



SECTION 6

Capital Improvement Program

STORMWATER 6.3

6.3 Stormwater Improvements Recommendations

6.3.1 10-Year CIP Stormwater Improvements

The proposed 10-Year CIP stormwater improvements are summarized and prioritized into CIP projects in *Table 6-37* and depicted in *Figure 6-29* below. The prioritization ranking of the projects is based on the severity of the existing roadway flooding as shown in *Section 4*.

The proposed improvements for each project are described in further detail below and include conceptual cost estimates for each project. The conceptual construction cost estimate includes the cost for detailed design and construction engineering and inspection for the project. The construction cost information is preliminary in nature. These costs are based upon comparisons of previous and current similar types of work and materials underway in the Southeast Florida area. All costs developed herein are in 2019 dollars and do not include land acquisitions or easements.

Table 6-37: Proposed 10-Year Stormwater Capital Improvement Projects

Project # / Priority	Project Name
1	Coral Gardens Drive Outfalls & Stormwater System Improvements
2	NE 28 th Drive Outfall Improvements
3	NE 14 th Avenue Outfall Improvements
4	NW 24 th Street to NW 22 nd Street Stormwater System & Outfall Improvements
5	NW 3 rd Avenue Stormwater System & Outfall Improvements
6	NE 30 th Street Outfall Improvements
7	NE 28 th Drive Outfall Improvements
8	NE 7 th Terrace Stormwater System and Outfall
9	NE 17 th Avenue Stormwater Outfall Improvements
10	NE 27 th Drive Stormwater Exfiltration Trench
11	NW 25 th Street Stormwater Exfiltration Trench
12	NE 25 th Street & NE 8 th Terrace Stormwater Exfiltration Trench

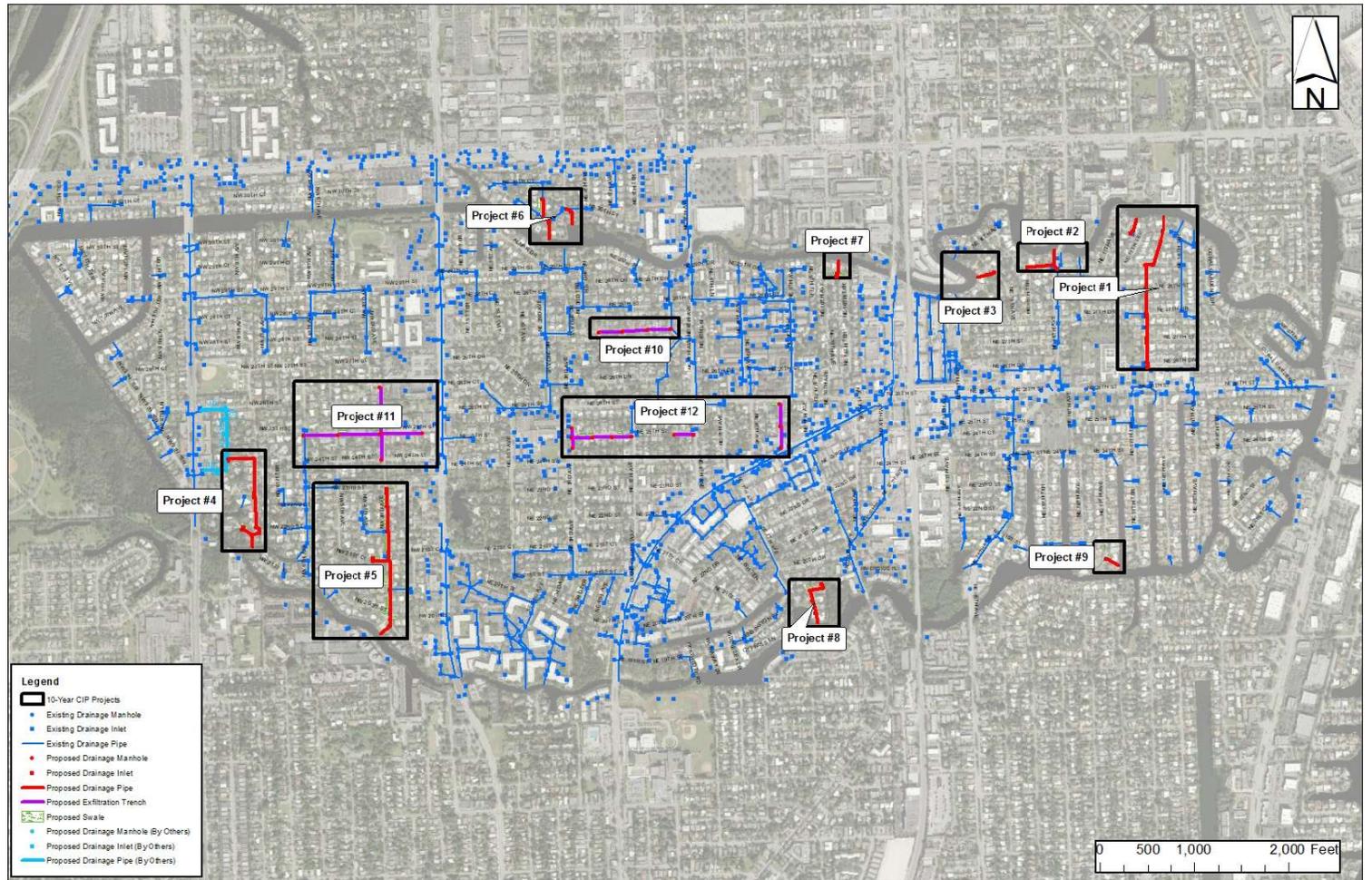


Figure 6-29: Proposed 10-Year Stormwater Capital Improvement Projects

6.3.1.1 Project #1: Coral Gardens Drive Outfalls & Stormwater System Improvements

Coral Gardens Dr. is located at the northeast limits of the City. There is an existing stormwater system which spans from NE 28th Dr. to Coral Gardens Dr. where four (4) existing outfalls discharge into the North River. This area was identified and prioritized as Project #1 for proposed improvements due to the severity of the existing roadway flooding experienced during a 3-year, 1-day rainfall event. In **Figure 6-30**, the existing ponding depth (in feet) at this location is shown side-by-side with the proposed roadway ponding depths after installation of the improvements.

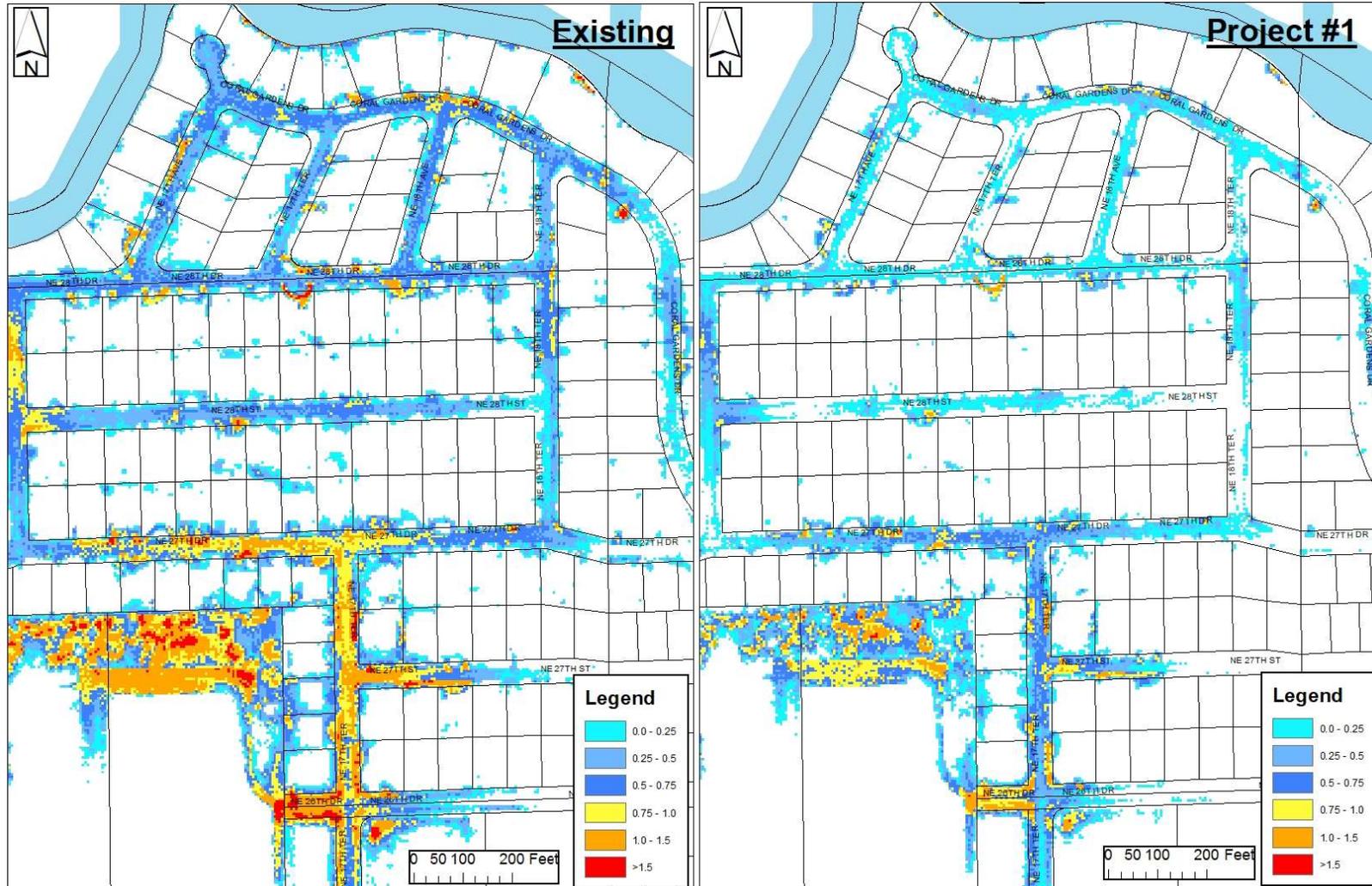


Figure 6-30: Project #1 – Existing Roadway Ponding Depth vs. Proposed Roadway Ponding Depth

The proposed stormwater system improvements include replacement and upsizing of the existing stormwater system from NE 28th Dr. up to Coral Gardens Dr., replacement and upsizing of two (2) of the existing outfall pipes, and installation of swales within the ROW as appropriate in the project area. At the planning level stage of this document, the proposed improvements assume that the City has existing easements for the existing stormwater system located between properties from NE 27th Dr. to NE 28th Dr. If the City desires to install the proposed stormwater improvements along the roadway rather than in the same location as the existing stormwater system, then this can be determined during the detailed design phase. Proposing an alternate route for the proposed stormwater improvements may increase the construction costs of the project. Based on the proposed Project #1 improvements shown in **Figure 6-31**, the following **Table 6-38** outlines the conceptual construction cost estimate.

Table 6-38: 10-Year CIP – Project #1 Engineer’s Opinion of Probable Construction Cost

	Estimated			
	Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 26,000.00	\$ 26,000.00
Mobilization (2.5%)	1	LS	\$ 13,000.00	\$ 13,000.00
Maintenance of Traffic	1,870	LF	\$ 3.00	\$ 5,610.00
Clearing and Misc. Site Work (2.5%)	1	LS	\$ 13,000.00	\$ 13,000.00
			Subtotal General:	\$ 57,610.00
Drainage & Restoration				
Remove & Dispose Existing Drainage Pipe	1,870	LF	\$ 45.00	\$ 84,150.00
Remove & Dispose Existing Drainage Structure	12	EA	\$ 1,200.00	\$ 14,400.00
Type C Drainage Inlet w/ Frame & Grate	5	EA	\$ 3,500.00	\$ 17,500.00
4' Diameter Manhole Inlet w/ Casting	6	EA	\$ 5,500.00	\$ 33,000.00
5' Diameter Manhole Inlet w/ Casting	1	EA	\$ 7,000.00	\$ 7,000.00
6' Diameter Manhole Inlet w/ Casting	2	EA	\$ 8,500.00	\$ 17,000.00
18" RCP Drainage Pipe	410	LF	\$ 89.00	\$ 36,490.00
24" RCP Drainage Pipe	450	LF	\$ 101.00	\$ 45,450.00
30" RCP Drainage Pipe	860	LF	\$ 121.00	\$ 104,060.00
36" RCP Drainage Pipe	150	LF	\$ 171.00	\$ 25,650.00
Connect to Existing Drainage Pipe with Concrete Collar per FDOT Index 280	6	EA	\$ 2,000.00	\$ 12,000.00
Swale Regrading with Sod	450	SY	\$ 9.00	\$ 4,050.00
Roadway Mill and Overlay	1,200	SY	\$ 13.00	\$ 15,600.00
Driveway Restoration	2,500	SF	\$ 20.00	\$ 50,000.00
			Subtotal Drainage & Restoration:	\$ 466,350.00
			Total Construction	\$ 523,960.00
			Contingencies (20%)	\$ 104,792.00
			Engineering, Legal Admin. Costs (15%)	\$ 78,594.00
			Total Cost:	\$ 707,346.00

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1.2 Project #2: NE 28th Drive Outfall Improvements

NE 28th Dr. is located at the northeast limits of the City adjacent to the North River. There is an existing stormwater outfall piped system along the north-side of NE 28th Dr. which outfalls at NE 16th Ave. This area was identified and prioritized as Project #2 for proposed improvements. *Figure 6-32* shows the pre- vs. post-improvements roadway ponding depths (in feet) at this location.

