

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
WATER QUALITY IMPACT EVALUATION CHECKLIST

650-050-37
 ENVIRONMENTAL
 MANAGEMENT
 10/17

PART 1: PROJECT INFORMATION

Project Name:	SW 10th Street Connector PD&E Study
County:	Broward County
FM Number:	439891-1-22-02
Federal Aid Project No:	
Brief Project Description:	The major improvements under the study will address local and limited access transportation needs, address safety and operational issues, enhance emergency response and evacuation, and improve system linkages and connectivity between I-95, Florida's Turnpike, and SR 869/SW 10th Street. The improved system connectivity and capacity will be achieved by widening to provide for a limited-access connector facility along the SR 869/SW 10th Street corridor.

PART 2: DETERMINATION OF WQIE SCOPE

Does project discharge to surface or ground water? Yes No

Does project alter the drainage system? Yes No

Is the project located within a permitted MS4? Yes No

Name: FDOT District 4 - Broward

If the answers to the questions above are no, complete the applicable sections of Part 3 and 4, and then check Box A in Part 5.

PART 3: PROJECT BASIN AND RECEIVING WATER CHARACTERISTICS

Surface Water

Receiving water(s) names: BCWCD#2 C-2 & C-3 Canal, SFWMD Hillsboro Canal Basin

Water Management District: South Florida Water Management District

Environmental Look Around meeting date: 2/15/2018

Attach meeting minutes/notes to the checklist.

Water Control District Name (list all that apply): Broward County WCD#2 (BCWCD #2)

Groundwater

Sole Source Aquifer (SSA)? Yes No

Name Biscayne Aquifer

If yes, complete Part 5, D and complete SSA Checklist shown in Part 2, Chapter 11 of the PD&E Manual

Other Aquifer? Yes No

Name _____

Springs vents? Yes No
Name _____

Well head protection area? Yes No
Name City of Deerfield Beach Wellfield

Groundwater recharge? Yes No
Name City of Deerfield Beach Wellfield

Notify District Drainage Engineer if karst conditions are expected or if a higher level of treatment may be needed due to a project being located within a WBID verified as Impaired in accordance with Chapter 62-303, F.A.C.

Date of notification: [Click here to enter a date.](#)

PART 4: WATER QUALITY CRITERIA

List all WBIDs and all parameters for which a WBID has been verified impaired, or has a TMDL in [Table 1](#). This information should be updated during each re-evaluation as required.

Note: If BMAP or RAP has been identified in [Table 1](#), [Table 2](#) must also be completed. Attach notes or minutes from all coordination meetings identified in [Table 2](#).

EST recommendations confirmed with agencies? Yes No

BMAP Stakeholders contacted: Yes No

TMDL program contacted: _____ Yes No

RAP Stakeholders contacted: Yes No

Regional water quality projects identified in the ELA Yes No

If yes, describe:

Potential direct effects associated with project construction and/or operation identified? Yes No

If yes, describe:

The project involves construction of a depressed roadway section 40' below existing grade, approximately at upper limits of the Biscayne Aquifer. Construction of the depressed roadway section is expected to require sheet pile installation to a greater depth encroaching beyond the upper limits of the Biscayne Aquifer.

Discuss any other relevant information related to water quality including Regulatory Agency Water Quality Requirements.

This project will implement stormwater BMPs to satisfy BCEPGMD and SFWMD regulatory criteria for treatment of pollutants related to transportation projects. Specifically, new wet retention ponds or expanded existing wet retention ponds will be constructed to provide water quality and attenuation of roadway runoff that is proposed to discharge into the C-2 Canal within the SW 10th Street corridor.

PART 5: WQIE DOCUMENTATION

- A. No involvement with water quality
- B. No water quality regulatory requirements apply.
- C. Water quality regulatory requirements apply to this project (provide Evaluator's information below). Water quality and stormwater issues will be mitigated through compliance with the design requirements of authorized regulatory agencies.
- D. EPA Ground/Drinking Water Branch review required. Yes No
Concurrence received? Yes No
If Yes, Date of EPA Concurrence: 2/25/2020.
Attach the concurrence letter

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016 and executed by FHWA and FDOT.

Evaluator Name (print): Aylin Costa, PE	
Title: Senior Drainage Engineer	
Signature: <i>Aylin Costa</i>	Date: 2/26/2020

Table 1: Water Quality Criteria

Receiving Waterbody Name (list all that apply)	FDEP Group Number / Name	WBID(s) Numbers	Classification (I,II,III,IIIL,IV,V)	Special Designations*	NNC limits**	Verified Impaired (Y/N)	TMDL (Y/N)	Pollutants of concern	BMAP, RA Plan or SSAC
BCWCD C-2 Canal	N/A	N/A	V	N/A	N/A	No	No	N/A	N/A
BCWCD C-3 Canal	N/A	N/A	V	N/A	N/A	No	No	N/A	N/A

* ONRW, OFW, Aquatic Preserve, Wild and Scenic River, Special Water, SWIM Area, Local Comp Plan, MS4 Area, Other

** Lakes, Spring vents, Streams, Estuaries

Note: If BMAP or RAP has been identified in [Table 1](#), [Table 2](#) must also be completed.

Table 2: REGULATORY Agencies/Stakeholders Contacted

Receiving Water Name (list all that apply)	Contact and Title	Date Contacted	Follow-up Required (Y/N)	Comments
Hillsboro Canal via BCWCD C-2 Canal, and C-3 Canal	Carlos DeRojas, P.E. Section Leader-Surface Water Management Division, SFWMD	02/15/18		See attached meeting minutes for Drainage-Permit Coordination Meeting on 02/15/2018
Hillsboro Canal via BCWCD C-2 Canal, and C-3 Canal	Barbara Conmy, P.E. Section Leader-Natural Resource Management Division, SFWMD	02/15/18		See attached meeting minutes for Drainage-Permit Coordination Meeting on 02/15/2018
BCWCD C-2 Canal, and C-3 Canal	Jose Portillo, P.E. Engineer, BCEPGMD	02/21/2018		See attached meeting minutes for Drainage-Permit Coordination Meeting on 02/21/2018
BCWCD C-2 Canal, and C-3 Canal	Carl Archie, P.E. Engineering Unit Supervisor, BCWCD #2	02/21/2018		See attached meeting minutes for Drainage-Permit Coordination Meeting on 02/21/2018
BCWCD C-2 Canal, and C-3 Canal	Johana Narvaez, M.S.E.E. Natural Resource Specialist Senior, BCEPGMD	02/21/2018		See attached meeting minutes for Drainage-Permit Coordination Meeting on 02/21/2018



MEETING MINUTES



Project:	SW 10 th Street Connector PD&E Study	FPID No:	439891-1-22-02
		Contract No.:	C9V60
Meeting Place:	SFWMD Headquarters 3300 Gun Club Road West Palm Beach, FL	Meeting Date:	2/15/18
		Meeting Time:	9:45 a.m.
Participants:	See sign-in sheet for attendees		
Purpose:	FDOT – SFWMD Drainage Coordination Meeting		

Introductions

Project Overview

1. Cassie Piche, RS&H Project Manager, provided a brief overview of the project, preliminary alignment alternatives, and schedule. She indicated that the project will be procured through a design-build contract, which is currently funded in 2025. She noted, however, that funding is anticipated to be available sooner.

Drainage Overview

2. Chris Jackson, RS&H Senior Drainage Engineer, indicated that the project is located within the South Florida Water Management District (SFWMD) Hillsboro Canal Drainage Basin and Broward County Water Control District (BCWCD) C-2 Basin. He added that the project falls under the regulatory jurisdiction of the SFWMD and BCWCD #2.
3. Chris provided an overview of the existing drainage. He indicated that portions of the project fall within the FEMA 100-year floodplain, the City of Deerfield Beach Wellfield zone of influence, and within a drainage basin designated by BCWCD as a “water quality basin” which is regulated by the BCWCD control structure (S-4) and outfall to the SFWMD Hillsboro Canal. Therefore, in lieu of new stormwater management facilities within the basin, any of the existing stormwater management facilities within the entire basin could be expanded/modified as needed to provide the required water quality, water quantity, and floodplain compensation volume for the project. He explained this provides additional flexibility from the conventional approach of collecting and conveying project runoff to an adjacent, isolated offsite stormwater management facility for treatment and attenuation prior to discharge to receiving waters.
4. Carlos de Rojas, SFWMD, agreed with the “water quality basin” designation but noted that the BCWCD basin and infrastructure was not covered under any existing SFWMD Environmental Resource Permit (ERP). As such, he noted that an ERP application would also need to be submitted by BCWCD for the basin.
5. Chris stated that the proposed improvements do not physically impact existing wellfield infrastructure but that dry retention pretreatment may be required for wellfield protection. Carlos clarified that dry pretreatment retention would only be required if the proposed stormwater management facilities were physically located within the respective zone of influence.

6. Chris provided an overview of the potential stormwater management options. He indicated that the flexibility provided by the designation of the basin as a “water quality basin” allows for modification/expansion of the existing stormwater management facilities within the vacant golf course at Century Village and within the Deer Creek Golf Course, north of Hillsboro Boulevard. He noted the possibility of shared use drainage, similar to I-595 with the Lago Mar and Pine Island Ridge golf courses. In the event that these golf courses cannot be modified/expanded to accommodate the project, then FDOT would be required to acquire offsite parcels, most likely industrial parcels along the south side of the project. Chris noted that French drain was not a viable option for this project.
7. Chris indicated that the proposed Express Lanes depressed section would impact the existing cross drains serving the BCWCD C-2 and C-3 canals. He noted that pump stations or inverted siphons would be required to maintain these conveyances. He also noted that a pump station would be required to collect and convey the roadway runoff from the Express Lanes depressed section.
8. Carlos De Rojas inquired about the depth of the Express Lanes depressed section and the associated dewatering activities. Cassie stated the cuts would be 56’ deep with the roadbed sitting 18’-20’ below grade. Carlos noted that groundwater modeling / calculations would be needed to demonstrate that the proposed Express Lanes depressed section and associated dewatering activities do not adversely impact the wellfield.

Permit Requirements

9. Chris indicated that there are no existing ERPs for the project area. He added that there is only a Water Use Permit for the City of Deerfield Beach wellfield.
10. Chris indicated that there were no wetlands or listed species impacts, however, dredging activities will be required in other surface waters, including the BCWCD C-2 and C-3 canals.
11. Chris identified the anticipated environmental permits as follows: SFWMD Environmental Resource Permit, SFWMD Consumptive Use (Dewatering Modification), and USACE Section 404 Dredge & Fill Permit. In addition, a Surface Water Management License and a Natural Resource License may be required from the Broward County Environmental Protection & Growth Management Department (BCEPGMD) for proposed activities outside of the State Highway System limits.
12. Chris indicated that FDOT would be meeting with BCEPGMD on 2/21/18 to discuss the project and to determine any additional requirements and permit criteria.

