

Solicitation 12632-626

Consultant Services for Melrose Manors Neighborhood Stormwater Improvements

Bid Designation: Public



City of Fort Lauderdale

Bid 12632-626

Consultant Services for Melrose Manors Neighborhood Stormwater Improvements

Bid Number **12632-626**
 Bid Title **Consultant Services for Melrose Manors Neighborhood Stormwater Improvements**

Bid Start Date **Jan 27, 2022 1:24:58 PM EST**
 Bid End Date **Mar 1, 2022 2:00:00 PM EST**
 Question & Answer End Date **Feb 18, 2022 5:00:00 PM EST**

Bid Contact **Fausto Vargas**
Procurement Specialist
Finance - Procurement Division
954-828-6167
fvargas@fortlauderdale.gov

Bid Contact **Maureen Lewis, MBA, CPPB**
Senior Procurement Specialist
Finance
954-828-5239
maureenl@fortlauderdale.gov

Contract Duration **One Time Purchase**
 Contract Renewal **Not Applicable**
 Prices Good for **120 days**

Bid Comments The City of Fort Lauderdale, FL (City) is actively seeking qualified, experienced, and licensed firm(s) to provide consultant services related to conceptual engineering, final design, permitting, public outreach, bidding, and construction management associated with stormwater management improvements for the Melrose Manors neighborhood. Information regarding the Environmental Protection Agency (EPA) Federal compliance is provided herein.

Sealed bids will be received electronically until **2:00 p.m.**, local time, on **TUESDAY, MARCH 1, 2022**, and opened online immediately thereafter. The opening may also be viewed in real time through a "Zoom meeting" by using the following information:

Join Zoom Meeting

Phone one-tap: US: +16692545252,,1610364503# or +16468287666,,1610364503#

Meeting URL: <https://fortlauderdale.zoomgov.com/j/1610364503?pwd=YUUUOd3kxRUhscINTcjhRMmpjQXR5QT09>

Meeting ID: 161 036 4503

Password: 232616

Join by Telephone

For higher quality, dial a number based on your current location.

Dial: US: +1 669 254 5252 or +1 646 828 7666 or +1 669 216 1590 or +1 551 285 1373

Meeting ID: 161 036 4503

Anyone requesting assistance or having further inquiry in this matter must contact the Procurement Specialist indicated on the solicitation, via the Question and Answer (Q&A) forum on bidsync.com before the Last Day for Questions indicated in the Solicitation.

Item Response Form

Item **12632-626--01-01 - Melrose Manors Neighborhood Stormwater Improvements**

Quantity **1 lump sum**

Prices are not requested for this item.

Delivery Location **City of Fort Lauderdale**
[See Specifications](#)
See Specifications
Fort Lauderdale FL 33301
Qty 1

Description

Upload attachments on this line.

Request for Qualifications

RFQ # 12632-626

CONSULTANT SERVICES FOR MELROSE MANORS NEIGHBORHOOD STORMWATER IMPROVEMENTS (P12719)

Pursuant to Section 287.055
Consultants' Competitive Negotiation Act (CCNA)

City of Fort Lauderdale



**JUAN CARLOS SAMUEL
PROJECT MANAGER II**

**MAUREEN LEWIS, MBA, CPPB
SENIOR PROCUREMENT SPECIALIST**
Telephone: (954) 828-5239 E-mail: maureen@fortlauderdale.gov

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SECTION I – INTRODUCTION AND INFORMATION

1.1 Purpose

The City of Fort Lauderdale, FL (City) is actively seeking qualified, experienced, and licensed firm(s) to provide consultant services related to conceptual engineering, final design, permitting, public outreach, bidding services, and construction management services associated with stormwater management improvements for the Melrose Manors neighborhood. The new improvements shall include stormwater collection, treatment, conveyance, and discharge to the New River Canal via a stormwater pump station located within the Melrose Manors neighborhood as further described in Section III – Scope of Services. Those firms which are interested in submitting proposals in response to this Request for Qualifications (RFQ) shall comply with Section IV – Submittal Requirements.

1.2 Bidsync

The City uses Bidsync (www.bidsync.com) to administer the competitive solicitation process, including but not limited to soliciting bids, issuing addenda, posting results and issuing notification of an intended decision. There is no charge to register and download the RFQ from BidSync. Proposers are strongly encouraged to read the various vendor Guides and Tutorials available in BidSync well in advance of their intention of submitting a response to ensure familiarity with the use of BidSync. The City shall not be responsible for an offeror's inability to submit a response by the end date and time for any reason, including issues arising from the use of BidSync. There is no charge to proposers to register and participate in the solicitation process, nor will any fees be charged to the awarded proposer.

It is the sole responsibility of the proposer to ensure that its bid is submitted electronically through BidSync at bidsync.com no later than the time and date specified in this solicitation. **PAPER BID SUBMITTALS WILL NOT BE ACCEPTED. BIDS MUST BE SUBMITTED ELECTRONICALLY VIA bidsync.com.**

1.3 Electronic Bid Openings

This solicitation will be opened electronically via bidsync.com at the date and time indicated in the solicitation. All openings will be held on the bidsync.com platform. Once the Procurement Specialist opens the solicitation, the bid tabulations (where applicable) may be viewed immediately on a computer, laptop, cell phone, or any other device with WiFi access. The opening may also be viewed in real time through a “Zoom meeting” by using the following information:

[Join Zoom Meeting](#)

Phone one-tap: US: [+16692545252](tel:+16692545252), [1610364503#](tel:+1610364503) or [+16468287666](tel:+16468287666), [1610364503#](tel:+1610364503)

Meeting URL:

<https://fortlauderdale.zoomgov.com/j/1610364503?pwd=YUU0d3kxRUhscINTcjhRMmpjQXR5QT09>

Meeting ID: 161 036 4503

Password: 232616

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Join by Telephone

For higher quality, dial a number based on your current location.

Dial: US: +1 669 254 5252 or +1 646 828 7666 or +1 669 216 1590 or +1 551 285 1373

Meeting ID: 161 036 4503

Anyone requesting assistance or having further inquiry in this matter must contact the Procurement Specialist indicated on the solicitation, via the Question and Answer (Q&A) forum on bidsync.com before the Last Day for Questions indicated in the Solicitation.

1.4 Pre-Proposal Meeting

There will not be a pre-proposal meeting for this RFQ.

1.5 Point of Contact

City of Fort Lauderdale, Procurement Services Division
Attn: Maureen Lewis, Senior Procurement Specialist
100 N. Andrews Avenue, 6th Floor
Fort Lauderdale, FL 33301
Telephone: (954) 828-5239
E-mail: maureenl@fortlauderdale.gov

For all inquiries concerning this RFQ, questions, and requests for additional information, please utilize the Q&A platform provided by BidSync at bidsync.com. Questions of a material nature must be received prior to the cut-off date specified in the RFQ. Material changes, if any, to the scope of services or bidding procedures will only be transmitted by written addendum. (See addendum section of BidSync site). **Consultants please note:** Proposals shall be submitted as stated in PART IV – Submittal Requirements. No part of your proposal can be submitted via FAX. Submission of a proposal will be considered evidence that the proposer has familiarized itself with the nature and extent of the work, and the equipment, materials, and labor required. The entire proposal must be submitted in accordance with all requirements contained in this solicitation. The questions and answers submitted in BidSync shall become part of any contract that is created from this RFQ.

1.6 Debarred or Suspended Bidders or Proposers

The proposer certifies, by submission of a response to this solicitation, that neither it nor its principals and sub-consultants are presently debarred or suspended by any Federal department or agency.

1.7 Prohibition Against Contracting with Scrutinized Companies

As to any contract for goods or services of \$1 million or more and as to the renewal of any contract for goods or services of \$1 million or more, subject to *Odebrecht Construction, Inc., v. Prasad*, 876 F.Supp.2d 1305 (S.D. Fla. 2012), *affirmed*, *Odebrecht Construction, Inc., v. Secretary, Florida Department of Transportation*, 715 F.3d 1268 (11th Cir. 2013), with regard to the “Cuba Amendment,” the Contractor certifies that it is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, and that it does not have business operations in Cuba or Syria, as provided in Section 287.135, Florida Statutes (2021), as may be amended or revised. As to any contract for goods or services of any amount and as to the renewal of any contract for goods or services of any amount, the Contractor certifies that it is not on the Scrutinized Companies that Boycott Israel

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List created pursuant to Section 215.4725, Florida Statutes (2021), as may be amended or revised, and that it is not engaged in a boycott of Israel. The City may terminate this Agreement at the City's option if the Contractor is found to have submitted a false certification as provided under subsection (5) of Section 287.135, Florida Statutes (2021), as may be amended or revised, or been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2021), as may be amended or revised, or is engaged in a boycott of Israel or has been engaged in business operations in Cuba or Syria, as defined in Section 287.135, Florida Statutes (2021), as may be amended or revised.

By submitting a proposal or response, the company, principals, or owners certify that it is not listed on the Scrutinized Companies with Activities in Sudan List or listed on the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or is engaged in business operations in Cuba or Syria.

END OF SECTION

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SECTION II – GENERAL TERMS AND CONDITIONS

2.1 Addenda, Changes, and Interpretations

It is the sole responsibility of each firm to notify the point of contact utilizing the Q&A forum provided by Bidsync and request modification or clarification of any ambiguity, conflict, discrepancy, omission or other error discovered in this competitive solicitation. Requests for clarification, modification, interpretation, or changes must be received prior to the Q&A deadline. Requests received after this date may not be addressed. Questions and requests for information that would not materially affect the scope of services to be performed or the solicitation process will be answered within the Q&A forum provided by Bidsync and shall be for clarification purposes only. Material changes, if any, to the scope of services or the solicitation process will only be transmitted by official written addendum issued by the City and uploaded to Bidsync as a separate addendum to the RFQ. Under no circumstances shall an oral explanation given by any City official, officer, staff, or agent be binding upon the City and should be disregarded. All addenda are a part of the competitive solicitation documents, and each firm will be bound by such addenda. It is the responsibility of each to read and comprehend all addenda issued.

2.2 Changes and Alterations

Consultant may change or withdraw a proposal at any time prior to the proposal submission deadline; however, no oral modifications will be allowed. Modifications shall not be allowed following the proposal deadline.

2.3 Consultants' Costs

The City shall not be liable for any costs incurred by consultants in responding to this RFQ, including costs incurred in connection with evaluation and award proceedings.

2.4 Mistakes

The consultant shall examine this RFQ carefully. The submission of a proposal shall be prima facie evidence that the consultant has full knowledge of the scope, nature, and quality of the work to be performed; the detailed requirements of the specifications; and the conditions under which the work is to be performed. Ignorance of the requirements will not relieve the consultant from liability and obligations under the Agreement.

2.5 Acceptance of Responses/Minor Irregularities

2.5.1 The City reserves the right to accept or reject any or all responses, part of responses, and to waive minor irregularities or variances to specifications contained in responses which do not make the response conditional in nature, and minor irregularities in the solicitation process. A minor irregularity shall be a variation from the solicitation that does not affect the price of the contract or does not give a respondent an advantage or benefit not enjoyed by other respondents, does not adversely impact the interests of other firms or does not affect the fundamental fairness of the solicitation process. The City also reserves the right to reissue a Request for Qualifications.

2.5.2 The City reserves the right to disqualify Consultant during any phase of the competitive solicitation process and terminate for cause any resulting contract upon evidence of collusion with intent to defraud or other illegal practices on the part of the Consultant.

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2.6 Responsiveness

In order to be considered responsive to the solicitation, the firm's response shall fully conform in all material respects to the solicitation and all of its requirements, including all form and substance.

2.7 Responsibility

In order to be considered as a responsible firm, firm shall be fully capable to meet all of the requirements of the solicitation and subsequent contract, must possess the full capability, including financial and technical, to perform as contractually required, and must be able to fully document the ability to provide good faith performance.

2.8 Minimum Qualifications

Firms shall be in the business of stormwater infrastructure and pump station consulting and must possess sufficient financial support, equipment and organization to ensure that it can satisfactorily perform the services if awarded a contract. Firms must demonstrate that they, or the principals assigned to the project, have successfully provided services with similar magnitude to those specified in the scope of services to at least one city similar in size and complexity to the City of Fort Lauderdale or can demonstrate they have the experience with large scale private sector clients and the managerial and financial ability to successfully perform the work.

Firms shall satisfy each of the following requirements cited below. Failure to do so may result in the proposal being deemed non-responsive.

2.8.1 Proposer or principals shall have relevant experience in stormwater infrastructure and pump station consulting. Project manager assigned to the work must have experience in stormwater infrastructure and pump station consulting and have served as project manager on similar projects.

2.8.2 Before awarding a contract, the City reserves the right to require that a firm submit such evidence of its qualifications as the City may deem necessary. Further, the City may consider any evidence of the financial, technical, and other qualifications and abilities of a firm or principals, including previous experiences of same with the City and performance evaluation for services, in making the award in the best interest of the City.

2.8.3 Firm or principals shall have no record of judgments, pending lawsuits against the City or criminal activities involving moral turpitude and not have any conflicts of interest that have not been waived by the City Commission.

2.8.4 Neither Firm nor any principal, officer, or stockholder shall be in arrears or in default of any debt or contract involving the City, (as a party to a contract, or otherwise); nor have failed to perform faithfully on any previous contract with the City.

2.8.5 Consultant(s) must be appropriately licensed and registered in the State of Florida in the required field of service.

2.9 Lobbying Activities

ALL CONSULTANTS PLEASE NOTE: Any consultant submitting a response to this solicitation must comply, if applicable, with City of Fort Lauderdale Ordinance No. C-11-42 & Resolution No. 07-101, Lobbying Activities. Copies of Ordinance No. C-11-42 and Resolution No. 07-101 may be obtained from the City Clerk's Office on the 7th Floor of City Hall, 100 N. Andrews Avenue, Fort

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Lauderdale, Florida 33301. The Ordinance may also be viewed on the City's website at <https://www.fortlauderdale.gov/home/showdocument?id=6036>.

2.10 Protest Procedure

2.10.1 Any proposer who is not recommended for award of a contract and who alleges a failure by the City to follow the City's Procurement Ordinance or any applicable law, may follow the protest procedure as found in the City's Procurement Ordinance within five (5) days after a notice of intent to award is posted on the City's web site at the following link: <https://www.fortlauderdale.gov/government/departments-a-h/finance/procurement-services/notices-of-intent-to-award>

2.10.2 The complete Protest Ordinance may be found on the City's web site at the following link: https://library.municode.com/fl/fort_lauderdale/codes/code_of_ordinances?nodemd=C00R_CH2AD_ARTVFI_DIV2PR_S2-182DIREPRAWINAW

2.11. Public Entity Crimes

In accordance with the Public Crimes Act, Section 287.133, Florida Statutes (2021), as may be amended or revised, a person or affiliate who is a contractor, consultant or other provider, who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to the City, may not submit a bid on a contract with the City for the construction or repair of a public building or public work, may not submit bids on leases of real property to the City, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with the City, and may not transact any business with the City in excess of the threshold amount provided in Section 287.017, Florida Statutes (2021), as may be amended or revised, for category two purchases for a period of thirty-six (36) months from the date of being placed on the convicted vendor list. Violation of this section by Contractor shall result in cancellation of the City purchase and may result in Contractor debarment.

2.12 Sub-Consultants

2.12.1 A Sub-Consultant is an individual or firm contracted by the Consultant or Consultant's firm to assist in the performance of services required under this RFQ. A Sub-Consultant shall be paid through Consultant or Consultant's firm and not paid directly by the City. Sub-Consultants are permitted by the City in the performance of the services pursuant to the Agreement. Consultant must clearly reflect in its proposal, the major Sub-Consultant(s) to be utilized in the performance of required services. The City retains the right to accept or reject any Sub-Consultant proposed in the response of Successful Consultant(s) or prior to contract execution. Any and all liabilities regarding the use of a Sub-Consultant shall be borne solely by the successful consultant and insurance for each Sub-Consultant must be maintained in good standing and approved by the City throughout the duration of the Contract. Neither Successful Consultant nor any of its Sub-Consultants is considered to be employees or agents of the City. Failure to list all Sub-Consultants and provide the required information may disqualify any proposed Sub-Consultant from performing work under this RFQ.

2.12.2 Consultants shall include in their responses, the requested Sub-Consultant information and include all relevant information required of the Consultant. In addition, within five (5) working days after the identification of the award to the successful Consultant(s), the Consultant shall provide a list confirming the Sub-Consultant(s) that the successful Consultant intends to utilize in the Contract, if applicable. The list shall include, at a minimum, the name, and location of the place of business for each Sub-Consultant, the

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services Sub-Consultant will provide relative to any contract that may result from this RFQ, Sub-consultants' hourly rates or fees, any applicable licenses, insurance, references, ownership, and other information required of Consultant.

2.13 Local Business Preference – N/A

2.14 Disadvantaged Business Enterprise Preference

2.14.1 Section 2-185, Code of Ordinances of the City of Fort Lauderdale, provides for a disadvantaged business preference. In order to be considered for a disadvantaged business preference, a proposer must include a certification from a government agency, as applicable to the disadvantaged business preference class claimed at the time of Proposal submittal:

Upon formal request of the City, based on the application of a Disadvantaged Business Preference the Proposer shall within ten (10) calendar days submit the following documentation to the Disadvantaged Business Enterprise Preference Class claimed:

- a. Copy of City of Fort Lauderdale current year business tax receipt, or the Tri-County (Broward, Dade, West Palm Beach) current year business tax receipt, or proof of active Sunbiz status and
- b. List of the names of all employees of the proposer and evidence of employees' residence within the geographic bounds of the City of Fort Lauderdale or the Tri-County, as the case may be, such as current Florida driver license, residential utility bill (water, electric, telephone, cable television), or other type of similar documentation acceptable to the City.

Failure to comply at time of Proposal submittal shall result in the Proposer being found ineligible for the Disadvantaged Business Enterprise Preference business preference.

The complete Disadvantaged Business Preference ordinance may be found on the City's website at the following link: <https://www.fortlauderdale.gov/home/showpublisheddocument?id=56883>

2.15 Insurance Requirements

As a condition precedent to the effectiveness of this Agreement, during the term of this Agreement and during any renewal or extension term of this Agreement, the Consultant, at its sole expense, shall provide insurance of such types and with such terms and limits as noted below. Providing proof of and maintaining adequate insurance coverage are material obligations of the Consultant. The Consultant shall provide the City a certificate of insurance evidencing such coverage. The Consultant's insurance coverage shall be primary insurance for all applicable policies. The limits of coverage under each policy maintained by the Consultant shall not be interpreted as limiting the Consultant's liability and obligations under this Agreement. All insurance policies shall be through insurers authorized or eligible to write policies in the State of Florida and possess an A.M. Best rating of A-, VII or better, subject to approval by the City's Risk Manager.

The coverages, limits, and/or endorsements required herein protect the interests of the City, and these coverages, limits, and/or endorsements shall in no way be relied upon by the Consultant for assessing the extent or determining appropriate types and limits of coverage to protect the Consultant against any loss exposures, whether as a result of this Agreement or otherwise. The requirements contained herein, as well as the City's review or acknowledgement, are not

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intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by the Consultant under this Agreement.

The following insurance policies and coverages are required:

Commercial General Liability

Coverage must be afforded under a Commercial General Liability policy with limits not less than:

- \$1,000,000 each occurrence and \$2,000,000 aggregate for Bodily Injury, Property Damage, and Personal and Advertising Injury
- \$1,000,000 each occurrence and \$2,000,000 aggregate for Products and Completed Operations

Policy must include coverage for contractual liability and independent contractors.

The City, a Florida municipal corporation, its officials, employees, and volunteers are to be covered as an additional insured with a CG 20 26 04 13 Additional Insured – Designated Person or Organization Endorsement or similar endorsement providing equal or broader Additional Insured Coverage with respect to liability arising out of activities performed by or on behalf of the Consultant. The coverage shall contain no special limitation on the scope of protection afforded to the City, its officials, employees, and volunteers.

Professional Liability

Coverage must be afforded for Wrongful Acts in an amount not less than \$1,000,000 each claim and \$2,000,000 aggregate.

Consultant must keep the professional liability insurance in force until the third anniversary of expiration or early termination of this Agreement or the third anniversary of acceptance of work by the City, whichever is longer, which obligation shall survive expiration or early termination of this Agreement.

Business Automobile Liability

Coverage must be afforded for all Owned, Hired, Scheduled, and Non-Owned vehicles for Bodily Injury and Property Damage in an amount not less than \$1,000,000 combined single limit each accident.

If the Consultant does not own vehicles, the Consultant shall maintain coverage for Hired and Non-Owned Auto Liability, which may be satisfied by way of endorsement to the Commercial General Liability policy or separate Business Auto Liability policy.

Workers' Compensation and Employer's Liability

Coverage must be afforded per Chapter 440, Florida Statutes. Any person or entity performing work for or on behalf of the City must provide Workers' Compensation insurance. Exceptions and exemptions will be allowed by the City's Risk Manager, if they are in accordance with Florida Statute.

The Consultant waives, and the Consultant shall ensure that the Consultant's insurance carrier waives, all subrogation rights against the City, its officials, employees, and volunteers for all losses or damages. The City requires the policy to be endorsed with WC 00 03 13 Waiver of our Right to Recover from Others or equivalent.

The Consultant must be in compliance with all applicable State and federal workers' compensation laws, including the U.S. Longshore Harbor Workers' Act and the Jones Act, if applicable.

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Insurance Certificate Requirements

- a. The Consultant shall provide the City with valid Certificates of Insurance (binders are unacceptable) no later than ten (10) days prior to the start of work contemplated in this Agreement.
- b. The Consultant shall provide to the City a Certificate of Insurance having a thirty (30) day notice of cancellation; ten (10) days' notice if cancellation is for nonpayment of premium.
- c. In the event that the insurer is unable to accommodate the cancellation notice requirement, it shall be the responsibility of the Consultant to provide the proper notice. Such notification will be in writing by registered mail, return receipt requested, and addressed to the certificate holder.
- d. In the event the Agreement term or any surviving obligation of the Consultant following expiration or early termination of the Agreement goes beyond the expiration date of the insurance policy, the Consultant shall provide the City with an updated Certificate of Insurance no later than ten (10) days prior to the expiration of the insurance currently in effect. The City reserves the right to suspend the Agreement until this requirement is met.
- e. The Certificate of Insurance shall indicate whether coverage is provided under a claims-made or occurrence form. If any coverage is provided on a claims-made form, the Certificate of Insurance must show a retroactive date, which shall be the effective date of the initial contract or prior.
- f. The City shall be named as an Additional Insured on all liability policies, with the exception of Workers' Compensation.
- g. The City shall be granted a Waiver of Subrogation on the Consultant's Workers' Compensation insurance policy.
- h. The title of the Agreement, Bid/Contract number, event dates, or other identifying reference must be listed on the Certificate of Insurance.

The Certificate Holder should read as follows:

City of Fort Lauderdale
100 N. Andrews Avenue
Fort Lauderdale, FL 33301

The Consultant has the sole responsibility for all insurance premiums and shall be fully and solely responsible for any costs or expenses as a result of a coverage deductible, co-insurance penalty, or self-insured retention; including any loss not covered because of the operation of such deductible, co-insurance penalty, self-insured retention, or coverage exclusion or limitation. Any costs for adding the City as an Additional Insured shall be at the Consultant's expense.

If the Consultant's primary insurance policy/policies do not meet the minimum requirements, as set forth in this Agreement, the Consultant may provide evidence of an Umbrella/Excess insurance policy to comply with this requirement.

The Consultant's insurance coverage shall be primary insurance as respects to the City, a Florida municipal corporation, its officials, employees, and volunteers. Any insurance or self-insurance maintained by the City, a Florida municipal corporation, its officials, employees, or volunteers shall be non-contributory.

Any exclusion or provision in any insurance policy maintained by the Consultant that excludes coverage required in this Agreement shall be deemed unacceptable and shall be considered breach of contract.

All required insurance policies must be maintained until the contract work has been accepted by the City, or until this Agreement is terminated, whichever is later. Any lapse in coverage shall be considered

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breach of contract. In addition, Consultant must provide to the City confirmation of coverage renewal via an updated certificate should any policies expire prior to the expiration of this Agreement. The City reserves the right to review, at any time, coverage forms and limits of Consultant's insurance policies.

The Consultant shall provide notice of any and all claims, accidents, and any other occurrences associated with this Agreement to the Consultant's insurance company or companies and the City's Risk Management office, as soon as practical.

It is the Consultant's responsibility to ensure that any and all of the Consultant's independent contractors and subcontractors comply with these insurance requirements. All coverages for independent contractors and subcontractors shall be subject to all of the applicable requirements stated herein. Any and all deficiencies are the responsibility of the Consultant.

NOTE: CITY PROJECT NUMBER, PROJECT NAME AND BID NUMBER MUST APPEAR ON EACH CERTIFICATE, AND THE CITY OF FORTLAUDERDALE MUST BE NAMED ON THE CERTIFICATE AS AN "ADDITIONAL INSURED" ON GENERAL LIABILITY POLICIES.

A Sample Insurance Certificate shall be included with the proposal to demonstrate the firm's ability to comply with insurance requirements. Provide a previous certificate or other evidence listing the insurance companies' names for all required coverage, and the dollar amounts of the coverage.

2.16 Insurance – Sub-consultants

Consultant shall require all of its sub-consultants to provide the aforementioned coverage as well as any other coverage that the consultant may consider necessary, and any deficiency in the coverage or policy limits of said sub-consultants will be the sole responsibility of the consultant.

2.17 Award of Contract

A Contract (the "Agreement") will be awarded in accordance with Florida Statutes, by the City Commission. The City reserves the right to execute or not execute, as applicable, a contract with the Consultant(s) that is determined to be in the City's best interests. The draft agreement is provided herein as an attachment to this RFQ. The City reserves the right to award a contract to more than one Consultant as is in the City's best interest.

2.18 Modification of Services

2.18.1 While this contract is for services provided to the department referenced in this Request for Proposals, the City may require similar work for other City departments. Successful Proposer agrees to take on such work unless such work would not be considered reasonable or become an undue burden to the Successful Proposer.

2.18.2 The City reserves the right to delete any portion of the work at any time without cause, and if such right is exercised by the City, the total fee shall be reduced in the same ratio as the estimated cost of the work deleted bears to the estimated cost of the work originally planned. If work has already been accomplished and approved by the City on any portion of a contract resulting from this RFQ, the Successful Proposer shall be paid for the work completed on the basis of the estimated percentage of completion of such portion to the total project cost.

2.18.3 The City may require additional items or services of a similar nature, but not specifically listed in the contract. The Successful Proposer agrees to provide such items or services, and shall provide the City prices on such additional items or services. If the

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price(s) offered are not acceptable to the City, and the situation cannot be resolved to the satisfaction of the City, the City reserves the right to procure those items or services from other vendors, or to cancel the contract upon giving the Successful Proposer thirty (30) days written notice.

2.18.4 If the Successful Proposer and the City agree on modifications or revisions to the task elements, after the City has approved work to begin on a particular task or project, and a budget has been established for that task or project, the Successful Proposer will submit a revised budget to the City for approval prior to proceeding with the work.

2.19 No Exclusive Contract

Proposer agrees and understands that the contract shall not be construed as an exclusive arrangement and further agrees that the City may, at any time, secure similar or identical services from another vendor at the City's sole option.

2.20 Unauthorized Work

The Successful Consultant(s) shall not begin work until a Contract has been awarded by the City Commission and a notice to proceed has been issued. Consultant(s) agree and understand that the issuance of a Purchase Order and/or Task Order shall be issued and provided to the Consultant(s) following Commission award.

2.21 Payment Method

The City shall make payment to the Contractor by check.

2.22 Prohibition Against Contingent Fees

The architect (or registered surveyor and mapper or professional engineer, as applicable) warrants that he or she has not and will not employ or retain any company or person, other than a bona fide employee working solely for the architect (or registered surveyor and mapper, or professional engineer, as applicable) to solicit or secure an agreement pursuant to this competitive solicitation and that he or she has not and will not pay or agree to pay any person, company, corporation, individual, or firm, other than a bona fide employee working solely for the architect (or registered surveyor and mapper or professional engineer, as applicable) any fee, commission, percentage, gift, or other consideration contingent upon or resulting from an award or making of an agreement pursuant to this competitive solicitation.

2.23 Indemnity/Hold Harmless Agreement

The Consultant agrees to protect, defend, indemnify, and hold harmless the City and its officers, employees and agents from and against any and all losses, penalties, damages, settlements, claims, costs, charges for other expenses, or liabilities of every and any kind including attorney's fees, in connection with or arising directly or indirectly out of the work agreed to or performed by Consultant under the terms of any agreement that may arise due to the bidding process. Without limiting the foregoing, any and all such claims, suits, or other actions relating to personal injury, death, damage to property, defects in materials or workmanship, actual or alleged violations of any applicable statute, ordinance, administrative order, rule or regulation, or decree of any court shall be included in the indemnity hereunder.

2.24 Ownership of Work

The City shall have full ownership and the right to copyright, otherwise limit, reproduce, modify, sell, or use all of the work or product produced under this Contract without payment of any royalties or fees to the Consultant above the agreed hourly rates and related costs.

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2.25 Substitution of Personnel

It is the intention of the City that the Proposer's personnel proposed for the contract will be available for the contract term. In the event the Proposer wishes to substitute personnel, he shall propose personnel of equal or higher qualifications and all replacement personnel are subject to City approval. In the event substitute personnel are not satisfactory to the City and the matter cannot be resolved to the satisfaction of the City, the City reserves the right to cancel the Contract for cause. See Section 5.09 General Conditions.

2.26 Canadian Companies

In the event Consultant is a corporation organized under the laws of any province of Canada or is a Canadian federal corporation, the City may enforce in the United States of America or in Canada or in both countries, a judgment entered against the Consultant. The Consultant waives any and all defenses to the City's enforcement in Canada, of a judgment entered by a court in the United States of America. All monetary amounts set forth in this Contract are in United States dollars.

2.27 Instructions

Careful attention must be given to all requested items contained in this RFQ. Proposers are invited to submit responses in accordance with the requirements of this RFQ. Please read the entire solicitation before submitting a proposal. Firms must provide a response to each requirement of the RFQ. Responses should be prepared in a concise manner with an emphasis on completeness and clarity. Firm's notes and comments may be rendered on an attachment, provided the same format of this RFQ text is followed. All responses shall be submitted electronically through Bidsync as stated in Section 4.1.

2.28 Discrepancies, Errors and Omissions

Any discrepancies, errors, or ambiguities in the RFQ or addenda should be reported in writing to the City's Procurement Services Division. Should it be necessary, a written addendum will be incorporated to the RFQ. The City will NOT be responsible for any oral instructions, clarifications, or other communications.

END OF SECTION

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SECTION III - SCOPE OF SERVICES

3.1 Purpose

The City is seeking the services of a qualified consulting firm(s) to provide Professional Services related to a contract for stormwater infrastructure and pump station consultant services. The following is a list of services that may be required. This list shall not be construed as an exclusive list of activities that successful firm(s) may be engaged in. The City shall have the right, in its sole and absolute discretion, to require additional services that are consistent with the scope of services and those activities typically performed by architects, engineers, and surveyors pursuant to Section 287.055 Florida Statutes, and for which the firm(s) are experience, qualified, and able to perform:

3.2 The scope of services to be provided by the consultant may include, but is not limited to, the following:

Data Collection Phase:

- Review the existing ICPR 4 hydraulic/hydrologic model and related assumptions ensuring its accuracy. Field data collection of the existing stormwater infrastructure in the Melrose Manors neighborhood and relevant surrounding areas. Additional data collection for boundary conditions, geotechnical, and surface topography needed to update and run successful ICPR 4 scenarios for this area.

Modeling Phase:

- Execute the stormwater model based on specific boundary conditions and climactic scenarios as instructed by the City. The model must include future sea level rise projections, storm surges, built-out scenarios, etc.
- Provide analysis of sub-basins and neighborhood systems to provide level of service analysis, identification and prioritization of problem areas, and the development of effective alternatives needed to handle the water quality/quantity problems in a holistic manner.
- Permitting of stormwater model.
- Present the model results and solutions in a comprehensive, deliverable hard copy report, and electronic formats for future operation by the City.

Design Phase:

- Provide (3) conceptual alternative solutions for stormwater improvements.
- Prepare 30%, 60%, and 100% permitted engineering plan, construction estimates and final bid documents.
- Prepare and participate in public outreach meetings.

Permitting Phase:

- Prepare and submit all regulatory permits to permitting agencies.
- Prepare and attend permitting agency meetings.

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Bidding Phase:

- Prepare bid package for advertisement by the City's procurement department.
- Attend pre-bid meetings.
- Respond to all RFI questions from prospective bidders.
- Provide Addendum assistance.

Construction Management & Construction and Inspection Phase:

- Review project submittals.
- Review and response to RFI questions from the contractor.
- Attend pre-construction meeting.
- Attend construction meetings.
- Provide construction inspection services.
- Review pay application and change orders.

Design solutions may include conventional stormwater systems, stormwater drainage wells, pump stations, exfiltration trenches, retention/detention systems, low impact and green infrastructure design features managed with new stormwater infrastructure technology. Work may include sewer and water infrastructure as needed to complete and coordinate other utility work and keep the project within schedule. Proposers are encouraged to be innovative and provide new ideas or alternatives, which may further enhance or improve this undertaking by incorporating green infrastructure as a cost-effective and resilient approach to water quality and quantity treatment solutions.

The consultant may retain multiple highly qualified sub-consultants for design and related program services. Due to the extent of the stormwater project and varied scope, the consultant must be able to provide services in the following disciplines. Other services and disciplines may be added by the city as needed during the program work.

1. civil engineering (general)
2. water and wastewater
 - a. facilities
 - b. pump stations
 - c. water asset management
 - d. low impact development (LID)
 - e. sustainable engineering
 - f. water, wastewater modeling
3. stormwater engineering with specialization in green infrastructure and climate resiliency adaptation

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4. stormwater asset management
5. stormwater benefit cost analysis
6. stormwater visualization tools
7. utilities engineering (subsurface engineering)
8. surveying and geographic information services (GIS)
 - a. aerial photogrammetric
 - b. land surveying
 - c. hydrographic surveying – canals & waterways
 - d. benthic surveys
9. electrical engineering
10. biological services
11. coastal engineering
12. seawall design and permitting
13. cultural resources (historic archeology history, ethnography)
14. airport engineering
15. architecture
 - a. general
 - b. Americans with disabilities act (ADA) design/inspection
 - c. parking lot design
16. community relations
17. grant coordination, including preparation of grant applications and deliverables
18. construction management services
 - a. construction inspections
 - b. construction management
 - c. contract administration
19. field inspections (various)

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20. geotechnical
21. historic preservation
22. environmental engineering
23. landscape architecture
24. marine engineering
25. mechanical engineering
26. planning services
27. structural engineering
 - a. bridges
 - b. buildings and other structures
28. traffic engineering
29. project management
30. project staff extension
31. computerized stormwater visualization tools
32. value, risk, and benefit to cost business case analysis
33. pre-construction services
 - a. constructability review
 - b. quality control/quality assurance
 - c. estimating
34. City shall have the right, in its sole and absolute discretion, to require additional services that are consistent with the scope of services and those activities typically performed by stormwater consultants and for which the firm(s) are experienced, qualified, and able to perform.

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3.3 PROJECT BACKGROUND

The Melrose Manors neighborhood lies within the North Fork New River Watershed, bounded by SE 31st Avenue to the west, Broward Blvd. to the north, Davie Blvd. to the south and I-95 to the east (approximately 640 acres). The majority of Melrose Manors is low lying, ranging between 3' to 5' NAVD (**see Figure I**). The area lacks stormwater infrastructure and has no positive outfall to a receiving water body. Because of this, medium to intense seasonal rainfall causes severe widespread flooding in this neighborhood. The flooding persists for days or weeks with only soil storage recovery available for drainage.

The selected consulting firm shall develop and permit a comprehensive stormwater management system for this neighborhood. The conceptual design will utilize an existing ICPR 4 hydrologic model to develop conceptual to final design solutions and ultimately, 100% design and permitted engineering plans.

PROJECT DESCRIPTION

The purpose of this RFQ is to manage the overall delivery of the following tasks:

1. Data collection of stormwater infrastructure attributes, utility conflicts, geotechnical, ground water and topographic information, and any other parameters needed to populate and update the existing ICPR 4 of Melrose Manors and surrounding areas.
2. Utilization of the updated ICPR model to conduct a comprehensive basin by basin analysis of the existing and proposed stormwater systems within the Melrose Manors neighborhood. The modeling boundaries must include in future projected climatological elevated tailwater conditions as experienced during Hurricane ETA, in November 2020.
3. Development of a conceptual engineering design for the Melrose Manors neighborhood with multiple alternatives, expected level of service (LOS), and preliminary cost estimates. This alternative will be presented to City staff to determine the most effective course of action and must include a positive outfall discharge to a body of water.
4. 30%, 60% and 100% engineering design, permitting, and construction management services for the Melrose Manors neighborhood stormwater system.

The selected Prime Design Consultant (consultant) shall ensure that the project components are technically, economically, and functionally consistent and are implemented in a manner that meets the specific deadlines and milestones of the City and the requirements of the Clean Water Act, National Pollution Discharge Elimination System Permits, Florida Department of Environmental Protection (FDEP) regulations, South Florida Water Management District (SFWMD), and any additional applicable regulatory requirements.

The scope of work for project will be divided into four (4) distinct task orders to be issued independently to the selected consultant over a 5-to-7-year period. The task orders will contain the phases outlined below in the scope of services section.