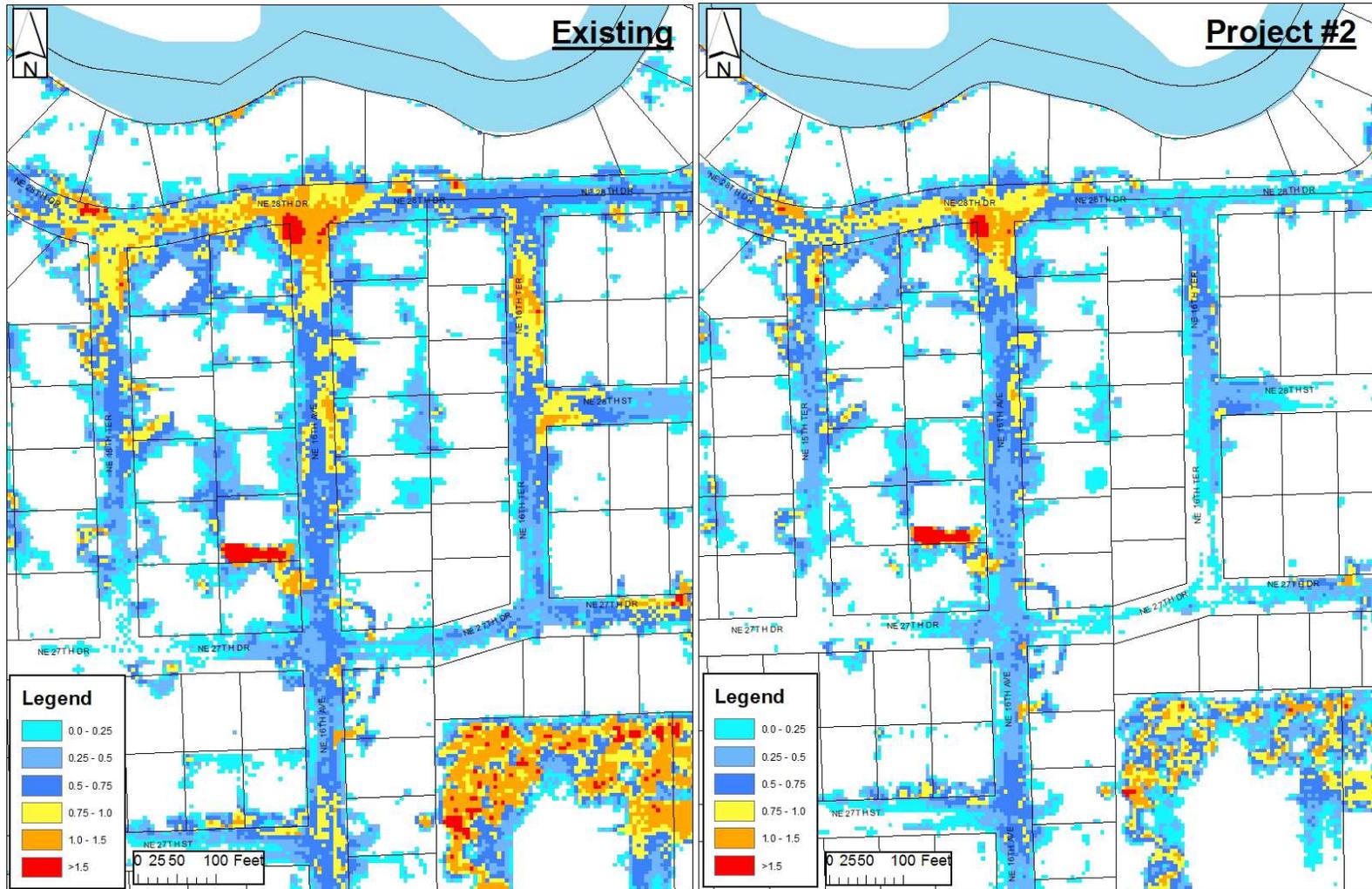


Figure 6-32: Project #2 – Existing Roadway Ponding Depth vs. Proposed Roadway Ponding Depth

The proposed improvements selected for this location were chosen based on the model results that provided both the best Level of Service increase for the City’s roadways in conjunction with all other proposed stormwater improvements and met the allowable discharge limits. The proposed stormwater improvements for this project area are shown in *Figure 6-33*.



Figure 6-33: Project #2 –NE 28th Drive Outfall Improvements

The proposed stormwater system improvements include replacement and upsizing of the existing stormwater outfall system at NE 28th Dr. and NE 16th Ave., and installation of swales within the ROW as appropriate in the project area. Based on the proposed Project #2 improvements shown in *Figure 6-33*, the following *Table 6-39* outlines the conceptual construction cost estimate.

Table 6-39: 10-Year CIP – Project #2 Engineer’s Opinion of Probable Construction Cost

	Estimated			
	Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 9,550.00	\$ 9,550.00
Mobilization (2.5%)	1	LS	\$ 4,775.00	\$ 4,775.00
Maintenance of Traffic	445	LF	\$ 3.00	\$ 1,335.00
Clearing and Misc. Site Work (2.5%)	1	LS	\$ 4,775.00	\$ 4,775.00
	Subtotal General:			\$ 20,435.00
Drainage & Restoration				
Remove & Dispose Existing Drainage Pipe	445	LF	\$ 45.00	\$ 20,025.00
Remove & Dispose Existing Drainage Structure	3	EA	\$ 1,200.00	\$ 3,600.00
Type C Drainage Inlet w/ Frame & Grate	1	EA	\$ 3,500.00	\$ 3,500.00
6' Diameter Manhole w/ Casting	2	EA	\$ 7,500.00	\$ 15,000.00
24" RCP Drainage Pipe	350	LF	\$ 101.00	\$ 35,350.00
30" RCP Drainage Pipe	160	LF	\$ 121.00	\$ 19,360.00
Connect to Existing Drainage Pipe with Concrete Collar per FDOT Index 280	3	EA	\$ 2,000.00	\$ 6,000.00
Swale Regrading with Sod	160	SY	\$ 9.00	\$ 1,440.00
Roadway Mill and Overlay	1,000	SY	\$ 13.00	\$ 13,000.00
Driveway Restoration	2,000	SF	\$ 20.00	\$ 40,000.00
	Subtotal Drainage & Restoration:			\$ 157,275.00
	Total Construction			\$ 177,710.00
	Contingencies (20%)			\$ 35,542.00
	Engineering, Legal Admin. Costs (15%)			\$ 26,656.50
	Total Cost:			\$ 239,908.50

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1.3 Project #3: NE 14th Avenue Outfall Improvements

NE 28th Dr. is located just east of Dixie Highway and is bordered on the west by the North River. There is an existing stormwater outfall piped system across the roadway fork between NE 14th Ave. and NE 15th Ave. and the outfall discharges between properties to the North River. This area was identified and prioritized as Project #3 for proposed improvements. **Figure 6-34** shows the pre- vs. post-improvements roadway ponding depths (in feet) at this location.

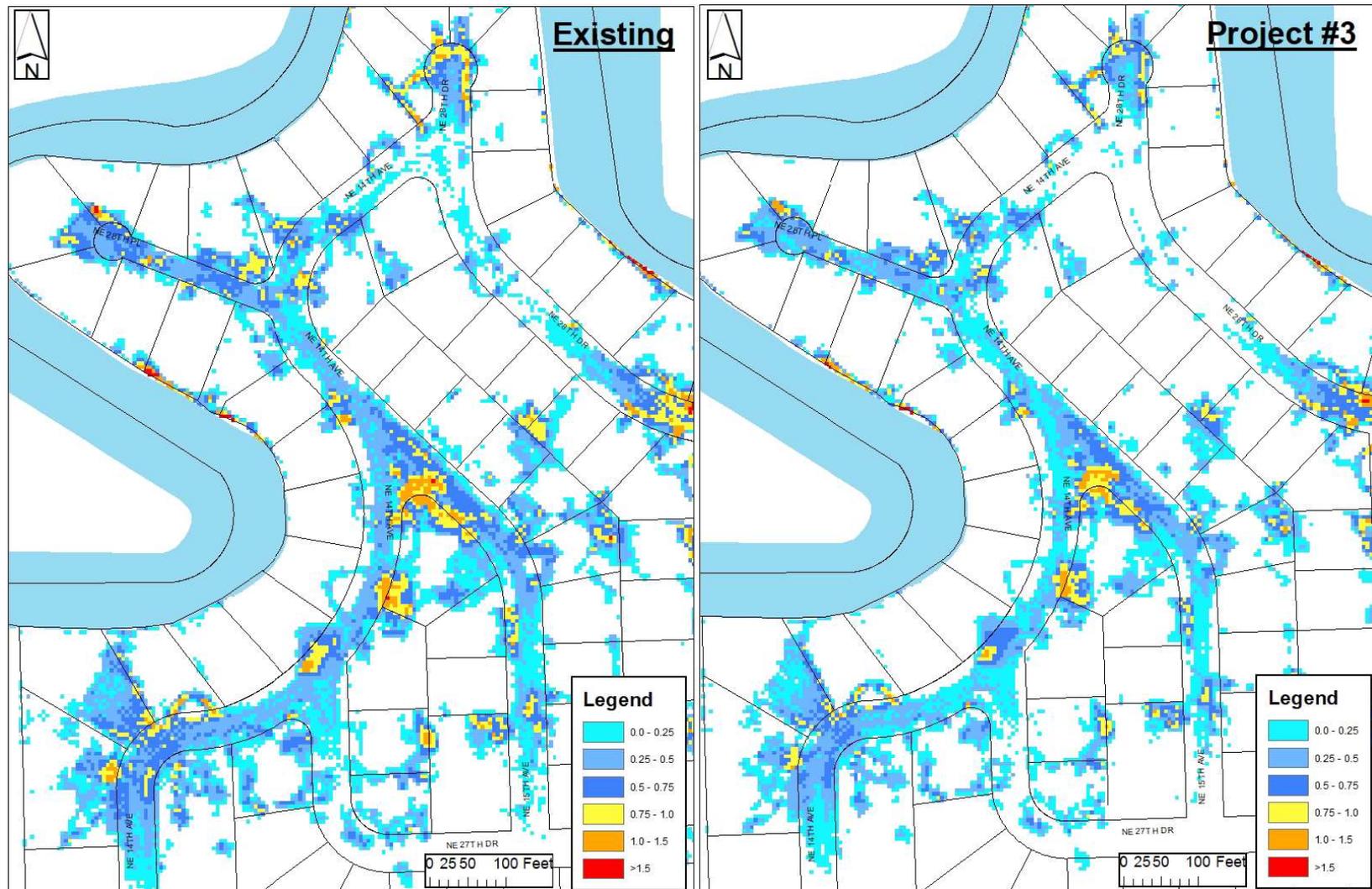


Figure 6-34: Project #3 – Existing Roadway Ponding Depth vs. Proposed Roadway Ponding Depth

The proposed stormwater system improvements include replacement and upsizing of the existing stormwater outfall system at NE 14th Ave. and installation of swales within the ROW as appropriate in the project area.. Based on the proposed Project #3 improvements shown in *Figure 6-35*, the following *Table 6-40* outlines the conceptual construction cost estimate.

Table 6-40: 10-Year CIP – Project #3 Engineer’s Opinion of Probable Construction Cost

	Estimated Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 5,300.00	\$ 5,300.00
Mobilization (2.5%)	1	LS	\$ 2,650.00	\$ 2,650.00
Maintenance of Traffic	200	LF	\$ 3.00	\$ 600.00
Clearing and Misc. Site Work (2.5%)	1	LS	\$ 2,650.00	\$ 2,650.00
			Subtotal General:	\$ 11,200.00
Drainage & Restoration				
Remove & Dispose Existing Drainage Pipe	200	LF	\$ 45.00	\$ 9,000.00
Remove & Dispose Existing Drainage Structure	3	EA	\$ 1,200.00	\$ 3,600.00
Type C Drainage Inlet w/ Frame & Grate	1	EA	\$ 3,500.00	\$ 3,500.00
4' Diameter Manhole Inlet w/ Casting	2	EA	\$ 5,500.00	\$ 11,000.00
24" RCP Drainage Pipe	200	LF	\$ 101.00	\$ 20,200.00
Swale Regrading with Sod	60	SY	\$ 9.00	\$ 540.00
Roadway Mill and Overlay	250	SY	\$ 13.00	\$ 3,250.00
Driveway Restoration	400	SF	\$ 20.00	\$ 8,000.00
Seawall Restoration	1	LS	\$ 20,000.00	\$ 20,000.00
			Subtotal Drainage & Restoration:	\$ 79,090.00
			Total Construction	\$ 90,290.00
			Contingencies (20%)	\$ 18,058.00
			Engineering, Legal Admin. Costs (15%)	\$ 13,543.50
			Total Cost:	\$ 121,891.50

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1.4 Project #4: NW 24th Street to NW 22nd Street Stormwater System & Outfall Improvements

NW 24th St. is located just east of Powerline Rd., which is Broward County-owned roadway. There is an existing stormwater system owned by the County on Powerline Rd., and the City has an existing piped outfall system at the dead-end at NW 22nd St.. **Figure 6-36** shows the pre- vs. post-improvements roadway ponding depths (in feet) at this location.

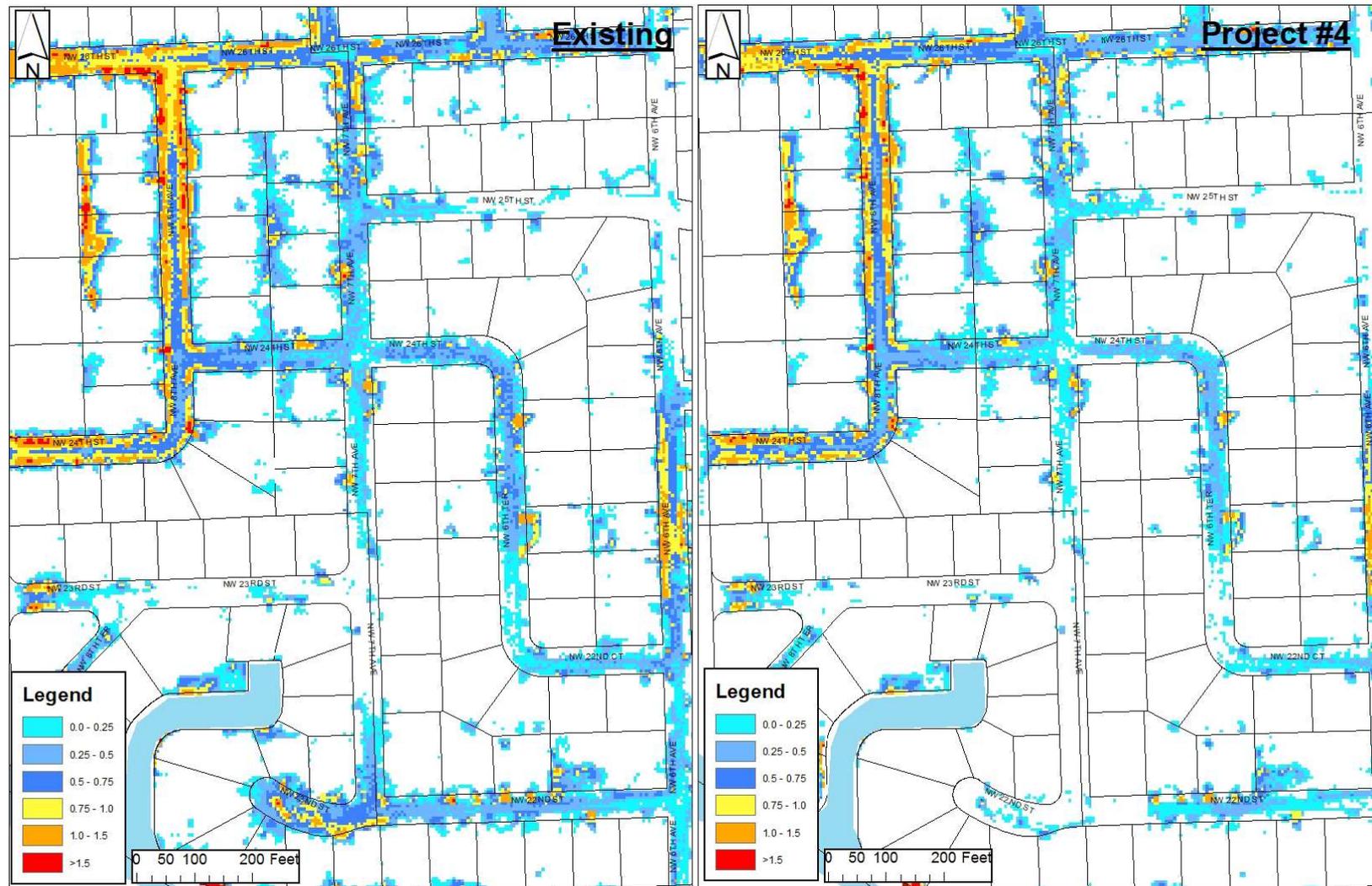


Figure 6-36: Project #4 – Existing Roadway Ponding Depth vs. Proposed Roadway Ponding Depth

In an effort to alleviate roadway ponding, the City has already elected to proceed with proposed stormwater improvements along NW 24th St., NW 8th Ave. and NW 26th St., which tie into the County’s existing stormwater system on Powerline Rd. (see **Figure 6-37** provided by the City).



