and functioning properly, engage a Geotechnical Engineer to investigate if additional seepage is occurring through the dam. Testing approaches and expected cost are discussed in **Section 5.2**.

4.3 Improvement of Groundwater Infiltration at the Greenway Wetland

The design percolation within the Greenway Wetland was rated as minimal, but based on the turbidity shown in aerial photographs and observed during the site visit, the pores in the soil have likely become clogged with silt, essentially eliminating percolation within the depression. Two (2) recommendations are listed below for consideration:

1. In the future, when the wetland area goes dry, visually confirm if sedimentation has occurred to prevent the wetland area from natural recovery to the groundwater. If significant, attempt to scrape or remove the siltation. Alternatively, scarifying the top 1-2 ft. to restore percolation, unless wetland impacts might be incurred. If wetland impacts are involved, plant wetland grasses whose root systems might help open the soil structure to restore percolation.
2. To mechanically supplement the restoration of natural percolation as described above, perform a series of borehole tests in the depression to determine if a layer of moderately transmissive soils might be present below the soils immediately at the ground surface to within about 20 feet of the surface. The NRCS soils data around the wetland area reports Albany loamy sand with a depth to water table of 12 to 30 inches and a transmissivity of 0.57 to 1.98 inches. If a reasonably transmissive soil layer is identified by geotechnical investigation, a series of sand chimneys or dry well drains, elevated to allow inflow at the desired elevation of the Greenway Wetland, could provide some improvement in drawing down the excess ponding.
3. A generic schematic of a dry well is shown in **Figure 27**, below and could be modified for the project location:

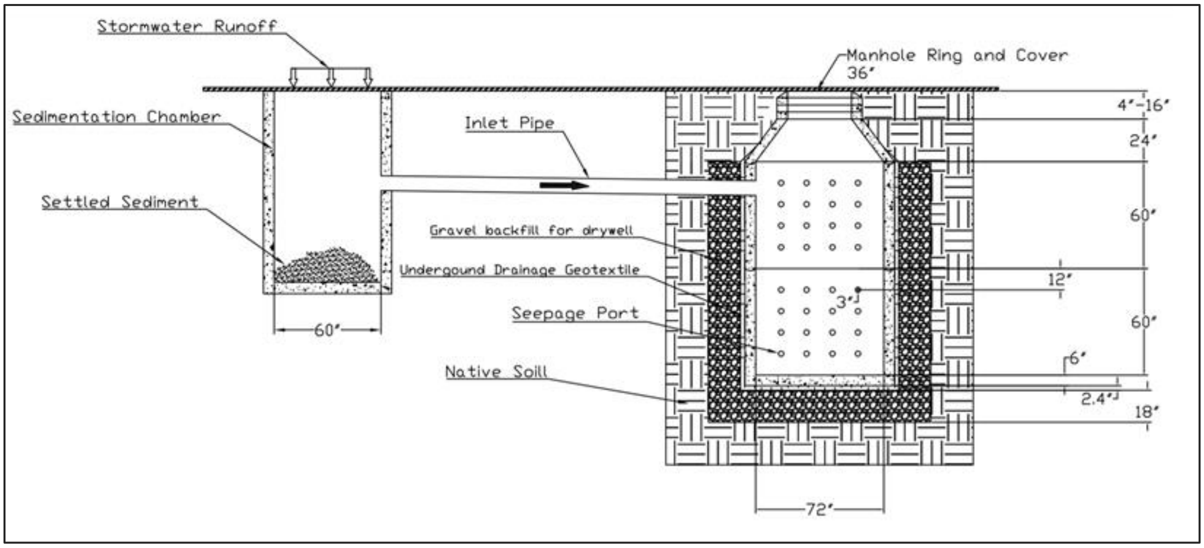


Figure 27: Dry Well Schematic

4.4 Improvements to Restore Greenway Usage

If flooding continues within the Greenway Wetland, boardwalks may be installed to elevate users above the flooding. Walkers, runners, and bikers could use the boardwalk, with equestrian usage excluded, to reduce cost and maintenance. Until the long-term ponding is remedied, the users of the boardwalk may be subject to odor and mosquito issues of the stagnant water. Moreover, until the integrity of the dam is confirmed, as discussed in **Section 4.1**, usage of the area immediately downstream of the dam should not be encouraged by adding trail amenities such as a boardwalk.

5. Costs for Recommendations

This section presents cost estimates for the recommendations discussed in **Section 4**.

5.1 Development of Targeted Model for the Greenway Wetland

Approximate cost for engineering fees to develop a targeted model for the Greenway Wetland ranges from $50,000 to $70,000, depending on the level of detailed analysis desired.

5.2 Investigation into Dove Pond Dam Functionality and Seepage

Inspection of the gate valves and floats on the pipe through the dam should be a simple, no-cost request by Leon County to the maintaining agency for the dam.

Environmental Geotechnical Specialists (EGS), a local geotechnical firm, recommended a budget of $75,000 -$100,000 for an in-depth geotechnical investigation and evaluation to be performed at the Dove Pond Dam. This includes the following types of testing:

- Geophysical testing (Electrical Resistivity Imaging) of the existing dam, as well as downstream
- Geotechnical investigation, including soil borings installed through the dam, as well as downstream
- Piezometers to monitor the groundwater fluctuation within the dam, as well as the fluctuations downstream
- Perform a seepage analysis of the dam, as well as a review of the geophysical data to determine if existing seeps are present

5.3 Improvement of Groundwater Infiltration at the Greenway Wetland

5.3.1 Recommendation 1: Scarification of Ground Surface within the Depression

The approximate area of scarification is shown in **Figure 28**, below:

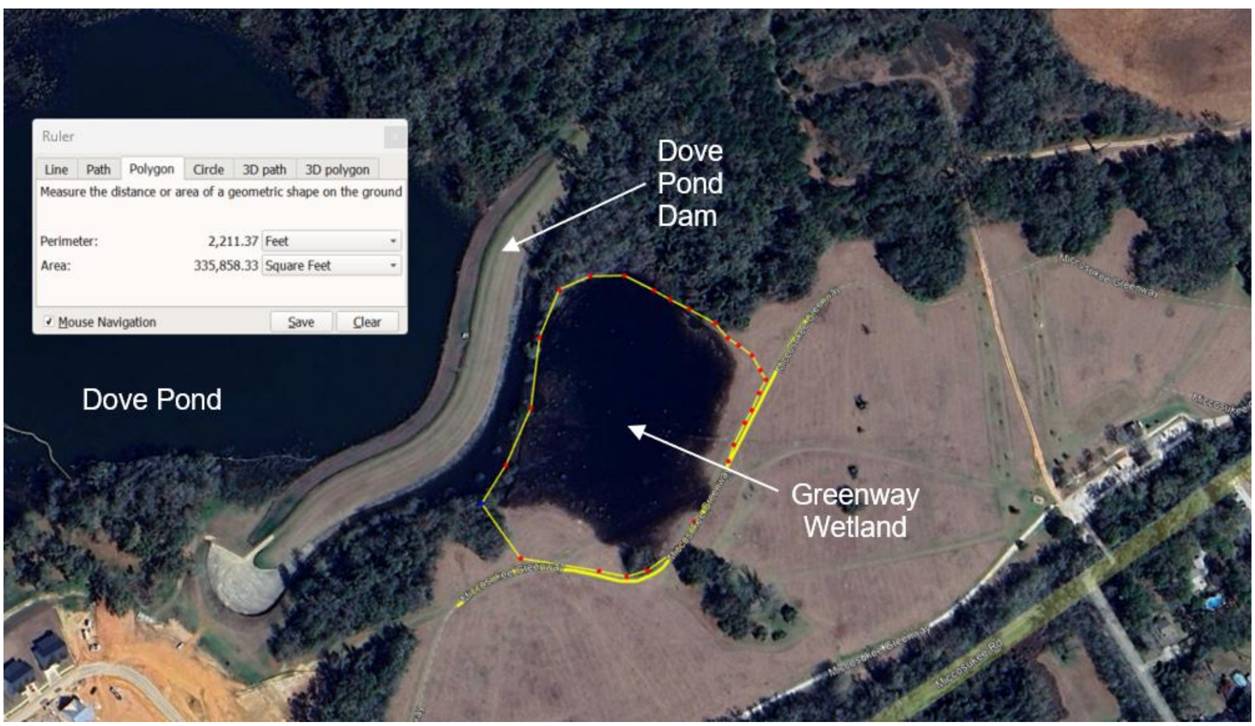


Figure 28: Approximate Area of Scarification of the Greenway Wetland Downstream of Dove Pond

The approximate area is 37,500 SY. This recommendation is contingent on the verification of siltation and highly variable water levels; therefore, it is recommended that Leon County maintenance perform these recommendations, should the County decide to pursue this scarification.

5.3.2 Recommendation No. 2: Increase Infiltration

A dry well drain is typically comprised of a perforated casing structure, filled with gravel and/or sand that collects stormwater and infiltrates it into the surrounding groundwater through a more transmissive soil layer underground. A series of dry wells could be installed with an inflow at elevation 83.0 ft-NAVD, which allows 3 feet of storage above the bottom of the Greenway Wetland at elevation 80.0 ft-NAVD.

The cost for a dry well is dependent on final design; however, FDOT's 2025 Bid Price Dashboard approximates the component cost of a general design as follows:

- Concrete Type C Inlet >10ft = **$11,000**
- Concrete Type P Manhole >10ft = **$12,000**
- Bedding Stone = $169/TN x ~50 tons = **$8,500**
- 15-inch pipe = $281/LF x ~100ft = **$28,000**

Estimated TOTAL = <u>$59,500</u>

5.4 Improvements to Restore Greenway Usage

From **Figure 29**, below, the approximate length of boardwalk needed to avoid wet terrain is estimated at 1,300 ft.:

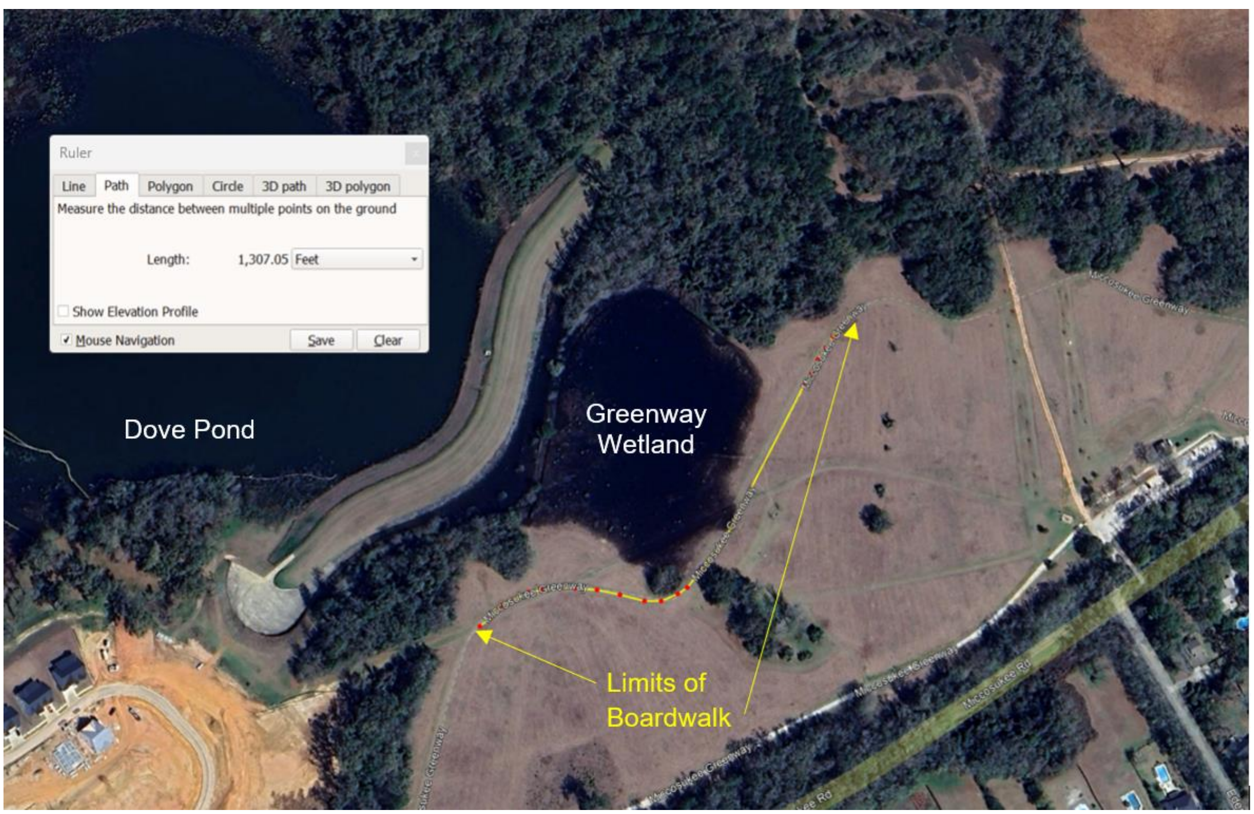


Figure 29: Path of Boardwalk Downstream of Dove Pond Dam

Costs for boardwalks vary depending on the material, foundation type, height of piers and features such as handrails. Assuming a 10-ft wide boardwalk with handrailings at a cost of $700 – $1,500 per linear foot, the boardwalk cost is estimated to range from approximately $1-2 million.