Meeting Sign-In Sheet

SW 10th Street PD&E Study FDOT-SFWMD Drainage-Permit Coordination Meeting

February 15, 2018 @ 9.45 am
Meeting Location: SFWMD, 3300 Gun Club Road,
West Palm Beach, FL



	Name	Company	Phone	e-mail
	Anson Sonnett	FDOT	954-777-4474	anson.sonnett@dot.state.fl.us
CC	Claudia Calvo	FDOT	954-777-4476	claudia.calvo@dot.state.fl.us
✓	Cassie Piche	RS&H	954-236-7365	cassie.piche@rsandh.com
CJT	Chris Jackson	RS&H	954-236-7375	chris.jackson@rsandh.com
VC	Vanessa Caycedo	RS&H	954-236-7360	vanessa.caycedo@rsandh.com
	Jason Lee	KHA		Jason.Lee@kimley-horn.com
✓	Carlos deRojas <i>cd</i>	SFWMD		cderojas@sfwmd.gov
	Morgan Reins			mreins@sfwmd.gov
	Barb Conmy	SFWMD		bconmy@sfwmd.gov
	Justin Friedman	E Sciences		j.friedman@esciencesinc.com
	KENSONI Campbell	SFWMD	561-687-2561	kcampbell@sfwmd.gov
	Denise Palmatier	Kimley-Horn	501-723-0402	denise.palmatier@kimley-horn.com
	Hui Shi	FDOT	954-777-4357	Hui.Shi@dot.state.fl.us
	Margaret Bushmore	FDOT	954-777-4357	margaret.bushmore@dot.state.fl.us
	Garrett O'Brady	FDOT	954-777-4390	garrett.obrady@dot.state.fl.us

Meeting Sign-In Sheet

SW 10th Street PD&E Study FDOT-SFWMD Drainage-Permit Coordination

Meeting

February 15, 2018 @ 9.45 am

Meeting Location: SFWMD, 3300 Gun Club Road,
West Palm Beach, FL



	Name	Company	Phone	e-mail
	Anson Sonnett	FDOT	954-777-4474	anson.sonnett@dot.state.fl.us
c.c.	Claudia Calvo	FDOT	954-777-4476	claudia.calvo@dot.state.fl.us
✓	Cassie Piche	RS&H	954-236-7365	cassie.piche@rsandh.com
CST	Chris Jackson	RS&H	954-236-7375	chris.jackson@rsandh.com
VC	Vanessa Caycedo	RS&H	954-236-7360	vanessa.caycedo@rsandh.com
	Jason Lee	KHA		Jason.Lee@kimley-horn.com
✓	Carlos deRojas	SFWMD		cderojas@sfwmd.gov
SA	Hui Shi	FDOT	954-777-4457	hui.shi@dot.state.fl.us
MR	Margaret Rushmore	FDOT	954-777-4339	margaret.rushmore@dot.state.fl.us
BO	Garrett O'Bray	FDOT	954-777-4390	garrett.obray@dot.state.fl.us
	Lisa Stone	Kimley-Horn	561-840-0826	lisa.stone@kimley-horn.com
	Denise Palmatier	"	" " 0201	denise.palmatier " " "
	Jennifer Schull	NORTH / NIMS	786 367 4117	jennifer.schull@noaa.gov



MEETING MINUTES



Project:	SW 10 th Street Connector PD&E Study	FPID No:	439891-1-22-02
		Contract No.:	C9V60
Meeting Place:	Broward County 1 N. University Drive Plantation, FL	Meeting Date:	2/21/18
		Meeting Time:	2:00 p.m.
Participants:	See sign-in sheet for attendees		
Purpose:	FDOT-BCEPGMD Drainage Coordination Meeting		

Introductions

Project Overview

1. After introductions, Chris Jackson, RS&H Senior Drainage Engineer, provided a brief project overview and indicated the purpose of the meeting was to discuss potential impacts to Broward County Water Control District (BCWCD) #2 surface water management infrastructure. He discussed the preliminary alignments that were currently under evaluation as part of the Florida Department of Transportation (FDOT) SW 10th Street Project Development & Environment (PD&E) study.
2. Chris presented a stacked exhibit illustrating a northern alignment and a center alignment, both consisting of typical sections with four managed lanes within a depressed open cut section primarily serving traffic to/from the Sawgrass, Turnpike, and I-95, along with four at-grade, local general purpose lanes serving local SW 10th Street traffic.
3. Chris stated that the project is under a fast-track schedule since FDOT is planning to move directly from the PD&E study phase into the Design-Build phase, allowing for the proposed managed lanes to connect with the I-95 express lanes, which are currently under construction. He stated that the project is currently funded in 2025, however, funding is expected to become available sooner.

Drainage Overview

4. Chris indicated that the project is located within the South Florida Water Management District (SFWMD) Hillsboro Canal drainage basin and the BCWCD C-2 basin. He noted the project falls under the regulatory jurisdiction of SFWMD, as well as BCEPGMD since existing BCWCD #2 infrastructure and right-of-way is proposed to be impacted.
5. Chris indicated that portions of the project fall within the FEMA 100-year floodplain and the City of Deerfield Beach Wellfield zone of influence.
6. Chris provided an overview of the existing drainage. He indicated that the C-2 basin is controlled by one structure (S-4) at the north end of the C-2 Canal which discharges to the SFWMD Hillsboro Canal. He also indicated that, per prior correspondence with Carl Archie, BCWCD #2, the C-2 basin is designated as a “water quality basin” which provides storage, treatment, and groundwater control necessary to protect the wellfields from saltwater intrusion.

7. Chris acknowledged that stormwater treatment and attenuation would be required for the project. He also indicated that the project would likely impact the existing cross drains serving the BCWCD C-2 and C-3 canals.
8. Chris provided an overview of the potential stormwater management options. He stated that drainage and permit criteria could be achieved with the conventional approach of collecting and conveying project runoff to an adjacent, isolated offsite stormwater management facility for treatment and attenuation prior to discharge to receiving waters. Alternatively, he noted that the “water quality basin” designation provides additional flexibility by allowing for the potential of expanding/modifying any of the existing stormwater management facilities within the entire C-2 basin as needed to provide the required water quality, water quantity, and floodplain compensation volume for the project.
9. Chris indicated that the flexibility provided by the designation of the basin as a “water quality basin” would allow for modification/expansion of the existing stormwater management facilities such as the vacant golf course at Century Village and within the Deer Creek Golf Course, north of Hillsboro Boulevard. He noted that if these golf courses cannot be modified/expanded to accommodate the project, then FDOT would have very limited stormwater management options and would most likely need to acquire large offsite industrial parcels along the south side of the project.
10. Jose Portillo, BCEPGMD, agreed with the “water quality basin” designation but noted that FDOT would need to demonstrate no adverse impacts to conveyance at or near the point of inflow. Chris agreed with this concern and stated that FDOT would certainly evaluate any potential for adverse impacts.
11. Chris indicated that this “water quality basin” approach was also discussed at a meeting with SFWMD on February 15, 2018. He noted that SFWMD supported the approach but mentioned that there is no existing Environmental Resource Permit (ERP) for the C-2 basin and therefore a new ERP application would have to be submitted by Broward County if FDOT pursues this approach. The ERP application would require a model of the entire basin to demonstrate how it functions today. Carl and Jose stated there was no concern with this, but were unsure if this would require a new permit versus a modification to an existing permit, previously issued to Broward County for a project to the west of the SW 10th Street project.
12. Susan Juncosa, BCEPGMD, expressed concern with direct discharge of stormwater runoff to the C-2 Canal which is near the wellfields. She noted potential impacts to the wellfield and suggested that homeowners would be concerned that their ponds wouldn’t be degraded. Chris stated that similar concerns were encountered with the I-595 project in which there was direct discharge to the Lago Mar and Pine Island Ridge golf courses, and explained that the Department committed to providing sumps and baffles on every inlet throughout the project along with pollution control box just upstream of the discharge point into the golf course pond systems. He noted a similar approach could be taken for this project.
13. Chris indicated that at the recent SFWMD meeting, Carlos de Rojas clarified that dry pre-treatment retention is only required when the proposed stormwater management facilities are physically located within the wellfield zone of influence. Chris noted that while portions of the project falls within the wellfield zone of influence, none of the proposed stormwater management facilities do. He added that the proposed modifications/expansions to the stormwater management system could be limited to areas outside the wellfield zone of influence as well. Susan indicated that existing stormwater management facilities within the wellfield zone of influence could also become a concern since everything is interconnected.

14. Jose indicated that nutrient loading, particularly for nitrogen, could be a concern and inquired about the possibility of providing dry pre-treatment before discharging into the existing stormwater management system. Chris stated that it wouldn't be possible to provide dry pre-treatment within the existing corridor due to insufficient right-of-way width. However, he noted dry retention pre-treatment could be provided if roadway runoff was collected and conveyed by pipe to the offsite parcel located within the vacant golf course at Century Village, adjacent to Military Trail. Chris also stated that French drain might be able to be used along SW 10th Street to provide a limited amount of pre-treatment prior to discharge through a weir to the C-2 Canal. However, he had reservations since the need for pump stations to drain the depressed managed lanes section could make the use of French drain with weirs an unviable option. Susan and Jose also reaffirmed that French drains wouldn't be allowed within the wellfield zone of influence.
15. Susan inquired about the status of the Century Village golf course ownership, as she recalled a permit recently being submitted for a residential development. Chris stated that it is his understanding that there is a Memorandum of Agreement between the property owner, Fairway Investors LLC, and Toll Brothers for the three eastern vacant golf course parcels. However, he was unsure if the actual closing had yet gone through. Anson Sonnett, FDOT Project Manager, stated that Toll Brothers presented the City of Deerfield with plans to develop one parcel and turn the other two over to Century Village as passive parks but no approval has yet been given.
16. Chris stated that before putting too much effort into coordinating with Fairway Investors, Toll Brothers, or Deer Creek, FDOT needed to confirm the viability of the "water quality basin" approach. Otherwise, he noted, the focus would need to shift to traditional offsite pond siting and acquisition. Jose and Carl indicated that the "water quality basin" approach should be acceptable as long as the nutrient loading and pre-treatment concerns were properly addressed.
17. Chris indicated that the managed lanes depressed section would impact existing cross drains serving the BCWCD C-2 and C-3 canals. He noted that inverted siphons below the managed lanes depressed section, pipes on structure spanning over the managed lanes, and/or pump stations would be required to maintain these conveyances. He also noted that a pump station would be required for FDOT to collect and convey the roadway runoff from the managed lanes depressed section.
18. Carl stated they do not use stormwater pump stations since they have the advantage of gravity head within this area. He emphasized that maintenance and accessibility of the infrastructure would be a concern. He stated that while he would not prefer pump stations, he would not immediately rule them out. Carl asked that the options be sent to him so that he could evaluate them further. Jason Lee, Kimley-Horn, will prepare and distribute exhibits illustrating the three concepts.