Figure 6-37: Proposed NW 8th Avenue Stormwater Improvements Provided by City

The City has elected to move forward with these proposed improvements in fiscal year (FY) 2020 as a separate effort from this planning document. The City has estimated that construction of the proposed improvements shown in **Figure 6-37** will be approximately \$450,808.00.

While the proposed improvements shown in *Figure 6-37* will provide alleviation from the existing roadway ponding due to the area’s low elevations and inability to discharge, the model results suggest that this will be only a partial solution because the County’s stormwater system does not have the capacity to prevent flooding during minor and major storm events in this area. Additional outfall capacity is needed to improve the LOS in this area. It is recommended that, in conjunction with the City’s proposed improvements shown in *Figure 6-37*, a new outlet be constructed identified as Project #4 that provides a new piped connection from the City’s project to the existing outfall located at NW 22nd St. The existing outfall system will be upsized in conjunction with the piped connection (see *Figure 6-38*).



Figure 6-38: Project #4 – NW 24th St. to NW 22nd St. Stormwater System & Outfall Improvements

The proposed stormwater system improvements include connection to the City's 2020 project, installation of a new piped stormwater system along NW 24th St. and NW 7th Ave., upsizing of the existing stormwater outfall system at NW 22nd St., and installation of swales within the ROW as appropriate in the project area. Based on the proposed Project #4 improvements shown in *Figure 6-38*, the following *Table 6-41* outlines the conceptual construction cost estimate.

Table 6-41: 10-Year CIP – Project #4 Engineer's Opinion of Probable Construction Cost

	Estimated			
	Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 17,800.00	\$ 17,800.00
Mobilization (2.5%)	1	LS	\$ 8,900.00	\$ 8,900.00
Maintenance of Traffic	1,475	LF	\$ 3.00	\$ 4,425.00
Clearing and Misc. Site Work (2.5%)	1	LS	\$ 8,900.00	\$ 8,900.00
			Subtotal General:	\$ 40,025.00
Drainage & Restoration				
Remove & Dispose Existing Drainage Pipe	400	LF	\$ 45.00	\$ 18,000.00
Remove & Dispose Existing Drainage Structure	5	EA	\$ 1,200.00	\$ 6,000.00
Type C Drainage Inlet w/ Frame & Grate	3	EA	\$ 3,500.00	\$ 10,500.00
4' Diameter Manhole Inlet w/ Casting	1	EA	\$ 5,500.00	\$ 5,500.00
5' Diameter Manhole Inlet w/ Casting	6	EA	\$ 7,000.00	\$ 42,000.00
18" RCP Drainage Pipe	315	LF	\$ 89.00	\$ 28,035.00
24" RCP Drainage Pipe	535	LF	\$ 101.00	\$ 54,035.00
30" RCP Drainage Pipe	495	LF	\$ 121.00	\$ 59,895.00
36" RCP Drainage Pipe	130	LF	\$ 171.00	\$ 22,230.00
Core & Connect to Existing Drainage Structure	1	EA	\$ 2,500.00	\$ 2,500.00
Swale Regrading with Sod	530	SY	\$ 9.00	\$ 4,770.00
Roadway Mill and Overlay	700	SY	\$ 13.00	\$ 9,100.00
Driveway Restoration	2,300	SF	\$ 20.00	\$ 46,000.00
Seawall Restoration	1	LS	\$ 20,000.00	\$ 20,000.00
			Subtotal Drainage & Restoration:	\$ 328,565.00
			Total Construction	\$ 368,590.00
			Contingencies (20%)	\$ 73,718.00
			Engineering, Legal Admin. Costs (15%)	\$ 55,288.50
			Total Cost:	\$ 497,596.50

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1.5 Project #5: NW 3rd Avenue Stormwater System & Outfall Improvements

NW 3rd Ave is located just west of No. Andrews Ave. There is an existing piped stormwater system and outfall along NW 3rd Ave., but roadway ponding is still occurring in this area. This area was identified and prioritized as Project #5 for proposed improvements. *Figure 6-39* shows the pre- vs. post-improvements roadway ponding depths (in feet) at this location.

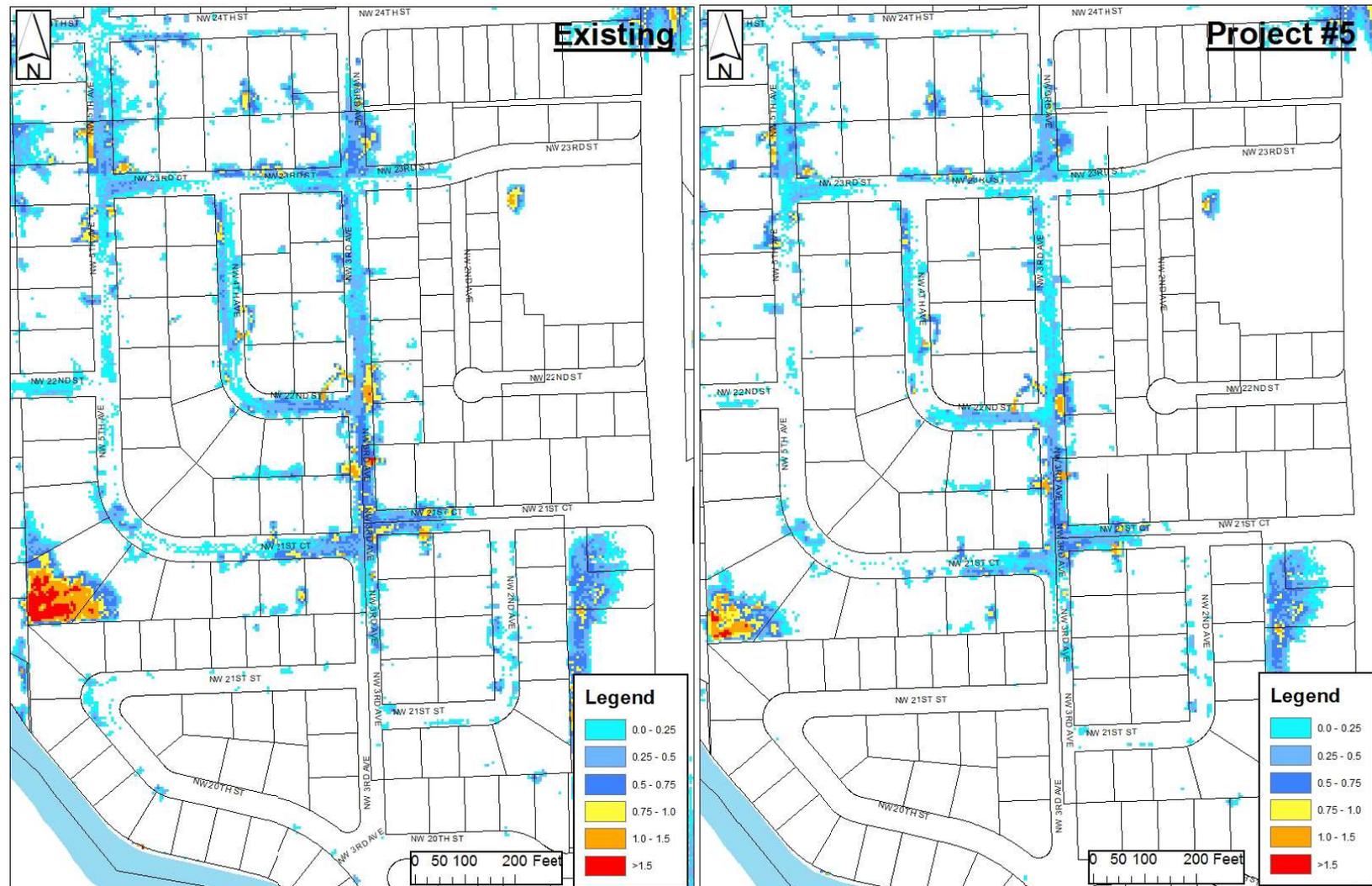


Figure 6-39: Project #5 – Existing Roadway Ponding Depth vs. Proposed Roadway Ponding Depth

The proposed improvements selected for this location were chosen based on the model results that provided both the best LOS increase for the City’s roadways in conjunction with all other proposed stormwater improvements and met the allowable discharge limits. The proposed stormwater improvements for this project area are shown in **Figure 6-40**.



Figure 6-40: Project #5 – NW 3rd Avenue Stormwater System & Outfall Improvements

The proposed stormwater system improvements include replacement and upsizing of the existing stormwater and outfall system on NW 3rd Ave. and installation of swales within the ROW as appropriate in the project area. Based on the proposed Project #5 improvements shown in *Figure 6-40*, the following *Table 6-42* outlines the conceptual construction cost estimate.

Table 6-42: 10-Year CIP – Project #5 Engineer’s Opinion of Probable Construction Cost

	Estimated			
	Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 24,500.00	\$ 24,500.00
Mobilization (2.5%)	1	LS	\$ 12,250.00	\$ 12,250.00
Maintenance of Traffic	1,800	LF	\$ 3.00	\$ 5,400.00
Clearing and Misc. Site Work (2.5%)	1	LS	\$ 12,250.00	\$ 12,250.00
	Subtotal General:			\$ 54,400.00
Drainage & Restoration				
Remove & Dispose Existing Drainage Pipe	1,590	LF	\$ 45.00	\$ 71,550.00
Remove & Dispose Existing Drainage Structure	9	EA	\$ 1,200.00	\$ 10,800.00
Type C Drainage Inlet w/ Frame & Grate	2	EA	\$ 3,500.00	\$ 7,000.00
4' Diameter Manhole Inlet w/ Casting	3	EA	\$ 5,500.00	\$ 16,500.00
5' Diameter Manhole Inlet w/ Casting	4	EA	\$ 7,000.00	\$ 28,000.00
6' Diameter Manhole Inlet w/ Casting	1	EA	\$ 8,500.00	\$ 8,500.00
18" RCP Drainage Pipe	210	LF	\$ 89.00	\$ 18,690.00
24" RCP Drainage Pipe	750	LF	\$ 101.00	\$ 75,750.00
30" RCP Drainage Pipe	710	LF	\$ 121.00	\$ 85,910.00
36" RCP Drainage Pipe	130	LF	\$ 171.00	\$ 22,230.00
Connect to Existing Drainage Pipe with Concrete Collar per FDOT Index 280	3	EA	\$ 2,000.00	\$ 6,000.00
Swale Regrading with Sod	2,500	SY	\$ 9.00	\$ 22,500.00
Roadway Mill and Overlay	1,275	SY	\$ 13.00	\$ 16,575.00
Driveway Restoration	2,660	SF	\$ 20.00	\$ 53,200.00
Seawall Restoration	1	LS	\$ 20,000.00	\$ 20,000.00
	Subtotal Drainage & Restoration:			\$ 463,205.00
	Total Construction			\$ 517,605.00
	Contingencies (20%)			\$ 103,521.00
	Engineering, Legal Admin. Costs (15%)			\$ 77,640.75
	Total Cost:			\$ 698,766.75

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1.6 Project #6: NE 30th Street Outfall Improvements

NE 30th St. is located on the northern boundary of the North River. There is an existing piped stormwater system and outfall along NE 30th St., but roadway ponding is still occurring in this area. This area was identified and prioritized as Project #6 for proposed improvements. *Figure 6-41* shows the pre- vs. post-improvements roadway ponding depths (in feet) at this location.

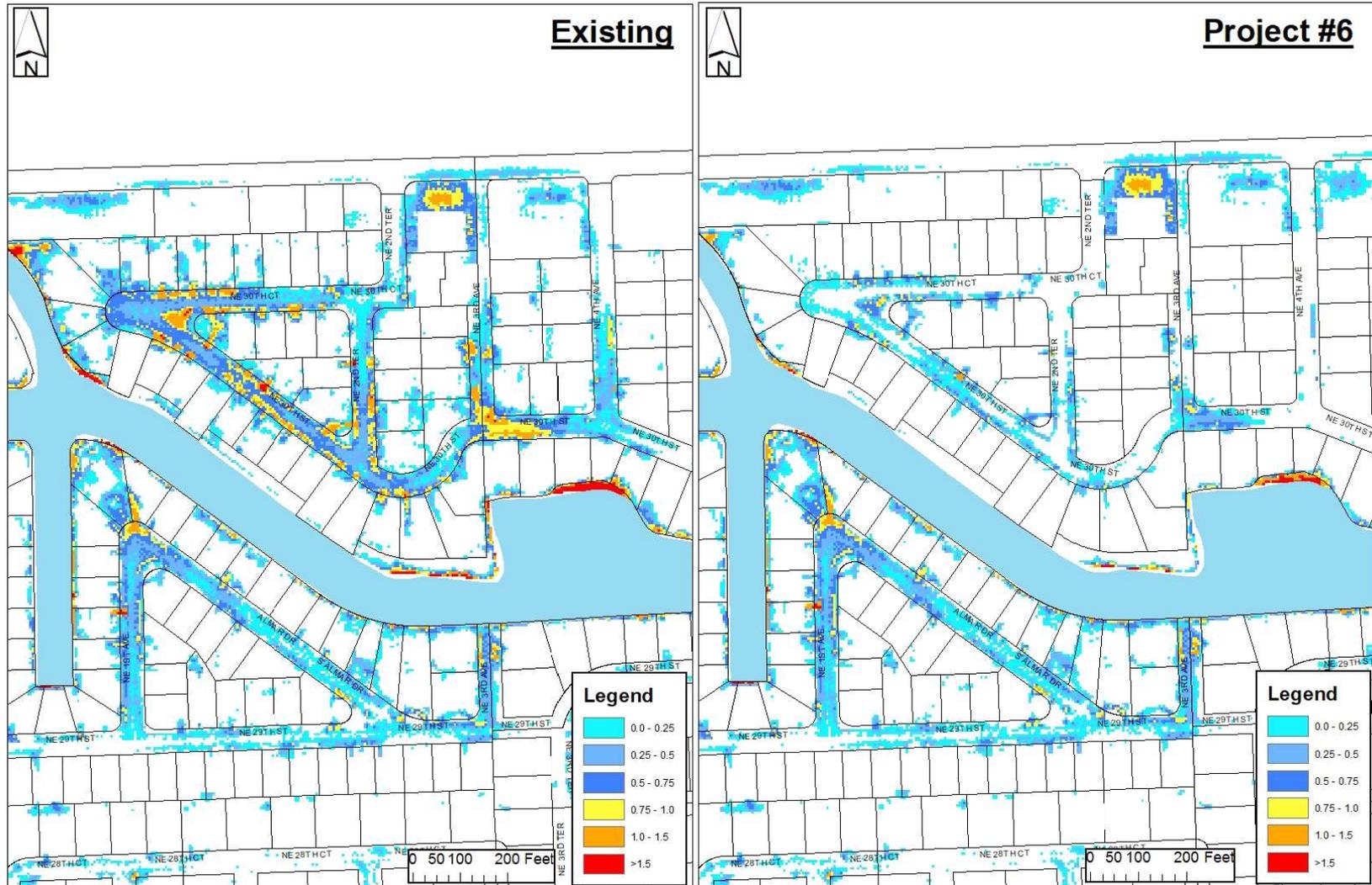


Figure 6-41: Project #6 – Existing Roadway Ponding Depth vs. Proposed Roadway Ponding Depth

The proposed stormwater system improvements include replacement and upsizing of the existing stormwater outfall system at NE 30th St. and installation of swales within the ROW as appropriate in the project area. Based on the proposed Project #6 improvements shown in *Figure 6-42*, the following *Table 6-43* outlines the conceptual construction cost estimate.