6. References

1. Emergency Action Plan, 8/26/2021, Dove Pond Community Development District
2. Canopy Stormwater Facility Master Plan, Moore Bass Consulting, Inc., 2009 – 2010
3. Construction Plans for the Dove Pond Regional Stormwater Facility Dam at Canopy PUD, Moore Bass Consulting, Inc., Approved 6-23-2017
4. Stormwater Facilities Master Plan Update, Greenman-Pedersen, Inc., August 2018
5. Tri-Basin Stormwater Management Study, Baskerville Donavon, Inc.,

Appendix A. Task 1 – Data Collection Memo from AtkinsRéalis to Ms. Anna Padilla, August 13, 2025

MEMO

TO: Ms. Anna Padilla, PE

Leon County Public Works
2280 Miccosukee Road
Tallahassee, FL 32308

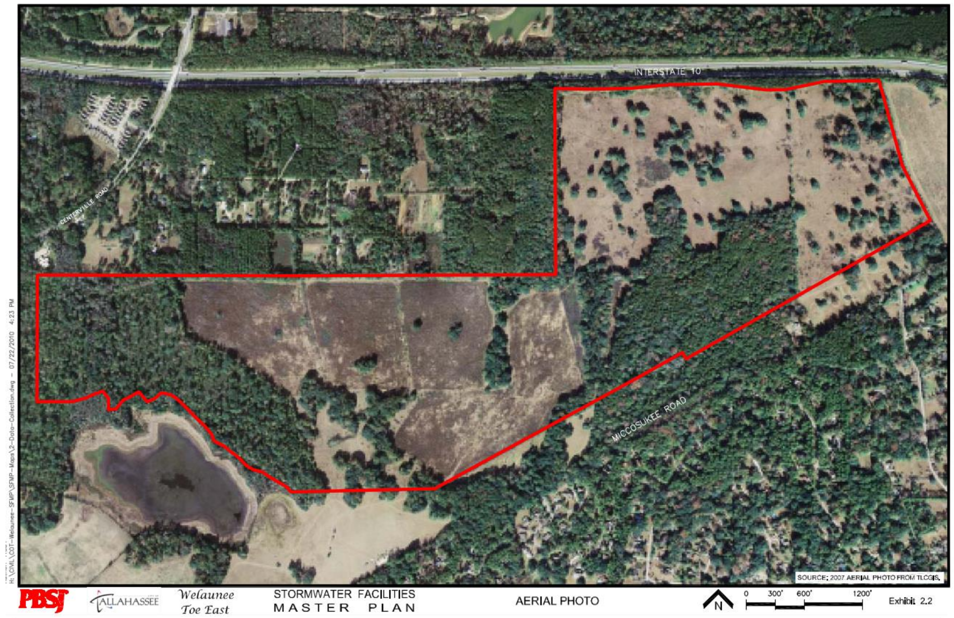
FROM	EMAIL	REF
Katey Earp, PE, Rick Renna, PE and Daniel Parsons, PE	Katey.Earp@atkinsrealis.com; Rick.Renna@atkinsrealis.com; Daniel.Parsons2@atkinsrealis.com	
DATE	**PHONE**	**CC**
13 August 2025	850 591-7133	

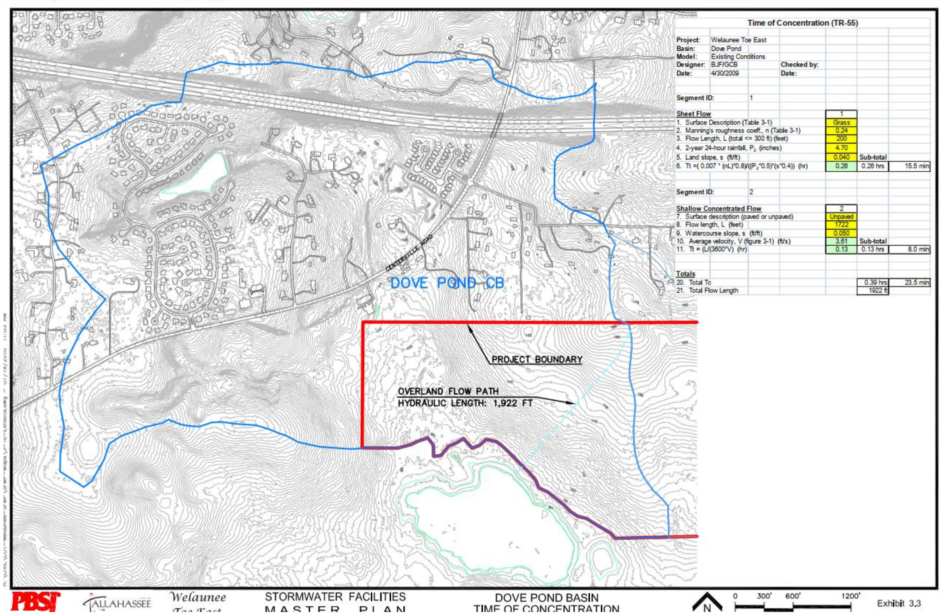
SUBJECT

Miccosukee Greenway Flooding Evaluation

The purpose of this Technical Memorandum is to document the data findings collected as part of Task 1 and subsequent discussions held during a virtual Teams meeting on August 8, 2025, with Anna Padilla, Rick Renna, Daniel Parsons and Katey Earp.
Responses from Ms. Padilla are shown in purple throughout the document.

1. **Review of the 2011 PBS&J Modeling Effort**
   a. The extent of the previous PBS&J (now AtkinsRéalis) study encompassed the Welaunee Toe East portion of the Welaunee Critical Area Plan (CAP). As a part of the CAP, a Stormwater Facilities Master Plan (SFMP) had to be approved prior to approval of a Planned Unit Development Concept Plan. The intent of the PBS&J study was to provide an outline for the future design of backbone stormwater facilities on the property.





2. In summary, AtkinsRéalis does not have recent stormwater models for this area. What are the County's intentions for modeling, given it is not specifically listed in the scope. *Ms. Padilla asked if the flooding we're seeing at the Greenway is correct, per existing models, or is it something else? Is Dove Pond functioning as intended?*

3. **Investigatory efforts into the Canopy Development:**
   a. Extensive permitting with the City has been ongoing since ~2000, with stormwater infrastructure designed for no discharge from Dove Pond for the 100 year event as well as the continuous simulations for 1964 and 1994, annual rainfall totals of 104" and 89", as opposed to average annual rainfall of approximately 63".
   b. The City is actively maintaining the Capacity Accounting Record for the Canopy.
   c. If the Canopy development exceeded the percent impervious, Directly Connected Impervious Area, or acreage of development, Dove Pond would be seeing higher stages and overflowing

more frequently. Precipitation along with coincident staff gage records compared to model stages could confirm this for us; however surface water flow from the spillway does not appear to be the cause of the downstream flooding.
The County has staff gage records for the downstream staff gages in the wetland area.

d. It would take an extensive effort to review and double check all the iterations of approved permit calcs and models. Is this what the County is looking for?
The County is not looking for a deep dive into all calculations, but a check of model output versus the stages we are seeing at the Greenway. Do the models account for groundwater flow?

4. Historical Google Aerials

a. 2025 Google Map Aerial

b. 2-7-95: Flooding to Miccosukee Road (Google Earth)

5. **AtkinsRéalis Field Visit Notes 7-31-2025**
    a. Dam appears to be in good condition. Healthy vegetation, no areas of noticeable erosion, retaining wall in good shape, well maintained.
    b. No evidence of rafted debris at the spillway slope, but some debris at the bottom of the concrete spillway leading down to wetland area.
    c. Stagnant water at the bottom of the concrete spillway, bad odor. Water at this location appeared more turbid/murky than Dove Pond.

6. **Questions for Leon County**
    a. When did flooding worsen and were there any changes that occurred in that time period? *Leon County began noticing the flooding after the series of April 2024 storms.* Are there observations, even anecdotal, of the duration and recovery of the flooding downstream of the dam?
    b. How does the flooding present after a rain event? Do the downstream wetlands stage up quickly? Do they stage up slowly over a period of time after an event? *Unsure, but will talk to parks department. Staff gages might provide more information.*
    c. The Emergency Action Plan states that dam inspections are required after heavy rain events. Did any of the maintenance inspection records for the dam show anything unusual? *Canopy Development District inspects the dam and provides reports to the City. (Katey to check with Moore Bass.)*
    d. Are there historic records of Dove Pond stages? *Staff gage records from within Dove Pond are with the Canopy Development District. Ms. Padilla will provide the records for the wetland area.*
    e. Any recorded discharge from the spillway? *Anna is not aware of any flow through the spillway.*

f. Moore Bass stated that there is an ongoing effort to revise the permitted geotechnical capabilities of Dove Pond to allow for great density in Canopy. Is Leon County privy to the records of the infiltration testing occurring at Dove Pond? *No, but could request from the City or Moore Bass.*

g. Have there been any changes to the structural improvements adopted in 1999 by Leon County as part of the Tri-Basin Study (TBS), to help alleviate flooding? *No changes to these structural improvements. During April event there were some temporary measures to alleviate localized flooding at Miccosukee/Edenfield Roads, but no permanent modification.*
    i. Construction of a regional stormwater facility at Pedrick Road and Mahan Drive.
    ii. Reopening of an outfall pipe from the Lafayette Oaks Pond and purchasing those properties most severely flooded.
    iii. Construction of a regional stormwater facility on Welaunee Property upstream of Lafayette Oaks to hold back stormwater flow from the north.

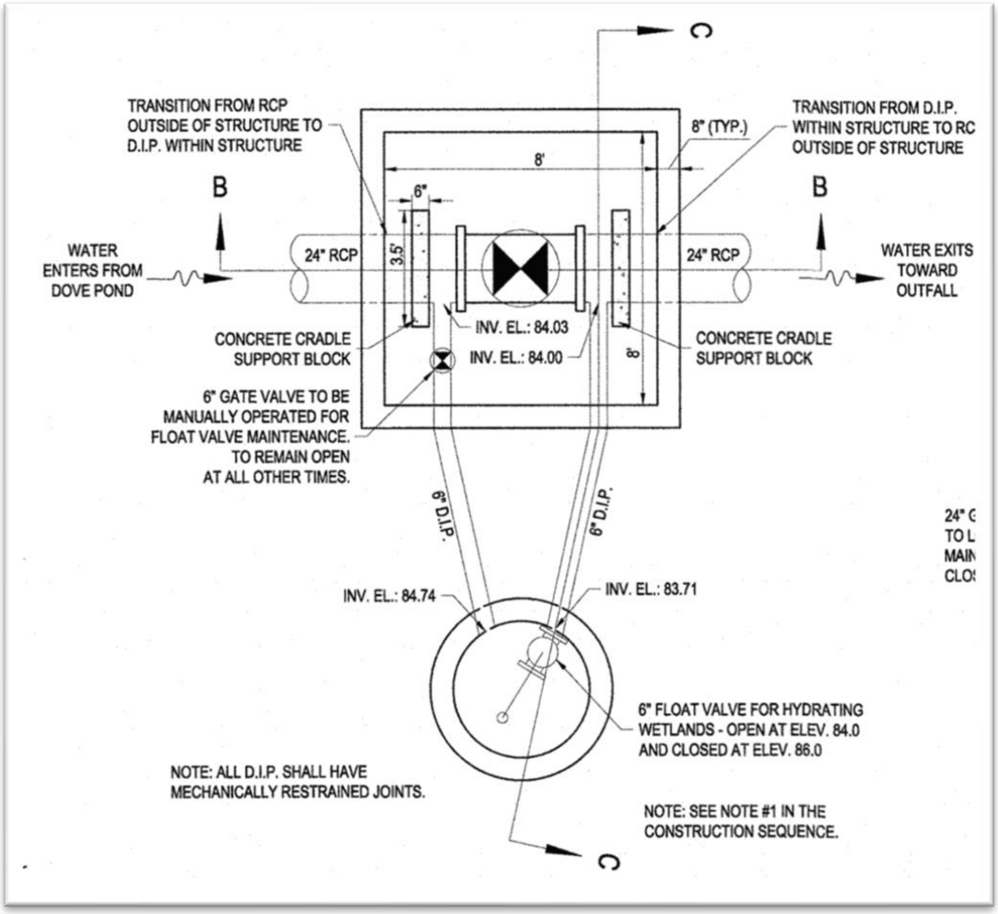
h. Have there been any other notable structural changes downstream of Dove Pond that might influence the flooding downstream of the dam? *No.*

i. There are two existing culverts under Centerville Road that allow stormwater to flow through two wet weather ditches to Dove Pond.
    i. Any known developments or changes to the basin upstream of Centerville? *No.*
    ii. Have the culverts been changed in any manner? *No.*

j. Are permeability measurements available downstream from the dam? *Not to Anna's knowledge, unless part of the Tri Basin Study or Canopy permit effort.*

7. Initial List of Ideas from Research

a. Investigation into Dove Pond Dam Operation & Functionality:
   Consider a 2-tier approach:
    i. First, confirm the functionality and status of the following structures through the dam:
        1. 24" gate valve located in the 24" RCP – intended to drain Dove Pond when needed for maintenance.
        2. 6" float valve is operating at appropriate elevations - built to keep the downstream wetlands hydrated.
        3. 6" gate valve in the 6" DIP – built to be able to maintain the float valve.



ii. If the gate and float valves appear to be constructed and functioning properly, engage a Geotechnical Engineer to investigate if additional seepage is occurring at the dam. Possible testing includes the following:
    1. Dye test
    2. Ground penetrating radar
    3. Piezometers for infiltration/groundwater
    4. Turbidity measurements

iii. References:
    1. Seepage Surveillance & Monitoring - ASDSO Dam Safety Toolbox
    2. FEMA P-1032: Evaluation and Monitoring of Seepage and Internal Erosion, Part 3

b. Chimney drains and/or French drains with an elevated inflow to allow water to stage up and remain wetland up to a certain elevation.

c. In the future, if/when the wetland area goes dry, confirm if any sedimentation has occurred to prevent the wetland area from natural recovery. If so, consider scarifying the top 1-2 ft. to restore percolation, unless wetland impacts might be assessed.