Permit Requirements

19. Chris indicated that there are no existing Broward County or SFWMD stormwater management permits for the project or C-2 basin. He added that there is only a SFWMD Consumptive Use permit for the City of Deerfield Beach Wellfield.
20. Chris envisioned SFWMD would require submittal of an ERP application from Broward County to address the existing conditions of the BCWCD C-2 drainage basin, followed by a subsequent ERP application from FDOT for the SW 10th Street project that would build upon the permit to be issued to Broward County. He noted that the Broward County application would need to include drainage maps and ICPR model based on existing plans, atlas', as-builts, etc. and that the FDOT application would essentially modify the Broward

County drainage maps and ICPR model to reflect the additional impervious area and modified/expanded stormwater management facilities associated with the SW 10th Street project.

21. Carl mentioned that the County had similarly permitted one of its regional basins with SFWMD. He stated that this was done primarily to turn the entire area into a wellfield recharge basin and to facilitate large scale development.
22. Chris stated that while the proposed improvements do not physically impact or encroach existing wellfield infrastructure, SFWMD also requested that groundwater modeling be performed to ensure that the wellfields are not impacted by the managed lanes depressed section. He also mentioned that SFWMD requested additional analysis to ensure that dewatering activities do not adversely impact wellfields.
23. Chris noted that there were no wetlands within the project limits but that dredging activities would be required within other surface waters, including the BCWCD C-2 and C-3 canals.
24. Chris identified the anticipated environmental permits, as follows: SFWMD Environmental Resource Permit, SFWMD Consumptive Use (Dewatering), and USACE Section 404 Dredge & Fill Permit. In addition, he noted that a Surface Water Management License and a Natural Resource License would be required from BCEPGMD. Jose indicated that a Dewatering Approval may also be needed from BCEPGMD if dewatering is required within 500 feet of a contamination site.
25. Chris inquired about the new Broward County codes pertaining to sea level rise and antecedent (groundwater) conditions. Jose stated that the project is too far west to be affected by these new codes.

Meeting Sign-In Sheet

SW 10th Street PD&E Study FDOT-BCEPGMD Drainage-Permit Coordination Meeting

February 21, 2018 @ 2:00 pm

Meeting Location: Broward County, 1 N. University Drive,
Plantation, FL



	Name	Company	Phone	e-mail
<i>AS</i>	Anson Sonnett	FDOT	954-777-4474	anson.sonnett@dot.state.fl.us
<i>HS</i>	Hui Shi	FDOT	954-777-4476	hui.shi@dot.state.fl.us
	Cassie Piche	RS&H	954-236-7365	cassie.piche@rsandh.com
<i>CSJ</i>	Chris Jackson	RS&H	954-236-7375	chris.jackson@rsandh.com
<i>VC</i>	Vanessa Caycedo	RS&H	954-236-7360	vanessa.caycedo@rsandh.com
<i>GL</i>	Jason Lee	KHA	<i>561-317-0206</i>	Jason.Lee@kimley-horn.com
	Carlos Adoriso	BCEPGMD		CADORISIO@broward.org
<i>JP</i>	Jose Portillo	BCEPGMD		JPORCILLO@broward.org
<i>JW.</i>	Johana Narvaez	BCEPGMD	<i>954-519-0318</i>	JNARVAEZ@broward.org
<i>CA</i>	Carl Archie	BCWCD #2	<i>954-831-0753</i>	CARCHIE@broward.org
	<i>Claudia Calvo</i>	FDOT	<i>954-777-4476</i>	<i>claudia.calvo@dot.state.fl.us</i>
	<i>Ana Lily Padron</i>	HDR	<i>305-728-7459</i>	<i>analily.padron@hdrinc.com</i>
	<i>Ryan Solis-Rio</i>	<i>Conyedino</i>	<i>954-777-0044</i>	<i>rsolis-rio@conyedino.com</i>
	<i>Susan Juncosa</i>	<i>BC-WMD</i>	<i>954-831-0778</i>	<i>sjuncosa@broward.org</i>



MEETING MINUTES



Project:	SW 10th Street Connector PD&E Study	FPID No:	439891-1-22-02
		Contract No.:	C9V60
Meeting Place:	Century Village Community 3501 West Drive Deerfield Beach, FL	Meeting Date:	10/12/2018
		Meeting Time:	3:00 PM
Participants:	See sign-in sheet for attendees		
Purpose:	FDOT-Century Village Drainage Coordination Meeting		

Project Overview

1. Robert Bostian, FDOT Project Manager, provided a brief overview and description of the project, alternatives and schedule. He indicated that the first Alternatives Workshop held in April was an opportunity for the team to show the residents and locals what the plans for the corridor are. He indicated that while FDOT owns most of the corridor right-of-way (approximately 250 feet in width), there are a few, localized areas where some right-of-way will need to be acquired. He indicated that the following alternatives workshop will be held in November and that the PD&E process will be wrapped up by next summer, moving on to final design. The project will be procured through a design-build contract and is currently funded for 2022.

Drainage Overview

2. Chris Jackson, RS&H Senior Drainage Engineer, indicated that the project extends from just east of the Sawgrass Interchange to Military Trail. He indicated that the project is located and falls under the jurisdiction of the South Florida Water Management District (SFWMD) Hillsboro Canal Drainage Basin and Broward County Water Control District (BCWCD) C-2 and C-3 Basins. He added that Century Village Community is located within the C-2 Basin.
3. Chris mentioned that the project is in the PD&E Study phase, and as part of the drainage phase for that process, is developing a conceptual drainage design and defining any offsite pond requirements in order to select the best site for the project.
4. Chris stated that good progress has been made in the Pre-Development and Post-Development analysis of the area within the project limits and that the team has already developed a draft Conceptual Drainage Report/Pond Siting Report. The report includes Drainage Maps, Calculations and Models, and the analysis has resulted in the required parcel sizes for the stormwater management facilities that will be needed to meet permitting requirements as well FDOT drainage design criteria.
5. Chris stated that drainage analysis indicates approximately 11 acres are required for stormwater management of the SW 10th Street project limits from Powerline Road to the FEC railroad, including pump stations for conveyance of roadway runoff to the receiving pond/canal.
6. Chris stated that right-of-way acquisition for offsite ponds will be required to accommodate the 11 acres and mentioned there are no undeveloped parcels within or directly adjacent to the existing right-of-way.

7. Chris mentioned that the conventional approach for stormwater management facilities are pond site alternatives located relatively close to the corridor which receive untreated stormwater runoff via piping from the roadway corridor and then contain control structures which discharge the treated overflow into the receiving waters (C-2 Canal in this case). He added that BCWCD C-2 Basin is a little different, as it is designated as a “water quality basin” which provides storage, treatment, and groundwater control for the entire basin draining to it and is controlled by one structure (S-4) at the north end of the C-2 Canal which discharges to the SFWMD Hillsboro Canal. Therefore, in lieu of new stormwater management facilities within the basin, any of the existing stormwater management facilities within the entire basin could be expanded/modified as needed to provide the required water quality, water quantity, and floodplain compensation volume for the project. He explained this provides additional flexibility from the conventional approach of collecting and conveying project runoff to an adjacent, isolated offsite stormwater management facility for treatment and attenuation prior to discharge to receiving waters.
8. Chris explained the six identified alternatives depicted on the meeting exhibit:
 - Three conventional alternatives were identified for stormwater management facilities and defined conventional as pond site alternatives located relatively close to the corridor which receive untreated stormwater runoff via piping from the roadway corridor and then contain control structures which discharge the treated overflow into the receiving waters (C-2 Canal). He noted that all three alternatives were developed, and located off-frontage within the industrial area located south of SW 10th Street, just east of Powerline Road, and would require permanent easements for inflow and/or outflow. He added that the three alternatives avoid residential relocations but impacted existing businesses.
 - Three non-conventional (water quality basin) alternatives were identified for stormwater management facilities to the north of SW 10th Street. He noted that these were located within the vacant golf course property owned by Fairway Investors LLC within the Century Village community just south of Hillsboro Blvd. Chris noted that the golf course parcels were planned to be purchased by Toll Brothers for residential development and park space.
 - Chris explained that while all of the golf parcels were certainly viable alternatives, the westernmost (19.26-acre) parcel stood out above the rest due to better access for construction and maintenance, hydraulic connectivity, and avoidance of the planned residential development by Toll Brothers.
9. Dan Johnson, Master Management Executive Director, indicated that Century Village, Toll Brothers, and Fairway Investors signed a tri-party agreement a month ago, for the four parcels that constitute the golf course property. As part of the agreement, Fairway Investors will sell Toll Brothers the entire golf course property, then Toll Brothers will transfer the two westernmost parcels to Century Village, along with a third parcel (located just east of the Century Village clubhouse) upon construction of the Toll Brother’s stormwater management facility. The easternmost parcel (abutting Military Trail) will be developed by Toll Brothers into a multi-family residential community with 201 townhomes. He added that once those parcels are turned over, Master Management plans to develop those into a park for the residents at Century Village, which will include bike trails and walkways/sidewalks. He mentioned he was unsure how the residents would react to a pond in the site rather than their anticipated park.
10. Dan inquired about the possible benefits from turning one of those parcels into a pond. Chris stated that greatest benefit to the residents adjacent to the parcel in question, would be turning their homes into waterfront sites, and compensating Century Village for the right-of-way, essentially paying for the bike trails and walkways/sidewalks improvements.

11. Chris also added that the vacant golf course parcels are known to be contaminated and that FDOT would remediate them prior to construction. Dan stated that as part of the agreement, Toll Brothers will be fully remediating the four parcels.
12. Chris mentioned that if the Department were to acquire the parcel in question, Toll Brothers would have less acreage to remediate and that whoever owns the parcel would have the right to fair market value compensation.
13. Cassie inquired about the types of contaminants that the sites will be remediated for, and whether or not any testing had been done. Dan stated that the site will be remediated per the FDEP 5.5 ppm for arsenic criteria, and that much of the site will not be built on.
14. Cassie asked Dan if they could provide the contaminants' test results reports.
15. Dan stated that Toll Brothers has to turn over those reports within the next 30 days, as part of the agreement. However, FDEP does have them on record. Dan stated that they are on their due diligence period under their agreement, in which case if Toll Brothers does not remediate the site, the agreement is void.
16. Robert stated that the required stormwater acreage could be provided within any of the parcels and still incorporate the planned aesthetic features of the park.
17. Dan inquired about the Department's proposed pond site being located in the same parcel that Toll Brothers will be using for their retention pond. Chris explained that from a right-of-way acquisition perspective, the other parcels would have been cleaner since hydraulically connected with public right-of-way (i.e. C-2 Canal right-of-way). The only hydraulic connection to the subject parcel is through property owned in fee by several different private parties. Nonetheless, further analysis will have to be done on it, to ensure that permitting requirements are met within the area that Toll Brothers will not be using for their pond.
18. Chris explained that the viability of any of these parcels is contingent upon forthcoming regional modeling, contamination assessment/mitigation, and SFWMD and BCEPGMD permit requirements. He noted that they will require that the soil is remediated to avoid exacerbating the plume.
19. Dan mentioned that onsite and offsite testing has been underway, and the results indicate that contamination was low. Testing company was encouraged with the results, as they anticipated higher contamination levels.
20. Dan stated that the Due Diligence period for the tri-party agreement still has 40 more days on it. Property transfers/closing is anticipated for November 2019 for the two westernmost parcels. The third parcel being donated to Century Village (minus the Toll Brothers pond area) is not expected to be transferred until 2021 once Toll Brothers construction is completed.
21. Chris stated that the Department's timeline is more expeditious. The Department will need to know Century Village input to move forward on any of the options that are feasible. He noted that the two westernmost parcels combined are approximately 40 acres, and the ponds could meander and be designed in conjunction with the park plans.
22. Cassie asked if current site plans/renderings/figures could be shared with the Department to be further analyzed and work in conjunction with the park design.
23. Dan inquired on the impact on maintenance as a result from the additional stormwater runoff on their site. Chris explained that no additional maintenance would be required, as the acreage required for the pond site is enough to offset the runoff volume being generated by the additional travel lanes.
24. Vallen Smikle, Master Management Director of Planned Projects, stated that Toll Brothers plans/documents were already filed/submitted to City of Deerfield Beach for approval.
25. Dan mentioned Century Village prefers the Department to focus the stormwater management facility plans for the third parcel (east of the clubhouse) since they have no plans for the park or walking paths and amenities on such parcel.