Table 6-43: 10-Year CIP – Project #6 Engineer’s Opinion of Probable Construction Cost

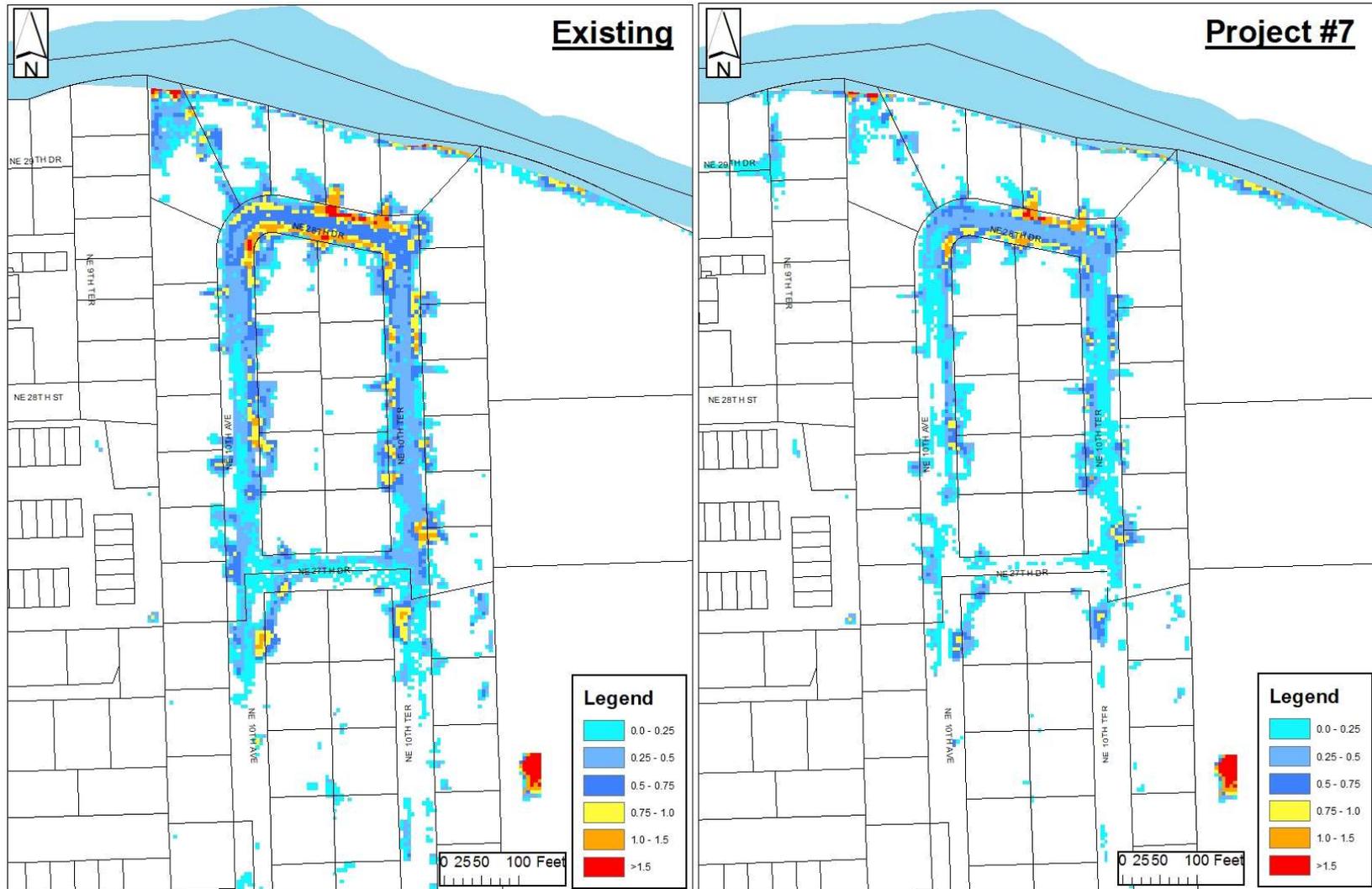
	Estimated			
	Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 12,700.00	\$ 12,700.00
Mobilization (2.5%)	1	LS	\$ 6,350.00	\$ 6,350.00
Maintenance of Traffic	670	LF	\$ 3.00	\$ 2,010.00
Clearing and Misc. Site Work (2.5%)	1	LS	\$ 6,350.00	\$ 6,350.00
	Subtotal General:			\$ 27,410.00
Drainage & Restoration				
Remove & Dispose Existing Drainage Pipe	670	LF	\$ 45.00	\$ 30,150.00
Remove & Dispose Existing Drainage Structure	6	EA	\$ 1,200.00	\$ 7,200.00
4' Diameter Manhole Inlet w/ Casting	3	EA	\$ 5,500.00	\$ 16,500.00
5' Diameter Manhole Inlet w/ Casting	2	EA	\$ 7,000.00	\$ 14,000.00
6' Diameter Manhole w/ Casting	1	EA	\$ 7,500.00	\$ 7,500.00
24" RCP Drainage Pipe	360	LF	\$ 101.00	\$ 36,360.00
30" RCP Drainage Pipe	310	LF	\$ 121.00	\$ 37,510.00
Connect to Existing Drainage Pipe with Concrete Collar per FDOT Index 280	5	EA	\$ 2,000.00	\$ 10,000.00
Swale Regrading with Sod	730	SY	\$ 9.00	\$ 6,570.00
Roadway Mill and Overlay	380	SY	\$ 13.00	\$ 4,940.00
Driveway Restoration	1,580	SF	\$ 20.00	\$ 31,600.00
Seawall Restoration	1	LS	\$ 20,000.00	\$ 20,000.00
	Subtotal Drainage & Restoration:			\$ 222,330.00
	Total Construction			\$ 249,740.00
	Contingencies (20%)			\$ 49,948.00
	Engineering, Legal Admin. Costs (15%)			\$ 37,461.00
	Total Cost:			\$ 337,149.00

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1.7 Project #7: NE 28th Street Outfall Improvements

NE 28th St. is located on the southern boundary of the North River, west of Wilton Dr.. There is an existing piped stormwater outfall system on NE 28th St., but roadway ponding is still occurring in this area. This area was identified and prioritized as Project #7 for proposed improvements. **Figure 6-43** shows the pre- vs. post-improvements roadway ponding depths (in feet) at this location.

Figure 6-43: Project #7 – Existing Roadway Ponding Depth vs. Proposed Roadway Ponding Depth



The proposed improvements selected for this location were chosen based on the model results that provided both the best Level of Service increase for the City’s roadways in conjunction with all other proposed stormwater improvements and met the allowable discharge limits. The proposed stormwater improvements for this project area are shown in **Figure 6-44**.



Figure 6-44: Project #7 – NE 28th Street Outfall Improvements

The proposed stormwater system improvements include replacement and upsizing of the existing stormwater outfall system at NE 28th St., installation of swales within the ROW as appropriate, and installation of discharge check valves identified in *Figure 4-19* that are in the project area. Based on the proposed Project #7 improvements shown in *Figure 6-44*, the following *Table 6-44* outlines the conceptual construction cost estimate.

Table 6-44: 10-Year CIP – Project #7 Engineer’s Opinion of Probable Construction Cost

	Estimated			
	Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 4,300.00	\$ 4,300.00
Mobilization (2.5%)	1	LS	\$ 2,150.00	\$ 2,150.00
Maintenance of Traffic	175	LF	\$ 3.00	\$ 525.00
Clearing and Misc. Site Work (2.5%)	1	LS	\$ 2,150.00	\$ 2,150.00
	Subtotal General:			\$ 9,125.00
Drainage & Restoration				
Remove & Dispose Existing Drainage Pipe	175	LF	\$ 45.00	\$ 7,875.00
Remove & Dispose Existing Drainage Structure	2	EA	\$ 1,200.00	\$ 2,400.00
Type C Drainage Inlet w/ Frame & Grate	1	EA	\$ 3,500.00	\$ 3,500.00
4' Diameter Manhole Inlet w/ Casting	1	EA	\$ 5,500.00	\$ 5,500.00
24" RCP Drainage Pipe	40	LF	\$ 101.00	\$ 4,040.00
30" RCP Drainage Pipe	135	LF	\$ 121.00	\$ 16,335.00
Swale Regrading with Sod	145	SY	\$ 9.00	\$ 1,305.00
Roadway Mill and Overlay	150	SY	\$ 13.00	\$ 1,950.00
Driveway Restoration	400	SF	\$ 20.00	\$ 8,000.00
Seawall Restoration	1	LS	\$ 20,000.00	\$ 20,000.00
	Subtotal Drainage & Restoration:			\$ 70,905.00
	Total Construction			\$ 80,030.00
	Contingencies (20%)			\$ 16,006.00
	Engineering, Legal Admin. Costs (15%)			\$ 12,004.50
	Total Cost:			\$ 108,040.50

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1.8 Project #9: NE 7th Terrace Stormwater System and Outfall

NE 7th Ter. is located on the northern boundary of the South River, west of Wilton Dr.. There is an existing stormwater piped outfall that does not tie into an existing stormwater system. This area was identified and prioritized as Project #8 for proposed improvements. *Figure 6-45* shows the pre- vs. post-improvements roadway ponding depths (in feet) at this location.

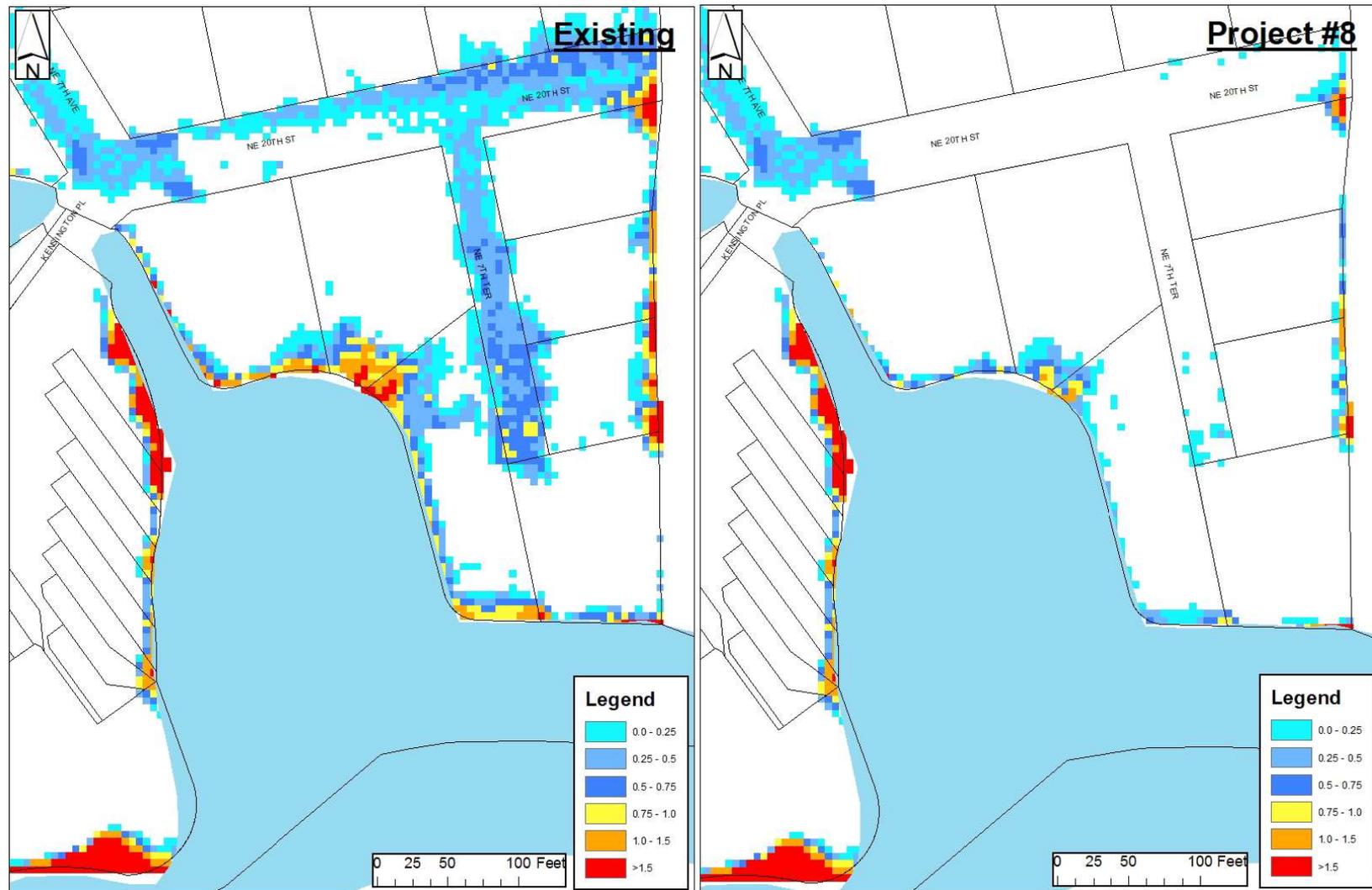


Figure 6-45: Project #8 – Existing Roadway Ponding Depth vs. Proposed Roadway Ponding Depth

The proposed improvements selected for this location were chosen based on the model results that provided both the best Level of Service increase for the City’s roadways in conjunction with all other proposed stormwater improvements and met the allowable discharge limits. The proposed stormwater improvements for this project area are shown in **Figure 6-46**.