8. Report Framework

a. **Task 1**: Completed with this meeting.

b. **Task 2**: Critical design elevations, rainfalls, storage volumes and other quantitative surface water issues have been eclipsed by the spillway staying inactive over its life. The signs of seepage have taken the place of surface water issues.

c. **Task 3**: If design or field permeability measurements are available downstream of the dam, we will analyze the changes. Siltation downstream of the dam would also be evidence of decreased infiltration. The odor observed during the field visit is also evidence of stagnation rather than infiltration of the water downstream of the dam.

d. **Task 4**: The final report would include the following:
   i. Formalization of the information and discussion in this document.
   ii. Documentation of the field visit.
   iii. Recommendations for checking the performance of the gate valves and float valve in the pipe through the dam.
   iv. Recommendations for the geotechnical investigation of potential dam seepage.
   v. Concept plans for the following:
      - Chimney drains and French drains for the area downstream of the dam.
      - Scarifying the wetland downstream of the dam.
      - Boardwalks and raised walkways are NOT recommended until the possible seepage of the dam is investigated. Could provide a range of costs for pedestrian bridges over flooded areas. *Anna will check with Public Works Director about including pedestrian options in the report. Could include a cost for geotechnical investigation.*

Appendix B. Dove Pond Dam Construction Plans

Construction Plans for the Dove Pond Dam (Moore Bass Consulting, 2010)

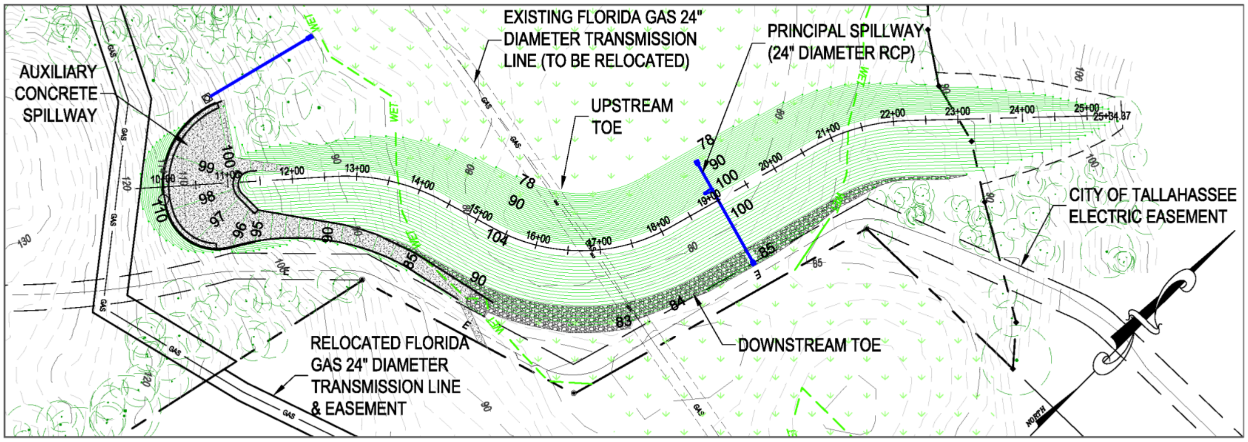


Figure 30: Plan View of the Dove Pond Dam Spillway (Dove Pond Dam Emergency Action Plan 2021)

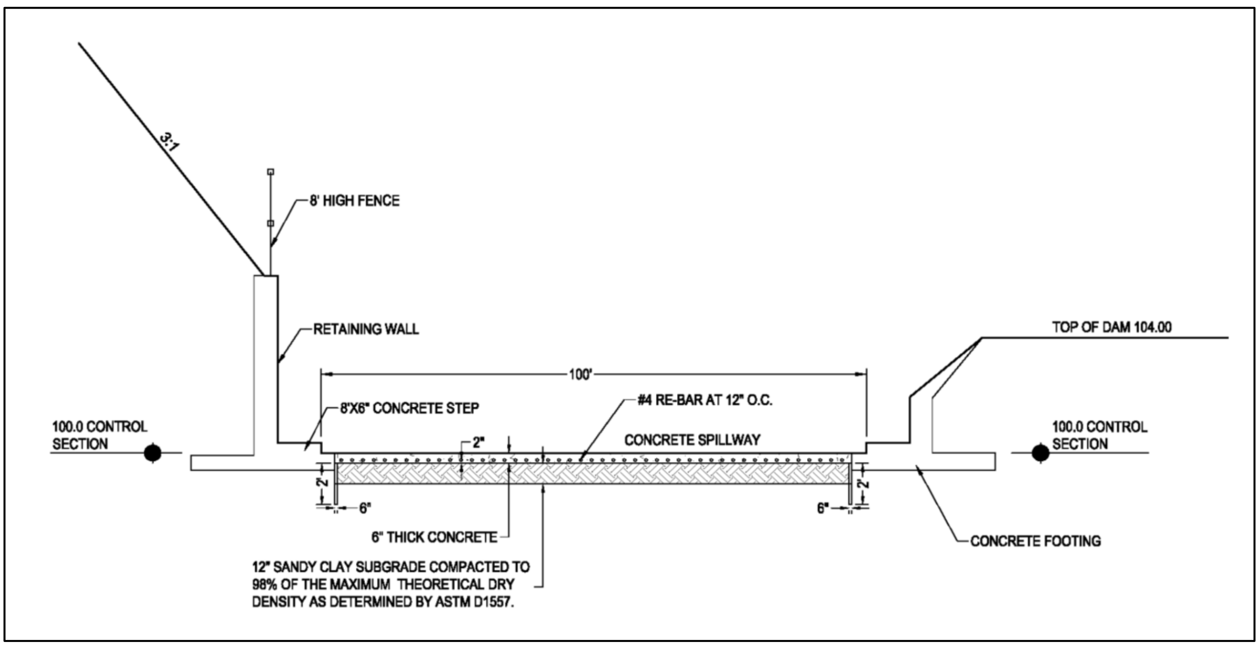


Figure 31: Cross Section of the Dove Pond Dam Spillway (Dove Pond Dam Emergency Action Plan 2021)

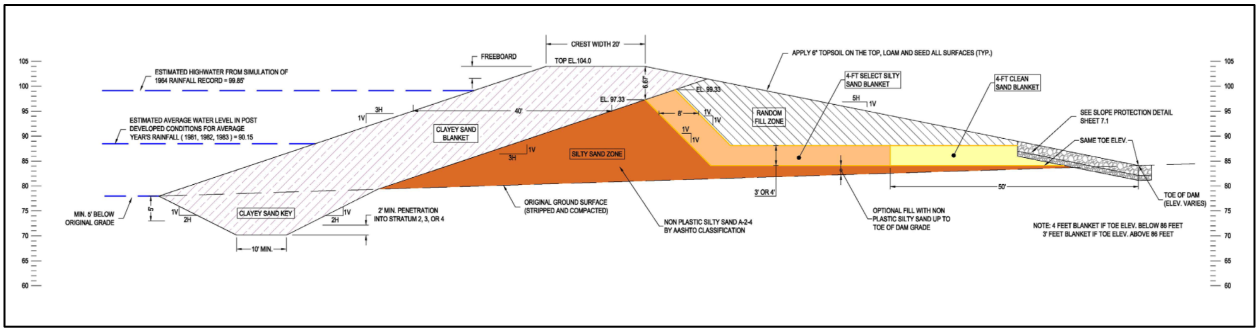


Figure 32: Cross Section of the Dove Pond Dam (Dove Pond Dam Emergency Action Plan 2021)

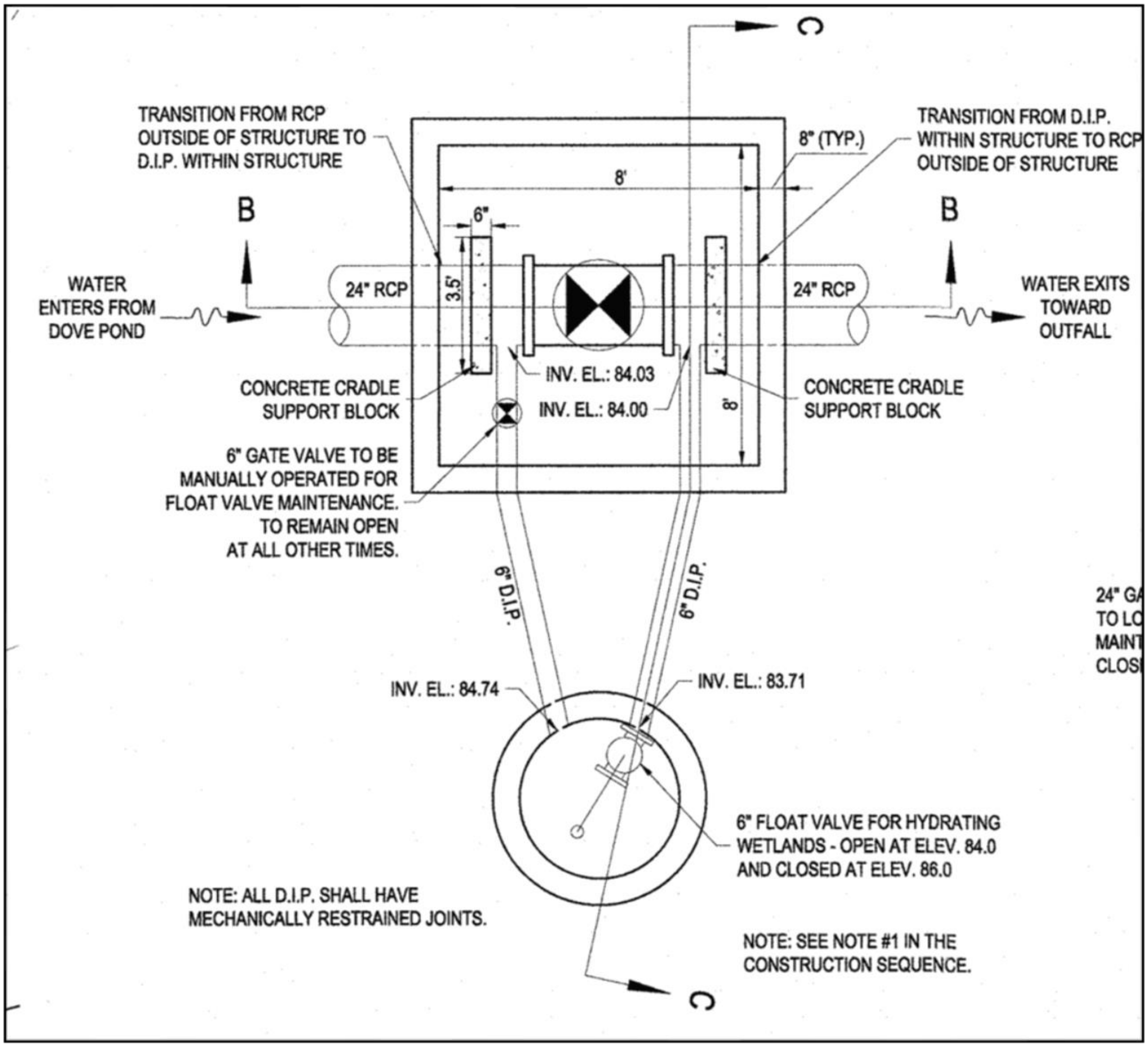


Figure 33: Valves in the Discharge Pipe through the Dove Pond Dam (Dove Pond Dam Construction Plans)