26. Dan inquired on the project's anticipated date for construction of stormwater management facilities. Robert explained that it is anticipated for spring of 2022, and he added that the Department could work on advanced right of-way acquisition to build the ponds ahead of roadway construction if it is advantageous for all parties.

Next Steps / Action Items

1. RS&H to setup Drainage Coordination Meeting with Toll Brothers.
2. RS&H to obtain any available plans and documents from Toll Brothers and City of Deerfield Beach.

Meeting Sign-In Sheet

SW 10th Street PD&E Study

FDOT-Century Village Drainage Coordination

Meeting

October 12, 2018 @ 3:00 pm

Meeting Location: Century Village Community
3501 West Drive, Deerfield Beach, FL



Name	Company	Phone	e-mail
Silvana Alvarez	FDOT		silvana.alvarez@dot.state.fl.us
Claudia Calvo	FDOT	(954) 777-4476	claudia.calvo@dot.state.fl.us
Robert Bostian	FDOT	954 777-4427	Robert.Bostian@dot.state.fl.us
Lynn Kelley	FDOT	954-777-4334	lynn.kelley@dot.state.fl.us
CHRIS JACKSON	RS&H	954.205.0288	CHRIS.JACKSON@RSANDH.COM
Hui Shi	FDOT	954-777-4557	Hui.Shi@dot.state.fl.us
Dan Johnson	CVEMM	954-421-5566	djohnsen@cvedb.com
Robert Streather	CVEMM	954-421-5566	Rstreather@cvedb.com
Vallen Smikle	CVEMM	954-421-5566	vsmikle@cvedb.com
Jimmy Battaglia	RS&H	954-236-7399	jimmy.battaglia@rsandh.com
VANESSA CARCEPO	RS&H	(954) 236 7360	vanessa.caycedo@rsandh.com
RS&H: Cassie Piche			



MEETING AGENDA



Project:	SW 10th Street Connector PD&E Study	FPID No:	439891-1-22-02
		Contract No.:	C9V60
Meeting Place:	Conference Call	Meeting Date:	10/24/2018
		Meeting Time:	1:00 PM
Participants:	Robert Bostian, Cassie Piche, Chris Jackson, Vanessa Caycedo, Tina Borello, Zane Beard, Lisa Stone		
Purpose:	FDOT-Toll Brothers Drainage Coordination Meeting		

1. Introductions

2. Project Overview

Chris Jackson, RS&H Senior Drainage Engineer, provided a brief overview and description of the project, alternatives and schedule.

3. Drainage Overview

1. Chris discussed the pre-development and post-development drainage conditions for the project. He indicated that the project extends from just east of the Sawgrass Interchange to Military Trail, and that the project is located and falls under the jurisdiction of the South Florida Water Management District (SFWMD) Hillsboro Canal Drainage Basin and Broward County Water Control District (BCWCD) C-2 and C-3 Basins. He added that Century Village Community and future Toll Brothers properties are located within the C-2 Basin.
2. Chris mentioned that the project is in the PD&E Study phase, and as part of the drainage phase for that process, is developing a conceptual drainage design and defining any offsite pond requirements in order to select the best site for the project. He stated that good progress has been made in the Pre-Development and Post-Development analysis of the area within the project limits and that the team has already developed a draft Conceptual Drainage Report/Pond Siting Report. The report includes Drainage Maps, Calculations and Models, and the analysis has resulted in the required parcel sizes for the stormwater management facilities that will be needed to meet permitting requirements as well FDOT drainage design criteria.
3. Chris stated that the drainage analysis indicates approximately 11 acres are required for stormwater management of the SW 10th Street project limits from Powerline Road to the FEC railroad, including pump stations for conveyance of roadway runoff to the receiving pond/canal. Chris stated that right-of-way acquisition for offsite ponds will be required to accommodate the 11 acres.
4. Chris briefly discussed the conventional approach for stormwater management facilities (a pond site located near the corridor which receives untreated stormwater runoff via piping from the roadway corridor and then contain control structures which discharge the treated overflow into the receiving waters (C-2 Canal in this case)). He then mentioned that BCWCD C-2 Basin is designated as a "water quality basin" which provides storage, treatment, and groundwater control for the entire basin draining to it and is controlled by one structure (S-4) at the north end of the C-2 Canal which discharges to the SFWMD Hillsboro Canal. Therefore, pond site alternatives within existing stormwater management facilities in the C-2 basin have also been evaluated to expand/modify as needed to provide the required water quality, water quantity, and floodplain compensation volume for the project.

5. Chris discussed that pond siting analysis has been completed, identifying three conventional offsite pond alternatives, along with four additional non-conventional offsite pond alternatives identified within the vacant Century Village golf course parcels owned by Fairway Investors LLC (soon to be Toll Brothers) for accommodation of stormwater management needs.
6. Chris stated that from the recent meeting with Century Village, it was discussed that, of the non-conventional alternatives, Century Village prefers Alternative 6 (the parcel just east of the clubhouse). They currently have development plans for Alternatives 4 and 5 that have already been vetted through the community.
7. Zane Beard, Land Development Manager for Toll Brothers, stated that the parcel just east of the clubhouse (Alternative 6) is the location of their stormwater management facility. He stated that they will need approximately 4 acres of the total 17.11 acres for construction of their stormwater management facility.
8. Zane asked what the project schedule was for the FDOT SW 10th Street Connector project, particularly for right-of-way acquisition, concerned that the project schedule would interfere with their development plans. Robert stated that construction is currently planned for spring of 2022, and he added that the Department could work on advanced right of-way acquisition to build the ponds ahead of roadway construction if it is advantageous for all parties.
9. Zane stated that Toll Brothers will be breaking ground in February 2019 and that they do not have a closing date for parcel acquisition, as it is contingent upon permit approvals.
10. Chris asked if Toll Brothers was using conventional stormwater management facility design or if they were expanding the existing lake/canal system within the parcel for volume compensation of the C-2 basin. Zane stated that they are expanding the existing facilities for their pond construction.
11. Cassie Piche, RS&H Project Manager, mentioned concerns over the presence of arsenic within the vacant golf course parcels and asked if any testing has been done for these parcels by Toll Brothers. Zane stated that they have done contamination testing, and although the reports were not yet available, results indicated lower contamination than originally anticipated.
12. Cassie asked if Toll Brothers could provide any of their development plans, reports, etc. Zane stated that their Site Assessment Report is to be submitted Friday, October 26th, and that he will send it over to RS&H once it has been submitted.

4. Next Steps / Action Items

1. Continued coordination with Toll Brothers as regional modeling progresses.

Attachment B

Sole Source Aquifer Checklist

SOLE SOURCE AQUIFER CHECKLIST

Topic No. 650-000-001

Project Development and Environmental Manual

PROJECT NAME: SW 10th Street Connector PD&E Study

NAME OF SOLE SOURCE AQUIFER: Biscayne Aquifer

1. Location of project: City of Deerfield Beach, Broward County, Florida, in Sections 2, 3, 4, 9, 10 and 11 of Township 48 South and Range 42 East.

2. Project description: The project will improve system linkages and connectivity between I-95, Florida's Turnpike, and SR 869/SW 10th Street. The improved system connectivity and capacity will be achieved by widening to provide for a limited-access connector facility along the SR 869/SW 10th St corridor.

3. Is there any increase of impervious surface? Yes

If so, what is the area 34.74-acre

4. Describe how storm water is currently treated on the site? Stormwater treatment and attenuation is currently provided within roadside swales that overflow to the BCWCD #2 C-3 and C-2 canals.

5. How will storm water be treated on this site during construction and after the project is complete?

During construction discharges of stormwater will be regulated by NPDES Generic Permit for Stormwater Discharge from Large and Small Construction Activities, which requires preparation of a project specific Stormwater Pollution Prevention Plan and Erosion Control Plans outlining Best Management Practices.

Regulatory agencies including SFMWD and USACE will also review the Constructions Plans, Stormwater Pollution Prevention Plan and Erosion Control Plans for the project and may identify special conditions for permit issuance thru the SFWMD Environmental Resource Permit or USACE Section 404 Permit approvals process. Both of the permits referenced above are required prior to commencement of any construction activities.

Furthermore dewatering activities during construction are regulated by South Florida Water Management District – Water Use Permits Program and will adhere to the attached Master Water -Use (Dewatering) Permit Conditions as well as project specific Best Management Practices .

After project completion stormwater treatment and attenuation will be provided within new offsite wet retention ponds or expansion of existing offsite retention areas .

6. Are there any underground storage tanks present or to be installed? Yes.

Include details of such tanks. See attached SCER Excerpts (**Map and Possible Contaminated Sites Listing: Attachment B-1**) containing map locations and general information for all existing underground storage tanks (USTs) within the project area.

7. Will there be any liquid or solid waste generated? TBD During Design/Construction Phase.

If so how will it be disposed of? N/A

SOLE SOURCE AQUIFER CHECKLIST

Topic No. 650-000-001

Project Development and Environmental Manual

8. What is the depth of excavation? TBD During Design/Construction Phase. Anticipated depth of excavation for a depressed roadway section is 40' below existing grade in addition ground anchors will be extending below the roadway to support a tremie seal that will be placed to support the depressed roadway. Also, temporary sheeting is expected to be used in order to perform the excavation needed to construct the depressed section, the sheeting will need to extend much deeper than the excavation depth and can be removed when the completed. Proposed Bridge foundations lengths including auger or driven piles will be determined during the design phase. Pile locations, depths and construction means and methods will be included in plans and documentation submittals to regulatory agencies as part of the permitting process. These are all anticipated to follow typical design and construction details of similar projects in South Florida.

9. Are there any wells in the area that may provide direct routes for contaminants to access the aquifer and how close are they to the project? The project is located in the immediate vicinity of the City of Deerfield Beach Wellfield. See attached map of Broward County wellfield protections zones. Proposed retention ponds or expansion to existing ponds does not fall within the limits of the wellfield cone of depression (Protection Ordinance for Zone 3), stormwater discharges to the C-2 Canal which runs through the cone of depression are anticipated similar to the existing condition.