Figure 6-46: Project #8 – NE 7th Terrace Stormwater System and Outfall

The proposed stormwater system improvements include replacement and upsizing of the existing stormwater outfall and installation of a new piped stormwater system at NE 7th Ter. and installation of swales within the ROW as appropriate in the project area. Based on the proposed Project #8 improvements shown in *Figure 6-46*, the following *Table 6-45* outlines the conceptual construction cost estimate.

Table 6-45: 10-Year CIP – Project #8 Engineer’s Opinion of Probable Construction Cost

	Estimated Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 7,600.00	\$ 7,600.00
Mobilization (2.5%)	1	LS	\$ 3,800.00	\$ 3,800.00
Maintenance of Traffic	545	LF	\$ 3.00	\$ 1,635.00
Clearing and Misc. Site Work (2.5%)	1	LS	\$ 3,800.00	\$ 3,800.00
			Subtotal General:	\$ 16,835.00
Drainage & Restoration				
Remove & Dispose Existing Drainage Pipe	50	LF	\$ 45.00	\$ 2,250.00
Remove & Dispose Existing Drainage Structure	1	EA	\$ 1,200.00	\$ 1,200.00
Type C Drainage Inlet w/ Frame & Grate	1	EA	\$ 3,500.00	\$ 3,500.00
4' Diameter Manhole Inlet w/ Casting	2	EA	\$ 5,500.00	\$ 11,000.00
5' Diameter Manhole Inlet w/ Casting	3	EA	\$ 7,000.00	\$ 21,000.00
18" RCP Drainage Pipe	50	LF	\$ 89.00	\$ 4,450.00
24" RCP Drainage Pipe	380	LF	\$ 101.00	\$ 38,380.00
30" RCP Drainage Pipe	115	LF	\$ 121.00	\$ 13,915.00
Swale Regrading with Sod	180	SY	\$ 9.00	\$ 1,620.00
Roadway Mill and Overlay	200	SY	\$ 13.00	\$ 2,600.00
Driveway Restoration	1,600	SF	\$ 20.00	\$ 32,000.00
Seawall Restoration	1	LS	\$ 20,000.00	\$ 20,000.00
			Subtotal Drainage & Restoration:	\$ 151,915.00
			Total Construction	\$ 168,750.00
			Contingencies (20%)	\$ 33,750.00
			Engineering, Legal Admin. Costs (15%)	\$ 25,312.50
			Total Cost:	\$ 227,812.50

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1.9 Project #9: NE 17th Avenue Stormwater Outfall Improvements

NE 17th Ave. is located on the northern boundary of the South River, east of Wilton Dr. There is an existing piped stormwater outfall on NE 17th Ave., but roadway ponding is still occurring in this area. This area was identified and prioritized as Project #9 for proposed improvements. *Figure 6-47* shows the pre- vs. post-improvements roadway ponding depths (in feet) at this location.

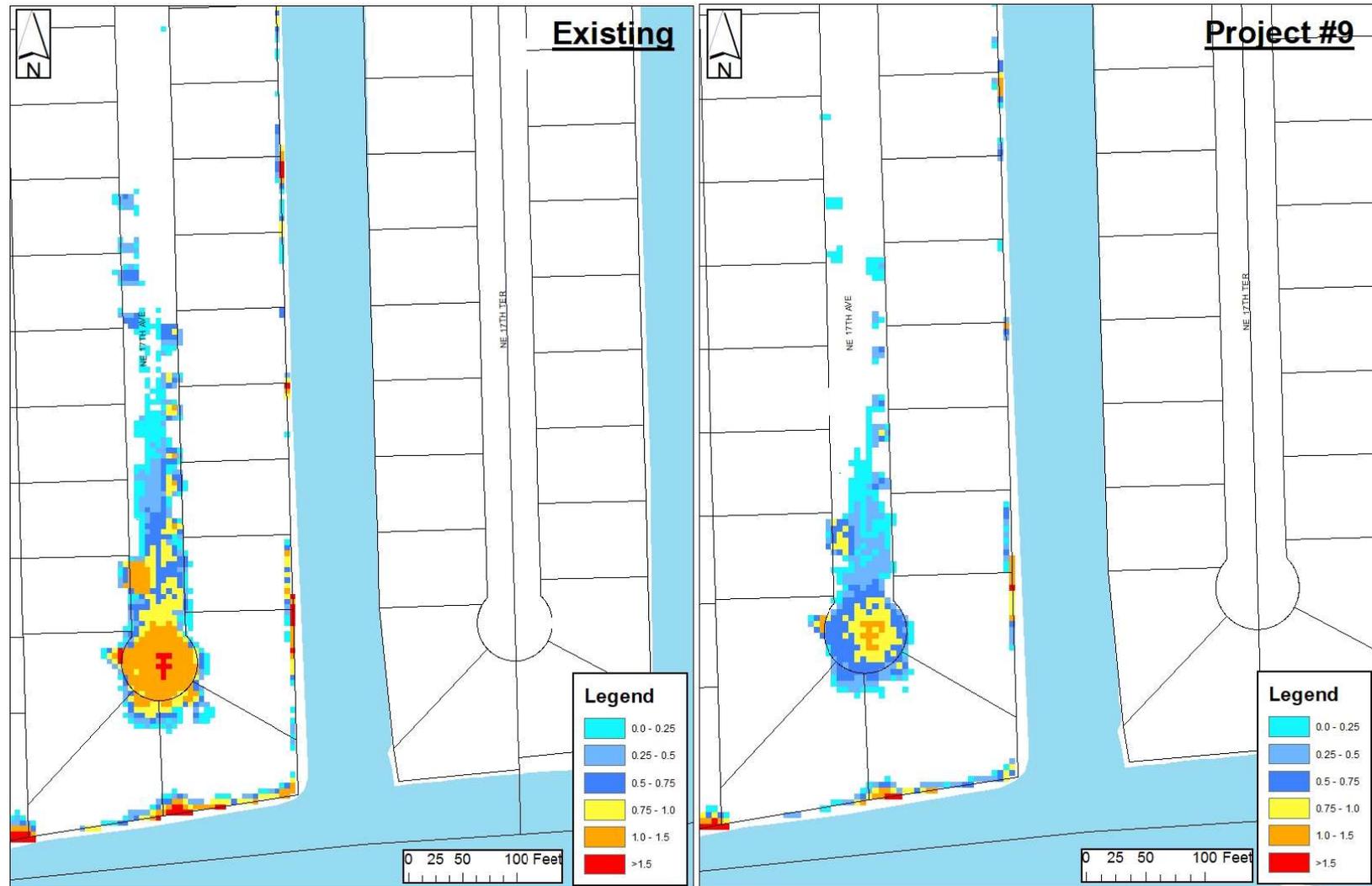


Figure 6-47: Project #9 – Existing Roadway Ponding Depth vs. Proposed Roadway Ponding Depth

The proposed improvements selected for this location were chosen based on the model results that provided both the best Level of Service increase for the City’s roadways in conjunction with all other proposed stormwater improvements and met the allowable discharge limits. The proposed stormwater improvements for this project area are shown in **Figure 6-48**.



Figure 6-48: Project #9 – NE 17th Avenue Stormwater Outfall Improvements

The proposed stormwater system improvements include replacement and upsizing of the existing stormwater outfall and installation of swales within the ROW as appropriate in the project area. Based on the proposed Project #9 improvements shown in *Figure 6-48*, the following *Table 6-46* outlines the conceptual construction cost estimate.

Table 6-46: 10-Year CIP – Project #9 Engineer’s Opinion of Probable Construction Cost

	Estimated			
	Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 3,100.00	\$ 3,100.00
Mobilization (2.5%)	1	LS	\$ 1,550.00	\$ 1,550.00
Maintenance of Traffic	145	LF	\$ 3.00	\$ 435.00
Clearing and Misc. Site Work (2.5%)	1	LS	\$ 1,550.00	\$ 1,550.00
			Subtotal General:	\$ 6,635.00
Drainage & Restoration				
Remove & Dispose Existing Drainage Pipe	145	LF	\$ 45.00	\$ 6,525.00
Remove & Dispose Existing Drainage Structure	1	EA	\$ 1,200.00	\$ 1,200.00
4' Diameter Manhole w/ Casting	1	EA	\$ 4,500.00	\$ 4,500.00
24" RCP Drainage Pipe	145	LF	\$ 101.00	\$ 14,645.00
Swale Regrading with Sod	110	SY	\$ 9.00	\$ 990.00
Roadway Mill and Overlay	840	SY	\$ 13.00	\$ 10,920.00
Driveway Restoration	1,100	SF	\$ 20.00	\$ 22,000.00
			Subtotal Drainage & Restoration:	\$ 60,780.00
			Total Construction	\$ 67,415.00
			Contingencies (20%)	\$ 13,483.00
			Engineering, Legal Admin. Costs (15%)	\$ 10,112.25
			Total Cost:	\$ 91,010.25

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1.10 Water Quality Improvements

As discussed in *Section 4.1*, as part of the Clean Water Act of 1972, there have been rules implemented to address to water quality of our canals, rivers, lakes and estuaries. Some examples of water quality best management practices include swales, drainage structure sumps, pollutant retardant baffles (PRB's), exfiltration trench, etc. Swales and drainage structure sumps are proposed in all of the 10-Year CIP projects. The calculations for the total runoff captured and treated by the proposed swales is shown below:

Swale Calculations

Calculate volume of runoff captured in the proposed swales:

Proposed Swales: 6" depth

$$\frac{6,905 \text{ yd}^2}{1} \times \frac{9 \text{ ft}^2}{1 \text{ yd}^2} = 62,145 \text{ ft}^2 \times \frac{1}{12 \text{ ft (avg. swale width)}} = 5,179 \text{ LF}$$

$$5,179 \text{ LF} \times 2.50 \frac{\text{ft}^2}{\text{LF}} = 12,947 \text{ ft}^3 \text{ (3.57 Ac - in)}$$

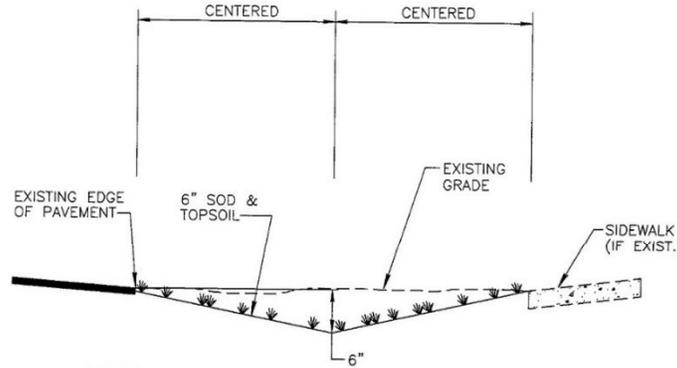


Figure 6-49: Proposed Swale Detail

Exfiltration trench is proposed for water quality improvements in Projects #10 - #12. The locations of the proposed exfiltration trenches were chosen based on the highest land elevations in the City as shown in **Figure 6-50**. An exfiltration trench provides its greatest water quality benefits at the locations that have a greater depth to the water table.

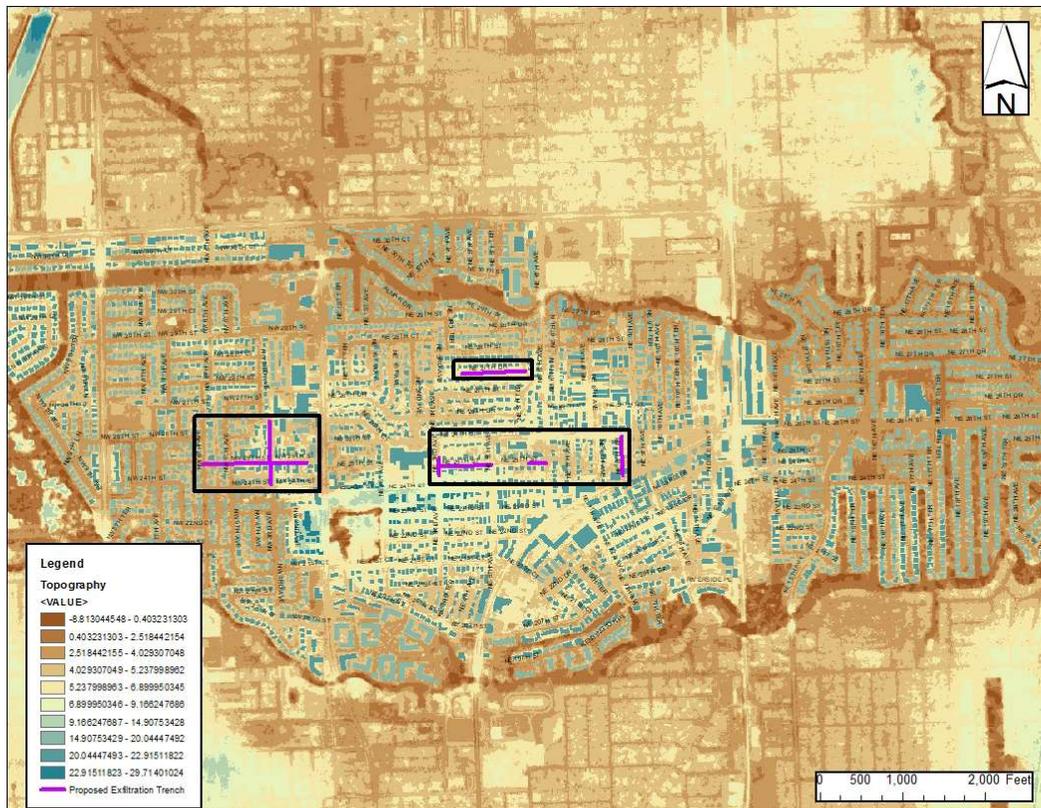


Figure 6-50: Proposed Exfiltration Trench 10-Year CIP Projects

6.3.1.11 Project #10: NE 27th Drive Stormwater Exfiltration Trench

The project location is on NE 17th Ave. between NE 2nd Ave. and NE 5th Ter. There is an existing piped stormwater system on NE 5th Ter. This area was identified and prioritized as Project #10 for proposed water quality improvements. The proposed improvements selected for this location were chosen based on the model results that provided both the best Level of Service increase for the City's roadways in conjunction with all other proposed stormwater improvements and met the allowable discharge limits. The proposed stormwater improvements for this project area are shown in *Figure 6-51*.



Figure 6-51: Project #10 – NE 27th Drive Stormwater Exfiltration Trench

The proposed stormwater system improvements include installation of proposed exfiltration trench and installation of swales within the ROW as appropriate in the project area. Based on the proposed Project #10 improvements shown in *Figure 6-51*, the following *Table 6-47* outlines the conceptual construction cost estimate.