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The anticipated Task Orders are:

- Task Order #1: Data Collection and Modelling Phase
- Task Order #2: Design Phase (Conceptual and Final), Permitting, Public Outreach
- Task Order #3: Bidding Assistance
- Task Order #4: Construction and Inspection (CEI) Services and/or Construction Management Services

END OF SECTION

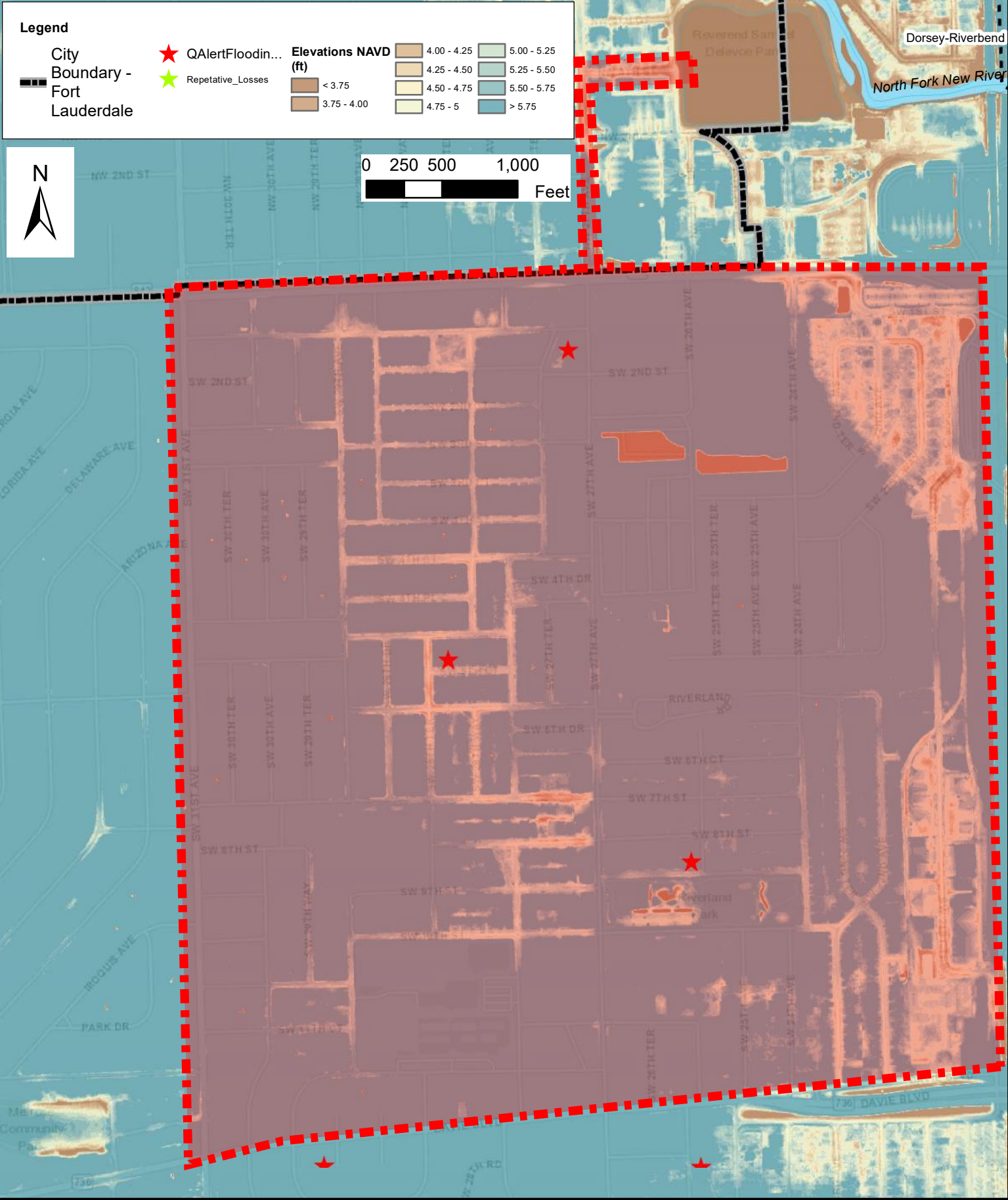


Figure "I"
City of Fort Lauderdale
Melrose Manors/Riverland - Digital Elevation Model (DEM)

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SECTION IV – SUBMITTAL REQUIREMENTS

4.1 Instructions

4.1.1 The City uses BidSync (bidsync.com) to administer the competitive solicitation process, including but not limited to soliciting proposals, issuing addenda, responding to questions/requests for information. There is no charge to register and download the RFQ from BidSync. Proposers are strongly encouraged to read the various vendor Guides and Tutorials available in BidSync well in advance of their intention of submitting a proposal to ensure familiarity with the use of BidSync. The City shall not be responsible for a proposer's inability to submit a proposal by the end date and time for any reason, including issues arising from the use of BidSync.

All proposals must be submitted electronically.

4.1.2 Careful attention must be given to all requested items contained in this RFQ. Consultants are invited to submit responses in accordance with the requirements of this RFQ. Please read entire solicitation before submitting a SOQ. Consultants must provide a response to each requirement of the RFQ. Responses should be prepared in a concise manner with an emphasis on completeness and clarity. Consultant's notes, exceptions, and comments may be rendered on an attachment, provided the same format of this RFQ text is followed

4.1.3 All information submitted by proposer shall be typewritten or provided as otherwise instructed to in the RFQ. Proposers shall use and submit any applicable or required forms provided by the City and attach such to its response. Failure to use the forms may cause the response to be rejected and deemed non-responsive.

The proposer understands that the information contained in these proposal pages is to be relied upon by the City in awarding the proposed Agreement, and such information is warranted by the proposer to be true. The proposer agrees to furnish such additional information, prior to acceptance of any proposal, relating to the qualifications of the proposer, as may be required by the City.

4.1.4 Proposals shall be submitted by an authorized representative of the firm. Proposals must be submitted in the business entity's name by the President, Partner, Officer or Representative authorized to contractually bind the business entity. Proposals shall include an attachment evidencing that the individual submitting the proposal, does in fact have the required authority stated herein.

4.1.5 In the event of Contract award, all documentation produced as part of the Contract shall become the exclusive property of the City. The Proposer's response to the RFQ is a public record pursuant to Florida law, which is subject to disclosure by the City under the State of Florida Public Records Law, Florida Statutes Chapter 119.07 ("Public Records Law"). The City shall permit public access to all documents, papers, letters or other material submitted in connection with this RFQ and the Contract to be executed for this RFQ, subject to the provisions of Chapter 119.07 of the Florida Statutes.

Any language contained in the Proposer's response to the RFQ purporting to require confidentiality of any portion of the Proposer's response to the RFQ, except to the extent that certain information is in the City's opinion a Trade Secret pursuant to Florida law, shall be void. If a Proposer submits any documents or other information to the City which the Proposer claims is Trade Secret information and exempt from Florida Statutes

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Chapter 119.07 ("Public Records Laws"), the Proposer shall clearly designate that it is a Trade Secret and that it is asserting that the document or information is exempt. The Proposer must specifically identify the exemption being claimed under Florida Statutes 119.07. The City shall be the final arbiter of whether any information contained in the Proposer's response to the RFQ constitutes a Trade Secret. The City's determination of whether an exemption applies shall be final, and the Proposer agrees to defend, indemnify, and hold harmless the City and the City's officers, employees, and agent, against any loss or damages incurred by any person or entity as a result of the City's treatment of records as public records. In addition, the proposer agrees to defend, indemnify, and hold harmless the City and the City's officers, employees, and agents, against any loss or damages incurred by any person or entity as a result of the City's treatment of records as exempt from disclosure or confidential. Proposals purporting to be subject to copyright protection in full or in part will be rejected. The proposer authorizes the City to publish, copy, and reproduce any and all documents submitted to the City bearing copyright symbols or otherwise purporting to be subject to copyright protection.

EXCEPT FOR CLEARLY MARKED PORTIONS THAT ARE BONA FIDE TRADE SECRETS PURSUANT TO FLORIDA LAW, DO NOT MARK YOUR RESPONSE TO THE SOLICITATION AS PROPRIETARY OR CONFIDENTIAL. DO NOT MARK YOUR RESPONSE TO THE SOLICITATION OR ANY PART THEREOF AS COPYRIGHTED.

IF THE CONSULTANT HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONSULTANT'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT. CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT: PRRCONTRACT@FORTLAUDERDALE.GOV, 954-828-5002, CITY CLERK'S OFFICE, 100 NORTH ANDREWS AVENUE, FORT LAUDERDALE, FLORIDA 33301.

Consultant shall:

1. Keep and maintain public records required by the City in order to perform the service.
2. Upon request from the City's custodian of public records, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes (2021), as may be amended or revised, or as otherwise provided by law.
3. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of this Agreement if the Consultant does not transfer the records to the City.
4. Upon completion of the Agreement, transfer, at no cost, to the City, all public records in possession of the Consultant or keep and maintain public records required by the City to perform the service. If the Consultant transfers all public records to the City upon completion of this Agreement, the Consultant shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Consultant keeps and maintains public records upon completion of this Agreement, the Consultant shall meet all applicable requirements for retaining

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public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City.

- 4.1.6** By submitting a response, Proposer is confirming that the firm has not been placed on the convicted vendors list as described in Section §287.133 (2) (a) Florida Statutes; that the only person(s), company or parties interested in the proposal as principals are named therein; that the proposal is made without collusion with any other person(s), company or parties submitting a proposal; that it is in all respects fair and in good faith, without collusion or fraud; and that the signer of the proposal has full authority to bind the firm.

4.2 Contents of the Proposal

The City deems certain documentation and information important in the determination of responsiveness and for the purpose of evaluating responses. Responses should seek to avoid information in excess of that requested, must be concise, and must specifically address the issues of this RFQ. The City prefers that responses be no more than 100 pages in one complete pdf document. The proposals should be organized, divided and indexed into the sections indicated herein. These are not inclusive of all the information that may be necessary to properly evaluate the response and meet the requirements of the scope of work and/or specifications. Additional documents and information should be provided as deemed appropriate by the respondent in response to specific requirements stated herein or through the RFQ.

Note: Do not include pricing - Compensation will be requested and considered only during the competitive negotiations process.

4.2.1 Table of Contents

The table of contents should outline in sequential order the major areas of the submittal, including enclosures. All pages should be consecutively numbered and correspond to the Table of Contents.

4.2.2 Executive Summary

Each proposer must submit an executive summary that identifies the business entity, its background, main office(s), and office location that will service this contract. Identify the officers, principals, supervisory staff and key individuals who will be directly involved with the work and their office locations. The executive summary should also summarize the key elements of the proposal.

4.2.3 Firm Qualifications and Experience

Respondents must provide documentation that demonstrates their ability to satisfy all of the minimum qualification requirements. A Standard Form 330 may be used to provide this information. Indicate the firm's number of years of experience in providing the professional services as it relates to the work contemplated. Provide details of past projects for agencies of similar size and scope, including information on your firm's ability to meet time and budget requirements. Indicate the firm's initiatives towards its own sustainable business practices that demonstrate a commitment to conservation. Indicate business structure, i.e. Corp., Partnership, LLC. Firm should be registered as a legal entity in the State of Florida; Minority or Woman owned Business (if applicable); company address, phone number, fax number, e-mail address, web site, contact person(s), etc. Relative size of the firm, including management, technical and support staff; licenses and any other pertinent information shall be submitted.

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Provide a comprehensive summary of the experience and qualifications of the individual(s) who will be selected to serve as the project manager(s) for the City.

4.2.4 Qualifications of the Project Team

List the members of the project team (**may be on a Standard Form 330 if you choose**). Provide a list of the personnel to be used on each project and their qualifications. Providing this information on an organizational chart is recommended. A brief resume including education, experience, licenses and any other pertinent information shall be included for each team member, including sub-consultants to be assigned to each project. Explain how each project team member will contribute to the project, in what capacity, and the level of involvement they will have. Each resume should not exceed two (2) pages in length. Provide any other documentation that demonstrates their ability to satisfy all of the minimum qualification requirements. Submittals that do not contain such documentation may be deemed non-responsive.

4.2.5 Approach to Scope of Work

- Provide in concise narrative form, your understanding of the City's needs, goals and objectives as they relate to the project, and your overall approach to accomplishing the project.
- Give an overview on your proposed vision, ideas and methodology. Describe your proposed approach to the project. As part of the project approach, the firm shall propose a scheduling methodology (timeline) for effectively managing and executing the work in the optimum time.
- Also provide information on your firm's current workload and how this project will fit into your workload. Describe the firm's current and anticipated workload. Include a summary of current projects and anticipated completion timeframes. Describe how City tasks will be prioritized within your organization, and the availability of the project team to commit towards this project.
- Describe available facilities, technological capabilities and other available resources you offer for the project.
- Provide a proposed (realistic) schedule from Notice to proceed until the construction drawings are issued. The City expects this project to be completed expeditiously and the City reserves the right to make adjustments to this schedule as necessary.

4.2.6 References

Provide at least three references, preferably government agencies, for projects with similar scope as listed in this RFQ. Information should include:

- Client Name, address, contact person telephone and e-mail address (E-mail will be primary means of contact).
- Description of work.
- Year the project was completed.
- Total cost of the construction, estimated and actual.

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Note: Do not simply include City of Fort Lauderdale work or staff as references to demonstrate your capabilities. The Committee is interested in work experience and references other than the City as well.

4.2.7 Minority/Women (M/WBE) Participation

If your firm is a certified minority business enterprise as defined by the Florida Small and Minority Business Assistance Act of 1985, provide copies of your certification(s). If your firm is not a certified M/WBE, describe your company's previous efforts, as well as planned efforts in meeting M/WBE procurement goals under Florida Statutes 287.09451.

4.2.8 Sub-consultants

Consultant must clearly identify any sub-consultants that may be utilized during the term of this contract.

4.2.9 Required Forms

a. Sample Insurance Certificate

Demonstrate your firm's ability to comply with insurance requirements. Provide a previous certificate or other evidence listing the Insurance Companies' names for both Professional Liability and General Liability, and the dollar amounts of the coverage.

b. Local Business Preference Certification [if applicable]

c. Disadvantaged Business Enterprise Preference Certification [if applicable]

d. Non-Collusion Statement

This form is to be completed, if applicable, and inserted in this section.

e. Non-Discrimination Certification Form

e. E-Verify Affirmation Statement

f. Contract Payment Method [if applicable]

This form must be completed and returned with your proposal. Proposers must presently have the ability to accept these credit cards or take whatever steps necessary to implement acceptance of a card before the start of the contract term, or contract award by the City.

g. Bid/Proposal Certification

Complete and attach the Certification

4.3 By submitting a proposal, each firm is confirming that the firm has not been placed on the convicted vendors list as described in Section §287.133 (2) (a) Florida Statutes.

4.4 Before awarding a contract, the City reserves the right to require that a firm submit such evidence of its qualifications as the City may deem necessary. Further, the City may consider any evidence of the financial, technical, and other qualifications and abilities of a firm or principals, including previous experiences of same with the City and performance evaluation for services, in making the award in the best interest of the City.

END OF SECTION

SECTION V - EVALUATION AND AWARD

5.1 Evaluation Procedure

- 5.1.1** Evaluation of the submittals will be conducted by an Evaluation Committee, consisting of a minimum of three members of City Staff, or other persons selected by the City Manager or designee. All committee members must be present at scheduled evaluation meetings. Submittals shall be evaluated based upon the information and references contained in the proposals as submitted. Evaluation procedures shall be regulated by F.S. § 287.055, referred to as Consultant's Competitive Negotiations Act (CCNA). Any firm(s) involved in a joint venture in its proposal will be evaluated individually, as each firm of the joint venture would have to stand on its own merits.
- 5.1.2** The Committee shall short list no less than three (3) submittals, assuming that three or more submittals have been received, that it deems best satisfy the weighted criteria set forth herein and attempt to select the best qualified firm(s) for the particular discipline. The Committee shall then hold discussions, conduct interviews, and/or require oral presentations with all short-listed firms. The Committee shall then re-rank the short-listed firms based upon the information provided in interviews and/or presentations, the materials presented, the firm's responses to the RFQ, and deliberations of the Evaluation Committee at publicly advertised evaluation meetings. The City may request, and the firm shall provide, additional information deemed necessary by the Evaluation Committee to conduct evaluations.
- 5.1.3** If the City Manager or his/her designee is unable to negotiate a satisfactory contract with the first ranked firm, negotiations with that firm shall be formally terminated. Upon termination of said negotiations, negotiations shall then be undertaken with the second ranked firm, with this process being repeated until an agreement is reached which is then recommended and formally approved by the City Commission or until the short-list is exhausted in which case a new Request for Qualifications may be undertaken.

5.2 Evaluation Criteria

- 5.2.1** Per Florida Statute 287.055, in determining whether a firm is qualified, the agency shall consider such factors as the ability of professional personnel; whether a firm is a certified minority business enterprise; past performance; willingness to meet time and budget requirements; location; recent, current, and projected workloads of the firms; and the volume of work previously awarded to each firm by the agency, with the object of effecting an equitable distribution of contracts among qualified firms, provided such distribution does not violate the principle of selection of the most highly qualified firms. The agency may request, accept, and consider proposals for the compensation to be paid under the contract only during competitive negotiations.
- 5.2.2** The City uses a mathematical formula to determine the scoring for each individual responsive and responsible firm based on the weighted criteria stated herein. Each evaluation committee member will rank each firm by criteria, giving their first ranked firm as number 1, the second ranked firm a number 2, and so on. The City shall average the ranking for each criterion, for all evaluation committee members, and then multiply that average ranking by the weighted criteria identified herein. The lowest average final ranking score will determine the recommendation by the evaluation committee to the City Manager.

5.2.3 Weighted Criteria

Criteria	Percentage (%)
Qualifications of Firm <i>[Including licenses, insurance, and other pertinent information for the firm]</i>	20
Experience <i>[Including firm and project team, principals, project manager, staff and sub-consultants]</i>	20
History and Past Performance of the Firm <i>[Including previous similar projects, references, volume of previous work awarded by the City and/or other agencies; recent, current, and projected workloads]</i>	15
Approach to Scope of Work <i>[Including proposer's understanding of the City's vulnerability to the effect of climate change and sea level rise and its goal to address resiliency through infrastructure projects; overall approach.]</i>	20
Volume of previous work awarded by the City	10
Location and proximity to the City	10
Ability to meet time and budget requirements	10
M/WBE Participation Efforts	5
TOTAL	100%

5.3 Contract Award

- 5.3.1** The City reserves the right to award a contract to that Consultant who will best serve the interest of the City. The City reserves the right, based upon its deliberations and in its opinion, to accept or reject any or all submittals. The City also reserves the right to waive minor irregularities or variations of the submittal requirements and RFQ process.
- 5.3.2** Upon award of a contract by the City Commission, the City Manager is authorized to execute the Contract on behalf of the City.
- 5.3.3** The City Manager shall appoint a contract administrator or project manager for each contract to assure compliance with the contract and applicable law. The contract administrator or project manager shall review all pay requests or deny same as required prior to approval by the City Manager.

END OF SECTION

AGREEMENT

between

City of Fort Lauderdale

and

COMPANY NAME

for

(RFQ TITLE)

RFQ No. [REDACTED]

DRAFT CONTRACT

AGREEMENT

THIS IS AN AGREEMENT made and entered into this ___ day of _____, 202__, by and between:

CITY OF FORT LAUDERDALE, a Florida municipality, (hereinafter referred to as "CITY")

and

(COMPANY NAME), a _____ (company/corporation) authorized to conduct business in the State of Florida, (hereinafter referred to as "CONSULTANT")

WHEREAS, the City Commission of the City of Fort Lauderdale, Florida at its meeting of (COMMISSION DATE) authorized by motion the execution of this Agreement between CONSULTANT and CITY authorizing the performance of (TITLE), RFQ No. _____, incorporated herein, (the "Agreement"); and

WHEREAS, the CONSULTANT is willing and able to render professional services for such project for the compensation and on the terms hereinafter set forth;

NOW, THEREFORE, in consideration of the mutual covenants, agreements, terms, and conditions contained herein, the Parties hereto, do agree as follows:

ARTICLE 1

DEFINITIONS AND IDENTIFICATIONS

For the purposes of this Agreement and the various covenants, conditions, terms and provisions which follow, the DEFINITIONS and IDENTIFICATIONS set forth below are assumed to be true and correct and are therefore agreed upon by the Parties.

- 1.1 **AGREEMENT**: Means this document between the CITY and CONSULTANT dated (COMMISSION DATE), 202__, and any duly authorized and executed Amendments to Agreement.
- 1.2 **BASIC SERVICES**: Services performed by CONSULTANT for authorized scope of work for the Project phase described in this Agreement and listed in Exhibit "A," Scope of Services.
- 1.3 **CONSULTANT'S PERIODIC ESTIMATE FOR PAYMENT**: A statement by CONSULTANT based on observations at the site and on review of documentation submitted by the Contractor that by its issuance recommends that CITY pay identified amounts to the Contractor for services performed by the

Contractor on the Project.

- 1.4 CHANGE ORDER: A written order approved by the CITY authorizing a revision of this Agreement between the CITY and CONSULTANT that is directly related to the original scope of work or an adjustment in the original contract price or the contract time directly related to the original scope of work, issued on or after the effective date of this Agreement.

The CONSULTANT may review and make recommendations to the CITY on any proposed Change Orders, for approval or other appropriate action by the CITY.

- 1.5 CITY: The City of Fort Lauderdale, a Florida municipality.
- 1.6 CITY MANAGER: The City Manager of the City of Fort Lauderdale, Florida.
- 1.7 COMMISSION: The City Commission of the City of Fort Lauderdale, Florida, which is the governing body of the CITY government.
- 1.8 CONSTRUCTION COST: The total construction cost to CITY of all elements of the Project designed or specified by CONSULTANT.
- 1.9 CONSTRUCTION COST LIMIT: A maximum construction cost limit established by the CITY defining the maximum budget amount to which the final construction documents should be designed so as not to exceed.
- 1.10 CONSTRUCTION DOCUMENTS: Those working drawings and specifications and other writings setting forth in detail and prescribing the work to be done, the materials, workmanship and other requirements for construction of the entire Project, including any bidding information.
- 1.11 CONSULTANT: (CONSULTANT'S NAME), the CONSULTANT selected to perform professional services pursuant to this Agreement.
- 1.12 CONTRACT ADMINISTRATOR: The Public Works Director of the City of Fort Lauderdale, or his designee. In the administration of this Agreement, as contrasted with matters of policy, all parties may rely upon instructions or determinations made by the Contract Administrator.
- 1.13 CONTRACTOR: One or more individuals, firms, corporations, or other entities identified as such by a written agreement with CITY ("Contract for Construction") to perform the construction services required to complete the Project.
- 1.14 DEPARTMENT DIRECTOR: The director of the (Department) Department for the City of Fort Lauderdale.

- 1.15 ERROR: A mistake in design, plans and/or specifications that incorporates into those documents an element that is incorrect and is deficient from the standard of care that a professional engineer in similar circumstances, working on a similar project and location would have exercised. Also includes mistakes in design, plans, specifications and/or shop drawings review that lead to materials and/or equipment being ordered and/or delivered where additional costs are incurred.
- 1.16 FINAL STATEMENT OF PROBABLE CONSTRUCTION COSTS: A final cost estimate prepared by CONSULTANT during the Final Design Phase of the Project, based upon the final detailed Construction Documents of the Project.
- 1.17 NOTICE TO PROCEED: A written Notice to Proceed with the Project issued by the Contract Administrator.
- 1.18 OMISSION: A scope of work missed by CONSULTANT that is necessary for the Project, including a quantity miscalculation, which was later discovered and added by Change Order and which is deficient from the standard of care that a professional engineer in similar circumstances, working on a similar project and location would have exercised. Also includes design that was wrong, but was corrected after award to the Contractor, but before the construction process was materially affected.
- 1.19 ORIGINAL CONTRACT PRICE: The original bid and/or contract price as awarded to a Contractor based upon CONSULTANT'S final detailed Construction Documents of the Project.
- 1.20 PLANS AND SPECIFICATIONS: The documents setting forth the final design plans and specifications of the Project, including architectural, civil, structural, mechanical, electrical, communications and security systems, materials, lighting equipment, site and landscape design, and other essentials as may be appropriate, all as approved by CITY as provided in this Agreement.
- 1.21 PRELIMINARY PLANS: The documents prepared by CONSULTANT consisting of preliminary design drawings, renderings and other documents to fix and describe the size and character of the entire Project, and the relationship of Project components to one another and existing features.
- 1.22 PROJECT: An agreed scope of work for accomplishing a specific plan or development. This may include, but is not limited to, planning, architectural, engineering, and construction support services. The services to be provided by CONSULTANT shall be as defined in this Agreement and further detailed in Task Orders for individual projects or combinations of projects. The Project planning, design and construction may occur in separate phases and Task Orders at the CITY's discretion.

- 1.23 RESIDENT PROJECT REPRESENTATIVE: Individuals or entities selected, employed, compensated by and directed to perform services on behalf of CITY, in monitoring the Construction Phase of the Project to completion.
- 1.24 STATEMENT OF PROBABLE PROJECT COSTS: A document to be prepared by CONSULTANT that shall reflect a detailed statement of the total probable costs.
- 1.25 SUBSTANTIAL COMPLETION: The CITY will consider the work substantially complete when the Contractor submits 100% complete deliverables (i.e. Drawings, Specifications, Reports, Renderings) as described in this Agreement to the satisfaction of the City.
- 1.26 TASK ORDER: A document setting forth a negotiated detailed scope of services to be performed by CONSULTANT at fixed contract prices in accordance with this Agreement between the CITY and CONSULTANT.
- 1.27 TIME OF COMPLETION: Time in which the entire work shall be completed for each Task Order.

ARTICLE 2 PREAMBLE

In order to establish the background, context and frame of reference for this Agreement and to generally express the objectives and intentions of the respective parties hereto, the following statements, representations and explanations shall be accepted as predicates for the undertakings and commitments included within the provisions of this Agreement which follow and may be relied upon by the parties as essential elements of the mutual considerations upon which this Agreement is based.

- 2.1 Pursuant to Section 287.055, Florida Statutes, CITY has formed a Committee to evaluate CONSULTANT's statement of qualifications and performance data to ensure that CONSULTANT has met the requirements of the Consultants' Competitive Negotiation Act, as set forth in Section 287.055, Florida Statutes, and has selected CONSULTANT to perform services hereunder.

ARTICLE 3 SCOPE OF SERVICES

- 3.1 The CONSULTANT shall perform the following professional services: (**TYPE OF ENGINEERING SERVICES**) Engineering Services to (**TITLE**) as more specifically described in Exhibit "A," Scope of Services, attached hereto and incorporated herein, and shall include, but not be limited to, services as applicable and authorized by individual Task Orders for the individual projects in accordance with Article 5 herein. CONSULTANT shall provide all services set forth in Exhibit "A" including all necessary, incidental and related activities and services required by the Scope of Services and contemplated in CONSULTANT's level of effort.

CONSULTANT will perform the Services in accordance with standard industry practices, with the care, knowledge and skill expected of similar engineering firms. No other warranties, express or implied are made or intended.

- 3.2 CITY and CONSULTANT acknowledge that the Scope of Services does not delineate every detail and minor work tasks required to be performed by CONSULTANT to complete the Project. If, during the course of the performance of the services included in this Agreement, CONSULTANT determines that work should be performed to complete the Project which is in CONSULTANT's opinion, outside the level of effort originally anticipated, whether or not the Scope of Services identifies the work items, CONSULTANT shall notify Contract Administrator and obtain written approval by the CITY in a timely manner before proceeding with the work. Notice to Contract Administrator does not constitute authorization or approval by CITY to perform the work. The CITY shall not pay for any work that is not approved by the Contract Administrator in writing. If CONSULTANT proceeds with said work without notifying the Contract Administrator, said work shall be deemed to be within the original level of effort, whether specifically addressed in the Scope of Services. Notice to Contract Administrator does not constitute authorization or approval by CITY to perform the work. Performance of work by CONSULTANT outside the originally anticipated level of effort without prior written CITY approval is at CONSULTANT's sole risk.

ARTICLE 4
GENERAL PROVISIONS

- 4.1 Negotiations pertaining to the rates for professional design, engineering, architectural and project management services to be performed by CONSULTANT have been undertaken between CONSULTANT and CITY representatives pursuant to Section 287.055, Florida Statutes, and this Agreement incorporates the results of such negotiation.
- 4.2 CONSULTANT shall include CITY's specific Task Order number as part of the heading on all correspondence, invoices and drawings. All correspondence shall be directed specifically to the Contract Administrator.

ARTICLE 5
PRIORITY OF PROVISIONS

- 5.1 The Contract Documents are intended to include all items necessary for the proper execution and completion of the work by CONSULTANT. Any labor, services, materials, supplies, equipment or documentation that may reasonably be inferred from the Contract Documents or trade usage from prevailing custom as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to CITY. The Contract Documents are complementary, and wherever possible the provisions of the Contract Documents shall be construed in such manner as to avoid conflicts between provisions of the various Contract Documents. In the event of any inconsistency in the Contract Documents, where such inconsistency is not clarified by change order, addendum or amendment, the Contract Documents shall be construed according to the following priorities:

First priority: Approved Change Orders, Addenda or Amendments to all related documents.

Second priority: Specifications (quality) and Drawings (location and quantity) of CONSULTANT.

Third priority: This AGREEMENT.

Fourth priority: City of Fort Lauderdale Request for Qualifications (RFQ #).

Fifth priority: CONSULTANT's response to City of Fort Lauderdale Request for Qualifications (RFQ #).

- 5.2 Anything shown on the drawings and not mentioned in the specifications and now shown on the drawings, shall have the same effect as if shown or mentioned respectively in both. In the event of a conflict among the Contract Documents, the latest, most stringent, and more technical requirement(s), including, but not limited to, issues of quantities or cost of the Work shall control.

Reference to standard specifications, manuals, rules, regulations, ordinances, laws or codes of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, rule, regulation, ordinance, law or code in effect at the time of permit submittal.

ARTICLE 6
TASK ORDERS

- 6.1 The Project will be divided into "Tasks."
- 6.2 Task Orders shall be jointly prepared by the CITY and CONSULTANT defining the detailed scope of services to be provided for the particular Project. Each Task Order shall be separately numbered and approved in accordance with this Agreement and all applicable CITY code requirements.

ARTICLE 7
TERM OF AGREEMENT; TIME FOR PERFORMANCE

- 7.1 CONSULTANT shall perform the basic services described in Exhibit "A" within the time periods specified in the project schedule indicated in Exhibit C. The Project Schedule shall be automatically incorporated into this Agreement. Said time periods shall commence from the date of the Notice to Proceed for such services.
- 7.2 Prior to beginning the performance of any services under this Agreement, CONSULTANT must receive a Notice to Proceed. CONSULTANT must receive written approval from the Contract Administrator prior to beginning the performance of services in any subsequent phases of the Agreement. Prior to granting approval for CONSULTANT to proceed to a subsequent phase, the Contract Administrator may, at his or her sole option, require CONSULTANT to submit itemized deliverables for the Contract Administrator's review.
- 7.3 In the event CONSULTANT is unable to complete the above services because of delays resulting from untimely review by CITY or other governmental authorities having jurisdiction over the Project, and such delays are not the fault of CONSULTANT, or because of delays which were caused by factors outside the control of CONSULTANT, CITY shall grant a reasonable extension of time for completion of the services and shall provide reasonable compensation, if appropriate. It shall be the responsibility of the CONSULTANT to notify CITY promptly in writing whenever a delay in approval by a governmental agency is anticipated or experienced, and to inform CITY of all facts and details related to the delay.
- 7.4 In the event Contractor fails to substantially complete the Project on or before the substantial completion date specified in the project schedule with CITY or if Contractor is granted an extension of time beyond said substantial completion date, and CONSULTANT's services are extended beyond the substantial completion date, through no fault of CONSULTANT, CONSULTANT shall be compensated in accordance with Article 7 for all services rendered by CONSULTANT beyond the substantial completion date.

- 7.5 The time for the performance of services described in the Task Orders Scope of Services and supplemental Task Orders shall be negotiated by the CITY and CONSULTANT as the services are requested and authorized by the CITY.
- 7.6 The term of this Agreement shall be limited to the time duration required to complete the basic services of the aforementioned project and any additional project related Task Orders for additional services.

ARTICLE 8 COMPENSATION AND METHOD OF PAYMENT

8.1 AMOUNT AND METHOD OF COMPENSATION

8.1.1 Not-To-Exceed Amount Compensation

CITY agrees to pay CONSULTANT as compensation for performance of basic services as related to Exhibit "A" required under the terms of this Agreement up to a Not-to-Exceed Amount of **(AGREEMENT TOTAL IN WORDS) (\$AGREEMENT TOTAL IN NUMBERS)**. It is agreed that the method of compensation is that of "Not-to-Exceed Amount" which means that CONSULTANT shall perform all services set forth in Exhibit "A" for total compensation in the amount of or less than that stated above. Compensation to be in accordance with the Cost Schedule and hourly billing rate schedule shown in Exhibit "B."

Except as required and provided for by the Florida Local Government Prompt Payment Act, City shall not be liable for interest for any reason, whether as prejudgment interest or for any other purpose, and in furtherance thereof Consultant waives, rejects, disclaims and surrenders any and all entitlement it has or may have to receive interest in connection with a dispute or claim based on or related to this Agreement.

A Not-to-Exceed proposal shall be accompanied by the CONSULTANT's estimate. The estimate shall detail the direct labor costs by categories of employees, work hours, and hourly rate; overhead; direct non-salary expenses and profit, or as required by individual Task Order.

8.2 METHOD OF BILLING

8.2.1 Not-To-Exceed Amount Compensation

CONSULTANT shall submit billings, which are identified by the specific project number in a timely manner for all salary costs attributable to the Project. These billings shall identify the nature of the work performed for each phase, subtask, deliverable and item identified in the Exhibit "A"

Scope of Services or Task Order, the total hours of work performed and the employee category of the individuals performing same. The statement shall show a summary of salary costs with accrual of the total and credits for portions paid previously. Sub-consultant fees must be documented by copies of invoices or receipts, which describe the nature of the expenses and contain a project number or other identifier, which clearly indicates the expense, as identifiable to the Project. Except for meals and travel expenses, it shall be deemed unacceptable for CONSULTANT to modify the invoice or receipt by adding a project number or other identifier. Internal expenses must be documented by appropriate CONSULTANT's cost accounting forms with a summary of charges by category. When requested, CONSULTANT shall provide backup for past and current invoices that records hours and salary costs by employee category and sub-consultant fees on a task basis, so that total hours and costs by task may be determined.

8.3 REIMBURSABLES

8.3.1 Direct non-salary expenses, entitled Reimbursables, directly attributable to the Project will be charged at actual cost. Reimbursable expenses are in addition to the compensation for basic services and include actual expenditures made by the CONSULTANT and the CONSULTANT'S employees directly attributable to the Project and will be charged at actual cost, without reference to the professional service fees above. CITY shall not withhold retainage from payments for Reimbursable Expenses. CONSULTANT shall be compensated for Reimbursables associated with a particular Task Order only up to the amount allocated for such Task Order. Any reimbursable or portion thereof which, when added to the Reimbursables related to a particular Task Order previously billed, exceeds the amount allocated for such Task Order shall be the responsibility of the CONSULTANT unless otherwise agreed to in writing by the Contract Administrator. Travel and subsistence expenses for the CONSULTANT, his staff and subconsultants and communication expenses, long distance telephone, courier and express mail between CONSULTANT's and subconsultants' various offices are not reimbursable under this Agreement. Reimbursables shall include only the following listed expenses unless authorized in writing by the Contract Administrator:

- A. Cost of reproduction, postage and handling of drawings and specifications which are required to deliver services set forth in this Agreement, excluding reproductions for the office use of the CONSULTANT. Reimbursable printing and photocopying

expenses shall include only those prints or photocopies of original documents which are (i) exchanged among CONSULTANT, CITY and other third parties retained or employed by any of them or (ii) submitted to CITY for review, approval or further distribution. Documents, which are reproduced for CONSULTANT's internal drafts, reviews, or other purposes, are not eligible for reimbursement.

- B. Identifiable testing costs and special inspections approved by Contract Administrator.
- C. All permit fees paid to regulatory agencies for approvals directly attributable to the Project. These permit fees do not include those permits required for the construction Contractor.
- D. Overnight Delivery/Courier Charges (when CITY requires/requests this service).

8.3.2 Reimbursable sub-consultant expenses are limited to the items described above when the subconsultant agreement provides for reimbursable expenses. A detailed statement of expenses must accompany any request for reimbursement. Local travel to and from the Project site or within the Tri-County Area will not be reimbursed.

8.3.3 It is acknowledged and agreed to by CONSULTANT that the dollar limitation set forth in each Task Order is a limitation upon, and describes the maximum extent of CITY's obligation to reimburse CONSULTANT for direct, non-salary expenses, but does not constitute a limitation, of any sort, upon CONSULTANT's obligation to incur such expenses in the performance of services hereunder. If CITY or Contract Administrator requests CONSULTANT to incur expenses not contemplated in the amount for Reimbursables, CONSULTANT shall notify Contract Administrator in writing before incurring such expenses. Any such expenses shall be reviewed and approved by CITY prior to incurring such expenses.

8.4 METHOD OF PAYMENT

8.4.1 CITY shall pay CONSULTANT in accordance with the Florida Prompt Payment Act. To be deemed proper, all invoices must comply with the requirements set forth in this Agreement and must be submitted on the form and pursuant to instructions prescribed by Contract Administrator.

- 8.4.2 CITY will review CONSULTANT's invoices and, if inaccuracies or errors are discovered in said invoice, CITY will inform CONSULTANT within ten (10) working days by fax and/or by email of such inaccuracies or errors and request that revised copies of all such documents be re-submitted by CONSULTANT to CITY.
- 8.4.3 Payments are scheduled to be made by CITY to CONSULTANT using a credit card/CITY Procurement Card (P-Card).
- 8.4.4 Payment will be made to CONSULTANT at:

(CONSULTANT'S ADDRESS)

ARTICLE 9
AMENDMENTS AND CHANGES IN SCOPE OF SERVICES

- 9.1 No modification, amendment or alteration in the terms or conditions contained herein shall be effective unless contained in a written Amendment prepared with the same formality as this Agreement and executed by the CITY and CONSULTANT.
- 9.2 CITY or CONSULTANT may request changes that would increase, decrease, or otherwise modify the Scope of Services to be provided under a Task Order. Such changes must be contained in a written amendment, executed by the Parties hereto, with the same formality and of equal dignity herewith, prior to any deviation from the terms of the Task Order including the initiation of any additional services. CITY shall compensate CONSULTANT for such additional services as provided in Article 7.
- 9.3 In the event a dispute between the Contract Administrator and CONSULTANT arises over whether requested services constitute additional services, and such dispute cannot be resolved by the Contract Administrator and CONSULTANT, such dispute shall be promptly presented to the City Manager for resolution. The City Manager's decision shall be final and binding on the Parties for amounts in the aggregate under \$100,000. In the event of a dispute in an amount over \$100,000, the Parties agree to use their best efforts to settle such dispute. To this effect, they shall consult and negotiate with each other, in good faith and, recognizing their mutual interests, attempt to reach a just and equitable solution satisfactory to both Parties. If they do not reach such solution within a period of sixty (60) days, then upon notice to the other, either Party may commence litigation to resolve the dispute in Broward County, Florida. Any resolution shall be set forth in a written document in accordance with Section 8.2 above. During the pendency of any dispute, CONSULTANT shall promptly perform the disputed services.

ARTICLE 10
CONSULTANT'S RESPONSIBILITIES

- 10.1 The CONSULTANT, following the CITY's approval of the Construction Documents and of the Final Statement of Probable Construction Costs, shall, when so directed and authorized by the CITY, assist the CITY in estimating construction costs, reviewing proposals, and assist in awarding contracts for construction. If requested, CONSULTANT shall review and analyze the proposals received by the CITY and shall make a recommendation for any award based on the City of Fort Lauderdale Procurement Ordinance.
- 10.2 Estimates, opinions of probable construction or implementation costs, financial evaluations, feasibility studies or economic analyses prepared by CONSULTANT will represent its best judgment based on its experience and available information. The CITY recognizes that CONSULTANT has no control over costs of labor, materials, equipment or services furnished by others or over market conditions or CONSULTANT's methods of determining prices, and that any evaluation of a facility to be constructed or work to be performed is speculative. Accordingly, CONSULTANT does not guarantee that proposals, bids or actual costs will not vary from opinions, evaluations or studies submitted by CONSULTANT.
- 10.3 In the event that the lowest "best value" bid, as such term is used in the City of Fort Lauderdale Procurement Code, excluding any alternate bid items ("base bid"), exceeds the Estimated Construction Cost for a project by more than ten percent (10%), CONSULTANT shall explain, in writing, the reasons why the bids or proposals exceeded the ten percent (10%) factor following the analysis of all base bids. In such a circumstance, the CITY may at its sole discretion, exercise any one or more of the following options:
- CONSULTANT shall be required to amend at the sole cost and expense of CONSULTANT, the Construction Drawings, Technical Specifications and Supplemental Conditions to enable the project to conform to a maximum of ten (10%) above the Estimated Construction Costs of the project, such amendments to be subject to the written final acceptance and approval of same by the CITY;
 - CONSULTANT shall be required to provide at the cost and expense of CONSULTANT re-bidding services and related items (including costs associated with regulatory review and approval of revised documents) as many times as requested by the CITY until the base bid of at least one "best value" bid falls within the factor of ten (10%) of the Estimated Construction Cost of the project;

- The CITY may approve an increase in the Estimated Construction Cost of the Project;
- The CITY may reject all bids or proposals and may authorize re-bidding;
- The CITY may if permitted, approve a renegotiation of the Project within a reasonable time;
- The CITY may abandon the project and terminate CONSULTANT's work authorization and Services for the Project; or
- The CITY may select as many deductive alternatives as may be necessary to bring the award within ten percent (10%) of the Estimated Construction Costs of the Project.