10. Are there any hazardous waste sites in the project area, especially if the waste site has an underground plume with monitoring wells that may be disturbed? Yes **Include details.** See SCER.

A Contamination Screening Evaluation Report (CSER) conducted as part of the PD&E study identified potential contaminated sites within or adjacent to the project area. Any of the identified potential contaminated sites to be impacted by construction, will require Level 2 Contamination Testing during the final design phase to identify means and methods for handling any encountered contaminated soil or groundwater during construction.

Additionally FDOT specifications require the contractor thru the project engineer, engage the District Contamination Impact Coordinator (DCIC), who will engage the services of the Department's Contamination Assessment/Remediation Contractor (CAR), should any contaminated or asbestos containing materials be encountered within the construction site.

11. Are there any deep pilings that may provide access to the aquifer? Yes, construction of the depressed section is expected to require sheet pile installation encroaching into the upper limits of the Biscayne Aquifer. As well as the depressed section of roadway that will include grout anchors extended below a 10' thick tremie seal to support the roadway, these areas will be sealed, and storm water collected and pumped to the surface after construction is complete. Additionally, construction of bridge structure foundations may encroach into the upper limits of the Biscayne Aquifer. Foundations construction will adhere to best management practices widely utilized throughout South Florida for similar projects with similar encroachments.

SOLE SOURCE AQUIFER CHECKLIST

Topic No. 650-000-001

Project Development and Environmental Manual

12. Are Best Management Practices planned to address any possible risks or concerns? Yes, Standard Stormwater Management BMPs after project completion and SWPPP/Erosion Control during construction. In addition to the proposed stormwater BMPs which will improve water quality within the overall basin, the depressed section will be constructed water tight with a tremie seal, drainage collection and conveyance system, and pump station in order to prevent roadway flooding, as well as leakage or infiltration to the aquifer.

13. Is there any other information that could be helpful in determining if this project may have an effect on the aquifer? Please refer to Public Water Supply Wells Considerations (**Attachment B-2**) and/or Contamination Screening Evaluation Report for more information.

14. Does this Project include any improvements that may be beneficial to the aquifer, such as improvements to the wastewater treatment plan? Yes, the proposed stormwater BMPs will improve water quality within the overall basin by providing significant surplus water quality treatment volume. Additionally, the proposed (interconnected) wet retention pond or expanded existing wet retention ponds will increase storage opportunities within the C-2 basin allowing for more recharge area to the aquifer and wellfield.

Attachment B-1

SCER Excerpts:

Map and Possible Contaminated Sites Listing

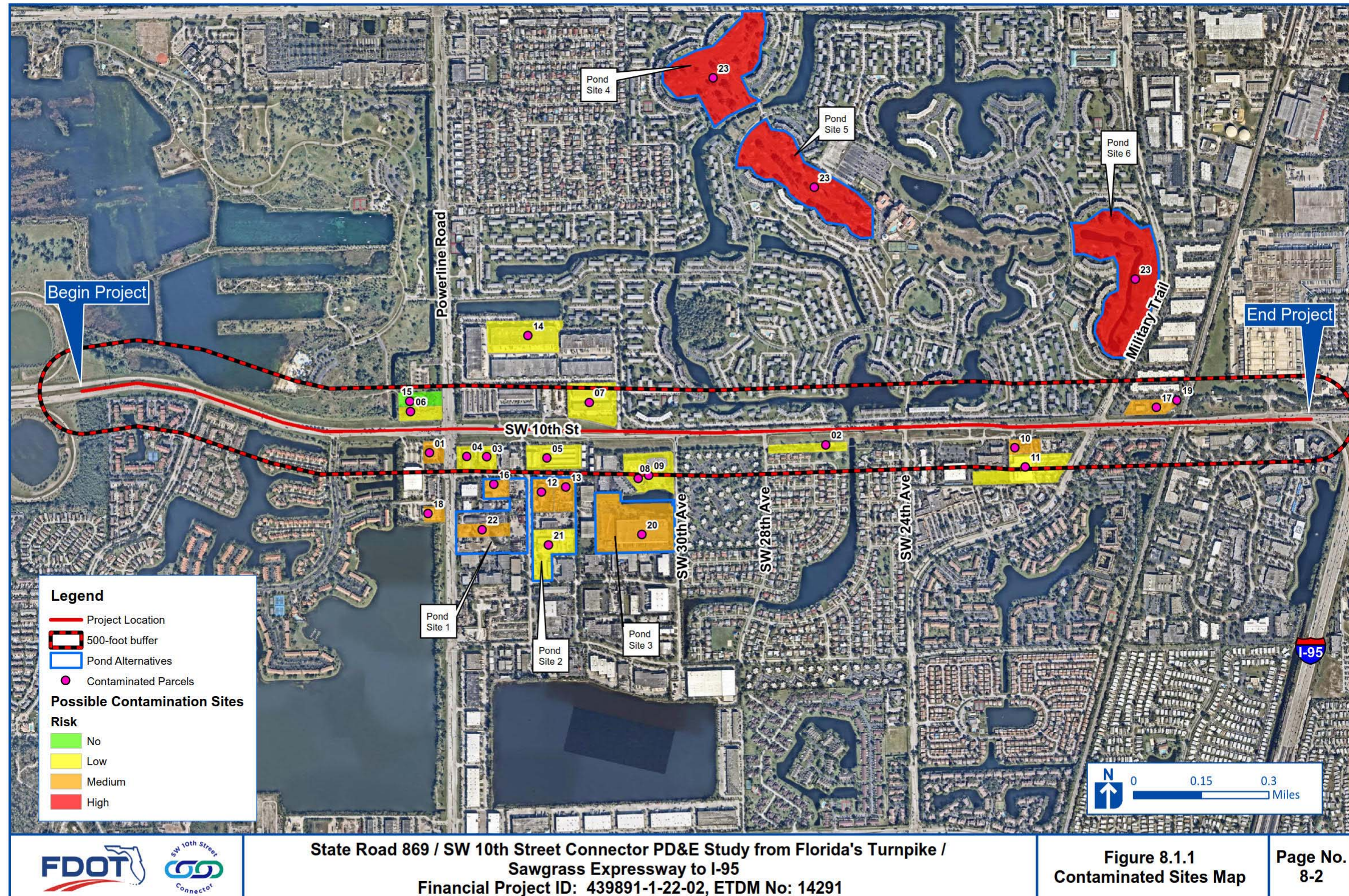


TABLE 8.1. POTENTIAL CONTAMINATED SITES SUMMARY

Site No.	Site No. per GeoSearch Radius Report	Facility Name	Location/ Address	County	Facility ID	Distance from ROW	Potential Concern(s)	Site History and Potential Contamination Parameters	Risk Evaluation Rating
01	05	Shell – First Coast Energy #1836	1011 S. Powerline Road, Deerfield Beach, FL	Broward	9800891 2049BCBF 03329BCST	Southwest adjacent	Operational USTs – Gas Station	This facility is an active retail station that contains four 10,000-gallon unleaded gas USTs and one 8,000-gallon vehicular diesel UST. The USTs were reportedly installed in 1998, and remain in service. The facility reported a petroleum discharge in March 2015. Cleanup activities for the discharge have since been completed, and the facility received a Site Rehabilitation Completion Order (SRCO) from the FDEP in September 2017. An inspection completed in October 2017 indicated full compliance of the storage tank system. There were no other releases, discharges, and/or major compliance issues identified in association with this facility. The facility remains an operational gas station and is associated with a Medium risk.	Medium
02	06	City of Deerfield Beach – Well FA-2	2450 SW 10 th Street, Deerfield Beach, FL	Broward	9812649 13247BCST	South adjacent	Operational Storage Tank	This facility currently contains one 1,000-gallon emergency generator diesel fuel aboveground storage tank (AST), which was observed during field reconnaissance. The tank was staged on a concrete pad and did not appear to be within secondary containment. The AST was reportedly installed in April 2011 with double-walled construction. There were no releases, discharges and/or major compliance issues identified in association with this facility. The most recent compliance inspection, dated September 2016, found the facility to be in compliance and the AST in good condition. The facility remains an operational storage tank site and is associated with a Low risk.	Low
03	07	Home Aide Diagnostics, Inc. (Formerly Konica Graphic Imaging Intl. Inc.)	1072 S. Powerline Road, Deerfield Beach, FL	Broward	FLR00007669 5	South adjacent	Hazardous waste (CESQG)	This facility was identified as a RCRA Conditionally Exempt Small Quantity Generator (CESQG). The CESQG designation indicates that this facility generates less than 100 kilograms per month (kg/mg) of hazardous waste. Waste types documented for this facility include ignitable waste (D001) and corrosive waste (D002). Additional documentation regarding this facility was not identified. There were no violations, releases, or corrective action enforcements identified in association with this facility. This facility currently operates as a wholesale medical supplier with truck loading bays observed in the field and is associated with a Low risk.	Low
04	08	Med-Care Pharmacy Inc. / Dana Medical Properties	1052 S. Powerline Road, Deerfield Beach, FL	Broward	9100756 02169BCST	South adjacent	Former UST Operational AST	This facility historically contained one 550-gallon emergency generator diesel fuel UST. The UST was reportedly removed in 1998 and replaced with the existing 1,000-gallon emergency generator diesel fuel AST, which remains in operation. There were no releases, discharges and/or major compliance issues identified in association with this facility. The most recent compliance inspection, dated September 2016, found the facility to be in compliance and the AST in good condition. This facility currently operates as a pharmacy and is associated with a Low risk.	Low
05	10	Public Storage (Formerly Farmer & Irwin Corp.)	3301 SW 11 th Street, Deerfield Beach, FL	Broward	8838386	South adjacent	Former fuel USTs	This facility historically contained one 3,000-gallon unleaded gas UST and one 1,000-gallon vehicular diesel UST, which were reportedly installed in 1973 and removed in 1992. There were no releases, discharges and/or major compliance issues identified in association with this facility. However, no documentation regarding tank closure or assessment was identified in the database review. This site has been redeveloped into a self-storage business, which was observed in the field. As such, this facility was assigned a Low risk.	Low
06	11	Quiet Waters Park	401 South Powerline Road, Deerfield Beach, FL 33442	Broward	98074	North adjacent	Yard Waste/ Debris	A portion of the park was authorized as a Disaster Debris Management Site (DDMS). This facility would receive yard waste during a designated disaster. This authorization is provided annually from the FDEP. The latest authorization was issued on March 28, 2018 and is associated with a Low risk.	Low