Table 6-47: 10-Year CIP – Project #10 Engineer’s Opinion of Probable Construction Cost

	Estimated			
	Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 8,200.00	\$ 8,200.00
Mobilization (2.5%)	1	LS	\$ 4,100.00	\$ 4,100.00
Maintenance of Traffic	770	LF	\$ 3.00	\$ 2,310.00
Clearing and Misc. Site Work (2.5%)	1	LS	\$ 4,100.00	\$ 4,100.00
	Subtotal General:			\$ 18,710.00
Drainage & Restoration				
Remove & Dispose Existing Drainage Structure	1	EA	\$ 1,200.00	\$ 1,200.00
4' Diameter Manhole w/ Casting	3	EA	\$ 4,500.00	\$ 13,500.00
5' Diameter Manhole w/ Casting	1	EA	\$ 6,000.00	\$ 6,000.00
18" RCP Drainage Pipe	50	LF	\$ 89.00	\$ 4,450.00
18" RCP Drainage Pipe w/ 5'x5' Exfiltration Trench	720	LF	\$ 136.00	\$ 97,920.00
Connect to Existing Drainage Pipe with Concrete Collar per FDOT Index 280	2	EA	\$ 2,000.00	\$ 4,000.00
Swale Regrading with Sod	250	SY	\$ 9.00	\$ 2,250.00
Roadway Mill and Overlay	2,020	SY	\$ 13.00	\$ 26,260.00
Driveway Restoration	400	SF	\$ 20.00	\$ 8,000.00
	Subtotal Drainage & Restoration:			\$ 163,580.00
	Total Construction			\$ 182,290.00
	Contingencies (20%)			\$ 36,458.00
	Engineering, Legal Admin. Costs (15%)			\$ 27,343.50
	Total Cost:			\$ 246,091.50

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1.12 Project #11: NW 25th Street Stormwater Exfiltration Trench

The project location is on NE 25th St. between NW 6th Ave. and N. Andrews Ave. and on NW 3rd Ave. from NW 26th Ct. to NW 24th St. There is an existing piped stormwater system on NW 6th Ave. and N. Andrews Ave. This area was identified and prioritized as Project #11 for proposed water quality improvements. The proposed improvements selected for this location were chosen based on the model results that provided both the best Level of Service increase for the City's roadways in conjunction with all other proposed stormwater improvements and met the allowable discharge limits. The proposed stormwater improvements for this project area are shown in *Figure 6-52*.



Figure 6-52: Project #11 – NW 25th Street Stormwater Exfiltration Trench

The proposed stormwater system improvements include installation of proposed exfiltration trench and installation of swales within the ROW as appropriate in the project area. Based on the proposed Project #11 improvements shown in *Figure 6-52*, the following *Table 6-48* outlines the conceptual construction cost estimate.

Table 6-48: 10-Year CIP – Project #11 Engineer’s Opinion of Probable Construction Cost

	Estimated			Total
	Quantity	Unit	Unit Price	
General				
General Conditions (5%)	1	LS	\$ 22,000.00	\$ 22,000.00
Mobilization (2.5%)	1	LS	\$ 11,000.00	\$ 11,000.00
Maintenance of Traffic	2,030	LF	\$ 3.00	\$ 6,090.00
Clearing and Misc. Site Work (2.5%)	1	LS	\$ 11,000.00	\$ 11,000.00
	Subtotal General:			\$ 50,090.00
Drainage & Restoration				
Remove & Dispose Existing Drainage Structure	1	EA	\$ 1,200.00	\$ 1,200.00
4' Diameter Manhole Inlet w/ Casting	5	EA	\$ 5,500.00	\$ 27,500.00
4' Diameter Manhole w/ Casting	1	EA	\$ 4,500.00	\$ 4,500.00
18" RCP Drainage Pipe	80	LF	\$ 89.00	\$ 7,120.00
18" RCP Drainage Pipe w/ 5'x5' Exfiltration Trench	1,950	LF	\$ 136.00	\$ 265,200.00
Connect to Existing Drainage Pipe with Concrete Collar per FDOT Index 280	2	EA	\$ 2,000.00	\$ 4,000.00
Swale Regrading with Sod	1,300	SY	\$ 9.00	\$ 11,700.00
Roadway Mill and Overlay	800	SY	\$ 13.00	\$ 10,400.00
Driveway Restoration	5,310	SF	\$ 20.00	\$ 106,200.00
	Subtotal Drainage & Restoration:			\$ 437,820.00
	Total Construction			\$ 487,910.00
	Contingencies (20%)			\$ 97,582.00
	Engineering, Legal Admin. Costs (15%)			\$ 73,186.50
	Total Cost:			\$ 658,678.50

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1.13 Project #12: NE 25th Street & NE 8th Terrace Stormwater Exfiltration Trench

The project location is on NE 25th St. between NE 3rd Ave. and NE 6th Ave. and NE 8th Ter. between NE 26th St. and Wilton Dr.. This area was identified and prioritized as Project #12 for proposed water quality improvements. The proposed improvements selected for this location were chosen based on the model results that provided both the best Level of Service increase for the City’s roadways in conjunction with all other proposed stormwater improvements and met the allowable discharge limits. The proposed stormwater improvements for this project area are shown in *Figure 6-53*.



Figure 6-53: Project #12 – NE 25th Street & NE 8th Terrace Stormwater Exfiltration Trench

The proposed stormwater system improvements include installation of proposed exfiltration trench and installation of swales within the ROW as appropriate in the project area. Based on the proposed Project #13 improvements shown in *Figure 6-53*, the following *Table 6-49* outlines the conceptual construction cost estimate.

Table 6-49: 10-Year CIP – Project #12 Engineer’s Opinion of Probable Construction Cost

	Estimated Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 19,800.00	\$ 19,800.00
Mobilization (2.5%)	1	LS	\$ 9,900.00	\$ 9,900.00
Maintenance of Traffic	1,545	LF	\$ 3.00	\$ 4,635.00
Clearing and Misc. Site Work (2.5%)	1	LS	\$ 9,900.00	\$ 9,900.00
			Subtotal General:	\$ 44,235.00
Drainage & Restoration				
Remove & Dispose Existing Drainage Structure	2	EA	\$ 1,200.00	\$ 2,400.00
4' Diameter Manhole Inlet w/ Casting	5	EA	\$ 5,500.00	\$ 27,500.00
4' Diameter Manhole w/ Casting	5	EA	\$ 4,500.00	\$ 22,500.00
5' Diameter Manhole w/ Casting	1	EA	\$ 6,000.00	\$ 6,000.00
18" RCP Drainage Pipe	130	LF	\$ 89.00	\$ 11,570.00
18" RCP Drainage Pipe w/ 5'x5' Exfiltration Trench	1,415	LF	\$ 136.00	\$ 192,440.00
Connect to Existing Drainage Pipe with Concrete Collar per FDOT Index 280	1	EA	\$ 2,000.00	\$ 2,000.00
Swale Regrading with Sod	580	SY	\$ 9.00	\$ 5,220.00
Roadway Mill and Overlay	2,300	SY	\$ 13.00	\$ 29,900.00
Driveway Restoration	4,800	SF	\$ 20.00	\$ 96,000.00
			Subtotal Drainage & Restoration:	\$ 395,530.00
			Total Construction	\$ 439,765.00
			Contingencies (20%)	\$ 87,953.00
			Engineering, Legal Admin. Costs (15%)	\$ 65,964.75
			Total Cost:	\$ 593,682.75

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1.14 10-Year CIP Stormwater Improvements Summary

For the City's 10-Year (short-term) CIP budgetary projects, locations for proposed stormwater improvements were chosen based on the severity of the flooding with the goal of reducing flooding and increasing the LOS score for the City's roadways. As shown in the figures, the proposed improvements target and decrease the amount of flooding within City roadways which experience greater than 12 inches of flooding and provide relief to many roadways which currently experience between 6 to 12 inches of flooding.

As summarized in **Table 6-50**, the proposed short-term improvements were summarized and prioritized into thirteen (13) CIP projects that are proposed to be implemented over the next 10-years. These proposed short-term improvements will decrease the amount of roadway flooding that is anticipated within the City over the next 10 years; however, increasing sea level rise and king tides will require further stormwater improvements as described in **Section 4.8.4**.

Table 6-50: 10-Year CIP Project Summary

FY	Project	Estimated Cost of Recommended Improvements
2020	Project #1: Coral Gardens Drive Outfalls & Stormwater System Improvements	\$ 707,346.00
2021	Project #2: NE 28th Drive Outfall Improvements & Project #3: NE 14th Avenue Outfall Improvements	\$ 361,800.00
2022	Project #4: NW 24th Street to NW 22nd Street Stormwater System & Outfall Improvements	\$ 497,596.50
2023	Project #5: NW 3rd Avenue Stormwater System & Outfall Improvements	\$ 698,766.75
2024	Project #6: NE 30th Street Outfall Improvements	\$ 337,149.00
2025	Project #7: NE 28th Drive Outfall Improvements	\$ 108,040.50
2026	Project #8: NE 7th Terrace Stormwater System and Outfall & Project #9: NE 17th Avenue Stormwater Outfall Improvements	\$ 318,822.75
2027	Project #10: NE 27th Drive Stormwater Exfiltration Trench	\$ 246,091.50
2028	Project #11: NW 25th Street Stormwater Exfiltration Trench	\$ 658,678.50
2029	Project #12: NE 25th Street & NE 8th Terrace Stormwater Exfiltration Trench	\$ 593,682.75
Total:		\$ 4,527,974.25

6.3.2 Long-Term CIP Stormwater Improvements

Figure 6-54 shows the pumped drainage systems that were developed based on the modeling and SLR analyses. The Engineer's Opinion of Probable Construction Costs are summarized in **Table 6-51** for the pump stations. Since the Long-Term projects are based on SLR projection that extends beyond the 20 years, only three (3) of the nine (9) pump stations are proposed to be included within the 20-Year CIP. These stations correspond to the lowest, most flood prone area of the City. The remaining stations should be considered for the years to follow and may be deemed unnecessary if a regional solution, as discussed in **Section 4.8.2.**, comes to fruition.

Table 6-51: 20+ Year CIP - Engineer's Opinion of Probable Construction Cost Summary

FY	Project	Estimated Cost of Recommended Improvements
2030	PS-01: NE 16th Ave & NE 28th Dr Pump Station and Related Improvements	\$ 2,714,492.45
2033	PS-72: NE 18th Ave & Coral Gardens Dr Pump Station and Related Improvements	\$ 2,492,375.59
2036	PS-76: NE 14th Ave & NE 15th Ave Pump Station and Related Improvements	\$ 1,757,580.08
TBD	PS-23: NW 6th Ave & NW 22nd St Pump Station and Related Improvements	\$ 8,007,675.42
TBD	PS-26: W Ave & NW 20th St Pump Station and Related Improvements	\$ 4,031,003.50
TBD	PS-59: NE 24th St & NE 16th Ave Pump Station and Related Improvements	\$ 4,344,675.93
TBD	PS-67: NE NE 24th St & NE 20th Ave Pump Station and Related Improvements	\$ 7,177,649.97
TBD	PS-69: NE 27th Dr & Coral Gardens Dr Drainage Improvements	\$ 549,474.27
TBD	PS-14: NW 6th Ave & NW 29th St Pump Station and Related Improvements	\$ 2,921,374.91
Total:		\$ 33,996,302.12
20-Year CIP		\$ 6,964,448.12
Beyond		\$ 27,031,854.00

Most of the pumped systems are located on the east one third of the City and some are located in the western portion of the City. All of the pumped systems correspond to lower lying areas vulnerable to SLR. **Figures 6-55** and **6-56** show the recommended pumped systems in more detail in the eastern and western parts of the City, respectively. It should be noted that one of the pumped systems (PS-69) would need to be located in Broward County's right-of-way (NE 26th Street) and would need to serve that roadway. It is assumed that this pump station would be the responsibility of the County, but that the City would be responsible for the collection system that would enter from Coral Gardens Drive.

Engineer's Opinion of Probable Construction Costs are also provided in **Table 6-52** through **Table 6-60**.