As-Built Survey: Moore Bass Consulting, Dove Pond Dam Spillway, 10-22-2021

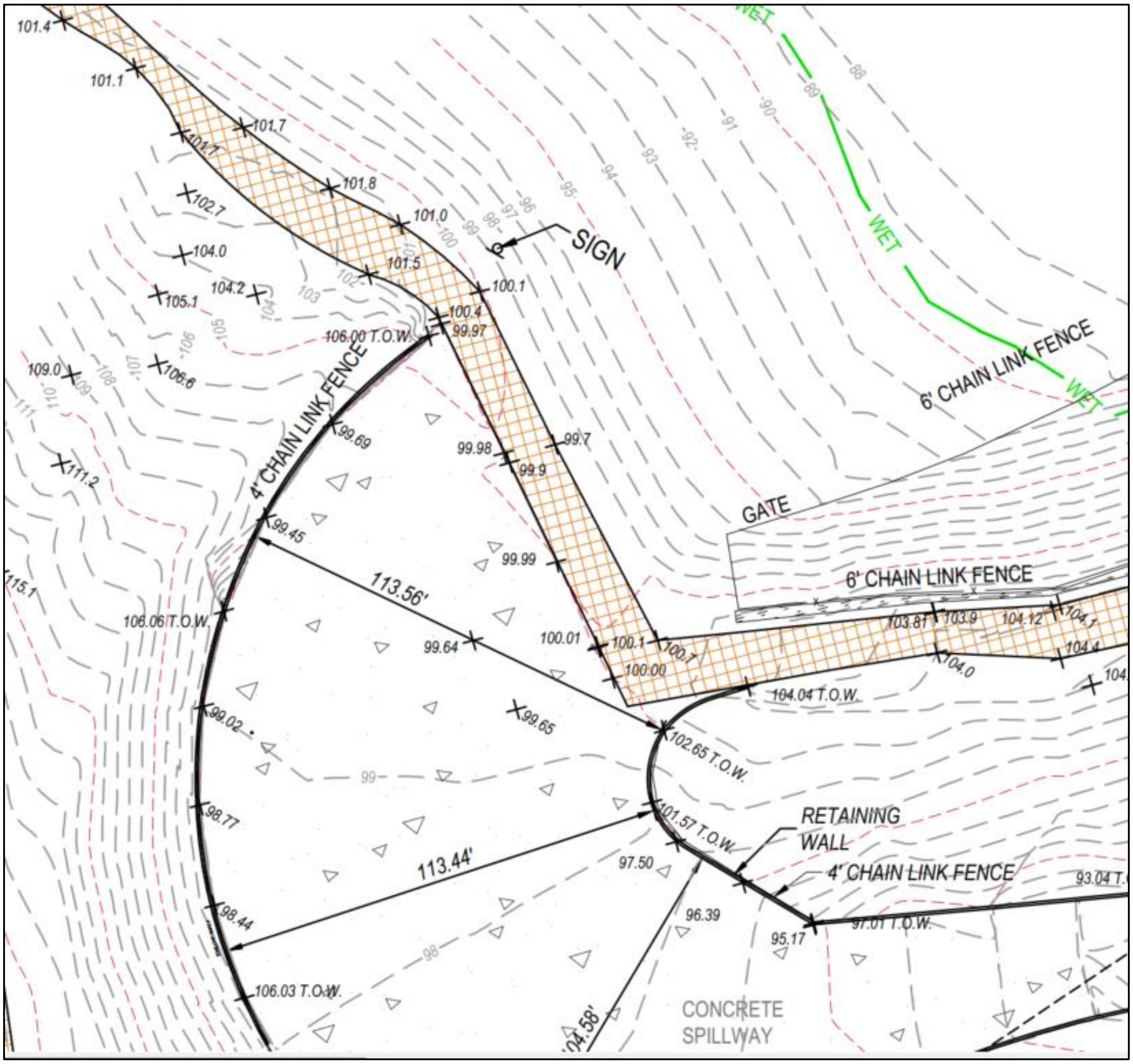


Figure 34: As-built Survey of the Dove Pond Dam Spillway

Appendix C. 9-15-23 Memo from City of Tallahassee Stormwater in Response to the Supplemental Dove Pond Monitoring Data

Memorandum

TO: Craig Barkve, PE, Program Engineer
Growth Management

THROUGH: Jason Smith, PE, Manager Stormwater Planning
Underground Utilities & Public Infrastructure (UUPI)

FROM: Charley Schwartz, PE, Program Engineer Stormwater Planning *Charley Schwartz*
UUPI
Jason Iceman, PE, Program Engineer Water Quality Programs *Jason Iceman*
UUPI

DATE: September 15, 2023

SUBJECT: Proposed Dove Pond Infiltration Increase

Stormwater Management (SWM) staff has completed a review of the revised Dove Pond stormwater analysis and recorded monitoring data materials submitted by Moore Bass (MB) as supplemented on August 22, 2023. Based on the Stormwater Narrative provided by MB, *"The purpose of this analysis is to present the results of the recorded data and provide an updated stormwater model utilizing the higher infiltration rates. This will allow for construction of more impervious area than is stated in the approved capacity accounting record with no structural modifications to the system."*

Based on the information provided, SWM staff does not find sufficient justification for the proposed increased infiltration rates. More detailed SWM staff comments on the infiltration rate analysis are provided below.

SWM staff also reviewed the XPSWMM model utilized by MB for this analysis and have provided general comments. Any future models submitted (e.g., FEMA floodplain analysis) should ensure identified model and documentation issues are addressed.

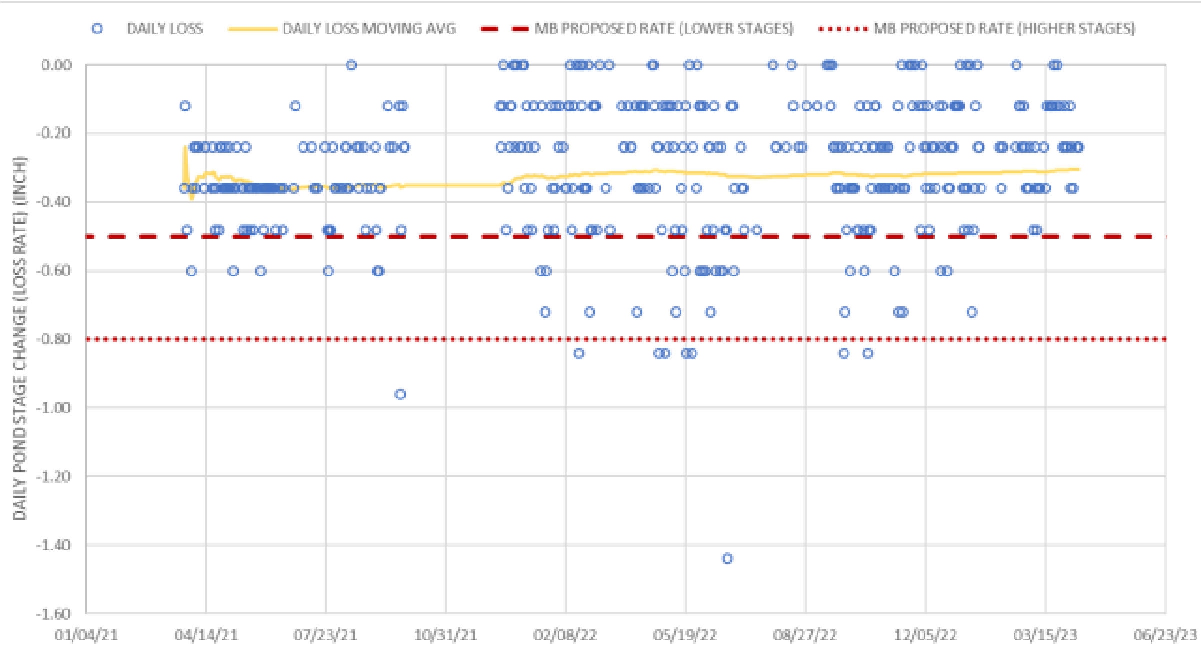
COMMENTS ON INFILTRATION RATE ANALYSIS

Provided Data

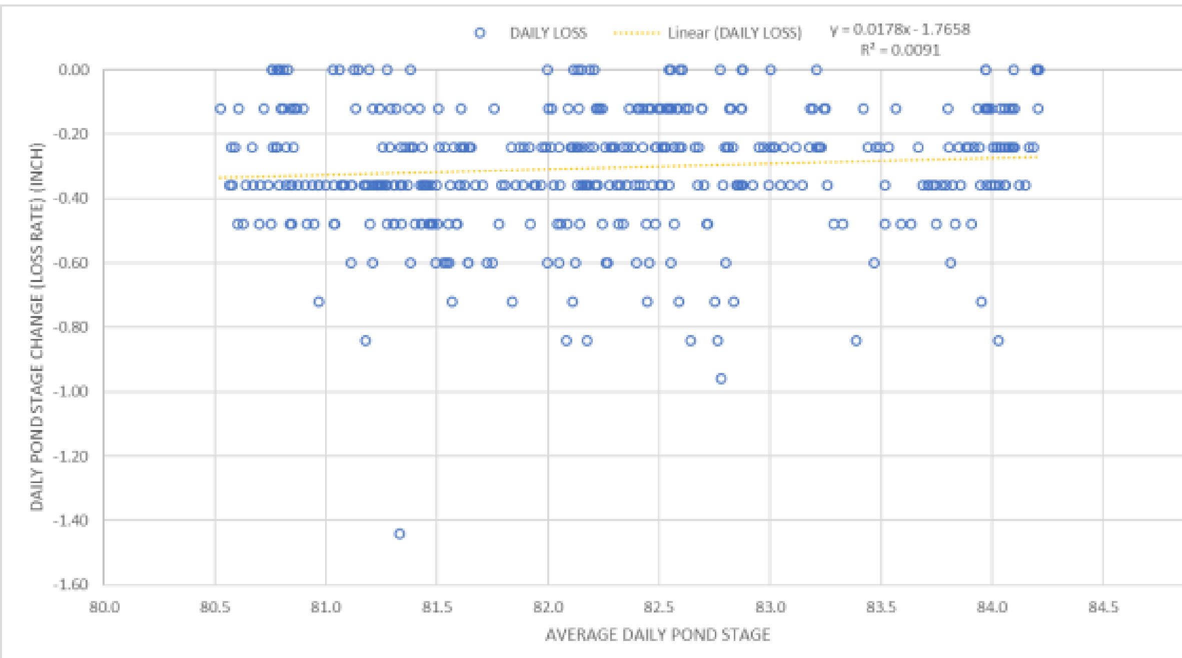
1. MB proposed increasing the basin infiltration rates used to model volume recovery in Dove Pond in XPSWMM. The proposed rates are 0.5 inch/day for pond stages at or below 86' NAVD and 0.8 inch/day for pond stages at or above 87' NAVD. The recorded stage data provided does not support either proposed rate.

    a. SWM's review of the provided data indicates observed total loss rates are more in line with approximately 0.3 inch/day. A comparison of daily loss rate observed at Dove Pond versus proposed basin infiltration rates is shown below. It should be noted, the observed total loss rate includes infiltration (vertical percolation as well as horizontal percolation) <u>and</u> evapotranspiration (ET) as shown in the equation below. The modeled basin infiltration rate should only consider percolation since ET is included in XP's hydrologic routine by default.

    observed stage change with time = total loss rate = (basin infiltration rate + ET rate)



b. SWM's review also indicates that increasing infiltration rate with stage may not be justified based on the provided data. The observed loss rate exhibits a slightly decreasing trend with stage increase as shown below, where positive trend line slope indicates decrease in rate. However, it is noted that the observed stage range is relatively narrow and does not capture pond stages above 84.5' NAVD and the year 2021 was overall drier than the subsequent years monitored. More data is required especially at higher stages to better understand the relationship between pond stage and infiltration rate.



c. For reference, the previously approved permitted model uses basin infiltration rates that range from 0.25 inch/day (stage 77' only), 0.4 inch/day (stages 78-86'), and 0.42-0.57 inch/day (stages 87-100' spillway elevation). The proposed increase in rate by pond stage is shown below. The initial condition of Dove Pond (N70) for the 1964 simulation is 88.1' NAVD, meaning only proposed rate changes near and above stage 88' are relevant to the simulation.

POND STAGE (NAVD)	MODEL NODE (N70) DEPTH	PERMITTED RATE (IN/DAY)	PROPOSED RATE (IN/DAY)	PROPOSED RATE INCREASE
77	1	0.25	0.25	0%
78	2	0.40	0.50	26%
79	3	0.40	0.50	26%
80	4	0.40	0.50	26%
81	5	0.40	0.50	26%
82	6	0.40	0.50	26%
83	7	0.40	0.50	26%
84	8	0.40	0.50	26%
85	9	0.40	0.50	26%
86	10	0.40	0.50	26%
87	11	0.42	0.80	89%
88	12	0.49	0.80	63%
89	13	0.51	0.80	58%
90	14	0.52	0.80	55%
91	15	0.53	0.80	52%
92	16	0.53	0.80	50%
93	17	0.54	0.80	49%
94	18	0.54	0.80	47%
95	19	0.55	0.80	46%
96	20	0.55	0.80	45%
97	21	0.56	0.80	44%
98	22	0.56	0.80	42%
99	23	0.57	0.80	41%
100	24	0.57	0.80	41%

2. Limitations of provided data (1/1/2021 – 4/12/2023)
   a. Stage/Elevation Data
      i. Observations are limited to lower pond stages.
         1. Observed Elevations ranged from 78.68' to 84.21'.
         2. Average Observed Elevation ~82'.
         3. Spillway Elevation is 100'.
      ii. Data Gaps (No stage measurements for the following)
         1. 9/28/2021 16:00 thru 12/14/2021 16:00
         2. 1/14/2022 14:00 thru 1/17/2022 15:00

iii. Significant on-going development was occurring within drainage areas to Dove Pond during the observation period making runoff conditions variable with time (ex. Canopy, Hansell Hill).

b. Rainfall Data
   i. Relatively Dry Monitoring Period (1/1/2021 – 4/12/2023)
      1. 103.56" total at Dove Pond rain gauge (data gaps see below).
      2. For comparison:
         a. 133" average total for monitoring period based on 30-yr avg from NWS Tallahassee.
         b. 104" total for the 1964 simulation year.
      3. No large rainfall events (2.62" = highest daily rain accumulation).
      4. 108.8" total from One Rain Senior Center gauge.
      5. 119.14" from One Rain Hilaman gauge.
      6. 121.05" from NWS Tallahassee gauge.
      7. 2021 was drier than subsequent years monitored.
   ii. Data Gap
      1. No rain reported from 9/28/2021 8:00 to 1/17/2022 15:00.
         a. This included/overlapped stage gauge gaps above.
         b. COT One Rain network Senior Center indicated some rainfall events in this period (9/21/2021, 10/5-10/6/2021, 10/24, etc.) which would bring Dove Pond total more in line with other area rain gauges.