It is expressly understood and agreed that the redesigning services required to keep the Project within 10% of the Estimated Construction Cost shall not be considered additional services and CONSULTANT agrees that it shall not seek compensation from the CITY for such Services.

- 10.4 The CONSULTANT may be requested to provide the CITY with a list of recommended, prospective proposers.
- 10.5 The CONSULTANT may be asked to attend all pre-bid/proposal conferences.
- 10.6 The CONSULTANT shall recommend any addenda, through the Contract Administrator, as appropriate to clarify, correct, or change proposal/bid documents.
- 10.7 If pre-qualification of proposers is required as set forth in the request for proposal, CONSULTANT shall assist the CITY, if requested, in developing qualification criteria, review qualifications and recommend acceptance or rejection of the proposers. If requested, CONSULTANT shall evaluate proposals and proposers, and make recommendations regarding any award by the CITY.
- 10.8 The CITY shall make decisions on claims regarding interpretation of the Construction Documents, and on other matters relating to the execution and progress of the work after receiving a recommendation from CONSULTANT. CONSULTANT may also assist in approving progress payments to the Contractor based on each Project Schedule of Values and the percentage of work completed.
- 10.9 The CITY shall maintain a record of all Change Orders which shall be categorized according to the various types, causes, etc. that it may be determined are useful or necessary for its purpose. Among those shall be Change Orders identified as architectural/engineering Errors or Omissions.
- 10.9.1 Unless otherwise agreed by both Parties in writing, it is specifically agreed that any change to the work identified as an Error on the part of CONSULTANT shall be considered for purposes of this Agreement to be

an additional cost to the CITY which would not be incurred without the Error.

- 10.9.2 Unless otherwise agreed by both Parties in writing, it is further specifically agreed for purposes of this Agreement that fifteen percent (15%) of the cost of Change Orders for any item categorized as an Omission shall be considered an additional cost to the CITY which would not be incurred without the Omission. So long as the total of those two numbers (Change Order costs of Errors plus fifteen percent (15%) of Omissions) remains less than two percent (2%) of the total Construction Cost of the Project, the CITY shall not look to CONSULTANT for reimbursement for Errors and Omissions.
- 10.9.3 Should the sum of the two as defined above (cost of Errors plus fifteen percent (15%) of the cost of Omissions) exceed two percent (2%) of the Construction Cost, the CITY shall recover the full and total additional cost to the CITY as a result of CONSULTANT's Errors and Omissions from CONSULTANT, that being defined as the cost of Errors plus fifteen percent (15%) of the cost of Omissions above two percent (2%) of the Construction Cost.
- 10.9.4 To obtain such recovery, the CITY shall deduct from CONSULTANT's fee a sufficient amount to recover all such additional cost to the CITY.
- 10.9.5 In executing this Agreement, CONSULTANT acknowledges acceptance of these calculations and to the CITY's right to recover same as stated above. The recovery of additional costs to the CITY under this paragraph shall not limit or preclude recovery for other separate and/or additional damages which the CITY may otherwise incur.
- 10.9.6 The Contract Administrator's decision as to whether a Change Order is caused by an Error or caused by an Omission, taking into consideration industry standards, shall be final and binding on both Parties for amounts in the aggregate under \$100,000 per project, subject to Section 8.3. In the event of a dispute in an amount over \$100,000, the Parties agree to use their best efforts to settle such dispute. To this effect, they shall consult and negotiate with each other, in good faith and, recognizing their mutual interests, attempt to reach a just and equitable solution satisfactory to both Parties. If they do not reach such solution within a period of sixty (60) days, then upon notice to the other, either Party may commence litigation to resolve the dispute in Broward County, Florida.

ARTICLE 11
CITY'S RESPONSIBILITIES

- 11.1 CITY shall assist CONSULTANT by placing at CONSULTANT's disposal, all information CITY has available pertinent to the Project including previous reports and any other data relative to design or construction of the Project.
- 11.2 CITY shall arrange for access to, and make all provisions for, CONSULTANT to enter upon public and private property as required for CONSULTANT to perform its services.
- 11.3 CITY shall review the itemized deliverables/documents identified per Task Order.
- 11.4 CITY shall give prompt written notice to CONSULTANT whenever CITY observes or otherwise becomes aware of any development that affects the scope or timing of CONSULTANT's services or any defect in the work of the Contractor.

ARTICLE 12
MISCELLANEOUS

12.1 OWNERSHIP OF DOCUMENTS

All documents including, but not limited to, drawings, renderings, models, and specifications prepared or furnished by CONSULTANT, its dependent professional associates and consultants, pursuant to this Agreement shall be owned by the CITY.

Drawings, specifications, designs, models, photographs, reports, surveys and other data prepared in connection with this Agreement are and shall remain the property of the CITY whether the Project for which they are made is executed or not, and are subject to reuse by the CITY in accordance with Section 287.055(10) of the Florida Statutes. They are not intended or represented to be suitable for reuse by the CITY or others on extensions of this Project or on any other project without appropriate verification or adaptation. Any reuse, except for the specific purpose intended hereunder, will be at the CITY's sole risk and without liability or legal exposure to CONSULTANT or its subcontractors. This does not, however, relieve CONSULTANT of liability or legal exposure for errors, omissions, or negligent acts made on the part of CONSULTANT in connection with the proper use of documents prepared under this Agreement. Any such verification or adaptation may entitle CONSULTANT to further compensation at rates to be agreed upon by the CITY and CONSULTANT. This shall not limit the CITY's reuse of preliminary or developmental plans or ideas incorporated therein, should the Project be suspended or terminated prior to completion.

12.2 TERMINATION

12.2.1 Termination for Cause. It is expressly understood and agreed that the CITY may terminate this Agreement at any time for cause in the event that the CONSULTANT (1) violates any provisions of this Agreement or performs same in bad faith or (2) unreasonably delays the performance of the services or does not perform the services in a timely and satisfactory manner upon written notice to the CONSULTANT. Notice of termination shall be provided in accordance with Section 11.27. In the case of termination by the CITY for cause, the CONSULTANT shall be first granted a 10-working day cure period after receipt of written notice from the CITY. In the event that the Agreement is terminated, the CONSULTANT shall be entitled to be compensated for the services rendered and accepted by the CITY from the date of execution of the Agreement up to the time of termination. Such compensation shall be based on the fee as set forth above, wherever possible. For those portions of services rendered to which the applicable fee cannot be applied, payment shall be based upon the appropriate rates for the actual time spent on the Project. In the event that the CONSULTANT abandons this Agreement or through violation of any of the terms and conditions of this Agreement, causes it to be terminated, CONSULTANT shall indemnify the CITY against any and all loss pertaining to this termination.

All finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs and reports prepared by CONSULTANT shall become the property of CITY and shall be delivered by CONSULTANT to the CITY within five (5) days of CITY's request. Upon payment of such sum by CITY to CONSULTANT, CITY shall have no further duties or obligations pursuant to or arising from this Agreement.

12.2.2 This Agreement may also be terminated by CITY upon such notice as CITY deems appropriate in the event CITY or Contract Administrator determines that termination is necessary to protect the public health, safety, or welfare.

12.2.3 Notice of termination shall be provided in accordance with Section 11.27, NOTICES, except that Contract Administrator may provide a prior verbal stop work order if the Contract Administrator deems a stop work order of this Agreement in whole or in part is necessary to protect the public's health, safety, or welfare. A verbal stop work order shall be promptly confirmed in writing as set forth in Section 11.27, NOTICES.

12.2.4 Termination for Convenience. In the event this Agreement is terminated for convenience, CONSULTANT shall be paid for any services performed and accepted by the CITY to the date the Agreement is terminated. Compensation shall be withheld until all documents specified in Section 11.3 of this Agreement are provided to the CITY. Upon being notified of

CITY's election to terminate, CONSULTANT shall refrain from performing further services or incurring additional expenses under the terms of this Agreement. Under no circumstances shall CITY make payment for services which have not been performed.

12.2.5 Termination by CONSULTANT. CONSULTANT shall have the right to terminate this Agreement upon substantial breach by the CITY of its obligation under this Agreement as to unreasonable delay in payment or non-payment of undisputed amounts. CONSULTANT shall have no right to terminate this Agreement for convenience of the CONSULTANT.

12.3 AUDIT RIGHT AND RETENTION OF RECORDS

CITY shall have the right to audit the books, records, and accounts of CONSULTANT that are related to this Project. CONSULTANT shall keep such books, records, and accounts as may be necessary in order to record complete and correct entries related to the Project.

CONSULTANT shall preserve and make available, at reasonable times and upon prior written notice for examination and audit by CITY all financial records, supporting documents, statistical records, and any other documents pertinent to this Agreement for the required retention period of the Florida Public Records Act (Chapter 119, Florida Statutes), if applicable, or, if the Florida Public Records Act is not applicable, for a minimum of three (3) years after termination of this Agreement. If any audit has been initiated and audit findings have not been resolved at the end of the retention period or three (3) years, whichever is longer, the books, records, and accounts shall be retained until resolution of the audit findings. If the Florida Public Records Act is determined by CITY to be applicable to CONSULTANT's records, CONSULTANT shall comply with all requirements thereof; however, no confidentiality or non-disclosure requirement of either federal or state law shall be violated by CONSULTANT. Any incomplete or incorrect entry in such books, records, and accounts shall be a basis for CITY's disallowance and recovery of any payment upon such entry.

12.4 NON-DISCRIMINATION, EQUAL EMPLOYMENT OPPORTUNITY, AND AMERICANS WITH DISABILITIES ACT

CONSULTANT shall not unlawfully discriminate against any person in its operations and activities in its use or expenditure of the funds or any portion of the funds provided by this Agreement and shall affirmatively comply with all applicable provisions of the Americans with Disabilities Act (ADA) in the course of providing any services funded in whole or in part by CITY, including Titles I and II of the ADA (regarding nondiscrimination or the basis of disability), and all applicable regulations, guidelines, and standards.

CONSULTANT's decisions regarding the delivery of services under this Agreement shall be made without regard to or consideration of race, age, religion, color, gender, sexual orientation, national origin, marital status, physical or mental disability, political affiliation, or any other factor which cannot be lawfully or appropriately used as a basis for service delivery.

CONSULTANT shall comply with Title I of the Americans with Disabilities Act regarding nondiscrimination on the basis of disability in employment and further shall not discriminate against any employee or applicant for employment because of race, age, religion, color, gender, sexual orientation, national origin, marital status, political affiliation, or physical or mental disability. In addition, CONSULTANT shall take affirmative steps to ensure nondiscrimination in employment against disabled persons. Such actions shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff, termination, rates of pay, other forms of compensation, terms and conditions of employment, training (including apprenticeship), and accessibility.

CONSULTANT shall take affirmative action to ensure that applicants are employed, and employees are treated without regard to race, age, religion, color, gender, sexual orientation, national origin, marital status, political affiliation, or physical or mental disability during employment. Such actions shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff, termination, rates of pay, other forms of compensation, terms and conditions of employment, training (including apprenticeship), and accessibility.

12.5 MINORITY PARTICIPATION

Historically, the CITY has been able to achieve participation levels of approximately twelve percent (12%) by MBE/WBE firms in CITY projects, and in the purchase of goods and services. The CONSULTANT shall make a good faith effort to help the CITY maintain and encourage MBE/WBE participation levels consistent with such historical levels and market conditions. The CONSULTANT will be required to document all such efforts and supply the CITY with this documentation at the end of the Project, or in cases where projects are longer than one year, each CITY fiscal year.

12.6 PUBLIC ENTITY CRIMES ACT

In accordance with the Public Crimes Act, Section 287.133, Florida Statutes (2021), as may be amended or revised, a person or affiliate who is a contractor, consultant or other provider, who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to the City, may not submit a bid on a contract with the City for the construction or repair of a public building or public work, may

not submit bids on leases of real property to the City, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with the City, and may not transact any business with the City in excess of the threshold amount provided in Section 287.017, Florida Statutes (2021), as may be amended or revised, for category two purchases for a period of thirty-six (36) months from the date of being placed on the convicted vendor list. Violation of this section by Contractor shall result in cancellation of the City purchase and may result in Contractor debarment.

12.7 SUB-CONSULTANTS

12.7.1 CONSULTANT may subcontract certain items of work to sub-consultant. The parties expressly agree that the CONSULTANT shall submit pertinent information regarding the proposed sub-consultant, including sub-consultant's scope of work and fees, for review and approval by the CITY prior to sub-consultants proceeding with any work.

12.7.2 CONSULTANT shall utilize the sub-consultants identified in the proposal that were a material part of the selection of CONSULTANT to provide the services for this Project. CONSULTANT shall obtain written approval of the Contract Administrator prior to changing or modifying the list of sub-consultants submitted by CONSULTANT.

The list of sub-consultants submitted is as follows:

(NAME ALL SUB-CONSULTANTS HERE)

12.8 ASSIGNMENT AND PERFORMANCE

Neither this Agreement nor any interest herein shall be assigned, transferred, or encumbered without the written consent of the other Party, and CONSULTANT shall not sub-contract any portion of the work required by this Agreement except as authorized pursuant to Section 11.7.

CONSULTANT represents that all persons delivering the services required by this Agreement have the knowledge and skills, either by training, experience, education, or a combination thereof, to adequately and competently perform the duties, obligations, and services set forth in the Scope of Services and to provide and perform such services to CITY's satisfaction for the agreed compensation.

CONSULTANT shall perform its duties, obligations, and services under this Agreement in a skillful and respectable manner. The quality of CONSULTANT's performance and all interim and final product(s) provided to or on behalf of CITY shall meet or exceed all professional standards of the State of Florida.

12.9 INDEMNIFICATION OF CITY

12.9.1 CONSULTANT shall indemnify and hold harmless CITY, its officers and employees, from liabilities, damages, losses, and costs, including but not limited to reasonable attorneys' fees, to the extent caused by the negligence, recklessness or intentional misconduct of CONSULTANT and persons employed or utilized by CONSULTANT in the performance of this Agreement. These indemnifications shall survive the term of this Agreement. In the event that any action or proceeding is brought against CITY by reason of any such claim or demand, CONSULTANT shall, upon written notice from CITY, resist and defend such action or proceeding by counsel approved by the CITY.

12.9.2 To the extent considered necessary by Contract Administrator and CITY, any sums due the CONSULTANT under this Agreement may be retained by CITY until all of the CITY's claims for indemnification pursuant to this Agreement have been settled or otherwise resolved, and any amount withheld shall not be subject to payment of interest by CITY.

12.9.3 The Indemnification provided above shall obligate CONSULTANT to defend at its own expense to and through appellate, supplemental or bankruptcy proceeding, or to provide for such defense, at CITY's option, any and all claims of liability and all suits and actions of every name and description covered by Section 11.9.1 above that may be brought against CITY whether performed by CONSULTANT, or persons employed or utilized by CONSULTANT.

12.10 LIMITATION OF CITY'S LIABILITY

The CITY desires to enter into this Agreement only if in so doing the CITY can place a limit on the CITY's liability for any cause of action arising out of this Agreement, so that the CITY's liability for any breach never exceeds the sum of \$1,000.00. For other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the CONSULTANT expresses its willingness to enter into this Agreement with the knowledge that the CONSULTANT's recovery from the CITY to any action or claim arising from the Agreement is limited to a maximum amount of \$1,000.00 less the amount of all funds actually paid by the CITY to the CONSULTANT pursuant to this Agreement. Accordingly, and notwithstanding any other term or condition of this Agreement that may suggest otherwise, the CONSULTANT agrees that the CITY shall not be liable to the CONSULTANT for damages in an amount in excess of \$1,000.00, which amount shall be reduced by the amount actually paid by the CITY to the CONSULTANT pursuant to this Agreement, for any action or claim arising out of this Agreement. Nothing contained in this paragraph or elsewhere in this Agreement is in any manner intended either to be a waiver of the limitation placed upon the CITY's liability as set forth in Section 768.28, Florida Statutes, or to extend the CITY's

liability beyond the limits established in said Section 768.28; and no claim or award against the CITY shall include attorney's fees, investigative costs, extended damages, expert fees, suit costs or pre-judgment interest. Notwithstanding the foregoing, the parties agree and understand that the provisions of this Article 11.10 do not apply to monies owed, if any, for services rendered to CONSULTANT by the CITY under the provisions of this Agreement.

12.11 INSURANCE

12.11.1 **(INSERT INSURANCE INFORMATION HERE IN ACCORDANCE WITH SOLICITATION)**

12.12 REPRESENTATIVE OF CITY AND CONSULTANT

12.12.1 The Parties recognize that questions in the day-to-day conduct of the Project will arise. The Contract Administrator, upon CONSULTANT's request, shall advise CONSULTANT in writing of one (1) or more CITY employees to whom all communications pertaining to the day-to-day conduct of the Project shall be addressed.

12.12.2 CONSULTANT shall inform the Contract Administrator in writing of CONSULTANT's representative to whom matters involving the conduct of the Project shall be addressed.

12.13 ALL PRIOR AGREEMENTS SUPERSEDED

This document incorporates and includes all prior negotiations, correspondence, conversations, agreements or understandings applicable to the matters contained herein; and the Parties agree that there are no commitments, agreements or understandings concerning the subject matter of this Agreement that are not contained in this document. Accordingly, the Parties agree that no deviation from the terms hereof shall be predicated upon any prior representations or agreements whether oral or written.

It is further agreed that no modification, amendment or alteration in the terms or conditions contained herein shall be effective unless contained in a written document executed with the same formality and of equal dignity herewith.

12.14 CONSULTANT'S STAFF

CONSULTANT will provide the key staff identified in its proposal for the Project as long as said key staff are in CONSULTANT's employment.

CONSULTANT will obtain prior written approval of Contract Administrator to change key staff. CONSULTANT shall provide Contract Administrator with such

information as necessary to determine the suitability of any proposed new key staff. Contract Administrator will be reasonable in evaluating key staff qualifications.

If Contract Administrator desires to request removal of any of CONSULTANT's staff, Contract Administrator shall first meet with CONSULTANT and provide reasonable justification for said removal.

12.15 INDEPENDENT CONTRACTOR

CONSULTANT is an independent contractor under this Agreement. Services provided by CONSULTANT shall be subject to the supervision of CONSULTANT. In providing the services, CONSULTANT or its agents shall not be acting and shall not be deemed as acting as officers, employees, or agents of the CITY. Personnel policies, tax responsibilities, social security and health insurance, employee benefits, purchasing policies and other similar administrative procedures applicable to services rendered under this Agreement shall be those of CONSULTANT. The Parties expressly acknowledge that it is not their intent to create any rights or obligations in any third person or entity under this Agreement.

12.16 THIRD PARTY BENEFICIARIES

Neither CONSULTANT nor CITY intends to directly or substantially benefit a third party by this Agreement. Therefore, the Parties agree that there are no third-party beneficiaries to this Agreement and that no third party shall be entitled to assert a claim against either of them based upon this Agreement.

12.17 CONFLICTS

Neither CONSULTANT nor its employees shall have or hold any continuing or frequently recurring employment or contractual relationship that is substantially antagonistic or incompatible with CONSULTANT's loyal and conscientious exercise of judgment related to its performance under this Agreement.

CONSULTANT agrees that none of its officers or employees shall, during the term of this Agreement, serve as expert witness against CITY in any legal or administrative proceeding in which he or she is not a party, unless compelled by court process, nor shall such persons give sworn testimony or issue a report or writing, as an expression of his or her expert opinion, which is adverse or prejudicial to the interests of CITY or in connection with any such pending or threatened legal or administrative proceeding. The limitations of this Section shall not preclude such persons from representing themselves in any action or in any administrative or legal proceeding.

In the event CONSULTANT is permitted to utilize sub-consultants to perform any services required by this Agreement, CONSULTANT agrees to prohibit such sub-

consultants, by written contract, from having any conflicts as within the meaning of this Section.

12.18 CONTINGENCY FEE

CONSULTANT warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for CONSULTANT, to solicit or secure this Agreement and that it has not paid or agreed to pay any person, company, corporation, individual or firm, other than a bona fide employee working solely for CONSULTANT, any fee, commission, percentage, gift, or other consideration contingent upon or resulting from the award or making of this Agreement. For a breach or violation of this provision, the CITY shall have the right to terminate this Agreement without liability at its discretion, or to deduct from the Agreement price or otherwise recover the full amount of such fee, commission, percentage, gift or consideration.

12.19 WAIVER OF BREACH AND MATERIALITY

Failure by CITY to enforce any provision of this Agreement shall not be deemed a waiver of such provision or modification of this Agreement.

CITY and CONSULTANT agree that each requirement, duty, and obligation set forth herein is substantial and important to the formation of this Agreement and, therefore, is a material term hereof.

12.20 COMPLIANCE WITH LAWS

CONSULTANT shall comply with all applicable federal, state, and local laws, codes, ordinances, rules, and regulations in performing its duties, responsibilities, and obligations related to this Agreement.

12.21 SEVERANCE

In the event this Agreement or a portion of this Agreement is found by a court of competent jurisdiction to be invalid, the remaining provisions shall continue to be effective unless CITY or CONSULTANT elects to terminate this Agreement. The election to terminate this Agreement based upon this provision shall be made within seven (7) days after the findings by the court become final.

12.22 JOINT PREPARATION

Preparation of this Agreement has been a joint effort of CITY and CONSULTANT and the resulting document shall not, solely as a matter of judicial construction, be construed more severely against one of the Parties than any other.

12.23 PRIORITY OF PROVISIONS

If there is a conflict or inconsistency between any term, statement, requirement, or provision of any exhibit attached hereto, any document or events referred to herein, or any document incorporated into this Agreement by reference and a term, statement, requirement, or provision of this Agreement, the term, statement, requirement, or provision contained in Articles 1-11 of this Agreement shall prevail and be given effect.

12.24 APPLICABLE LAW AND VENUE AND WAIVER OF JURY TRIAL

The Agreement shall be interpreted and construed in accordance with, and governed by, the laws of the state of Florida. The Parties agree that the exclusive venue for any lawsuit arising from, related to, or in connection with this Agreement shall be in the state courts of the Seventeenth Judicial Circuit in and for Broward County, Florida. If any claims arising from, related to, or in connection with this Agreement must be litigated in federal court, the Parties agree that the exclusive venue for any such lawsuit shall be in the United States District Court or United States Bankruptcy Court for the Southern District of Florida. **BY ENTERING INTO THIS AGREEMENT, THE PARTIES HEREBY EXPRESSLY WAIVE ANY AND ALL RIGHTS EITHER PARTY MIGHT HAVE TO A TRIAL BY JURY OF ANY ISSUES RELATED TO THIS AGREEMENT. IF A PARTY FAILS TO WITHDRAW A REQUEST FOR A JURY TRIAL IN A LAWSUIT ARISING OUT OF THIS AGREEMENT AFTER WRITTEN NOTICE BY THE OTHER PARTY OF VIOLATION OF THIS SECTION, THE PARTY MAKING THE REQUEST FOR JURY TRIAL SHALL BE LIABLE FOR THE REASONABLE ATTORNEYS' FEES AND COSTS OF THE OTHER PARTY IN CONTESTING THE REQUEST FOR JURY TRIAL, AND SUCH AMOUNTS SHALL BE AWARDED BY THE COURT IN ADJUDICATING THE MOTION.**

In the event Consultant is a corporation organized under the laws of any province of Canada or is a Canadian federal corporation, the City may enforce in the United States of America or in Canada or in both countries a judgment entered against CONSULTANT. CONSULTANT waives any and all defenses to the City's enforcement in Canada of a judgment entered by a court in the United States of America.

12.25 EXHIBITS

Each Exhibit referred to in this Agreement forms an essential part of this Agreement. The Exhibits, if not physically attached, should be treated as part of this Agreement, and are incorporated herein by reference.

12.26 ONE ORIGINAL AGREEMENT

This Agreement shall be executed in one (1) signed Agreement, treated as an original.

12.27 NOTICES

Whenever either Party desires to give notice unto the other, it must be given by written notice, sent by certified United States mail, with return receipt requested, addressed to the Party for whom it is intended, at the place last specified, and the place for giving of notice in compliance with the provisions of this paragraph. For the present, the Parties designate the following as the respective places for giving of notice, to-wit:

CITY: (Department director)
City of Fort Lauderdale
address
Fort Lauderdale, FL [redacted]
Telephone: (954) 828-[redacted]

With a copy to: City Manager
City of Fort Lauderdale
100 North Andrews Avenue
Fort Lauderdale, FL 33301
Telephone: (954) 828-5364

City Attorney
City of Fort Lauderdale
100 North Andrews Avenue
Fort Lauderdale, FL 33301
Telephone: (954) 828-5037

CONSULTANT: NAME [redacted]
COMPANY NAME [redacted]
ADDRESS [redacted]
STATE AND ZIP [redacted]
Telephone [redacted]
Email: [redacted]

12.28 ATTORNEY FEES

If CITY or CONSULTANT incurs any expense in enforcing the terms of this Agreement through litigation, the prevailing party in that litigation shall be reimbursed for all such costs and expenses, including but not limited to court costs, and reasonable attorney fees incurred during litigation.

12.29 PERMITS, LICENSES AND TAXES

CONSULTANT shall, at its own expense, obtain all necessary permits and licenses, pay all applicable fees, and pay all applicable sales, consumer, use and other taxes required to comply with local ordinances, state and federal law. CONSULTANT is responsible for reviewing the pertinent state statutes regarding state taxes and for complying with all requirements therein. Any change in tax laws after the execution of this Agreement will be subject to further negotiation and CONSULTANT shall be responsible for complying with all state tax requirements.

12.30 ENVIRONMENTAL, HEALTH AND SAFETY

CONSULTANT shall maintain a safe working environment during performance of the work. CONSULTANT shall comply, and shall secure compliance by its employees, agents, and sub-consultants, with all applicable environmental, health, safety and security laws and regulations, and performance conditions in this Agreement. Compliance with such requirements shall represent the minimum standard required of CONSULTANT. CONSULTANT shall be responsible for examining all requirements and determine whether additional or more stringent environmental, health, safety and security provisions are required for the work. CONSULTANT agrees to utilize protective devices as required by applicable laws, regulations, and any industry or CONSULTANT's health and safety plans and regulations, and to pay the costs and expenses thereof, and warrants that all such persons shall be fit and qualified to carry out the Work.

12.31 STANDARD OF CARE

CONSULTANT represents that he/she/it is qualified to perform the work, that CONSULTANT and his/her/its sub-consultants possess current, valid state and/or local licenses to perform the Work, and that their services shall be performed in a manner consistent with that level of care and skill ordinarily exercised by other qualified consultants under similar circumstances.

12.32 TRUTH-IN-NEGOTIATION CERTIFICATE

Signature of this Agreement by CONSULTANT shall act as the execution of a Truth-in-Negotiation Certificate stating that wage rates and other factual unit costs supporting the compensation of this Agreement are accurate, complete, and current at the time of contracting. The original contract price and any additions thereto shall be adjusted to exclude any significant sums, by which the CITY determines that contract price was increased due to inaccurate, incomplete, or non-current wage rates and other factual unit costs. All such contract adjustments must be made within one (1) year following the end of the contract.

12.33 EVALUATION

The CITY maintains the right to periodically review the performance of the CONSULTANT. This review will take into account the timely execution of Task Orders, the quality of the work performed, the cost to the CITY and the good faith efforts made by the CONSULTANT to maintain MBE/WBE participation in CITY projects. Any deficiencies in performance will be described in writing and an opportunity afforded, where practicable, for the CONSULTANT to address and/or remedy such deficiencies.

12.34 STATUTORY COMPLIANCE

CONSULTANT shall prepare all documents and other materials for the Project in accordance with all applicable rules, laws, ordinances and governmental regulations of the State of Florida, Broward County, the City of Fort Lauderdale, Florida, and all governmental agencies having jurisdiction over the services to be provided by CONSULTANT under this Agreement or over any aspect or phase of the Project.

12.35 SCRUTINIZED COMPANIES

As to any contract for goods or services of \$1 million or more and as to the renewal of any contract for goods or services of \$1 million or more, subject to *Odebrecht Construction, Inc., v. Prasad*, 876 F.Supp.2d 1305 (S.D. Fla. 2012), *affirmed*, *Odebrecht Construction, Inc., v. Secretary, Florida Department of Transportation*, 715 F.3d 1268 (11th Cir. 2013), with regard to the "Cuba Amendment," the Contractor certifies that it is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, and that it does not have business operations in Cuba or Syria, as provided in Section 287.135, Florida Statutes (2021), as may be amended or revised. As to any contract for goods or services of any amount and as to the renewal of any contract for goods or services of any amount, the Contractor certifies that it is not on the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2021), as may be amended or revised, and that it is not engaged in a boycott of Israel. The City may terminate this Agreement at the City's option if the Contractor is found to have submitted a false certification as provided under subsection (5) of Section 287.135, Florida Statutes (2021), as may be amended or revised, or been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2021), as may be amended or revised, or is engaged in a boycott of Israel or has been engaged in business operations in Cuba or Syria, as defined in Section 287.135, Florida Statutes (2021), as may be amended or revised.

12.36 PUBLIC RECORDS

IF THE CONSULTANT HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONSULTANT'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT PRRCONTRACT@FORTLAUDERDALE.GOV, 954-828-5002, CITY CLERK'S OFFICE, 100 NORTH ANDREWS AVENUE, FORT LAUDERDALE, FLORIDA, 33301.

Consultant shall:

1. Keep and maintain public records required by the City in order to perform the service.
2. Upon request from the City's custodian of public records, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes (2021), as may be amended or revised, or as otherwise provided by law.
3. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of this Agreement if CONSULTANT does not transfer the records to the City.
4. Upon completion of the Agreement, transfer, at no cost to the City, all public records in possession of CONSULTANT or keep and maintain public records required by the City to perform the service. If CONSULTANT transfers all public records to the City upon completion of this Agreement, CONSULTANT shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If CONSULTANT keeps and maintains public records upon completion of this Agreement, CONSULTANT shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City.

12.37 INTELLECTUAL PROPERTY

CONSULTANT shall protect and defend at CONSULTANT's expense, counsel being subject to the City's approval, and indemnify and hold harmless the City from and against any and all losses, penalties, fines, damages, settlements, judgments, claims, costs, charges, royalties, expenses, or liabilities, including any award of attorney fees and any award of costs, in connection with or arising directly or indirectly out of any infringement or allegation of infringement of any patent, copyright, or other intellectual property right in connection with the CONSULTANT's or the CITY's use of any copyrighted, patented or un-patented invention, process, article, material, or device that is manufactured, provided, or used pursuant to this Agreement. If the CONSULTANT uses any design, device, or materials covered by letters, patent or copyright, it is mutually agreed and understood without exception that the bid prices shall include all royalties or costs arising from the use of such design, device, or materials in any way involved in the work.

12.38 RIGHTS IN DOCUMENTS AND WORK

Any and all reports, photographs, surveys, and other data and documents provided or created in connection with this Agreement are and shall remain the property of CITY; and CONSULTANT disclaims any copyright in such materials. In the event of and upon termination of this Agreement, any reports, photographs, surveys, and other data and documents prepared by CONSULTANT, whether finished or unfinished, shall become the property of City and shall be delivered by CONSULTANT to the CITY's Contract Administrator within seven (7) days of termination of this Agreement by either Party. Any compensation due to CONSULTANT shall be withheld until CONSULTANT delivers all documents to the CITY as provided herein.

12.39 REPRESENTATION OF AUTHORITY

Each individual executing this Agreement on behalf of a Party hereto hereby represents and warrants that he or she is, on the date he or she signs this Agreement, duly authorized by all necessary and appropriate action to execute this Agreement on behalf of such Party and does so with full legal authority.

[THIS SPACE WAS INTENTIONALLY LEFT BLANK]

IN WITNESS OF THE FOREGOING, the Parties have set their hands and seals the day and year first written above.

CITY

CITY OF FORT LAUDERDALE, a Florida municipal corporation

By: _____
CHRISTOPHER J. LAGERBLOOM
City Manager

Date: _____

ATTEST:

By: _____
JEFFREY A. MODARELLI
City Clerk

Approved as to Legal Form:
Alain E. Boileau, City Attorney

By: _____
RHONDA MONTOYA HASAN
Assistant City Attorney

DRAFT CONTRACT

WITNESSES:

COMPANY NAME), a [redacted] company/corporation authorized to conduct business in the State of Florida,

By: _____, Director

Print Name

ATTEST:

Print Name

By: _____ Secretary

(CORPORATE SEAL)

STATE OF _____:

COUNTY OF _____:

The foregoing instrument was acknowledged before me by means of physical presence or online notarization, this _____ day of _____, 202__, by (NAME OF AUTHORIZED OFFICER) as _____ (TITLE OF AUTHORIZED OFFICER) for _____ (NAME OF COMPANY), a Florida _____ (TYPE OF COMPANY) authorized to conduct business in the State of Florida.

(Signature of Notary Public - State of Florida)

(Print, Type, or Stamp Commissioned Name of Notary Public)

Personally Known _____ OR Produced Identification _____
Type of Identification Produced: _____

EXHIBIT A

DRAFT CONTRACT

EXHIBIT "B"

DRAFT CONTRACT

EXHIBIT "C"

DRAFT CONTRACT

P12719

**SUPPORTING
DOCUMENTATION**

Hazen *Technical Memorandum*

August 19, 2016

To: Rares V. Petrica (Project Manager II, Public Works Department)

From: The Hazen Team

Stormwater Master Plan Modeling and Design Implementation

Conceptual Stormwater Quantity Modeling Approach and Standards



This memorandum summarizes recommended data sources, conceptual modeling approach and proposed parameterization standards for developing a city-wide stormwater quantity model for the City of Fort Lauderdale. This memorandum satisfies the deliverable under Task 3.3 of the City of Fort Lauderdale's Stormwater Master Plan Modeling and Design Implementation contract, City Contract 11869, Task Order Number 1. This memorandum includes modeling methodologies and is intended to provide a series of recommendations that will be reviewed by both staff and the consultant team. Additionally, this memorandum will be updated on a periodic basis to reflect refinements and capture additional approaches and standards, as needed. A summary of revisions associated with each version of this document is included in Appendix A.

Introduction

Hazen and Sawyer and its team of subconsultants (Hazen Team) obtained and reviewed reports, data, and model manuals relevant to developing a general approach and recommended stormwater quantity modeling standards to be implemented for the City of Fort Lauderdale (City). This effort was performed as part of the Hazen Team's Stormwater Master Plan Modeling and Design Implementation contract, City Contract 11869, Task Order Number 1. This memorandum satisfies a deliverable under Subtask 3.3.

The Hazen Team was tasked with developing and implementing a hydrological and hydraulic stormwater model of the entire City. The model will consist of a comprehensive basin by basin analysis of the existing and proposed stormwater systems, and how they react to different boundary conditions, including future projected climatological conditions. The model results will be used to establish the flood protection level of service throughout the City. Additionally, the model will be used to analyze conceptual solutions for individual neighborhood capital improvement projects (CIP). The model also will have a number of other potential uses beyond the life of this project (CIP design, development reviews, floodplain administration – to name a few). The City selected Streamline Technologies, Inc. Interconnected Pond and Routing model, version 4 (ICPRv4) to be used for this effort.

This memorandum summarizes proposed data sources relevant for establishing hydrologic and hydraulic parameters within ICPRv4, presents recommended modeling standards, and identifies gaps in existing data. Additionally, the subdivision of the City into multiple watershed and the preliminary routing

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network is included herein. At this time the process for merging data into the City's master geodatabase is not presented since the geodatabase design is currently in progress. This will be addressed in a future version of this document.



Available Data

Topography

Two topographic data sources will be used for this project to define the land surface– (1) new Light Detection and Ranging (LiDAR) data currently being collected under this Contract for areas within the City limits and (2) LiDAR data collected in 2007 by the Florida Department of Emergency Management (FDEM). Elevations in both datasets are referenced to the North American Vertical Datum of 1988 (NAVD88) with units in feet.

The City's new LiDAR will be captured with vertical accuracy of approximately 0.15 feet and horizontal accuracy of 0.5 feet at an approximate 95-percent confidence level. The LiDAR data will be flown at approximately 1400 feet above ground in two different cardinal directions to obtain three-dimensional ground points at an approximate density of 45 points per square meter. The new LiDAR data will be dense enough to be used to generate accurate ground surface models inside the City limits. The ground models will include a Digital Terrain Model (DTM) and a Digital Elevation Model (DEM), with hydro-enforced break lines for the stormwater modeling. This dataset will be used for topographic-derived parameters within the City's limits.

The existing topographic data available for the City (and urban Broward County) is the 2007 FDEM LiDAR dataset, which is available from sites such as Florida International University's International Hurricane Research Center LiDAR Download Viewer, United States Geologic Survey's (USGS') National Elevation Dataset, or National Oceanic and Atmospheric Administration's (NOAA's) Data Access Viewer. 3001 Inc. collected the 2007 FDEM LiDAR dataset for FDEM between July 2007 and February 2008 as part of a state-wide LiDAR mapping effort. The dataset covers the entire project area. FDEM acquired the dataset to develop a DTM that could be used for state-wide regional evacuation studies. 3001 determined that the vertical accuracy of the ground points have a root-mean-square error (RMSE) of 0.15 foot (0.29 foot at the 95% confidence level) in unobscured areas. The accuracy assessment computed RMSE based on a comparison of ground control points and filtered LiDAR points. The horizontal accuracy was determined by 3001 to have a RMSE of 0.81 feet. The 2007 FDEM LiDAR dataset includes breaklines to improve the DTM in areas where the point density was insufficient. A more complete description of the 2007 FDEM LiDAR dataset is provided in 3001's LiDAR Processing Report, Survey Report, and Vertical Accuracy Report (2008). Figure 1 shows the 5-foot grid DEM derived from the FDEM data within the City. This DEM is not hydrographically corrected, which means water bodies do not reflect a consistent (such as for ponds) or gently sloped surface (such as for canals). Hydrologic corrections will need to be made for the areas within this data that will be utilized for the project.