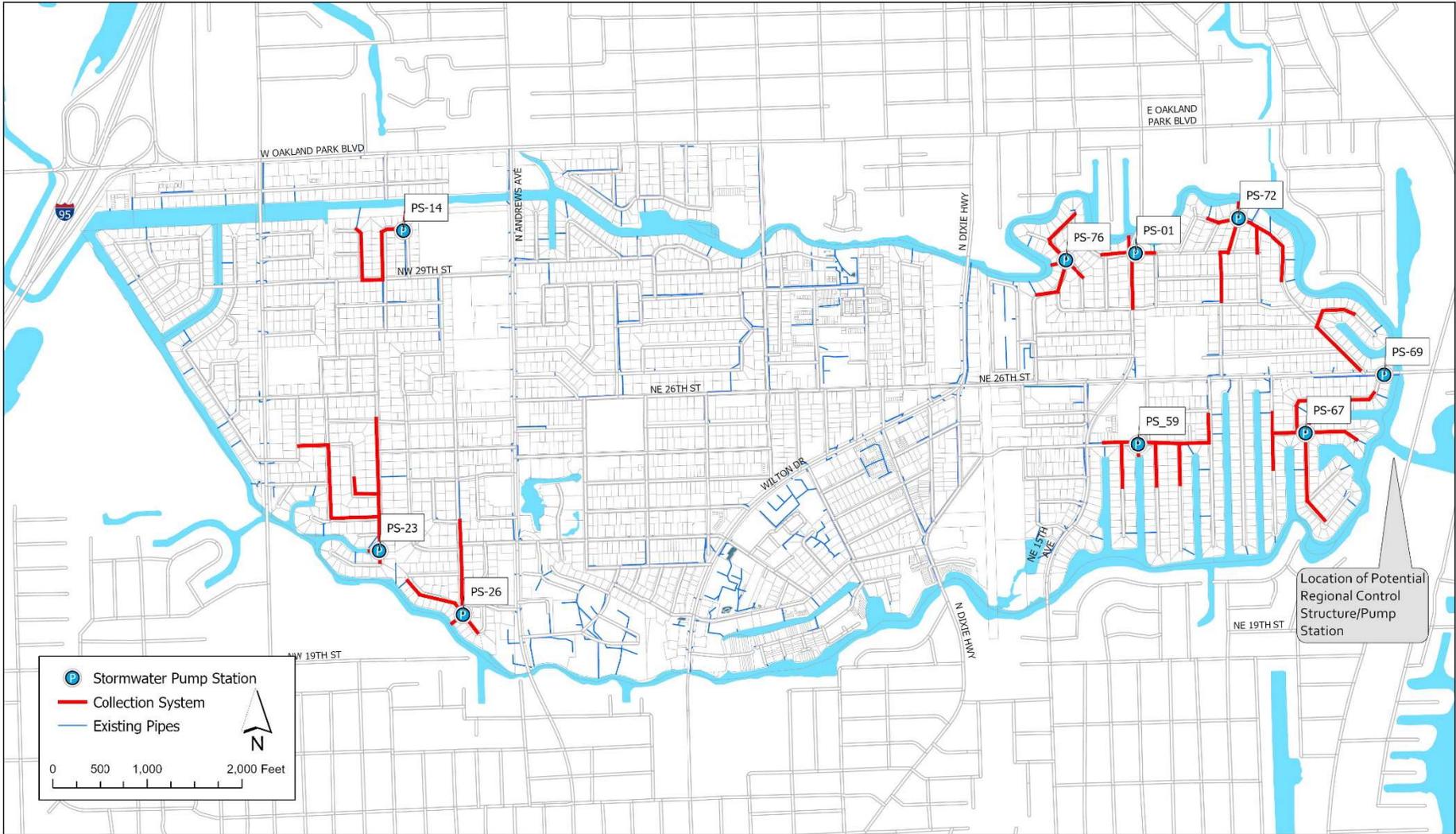


Figure 6-54: 20+ Year CIP Projects

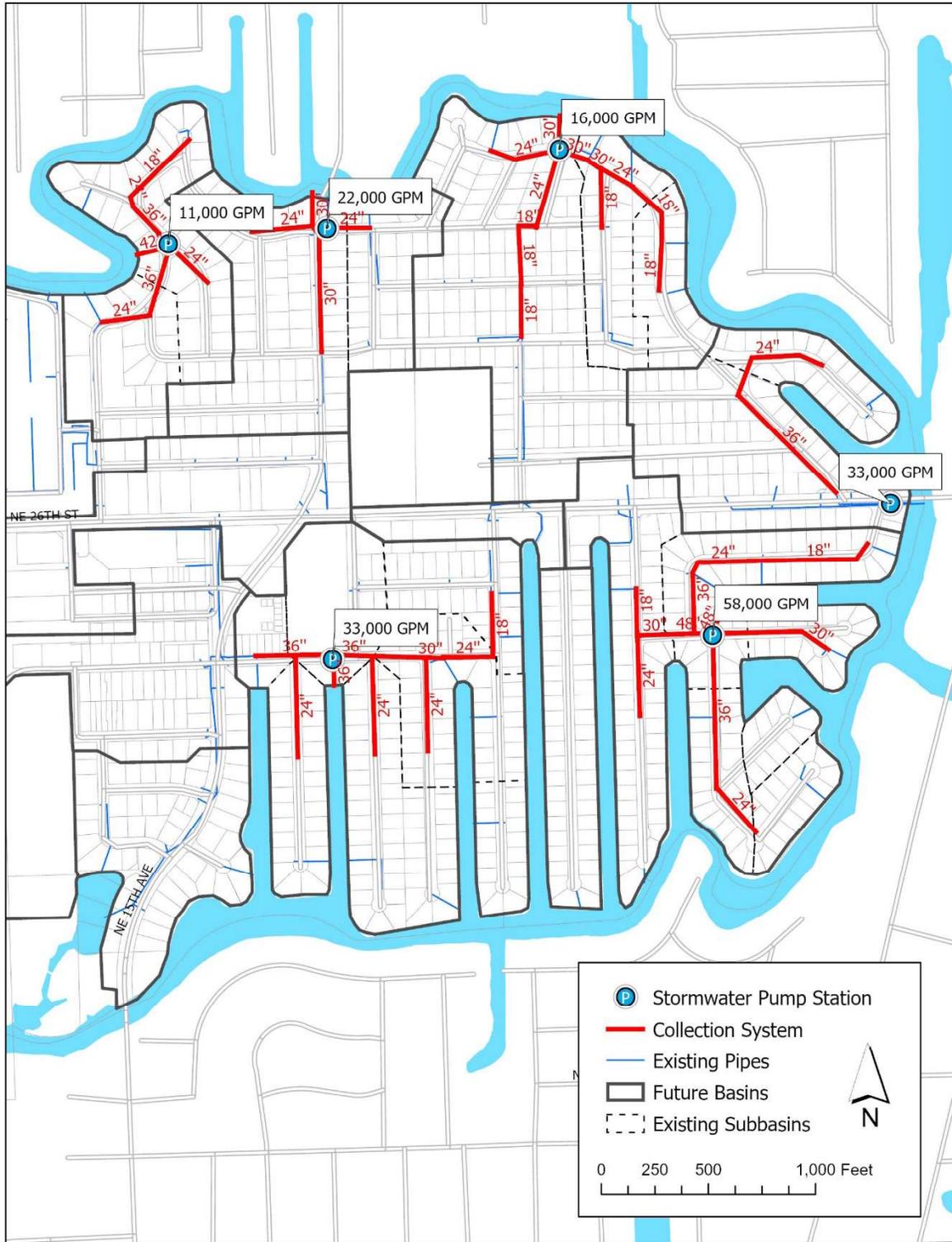


Figure 6-55: 20+ Year CIP – Pumped Systems (East)

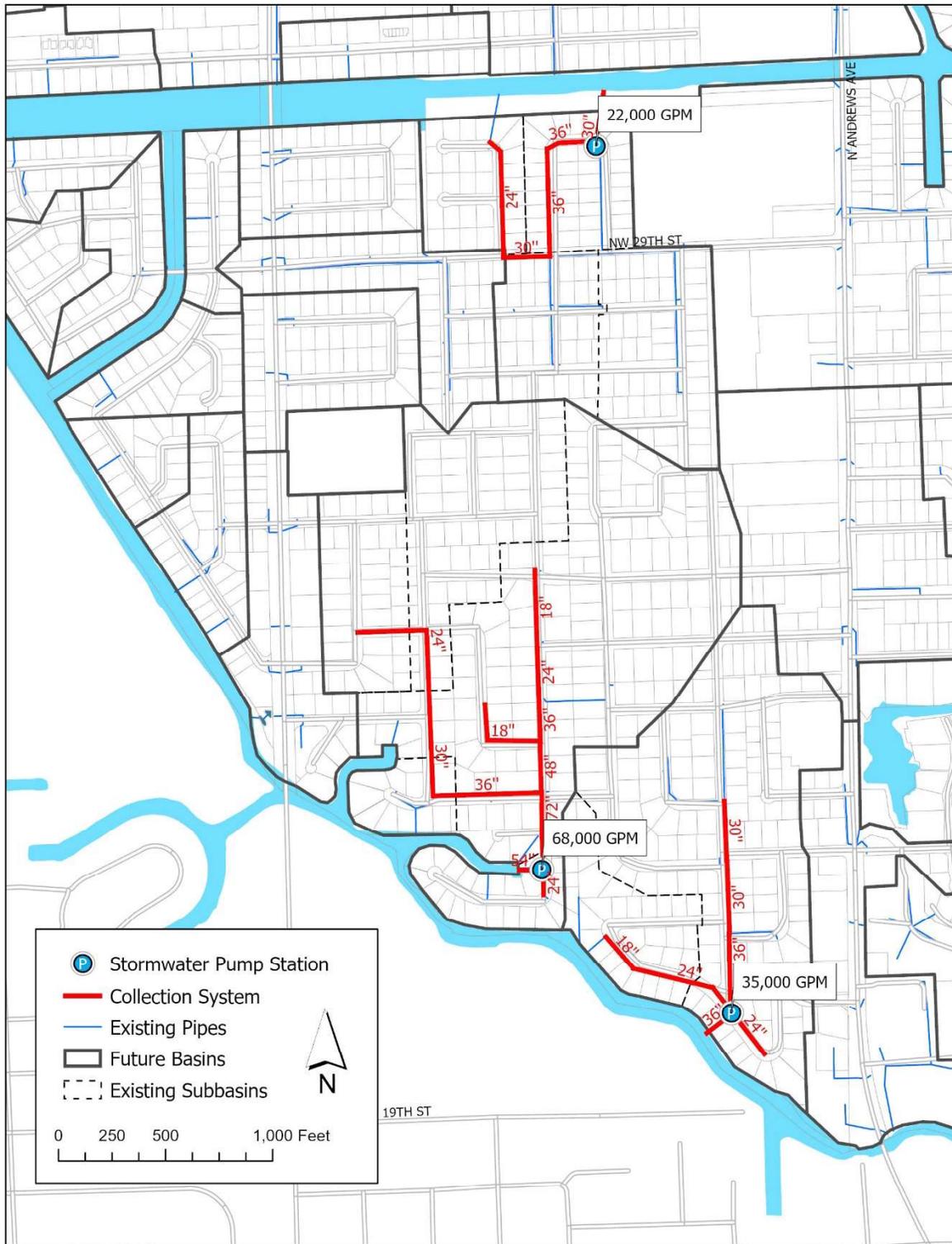


Figure 6-56: 20+ Year CIP – Pumped Systems (West)

Table 6-52: 20+ Year CIP – PS-01 Engineer’s Opinion of Probable Construction Cost

	Estimated			
	Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 92,145.36	\$ 92,145.36
Mobilization (2.5%)	1	LS	\$ 46,072.68	\$ 46,072.68
Maintenance of Traffic	1,870	LF	\$ 3.00	\$ 5,610.00
Clearing and Misc. Site Work	1	LS	\$ 24,000.00	\$ 24,000.00
			Subtotal General:	\$ 167,828.03
Drainage & Restoration				
Remove & Dispose Existing Drainage Facilities	1	LS	\$ 50,000.00	\$ 50,000.00
Type C Drainage Inlet w/ Frame & Grate	12	EA	\$ 3,500.00	\$ 42,000.00
4' Diameter Manhole Inlet w/ Casting	3	EA	\$ 5,500.00	\$ 16,500.00
5' Diameter Manhole Inlet w/ Casting	3	EA	\$ 7,000.00	\$ 21,000.00
24" RCP Drainage Pipe	194	LF	\$ 101.00	\$ 19,594.00
30" RCP Drainage Pipe	822	LF	\$ 121.00	\$ 99,462.00
Connect to Existing Drainage Facilities	1	LS	\$ 5,000.00	\$ 5,000.00
Stormwater Pump Station	22,000	GPM	\$ 70.00	\$ 1,540,000.00
Roadway Mill and Overlay	2,258	SY	\$ 13.00	\$ 29,351.11
Driveway Restoration	1	LS	\$ 20,000.00	\$ 20,000.00
			Subtotal Drainage & Restoration:	\$ 1,842,907.11
			Total Construction	\$ 2,010,735.14
			Contingencies (20%)	\$ 402,147.03
			Engineering, Legal Admin. Costs (15%)	\$ 301,610.27
			Total Cost:	\$ 2,714,492.45

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

Table 6-53: 20+ Year CIP – PS-72 Engineer’s Opinion of Probable Construction Cost

	Estimated Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 84,104.98	\$ 84,104.98
Mobilization (2.5%)	1	LS	\$ 42,052.49	\$ 42,052.49
Maintenance of Traffic	2,649	LF	\$ 3.00	\$ 7,947.00
Clearing and Misc. Site Work	1	LS	\$ 30,000.00	\$ 30,000.00
			Subtotal General:	\$ 164,104.48
Drainage & Restoration				
Remove & Dispose Existing Drainage Facilities	1	LS	\$ 50,000.00	\$ 50,000.00
Type C Drainage Inlet w/ Frame & Grate	22	EA	\$ 3,500.00	\$ 77,000.00
4' Diameter Manhole Inlet w/ Casting	6	EA	\$ 5,500.00	\$ 33,000.00
5' Diameter Manhole Inlet w/ Casting	5	EA	\$ 7,000.00	\$ 35,000.00
18" RCP Drainage Pipe	1,533	LF	\$ 89.00	\$ 136,437.00
24" RCP Drainage Pipe	745	LF	\$ 101.00	\$ 75,245.00
30" RCP Drainage Pipe	371	LF	\$ 121.00	\$ 44,891.00
Connect to Existing Drainage Facilities	1	LS	\$ 6,000.00	\$ 6,000.00
Stormwater Pump Station	16,000	GPM	\$ 70.00	\$ 1,120,000.00
Roadway Mill and Overlay	5,887	SY	\$ 13.00	\$ 76,526.67
Driveway Restoration	1	LS	\$ 28,000.00	\$ 28,000.00
			Subtotal Drainage & Restoration:	\$ 1,682,099.67
			Total Construction	\$ 1,846,204.14
			Contingencies (20%)	\$ 369,240.83
			Engineering, Legal Admin. Costs (15%)	\$ 276,930.62
			Total Cost:	\$ 2,492,375.59

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

Table 6-54: 20+ Year CIP – PS-76 Engineer’s Opinion of Probable Construction Cost

	Estimated			
	Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 59,025.08	\$ 59,025.08
Mobilization (2.5%)	1	LS	\$ 29,512.54	\$ 29,512.54
Maintenance of Traffic	1,624	LF	\$ 3.00	\$ 4,872.00
Clearing and Misc. Site Work	1	LS	\$ 28,000.00	\$ 28,000.00
	Subtotal General:			\$ 121,409.62
Drainage & Restoration				
Remove & Dispose Existing Drainage Facilities	1	LS	\$ 50,000.00	\$ 50,000.00
Type C Drainage Inlet w/ Frame & Grate	13	EA	\$ 3,500.00	\$ 45,500.00
4' Diameter Manhole Inlet w/ Casting	3	EA	\$ 5,500.00	\$ 16,500.00
5' Diameter Manhole Inlet w/ Casting	3	EA	\$ 7,000.00	\$ 21,000.00
18" RCP Drainage Pipe	379	LF	\$ 89.00	\$ 33,731.00
24" RCP Drainage Pipe	672	LF	\$ 101.00	\$ 67,872.00
36" RCP Drainage Pipe	573	LF	\$ 171.00	\$ 97,983.00
Connect to Existing Drainage Facilities	1	LS	\$ 6,000.00	\$ 6,000.00
Stormwater Pump Station	11,000	GPM	\$ 70.00	\$ 770,000.00
Roadway Mill and Overlay	3,609	SY	\$ 13.00	\$ 46,915.56
Driveway Restoration	1	LS	\$ 25,000.00	\$ 25,000.00
	Subtotal Drainage & Restoration:			\$ 1,180,501.56
Total Construction				\$ 1,301,911.17
Contingencies (20%)				\$ 260,382.23
Engineering, Legal Admin. Costs (15%)				\$ 195,286.68
Total Cost:				\$ 1,757,580.08

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

Table 6-55: 20+ Year CIP – PS-23 Engineer's Opinion of Probable Construction Cost