Provided Analysis

3. MB analysis excludes a significant amount of monitoring data without sufficient justification. While it is understandable to exclude data during and shortly after rainfall events, to allow stormwater runoff and discharge from upstream SWMFs to reach the pond, the analysis also excludes many data points where there was no rainfall reported or other justification provided. In some instances, the monitored stage elevation may have only increased one or two measuring units (0.01-0.02'). It is possible these slight elevation differences indicate seepage into the pond (which would need to be accounted for as part of overall loss rate behavior), though the differences are most likely general "noise" from the stage recording device (e.g. wave action, floating debris, etc.). An example of how this data exclusion can significantly increase reported loss rate follows:

   For the Period 4/1/2021 5:00 to 4/7/2021 6:00
   i. No rainfall was reported during this period.
   ii. MB separated into three periods excluding three large segments of the overall duration. MB's reported infiltration rates for the selected periods were 0.84, 0.77 & 0.90 inch/day.
   iii. When the three excluded time segments are included, the overall loss rate for this period was only ~0.4 inch/day.

4. MB analysis uses an averaging of averages method that does not account for weighting of infiltration rates based on different time durations represented. As such rates based on short time periods have equal weight to rates based on longer time periods when calculating a single average value.

5. The MB XPSWMM model uses the ET module's default rate of 0.1 inch/day for the 1964 simulation. Therefore, the ET rate should be subtracted from any observed total loss rate if observed loss data is used to develop a basin infiltration rate using the following equation:

basin infiltration rate = total loss rate – ET rate.

COMMENTS ON STORMWATER MODEL & DOCUMENTATION

1. A complete engineering stormwater analysis report should accompany future model submittals. The report should document all relevant assumptions and data sources used within the associated stormwater model and/or related calculations. Any previously provided calculations or other relevant documentation that remain applicable to the new submittal should be integrated into the report directly, such as within an Appendix, or explicitly referenced.
2. Basin delineations and other spatial data inputs need to be documented. It appears that some basins have changed since the original stormwater facility master plan was approved.
3. Any constructed SWMFs need to be integrated into the model with drainage basins routed accordingly.
4. ICPR and XPSWMM are both acceptable stormwater models; however, they do operate differently. Converting parameters from ICPR to XPSMM and associated model adjustment need to be documented (e.g., modeled consideration of ET is different).
5. The model needs to ensure that basin runoff response, pond infiltration, and ET are properly integrated without overlap (i.e., no "double counting").
6. Several hydrologic parameters included in the Dove Pond model appear outside of standard ranges or conflict with other hydrologic parameters (e.g., green ampt parameters, loss coefficients, etc.).

2023_09_15 Growth-SWPlanning_RateIncrease FindingsMemo

Final Audit Report 2023-10-19

Created:	2023-10-19
By:	Charley Schwartz (Charley.Schwartz@talgov.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAA7P15UutGTIti_5sB5sS-8mQzRKGxKXew

"2023_09_15 Growth-SWPlanning_RateIncreaseFindingsMemo" History

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- Document emailed to Jason Icerman (jason.icerman@talgov.com) for signature
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- Document e-signed by Jason Icerman (jason.icerman@talgov.com)
  Signature Date: 2023-10-19 - 7:44:58 PM GMT - Time Source: server

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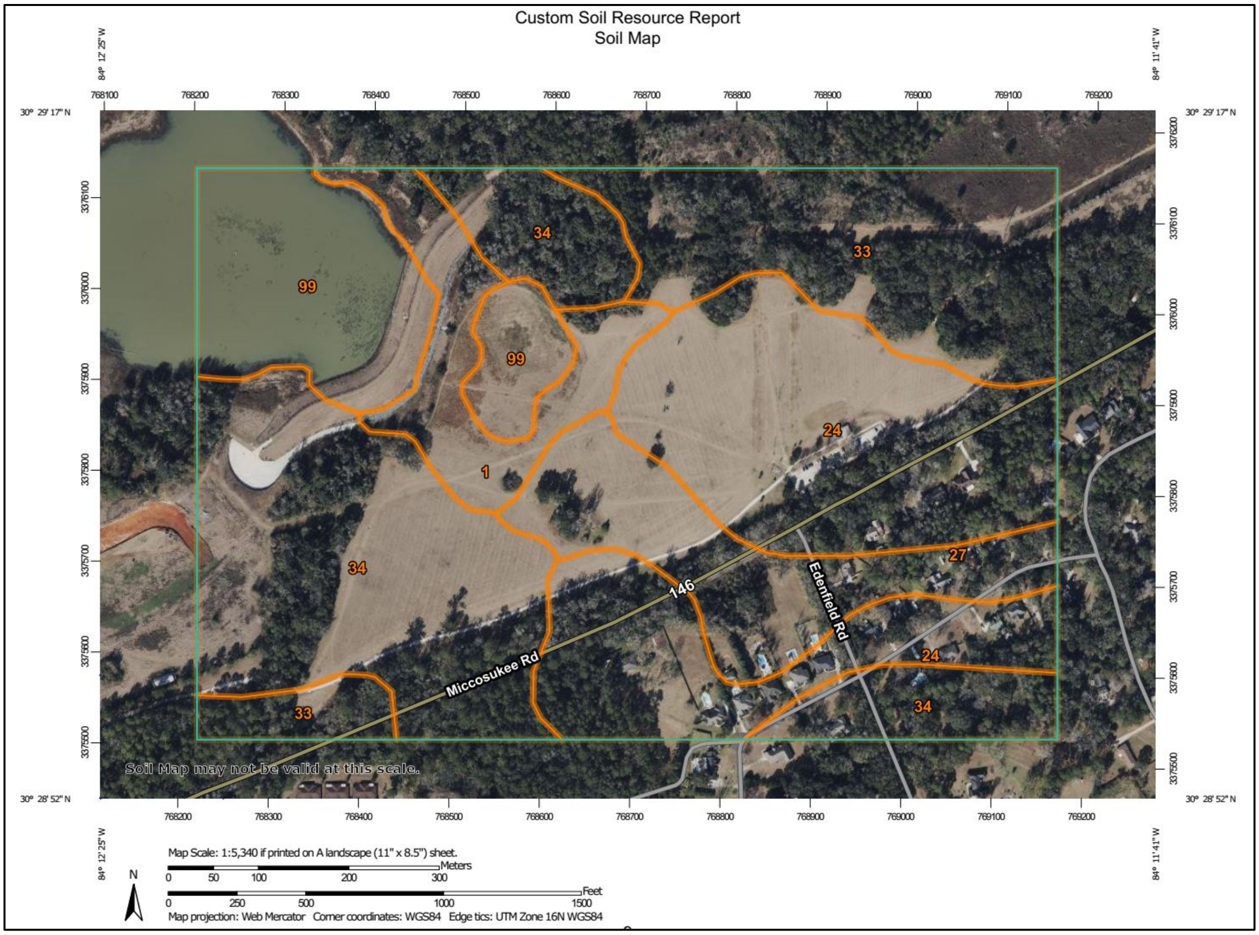
Adobe Acrobat Sign

Appendix D. NRCS Soil Survey Map



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Albany loamy sand, 0 to 2 percent slopes	10.2	6.9%
24	Lucy fine sand, 0 to 5 percent slopes	41.1	27.7%
27	Lynchburg fine sandy loam	14.9	10.0%
33	Orangeburg fine sandy loam, 2 to 5 percent slopes	24.5	16.5%
34	Orangeburg fine sandy loam, 5 to 8 percent slopes	40.2	27.1%
99	Water	17.5	11.8%
Totals for Area of Interest		**148.4**	**100.0%**

Engineering Properties–Leon County, Florida														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
1—Albany loamy sand, 0 to 2 percent slopes														
Albany	80	A/D	0-4	Loamy sand	SM	A-4, A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	68-77-89	17-26-36	0-0 -20	NP-0 -3
			4-21	Loamy sand	SM, SC-SM	A-2-4	0- 0- 0	0- 0- 0	93-96-100	86-93-100	66-72-86	22-25-35	0-0 -21	NP-0 -4
			21-36	Loamy sand	SM, SC-SM	A-2-4	0- 0- 0	0- 0- 0	93-97-100	87-93-100	66-73-86	22-25-35	0-0 -21	NP-0 -4
			36-50	Loamy sand	SM	A-2-4	0- 0- 0	0- 0- 0	93-97-100	87-93-100	66-73-86	22-25-35	0-0 -18	NP-0 -3
			50-63	Sandy loam, sandy clay loam	SC, SC-SM	A-4, A-2-4	0- 0- 0	0- 0- 0	93-96-100	86-93-100	62-69-80	27-31-39	18-20 -25	2-3 -7
			63-78	Sandy loam, sandy clay loam, fine sandy loam	SC, CL, SC-SM	A-6, A-2-4	0- 0- 0	0- 0- 0	93-96-100	86-93-100	71-87-100	30-43-54	20-30 -36	4-12-16
			78-100	Sandy clay loam, fine sandy loam, very fine sandy loam	CL, SM	A-6, A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	97-99-100	37-45-57	17-18 -32	1-2 -13
Plummer	10	A/D	0-17	Fine sand	SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	91-92-96	16-17-21	—	—
			17-61	Fine sand	SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	92-92-97	15-15-20	—	—
			61-80	Fine sandy loam, sandy clay loam, sandy loam	SC-SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	97-98-100	90-92-100	26-27-41	—	—
Troup	10	A	0-3	Loamy sand	SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	71-74-81	15-17-25	0-0 -0	NP
			3-55	Sand, loamy sand	SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	72-74-78	13-16-20	0-0 -0	NP

Engineering Properties–Leon County, Florida														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
			55-80	Sandy loam, sandy clay loam	SC, SC-SM, SM	A-4, A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	70-72-83	24-26-38	17-18 -26	3-4 -8

Engineering Properties–Leon County, Florida

Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
24—Lucy fine sand, 0 to 5 percent slopes														
Lucy	85	B	0-5	Fine sand	SM, SP-SM	A-2	0- 0- 0	0- 0- 0	98-99-100	95-98-100	50-69-87	10-15-30	0-7 -14	NP
			5-26	Fine sand, loamy fine sand	SM, SP-SM	A-2	0- 0- 0	0- 0- 0	98-99-100	95-98-100	50-69-87	10-15-30	0-7 -14	NP
			26-80	Sandy clay loam, fine sandy loam	SC, SC-SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	100-100-100	95-98-100	60-78-95	20-36-50	20-30-40	5-13-20
Orangeburg	5	B	0-5	Fine sandy loam	SM	A-2	0- 0- 0	0- 0- 0	98-99-100	95-98-100	75-85-95	20-28-35	0-7 -14	NP
			5-10	Fine sandy loam	SM	A-2	0- 0- 0	0- 0- 0	98-99-100	95-98-100	75-85-95	20-28-35	0-7 -14	NP
			10-80	Fine sandy loam, sandy clay loam	CL, SC	A-4, A-6	0- 0- 0	0- 0- 0	98-99-100	95-98-100	71-84-96	38-48-58	22-31-40	8-14-19
Troup	5	A	0-8	Fine sand	SM	A-4, A-2	0- 0- 0	0- 0- 0	95-98-100	90-95-100	65-78-90	15-28-40	0-7 -14	NP
			8-44	Fine sand	SM	A-2, A-4	0- 0- 0	0- 0- 0	95-98-100	90-95-100	65-78-90	15-28-40	0-7 -14	NP
			44-80	Sandy clay loam, fine sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4	0- 0- 0	0- 0- 0	95-98-100	95-98-100	70-80-90	24-40-55	10-20-30	4-7 -10
Wagram	3	B	0-6	Loamy fine sand	SM	A-2	0- 0- 0	0- 0- 0	100-100-100	98-99-100	50-68-85	15-25-35	0-7 -14	NP
			6-31	Loamy fine sand	SM	A-2	0- 0- 0	0- 0- 0	100-100-100	98-99-100	50-68-85	15-25-35	0-7 -14	NP
			31-62	Sandy clay loam, fine sandy loam	SC	A-2, A-4, A-6	0- 0- 0	0- 0- 0	100-100-100	98-99-100	80-88-95	31-38-45	21-31-40	8-18-25
			62-80	Sandy clay loam, sandy clay	CH, CL, SC	A-6, A-7	0- 0- 0	0- 0- 0	100-100-100	98-99-100	80-90-100	40-50-60	35-53-70	20-31-42
Blanton	2	A	0-7	Fine sand	SP-SM	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100-100	90-95-100	65-83-100	5- 9- 12	0-7 -14	NP
			7-52	Fine sand	SP-SM	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100-100	90-95-100	65-83-100	5- 9- 12	0-7 -14	NP
			52-80	Sandy clay loam, fine sandy loam	SC, SC-SM, SM	A-2-4, A-2-6, A-4, A-6	0- 0- 0	0- 0- 0	100-100-100	95-98-100	69-82-95	25-38-50	18-31-43	4-8 -12