TABLE 8.1. POTENTIAL CONTAMINATED SITES SUMMARY

Site No.	Site No. per GeoSearch Radius Report	Facility Name	Location/ Address	County	Facility ID	Distance from ROW	Potential Concern(s)	Site History and Potential Contamination Parameters	Risk Evaluation Rating
07	12	Devcon	3165 SW 10 th Street, Deerfield Beach, FL	Broward	FLTMP9103109	North adjacent	Hazardous waste (CESQG)	This facility was identified as a RCRA Conditionally Exempt Small Quantity Generator. The CESQG designation indicates that this facility generates less than 100 kg per month of hazardous waste. Additional documentation regarding this facility was not identified. There were no violations, releases, or corrective action enforcements identified in association with this facility. This facility is associated with a Low risk.	Low
08	13A	Ryan Inc. Eastern Shop	1071 SW 30 th Avenue, Deerfield Beach, FL	Broward	FLD982139628	300 ft. south	Various	This facility was originally classified as a RCRA Small Quantity Generator (SQG) in May 1990. The SQG designation indicates that this facility generates 100-1000 kg per month of hazardous waste. Waste types documented for this facility include ignitable waste (D001) and spent halogenated solvents (F002 and F004). The facility appears to have been closed since November 2011, and the facility is no longer an active RCRA generator. There were no violations, releases, or corrective action enforcements identified in association with this facility. The facility currently operates as a Solatube Dealer, installing residential daylighting and solar-powered attic ventilation, and is associated with a Low risk.	Low
09	13B	United Wholesale	1027 SW 30 th Avenue, Deerfield Beach, FL	Broward	FLR000033134	300 ft. south	Various	This facility was originally classified as a RCRA Small Quantity Generator 1997. However, the facility was designated as closed in 1998, and is no longer classified as a RCRA generator. The SQG designation indicates that this facility generates 100-1000 kg per month of hazardous waste. Waste types documented for this facility include expired pharmaceutical products including reactives, flammables and poisons. There were no violations, releases, or corrective action enforcements identified in association with this facility. This facility is associated with a Low risk.	Low
10	14A	Brothers Dry Cleaning Inc. / One Price Dry Cleaner	1141-1145 S. Military Trail, Deerfield Beach, FL	Broward	9800676 FLR000063537	120 ft. south	Drycleaner	This facility is a former drycleaner that previously contained one AST containing dry-cleaning solvent. The AST has reportedly been removed with no supporting documentation. The facility is listed as closed. The facility was previously classified as a RCRA Small Quantity Generator (SQG), associated with ignitable wastes (D001) and tetrachloroethylene (D039), a dry-cleaning solvent. The facility was recategorized as a non-generator in 2011. There were no violations, releases, or corrective action enforcements identified in association with this facility. The facility current remains vacant. Based on field reconnaissance, it was unable to determine if this facility was a drop-off only facility or if dry cleaning took place at this facility. This facility is associated with a Medium risk.	Medium
11	14B	Wal-Mart Neighborhood Market #3104 / Global Media Group, Inc.	1101 & 1121 S. Military Trail, Deerfield Beach, FL	Broward	FLR000198986 97406	220 ft. south	Various	The Wal-Mart Neighborhood Market #3104 facility is listed as a RCRA CESQG, in association with a variety of waste categories related to the existing retail supermarket operations. The CESQG designation indicates that this facility generates less than 100 kg per month of hazardous waste. There were no violations, releases, or corrective action enforcements identified in association with this facility. The Global Media Group, Inc. facility was identified in the Solid Waste Facilities database as an inactive waste tire collector, with no reported violations. This facility is associated with a Low risk.	Low

TABLE 8.1. POTENTIAL CONTAMINATED SITES SUMMARY

Site No.	Site No. per GeoSearch Radius Report	Facility Name	Location/ Address	County	Facility ID	Distance from ROW	Potential Concern(s)	Site History and Potential Contamination Parameters	Risk Evaluation Rating
12	15	City of Deerfield Beach	Turner Envirologic Area, Deerfield Beach, FL	Broward	BF060501000	1000 ft. south	Brownfield Area (see Site 16 below for additional details)	This site is a potential pond site and was declared a Brownfield Area under the City of Deerfield Beach Resolution Number 2005-179, dated October 18, 2005. The area designation alone does not represent a significant contamination concern. However, the area largely coincides with the East Coast Asphalt Corp. facility, discussed further below and is associated with a Medium risk.	Medium
13	16	East Coast Asphalt Corporation	3300 SW 11 th Street, Deerfield Beach, FL	Broward	8944925 00954BCST 0762BCBF 31481	1000 ft. south	Documented petroleum impacts onsite (soil and groundwater)	This facility is a potential pond site that historically contained five (5) ASTs (vehicular diesel, miscellaneous petroleum, hazardous substance) ranging from 4,000-25,000 gallons. The ASTs have reportedly been removed from the site. The presence of storage tanks was not confirmed during site reconnaissance. The facility reported a petroleum discharge in August 1989 upon the discovery of diesel contamination. Immediately after discovery, a portion of the contaminated area was excavated. A Remedial Action Plan (RAP) was approved in 1991, and remedial activities occurred from 1991 until being discontinued in 1995. The facility was deemed eligible for cleanup funding under the State-funded Petroleum Cleanup Participation Program (PCPP) in 1997 with a cleanup priority score of 25. The most recent site assessment report, dated May 2000, indicated the presence of petroleum contamination in soil and groundwater at the site. The approximate limits of the contaminant impacts appear to lie largely within the site boundaries, with groundwater flow depicted to the southeast, away from the project study area right-of-way. The facility received notification of funding availability for assessment activities in October 2017. Requests for Site Access Agreements were requested in December 2017 and January 2018. No Limited Contamination Assessment Report (LCAR) has been submitted as of May 2018. At this time, the full assessment and cleanup of petroleum impacts have yet to be completed. The facility was listed in the Broward County contaminated sites database and was identified in association with the Turner Envirologic Area brownfield, discussed above. Based on the ongoing site assessment activities at this facility, it was designated with a Medium risk.	Medium
14	18A	Dana Classic Fragrances, Inc.	720 S. Powerline Road, Deerfield Beach, FL	Broward	FLT08007948 6 FLR00015277 7	450 ft. north	Various	Four (4) facilities were listed in this multi-tenant warehouse property (Site 18; folio no. 484203230010) situated at the northeastern intersection of SW 10 th Street and South Powerline Road. Two facilities were reported at 720 South Powerline Road. The Dana Classic Fragrances Inc. facility was listed as an active RCRA CESQG. Waste types documented for this facility include cosmetics, beauty supplies and perfumes. There were no major violations, releases, or corrective action enforcements identified in association with this facility. This designation is associated with a Low risk evaluation.	Low
15	19	Deerfield Quarry	Deerfield Beach, FL	Broward	10240603	Within the 500ft. buffer	None	This facility was listed under the Mineral Resource Data System (MRDS) database in the GeoSearch Radius Report. The facility was identified as a crushed stone producer. There were no releases, discharges, and/or major compliance issues identified in association with this facility. This facility is now part of Quiet Waters Park and is adjacent to the Park's maintenance facility.	No

TABLE 8.1. POTENTIAL CONTAMINATED SITES SUMMARY

Site No.	Site No. per GeoSearch Radius Report	Facility Name	Location/ Address	County	Facility ID	Distance from ROW	Potential Concern(s)	Site History and Potential Contamination Parameters	Risk Evaluation Rating
16	23	Man-Con Inc. / Stan Freitag Equipment Rental, Inc.	3460 SW 11 th Street, Deerfield Beach, FL	Broward	9401000 01022BCST 54871	400 ft. south	Operational AST, Former solid waste facility	<p>The Man-Con Inc. facility is a potential pond site and currently contains one 1,000-gallon vehicular diesel AST, which was reportedly installed in 1994 and remains in operation. During field reconnaissance, could not confirm presence or absence of AST due to facility being gated and access was limited. There were no releases, discharges and/or major compliance issues identified in association with this facility. The most recent compliance inspection, dated July 2016, found the facility to be in compliance and the AST in good condition. The AST was not identified during site reconnaissance. The facility remains an operational storage tank site and is associated with a Medium risk.</p> <p>The Stan Freitag Equipment Rental, Inc. facility was identified as a waste processing facility, specifically a Material Recovery Facility – Class I & III. The facility was listed in the Solid Waste Facilities database in the GeoSearch Radius Report. According to the Radius Report and FDEP Map Direct database, the facility was given a No Further Action status in July 2010. There were no releases, discharges and/or major compliance issues identified in association with this facility. No additional documentation was available for review.</p>	Medium
17	24	Cen-Deer Management Inc. / Nanaks Landscaping / Trolley Tours	998 S. Military Trail, Deerfield Beach, FL	Broward	8840464 13642BCST 2768ABCBF	North adjacent	Various	<p>The Cen-Deer Management Inc. facility historically contained four 888-gallon USTs (leaded gas, unleaded gas, vehicular diesel), which were reportedly removed from the site in 1986. The facility reported a petroleum discharge in October 1985. Cleanup activities for the discharge have since been completed, and the facility received a Site Rehabilitation Completion Order (SRCO) from the FDEP in November 2011. There were no other releases, discharges and/or major compliance issues identified in association with this facility.</p> <p>The Trolley Tours facility was listed as a Broward County contaminated site in association with the documented cleanup activities which occurred at the Cen-Deer Management Inc. facility, discussed above.</p> <p>The Nanaks Landscaping facility is an active lawn care service provider. The facility currently maintains a Hazardous Material Management license with Broward County in association with petroleum products, solvents, rags, fluorescent tubes, and pesticides. The facility also contains two 300-gallon vehicular diesel ASTs and one 250-gallon emergency generator diesel AST, which were confirmed during field reconnaissance. There have been no discharges associated with this facility. The most recent compliance inspection, dated March 2017, found the facility to be in compliance. No storage tanks were observed during site reconnaissance. The facility remains an operational storage tank site and is associated with a Medium risk.</p>	Medium

TABLE 8.1. POTENTIAL CONTAMINATED SITES SUMMARY

Site No.	Site No. per GeoSearch Radius Report	Facility Name	Location/ Address	County	Facility ID	Distance from ROW	Potential Concern(s)	Site History and Potential Contamination Parameters	Risk Evaluation Rating
18	26	Cache Cleaners	1151 S. Powerline Road, Deerfield Beach, FL	Broward	9814593	250 ft. west of Pond 1	Drycleaner	This facility was identified as a drycleaner, and currently contains one AST containing tetrachloroethylene (PCE) which was installed in 2015. During field reconnaissance, presence or absence of AST could not be confirmed. There were no releases, discharges and/or major compliance issues identified in association with this facility. Recent documentation suggests ongoing operation and dry-cleaning activities take place at this facility. The facility remains an operational storage tank site and is associated with a Medium risk.	Medium
19	27	Deerfield Beach City – Well #17	994 S. Military Trail, Deerfield Beach, FL	Broward	8622498	Within 500 ft. buffer	Former UST Operational AST	This facility historically contained one 600-gallon emergency generator diesel fuel UST. The UST was reportedly removed in 1987 and replaced with the existing 550-gallon emergency generator diesel fuel AST, which remains in operation and was confirmed onsite during field reconnaissance. The facility reported a petroleum discharge in October 1985. Cleanup activities for the discharge have since been completed, and the facility received a No Further Action status in March 2007. There were no other releases, discharges and/or major compliance issues identified in association with this facility. An AST in secondary containment was observed during site reconnaissance. The facility remains an operational gas station and was associated with a Medium risk.	Medium
20	29	Rexall Sundown, Inc.	1111 SW 30 th Avenue, Deerfield Beach, FL	Broward	9803298 03057BCST	800 ft. south	Operational Storage Tank	This facility is a potential pond site and currently contains one 1,000-gallon emergency generator diesel fuel AST, which was reportedly installed in February 1998. There were no releases, discharges and/or major compliance issues identified in association with this facility. The most recent compliance inspection, dated July 2017, found the facility to be in compliance and the AST in good condition. One AST was observed during site reconnaissance. The facility remains an operational gas station and was associated with a Medium risk.	Medium
21	30	Hanson Roof Tile	1340 SW 34 th Avenue, Deerfield Beach, FL	Broward	8627909 01033BCST FLD98417521 6	0.21 miles south	Storage tanks	This facility is a potential pond site that historically contained one 3,000-gallon vehicular diesel UST, which has reportedly been removed from the site. The facility reported a petroleum discharge in March 1990. The facility was issued a No Cleanup Required status from the FDEP, and cleanup activities were deemed complete in August 2007. The facility was identified as a RCRA CESQG, and currently maintains a Hazardous Materials license through Broward County in association with the active roofing manufacturing operations. The most recent compliance inspection, dated July 2016, found the facility to be in compliance. The inspection noted that the facility contained two 500-gallon used oil ASTs, stored within secondary containment, and an empty 500-gallon diesel fuel tank. No additional discharges, releases, or major compliance violations were reported for this facility. No storage tanks were observed during field reconnaissance. This facility is associated with a Low risk.	Low