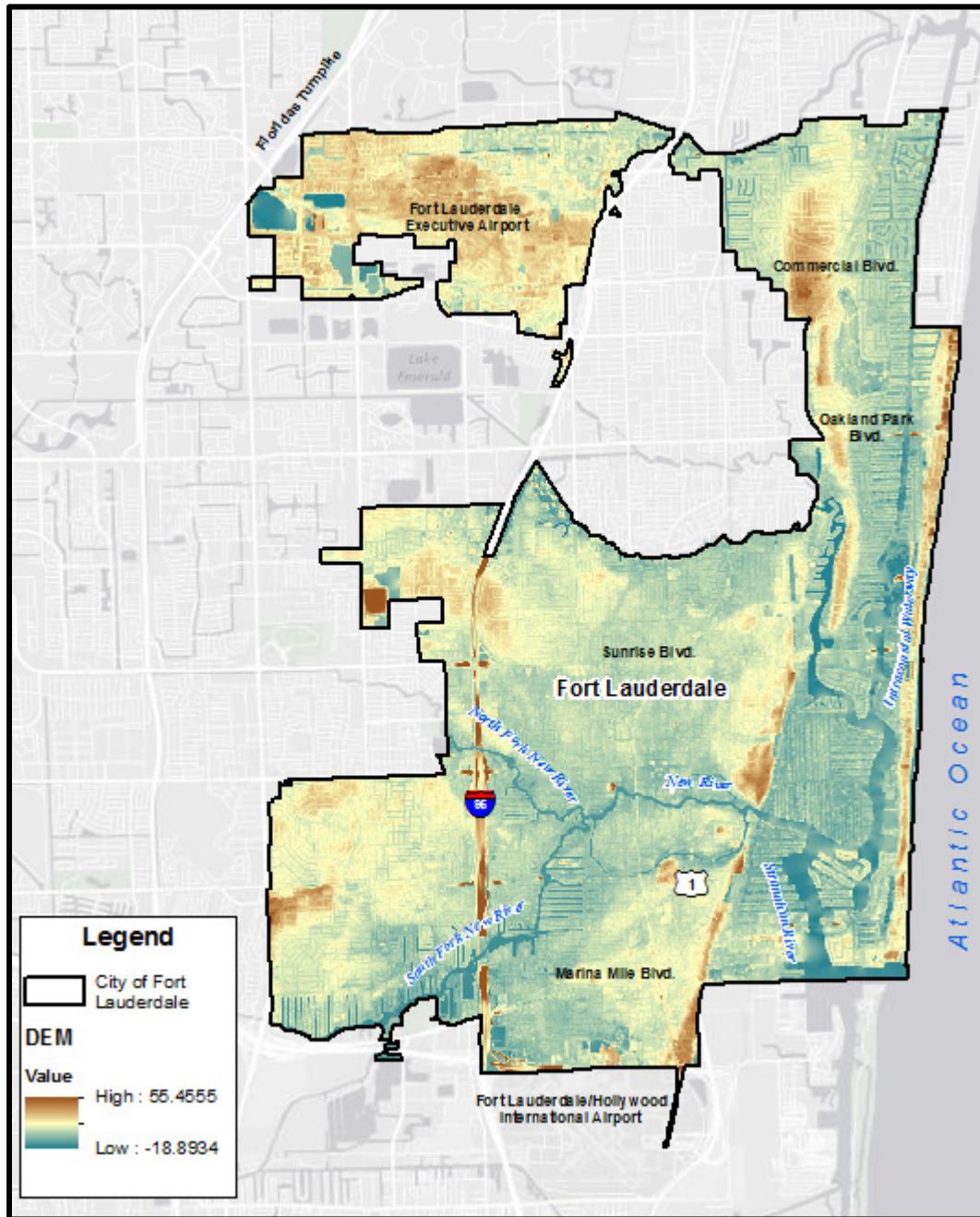
Additionally, several sources of bathymetric data are available to define canals and ponds within the project area. The City has provided a triangulated network (TIN) of bathymetric survey data for 236 canals within the City. No metadata or survey report were provided, so the date(s) of collection, accuracy statements, and vertical datum are unknown. Additionally, pond bottom depths are available for several lakes and ponds from an input file to Broward County's Integrated Surface and Groundwater Model (BC ISGM) developed with MIKE SHE/11 software. However, it should be noted that this input contains assumed elevations for lakes without bathymetric data. A bottom depth of 15-feet below the assumed ground elevation was use.



Preference will be given to the newest LiDAR data currently being collected and the FDEM data will be used for areas outside of the City's limits. Both data sources will be stored in an ArcGIS 10.3 geodatabase as points (e.g. LiDAR bare earth returns), lines (e.g. breaklines), and polygons (e.g. water bodies). An ESRI terrain feature will be used to construct a triangulated DTM, which will then in turn be used to generate a gridded DEM, with at least a 5-foot by 5-foot resolution. Post-processing of the bare-earth based DEM will be necessary to define the bathymetry, or submerged portions, of waterbodies such as lakes, ponds, canals, and rivers. Additionally, the DEM will need to be modified for any exfiltration systems that will be included in the model. This post-processing is necessary to accurately model the groundwater regions within ICPRv4.



Figure 1: 2007 FDEM Bare-Earth DEM within the City of Fort Lauderdale



Soils

Soil input parameters will be derived from the Natural Resources Conservation Service (NRCS) Soil Survey in the Soil Survey Geographic (SSURGO) database. The data were collected between 2004 and 2015 and were published in 2015 as the Web Soil Survey. The source information meets National Map Accuracy Standards at a scale of 1 inch equals 1,000 feet and was originally mapped at scales ranging from 1:20,000 to 1:24,000.



The soils data are mapped as polygons defined by map units, where each map unit can be repeated across many polygons. The City has 35 unique map units with different percent mixes of standard soil types. Each soil type has a set of soil horizons with unique depths. Soil parameter values, such as hydraulic conductivity, are listed for each soil horizon in each soil type. For modeling purposes, each parameter needs to be summarized to one unique value for each map unit. Thus, the major soil type (the soil type that had the highest percent cover in the map unit) will be chosen to define the parameters for each map unit. To define a unique parameter for each soil type, the values associated with each soil horizons in the soil type will be averaged. Either the horizons above the top two feet or the soil horizons above annual high groundwater level will be averaged with a harmonic average weighted by thickness of horizon.

The hydrologic group is assigned to the map unit rather than the soil type. Because each map unit is defined by a mix of soil types, the hydrologic soil group (HSG) is not necessarily the same between map units with the same major soil type. Table 1 below shows the percent cover for each soil type within the City while

Table 2 reflects the percentages for hydrologic soil groups within the City. The spatial distribution of soil types and hydrologic soil groups can be seen in Figure 2 and Figure 3 below.

Table 1: Soil types listed by percent cover within the City of Fort Lauderdale

Soil Type	Percent by Area
Immokalee	21.1%
Matlacha	19.7%
Arents	14.1%
Duette	12.3%
Dade	7.5%
Water	7.3%
Udorthents	3.2%
Paola	2.8%
St. Lucie	2.7%
Margate	2.4%
Basinger	1.9%
Palm Beach	1.4%
Pomello	1.2%
Canaveral	1.0%
Sanibel	0.4%
Pompano	0.3%
Plantation	0.3%
Terra Ceia	0.3%
Perrine Variant	0.1%
Okeelanta	0.05%
Pennsuco	0.04%
Lauderhill	0.002%
Hallandale	0.0001%

**Table 2: Percentage of Hydrologic Soil Groups within the City of Fort Lauderdale**

Hydrologic Soil Group	Percent by Area
A	35.6%
A/D	27.4%
B/D	9.4%
B	2.4%
Urban Land (No HSG listed)	17.2%
Beaches (No HSG listed)	0.6%
Water (No HSG listed)	7.3%



Figure 2. Soil Types within the City

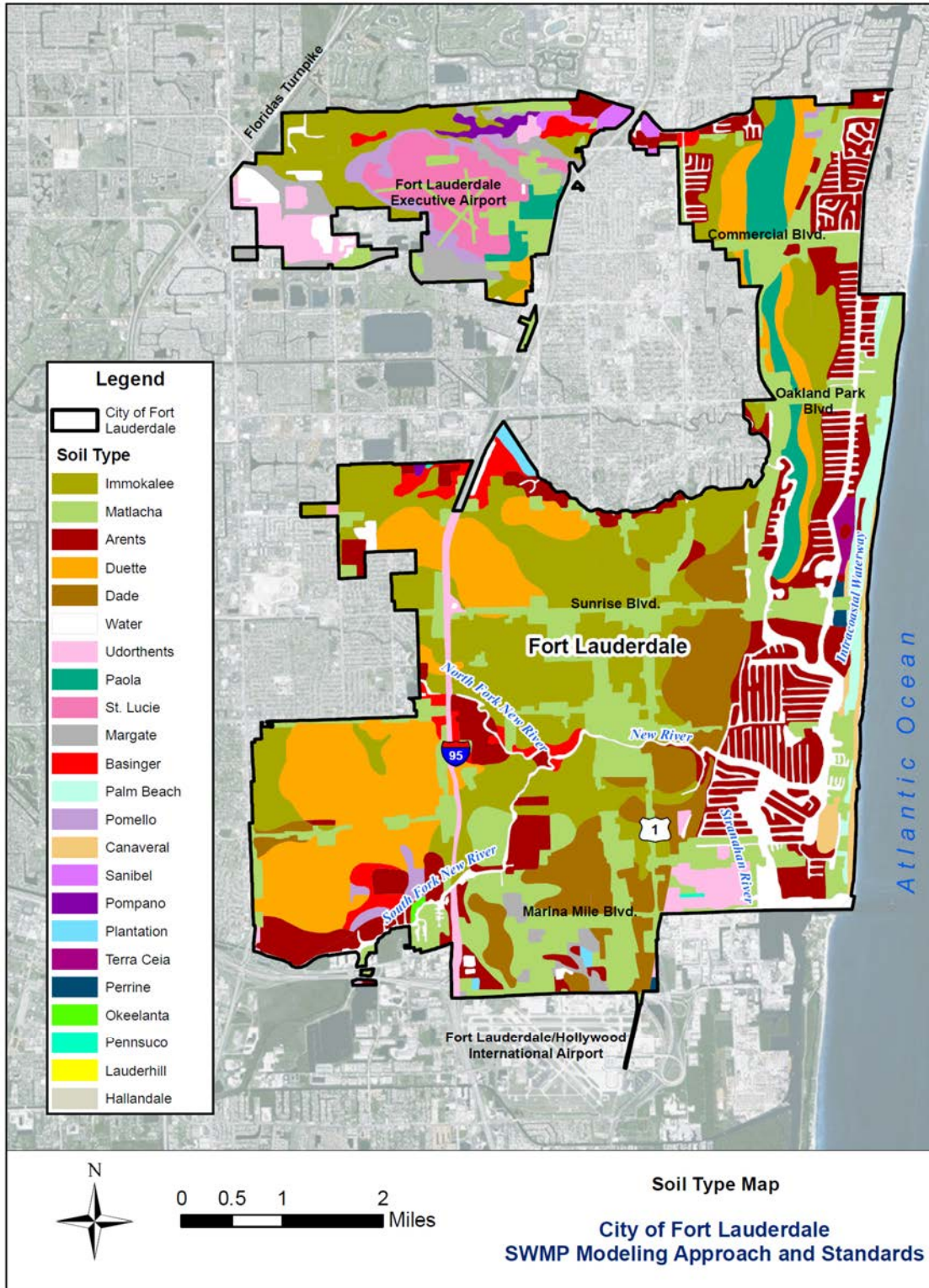
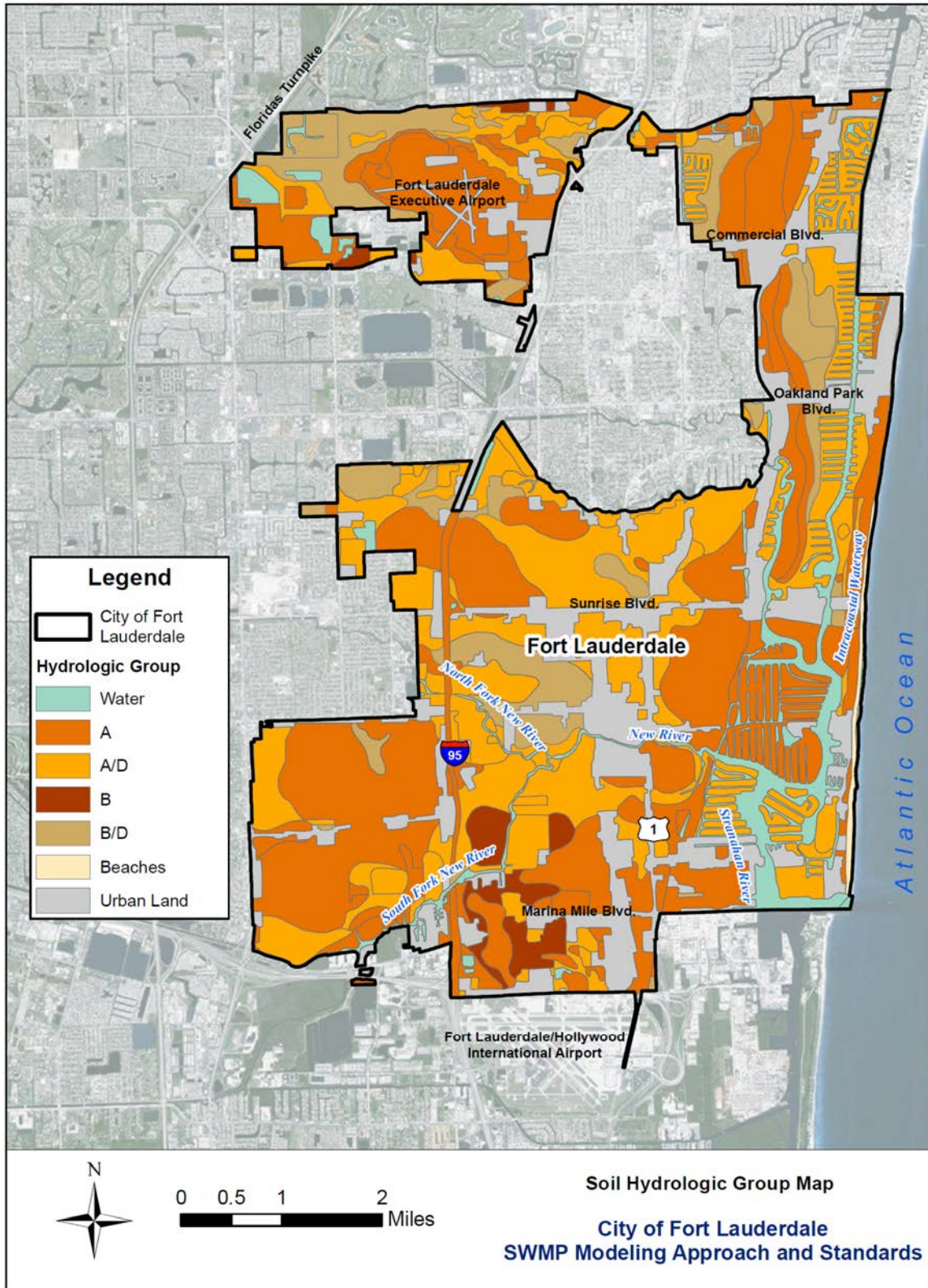




Figure 3. Hydrologic Soil Groups with the City of Fort Lauderdale



Land Use/Land Cover



Land Use data will be derived and updated from the South Florida Water Management District (SFWMD) Land Cover Land Use (LCLU) data from 2008-2009. SFWMD created the 2008-2009 LCLU data by updating 2004-2005 vector data using 2008-2009 aerial photography (4 inches to 2 feet pixel resolution) and classifying data with an amended version of the Florida Land Use, Cover and Forms Classification System (FLUCCS) originally created by the Florida Department of Transportation (FDOT). The minimum mapping unit for classification used by SFWMD was 2 acres for wetlands and 5 acres for uplands.

The LCLU data will be updated to reflect changes in land use due to developments five acres in size or greater as well as to capture wetlands and waterbodies greater than or equal to one acre in size. Data that may be used to support the updates include the following:

- 2015 aerial images (available from FDOT and Broward County Property Appraiser, BCPA) or BCPA 2016 imagery if it becomes available in time,
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) data, and
- SFWMD Arc Hydro Enhanced Database (AHED) waterbody feature class, dated May 24, 2016.

The waterbody feature class delineates water bodies such as rivers, streams, canals, and lakes within the SFWMD and was acquired from the USGS National Hydrography Dataset. The NWI data were created by USFWS to represent wetlands and deep water habitats in the United States. Preference will be given to the 2015/2016 aerial imagery if polygon shape, location, or size differ between the NWI and AHED data sources. Classification of revised land uses and cover will follow the 2009 Photointerpretation Key developed by SFWMD for the 2009 update.

Once updates are completed, topology checks, and necessary revisions, will be performed.

Future land use will need to be provided by the City for use in future conditions simulations.

Hydrogeology

Unsaturated Conditions

Soil parameters representing unsaturated conditions will be based on the aforementioned SSURGO data (see Soils subsection), soil characterization data from the University of Florida Institute of Food and Agricultural Sciences (IFAS) Soil Science Department, and supplemented with geotechnical reports from site tests where available. SSURGO data will define the spatial extents of soil units throughout the City as well as be used to derive the soil parameters. SSURGO data may be refined and will be compared with IFAS data and geotechnical reports collected as part of the Stormwater Inventory/Data Collection task (i.e. Task Number 1) of Hazen's Stormwater Master Plan Modeling and Design Implementation contract, City Contract 11869, Task Order Number 1. IFAS soil characterization data were collected throughout the 1970s and 1980s and are available as an Excel spreadsheet via the Florida Soil Characterization Data Retrieval System. The IFAS soil characterization data supplements the physical and chemical properties available to describe the soils within the project area. Geotechnical reports may be available for sites throughout the project area as part of Environmental Resource Permit applications and may be used to refine parameters as needed.



Saturated Conditions

Within southeast Florida, groundwater levels are closely related to surface water levels and this interaction will need to be accounted for within the City's model. The Biscayne aquifer is the surficial aquifer within the City's watershed and is typically characterized by six stratigraphic layers:

- Lake Flirt Marl/Undifferentiated Soil and Sand (Holocene series) approximately 0-5 feet thick,
- Pamlico Sand (also referred to as Perkins' Quaternary Period 5, or Q5) approximately 0-50 feet thick,
- Miami Limestone (Q4) approximately 0-30 feet thick,
- Fort Thompson Formation (Q3) approximately 0-100 feet thick,
- Anastasia Formation (Q2) approximately 0-140 feet thick, and
- Key Largo Limestone (Q1) approximately 0-20 feet thick.

The Biscayne aquifer is underlain by the Tamiami Formation, which includes the Pinecrest Sand that serves as the upper confining unit and the Gray limestone aquifer.

Summaries of several available data sources for saturated soil data for the area are provided in the draft Technical Memorandum Literature Review and Inventory of Existing Stormwater Studies, dated July 28, 2016. Recommended data source for the hydrogeologic parameterization within ICPRv4 are the coarse and fine parameter inputs from the USGS three-dimensional, variable-density solute-transport model (SEAWAT), if the inputs can be extracted from the SEAWAT model files. The inputs are currently model specific and will need to be extracted to a data table that can be associated with the spatial grid cells and stratigraphic layers. The SEAWAT inputs will be used to establish hydraulic conductivity (horizontal and vertical), layer thickness, and porosity for the groundwater regions to be modeled within ICPRv4. If the data cannot be extracted from the SEAWAT model, data from the Federal Emergency Management Agency's (FEMA's) flood event model for Broward County, developed using MIKE SHE/11, can be utilized to establish parameters.

The horizontal spatial resolution of input parameters from both sources is 500 feet by 500 feet. The model divided the surficial aquifer system into 12 vertical layers as illustrated in Figure 4; however, some parameters are more generalized into coarse or fine parameters as follows:

- Horizontal hydraulic conductivity generalized for fine parameter layers: UPR, PD1, PD2, and LWR
- Vertical hydraulic conductivity generalized for fine parameter layers: UPR, PD1, PD2, and LWR
- Specific Yield generalized for coarse parameter layers: UPR, PRD, and LWR.
- Porosity generalized for fine parameter layers: UPR, PD1, PD2, and LWR

The Upper Unit (UPR) is consistent with Q5, Q4, and Q3 Perkins' units. The Upper Production Unit (PD1) and Lower Production Unit (PD2) are consistent with Q2 and Q1, respectively. The Lower Unit (LWR) is consistent with the Tamiami Formation. The Upper Unit will be used to define the groundwater zones and associated parameters.

If the SEAWAT parameters cannot be extracted, then the MIKE SHE/11 parameters will be utilized to establish the groundwater zones and look-up tables for the ICPRv4 model. The Broward County MIKE SHE/11 models the five saturated zones of the Biscayne Aquifer as follows:



- Layer 1 = Pamlico Sands
- Layer 2 = Anastasia Formation
- Layer 3 = Biscayne Aquifer
- Layer 4 = Upper unit of the Tamiami Formation (Pinecrest Sands)
- Layer 5 = Grey Limestone for west/lower cells and Tamiami in the east

The model stratigraphy and parameters were originally developed from the MODFLOW models developed by SFWMD for Broward County (CDM Smith and DHI, 2002, 2005a, and 2005b).

Figure 4. Units and Associated Model Layers within SEAWAT model (USGS, 2016)

Series	Lithostratigraphic units		Perkins' Q units	Hydrogeologic units	Model layer	Coarse parameter prefix	Fine parameter prefix	
Holocene	Undifferentiated							
Pleistocene	Miami Limestone	Anastasia Formation	Q5	Biscayne aquifer	Surficial aquifer system	UPR		
			Q4				1	
			Q3				2	
	Fort Thompson Formation	Key Largo Limestone	Q2			3	PRD	PD1
			Q1			4		
						5		
			6					
			7					
			8			PD2		
			9					
10								
Pliocene	Tamiami Formation	Pinecrest Sand Member		Upper semiconfining unit	11	LWR		
		Ochopee Limestone Member		Gray limestone aquifer	12			

EXPLANATION

- | | | | |
|-----|------------------|-------|--|
| UPR | Upper unit | PD1 | Upper production unit |
| PRD | Production units | PD2 | Lower production unit |
| LWR | Lower unit | -?-?- | Uncertain lithostratigraphic or hydrogeologic boundary |

Rainfall

Design Storm Events

The Hazen Team will perform five (5) design storm model simulations based on the SFWMD precipitation-frequency estimates for the following:

- 5-year 24-hour,
- 10-year 24-hour,
- 25-year 24- hour,
- 25-year 72-hour, and



- 100-year 72-hour storm frequency events.

To establish rainfall depths for each of these simulations the isohyetal maps contained within SFWMD's Environmental Resource Permit (ERP) Information Applicant's Handbook Volume II, effective May 22, 2016, will be utilized. These maps were originally published in 1990 by SFWMD in a Technical Memorandum titled "Frequency Analysis of One and Three-day Rainfall Maxima for Central and Southern Florida." Copies of the isohyetal maps associated with the above design storms are included in Appendix B. Interpolation of the isohyets was performed to determine the average rainfall depth to the nearest 0.20 inches and reported to the nearest 0.1 inch. This was accomplished by creating a rainfall surface by georeferencing the isohyetal maps into GIS based on the Broward County boundary. The depth contours were digitized, triangulated, and used to generate a rainfall raster for each design rainfall event. To address the spatial distribution of rainfall across the City within the model, each modeled watershed will have a unique rainfall depth associated with each event. Unique rainfall depths may be assigned to small areas based on engineering judgement.

Rainfall temporal distribution will likewise be based on the distributions provided in the SFWMD *ERP Information Applicant's Handbook (2016)*.

It should be noted that updated precipitation-frequency estimates for Florida have been developed by NOAA and represent a longer period of record compared to the aforementioned SFWMD estimates. Atlas 14 Precipitation-Frequency Atlas of the United States Volume 9 Version 2.0 was published in 2013, but has not been officially adopted for use by SFWMD. The estimates have been calculated for a range of frequencies and durations and have utilized a regional frequency analysis procedure that is based on L-moment statistics. The annual maximum series were calculated from precipitation measurements taken at random interval or constant interval increments ranging from one-minute to one-day and were gathered from a multitude of sources. These data were available from four sites in or near Fort Lauderdale. The location, summary table of point precipitation frequency estimates, as well as frequency curves for each of the four data stations in the Fort Lauderdale area are included in Appendix B.

Calibration and Verification Events

Calibration and verification of the stormwater modeling is not included under the current task order, but will be performed under a future task order. Select rainfall events will be simulated using Doppler-radar rainfall data, also referred to as NEXRAD or RAINDAR, available from SFWMD. The NEXRAD data are weather radar deployed by the National Weather Service (NWS) that uses reflectivity to estimate the amounts of rainfall from calibrated algorithms. The coverage in the SFWMD comes from five radars located in Tampa, Melbourne, Jacksonville, Miami, and Key West. The data are available in a two-kilometer by two-kilometer grid. For the Fort Lauderdale area, 15-minute data are available from 2002 to 2016 while hourly data are available from 1996 to 2016. When specific storm events are chosen for calibration/verification, data will be downloaded from the area that covers the Fort Lauderdale area. The two-kilometer by two-kilometer grid cells are identified by "HydroIDs." Those HydroIDs that cover the Fort Lauderdale area are listed in Table below and shown in Figure 5.



Table 3: NEXRAD HydroIDs covering the Fort Lauderdale areas of interest

10053518/10053519/10053520/10053521/10053522/10053523/10053524/10053525/10053526/
 10053527/10053528/10053044/10053045/10053046/10053047/10053048/10053049/10053050/
 10053051/10053052/10053053/10052570/10052571/10052572/10052573/10052574/10052575/
 10052576/10052577/10052578/10052579/10052095/10052096/10052097/10052098/10052099/
 10052100/10052101/10052102/10052103/10052104/10052105/10051622/10051623/10051624/
 10051625/10051626/10051627/10051628/10051629/10051630/10051631/10051148/10051149/
 10051150/10051151/10051152/10051153/10051154/10051155/10051156/10051157/10050673/
 10050674/10050675/10050676/10050677/10050678/10050679/10050680/10050681/10050682/
 10050683/10050199/10050200/10050201/10050202/10050203/10050204/10050205/10050206/
 10050207/10050208/10050209/10049726/10049727/10049728/10049729/10049730/10049731/
 10049732/10049733/10049734/10049735/1049252/1049253/1049254/1049255/1049256/10492
 57/1049258/1049259/1049260/1049261/10048778/10048779/10048780/10048781/10048782/10
 048783/10048784/10048785/10048786/10048787/10048304/10048305/10048306/10048307/10
 048308/10048309/10048310/10048311/10047830/10047831/10047832/10047833/10047834

Other rainfall data that may be used to supplement calibration/verification as well as quality control are rain gage data available from SFWMD DBHYDRO database and NOAA Hourly Observation data. The rain gages and associated frequency and duration are listed in Table below and shown in Figure 6 below. SFWMD's DBHYDRO database is an environmental database that stores hydrologic, meteorological, and water quality data from SFWMD and from USGS, NOAA, and the Everglades National Park. NOAA Hourly Observation data are available at one station near Fort Lauderdale, which is located at the Fort Lauderdale Hollywood International Airport. The hourly precipitation data is collected from weighing rain gages, Fischer-Porter gages, Universal rain gages, and automated recording sites. This data is available for the period of November 2001 to December 2013.



Table 4: Rain Gage data from NOAA Hourly Observation data and from SFWMD DBHYDRO database

Station	Data Type	Frequency	Statistic Type	Agency	Start Date	End Date
S13_R	Rain	Continuous	Instantaneous	WMD	12/31/1959	08/12/2002
FT. LAUD_R	Rain	Continuous	Instantaneous	WMD	09/30/1971	06/30/2016
G54_R	Rain	Continuous	Instantaneous	WMD	03/18/1997	07/01/2016
S33_R	Rain	Continuous	Instantaneous	WMD	03/18/1997	07/01/2016
S36_R	Rain	Continuous	Instantaneous	WMD	03/18/1997	07/01/2016
S37A_R	Rain	Continuous	Instantaneous	WMD	03/18/1997	07/01/2016
S37B_R	Rain	Continuous	Instantaneous	WMD	03/18/1997	07/01/2016
G57_R	Rain	Continuous	Instantaneous	WMD	03/18/1997	07/01/2016
GILL REA_R	Rain	Continuous	Instantaneous	WMD	03/31/1957	01/31/2008
S13_R	Rain	Daily	Sum	WMD	01/08/1991	10/31/2014
FT. LAUD_R	Rain	Daily	Sum	WMD	09/30/1971	06/29/2016
G54_R	Rain	Daily	Sum	WMD	03/18/1997	06/30/2016
S33_R	Rain	Daily	Sum	WMD	10/21/1993	07/01/2016
S36_R	Rain	Daily	Sum	WMD	01/08/1991	07/01/2016
S37A_R	Rain	Daily	Sum	WMD	01/08/1991	07/01/2016
S37B_R	Rain	Daily	Sum	WMD	01/08/1991	07/01/2016
G57_R	Rain	Daily	Sum	WMD	03/18/1997	06/30/2016
087254-1	Rain	Daily	Sum	NOAA	07/01/1948	04/25/2001
083168-2	Rain	Daily	Sum	NOAA	08/01/1998	05/10/2001
FTL	Rain	Daily	Sum	WMD	01/08/1991	03/01/2008
GILL REA_R	Rain	Daily	Sum	WMD	03/31/1957	01/31/2008
Fort Lauderdale Hollywood International Airport, FL US	Rain	Hourly	Instantaneous	NOAA	11/01/2001	12/31/2013



Figure 5. NEXRAD cells covering the Fort Lauderdale area of interest

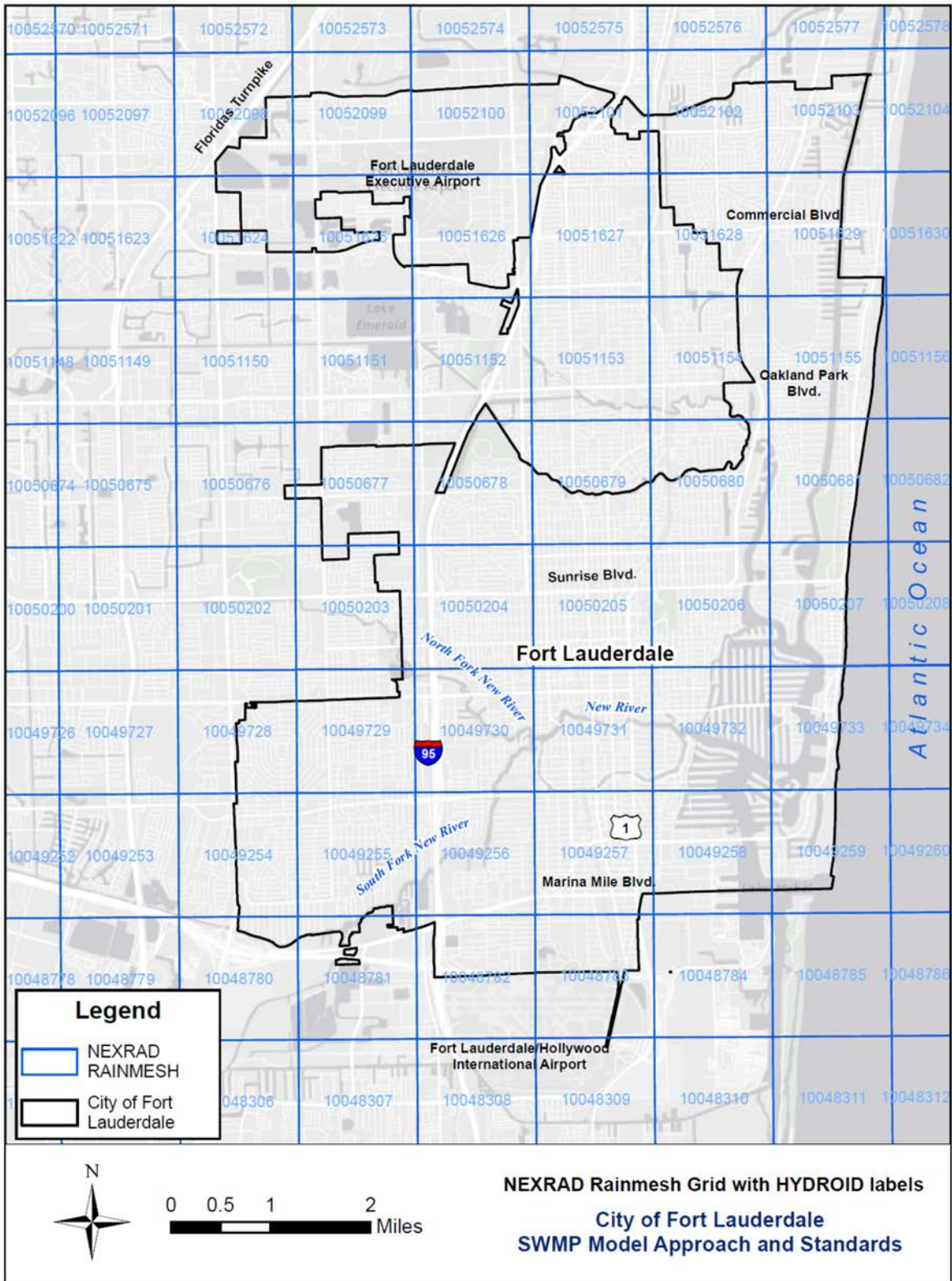
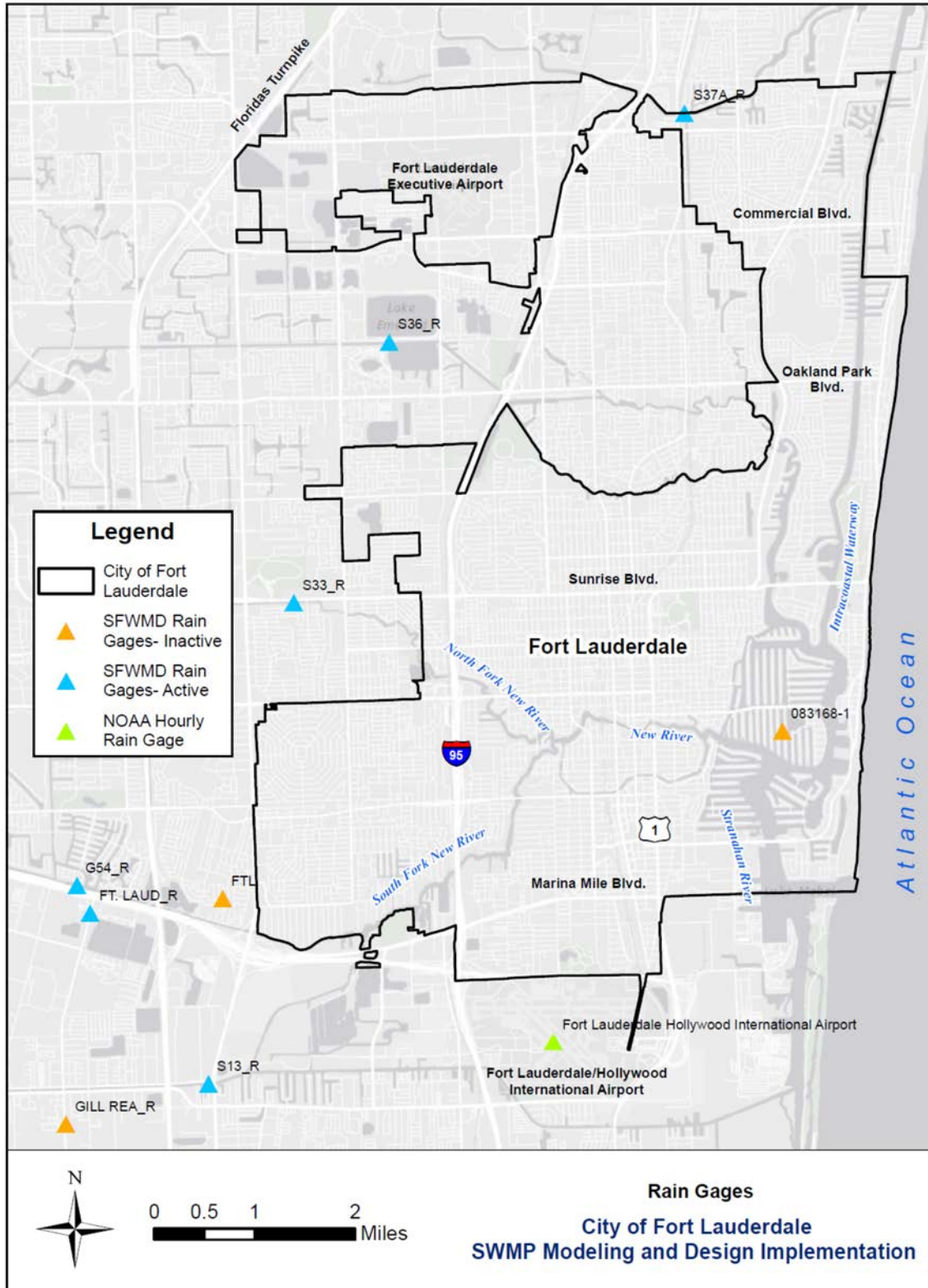




Figure 6. Rainfall Gage Stations within and around Fort Lauderdale, Florida





Flow and Stage

Flow and stage data are available from SFWMD's DBHYDRO database, an environmental database which stores hydrologic, meteorological, and water quality data from SFWMD and from USGS, NOAA, and the Everglades National Park. The flow and stage data and associated frequency and period of record are listed in Table and Table below.