Engineering Properties–Leon County, Florida														
Map unit symbol and soil name	**Pct. of map unit**	**Hydrologic group**	**Depth**	**USDA texture**	**Classification**		**Pct Fragments**		**Percentage passing sieve number—**				**Liquid limit**	**Plasticity index**
					Unified	**AASHTO**	**>10 inches**	**3-10 inches**	**4**	**10**	**40**	**200**		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
27—Lynchburg fine sandy loam														
Lynchburg, non-hydric	50	B/D	0-8	Fine sandy loam	ML, SM	A-2, A-4	0- 0- 0	0- 0- 0	92-96-100	90-95-100	75-88-100	25-45-65	0-15 -30	NP-4 -7
			8-18	Fine sandy loam	SM, ML	A-2, A-4	0- 0- 0	0- 0- 0	92-96-100	90-95-100	75-88-100	25-45-65	0-15 -30	NP-4 -7
			18-65	Sandy clay loam, sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	92-96-100	90-95-100	70-85-100	25-46-67	15-28 -40	4-11-18
			65-80	Sandy clay loam, sandy clay, clay	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	95-98-100	92-96-100	70-85-100	25-49-73	15-28 -40	4-12-20
Lynchburg, hydric	37	B/D	0-8	Fine sandy loam	SM, ML	A-2, A-4	0- 0- 0	0- 0- 0	92-96-100	90-95-100	75-88-100	25-45-65	0-15 -30	NP-4 -7
			8-18	Fine sandy loam	SM, ML	A-2, A-4	0- 0- 0	0- 0- 0	92-96-100	90-95-100	75-88-100	25-45-65	0-15 -30	NP-4 -7
			18-65	Sandy clay loam, sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	92-96-100	90-95-100	70-85-100	25-46-67	15-28 -40	4-11-18
			65-80	Sandy clay loam, sandy clay, clay	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	95-98-100	92-96-100	70-85-100	25-49-73	15-28 -40	4-12-20
Ocilla	13	B/D	0-3	Fine sand	SM, SP-SM	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	95-98-100	75-88-100	8-15- 35	0-7 -14	NP
			3-29	Fine sand, loamy fine sand	SM, SP-SM	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	95-98-100	75-88-100	8-15- 35	0-7 -14	NP
			29-39	Sandy loam, sandy clay loam, fine sandy loam	CL, SC, SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	100-100 -100	95-98-100	80-90-100	30-43-55	0-20 -40	NP-9 -18
			39-80	Sandy loam, sandy clay loam, fine sandy loam	CL, SC, SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	100-100 -100	95-98-100	80-90-100	30-43-55	0-20 -40	NP-9 -18

Engineering Properties–Leon County, Florida														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
33—Orangeburg fine sandy loam, 2 to 5 percent slopes														
Orangeburg	80	B	0-2	Fine sandy loam	SC-SM, CL-ML, SM	A-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	87-94-97	38-48-52	0-21 -26	NP-4 -6
			2-10	Fine sandy loam	SC-SM, SM, CL-ML	A-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	87-94-97	38-48-52	0-21 -25	NP-4 -6
			10-16	Sandy clay loam	CL, SC-SM	A-4, A-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	79-86-95	43-52-62	21-29 -32	5-10-12
			16-41	Sandy clay loam	CL, SC-SM	A-4, A-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	79-86-95	43-52-62	21-29 -32	5-10-12
			41-80	Sandy clay loam	CL, SC-SM	A-4, A-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	79-86-95	43-52-62	21-29 -32	5-10-12
Lucy	10	B	0-8	Loamy sand	SC-SM, SM	A-2-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	70-80-94	15-23-34	0-19 -24	NP-3 -7
			8-24	Loamy sand, sand, fine sand	SM, SC-SM	A-2-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	70-80-93	15-23-34	0-18 -23	NP-3 -7
			24-35	Sandy clay loam, sandy loam, fine sandy loam	SC, SC-SM, CL	A-6, A-2-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	66-77-94	30-39-51	20-28 -39	6-12-21
			35-80	Sandy clay loam, sandy clay	SC, CH	A-6, A-7-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	75-87-100	40-49-64	29-40 -52	13-23-32
Blanton	5	A	0-12	Sand	SP-SM, SM	A-3, A-2-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	81-85-90	8-10- 14	0-0 -0	NP
			12-69	Fine sand, loamy sand, sand	SM, SP-SM	A-2-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	74-85-100	11-15-35	0-0 -0	NP

Engineering Properties–Leon County, Florida														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
			69-80	Fine sandy loam	SC-SM, SC, SM	A-2-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	81-86-91	24-28-34	19-24 -26	3-7 -8
Troup	5	A	0-8	Fine sand	SM	A-2-4, A-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	83-93-100	16-22-39	0-0 -0	NP
			8-21	Fine sand, loamy fine sand, sand	SM	A-2-4, A-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	82-94-100	15-23-42	0-0 -0	NP
			21-43	Fine sand, loamy fine sand, sand	SM	A-2-4, A-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	82-94-100	15-23-42	0-0 -0	NP
			43-49	Fine sandy loam, sandy loam, sandy clay loam	SC-SM, SC, SM	A-2-4, A-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	76-86-100	25-33-44	0-21 -26	NP-4 -8
			49-56	Sandy clay loam, sandy loam	CL, SC, SM	A-6, A-2-4, A-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-94-99	35-47-55	17-28 -32	2-9 -11
			56-80	Sandy clay loam, sandy loam	SC, CL, SM	A-6, A-2-4, A-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-94-99	35-47-55	17-28 -32	2-9 -11

Engineering Properties–Leon County, Florida														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
34—Orangeburg fine sandy loam, 5 to 8 percent slopes														
Orangeburg	80	B	0-2	Fine sandy loam	SC-SM, CL-ML, SM	A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	87-94-97	38-48-52	0-21 -26	NP-4 -6
			2-10	Fine sandy loam	SC-SM, CL-ML, SM	A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	87-94-97	38-48-52	0-21 -25	NP-4 -6
			10-16	Sandy clay loam	CL, SC-SM	A-4, A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	79-86-95	43-52-62	21-29-32	5-10-12
			16-41	Sandy clay loam	CL, SC-SM	A-4, A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	79-86-95	43-52-62	21-29-32	5-10-12
			41-80	Sandy clay loam	CL, SC-SM	A-4, A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	79-86-95	43-52-62	21-29-32	5-10-12
Lucy	10	B	0-8	Loamy sand	SM, SC-SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	70-80-94	15-23-34	0-19 -24	NP-3 -7
			8-24	Loamy sand, sand, fine sand	SM, SC-SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	70-80-93	15-23-34	0-18 -23	NP-3 -7
			24-35	Sandy loam, fine sandy loam, sandy clay loam	SC, SC-SM, CL	A-6, A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	66-77-94	30-39-51	20-28-39	6-12-21
			35-80	Sandy clay loam, sandy clay	CH, SC	A-6, A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	75-87-100	40-49-64	29-40-52	13-23-32
Blanton	7	A	0-12	Sand	SP-SM, SM	A-3, A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	81-85-90	8-10- 14	0-0 -0	NP
			12-69	Fine sand, loamy sand, sand	SM, SP-SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	74-85-100	11-15-35	0-0 -0	NP
			69-80	Fine sandy loam	SC-SM, SC, SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	81-86-91	24-28-34	19-24-26	3-7 -8
Troup	3	A	0-8	Fine sand	SM	A-2-4, A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	83-93-100	16-22-39	0-0 -0	NP
			8-21	Fine sand, loamy fine sand, sand	SM	A-2-4, A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	82-94-100	15-23-42	0-0 -0	NP
			21-43	Sand, fine sand, loamy fine sand	SM	A-2-4, A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	82-94-100	15-23-42	0-0 -0	NP
			43-49	Fine sandy loam, sandy clay loam, sandy loam	SM, SC-SM, SC	A-2-4, A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	76-86-100	25-33-44	0-21 -26	NP-4 -8
			49-56	Sandy clay loam, sandy loam	SC, CL, SM	A-2-4, A-4, A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	85-94-99	35-47-55	17-28-32	2-9 -11
			56-80	Sandy loam, sandy clay loam	SM, SC, CL	A-6, A-2-4, A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	85-94-99	35-47-55	17-28-32	2-9 -11