TABLE 8.1. POTENTIAL CONTAMINATED SITES SUMMARY

Site No.	Site No. per GeoSearch Radius Report	Facility Name	Location/ Address	County	Facility ID	Distance from ROW	Potential Concern(s)	Site History and Potential Contamination Parameters	Risk Evaluation Rating
22	32	Hardrives Asphalt Company	1200 S. Powerline Road, Deerfield Beach, FL	Broward	8944976 01802BCST	850 ft. south	Operational ASTs	This facility is a potential pond site that manufactures asphalt for roadway repairs. Materials for asphalt production are stored onsite. The facility currently contains two 15,000-gallon "other non-regulated" ASTs, one 12,000-gallon fuel oil AST, and one 6,500-gallon vehicular diesel AST. The ASTs were reportedly installed between 1974 and 1986. There were no releases, discharges and/or major compliance issues identified in association with this facility. The most recent compliance inspection, dated September 2016, found the facility to be in compliance and the ASTs in good condition. ASTs were observed during field reconnaissance. The facility is a potential pond site that manufactures asphalt and stockpiles materials onsite and is associated with a Medium risk.	Medium
23	Site not listed in Radius Report	Century Village Golf Course	450 Century Boulevard, Deerfield Beach, FL	Broward	Site not listed in Radius Report	North adjacent	Pesticides Herbicides Arsenic	This site is a former golf course dating back to the early 1970's and operating as a golf course through April 2013. Broward County has issued Environmental Assessment and Remediation License numbers 1281,1282, and 1283 for five parcels on the golf course. A Site Assessment Report (SAR) dated November 20, 2017 was submitted to Broward County. Assessment activities described in the SAR indicate arsenic contamination in the groundwater and soils. Broward County required a SAR Addendum and has issued extensions for submitting this addendum. Quarterly monitoring reports have been submitted and based on the Fourth Quarter Monitoring Report dated March 7, 2018 arsenic continues to be detected in the groundwater, but concentrations when compared to assessments done in 2014 are stable or decreasing. The report indicated no additional groundwater monitoring. Broward County approved the no further monitoring but reserved the right to require additional assessment following submittal of the SAR addendum. The SAR Addendum was submitted on November 1, 2018 and documented organochlorinated pesticide parameters and arsenic that exceed their respective SCTLs. A Risk Evaluation was completed for the pesticides which recommended that a Restrictive Covenant be prepared to restrict the property to a passive recreational park. Additionally, groundwater impacts (arsenic) were identified that showed stable conditions through a year-long monitoring period. It was also noted that a Restrictive Covenant would be placed on the property to preclude the use of groundwater at the site. A Restrictive Covenant is being proposed as a way to manage the contaminants left in place. The property is a potential pond site that contains arsenic and pesticides at concentrations that exceed their respective cleanup target levels in soil and/or groundwater and is associated with a High risk.	High

*GeoSearch Radius Report Sites 1-4, 9, 17, 22, and 28A-C are NPDES permits and therefore were not included in this table. GeoSearch Radius Report Sites 18B, 18C, 20, 21A, 21B, 25, 28A-C, and 31 are more than 500 feet from the project corridor and therefore were not included in this table.

Attachment B-2

Public Water Supply Wells Considerations



MEMORANDUM

To: Chris Jackson, PE, LEED AP
RS&H, Inc.

Phil Schwab, PE
RS&H, Inc.

From: Jason C. Sheasley, PG

Date: September 13, 2019

**RE: Public Water Supply Wells Considerations
FPID No. 439891-1-22-02
SW 10th Street Connector PD&E Study
Broward County, Florida**

Kimley-Horn and Associates, Inc. (Kimley-Horn) has reviewed the SW 10th Street Connector Project Development & Environmental (PD&E) Study Preferred Alternative plans which propose to depress a section of SW 10th Street adjacent to existing public water supply wells maintained by the City of Deerfield Beach. Based on our review of the plans and Deerfield Beach well field data we do not anticipate any adverse impacts to the existing public water supply wells.

BACKGROUND

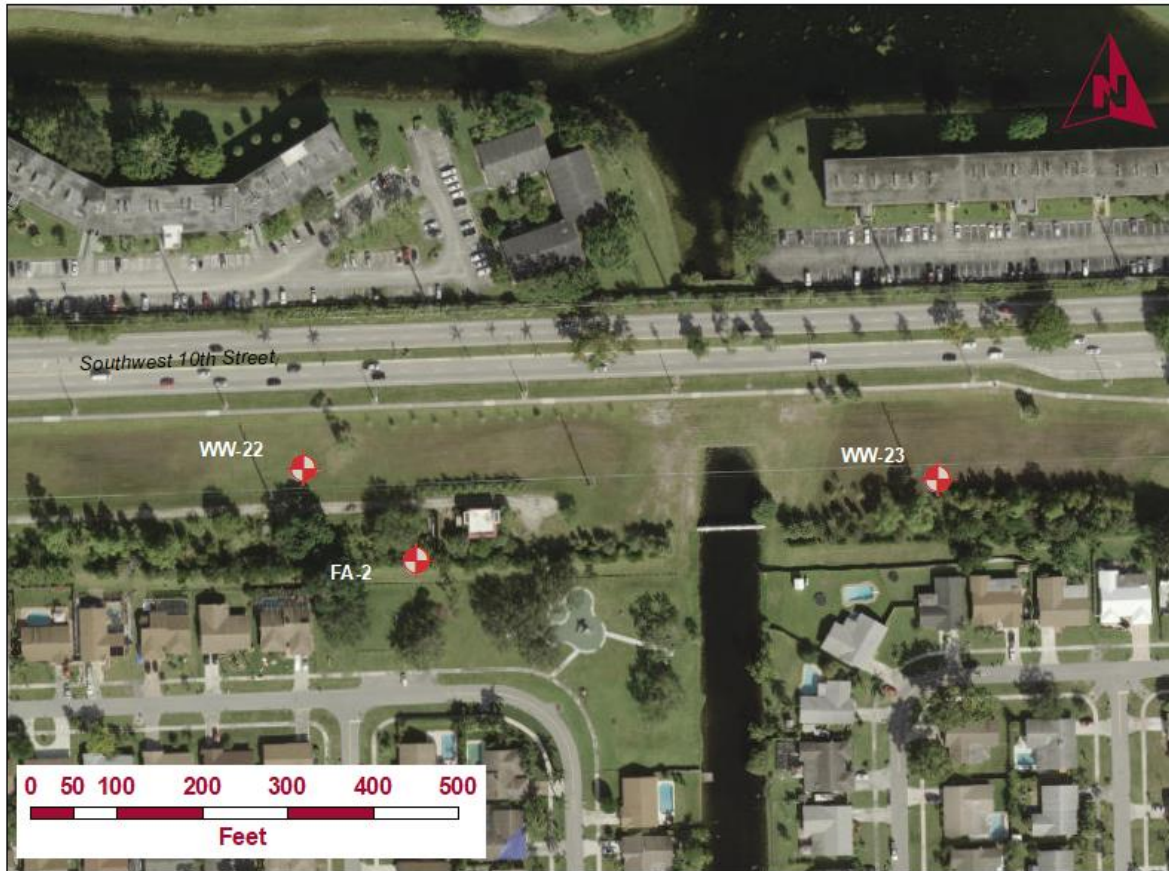
The depressed roadway will be constructed in cells; each approximately 100-feet long and 40-feet deep. Sheet piling will be installed along the perimeter of each cell to facilitate excavation and construction. The sheet pile will be constructed to depths ranging from 40 to 60 feet below land surface (bls). Furthermore, the sheet pile walls will be sealed using grout to preclude ground water infiltration into the excavation. As excavation and construction proceeds, the area inside each cell will be dewatered. Water-proofing will be installed in each cell prior to the construction of a concrete slab and concrete retaining walls. Each cell and the corresponding depressed roadway will be constructed in such a manner that permanent dewatering will not be necessary.

The City of Deerfield Beach maintains three public water supply wells (WW-22, WW-23 and FA-2) along the southern side of SW 10th Street (**Figure 1**). Wells WW-22 and WW-23 are constructed into the Biscayne Aquifer whereas FA-2 is constructed into the upper Floridan aquifer. The construction information for the three wells is presented below in **Table 1**.

**TABLE 1
DEERFIELD BEACH WELL CONSTRUCTION DETAILS**

Well No.	Diameter (inches)	Total Depth (feet, bls)	Casing Depth (feet, bls)	Pump Capacity (gallons/minute)
WW-22	14	170	105	2,800
WW-23	14	200	105	2,800
FA-2	12	1,030	915	3,000

**FIGURE 1
DEERFIELD BEACH WELL LOCATIONS**



HYDROGEOLOGY

There are two principal aquifer systems in northern Broward County; the surficial aquifer and the Floridan aquifer. According to Fish (1987), the surficial aquifer system is comprised of all materials from the top of the water table to the top of the intermediate confining unit. The intermediate confining unit is a thick sequence of low permeability sediments that separates the surficial aquifer from the underlying Floridan aquifer. The Floridan aquifer includes a thick sequence of highly permeable limestone and carbonate rocks. It is divided into the upper Floridan aquifer, middle confining or semi-confining unit and lower Floridan aquifer.

In the vicinity of SW 10th Street, the base of the surficial aquifer occurs at an altitude of approximately -320 feet below sea level. The bottom of the intermediate confining unit and the top of the Floridan aquifer occurs at approximately -1,000 feet below sea level.