Table 5: Flow data from SFWMD DBHYDRO Database

Station	Data Type	Frequency	Statistic Type	Agency	Start Date	End Date
G57_S	Flow	Continuous	Instantaneous	WMD	12/31/2014	present
S13_P	Flow	Continuous	Instantaneous	WMD	12/31/2014	present
S13_S	Flow	Continuous	Instantaneous	WMD	12/31/2014	present
S33_S	Flow	Continuous	Instantaneous	WMD	12/31/2014	present
S36_S	Flow	Continuous	Instantaneous	WMD	05/31/1985	present
S37A_S	Flow	Continuous	Instantaneous	WMD	12/31/2014	present
S37B_S	Flow	Continuous	Instantaneous	WMD	12/31/2014	present
G57_S	Flow	Daily	Mean	WMD	10/11/1994	present
G57_W	Flow	Daily	Mean	USGS	03/01/1940	09/30/1969
S13_P	Flow	Daily	Mean	WMD	01/01/1984	11/06/1989
S13_S	Flow	Daily	Mean	WMD	09/08/1989	present
S33_S	Flow	Daily	Mean	USGS	04/01/1962	09/30/2004
S36	Flow	Daily	Mean	USGS	06/25/1982	09/12/1984
S36_S	Flow	Daily	Mean	WMD	05/31/1985	present
S37A_DS_S	Flow	Daily	Mean	USGS	07/01/1982	11/03/1982
S37A_S	Flow	Daily	Mean	WMD	05/31/1985	present
S37B_S	Flow	Daily	Mean	WMD	08/31/1985	present

Table 6: Stage Data from SFWMD DBHYDRO database

Station	Data Type	Frequency	Statistic Type	Agency	Start Date	End Date
G54_H	Stage	Continuous	Instantaneous	WMD	12/10/1992	present
G54_T	Stage	Continuous	Instantaneous	WMD	12/10/1992	present
G57_H	Stage	Continuous	Instantaneous	WMD	10/11/1994	present
G57_T	Stage	Continuous	Instantaneous	WMD	10/11/1994	present
G65_H	Stage	Continuous	Instantaneous	WMD	08/06/2008	present
G65_T	Stage	Continuous	Instantaneous	WMD	08/06/2008	present
S13_H	Stage	Continuous	Instantaneous	WMD	09/08/1989	present
S13_T	Stage	Continuous	Instantaneous	WMD	01/01/1984	02/19/2016
S33_H	Stage	Continuous	Instantaneous	WMD	07/24/1991	present
S33_T	Stage	Continuous	Instantaneous	WMD	07/24/1991	present
S36_H	Stage	Continuous	Instantaneous	WMD	05/31/1985	present
S36_H	Stage	Continuous	Instantaneous	WMD	05/31/1985	present
S36_T	Stage	Continuous	Instantaneous	WMD	05/31/1985	present
S37A_H	Stage	Continuous	Instantaneous	WMD	05/31/1985	present
S37A_T	Stage	Continuous	Instantaneous	WMD	05/31/1985	present
S37B_T	Stage	Continuous	Instantaneous	WMD	08/31/1985	present
C11.I595	Stage	Daily	Mean	USGS	10/01/1988	10/12/1989
C13.US1	Stage	Daily	Max	USGS	12/15/1962	09/30/1967
C13.US1	Stage	Daily	Min	USGS	12/15/1962	09/30/1967
G54_H	Stage	Daily	Mean	WMD	12/10/1992	present
G54_T	Stage	Daily	Mean	WMD	12/10/1992	present
G57_H	Stage	Daily	Mean	WMD	10/11/1994	present



Table 6: Stage Data from SFWMD DBHYDRO database

Station	Data Type	Frequency	Statistic Type	Agency	Start Date	End Date
G57_T	Stage	Daily	Mean	WMD	10/11/1994	present
G65_H	Stage	Daily	Mean	WMD	08/06/2008	present
G65_T	Stage	Daily	Mean	WMD	08/06/2008	present
LAUD-BY	Stage	Daily	Max	USGS	02/19/1968	09/30/1974
LAUD-BY	Stage	Daily	Min	USGS	02/20/1968	09/30/1974
NNRC.FL	Stage	Daily	Max	USGS	06/01/1963	09/30/1967
NNRC.FL	Stage	Daily	Min	USGS	06/01/1963	09/30/1967
POND AP1	Stage	Daily	Mean	USGS	10/01/1988	10/12/1989
POND APP	Stage	Daily	Mean	USGS	10/01/1988	10/11/1989
PORT EVE	Stage	Daily	Max	USGS	02/21/1968	09/30/1974
PORT EVE	Stage	Daily	Min	USGS	02/21/1968	09/30/1974
PORT EVE	Stage	Daily	THH	USGS	10/01/1973	03/27/1978
PORT EVE	Stage	Daily	TLL	USGS	10/01/1973	03/27/1978
S13_H	Stage	Daily	Mean	USGS	10/01/1968	10/12/2004
S13_H	Stage	Daily	Mean	WMD	09/08/1989	present
S13_T	Stage	Daily	Mean	WMD	09/08/1989	present
S13P_H	Stage	Daily	Mean	WMD	01/11/1984	03/14/1991
S13P_T	Stage	Daily	Mean	WMD	01/11/1984	03/14/1991
S33_H	Stage	Daily	Mean	WMD	07/24/1991	present
S33_T	Stage	Daily	Mean	WMD	07/24/1991	present
S36_H	Stage	Daily	Mean	WMD	01/01/1978	12/31/1914
S36_T	Stage	Daily	Max	WMD	05/31/1985	present
S37A_H	Stage	Daily	Max	WMD	05/31/1985	present
S37A_T	Stage	Daily	Mean	WMD	05/31/1985	present
S37B_T	Stage	Daily	Mean	WMD	01/23/1962	10/26/1987
S37B_T	Stage	Daily	Mean	WMD	08/31/1985	present

Tidal water level measurements and mean values of tidal datums are available from NOAA for numerous stations in southeastern Florida. Datums are based on the latest NOAA National Tidal Datum Epoch (1983 through 2001). National Tidal Datum Epochs are 19-year periods adopted by the National Ocean Service and used to define mean values of tidal datums, such as mean sea level. Table 7 summarizes the active NOAA tidal water level stations and data record characteristics that are located in proximity to Fort Lauderdale. Virginia Key is the closest active water level station to the City as illustrated in Figure 7.



**Table 7: Active NOAA Water Level Tidal Stations with Published Datums
Near Fort Lauderdale, Florida**

Name	Station Number	Period of Record	Elevations on Station Datums Relative to NAVD88, feet (Relative to NGVD29, feet)				
			MHHW	MHW	MSL	HAT	Max
Lake Worth Pier	8722670	4/14/1970 - present	0.55 (2.12)	0.41 (1.98)	-0.95 (0.62)	1.83 (3.40)	2.43 (4.00)
Virginia Key	8723214	1/26/1994- present	0.22 (1.79)	0.16 (1.73)	-0.87 (0.70)	1.15 (2.72)	2.79 (4.36)
Vaca Key	8723970	12/4/1970- present	-0.36 (1.21)	-0.47 (1.10)	-0.83 (0.74)	0.27 (1.84)	5.43 (7.00)
Key West	8724580	1/18/1913- present	0.05 (1.62)	-0.24 (1.33)	-0.87 (0.70)	0.89 (2.46)	3.18 (4.75)

(Note: Mean Higher-High Water (MHHW), Mean High Water (MHW), Mean Sea Level (MSL), Highest Astronomical Tide (HAT), and Maximum Tide (Max) presented, 1983-2001 Epoch)

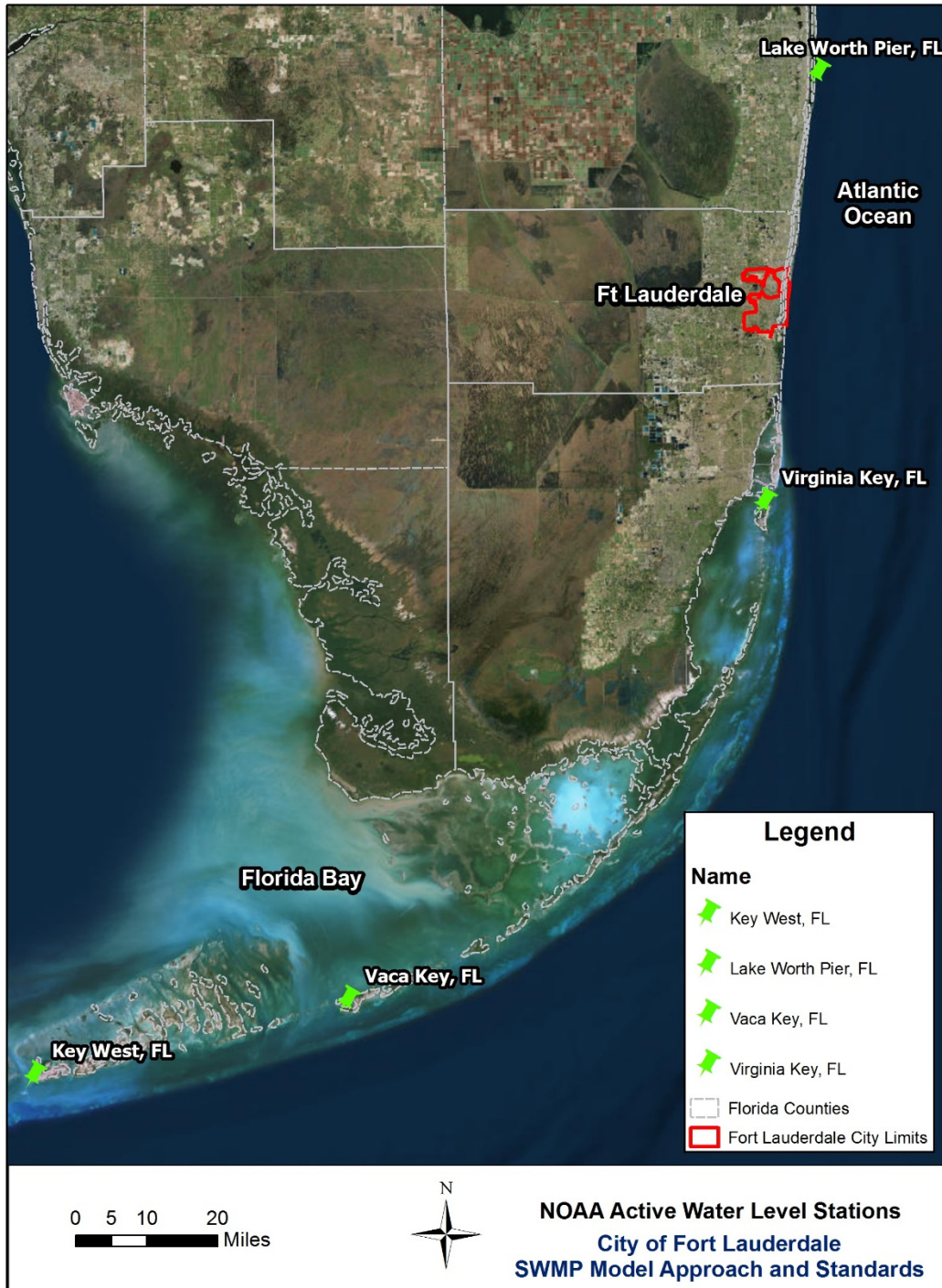
In addition to the stations providing water level measurements, NOAA also has published tidal datums and tide predictions for additional locations within and around Fort Lauderdale. Table 8 summarizes the stations where NOAA has established datums for the current epoch and provides tidal predictions.

**Table 8: NOAA Tidal Stations with Published Datums and Tide Predictions
Near Fort Lauderdale, Florida**

Name	Station Number
Lauderdale-by-the-Sea	8722899
Ft. Lauderdale, Andrews Avenue Bridge	8722937
Ft. Lauderdale Bahia Yacht Club	8722939
Port Everglades, Lake Mabel	8722951
South Port Everglades	8722956
North Dania Sound	8722957
Port Laudania	8722968
Whiskey Creek, South Entrance	8722971



Figure 7: Active NOAA Water Level Stations Near Fort Lauderdale, Florida





Modeling Approach

Watershed Delineation

The ten watersheds previously defined as part of the City’s 2009 Stormwater Master Plan will be maintained, but refined as part of future parameterization tasks. Conceptual watershed boundaries have been generated as shown in Figure 8 based on a preliminary analysis of basins generated from Broward County’s current five-foot cell DEM generated from the 2007 LiDAR. Watershed, sub-watershed/tributary, and basin delineations developed under Task 3.4.1, Hydrologic Parameterization, will be based on the City’s DEM (including the 2016 LiDAR and hydrographically corrected 2007 data), the City’s stormwater atlas, City’s as-built surveys, Environmental Resource Permits from Broward County, 2016 aerial imagery, and State and County roadway plans. If the 2016 aerial imagery is not available once parameterization and model development commences, current 2015 aerial imagery will be utilized.

Naming Convention

A standard naming convention is proposed to designate the type of one-dimensional model element, watershed, associated tributary, and unique number of each modeled element. The first character designates if the modeling element is a basin, node, or link – B, N, or L, respectively. The second character of an element’s name will be associated with the watershed. The proposed letter designations for the City’s watersheds are summarized below in Table 9. The letters “I” and “O” are not to be used to eliminate letter versus number confusion.

Table 9. Watershed Naming Designations

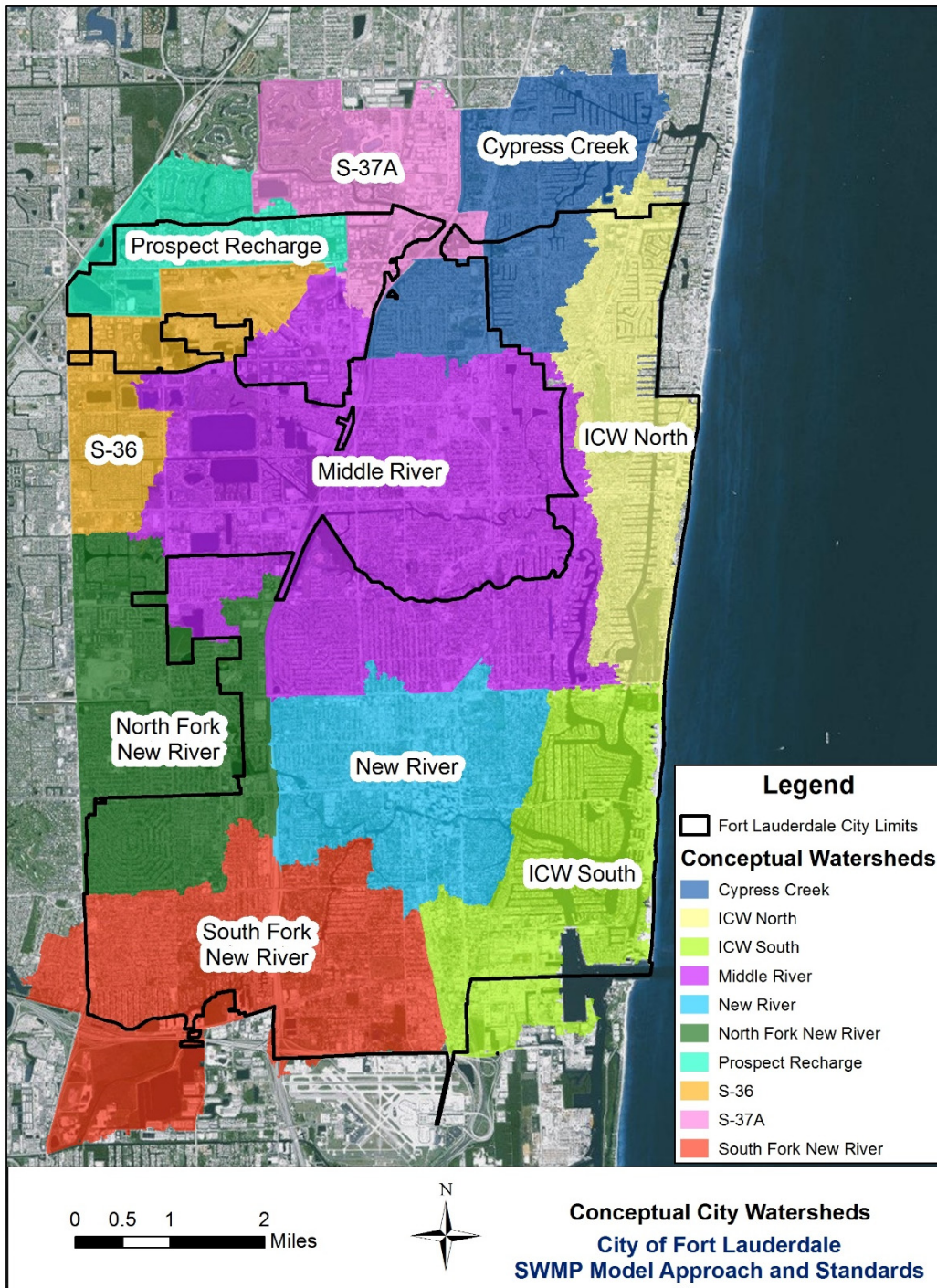
Watershed	Designation	Watershed	Designation
Cypress Creek	A	North Fork New River	F
ICW North	B	Prospect Recharge	G
ICW South	C	S-36	H
Middle River	D	S-37A	J
New River	E	South Fork New River	K

The third character will designate the associated sub-watershed/tributary that will be established and documented by each modeling team. The final four characters are for the unique number within the sub-watershed/tributary.

A unique name will first be assigned to each node in a watershed’s subwatershed/tributary, such as NAA0010 for node 0010 within subwatershed “A” of the Cypress Creek watershed. Basins will be named after the node that it is hydrologically assigned to, such as BAA0010 is the basin contributing runoff to node NAA0010. Links will also be named based on the node they are leaving. Additionally, to account for multiple links from a node an eighth character will be used starting with “A” and ordered from primary conveyance features to secondary/overland features. For instance, if there are three links leaving node NAA0010 – a culvert and two overland weirs – the links would be named LAA0010A for the culvert since it is the primary conveyance way and LAA0010B and LAA0010C for the two overland weirs.



Figure 8. Conceptual City Watersheds based on 2007 DEM



For two-dimensional modeling elements, such as overland flow and groundwater regions, similar naming conventions will be employed. The following convention will be applied:

- The first two characters are the type of region (“VR” for overland and “GR” for groundwater),
- Third character represents the watershed (same as Table 9 above),



- The last three characters are numerical to represent a unique number to be assigned to each region.

For instance, a groundwater region developed for the Cypress Creek watershed representing current and future conditions may be named GRA001 and GRA002, respectively.

Fillable Porosity and Conductivity Zones as well as the input surface to define the bottom of the surficial aquifer will be equivalent to the 500-foot by 500-foot model cells from the USGS SEAWAT model with six-digit cell names generated from the associated cell row and column values. For instance, the cell located in row 411, column 1 would have a unique identification name of "411001."

Standard file and folder naming conventions will be defined for input and output files to maintain consistency amongst the watershed models as well as for delivery to the City. Correct file formats, as recommended in the ICPR User's Manual, for importing and exporting ICPRv4 are critical for developing the city-wide model.

Datums

Horizontal

Data and modeling parameters will be referenced to the North American Datum of 1983 (NAD83) High Accuracy Reference Network (HARN) and utilize the State Plane Coordinate System, Florida East.

Vertical

Elevations will be referenced to the NAVD88. Elevations data referenced to the National Geodetic Vertical Datum of 1929 (NGVD29) will be converted as follows:

- Topographic information, such as from Environmental Resource Permits (ERPs) or cross sections surveys, will be converted using a single factor of -1.58 feet from NGVD29 to NAVD88.
- Stormwater infrastructure inlet, control and invert elevations from sources such as below will utilize a single conversion factor of -1.58 feet from NGVD29 to NAVD88:
 - City's Stormwater Atlas,
 - ERPs,
 - FDOT road plans, and
 - Broward County road plans.



- Hydrologic monitoring station levels will be converted based on a conversion value calculated specific to the monitoring station by entering the station's horizontal coordinates into the current version of CORPSCON, developed and maintained by the National Geodetic Survey (NGS) and U.S. Army Corps of Engineers (USACE).

Hydrologic Parameterization

Rainfall

As previously discussed, five design storms will be simulated based on the SFWMD rainfall frequency distributions provided in Appendix C of the SFWMD's Environmental Resource Permit Applicant's Handbook Volume II (2016). As illustrated by the isohyetal maps contained within Appendix B of this report, rainfall varies spatially across the City for the various design storms and ranges as follows:

- 5-year, 24-hour rainfall ranges from approximately 7.5-inches to 7.7-inches;
- 10-year, 24-hour rainfall ranges from approximately 8.6-inches to 8.8-inches;
- 25-year, 24-hour rainfall ranges from approximately 10.5-inches to 11.3-inches;
- 25-year, 72-hour rainfall ranges from approximately 14.0-inches to 15.8-inches; and
- 100-year, 72-hour rainfall ranges from approximately 17-inches to 20-inches.

The isohyetal maps illustrating the areal rainfall depths for the aforementioned events, will be georeferenced within ArcGIS, the isohyets within and around the City's watersheds will be digitized, and a rainfall depth "surface" raster will be generated to interpolate the rainfall depth between isohyets. The five design storm surfaces will be used to establish rainfall zones for each of the City's ten watersheds.

Infiltration and Runoff

ICPRv4 is capable of computing runoff as a one-dimensional (1D) representation utilizing basins and nodes as well as two-dimensional (2D) overland flow. Additionally, ICPRv4 simulates the interaction between surface runoff and the groundwater. Given the extensive amount of coastline, numerous canals, relatively flat ground surface, and hydrogeology of Fort Lauderdale the interaction between surface runoff and groundwater is critical for evaluating flood protection level of service. Much of the City's watersheds will be simulated as two-dimensional overland flow and groundwater regions, particularly along the primary and secondary canals and coastline. One-dimensional modeling of stormwater systems will be employed at the discretion of the engineer; therefore, recommendations are included herein for both.

Impervious Area and Directly Connected Impervious Area

Runoff generation is dependent upon the amount of impervious area. Land use classification will be used as proxy for establishing impervious look-up tables to define the total impervious area and directly connected impervious area (DCIA). DCIA is the impervious area that flows to a stormwater conveyance system (e.g., catch basins or curb inlet) or stormwater outfall (e.g., natural water body or detention basin) without flowing over a pervious area. It is expressed as a percent of the total land use area. Impervious area and DCIA were assessed for numerous land use types within the City. The land use areas, from SFWMD LULC data, were grouped into categories with similar land cover characteristics and then



representative samples were chosen by Collective Water from each category. Within each representative land use sample, Collective Water assessed 2015 FDOT aerial imagery to determine a percent impervious area and DCIA. Land use groups and their initial estimates of impervious area and DCIA percentages are listed in Table 10 below. **These values will be used as defaults, but will be reviewed at the basin scale and refined where necessary.**

Table 10: Initial Estimates of Percent Impervious Area and Percent DCIA for Representative Land Uses

Land Use Group	% Impervious Area	% DCIA
Residential - Low to Medium Density	48%	19%
Residential - High Density	57%	52%
Transportation and Utilities	71%	60%
Open Land, Golf Course, Parks and Zoos, Cemetery	19%	12%
Institutional, Educational, Stadium	51%	43%
Industrial	81%	75%
Commercial, Shopping Centers, Wholesale	81%	74%
Wetlands and Upland Forests	100%	100%
Water	100%	100%

Overland Roughness

Land Use will be used as a surrogate for overland roughness factors for both shallow and deep flow conditions as shown in Table 11. Dampening coefficients will initially be set at zero and will be adjusted if instabilities in the model simulations warrant. Area reduction factor, which accounts for lost storage due to obstructions in the overland flow area, will be set to 1.0 initially, which is the suggested value if no reduction is desired.

Table 11: Overland Roughness Coefficients by FLUCC Code

FLUCC CODE	Category	Shallow Manning's n	Deep Manning's n
1110	Residential, Low Density	0.150	0.13
1180	Residential, Low Density, Rural	0.150	0.13
1210	Residential, Medium Density	0.130	0.10
1290	Residential, Medium Density, Under Construction	0.130	0.10
1310	Residential, High Density	0.080	0.06
1320	Residential, High Density, Mobile Home Units	0.080	0.06
1330	Residential, High Density, Multiple Dwelling Units, Low Rise	0.080	0.06
1340	Residential, High Density, Multiple Dwelling Units, High Rise	0.080	0.06
1390	Residential, High Density High Density Under Construction	0.080	0.06
1400	Commercial and Services	0.014	0.01
1411	Shopping Centers	0.014	0.01
1423	Junk Yards	0.050	0.04
1460	Oil and Gas Storage	0.050	0.04
1480	Cemeteries	0.300	0.10
1490	Commercial and Services Under Construction	0.014	0.01
1550	Other Light Industrial	0.050	0.04
1700	Institutional	0.130	0.10
1710	Educational Facilities	0.130	0.10
1730	Military	0.130	0.10
1810	Swimming Beach	0.010	0.05
1820	Golf Course	0.300	0.10

**Table 11: Overland Roughness Coefficients by FLUCC Code**

FLUCC CODE	Category	Shallow Manning's n	Deep Manning's n
1830	Race Tracks	0.300	0.10
1840	Marinas and Fish Camps	0.130	0.10
1850	Parks and Zoos	0.150	0.10
1870	Stadiums - Not Academic	0.300	0.10
1900	Open Land	0.300	0.24
1920	Inactive Lands with Street Pattern	0.130	0.10
2210	Citrus Groves	0.300	0.24
2410	Tree Nurseries	0.300	0.24
2430	Ornamentals	0.200	0.16
3100	Herbaceous (Dry Prairie)	0.400	0.24
3200	Upland Shrub and Brushland	0.300	0.24
3220	Coastal Shrub	0.300	0.24
3300	Mixed Upland Non-Forested	0.300	0.24
4130	Sand Pine	0.400	0.30
4200	Upland Hardwood Forests	0.400	0.30
4220	Brazilian Pepper	0.400	0.30
4240	Melaleuca	0.450	0.36
5120	Channelized River, Stream, Waterway	0.070	0.05
4340	Upland Mixed Coniferous / Hardwood	0.450	0.36
4370	Australian Pine	0.450	0.36
5110	Natural River, Stream, Waterway	0.070	0.05
5200	Lakes	0.070	0.05
5300	Reservoirs	n/a	n/a
5710	Atlantic Ocean	n/a	n/a
6120	Mangrove Swamps	0.500	0.40
6170	Mixed Wetland Hardwoods	0.500	0.24
6172	Mixed Shrubs	0.500	0.24
6180	Cabbage Palm Wetland	0.500	0.24
6191	Wet Melaleuca	0.500	0.24
6210	Cypress	0.400	0.30
6410	Freshwater Marshes/Graminoid Prairie-Marsh	0.500	0.05
6440	Emergent Aquatic Vegetation	0.240	0.05
7400	Disturbed Land	0.300	0.24
7430	Spoil Areas	0.300	0.24
7470	Dikes and Levees	0.300	0.10
8100	Transportation	0.011	0.05
8110	Airports	0.011	0.05
8120	Railroads and Railyards	0.011	0.05
8140	Roads and Highways	0.011	0.05
8150	Port Facilities	0.011	0.05
8200	Communications	0.150	0.12
8310	Electrical Power Facilities	0.150	0.12
8320	Electrical Power Transmission Lines	0.150	0.12
8330	Water Supply Plants	0.150	0.12
8340	Sewage Treatment	0.150	0.12
8350	Solid Waste Disposal	0.300	0.10



Green-Ampt

The Green-Ampt method will be used to account for the movement of runoff through the unsaturated soil to the 2D groundwater zones. Green-Ampt parameters were established for the numerous soil mapping units defined from the SSURGO data, previously discussed in the Data section of this memorandum. Parameters were derived based on weighted averages for the full sample depth. Parameters for “Water” (MUKEY 1389906) were made to match Arents-Urban land complex (MUKEY 1389867), since the majority of the mapping unit areas defined as “Water” within the City-limits are adjacent to the Arent-Urban land complex. Additionally, the parameters for “Waters of the Atlantic Ocean” (MUKEY 1389907) were made to match Beaches (MUKEY 1389871). Table 12 summarizes the water content values by soil type including saturated moisture content, moisture content at field capacity, wilting point moisture content, and residual moisture content. Initial moisture content is equivalent to the field capacity moisture content. Table 13 summarizes the remaining Green-Ampt parameters by soil type including saturated hydraulic conductivity, pore size index, bubble pressure, and depth to water table. Depth to water table is based on the weighted average of all component soils for the June through October time frame. Water table depths for four soil types (Sanibel muck, Lauderhill muck, Dania muck, and Okeelanta muck) were adjusted from zero to 0.001 foot as recommended by the ICPRv4 User Manual.

Table 12. Green-Ampt Moisture Content Values by Soil Mapping Units

Mapping Unit Name	MUKey	MC Sat (dec)	MC Field (dec)	MC Initial (dec)	MC Wilting (dec)	MC Residual (dec)
Arents-Urban land complex	1389867	0.4423	0.0590	0.0590	0.0230	0.0115
Arents, organic substratum-Urban land complex	1389868	0.4653	0.1330	0.1330	0.0620	0.0310
Basinger fine sand, 0 to 2 % slopes	1389869	0.4110	0.0830	0.0830	0.0240	0.0120
Boca fine sand, 0 to 2 % slopes	1389870	0.4181	0.0960	0.0960	0.0340	0.0170
Beaches	1389871	0.4469	0.0090	0.0090	0.0030	0.0015
Canaveral-Urban land complex	1389872	0.4607	0.0480	0.0480	0.0180	0.0090
Dania muck	1389873	0.5737	0.5163	0.5163	0.3530	0.0513
Dade fine sand	1389874	0.4109	0.0600	0.0600	0.0180	0.0090
Duette-Urban land complex	1389875	0.4001	0.0370	0.0370	0.0110	0.0055
Dade-Urban land complex	1389876	0.4025	0.0370	0.0370	0.0110	0.0055
Hallandale fine sand	1389877	0.4558	0.0980	0.0980	0.0360	0.0180
Hallandale-Urban land complex	1389878	0.4325	0.0380	0.0380	0.0120	0.0060
Matlacha gravelly fine sand, limestone substratum	1389879	0.3767	0.0580	0.0580	0.0200	0.0100
Immokalee fine sand, 0 to 2 % slopes	1389880	0.4073	0.1160	0.1160	0.0460	0.0230
Immokalee, limestone substratum-Urban land complex	1389881	0.4031	0.0410	0.0410	0.0110	0.0055
Immokalee-Urban land complex	1389882	0.3984	0.0430	0.0430	0.0140	0.0070
Lauderhill muck	1389883	0.7229	0.6506	0.6506	0.4390	0.0355
Margate fine sand	1389884	0.4144	0.0870	0.0870	0.0310	0.0155
Matlacha, limestone substratum-Urban land complex	1389885	0.3639	0.0320	0.0320	0.0110	0.0055

**Table 12. Green-Ampt Moisture Content Values by Soil Mapping Units**

Mapping Unit Name	MUKey	MC Sat (dec)	MC Field (dec)	MC Initial (dec)	MC Wilting (dec)	MC Residual (dec)
Okeelanta muck, drained, 0 to 1 % slopes	1389886	0.5725	0.3030	0.3030	0.0740	0.0370
Paola fine sand, 0 to 8 % slopes	1389887	0.3901	0.0550	0.0550	0.0100	0.0050
Paola-Urban land complex	1389888	0.4023	0.0220	0.0220	0.0070	0.0035
Palm Beach sand	1389889	0.4706	0.0350	0.0350	0.0120	0.0060
Pennsuco silty clay loam	1389890	0.5876	0.1810	0.1810	0.0860	0.0430
Pennsuco silty clay loam, tidal	1389891	0.5876	0.1810	0.1810	0.0860	0.0430
Plantation muck	1389892	0.5479	0.3240	0.3240	0.1450	0.0541
Pomello fine sand, 0 to 2 % slopes	1389893	0.4177	0.0870	0.0870	0.0310	0.0155
Pompano fine sand, 0 to 2 % slopes	1389894	0.4028	0.0660	0.0660	0.0160	0.0080
Perrine silty clay loam	1389895	0.7404	0.5100	0.5100	0.0690	0.0345
Palm Beach-Urban land complex	1389896	0.4660	0.0220	0.0220	0.0070	0.0035
Perrine variant silt loam, frequently flooded	1389897	0.6050	0.5445	0.5445	0.3070	0.0453
Sanibel muck	1389898	0.4728	0.2450	0.2450	0.1140	0.0528
St. Lucie fine sand, 0 to 2 % slopes	1389899	0.3937	0.0490	0.0490	0.0070	0.0035
Terra Ceia muck, tidal	1389900	0.5928	0.5335	0.5335	0.3670	0.0442
Udorthents	1389901	0.4520	0.0400	0.0400	0.0110	0.0055
Udorthents, marly substratum-Urban land complex	1389902	0.5085	0.0650	0.0650	0.0310	0.0155
Udorthents, shaped	1389903	0.4573	0.0860	0.0860	0.0330	0.0165
Udorthents-Urban land complex	1389904	0.4462	0.0550	0.0550	0.0210	0.0105
Urban land	1389905	0.3502	0.0030	0.0030	0.0010	0.0005
Water	1389906	0.4423	0.0590	0.0590	0.0230	0.0115
Waters of the Atlantic Ocean	1389907	0.4469	0.0090	0.0090	0.0030	0.0015

Table 13. Remaining Green-Ampt Parameters by Soil Mapping Units

Mapping Unit Name	MUKey	Kv-sat (ft/day)	Pore Size Index (dec)	Bubble Pressure (in)	Depth to Water Table (ft)
Arents-Urban land complex	1389867	25.774	0.5028	1.1234	2.297
Arents, organic substratum-Urban land complex	1389868	26.079	0.5125	0.9847	2.493
Basinger fine sand, 0 to 2 % slopes	1389869	25.753	0.5769	1.4358	0.919
Boca fine sand, 0 to 2 % slopes	1389870	22.509	0.5458	1.3414	0.525
Beaches	1389871	59.528	0.5733	1.2193	2.854
Canaveral-Urban land complex	1389872	57.703	0.5663	1.1286	1.542
Dania muck	1389873	25.399	0.4846	0.6292	0.001
Dade fine sand	1389874	55.090	0.5796	1.4592	5.315
Duette-Urban land complex	1389875	50.618	0.5867	1.5628	4.823
Dade-Urban land complex	1389876	54.271	0.5822	1.5295	5.118



Table 13. Remaining Green-Ampt Parameters by Soil Mapping Units

Mapping Unit Name	MUKey	Kv-sat (ft/day)	Pore Size Index (dec)	Bubble Pressure (in)	Depth to Water Table (ft)
Hallandale fine sand	1389877	21.366	0.5513	1.1215	0.919
Hallandale-Urban land complex	1389878	24.249	0.5622	1.2730	0.886
Matlacha gravelly fine sand, limestone substratum	1389879	18.353	0.5843	1.7774	2.297
Immokalee fine sand, 0 to 2 % slopes	1389880	20.808	0.5409	1.4889	0.951
Immokalee, limestone substratum-Urban land complex	1389881	24.526	0.5564	1.4665	0.951
Immokalee-Urban land complex	1389882	22.556	0.5593	1.4972	0.919
Lauderhill muck	1389883	25.642	0.5756	0.5467	0.001
Margate fine sand	1389884	27.339	0.5532	1.3993	0.033
Matlacha, limestone substratum-Urban land complex	1389885	18.519	0.5915	1.9293	2.264
Okeelanta muck, drained, 0 to 1 % slopes	1389886	26.610	0.5372	0.7587	0.001
Paola fine sand, 0 to 8 % slopes	1389887	65.400	0.5973	1.6709	2.264
Paola-Urban land complex	1389888	58.672	0.5862	1.5669	2.756
Palm Beach sand	1389889	59.528	0.5673	1.0866	1.509
Pennsuco silty clay loam	1389890	15.018	0.3461	6.3386	0.492
Pennsuco silty clay loam, tidal	1389891	15.018	0.3461	6.3386	0.033
Plantation muck	1389892	25.524	0.4783	0.6765	0.033
Pomello fine sand, 0 to 2 % slopes	1389893	42.137	0.5701	1.3837	2.854
Pompano fine sand, 0 to 2 % slopes	1389894	25.339	0.5825	1.5588	0.361
Perrine silty clay loam	1389895	7.849	0.3037	7.9553	0.492
Palm Beach-Urban land complex	1389896	57.703	0.5651	1.1004	1.969
Perrine variant silt loam, frequently flooded	1389897	18.496	0.3239	11.5631	0.033
Sanibel muck	1389898	26.039	0.5199	0.9638	0.001
St. Lucie fine sand, 0 to 2 % slopes	1389899	57.127	0.6069	1.6585	2.100
Terra Ceia muck, tidal	1389900	25.792	0.5126	0.6615	0.066
Udorthents	1389901	26.079	0.5497	1.0955	6.594
Udorthents, marly substratum-Urban land complex	1389902	16.943	0.3974	3.5465	3.018
Udorthents, shaped	1389903	25.818	0.5331	1.0872	3.018
Udorthents-Urban land complex	1389904	25.813	0.5318	1.1442	2.953
Urban land	1389905	17.807	0.6035	2.1343	2.493
Water	1389906	25.774	0.5028	1.1234	2.297
Waters of the Atlantic Ocean	1389907	59.528	0.5733	1.2193	2.854



Evapotranspiration

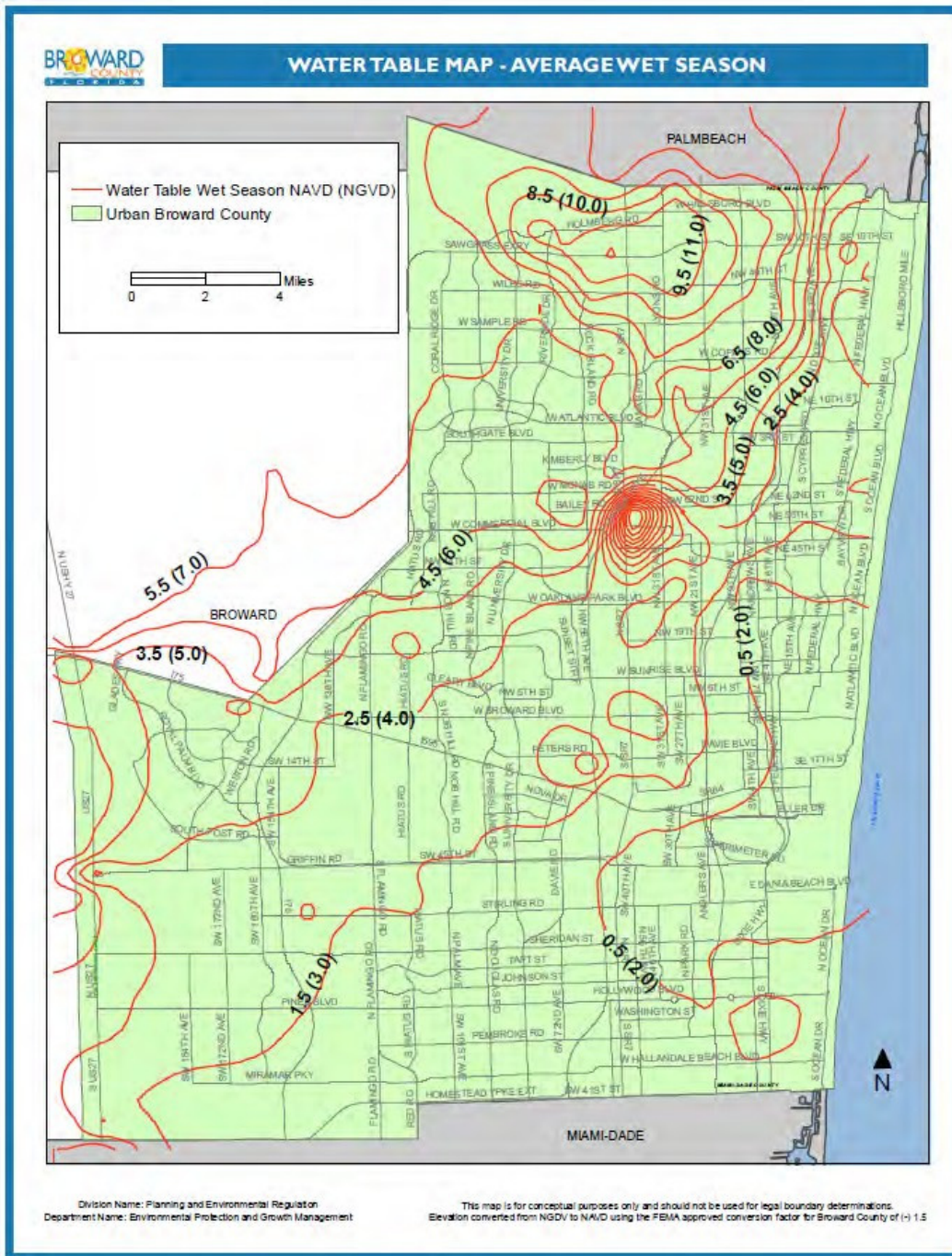
The City's model will be utilized for single storm events simulations with durations of three days or less. Evaporation from water bodies and evapotranspiration is negligible for these durations. These elements of the hydrologic cycle will not be modeled within ICPRv4.

Groundwater Flow System

ICPRv4 requires three surfaces to define the groundwater flow system: the ground surface, base of the surficial aquifer, and the initial water table. Given the short duration of the design storm events (e.g. up to 72-hours), leakage through the confining layer will not be modeled. Ground surface will be based on the DEM developed from current topographic information. Depth of the surficial aquifer will be based on USGS SEAWAT model inputs for each of the 500-foot by 500-foot cells overlapping the project area, as discussed previously in this memorandum. Initial water table elevations will be based on Broward County's most recent wet season water table map, available from the Planning and Environmental Division, Environmental Protection and Growth Management Department. A 2015 example taken from Broward County's Water Resources Fact Book is shown in Figure 9.



Figure 9. Average Wet Season Water Table Elevation, feet NAVD88 (Broward County, 2015)



Additionally, ICPRv4 requires spatial data defining fillable porosity zones and horizontal saturated conductivity zones and associated lookup tables of values. Vertical leakage zones will not be included at this time. Porosity and horizontal saturated, hydraulic conductivity will be based on coarse and fine input parameters from the USGS SEAWAT model. Fillable porosity zones and conductivity zones will be equivalent to SEAWAT’s 500-feet by 500-feet model cells.