Appendix E. Historical Aerials

FDOT Historical Aerials

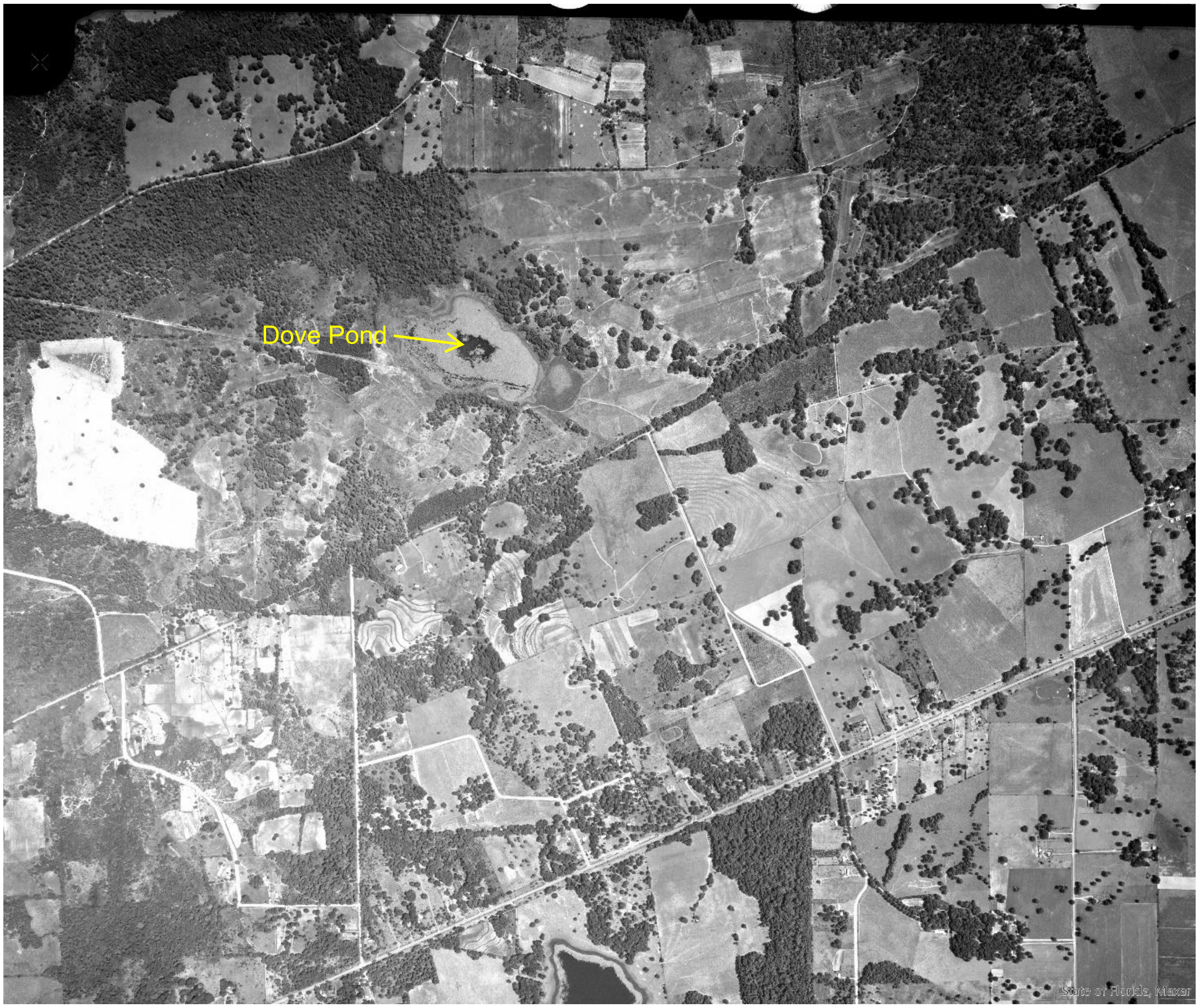


Figure 35: FDOT Historical Aerial – 1962

Figure 36: FDOT Historical Aerial – 1970

Figure 37: FDOT Historical Aerial – 1973

Figure 38: FDOT Historical Aerial – 1976

Figure 39: FDOT Historical Aerial – 1980

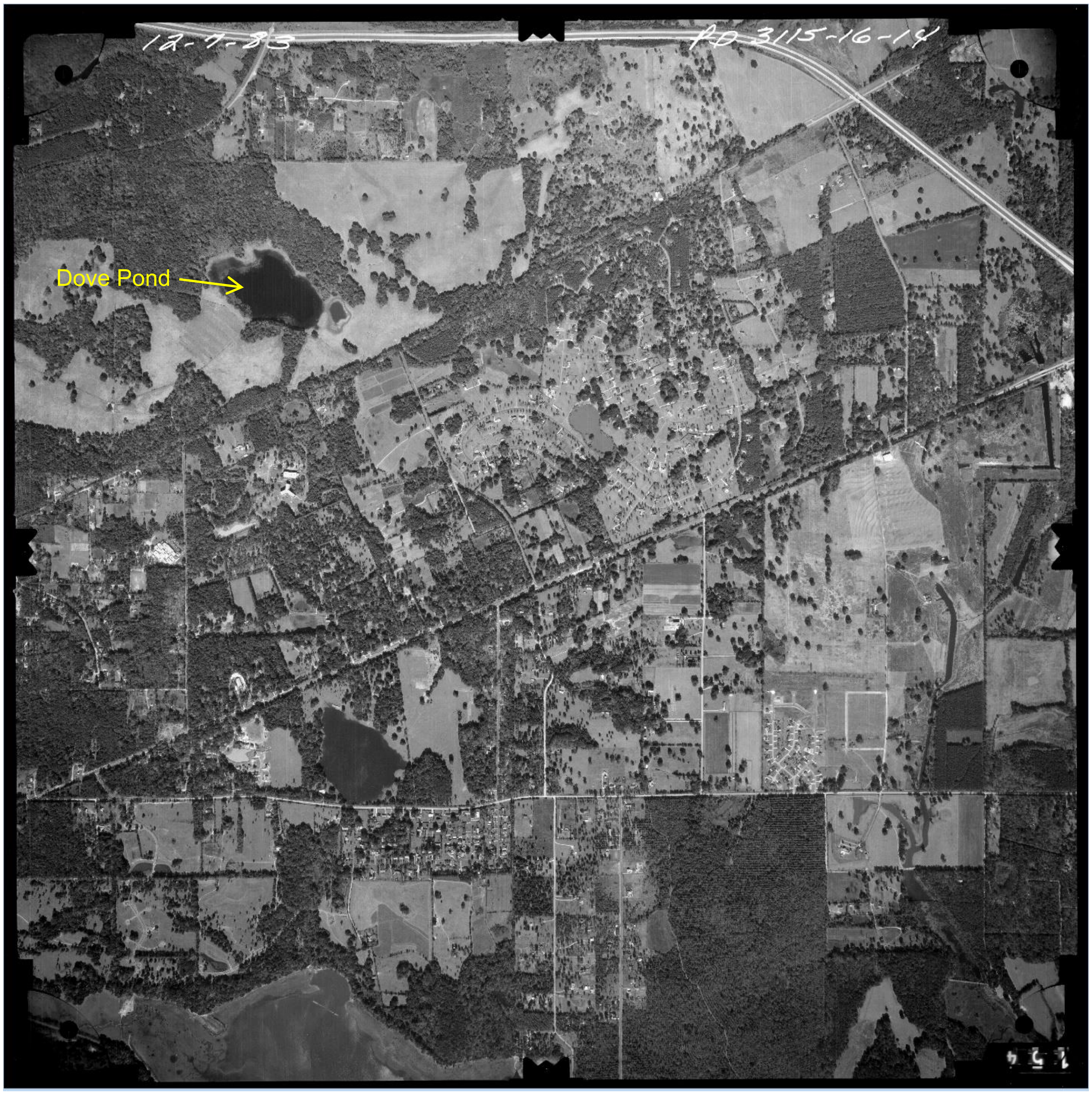


Figure 40: FDOT Historical Aerial – 1983

Figure 41: FDOT Historical Aerial – 1987

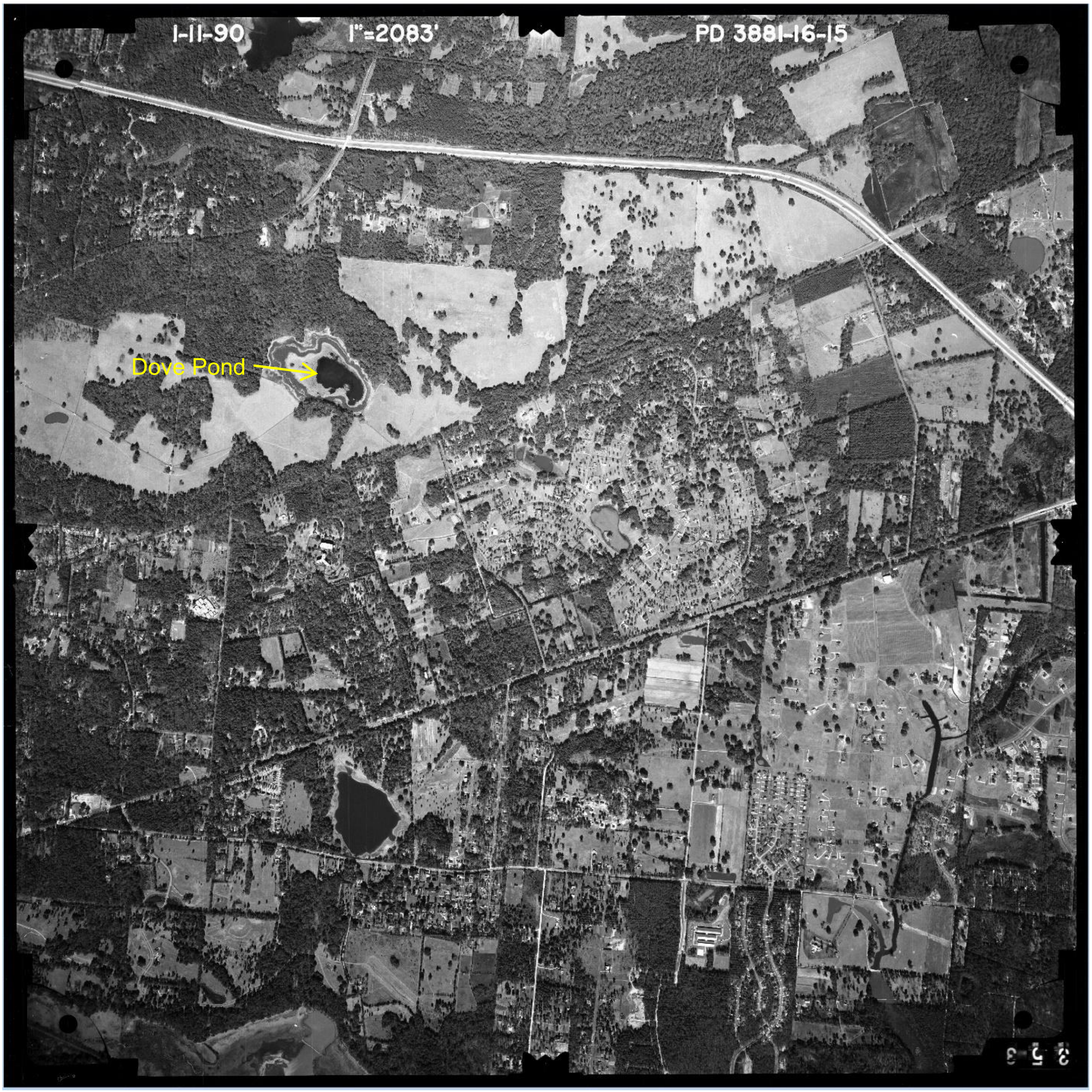


Figure 42: FDOT Historical Aerial – 1990

Figure 43: FDOT Historical Aerial – 1992

Google Earth Aerials

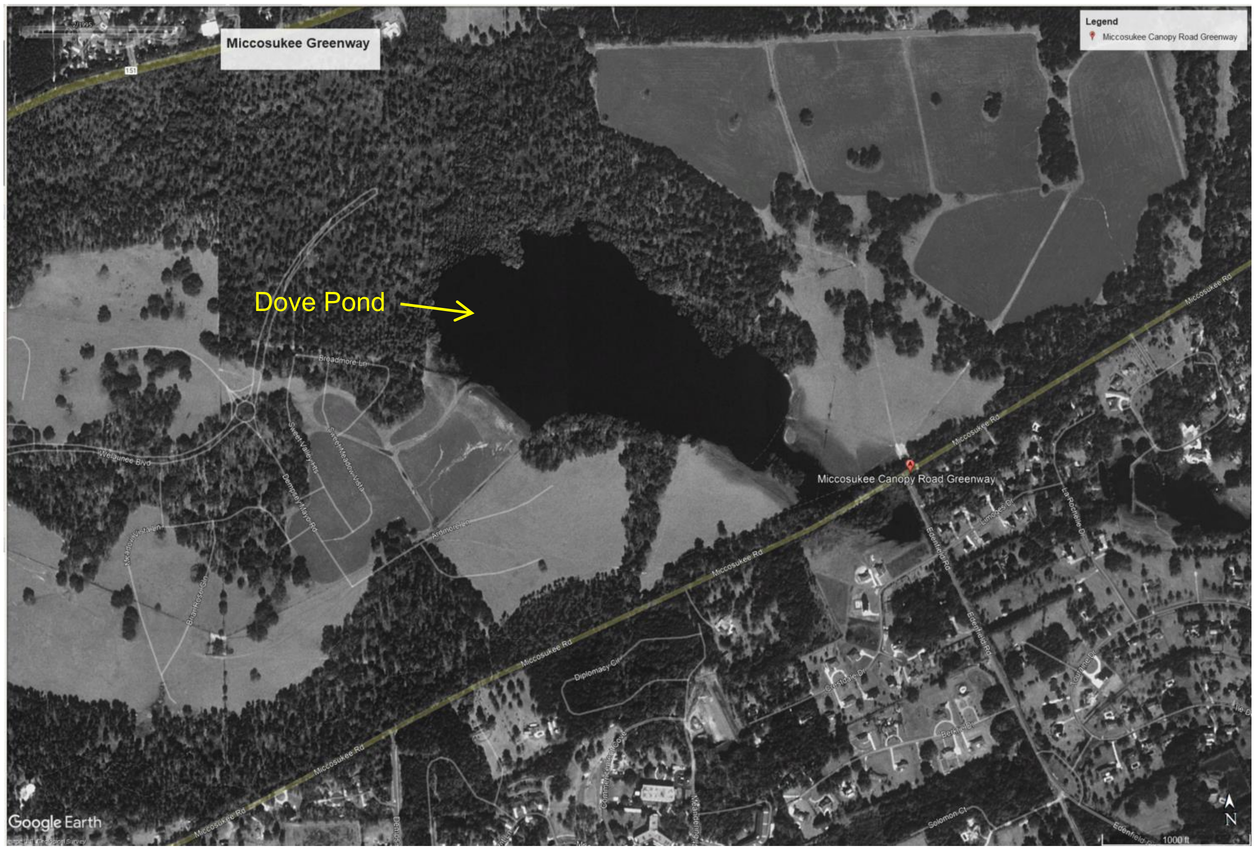


Figure 44: Google Earth Aerial – February 1995

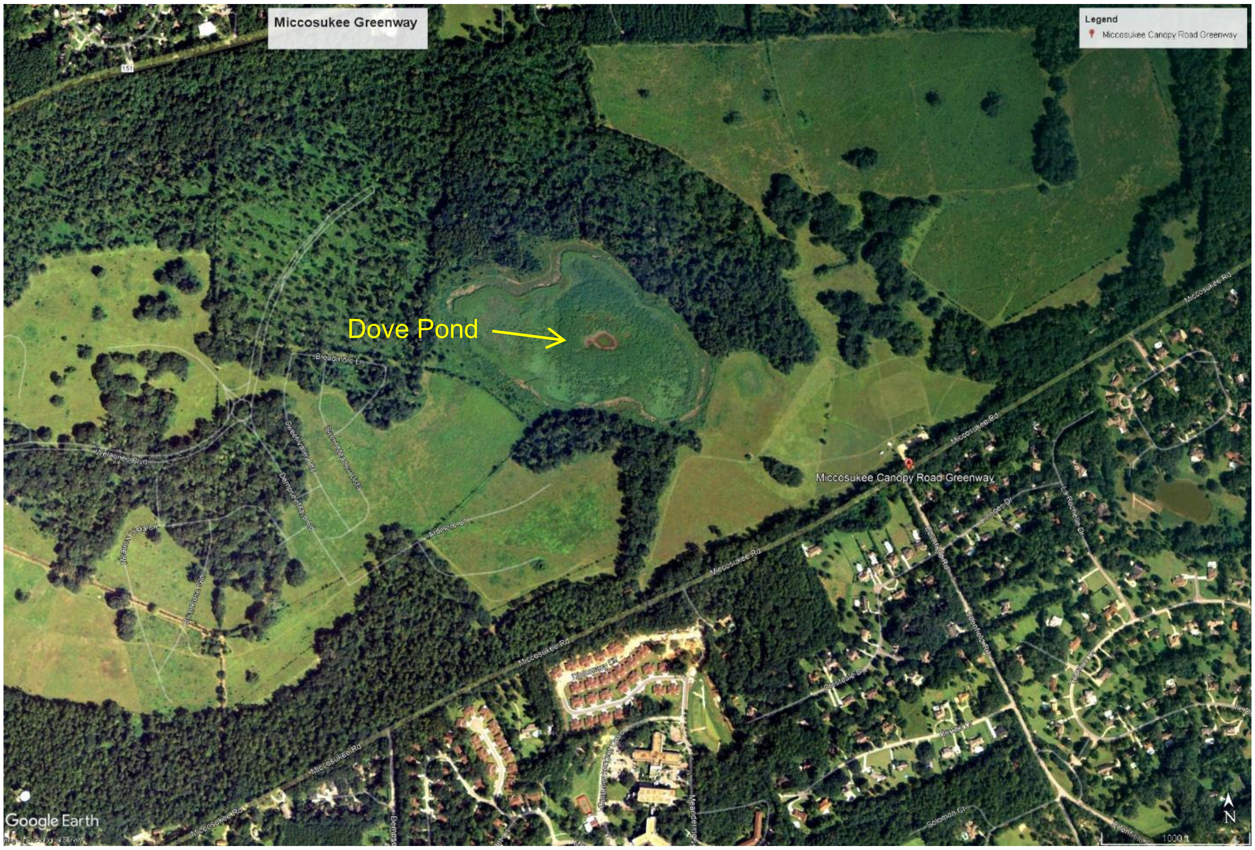


Figure 45: Google Earth Aerial – November 2007

Figure 46: Google Earth Aerial – December 2010

Figure 47: Google Earth Aerial – January 2018

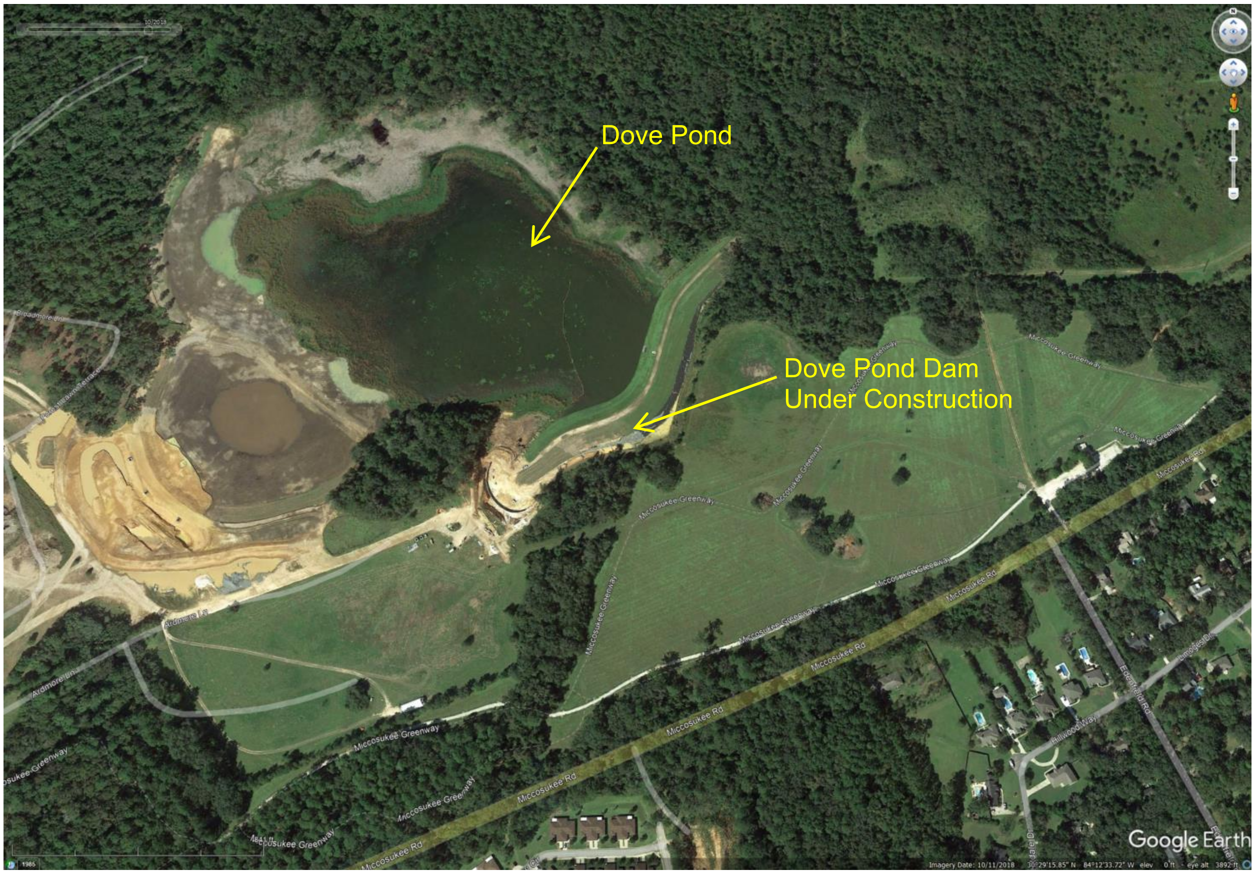


Figure 48: Google Earth Aerial – October 2018

Figure 49: Google Earth Aerial – April 2020

Figure 50: Google Earth Aerial – January 2024

Appendix F. Pictures from Field Review on July 31, 2025

Photograph 2: Dove Dam Overflow Spillway, Looking from the Top of the Dam

Photograph 3: Dove Dam Overflow Spillway, Looking from the Slope of the Dam

Photograph 4: Dove Dam Overflow Spillway, Looking Down the Spillway Ramp

Photograph 5: Wetland Immediately Downstream, of Dove Pond Dam

Photograph 6: Bottom of Dam Spillway

Photograph 7: Dove Pond Staff Gage Upstream of Dam

Photograph 8: Downstream Outlet of Discharge Pipe through Dove Pond Dam

Appendix G. Canopy Stormwater Facility Master Plan (SFMP) – 2010

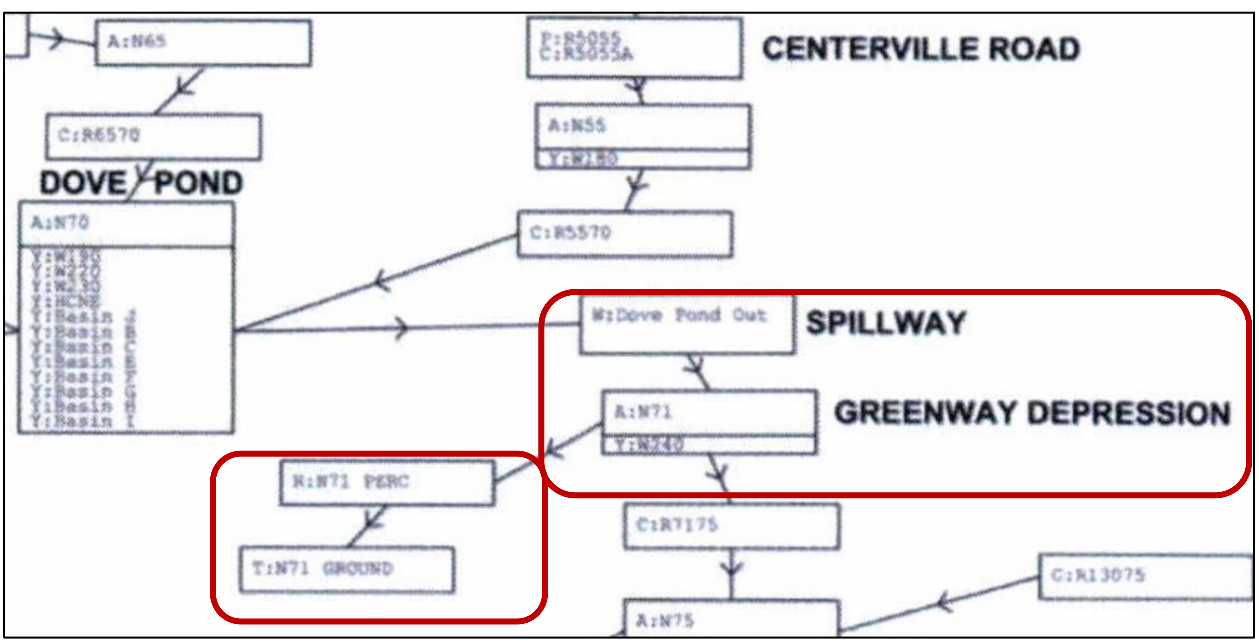


Figure 51: Post-development ICPR Model Node, Basin, and Discharge Setup for the Greenway Depression Area (Canopy Stormwater Facility Master Plan (SFMP) – 2010)

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==== Weirs ==========================================================================
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         Name: Dove Pond Out       From Node: N70
        Group: BASE                  To Node: N71
         Flow: Both                    Count: 1
         Type: Vertical: Fread      Geometry: Trapezoidal

            Bottom Width(ft): 120.00
        Left Side Slope(h/v): 5.00
       Right Side Slope(h/v): 5.00
                  Invert(ft): 100.000
      Control Elevation(ft): 100.000
      Struct Opening Dim(ft): 9999.00
                                                  TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
         Weir Discharge Coef: 3.200
      Orifice Discharge Coef: 0.600

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Figure 52: Post-development Spillway Discharge from Dove Pond (N70) to Greenway Depression Area (N71), Canopy Stormwater Facility Master Plan (SFMP) – 2010

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      Name: N71                Base Flow(cfs): 0.000          Init Stage(ft): 80.000
     Group: BASE                                              Warn Stage(ft): 88.100
      Type: Stage/Area

Small Depression within Greenway

      Stage(ft)        Area(ac)
--------------- ---------------
         80.000          0.1200
         81.000          0.6300
         82.000          1.2200
         83.000          1.9900
         84.000          3.3800
         85.000          5.9000