The permeability of the sediments within the surficial aquifer system are highly variable. The system may be divided locally into one or more water bearing units separated by units of lower permeability. The most prominent water-bearing unit within the surficial aquifer system is known as the Biscayne

aquifer. It is comprised of sand, limestone and shelly limestone and is highly transmissive (150,000 to 300,000 feet²/day). For this reason, the Biscayne aquifer serves as the principal source of drinking water for several communities in south Florida, including Deerfield Beach.

The intermediate confining unit, which separates the surficial aquifer system from the Floridan aquifer is comprised chiefly of interbedded sand, silt and clay with mudstone, claystone, and dolomite. These lithologic units have very low permeabilities and have limited capacities for transmitting water. Furthermore, the low permeability of the intermediate confining unit precludes the movement of water between the overlying surficial aquifer system and the underlying Floridan aquifer. In the vicinity of the SW 10th Street, the low permeability units of the intermediate confining unit are more than 700 feet thick.

The Floridan aquifer is comprised of highly permeable limestone, dolomite, and dolomitic limestone. Historically, the Floridan aquifer has not been used as a source of drinking water in south Florida due to elevated chloride concentrations. However, in recent years the Floridan aquifer in south Florida has been used as an alternative water supply due to increased demands. The upper Floridan aquifer is highly transmissive. The transmissivity of the aquifer ranges from 20,000 to 29,000 feet²/day in the vicinity of SW 10th Street.

Based on the geotechnical data from the proposed depressed roadway section and lithologic logs for the City of Deerfield Beach wellfields unconsolidated sand, silt and shell hash is present to a depth of approximately 40 to 50 feet bls in the vicinity of SW 10th Street. Between 50 to 100 feet bls an alternating sequence of limestone, sand and sandstone is present. Below 100 feet bls, alternating sequences of limestone, sandstone, phosphatic sands, and shell hash are present to a depth of approximately 320 feet bls.

DISCUSSION

Kimley-Horn has considered both the short-term and long-term effects of the depressed roadway section on the nearby public water supply wells and presents the following discussion.

Construction Dewatering

We anticipate that there will be little to no effect on the nearby public water supply wells as a result of the proposed construction dewatering activities. This is based on the following:

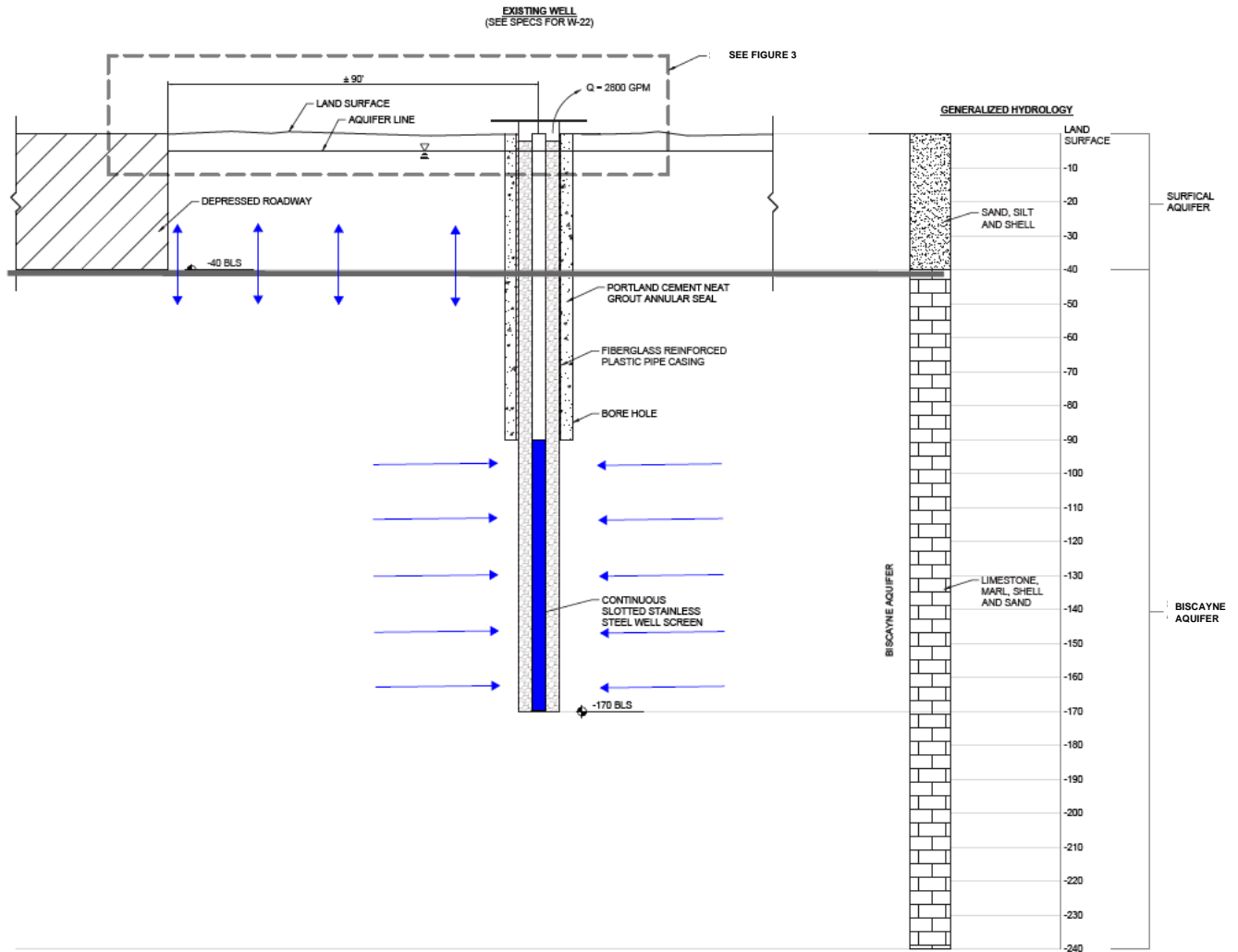
1. The proposed construction dewatering will occur inside of sheet piled cells. The sheet piling and tremie seal will isolate the individual cells from the surrounding subsurface area and prevent the infiltration of ground water into the excavation. Conversely, the sheet piling and tremie seal will preclude drawdown of the water table outside of the excavation area. Thus, the area inside the cells may be pumped dry to facilitate excavation and construction of the depressed roadway section.

The South Florida Water Management District (SFWMD) considers the use of sheet pile as an effective physical barrier to prevent drawdown of the water table due to short-term construction dewatering activities.

2. The total depths of the two Biscayne aquifer wells WW-22 and WW-23 are 170 and 200 feet bls, respectively. The wells are cased to approximately 105 feet bls. The depressed roadway

will be constructed to a depth of approximately 40 feet bls. Thus, the excavation activities will not intersect the water-bearing zone for the two production wells (Figure 2).

**FIGURE 2
DEPRESSED ROADWAY AND PUBLIC WATER SUPPLY WELL
CROSS-SECTION**



- It is estimated that it will take approximately two months to complete each cell. Thus, the duration of dewatering will be short-term. When permitting short-term construction dewatering permits, the SFWMD does not require the corresponding impact analysis to include nearby water wells due to the limited duration at which potential impacts could occur.

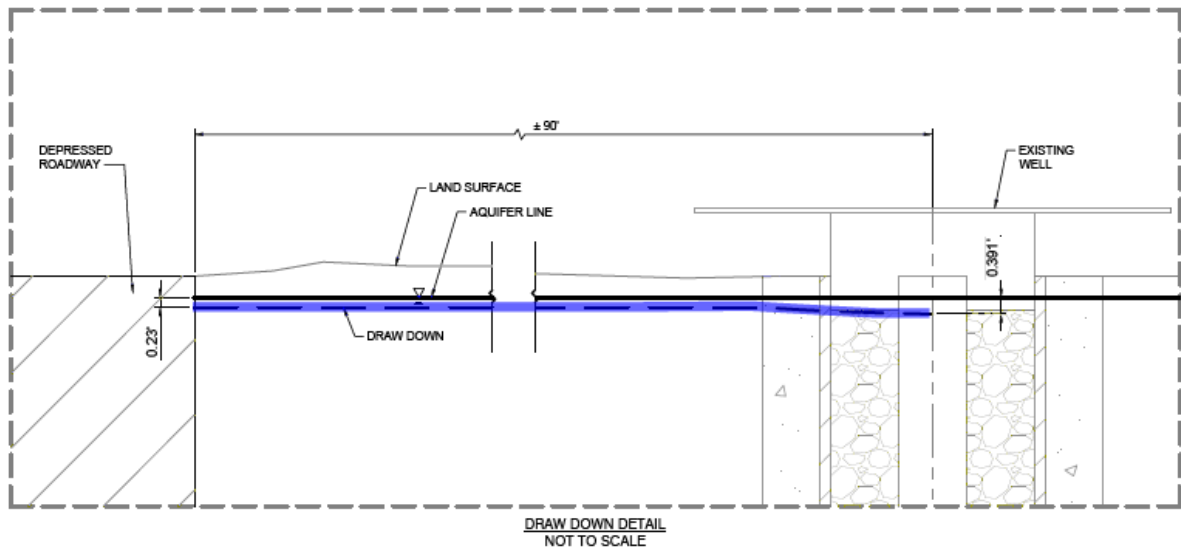
4. With regards to the nearby Floridan aquifer well FA-2, the intermediate confining unit between the surficial aquifer and underlying Floridan aquifer will preclude any hydraulic influence on the well.

Post-Construction Long-Term Effects

Kimley-Horn does not anticipate any long-term effects on the nearby public supply wells as a result of the depressed roadway section. This is based on the following:

1. The primary production zone for the two Biscayne aquifer wells (WW-22 and WW-23) is between approximately 100 to 200 feet bls, which is 60 to 160 feet below the base of the depressed roadway section. As such, the completed depressed roadway will not physically interfere with the production zone of the well.
2. The Biscayne aquifer is highly transmissive in the vicinity of SW 10th Street. Ground water modeling performed by CDM Smith for the City of Deerfield Beach’s Water Use Permit demonstrated that the depressed roadway is within the 0.1-foot drawdown contour for WW-22 and WW-23 (**Figure 3**). The limited amount of drawdown predicted to occur in the surficial aquifer suggests that the depressed roadway will have little to no effect on the two wells.

**FIGURE 3
DRAWDOWN CROSS-SECTION**



3. The depressed roadway section and wells WW-22 and WW-23 are located within the Northern Broward County Recharge System (NBCRS). The system is a diversion and impoundment project consisting of several canals that capture rainfall and runoff to maintain water levels in the surficial aquifer and recharge wetlands. The NBCRS will regionally maintain water levels in the surficial aquifer including within the areas of WW-22, WW-23 and the depressed roadway.

Furthermore, the two wells are located immediately adjacent to the C-2 canal, which maximize the amount of recharge to the aquifer.

4. Construction of the depressed roadway will include the use of sealed sheet piling and tremie seals. These controls will effectively seal each construction cell and preclude depressed roadway from acting as a conduit for the introduction and downward migration of contaminants into the aquifer.
5. Regarding the nearby Floridan aquifer well FA-2, the intermediate confining unit between the surficial aquifer and underlying Floridan aquifer will preclude any hydraulic influence on the well.