For future condition simulations, the initial water table elevations will be modified to reflect the response of the water table to sea level rise. As sea level rises the groundwater table will also rise in response as



simulated in investigations by Bjerklie et al (2012), and Materson and Garabedian (2007). As the groundwater table rises closer to the surface, the capacity of the soil to store stormwater via infiltration reduces thereby generating more surface water runoff as well as reducing the effectiveness of stormwater facilities such as exfiltration trenches. As part of an analysis of the effects of sea level rise on canal leakage and regional groundwater flow for Miami-Dade County, the USGS found water table elevation changes in response to this simulated sea level rise ranged from 0.5 feet along the coast to 0.1 feet in western portions of the Miami-Dade County (Huges and White, 2014). In 2016 USGS, in cooperation with Broward County, completed an analysis of effects to the salinity distribution within the Biscayne aquifer due to hydrologic system alterations. Included in the analyses were the effects due to three sea level rise scenarios: National Research Council's (NRC's) I, II, and III reflecting a rise of 0.5 meter, one meter, and 1.5 meter by 2100, respectively. Monthly water table elevations are simulated by the SEAWAT model used in the USGS analysis. It is anticipated that the model results can be used to estimate the change in elevation of the wet season water table throughout the City from alternate sea level conditions. The water table elevations for these three scenarios are not immediately available (e.g. through maps, time series data, etc.); therefore, the Hazen Team will need to export results and determine an approach for representing the water table under future sea level scenarios.

Seepage

The interaction of surface waterbodies and the water table is generally referred to as seepage. Water may enter or leave a canal depending on the stages of the local water table and the canal. When the two-dimensional overland flow region is defined within ICPRv4 and is used in conjunction with the two-dimensional groundwater region, seepage exchanges with lakes and canals can be quantified and transferred between the regions accordingly. Within the City, seepage occurs primarily along canals. As previously mentioned, the ground surface elevation model must appropriately represent the bottom, bathymetric surface of these elements so seepage rates can be determined based on the correct head conditions. Overland flow regions will be developed to include primary and secondary canal systems at a minimum; tertiary canals may be added at the discretion of the engineer.

Hydraulic Parameterization

Hydraulics within the City's watersheds will include a combination of one dimensional and two-dimensional model elements. The one dimensional components consist of nodes and links.

Channels

In-bank portions of channels will be modeled as one-dimensional elements with overbank portions modeled as two-dimensional overland flow regions. Nodes will be placed along the channel at significant transitions in channel geometry and/or slope, at inflow junctions, and to ensure that projected water surface elevations from adjacent junctions along open channels do not differ more than one foot relative to each other. Nodes must also be placed on either side of bridges and major structures. Channel control volumes will not encompass more than a single node.



Cross Sections

Cross sections from the FEMA MIKE SHE/11 model will be utilized for the submerged portions, where available. Cross section data will be supplemented using the channel survey data provided by the City. Overbank portions of the cross sections will utilize the City's most recent topographic information, whether the 2016 LiDAR (within the City limits) or 2007 FDEM LiDAR (outside the City limits).

Roughness

Channel roughness will be assigned based on field observations, photographs, and the roughness table provided in the ICPRv4 User's Manual and Chow (1959). Channels that are regularly maintained will have roughness values based on maintained conditions. All other channels will be parameterized based on the conditions at the time of field observations.

Loss Coefficients

Default values for expansion and contraction loss coefficients, as documented in the ICPRv4 User Manual will be used as the default values. Entrance and exit loss coefficients will typically be set to zero unless site conditions warrant additional minor losses be accounted. Bend loss coefficients will utilize the default values presented in the ICPRv4 User Manual.

Pipes

ICPRv4 utilizes standard Federal Highway Administration (FHWA) Culvert Codes to classify pipe reaches. Pipe entrance loss coefficients, Manning's roughness coefficients, bend loss coefficients will be based on values presented in the ICPRv4 User Manual. Default values within the ICPRv4 User Manual will be used for expansion and contraction loss coefficients. The following exit loss coefficients will be used unless review of the velocity head within the system warrants an alternate value:

- General default = 0.5
- Discharge to lakes, ponds, and wetlands = 1.0
- Minimum value for discharge to pipe with a similar velocity head = 0.1

Weirs and Overflow Interconnections

The following weir coefficients will be applied, unless special site conditions warrant different values:

- Sharp-crested weir = 3.1
- Broad, open land saddles = 2.5
- Broad saddles with brush and no trees = 2.3
- Broad saddles with heavy tree cover = 2.4
- Road overflows = 2.8



Bridges

Bridges will be represented as a family of rating curves within the ICPRv4 model. These rating curves will be based on results from modeling the bridges in Hydrologic Engineering Center's River Analysis System (HEC-RAS) version 4.1. Recommended parameters included in the HEC-RAS 5.0 Reference Manual will be used.

For bridges where no construction or as-built plans are available and no field surveys were performed, bridges will be represented as equivalent pipes within ICPRv4 based on the bridge's opening dimensions.

Stage-Area Relationships

For mapped basins, stage-area relationships will be generated through automated processes within GIS or ICPRv4. A minimum and maximum stage interval of 0.1 foot and 1.0 foot, respectively, will be used. Channel-storage exclusion areas will be defined along with associated storage to exclude storage that is accounted for within modeled channels. Channel-exclusion areas will be documented in GIS so that storage can be back-checked and readily adjusted.

Vault and Exfiltration Systems

Vault and exfiltration systems greater than two acre-feet and where the bottom of the system is more than one foot above the seasonal high water table will be modeled. For use within ICPRv4, the DEM representing the ground surface will need to be edited to represent the bottom of these modeled systems.

Starting Water Levels

Best available information will be used to establish initial starting water levels for stormwater management systems, ponds, and lakes. Source of best available information may include Environmental Resource Permits, current and historic aerial imagery, seasonal high groundwater table levels, or control-feature data. Initial water surface elevations for wetlands, ponds, and lakes will be based on seasonal high groundwater elevations and normal pool elevations. For primary and secondary canal systems, operation rules established by the local entity operating the system(s) will be consulted to establish initial water surface elevations typical of wet season conditions. For overland flow one-dimensional node interfaces, initial stages will represent the stormwater management system's conditions, not the DEM.

Boundary Nodes

Constant time-stage nodes will be developed for the following boundary conditions and referenced to NAVD88:

- Intracoastal Waterway = NOAA MHHW tidal datum for closest station (see Tables 7 and 8)
- Atlantic Ocean = NOAA tidal datum MHHW for Station 8722899, Lauderdale-By-The-Sea
- Salinity Control Structure S37B = SFWMD (see Table 6)
- Salinity Control Structure G57 = SFWMD (see Table 6)
- Salinity Control Structure S36 = SFWMD (see Table 6)
- Salinity Control Structure S33 = SFWMD (see Table 6)



- Salinity Control Structure G54 = SFWMD (see Table 6)

For tidal time-stage nodes, sea level rise that has occurred since the end of the epoch (i.e. 2001) will be accounted for. For current conditions (i.e. 2016), 15 years of sea level rise will be added to the MHHW tidal datums. NOAA's published historic, regional sea level rise rate of 0.00784 feet per year, based on the Miami Beach NOAA gauge 8723170, will be used. A total of 0.274 feet will be added to the MHHW based on the following:

$$\text{MHHW}_{\text{with SLR to 2016}} = \text{MHHW} + [(2016-2001) * 0.00784] + (20 * 0.00784)$$

$$\text{MHHW}_{\text{with SLR to 2016}} = \text{MHHW} + 0.274$$

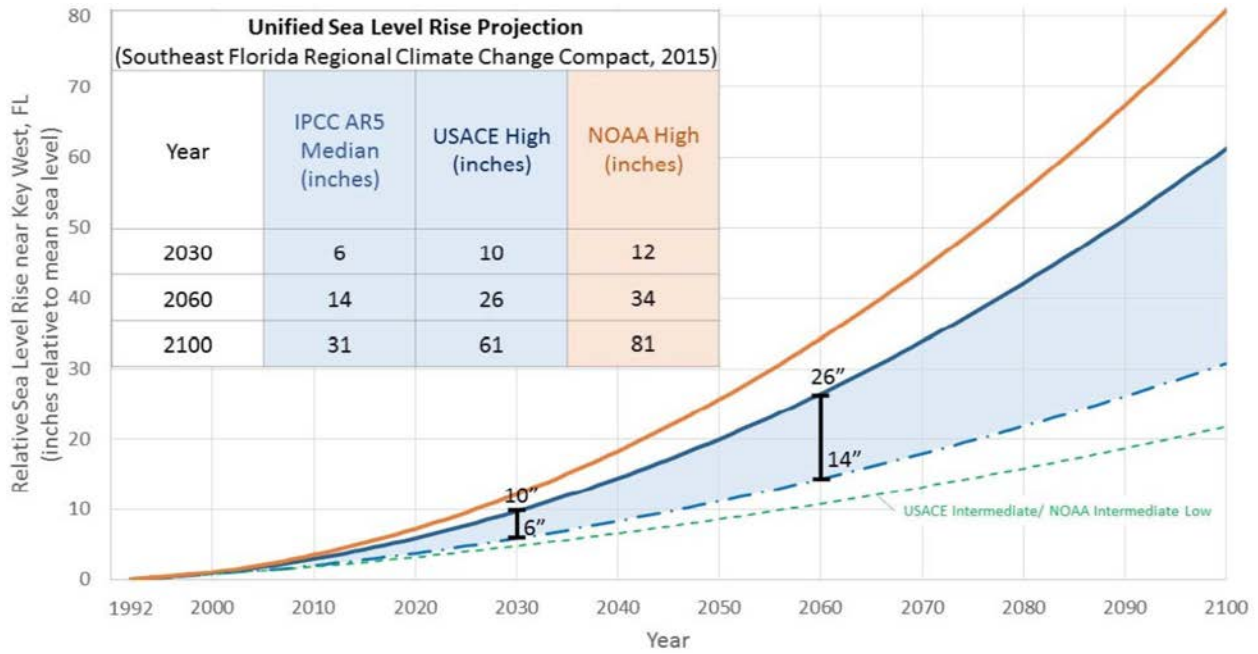
Time-discharge relationships will be established for boundary inflows representing upstream contributing areas. Time-flow conditions, for instance may reflect structural operation of SFWMD structures or contributing flow from an adjacent watershed. For interactions between City watersheds, these time-flow nodes will be removed upon merging the watershed into a city-wide model.

Future conditions simulations will reflect the unified sea level rise projections published by the Southeast Regional Climate Change Compact in October 2015. Future conditions simulations for the years 2035 and 2060 will reflect sea level rise for the following projections shown in Figure 10:

- Median of the Intergovernmental Panel on Climate Change (IPCC) Working Group I contribution to the Fifth Assessment Report (AR5) Representative Concentration Pathway (RCP) 8.5 scenario, representing the most extreme of four anthropogenic-based greenhouse gas emission scenarios;
- USACE High (same as the NOAA Intermediate-High), and
- NOAA High.



**Figure 10. Unified Sea Level Rise Projections
(Southeast Florida Regional Climate Change Compact, 2015)**



The following amounts in Table 14 will be applied to the published MHHWs selected for tidal time-stage nodes:

Table 14. Unified Sea Level Rise Projections for Future Scenarios

Year	IPCC AR5 (feet)	USACE High (feet)	NOAA High (feet)
2035	0.52	0.93	1.19
2060	1.09	2.09	2.75



Quality Assurance

For areas that are modeled as one-dimensional runoff the following will be adhered to:

Basins

Mapped basin delineations will be provided in a GIS format and will adhere to the following:

- No overlapping basin polygons or slivers,
- The number of basins in the GIS file will be an exact match to number within the associated model,
- Basin areas within the GIS file will be an exact match to the modeled areas.

Nodes

Nodes will be provided in a GIS format and will adhere to the following:

- Generally one node per basin,
- Nodes will be located at link ends and in the center or low point of storage areas,
- The maximum area in each stage-area relationship will not exceed the area within the respective basin,
- Stage-area relationships will extend beyond the 100-year peak stage,
- Stage-area relationships will exclude link storage.

Links

Links will be provided in a GIS format and will adhere to the following:

- Links will reflect the flow direction from upstream to downstream nodes,
- Links will be snapped to associated nodes,
- Links will follow drainage features and be straight lines only where applicable,
- Overflow weirs and/or channels will be included to allow runoff interconnections between adjacent basins, and
- Channel links will not have a relative difference in water surface elevations greater than one-foot.

Overland Flow Regions

Meshes developed for overland flow will be provided in a DXF format so the spatial relationship of the mesh(es) may be reviewed in GIS to ensure no gaps or overlaps with adjacent regions or mapped basins. The overland flow regions will define the extent of the region as well as exclusion areas. In addition, the following feature dataset will be delivered:

- VRPoints - all the point features necessary to generate the interior of the two-dimensional mesh along with the one-dimensional interface nodes (e.g. channel and ponds);
- VRLine – linear features within the mesh; and
- VRPolygon – polygon features used in mesh generation.



The VRPoints feature class will include a “Type” field indicating if the point is a breakpoint, overland flow node, or one-dimensional interface node. The VRLine feature class will include a “Type” field indicating whether the feature is a breakline, channel centerline, pipe, or weir. Additionally, the polygon features will include a “Type” field specifying whether the feature defines the extents of a channel or a pond/level pool element within the mesh.

Simulation Results

All runtime errors will be resolved.

Warnings will be reviewed and verified by a senior modeler/qualified professional to determine if revisions are necessary or warnings are deemed acceptable. Any warnings deemed acceptable will require written documentation.

All stage and discharge hydrographs will be reviewed to ensure little or no oscillations. Discharges at the first time step should be eliminated unless verified by a senior modeler/qualified professional and deemed warranted. Written explanation must be provided for these cases.

The mass balance report will reflect little to no percent difference and should be reported at the beginning of the model simulation and the percent error should decrease throughout.

Node and link extrapolations will be eliminated unless verified by a senior modeler/qualified professional and deemed warranted. Written explanation must be provided for these cases.

Peak discharges will be reviewed in comparison to surrounding reaches. Dramatic or unexplained increases or decreases in peak discharges relative to surrounding reaches will be resolved unless verified by a senior modeler/qualified professional and deemed acceptable.

Peak stage will be reviewed in comparison to surrounding reaches to ensure there are no dramatic, unexplained losses across a single reach. In addition, stage will be verified to ensure that they decrease in the downstream direction.

Stage and discharge results will be compared against the City’s 2009 SWMM model at analogous locations. Justification will be provided by a senior modeler/qualified professional for results that do not reasonably compare.



References

AECOM, July 2011. Broward County, Florida MIKE SHE – MIKE 11 Models.

Bjerklie, D.M., Mullaney, J.R., Stone, J.R., Skinner, B.J., and Ramlow, M.A. 2012. *Preliminary investigation of the effects of sea-level rise on groundwater levels in New Haven, Connecticut: U.S. Geological Survey Open-File Report 2012–1025*. Reston, Virginia.

Broward County Environmental Protection & Growth Management Department, Environmental Planning & Community Resilience Division. 2016. *Broward County Water Resources Fact Book*. Fort Lauderdale, Florida.

CDM Smith. 2009. City of Fort Lauderdale Stormwater Master Plan Report.

CDM Smith and DHI. 2002. Broward County Department of Planning and Environmental Protection, Modeling Water Management Practices in Central Broward County, Florida, Phase 2 Numerical Model Building and Model Results.

CDM Smith and DHI. 2005a. Broward County Environmental Protection Department Task 4.2 South Area Drainage Assessment MIKE SHE Model Report Broward County, Florida.

CDM Smith and DHI. 2005b. Broward County Environmental Protection Department Modeling Water Management Practices in North Broward County, Florida

CDM Smith and DHI. 2011. Broward County Integrated Water Resource Management Master Plan Task 16 – Integrated Water Resource Management Master Plan – Final.

Chow, V.T. 1959. Open Channel Hydraulics. McGraw-Hill. New York, New York.

Hughes, J.D., and White, J.T. 2014. *Hydrologic Conditions in Urban Miami-Dade County, Florida, and the Effect of Groundwater Pumpage and Increased Sea Level on Canal Leakage and Regional Groundwater Flow: U.S. Geological Survey Scientific Investigations Report 2014–5162*. Reston, Virginia.

Masterson, J.P. and Garabedian, S.P. 2007. *Effects of Sea-Level Rise on Ground Water Flow in a Coastal Aquifer System*. Ground Water, Volume 45, Number 2. March-April.

National Oceanic and Atmospheric Administration. March 2013. *Precipitation-Frequency Atlas of the United States. Atlas 14, Volume 9, Version 2.0: Southeastern States*. Silver Springs, Maryland.

Soil Survey Staff. 2010. Spatial and Tabular Data of the Soil Survey for Broward County, Florida. US Department of Agriculture, NRCS. Available at URL: <http://Soildatamartnrcs.Usda.Gov/> Fort Worth, Texas.

South Florida Water Management District. 2016. *Environmental Resource Permit Information Applicant's Handbook Volume II*. West Palm Beach, Florida.



Southeast Florida Regional Climate Change Compact Sea Level Rise Work Group. 2015. *Unified Sea Level Rise Projection for Southeast Florida*. Florida.

Streamline Technologies, Inc. 2016. *ICPR4 User's Manual and Technical Reference*. Winter Springs, Florida.

University of Florida, Institute of Food and Agricultural Sciences. 2006. *Characterization of Florida Soils*.

United States Geologic Survey. 2016. *Potential Effects of Alterations to the Hydrologic System on the Distribution of Salinity in the Biscayne Aquifer in Broward County, Florida*. Scientific Investigation Report 2016-5022. Reston, Virginia.



Appendix A

Revision History

Date	Version	Description	Author
August 16, 2016	1.0	Initial Release	SYD, AML



Appendix B

Precipitation-Frequency Estimate



SFWMD ERP Information Applicant's Handbook Volume II (May 2016)

The following presents isohyetal maps published by SFWMD for use in the five design storm model simulations to be performed by the Hazen team for the City of Fort Lauderdale.

Figure B1. Isohyetal map for 5-year return period, 24-hour duration (SFWMD, 2016)

ENVIRONMENTAL RESOURCE PERMIT APPLICANT'S HANDBOOK VOLUME II
Effective: MAY 22, 2016

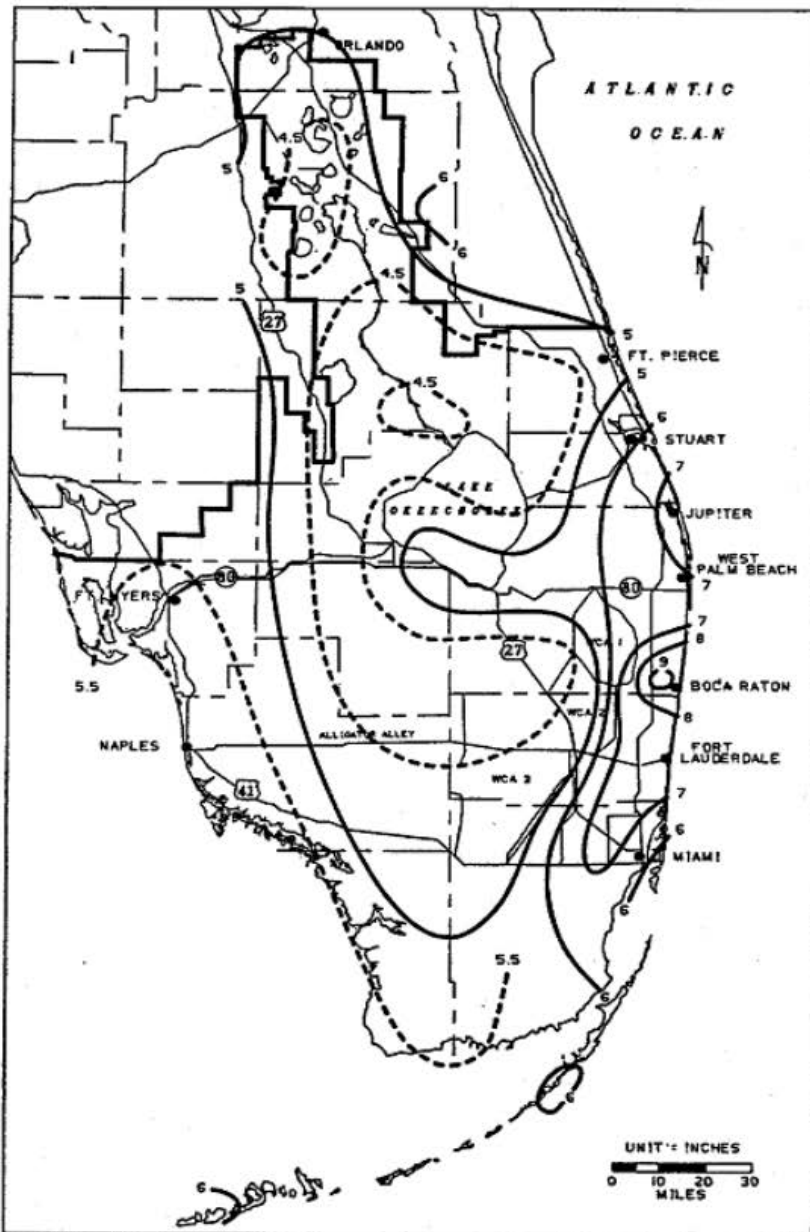


FIGURE C-3. 1-DAY RAINFALL: 5-YEAR RETURN PERIOD



Figure B2. Isohyetal map for 10-year return period, 24-hour duration (SFWMD, 2016)

ENVIRONMENTAL RESOURCE PERMIT APPLICANT'S HANDBOOK VOLUME II
Effective: MAY 22, 2016

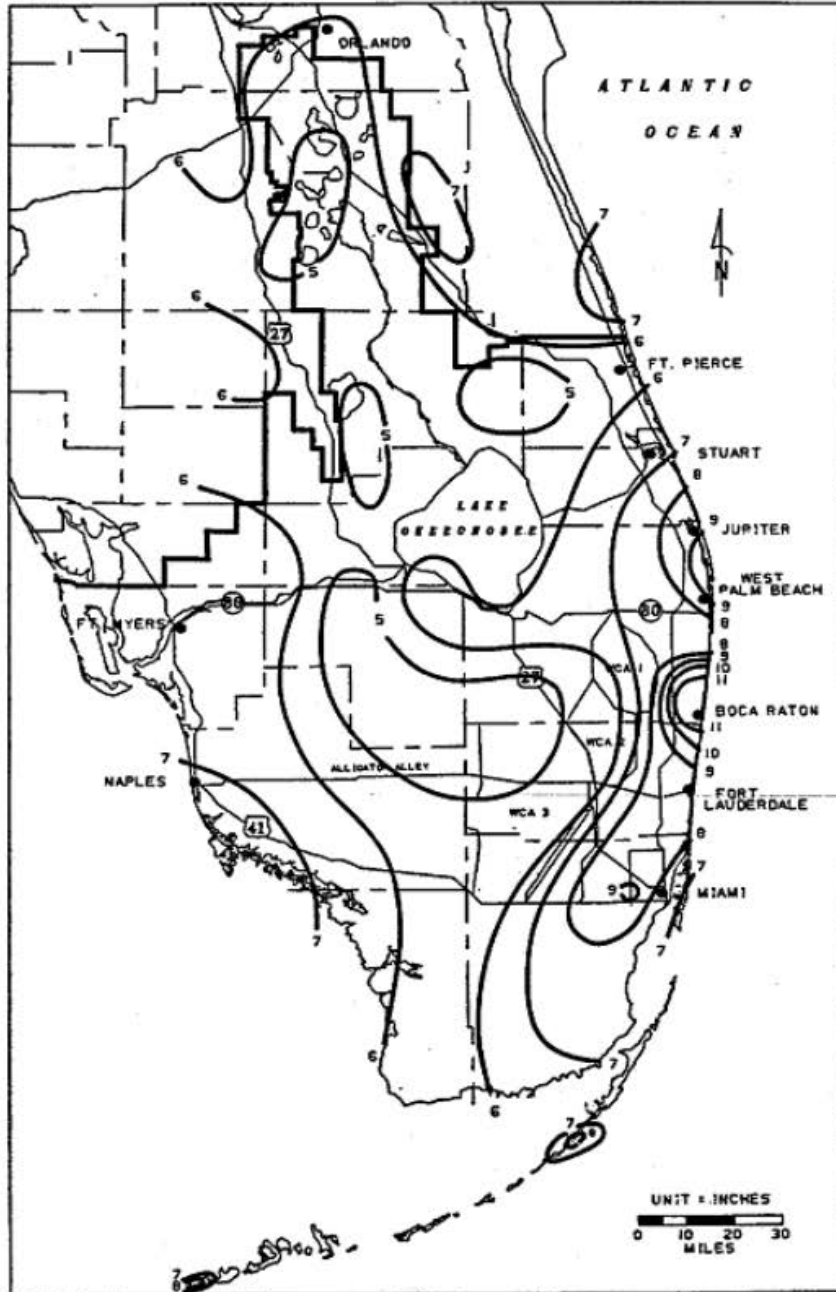


FIGURE C-4. 1-DAY RAINFALL: 10-YEAR RETURN PERIOD

A-14



Figure B3. Isohyetal map for 25-year return period, 24-hour duration (SFWMD, 2016)

ENVIRONMENTAL RESOURCE PERMIT APPLICANT'S HANDBOOK VOLUME II
Effective: MAY 22, 2016

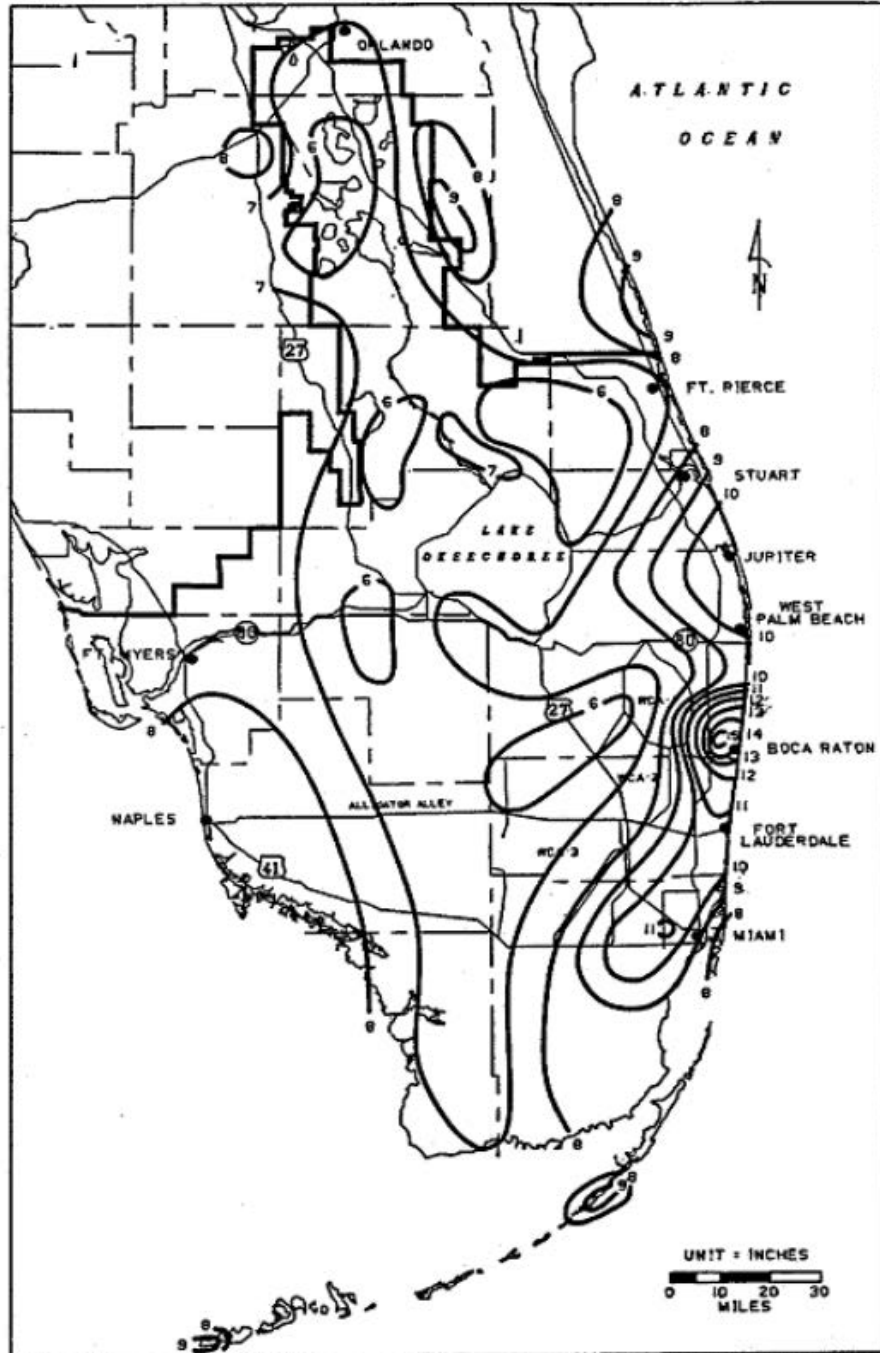


FIGURE C-5. 1-DAY RAINFALL: 25-YEAR RETURN PERIOD



Figure B4. Isohyetal map for 25-year return period, 72-hour duration (SFWMD, 2016)

ENVIRONMENTAL RESOURCE PERMIT APPLICANT'S HANDBOOK VOLUME II
Effective: MAY 22, 2016

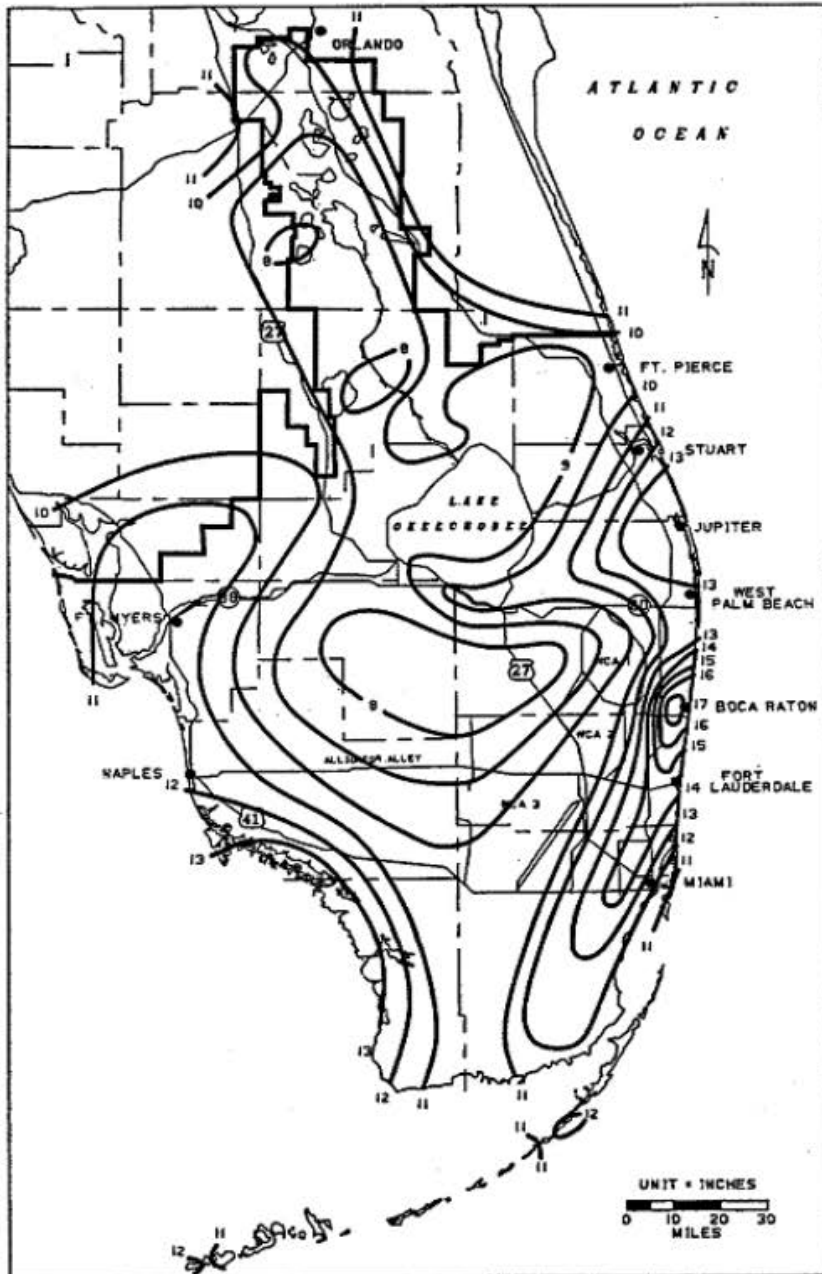


FIGURE C-8. 3-DAY RAINFALL: 25-YEAR RETURN PERIOD



Figure B5. Isohyetal map for 100-year return period, 72-hour duration (SFWMD, 2016)

ENVIRONMENTAL RESOURCE PERMIT APPLICANT'S HANDBOOK VOLUME II
Effective: MAY 22, 2016

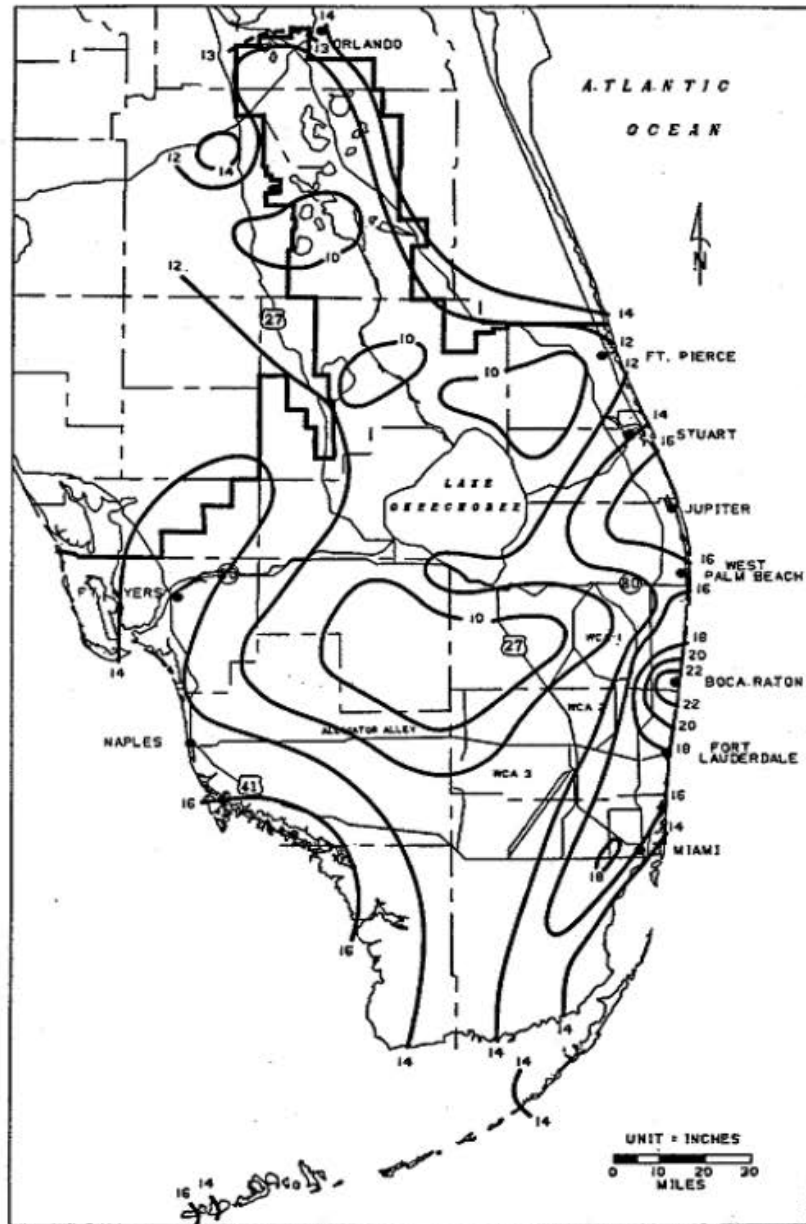


FIGURE C-9. 3-DAY RAINFALL: 100-YEAR RETURN PERIOD



NOAA Atlas 14 Precipitation-Frequency Atlas of the United States Volume 9, Version 2.0 (2013)

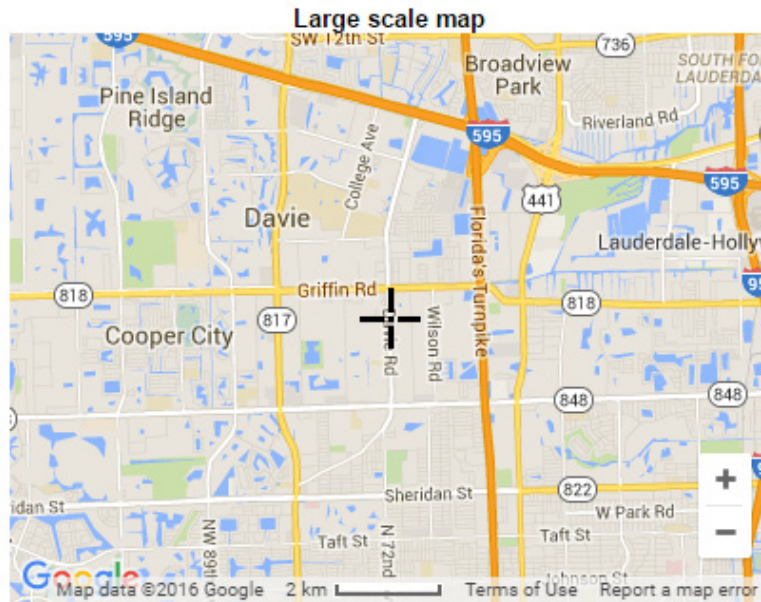
The following presents the location, point precipitation frequency estimates, and depth-duration frequency curves for the four data stations in and around Fort Lauderdale, Florida.