         86.000          7.1500
         87.000          8.6300
         88.000         12.2300
         89.000         15.4400
         90.000         18.7300
         91.000         21.7900
         92.000         25.5300

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```

Figure 53: Post-development ICPR Node 71 Design Storage (Canopy Stormwater Facility Master Plan (SFMP) – 2010)

Name: N71 PERC Group: BASE
Type: Rating Curve
Function: US Stage vs. Discharge

US Stage(ft)	Discharge(cfs)
80.000	0.00
81.000	0.01
82.000	0.02
83.000	0.03
84.000	0.06
85.000	0.99
86.000	0.12
87.000	0.16
88.000	0.27
89.000	0.36
90.000	0.46
91.000	0.55
92.000	0.66

Error: likely should be 0.09 cfs… this error does not substantively affect the modeling results.

Figure 54: Post-development Node 71 Design Percolation, Canopy Stormwater Facility Master Plan (SFMP) – 2010)

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
N71	BASE	002yr-001hr	1.34	83.97	88.10	0.0013	150324	0.77	52.98	1.34	0.06
N71	BASE	002yr-002hr	2.13	84.48	88.10	0.0013	205451	0.97	40.02	2.15	0.51
N71	BASE	002yr-004hr	4.00	83.24	88.10	0.0011	102976	2.20	4.29	4.00	0.04
N71	BASE	002yr-008hr	8.00	83.79	88.10	0.0015	136140	4.13	9.57	8.00	0.05
N71	BASE	002yr-024hr	24.01	81.26	88.10	0.0003	35478	12.00	0.77	24.01	0.01
N71	BASE	005yr-001hr	1.33	84.71	88.10	0.0015	230327	0.77	81.53	1.36	0.72
N71	BASE	005yr-002hr	2.16	85.34	88.10	0.0014	280673	0.97	61.78	8.00	0.74
N71	BASE	005yr-004hr	4.01	84.99	88.10	0.0015	260605	2.17	21.18	4.05	0.98
N71	BASE	005yr-008hr	5.59	85.37	88.10	0.0014	282405	4.07	30.96	14.00	0.72
N71	BASE	005yr-024hr	24.01	81.51	88.10	0.0003	41954	12.00	1.04	24.01	0.02
N71	BASE	010yr-001hr	1.33	85.19	88.10	0.0018	272269	0.77	104.45	8.00	0.90
N71	BASE	010yr-002hr	2.21	86.01	88.10	0.0016	316922	0.97	80.70	8.00	0.12
N71	BASE	010yr-004hr	4.08	85.83	88.10	0.0016	307328	2.17	33.04	10.00	0.28
N71	BASE	010yr-008hr	8.00	86.03	88.10	0.0016	315111	4.07	42.39	8.00	0.12
N71	BASE	010yr-024hr	24.00	81.66	88.10	0.0003	45661	12.00	1.22	24.00	0.02
N71	BASE	025yr-001hr	1.35	85.72	88.10	0.0020	301117	0.77	133.33	8.00	0.39
N71	BASE	025yr-002hr	2.23	86.77	88.10	0.0019	366055	0.97	103.23	2.24	0.15
N71	BASE	025yr-004hr	4.13	87.00	88.10	0.0014	381743	2.17	50.56	4.14	0.16
N71	BASE	025yr-008hr	8.00	87.15	88.10	0.0022	401466	4.03	61.94	8.00	0.18
N71	BASE	025yr-024hr	24.00	81.78	88.10	0.0003	48790	12.00	1.38	24.00	0.02
N71	BASE	100yr-001hr	1.37	86.28	88.10	0.0021	334610	0.77	173.76	1.38	0.13
N71	BASE	100yr-002hr	2.27	87.86	88.10	0.0024	515289	0.97	144.17	2.28	0.25
N71	BASE	100yr-004hr	4.06	88.26	88.10	0.0014	575571	2.17	75.02	5.06	4.32
N71	BASE	100yr-008hr	6.22	88.24	88.10	0.0022	572639	4.03	86.05	8.47	4.11
N71	BASE	100yr-024hr	24.00	83.18	88.10	0.0013	99093	12.00	1.78	24.00	0.04
N71	BASE	100yr-072hr	72.01	82.26	88.10	0.0004	63219	57.40	1.09	72.01	0.02
N71	BASE	100yr-168hr	168.00	82.41	88.10	0.0003	68141	153.40	0.77	168.00	0.03
N71	BASE	100yr-240hr	239.99	82.42	88.10	0.0004	68543	177.50	0.96	239.99	0.03
N71	BASE	1964	4784.30	88.47	88.10	0.0017	605299	4777.50	79.67	4785.45	5.79
N71	BASE	1994	1442.58	86.06	88.10	0.0016	316874	2943.25	37.69	6636.87	0.99

Figure 55: Post-development Peak Conditions in the Greenway Depression (Node 71), Canopy Stormwater Facility Master Plan (SFMP) – 2010)

Katey Earp, PE
Rick Renna, PE

AtkinsRéalis
(850) 575-1800
3522 Thomasville Rd, 5th Floor
Tallahassee, Florida 32309