	Estimated			
	Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$274,092.95	\$ 274,092.95
Mobilization (2.5%)	1	LS	\$137,046.48	\$ 137,046.48
Maintenance of Traffic	2,871	LF	\$ 3.00	\$ 8,613.00
Clearing and Misc. Site Work	1	LS	\$ 30,000.00	\$ 30,000.00
	Subtotal General:			\$ 449,752.43
Drainage & Restoration				
Remove & Dispose Existing Drainage Facilities	1	LS	\$ 50,000.00	\$ 50,000.00
Type C Drainage Inlet w/ Frame & Grate	16	EA	\$ 3,500.00	\$ 56,000.00
4' Diameter Manhole Inlet w/ Casting	3	EA	\$ 5,500.00	\$ 16,500.00
5' Diameter Manhole Inlet w/ Casting	4	EA	\$ 7,000.00	\$ 28,000.00
6' Diameter Manhole Inlet w/ Casting	2	EA	\$ 8,000.00	\$ 16,000.00
18" RCP Drainage Pipe	762	LF	\$ 89.00	\$ 67,818.00
24" RCP Drainage Pipe	690	LF	\$ 101.00	\$ 69,690.00
36" RCP Drainage Pipe	700	LF	\$ 171.00	\$ 119,700.00
48" RCP Drainage Pipe	243	LF	\$ 205.00	\$ 49,815.00
54" RCP Drainage Pipe	112	LF	\$ 225.00	\$ 25,200.00
72" RCP Drainage Pipe	364	LF	\$ 289.00	\$ 105,196.00
Connect to Existing Drainage Facilities	1	LS	\$ 5,000.00	\$ 5,000.00
Stormwater Pump Station	68,000	GPM	\$ 70.00	\$ 4,760,000.00
Roadway Mill and Overlay	6,380	SY	\$ 13.00	\$ 82,940.00
Driveway Restoration	1	LS	\$ 30,000.00	\$ 30,000.00
	Subtotal Drainage & Restoration:			\$ 5,481,859.00
	Total Construction			\$ 5,931,611.43
	Contingencies (20%)			\$ 1,186,322.29
	Engineering, Legal Admin. Costs (15%)			\$ 889,741.71
	Total Cost:			\$ 8,007,675.42

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

Table 6-56: 20+ Year CIP – PS-26 Engineer’s Opinion of Probable Construction Cost

	Estimated Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$137,521.23	\$ 137,521.23
Mobilization (2.5%)	1	LS	\$ 68,760.62	\$ 68,760.62
Maintenance of Traffic	1,074	LF	\$ 3.00	\$ 3,222.00
Clearing and Misc. Site Work	1	LS	\$ 26,000.00	\$ 26,000.00
			Subtotal General:	\$ 235,503.85
Drainage & Restoration				
Remove & Dispose Existing Drainage Facilities	1	LS	\$ 50,000.00	\$ 50,000.00
Type C Drainage Inlet w/ Frame & Grate	12	EA	\$ 3,500.00	\$ 42,000.00
4' Diameter Manhole Inlet w/ Casting	3	EA	\$ 5,500.00	\$ 16,500.00
5' Diameter Manhole Inlet w/ Casting	3	EA	\$ 7,000.00	\$ 21,000.00
6' Diameter Manhole Inlet w/ Casting	1	EA	\$ 8,000.00	\$ 8,000.00
18" RCP Drainage Pipe	298	LF	\$ 89.00	\$ 26,522.00
24" RCP Drainage Pipe	776	LF	\$ 101.00	\$ 78,376.00
Connect to Existing Drainage Facilities	1	LS	\$ 5,000.00	\$ 5,000.00
Stormwater Pump Station	35,000	GPM	\$ 70.00	\$ 2,450,000.00
Roadway Mill and Overlay	2,387	SY	\$ 13.00	\$ 31,026.67
Driveway Restoration	1	LS	\$ 22,000.00	\$ 22,000.00
			Subtotal Drainage & Restoration:	\$ 2,750,424.67
			Total Construction	\$ 2,985,928.52
			Contingencies (20%)	\$ 597,185.70
			Engineering, Legal Admin. Costs (15%)	\$ 447,889.28
			Total Cost:	\$ 4,031,003.50

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

Table 6-57: 20+ Year CIP – PS-59 Engineer’s Opinion of Probable Construction Cost

	Estimated			Total
	Quantity	Unit	Unit Price	
General				
General Conditions (5%)	1	LS	\$148,074.53	\$ 148,074.53
Mobilization (2.5%)	1	LS	\$ 74,037.27	\$ 74,037.27
Maintenance of Traffic	2,892	LF	\$ 3.00	\$ 8,676.00
Clearing and Misc. Site Work	1	LS	\$ 26,000.00	\$ 26,000.00
	Subtotal General:			\$ 256,787.80
Drainage & Restoration				
Remove & Dispose Existing Drainage Facilities	1	LS	\$ 50,000.00	\$ 50,000.00
Type C Drainage Inlet w/ Frame & Grate	23	EA	\$ 3,500.00	\$ 80,500.00
4' Diameter Manhole Inlet w/ Casting	4	EA	\$ 5,500.00	\$ 22,000.00
5' Diameter Manhole Inlet w/ Casting	5	EA	\$ 7,000.00	\$ 35,000.00
6' Diameter Manhole Inlet w/ Casting	1	EA	\$ 8,000.00	\$ 8,000.00
18" RCP Drainage Pipe	279	LF	\$ 89.00	\$ 24,831.00
24" RCP Drainage Pipe	1,593	LF	\$ 101.00	\$ 160,893.00
30" RCP Drainage Pipe	334	LF	\$ 121.00	\$ 40,414.00
36" RCP Drainage Pipe	686	LF	\$ 171.00	\$ 117,306.00
Connect to Existing Drainage Facilities	1	LS	\$ 5,000.00	\$ 5,000.00
Stormwater Pump Station	33,000	GPM	\$ 70.00	\$ 2,310,000.00
Roadway Mill and Overlay	6,427	SY	\$ 13.00	\$ 83,546.67
Driveway Restoration	1	LS	\$ 24,000.00	\$ 24,000.00
	Subtotal Drainage & Restoration:			\$ 2,961,490.67
	Total Construction			\$ 3,218,278.47
	Contingencies (20%)			\$ 643,655.69
	Engineering, Legal Admin. Costs (15%)			\$ 482,741.77
	Total Cost:			\$ 4,344,675.93

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

Table 6-58: 20+ Year CIP – PS-67 Engineer’s Opinion of Probable Construction Cost

	Estimated			Total
	Quantity	Unit	Unit Price	
General				
General Conditions (5%)	1	LS	\$245,369.62	\$ 245,369.62
Mobilization (2.5%)	1	LS	\$122,684.81	\$ 122,684.81
Maintenance of Traffic	3,777	LF	\$ 3.00	\$ 11,331.00
Clearing and Misc. Site Work	1	LS	\$ 30,000.00	\$ 30,000.00
	Subtotal General:			\$ 409,385.43
Drainage & Restoration				
Remove & Dispose Existing Drainage Facilities	1	LS	\$ 50,000.00	\$ 50,000.00
Type C Drainage Inlet w/ Frame & Grate	25	EA	\$ 3,500.00	\$ 87,500.00
4' Diameter Manhole Inlet w/ Casting	5	EA	\$ 5,500.00	\$ 27,500.00
5' Diameter Manhole Inlet w/ Casting	5	EA	\$ 7,000.00	\$ 35,000.00
6' Diameter Manhole Inlet w/ Casting	2	EA	\$ 8,000.00	\$ 16,000.00
18" RCP Drainage Pipe	751	LF	\$ 89.00	\$ 66,839.00
24" RCP Drainage Pipe	998	LF	\$ 101.00	\$ 100,798.00
30" RCP Drainage Pipe	823	LF	\$ 121.00	\$ 99,583.00
36" RCP Drainage Pipe	999	LF	\$ 171.00	\$ 170,829.00
48" RCP Drainage Pipe	206	LF	\$ 205.00	\$ 42,230.00
Connect to Existing Drainage Facilities	1	LS	\$ 6,000.00	\$ 6,000.00
Stormwater Pump Station	58,000	GPM	\$ 70.00	\$ 4,060,000.00
Roadway Mill and Overlay	8,393	SY	\$ 13.00	\$ 109,113.33
Driveway Restoration	1	LS	\$ 36,000.00	\$ 36,000.00
	Subtotal Drainage & Restoration:			\$ 4,907,392.33
	Total Construction			\$ 5,316,777.76
	Contingencies (20%)			\$ 1,063,355.55
	Engineering, Legal Admin. Costs (15%)			<u>\$ 797,516.66</u>
	Total Cost:			\$ 7,177,649.97

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

Table 6-59: 20+ Year CIP – PS-69 Engineer’s Opinion of Probable Construction Cost

	Estimated			
	Quantity	Unit	Unit Price	Total
General				
General Conditions (5%)	1	LS	\$ 17,373.02	\$ 17,373.02
Mobilization (2.5%)	1	LS	\$ 8,686.51	\$ 8,686.51
Maintenance of Traffic	1,166	LF	\$ 3.00	\$ 3,498.00
Clearing and Misc. Site Work	1	LS	\$ 30,000.00	\$ 30,000.00
	Subtotal General:			\$ 59,557.53
Drainage & Restoration				
Remove & Dispose Existing Drainage Facilities	1	LS	\$ 50,000.00	\$ 50,000.00
Type C Drainage Inlet w/ Frame & Grate	10	EA	\$ 3,500.00	\$ 35,000.00
4' Diameter Manhole Inlet w/ Casting	4	EA	\$ 5,500.00	\$ 22,000.00
5' Diameter Manhole Inlet w/ Casting	2	EA	\$ 7,000.00	\$ 14,000.00
24" RCP Drainage Pipe	523	LF	\$ 101.00	\$ 52,823.00
36" RCP Drainage Pipe	643	LF	\$ 171.00	\$ 109,953.00
Connect to Existing Drainage Facilities	1	LS	\$ 6,000.00	\$ 6,000.00
Stormwater Pump Station	33,000	GPM	\$ 70.00	By Others
Roadway Mill and Overlay	2,591	SY	\$ 13.00	\$ 33,684.44
Driveway Restoration	1	LS	\$ 24,000.00	\$ 24,000.00
	Subtotal Drainage & Restoration:			\$ 347,460.44
	Total Construction			\$ 407,017.98
	Contingencies (20%)			\$ 81,403.60
	Engineering, Legal Admin. Costs (15%)			\$ 61,052.70
	Total Cost:			\$ 549,474.27

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

Table 6-60: 20+ Year CIP – PS-14 Engineer’s Opinion of Probable Construction Cost

	Estimated			Total
	Quantity	Unit	Unit Price	
General				
General Conditions (5%)	1	LS	\$ 99,285.09	\$ 99,285.09
Mobilization (2.5%)	1	LS	\$ 49,642.54	\$ 49,642.54
Maintenance of Traffic	1,784	LF	\$ 3.00	\$ 5,352.00
Clearing and Misc. Site Work	1	LS	\$ 24,000.00	\$ 24,000.00
	Subtotal General:			\$ 178,279.63
Drainage & Restoration				
Remove & Dispose Existing Drainage Facilities	1	LS	\$ 50,000.00	\$ 50,000.00
Type C Drainage Inlet w/ Frame & Grate	10	EA	\$ 3,500.00	\$ 35,000.00
4' Diameter Manhole Inlet w/ Casting	3	EA	\$ 5,500.00	\$ 16,500.00
5' Diameter Manhole Inlet w/ Casting	4	EA	\$ 7,000.00	\$ 28,000.00
24" RCP Drainage Pipe	565	LF	\$ 101.00	\$ 57,065.00
30" RCP Drainage Pipe	477	LF	\$ 121.00	\$ 57,717.00
36" RCP Drainage Pipe	742	LF	\$ 171.00	\$ 126,882.00
Connect to Existing Drainage Facilities	1	LS	\$ 3,000.00	\$ 3,000.00
Stormwater Pump Station	22,000	GPM	\$ 70.00	\$ 1,540,000.00
Roadway Mill and Overlay	3,964	SY	\$ 13.00	\$ 51,537.78
Driveway Restoration	1	LS	\$ 20,000.00	\$ 20,000.00
	Subtotal Drainage & Restoration:			\$ 1,985,701.78
Total Construction				\$ 2,163,981.41
Contingencies (20%)				\$ 432,796.28
Engineering, Legal Admin. Costs (15%)				\$ 324,597.21
Total Cost:				\$ 2,921,374.91

Note: Costs are based on conceptual design (2019 dollars). Since the Engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer's opinion of probable Construction Cost provided herein are made on the basis of Engineer's experience and qualifications and represent Engineer's best judgement as an experienced and qualified Engineer familiar with the construction industry. Engineer cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable construction cost prepared by Engineer.

6.3.1 City Ordinances for Future Re-Development

In relation to stormwater improvements, the City has in place several ordinances which outline the specific stormwater retention requirements for private developments. The following is a list of the City's ordinances relating to stormwater requirements for future re-development with a brief summary:

- *City's Unified Land Development Code, Section 080-040. (F) Drainage.* – Provides specific stormwater requirements that comply with the water management district basin design standards for new and re-development. This section specifically states the requirement for on-site storage, which requires “development to retain onsite the first inch of stormwater runoff, or two and one-half (2.5) inches multiplied by the percentage impervious, whichever is greater.”
- *City's Code of Ordinances – Article 160. – Subdivision Design Standards; Section 1660-060. – Drainage improvements.* – Details requirements for subdivision drainage system design, structure and materials to provide the drainage level of service as outlined in the City's Code of Ordinances Article 90 – Concurrency and Impact Fees.
- *City's Code of Ordinances – Article VI. – Special Assessments – Section 2-285 – Storm System Improvements.* – Provides the City the authority to “install, repair, modify or otherwise upgrade all storm systems within its corporate boundaries” and allow the City to assess properties benefitting primarily from such storm system improvements for the total cost of the project.

In addition to these ordinances, the City requires permit submittals for re-development site plan approvals. These permit applications are subject to approval by Broward County if the proposed re-development is “non-residential or residential and larger than a duplex.” Re-development projects that meet this criteria must meet the drainage criteria outlined in Broward County's Code and will be evaluated by County staff and may require a surface water management license. The City's existing ordinances and site plan review procedures in conjunction with Broward County provide the City the necessary mechanism to regulate future development and re-development as it pertains to stormwater retention and improvements.

6.3.2 Stormwater Improvements Funding Mechanisms

In 2003, the City of Wilton Manors adopted Chapter 20, Article V of the City's Code of Ordinances to impose a stormwater utility user fee for the purpose of funding the maintenance, repair, improvements, and administration of the stormwater facilities throughout the City. The most recent rate study for the City's Stormwater Utility was completed in 2013. The City plans to perform a rate study as a mechanism to fund the recommended CIP projects. Additionally, the City may consider several grant opportunities for funding which include, but are not limited to, the following:

- FEMA Hurricane Mitigation Grant Funding
- State Revolving Funding (SRF)
- SFWMD Cooperative Funding Program (Stormwater Improvement Projects)
- FDEP 319 Grants

It should be noted that some of the grant opportunities mentioned require coordination / project prioritization at the local level prior to being recommended at the Federal and State levels.