Station ID: 90-0176

Location Name: Fort Lauderdale, Florida

Location Coordinates: Latitude: 26.0603°, Longitude: -80.2317°

Figure B6: Location and Aerial Imagery for Station ID: 90-0176 (NOAA, 2016)



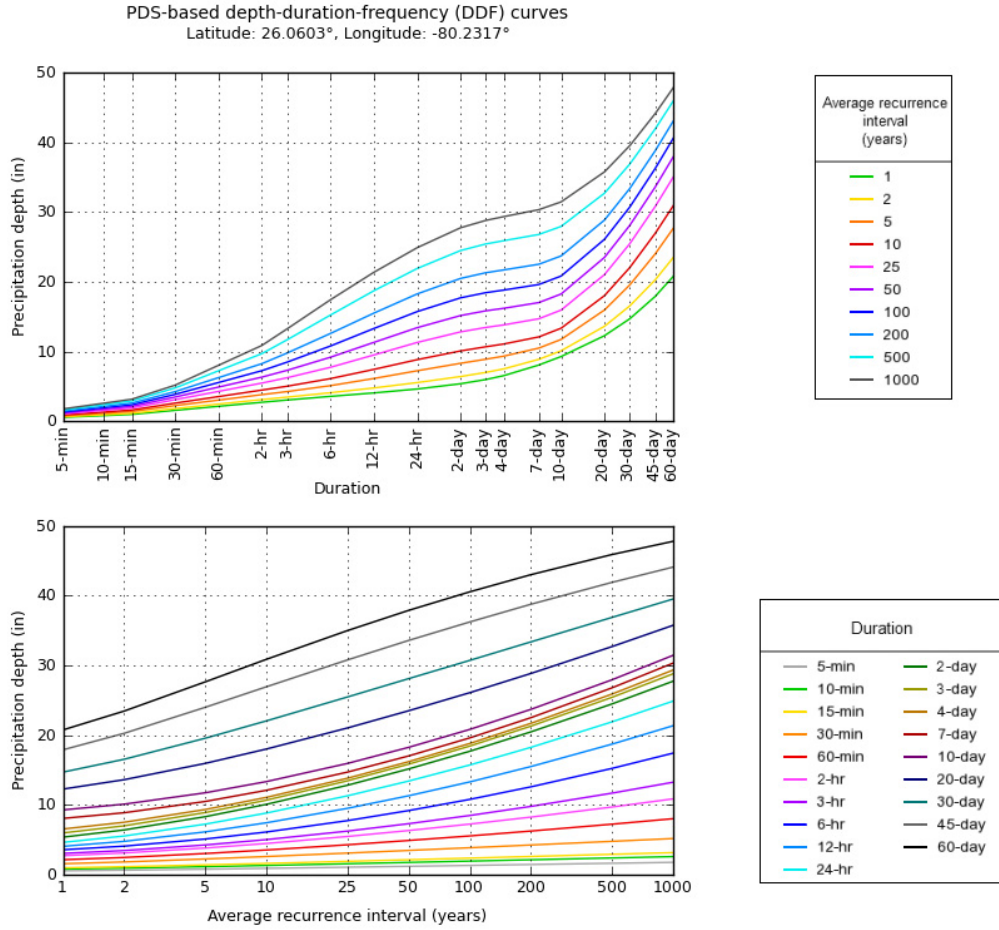
Hazen *Technical Memorandum*

Table B1: Point Precipitation Frequency Estimates for Station ID: 90-0176 (NOAA, 2013)

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.554	0.641	0.785	0.905	1.07	1.2	1.33	1.46	1.64	1.77
	(0.428-0.705)	(0.495-0.817)	(0.604-1.00)	(0.693-1.16)	(0.795-1.42)	(0.872-1.62)	(0.936-1.84)	(0.990-2.08)	(1.07-2.41)	(1.13-2.65)
10-min	0.811	0.939	1.15	1.32	1.57	1.76	1.95	2.14	2.4	2.59
	(0.627-1.03)	(0.725-1.20)	(0.885-1.47)	(1.01-1.70)	(1.16-2.08)	(1.28-2.37)	(1.37-2.69)	(1.45-3.05)	(1.57-3.52)	(1.65-3.88)
15-min	0.989	1.15	1.4	1.62	1.91	2.14	2.37	2.61	2.92	3.16
	(0.765-1.26)	(0.885-1.46)	(1.08-1.79)	(1.24-2.07)	(1.42-2.54)	(1.56-2.89)	(1.67-3.29)	(1.77-3.72)	(1.91-4.30)	(2.02-4.74)
30-min	1.57	1.83	2.25	2.6	3.1	3.48	3.86	4.26	4.78	5.18
	(1.21-2.00)	(1.41-2.33)	(1.73-2.87)	(1.99-3.34)	(2.30-4.11)	(2.53-4.69)	(2.72-5.35)	(2.88-6.07)	(3.12-7.03)	(3.31-7.76)
60-min	2.15	2.47	3.03	3.54	4.29	4.9	5.56	6.26	7.24	8.03
	(1.66-2.73)	(1.91-3.14)	(2.34-3.88)	(2.71-4.54)	(3.21-5.75)	(3.58-6.67)	(3.93-7.76)	(4.26-8.99)	(4.75-10.7)	(5.12-12.0)
2-hr	2.72	3.11	3.82	4.47	5.48	6.33	7.25	8.26	9.7	10.9
	(2.12-3.44)	(2.42-3.93)	(2.97-4.84)	(3.46-5.70)	(4.15-7.34)	(4.68-8.59)	(5.19-10.1)	(5.68-11.8)	(6.43-14.3)	(7.00-16.2)
3-hr	3.05	3.46	4.26	5.03	6.24	7.31	8.48	9.79	11.7	13.3
	(2.39-3.83)	(2.71-4.36)	(3.32-5.38)	(3.90-6.38)	(4.78-8.40)	(5.45-9.93)	(6.12-11.8)	(6.79-14.0)	(7.81-17.2)	(8.58-19.6)
6-hr	3.57	4.09	5.11	6.12	7.74	9.19	10.8	12.6	15.2	17.4
	(2.82-4.46)	(3.23-5.11)	(4.02-6.41)	(4.79-7.71)	(6.00-10.4)	(6.92-12.4)	(7.87-15.0)	(8.83-18.0)	(10.3-22.4)	(11.4-25.7)
12-hr	4.07	4.78	6.13	7.44	9.51	11.3	13.3	15.5	18.7	21.4
	(3.24-5.04)	(3.81-5.93)	(4.87-7.63)	(5.88-9.30)	(7.42-12.7)	(8.58-15.2)	(9.77-18.3)	(11.0-22.0)	(12.8-27.2)	(14.1-31.2)
24-hr	4.63	5.54	7.24	8.83	11.3	13.4	15.7	18.3	21.9	24.9
	(3.72-5.69)	(4.46-6.83)	(5.80-8.95)	(7.04-11.0)	(8.87-14.9)	(10.3-17.8)	(11.6-21.5)	(13.0-25.6)	(15.1-31.6)	(16.6-36.2)
2-day	5.38	6.41	8.31	10.1	12.8	15.2	17.7	20.5	24.5	27.7
	(4.37-6.57)	(5.20-7.84)	(6.72-10.2)	(8.11-12.4)	(10.1-16.7)	(11.7-20.0)	(13.2-24.0)	(14.7-28.5)	(17.0-35.1)	(18.7-40.0)
3-day	5.99	7	8.9	10.7	13.5	15.8	18.4	21.3	25.4	28.8
	(4.88-7.28)	(5.71-8.53)	(7.23-10.9)	(8.64-13.1)	(10.7-17.5)	(12.3-20.8)	(13.9-24.9)	(15.4-29.6)	(17.8-36.3)	(19.5-41.4)
4-day	6.55	7.51	9.34	11.1	13.8	16.2	18.8	21.7	25.9	29.3
	(5.36-7.94)	(6.15-9.12)	(7.62-11.4)	(8.99-13.6)	(11.1-17.9)	(12.6-21.2)	(14.2-25.3)	(15.8-30.1)	(18.2-36.9)	(20.0-42.1)
7-day	8.07	8.88	10.5	12.1	14.7	17	19.6	22.5	26.8	30.3
	(6.65-9.72)	(7.32-10.7)	(8.62-12.7)	(9.89-14.7)	(11.9-19.0)	(13.4-22.2)	(15.0-26.3)	(16.5-31.1)	(19.0-38.0)	(20.8-43.3)
10-day	9.29	10.1	11.7	13.3	15.9	18.3	20.8	23.7	27.9	31.5
	(7.70-11.1)	(8.37-12.2)	(9.69-14.1)	(11.0-16.2)	(12.9-20.4)	(14.4-23.7)	(15.9-27.7)	(17.5-32.5)	(19.9-39.5)	(21.7-44.7)
20-day	12.3	13.6	16	18	21	23.5	26.1	28.9	32.7	35.8
	(10.3-14.6)	(11.4-16.2)	(13.3-19.1)	(14.9-21.7)	(17.0-26.3)	(18.6-29.9)	(20.0-34.1)	(21.4-38.9)	(23.4-45.5)	(24.9-50.5)
30-day	14.7	16.5	19.6	22	25.5	28.1	30.7	33.4	36.9	39.5
	(12.4-17.4)	(13.9-19.6)	(16.4-23.3)	(18.4-26.4)	(20.6-31.5)	(22.3-35.3)	(23.6-39.7)	(24.8-44.6)	(26.4-50.8)	(27.7-55.6)
45-day	17.9	20.3	24	26.9	30.8	33.6	36.2	38.8	41.9	44.1
	(15.1-21.1)	(17.1-24.0)	(20.2-28.4)	(22.6-32.1)	(24.9-37.6)	(26.7-41.8)	(28.0-46.4)	(28.8-51.3)	(30.1-57.2)	(31.1-61.8)
60-day	20.8	23.5	27.6	30.9	35	37.9	40.5	43	45.9	47.8
	(17.6-24.4)	(19.9-27.6)	(23.4-32.7)	(26.0-36.7)	(28.4-42.5)	(30.2-46.9)	(31.4-51.6)	(32.1-56.6)	(33.1-62.4)	(33.9-66.7)
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).										
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.										
Please refer to NOAA Atlas 14 document for more information.										



Figure B7: Depth-Duration Frequency Curves for Station ID: 90-0176 (NOAA, 2013)



NOAA Atlas 14, Volume 9, Version 2

Created (GMT): Fri Jul 1 16:12:06 2016



Station ID: 95-1274

Location Name: Fort Lauderdale, Florida

Location Coordinates: Latitude: 26.1734°, Longitude: -80.1784°

Figure B8: Location and Aerial Imagery for Station ID: 95-1274 (NOAA, 2016)

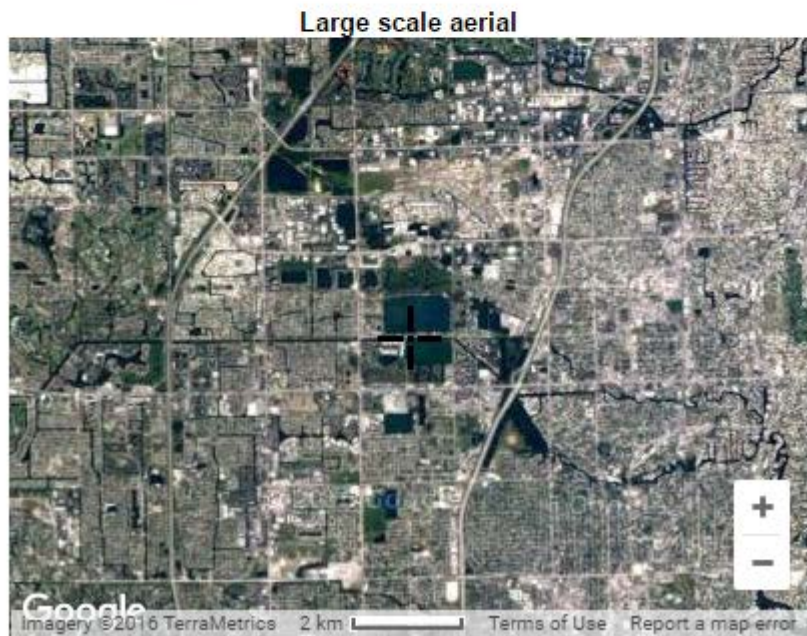
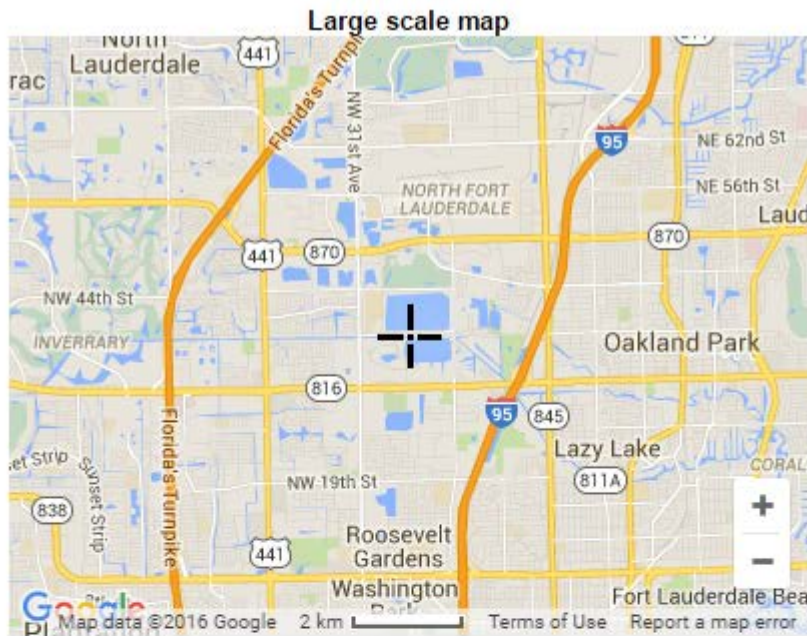


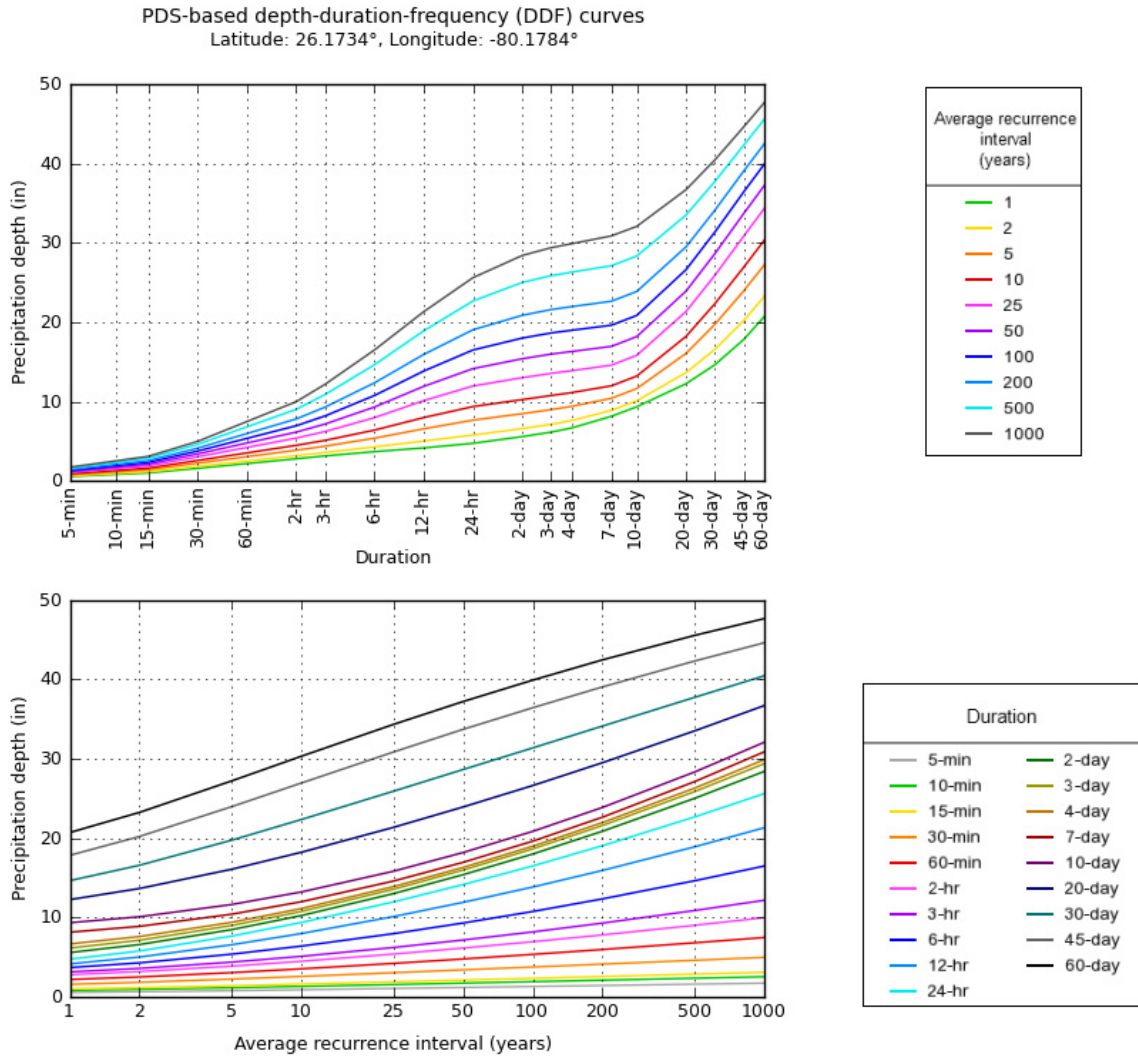


Table B2: Point Precipitation Frequency Estimates for Station ID: 95-1274 (NOAA, 2013)

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.567	0.652	0.791	0.907	1.07	1.19	1.31	1.44	1.61	1.74
	(0.453-0.720)	(0.521-0.829)	(0.630-1.01)	(0.719-1.16)	(0.819-1.42)	(0.895-1.61)	(0.958-1.82)	(1.01-2.06)	(1.09-2.38)	(1.15-2.62)
10-min	0.83	0.954	1.16	1.33	1.56	1.74	1.93	2.11	2.35	2.54
	(0.664-1.05)	(0.763-1.21)	(0.923-1.48)	(1.05-1.70)	(1.20-2.07)	(1.31-2.35)	(1.40-2.67)	(1.48-3.02)	(1.59-3.48)	(1.68-3.83)
15-min	1.01	1.16	1.41	1.62	1.91	2.13	2.35	2.57	2.87	3.1
	(0.810-1.29)	(0.930-1.48)	(1.13-1.80)	(1.28-2.08)	(1.46-2.53)	(1.60-2.87)	(1.71-3.26)	(1.80-3.69)	(1.94-4.25)	(2.05-4.67)
30-min	1.59	1.84	2.25	2.58	3.05	3.41	3.77	4.13	4.62	4.98
	(1.27-2.02)	(1.47-2.34)	(1.79-2.87)	(2.05-3.31)	(2.34-4.04)	(2.56-4.60)	(2.75-5.23)	(2.90-5.92)	(3.12-6.83)	(3.29-7.51)
60-min	2.19	2.51	3.06	3.54	4.22	4.78	5.36	5.97	6.82	7.49
	(1.76-2.79)	(2.01-3.20)	(2.44-3.90)	(2.80-4.53)	(3.26-5.65)	(3.61-6.49)	(3.92-7.49)	(4.20-8.60)	(4.63-10.1)	(4.95-11.3)
2-hr	2.8	3.19	3.88	4.49	5.4	6.15	6.95	7.81	9.02	9.99
	(2.25-3.53)	(2.56-4.03)	(3.10-4.91)	(3.58-5.72)	(4.20-7.20)	(4.68-8.33)	(5.12-9.68)	(5.54-11.2)	(6.17-13.3)	(6.64-15.0)
3-hr	3.15	3.59	4.38	5.11	6.23	7.17	8.19	9.3	10.9	12.2
	(2.54-3.96)	(2.89-4.52)	(3.52-5.53)	(4.08-6.49)	(4.88-8.32)	(5.48-9.71)	(6.06-11.4)	(6.63-13.3)	(7.48-16.1)	(8.13-18.2)
6-hr	3.7	4.29	5.39	6.4	7.97	9.31	10.8	12.4	14.6	16.5
	(3.00-4.62)	(3.48-5.37)	(4.35-6.75)	(5.14-8.07)	(6.29-10.6)	(7.16-12.6)	(8.02-14.9)	(8.87-17.6)	(10.1-21.5)	(11.1-24.5)
12-hr	4.16	5.03	6.57	7.98	10.1	11.9	13.8	15.9	18.9	21.3
	(3.39-5.16)	(4.09-6.24)	(5.33-8.19)	(6.45-9.99)	(8.02-13.4)	(9.21-15.9)	(10.4-19.0)	(11.5-22.6)	(13.2-27.6)	(14.4-31.4)
24-hr	4.75	5.79	7.66	9.37	12	14.2	16.5	19	22.7	25.6
	(3.89-5.85)	(4.74-7.14)	(6.25-9.48)	(7.61-11.7)	(9.54-15.7)	(11.0-18.8)	(12.4-22.6)	(13.8-26.8)	(15.9-32.9)	(17.4-37.5)
2-day	5.59	6.6	8.47	10.3	13	15.4	18	20.9	25	28.4
	(4.60-6.84)	(5.42-8.08)	(6.95-10.4)	(8.36-12.7)	(10.5-17.1)	(12.1-20.4)	(13.7-24.5)	(15.3-29.3)	(17.7-36.1)	(19.5-41.3)
3-day	6.16	7.14	8.99	10.8	13.6	16	18.6	21.6	25.9	29.4
	(5.08-7.50)	(5.89-8.71)	(7.40-11.0)	(8.81-13.2)	(11.0-17.7)	(12.6-21.1)	(14.2-25.3)	(15.9-30.2)	(18.3-37.2)	(20.2-42.6)
4-day	6.67	7.61	9.39	11.1	13.9	16.3	19	22	26.3	29.9
	(5.52-8.11)	(6.29-9.26)	(7.74-11.5)	(9.13-13.7)	(11.3-18.1)	(12.9-21.5)	(14.5-25.7)	(16.2-30.6)	(18.7-37.8)	(20.6-43.2)
7-day	8.15	8.89	10.4	12	14.6	17	19.6	22.6	27.1	30.9
	(6.77-9.85)	(7.38-10.8)	(8.63-12.6)	(9.88-14.6)	(11.9-19.0)	(13.5-22.3)	(15.1-26.5)	(16.8-31.5)	(19.4-38.8)	(21.4-44.4)
10-day	9.35	10.1	11.6	13.2	15.8	18.2	20.9	23.9	28.3	32.1
	(7.79-11.3)	(8.41-12.2)	(9.66-14.1)	(10.9-16.1)	(13.0-20.5)	(14.5-23.8)	(16.1-28.0)	(17.8-33.0)	(20.4-40.4)	(22.3-45.9)
20-day	12.3	13.7	16.1	18.2	21.4	23.9	26.6	29.5	33.5	36.7
	(10.3-14.7)	(11.4-16.4)	(13.4-19.3)	(15.1-22.0)	(17.3-26.9)	(19.0-30.6)	(20.5-35.0)	(22.0-40.1)	(24.1-47.0)	(25.7-52.2)
30-day	14.6	16.6	19.7	22.3	25.9	28.6	31.4	34.1	37.7	40.5
	(12.3-17.4)	(13.9-19.8)	(16.5-23.6)	(18.6-26.9)	(21.0-32.2)	(22.7-36.2)	(24.2-40.8)	(25.4-45.8)	(27.1-52.4)	(28.5-57.3)
45-day	17.8	20.2	24	26.9	30.9	33.7	36.4	39.1	42.3	44.6
	(15.0-21.2)	(17.0-24.0)	(20.1-28.5)	(22.5-32.3)	(24.9-37.9)	(26.8-42.2)	(28.1-47.0)	(29.1-52.0)	(30.5-58.2)	(31.5-62.9)
60-day	20.7	23.2	27.2	30.3	34.3	37.2	39.9	42.5	45.5	47.7
	(17.5-24.5)	(19.6-27.5)	(22.9-32.3)	(25.4-36.2)	(27.8-42.0)	(29.6-46.4)	(30.8-51.2)	(31.7-56.3)	(32.9-62.4)	(33.8-67.0)
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).										
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.										
Please refer to NOAA Atlas 14 document for more information.										



Figure B9: Depth-Duration Frequency Curves for Station ID: 95-1274 (NOAA, 2013)



NOAA Atlas 14, Volume 9, Version 2

Created (GMT): Fri Jul 1 16:11:42 2016



Station ID: 08-3163

Location Name: Fort Lauderdale, Florida

Location Coordinates: Latitude: 26.1734°, Longitude: -80.1784°

Figure B10: Location and Aerial Imagery for Station ID: 08-3163 (NOAA, 2016)

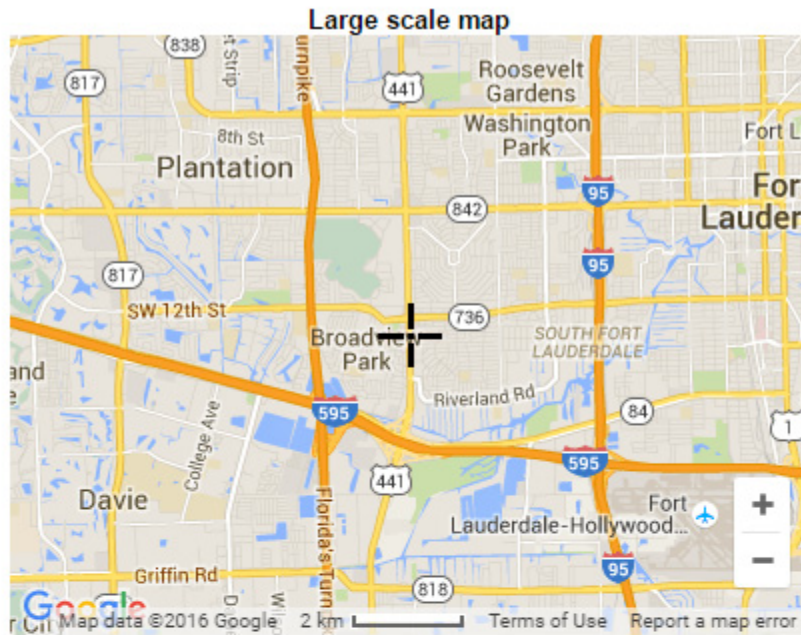


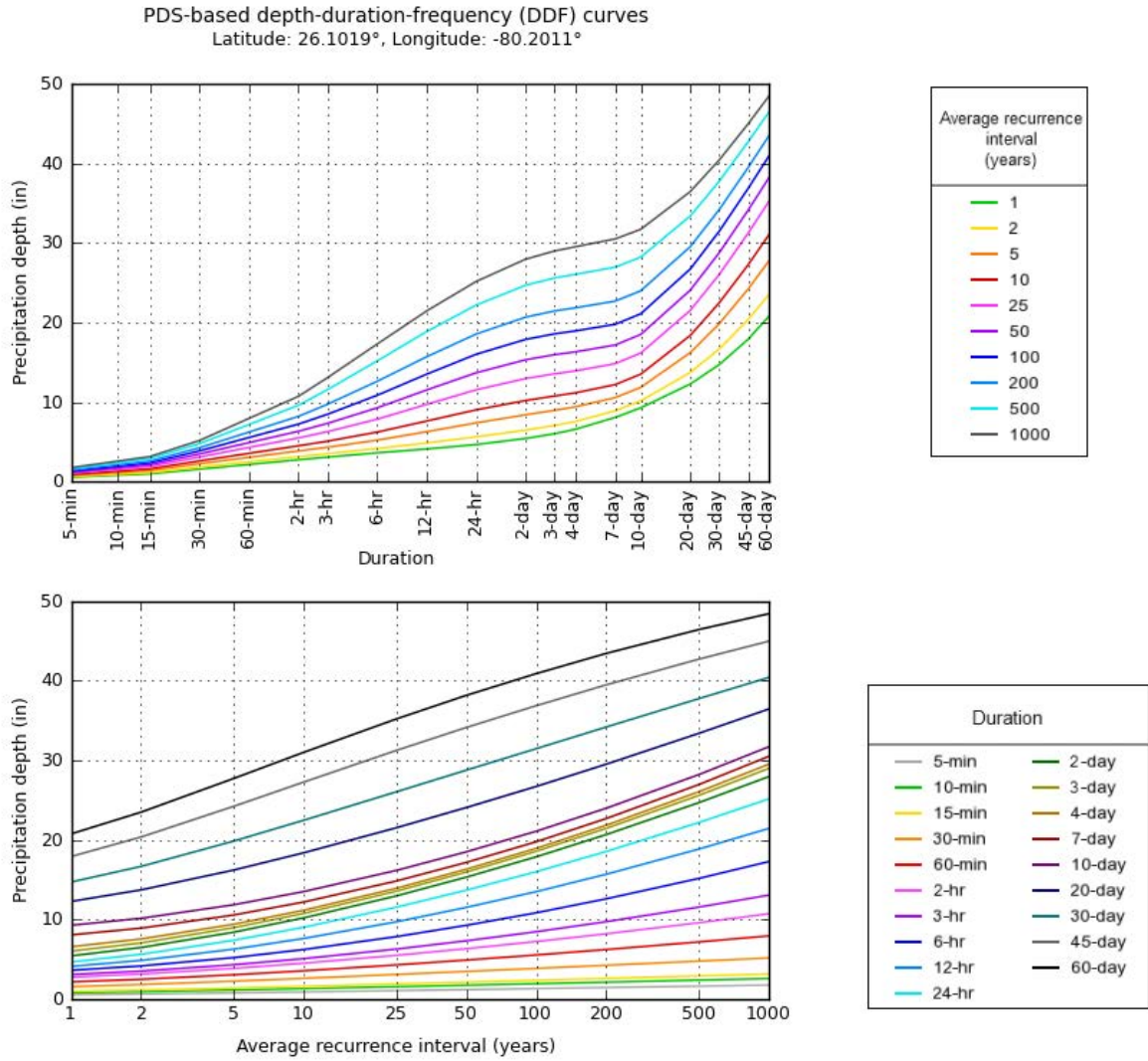


Table B3: Point Precipitation Frequency Estimates for Station ID: 08-3163 (NOAA, 2013)

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.556	0.643	0.786	0.905	1.07	1.2	1.33	1.46	1.64	1.77
	(0.439-0.700)	(0.507-0.810)	(0.618-0.992)	(0.708-1.15)	(0.813-1.39)	(0.892-1.57)	(0.959-1.77)	(1.02-1.99)	(1.10-2.27)	(1.16-2.49)
10-min	0.814	0.941	1.15	1.33	1.57	1.76	1.95	2.14	2.4	2.59
	(0.642-1.02)	(0.742-1.19)	(0.904-1.45)	(1.04-1.68)	(1.19-2.03)	(1.31-2.30)	(1.41-2.60)	(1.49-2.91)	(1.61-3.33)	(1.70-3.65)
15-min	0.992	1.15	1.4	1.62	1.91	2.14	2.37	2.61	2.92	3.16
	(0.783-1.25)	(0.905-1.45)	(1.10-1.77)	(1.26-2.05)	(1.45-2.48)	(1.59-2.81)	(1.71-3.16)	(1.82-3.55)	(1.97-4.06)	(2.08-4.45)
30-min	1.58	1.84	2.26	2.61	3.1	3.48	3.87	4.26	4.78	5.18
	(1.25-1.99)	(1.45-2.31)	(1.78-2.85)	(2.04-3.31)	(2.36-4.03)	(2.59-4.57)	(2.79-5.16)	(2.96-5.80)	(3.22-6.64)	(3.40-7.29)
60-min	2.17	2.5	3.06	3.56	4.3	4.91	5.55	6.24	7.19	7.95
	(1.71-2.73)	(1.97-3.15)	(2.41-3.87)	(2.79-4.52)	(3.29-5.64)	(3.67-6.48)	(4.03-7.46)	(4.36-8.55)	(4.86-10.1)	(5.23-11.2)
2-hr	2.76	3.16	3.87	4.52	5.5	6.34	7.24	8.21	9.6	10.7
	(2.20-3.45)	(2.51-3.94)	(3.06-4.84)	(3.56-5.67)	(4.26-7.18)	(4.79-8.33)	(5.30-9.69)	(5.80-11.2)	(6.54-13.4)	(7.11-15.0)
3-hr	3.1	3.52	4.33	5.09	6.29	7.33	8.47	9.74	11.6	13.1
	(2.48-3.85)	(2.82-4.38)	(3.45-5.38)	(4.04-6.36)	(4.92-8.22)	(5.58-9.63)	(6.25-11.3)	(6.92-13.3)	(7.93-16.1)	(8.69-18.2)
6-hr	3.63	4.17	5.22	6.23	7.85	9.28	10.9	12.6	15.2	17.3
	(2.93-4.46)	(3.37-5.13)	(4.20-6.43)	(4.99-7.71)	(6.21-10.2)	(7.14-12.1)	(8.09-14.4)	(9.04-17.1)	(10.5-21.0)	(11.6-23.9)
12-hr	4.11	4.87	6.28	7.62	9.72	11.5	13.5	15.7	18.9	21.4
	(3.35-5.01)	(3.97-5.94)	(5.10-7.68)	(6.16-9.35)	(7.74-12.5)	(8.93-14.9)	(10.1-17.8)	(11.3-21.1)	(13.1-25.9)	(14.5-29.5)
24-hr	4.67	5.63	7.39	9.03	11.5	13.7	16	18.5	22.2	25.2
	(3.84-5.64)	(4.63-6.80)	(6.06-8.95)	(7.36-11.0)	(9.25-14.7)	(10.7-17.5)	(12.1-20.9)	(13.5-24.7)	(15.5-30.2)	(17.1-34.4)
2-day	5.44	6.49	8.41	10.2	13	15.3	17.9	20.7	24.7	28
	(4.52-6.50)	(5.38-7.76)	(6.96-10.1)	(8.40-12.3)	(10.5-16.4)	(12.1-19.5)	(13.6-23.2)	(15.1-27.4)	(17.4-33.4)	(19.1-37.9)
3-day	6.03	7.07	8.98	10.8	13.6	16	18.6	21.5	25.6	29
	(5.04-7.17)	(5.89-8.40)	(7.47-10.7)	(8.91-12.9)	(11.0-17.0)	(12.6-20.2)	(14.2-24.0)	(15.8-28.3)	(18.1-34.5)	(19.9-39.2)
4-day	6.59	7.56	9.41	11.2	13.9	16.3	18.9	21.8	26.1	29.5
	(5.52-7.80)	(6.34-8.96)	(7.86-11.2)	(9.27-13.3)	(11.4-17.4)	(13.0-20.6)	(14.6-24.4)	(16.1-28.7)	(18.5-35.0)	(20.3-39.8)
7-day	8.08	8.92	10.6	12.2	14.8	17.2	19.8	22.7	27	30.5
	(6.83-9.49)	(7.53-10.5)	(8.90-12.5)	(10.2-14.4)	(12.2-18.5)	(13.8-21.5)	(15.3-25.3)	(16.9-29.7)	(19.3-36.1)	(21.1-40.9)
10-day	9.29	10.2	11.9	13.5	16.2	18.5	21.1	24	28.2	31.7
	(7.89-10.9)	(8.62-11.9)	(10.0-13.9)	(11.4-15.9)	(13.4-20.0)	(14.9-23.0)	(16.4-26.8)	(17.9-31.2)	(20.3-37.6)	(22.1-42.4)
20-day	12.3	13.7	16.2	18.4	21.5	24.1	26.7	29.5	33.4	36.4
	(10.5-14.2)	(11.8-15.9)	(13.8-18.8)	(15.6-21.4)	(17.8-25.9)	(19.4-29.4)	(20.8-33.3)	(22.1-37.8)	(24.0-43.8)	(25.5-48.4)
30-day	14.7	16.7	19.9	22.5	26	28.8	31.5	34.2	37.8	40.4
	(12.7-16.9)	(14.4-19.2)	(17.1-22.9)	(19.2-26.0)	(21.5-31.0)	(23.2-34.7)	(24.6-38.8)	(25.6-43.3)	(27.2-49.1)	(28.4-53.4)
45-day	17.9	20.4	24.2	27.3	31.2	34.1	36.9	39.5	42.7	45
	(15.5-20.5)	(17.7-23.3)	(20.9-27.8)	(23.4-31.4)	(25.8-36.7)	(27.6-40.7)	(28.8-45.0)	(29.6-49.5)	(30.8-55.0)	(31.8-59.2)
60-day	20.8	23.5	27.7	31	35.2	38.2	40.9	43.4	46.4	48.4
	(18.1-23.6)	(20.4-26.8)	(24.0-31.7)	(26.7-35.6)	(29.1-41.1)	(31.0-45.3)	(32.1-49.7)	(32.7-54.2)	(33.6-59.5)	(34.3-63.6)
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).										
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.										
Please refer to NOAA Atlas 14 document for more information.										



Figure B11: Depth-Duration Frequency Curves for Station ID: 08-3163 (NOAA, 2013)





Station ID: 08-3165

Location Name: Fort Lauderdale, Florida

Location Coordinates: Latitude: 26.1734°, Longitude: -80.1784°

Figure B12: Location and Aerial Imagery for Station ID: 08-3165 (NOAA, 2016)

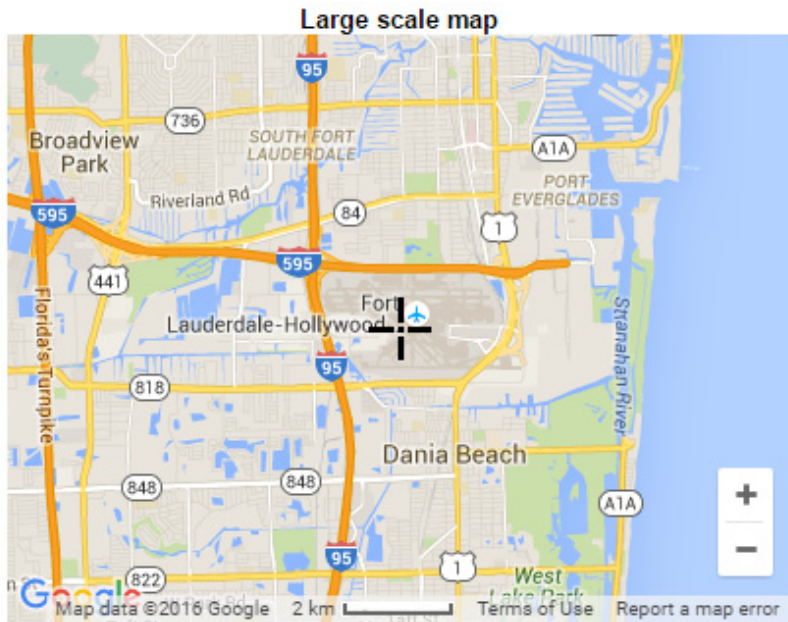


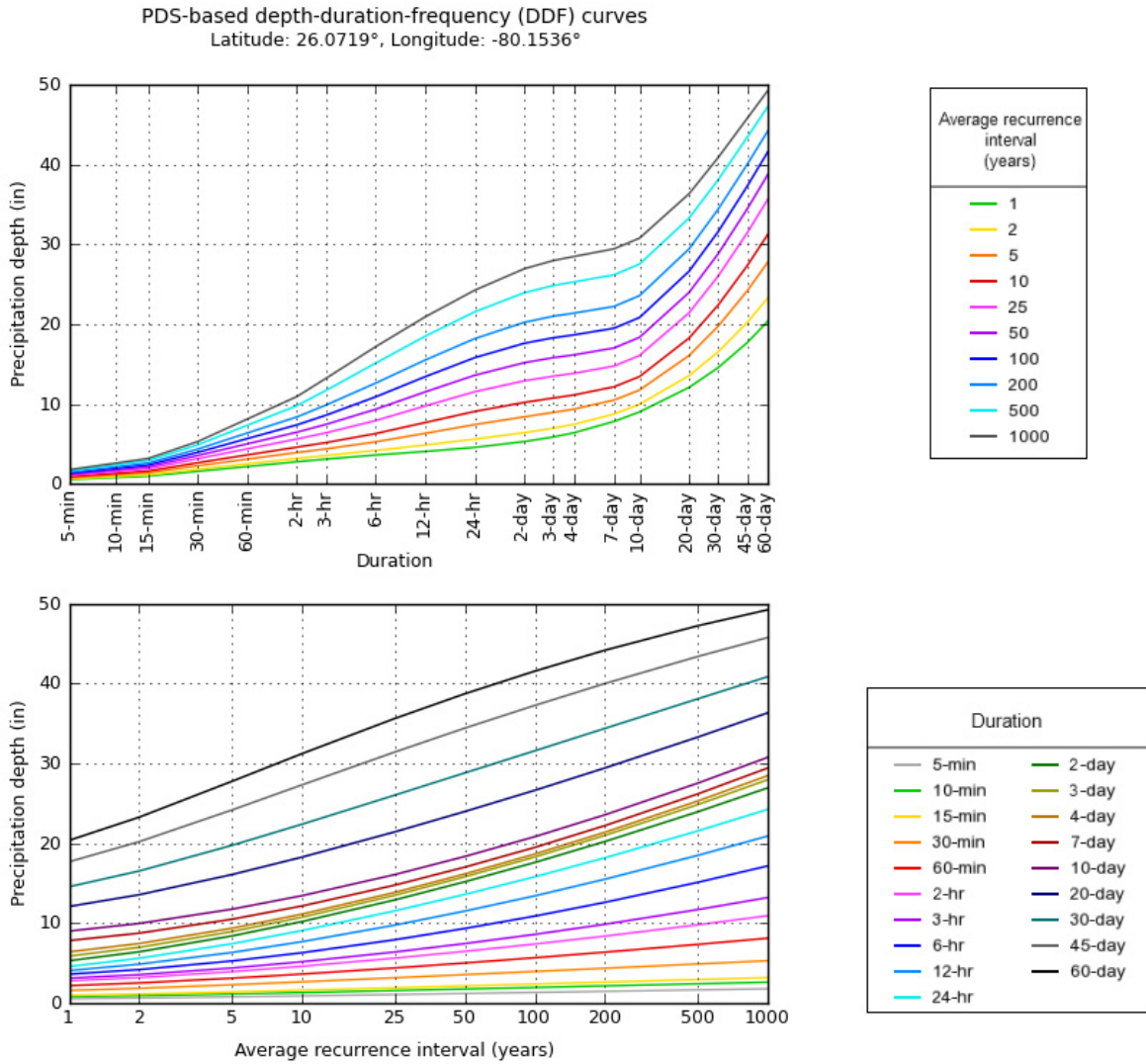


Table B4: Point Precipitation Frequency Estimates for Station ID: 08-3165 (NOAA, 2013)

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.547 (0.438-0.692)	0.636 (0.509-0.805)	0.783 (0.624-0.993)	0.905 (0.718-1.15)	1.07 (0.825-1.41)	1.21 (0.907-1.61)	1.34 (0.975-1.83)	1.47 (1.03-2.07)	1.65 (1.12-2.39)	1.79 (1.18-2.63)
10-min	0.801 (0.642-1.01)	0.931 (0.745-1.18)	1.15 (0.914-1.46)	1.32 (1.05-1.69)	1.57 (1.21-2.07)	1.76 (1.33-2.35)	1.96 (1.43-2.68)	2.15 (1.51-3.03)	2.42 (1.64-3.49)	2.62 (1.73-3.85)
15-min	0.977 (0.782-1.24)	1.14 (0.909-1.44)	1.4 (1.11-1.77)	1.61 (1.28-2.06)	1.92 (1.47-2.52)	2.15 (1.62-2.87)	2.39 (1.74-3.26)	2.63 (1.84-3.69)	2.95 (1.99-4.26)	3.19 (2.11-4.69)
30-min	1.58 (1.27-2.00)	1.85 (1.48-2.34)	2.29 (1.83-2.91)	2.66 (2.11-3.39)	3.17 (2.43-4.16)	3.56 (2.68-4.75)	3.95 (2.88-5.41)	4.36 (3.06-6.12)	4.89 (3.31-7.07)	5.3 (3.50-7.79)
60-min	2.18 (1.75-2.76)	2.52 (2.02-3.19)	3.11 (2.48-3.95)	3.63 (2.88-4.63)	4.39 (3.40-5.83)	5.02 (3.79-6.74)	5.67 (4.15-7.81)	6.37 (4.49-9.01)	7.34 (4.99-10.7)	8.12 (5.37-11.9)
2-hr	2.78 (2.24-3.50)	3.19 (2.57-4.02)	3.93 (3.15-4.96)	4.6 (3.67-5.83)	5.62 (4.39-7.45)	6.47 (4.93-8.68)	7.39 (5.45-10.2)	8.38 (5.95-11.8)	9.79 (6.71-14.2)	10.9 (7.27-16.0)
3-hr	3.11 (2.51-3.90)	3.56 (2.87-4.46)	4.38 (3.52-5.51)	5.17 (4.13-6.52)	6.39 (5.03-8.50)	7.45 (5.71-9.99)	8.6 (6.38-11.8)	9.87 (7.05-13.9)	11.7 (8.06-16.9)	13.2 (8.82-19.2)
6-hr	3.62 (2.94-4.50)	4.19 (3.40-5.21)	5.27 (4.26-6.57)	6.3 (5.06-7.89)	7.92 (6.28-10.5)	9.34 (7.21-12.5)	10.9 (8.14-14.9)	12.6 (9.07-17.7)	15.1 (10.5-21.8)	17.2 (11.5-24.8)
12-hr	4.06 (3.31-5.02)	4.87 (3.97-6.02)	6.33 (5.14-7.85)	7.68 (6.21-9.57)	9.76 (7.75-12.8)	11.5 (8.92-15.3)	13.4 (10.1-18.2)	15.5 (11.2-21.6)	18.5 (12.9-26.4)	20.9 (14.1-30.0)
24-hr	4.58 (3.75-5.62)	5.6 (4.59-6.88)	7.42 (6.06-9.14)	9.07 (7.37-11.2)	11.5 (9.19-15.0)	13.6 (10.6-17.9)	15.8 (11.9-21.2)	18.2 (13.2-25.1)	21.5 (15.1-30.5)	24.3 (16.5-34.6)
2-day	5.3 (4.37-6.46)	6.42 (5.28-7.83)	8.4 (6.90-10.3)	10.2 (8.33-12.5)	12.9 (10.3-16.7)	15.2 (11.9-19.8)	17.6 (13.3-23.5)	20.2 (14.8-27.7)	23.9 (16.9-33.7)	26.9 (18.5-38.2)
3-day	5.88 (4.86-7.13)	6.97 (5.76-8.47)	8.95 (7.37-10.9)	10.8 (8.81-13.2)	13.5 (10.9-17.4)	15.8 (12.4-20.5)	18.3 (13.9-24.3)	21 (15.4-28.7)	24.8 (17.6-34.8)	28 (19.2-39.5)
4-day	6.41 (5.31-7.75)	7.45 (6.17-9.03)	9.36 (7.73-11.4)	11.1 (9.14-13.6)	13.8 (11.2-17.8)	16.2 (12.7-20.9)	18.7 (14.2-24.8)	21.4 (15.7-29.1)	25.3 (18.0-35.4)	28.5 (19.6-40.1)
7-day	7.82 (6.51-9.41)	8.75 (7.27-10.5)	10.5 (8.70-12.7)	12.2 (10.0-14.7)	14.8 (12.0-18.8)	17 (13.5-21.9)	19.5 (15.0-25.7)	22.2 (16.5-30.1)	26.2 (18.7-36.4)	29.4 (20.4-41.2)
10-day	9.01 (7.51-10.8)	9.97 (8.31-12.0)	11.8 (9.77-14.1)	13.4 (11.1-16.3)	16.1 (13.1-20.4)	18.4 (14.6-23.5)	20.8 (16.0-27.4)	23.6 (17.5-31.8)	27.5 (19.7-38.1)	30.8 (21.4-42.9)
20-day	12.1 (10.1-14.4)	13.6 (11.4-16.2)	16.1 (13.4-19.2)	18.3 (15.2-21.9)	21.4 (17.4-26.7)	24 (19.0-30.3)	26.6 (20.5-34.5)	29.4 (21.9-39.1)	33.3 (23.9-45.5)	36.3 (25.5-50.4)
30-day	14.6 (12.3-17.3)	16.5 (13.9-19.6)	19.7 (16.5-23.5)	22.4 (18.7-26.8)	26 (21.1-32.0)	28.8 (22.9-36.0)	31.6 (24.3-40.5)	34.4 (25.6-45.3)	38.1 (27.4-51.6)	40.9 (28.8-56.4)
45-day	17.7 (14.9-20.9)	20.2 (17.0-23.9)	24.2 (20.3-28.7)	27.3 (22.8-32.5)	31.4 (25.4-38.3)	34.4 (27.3-42.6)	37.3 (28.7-47.3)	40 (29.8-52.2)	43.4 (31.2-58.3)	45.8 (32.3-62.9)
60-day	20.4 (17.2-24.0)	23.3 (19.7-27.4)	27.8 (23.4-32.8)	31.2 (26.2-37.1)	35.6 (28.8-43.1)	38.7 (30.8-47.7)	41.6 (32.1-52.4)	44.2 (32.9-57.3)	47.2 (34.0-63.1)	49.2 (34.9-67.5)
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).										
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.										
Please refer to NOAA Atlas 14 document for more information.										



Figure B13: Depth-Duration Frequency Curves for Station ID: 08-3165 (NOAA, 2013)

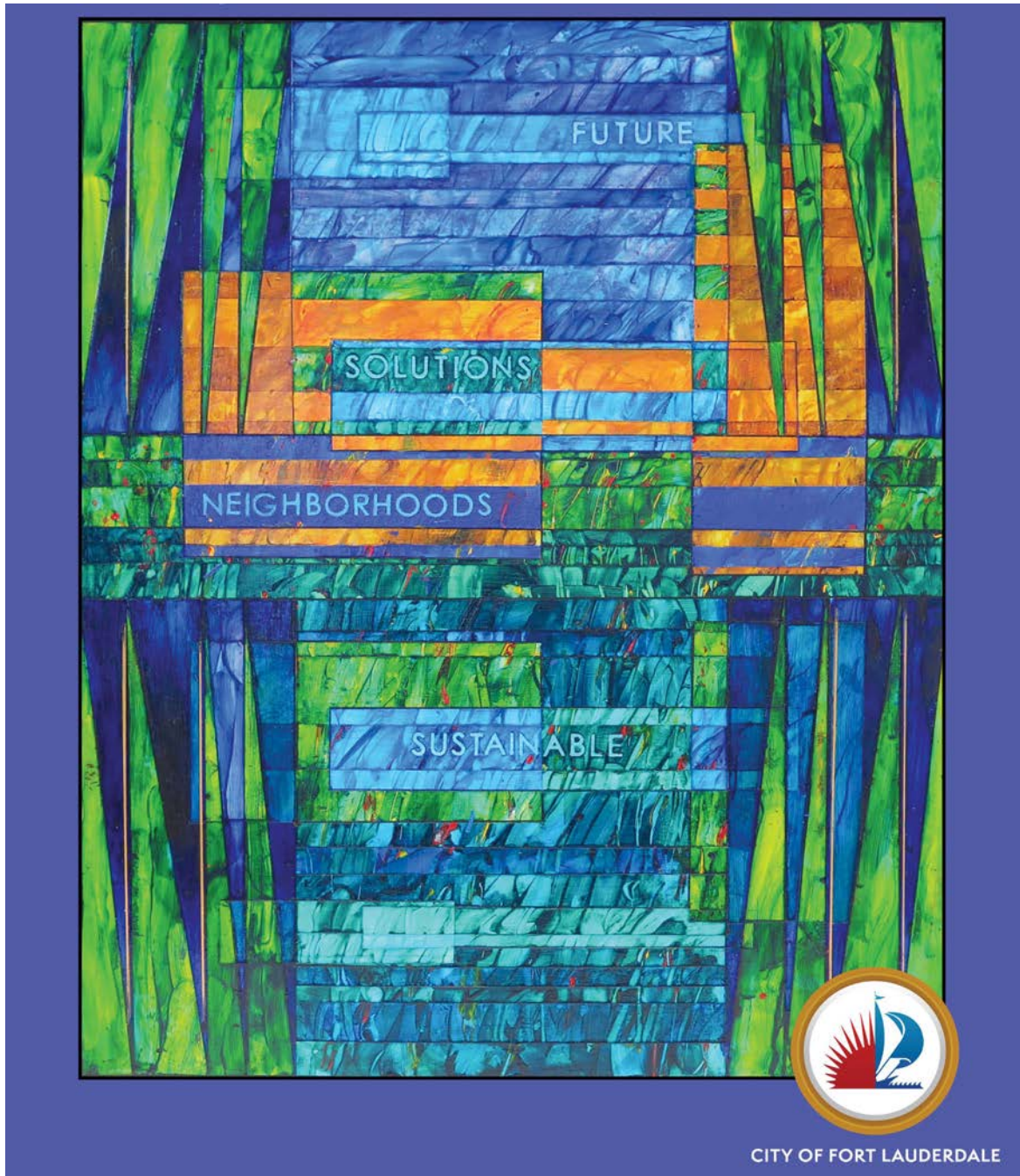


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Stormwater Master Plan Design and Implementation Program – 2021 Update

November 29, 2021

43193

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Appendix A: Conceptual Improvement Exhibits

1. Background

The City of Fort Lauderdale is implementing a stormwater management program to address chronic flooding and other stormwater management issues. Twenty-first century stormwater master planning and design for low-lying coastal areas requires new thinking. Solutions must be flexible, pragmatic, include a balance of conventional and innovative approaches, and utilize the natural environment as an asset. Development of those solutions is underway for the City. The City's approach to meeting the challenges of stormwater management and resiliency to tidal and rainfall driven flooding is focused on two primary drivers:

- Addressing appropriate levels of service and protection across the entire City (over the long-term), and
- Making meaningful progress in improving flood protection in the most severely impacted areas in the near-term

To that end, the following summarizes the City's Stormwater Master Plan Modeling and Design Implementation Program status and efforts to date (through October 2021).

2. Data Collection

A significant data collection effort was undertaken to support various aspects of the broader program, including stormwater modeling, watershed planning, design, permitting, and asset management.

Topographical mapping of the entire City using high density LiDAR (Light Detection and Ranging) technology was completed, and accuracy of the LiDAR data was confirmed through rigorous field checks using conventional survey techniques. The LiDAR data were arranged in “tiles” covering the entire City as shown in **Figure 2-1**. The City-wide high-density LiDAR facilitated generation of accurate ground surface models which were critical for the hydrologic/hydraulic stormwater model development. The LiDAR data also proven beneficial in evaluating seawall cap elevations and determining additional topographic features. Examples of LiDAR collected within the City are shown in **Figure 2-2**.

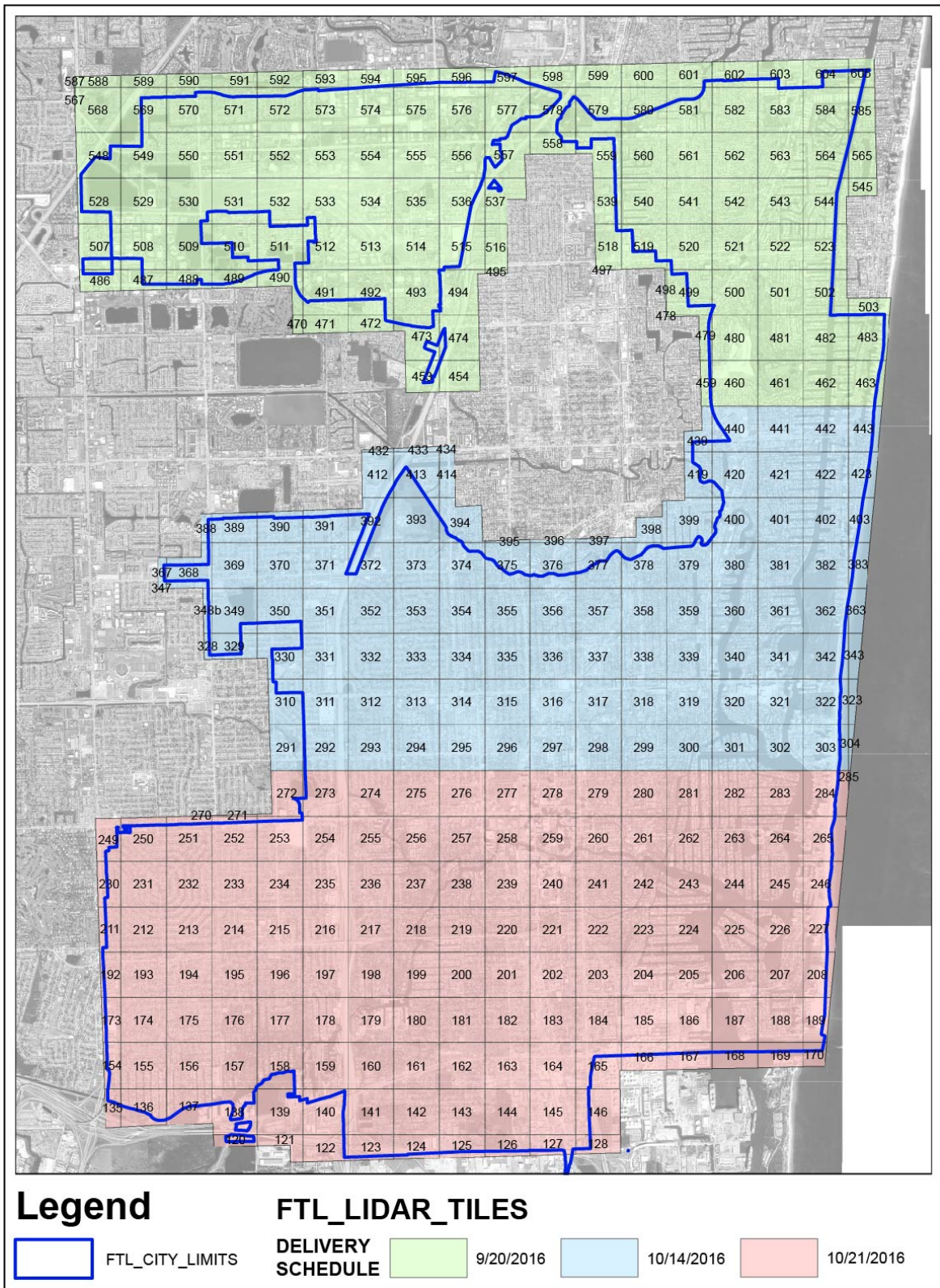


Figure 2-1: High Density LiDAR Tile Key Map

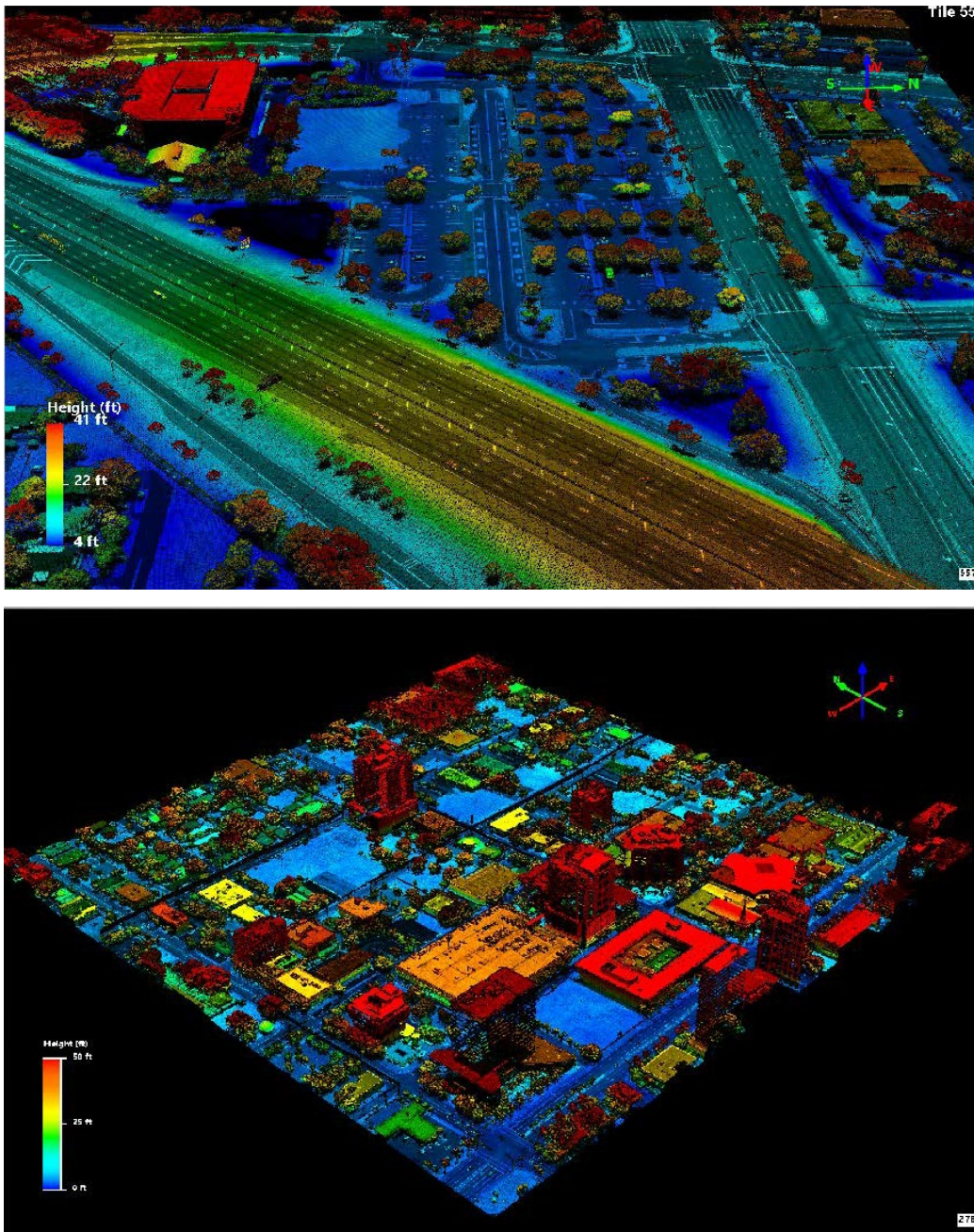


Figure 2-2: High Density LiDAR Examples

- Traditional field surveying and record drawing accumulation (from various sources) for collection of below-ground stormwater infrastructure data was also completed.
- An updated stormwater geodatabase was developed, and data collected from the survey efforts noted above were migrated to that system for the City’s future use. Additionally, stormwater asset information collected as part of specific design surveys is also being migrated to the stormwater geodatabase.

3. Watershed Modeling

A hydrologic/hydraulic stormwater model of the City was developed and utilized. The modeling effort consisted of a comprehensive basin by basin analysis of the existing and proposed stormwater systems and how they react to different conditions, including future projected climatological and land use conditions. The City of Fort Lauderdale contains scores of distinct neighborhoods, as shown in **Figure 3-1**, and was subdivided into 10 primary watersheds (see **Figure 3-2**). Model results were used to help develop conceptual plans to address seven priority neighborhoods' stormwater issues specifically in the areas found to be most susceptible to chronic flooding. This effort directly informed preliminary and final design in the seven neighborhoods, which are discussed below.

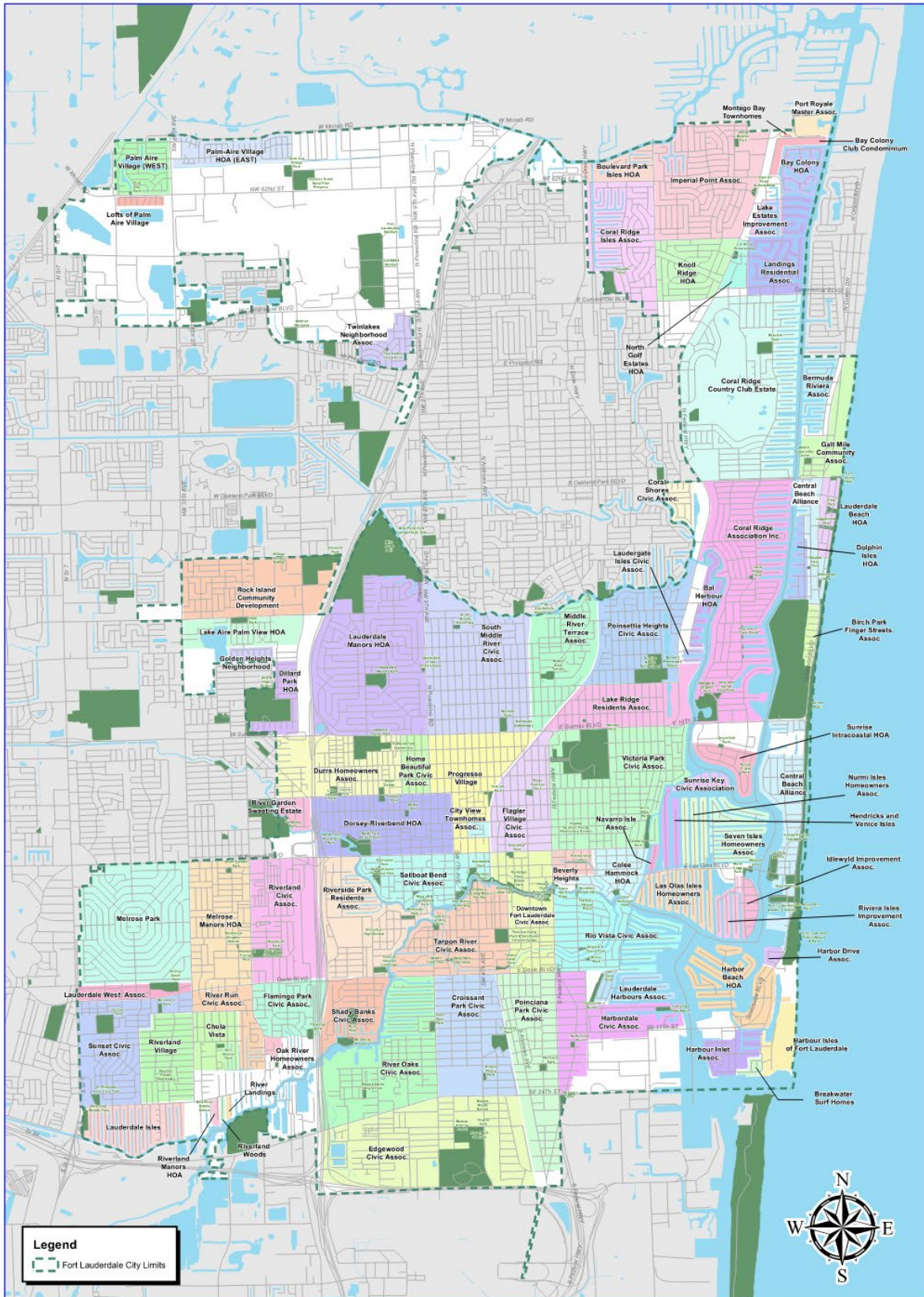


Figure 3-1: Fort Lauderdale Neighborhoods

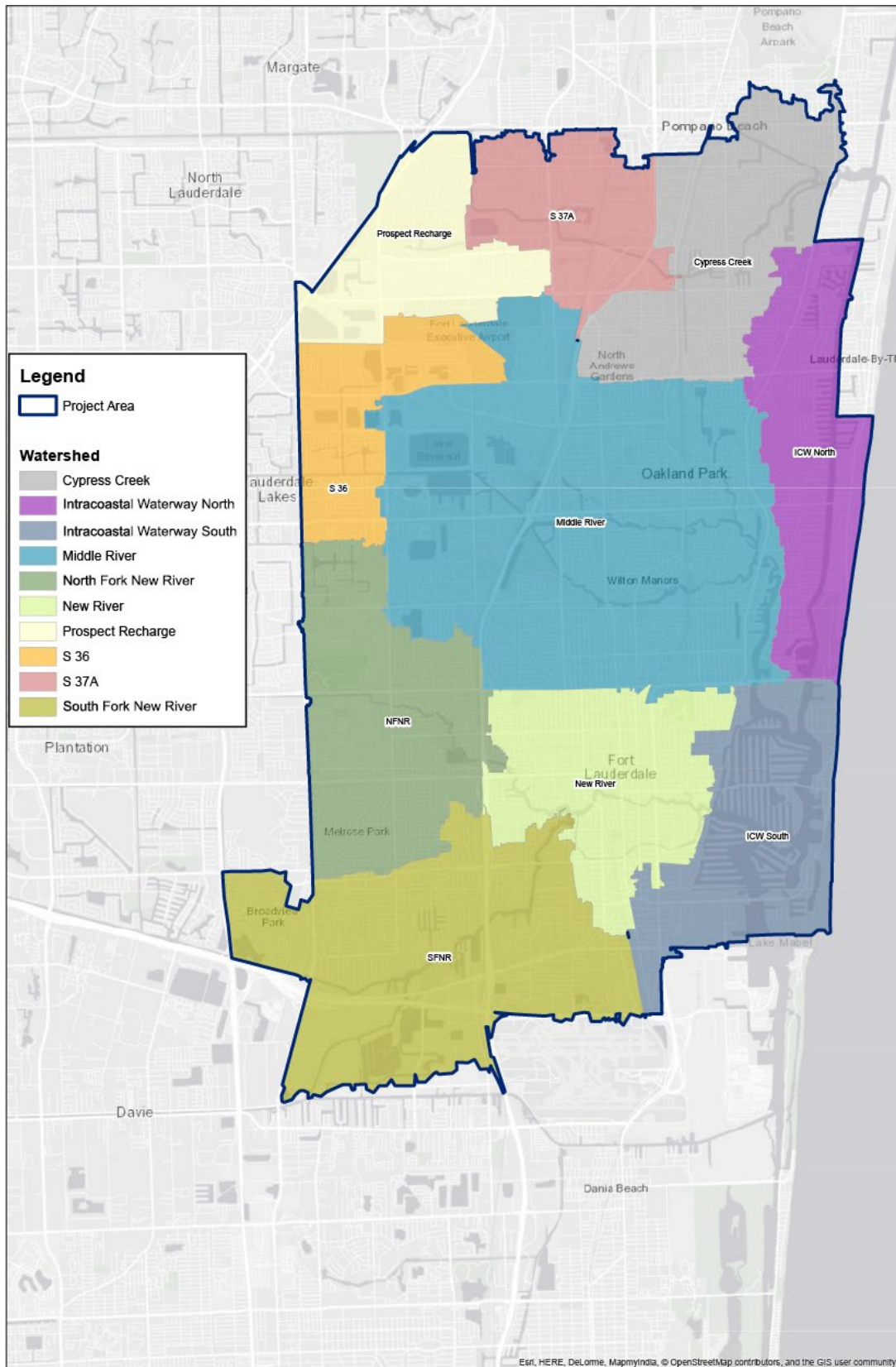


Figure 3-2: Fort Lauderdale Primary Watersheds

4. Neighborhood Capital Improvement Planning

4.1 Seven Priority Neighborhoods

Stormwater focused capital improvement planning primarily targeted the previously mentioned seven neighborhoods and the watersheds in which they are located (see **Table 4-1**). Planning for current improvements must consider impacts of future conditions. Direct and indirect impacts of rising seas, extreme tides, and higher groundwater levels (as a result) will affect significant areas of the City. City sponsored and funded community investments alone will not be able to adequately address the situation in certain locations. Policies, new/revised codes, and redevelopment criteria, particularly in areas within current/future floodplains, should be used in conjunction with community investments and programmatic changes. Resilience improvements in some areas should be strategically phased and coordinated and may require modifications to both public and private property.

It is recommended that the City be intentional about continuing coordination and communication with adjacent municipalities, Broward County, FDOT, SFWMD and others. Resilience will be best achieved through a collaborative effort of many stakeholders. Opportunities for joint funding and project execution will exist, as will the chance to share in the innovative efforts that will be needed to remain resilient in the face of a changing climate.

Table 4-1: Seven Priority Neighborhoods and Corresponding Watersheds

Neighborhood	Watershed(s)
Edgewood	South Fork New River
Victoria Park	New River, ICW South
Progresso Village	New River
Southeast Isles	ICW South, New River
Durrs	North Fork New River
Dorsey - Riverbend	North Fork New River, New River
River Oaks	South Fork New River

Depictions of model-predicted flooding for the four watersheds which contain those seven neighborhoods are shown in **Figures 4-1 through 4-8**. The included flood maps reflect 10-year, 24-hour and 100-year, 72-hour storm event simulations based on current conditions. Similar simulations were conducted for future conditions (2035 and 2060). Based on these model results, field reconnaissance, and miscellaneous data/reports from the City, Conceptual Improvement Exhibits were created (see **Appendix A**). These improvement plans were Conceptually Permitted by Broward County.

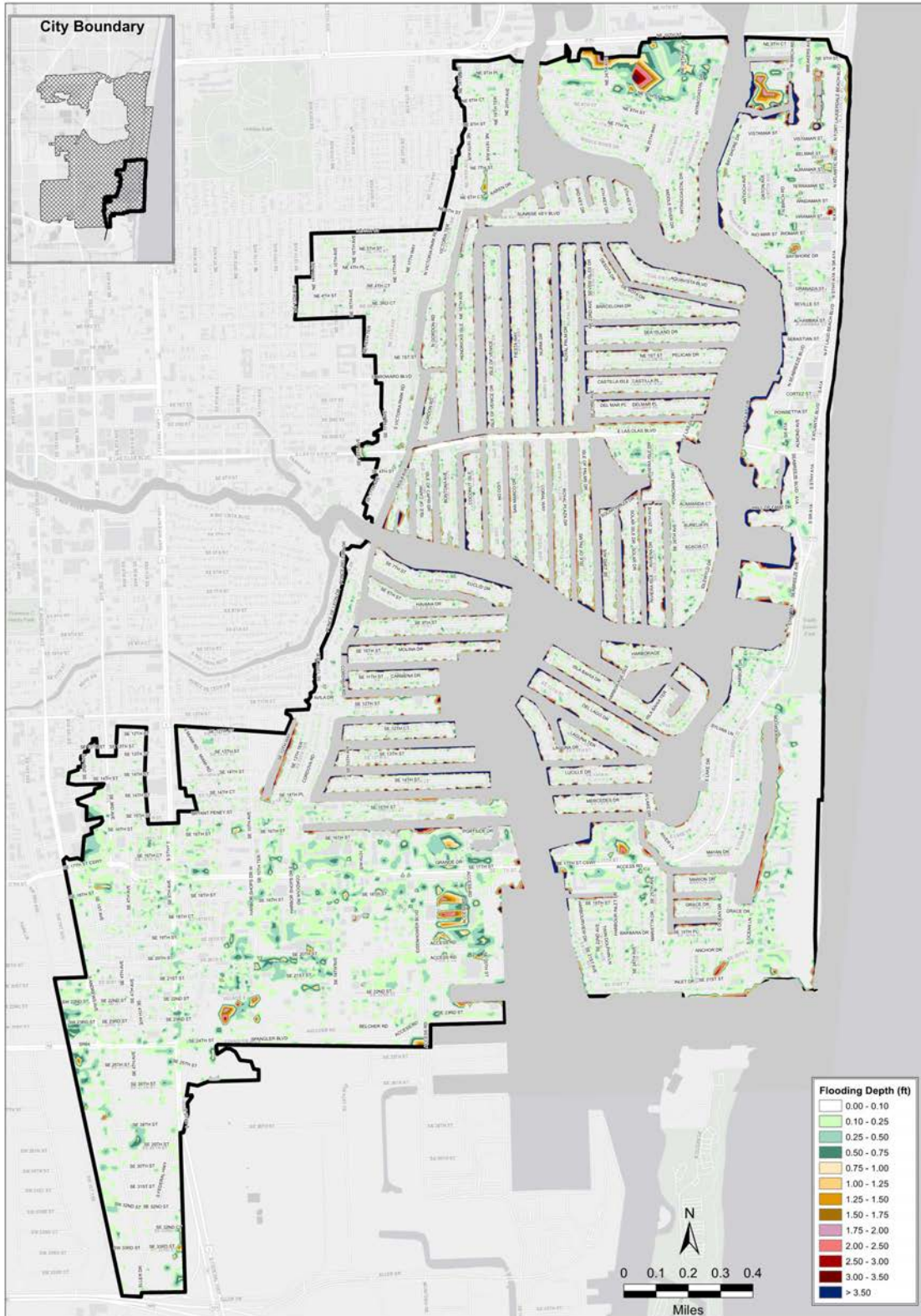


Figure 4-1: Intracoastal Waterway South Ground Surface Flooding Depth 10-Year 24-Hour Storm Event

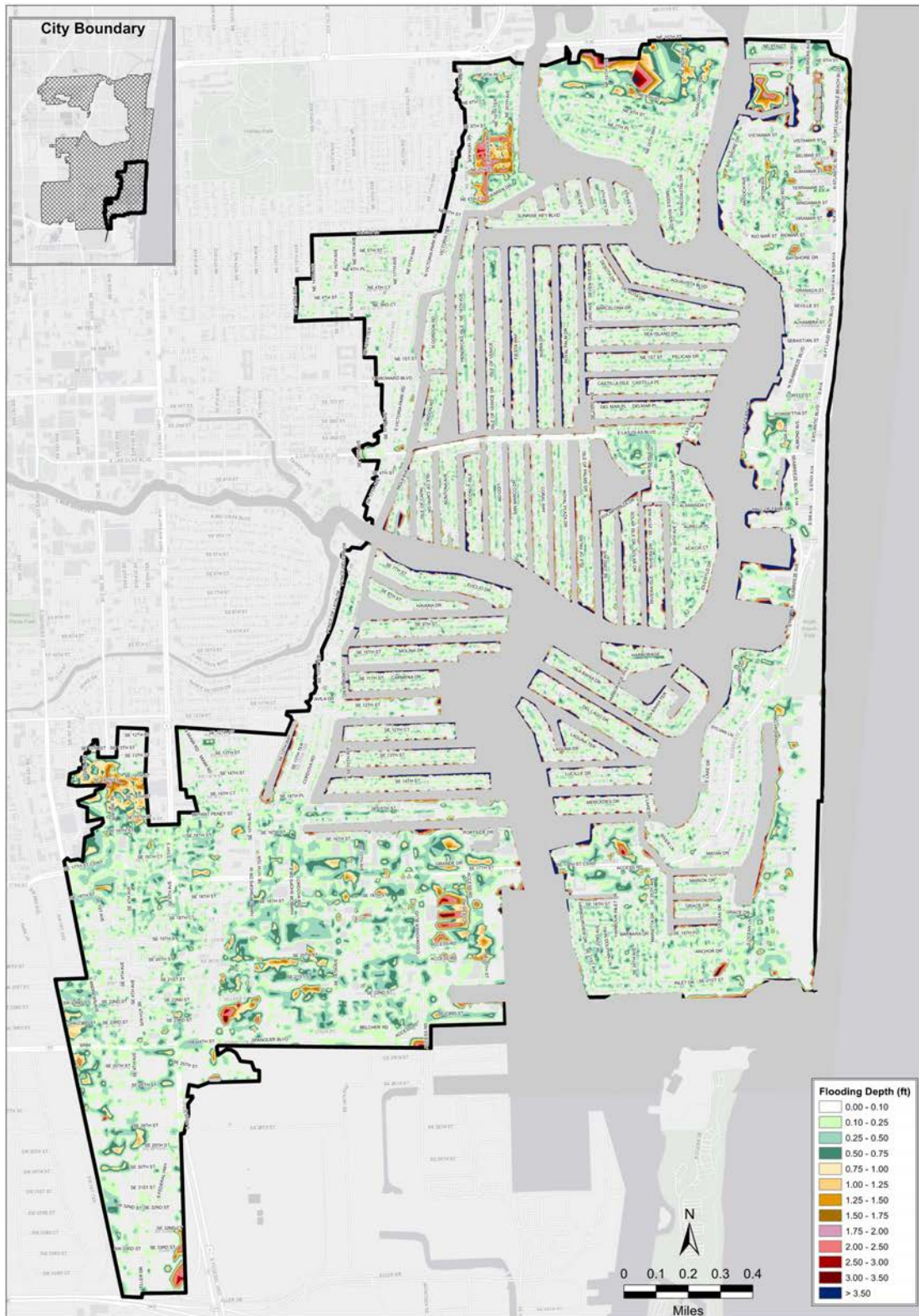


Figure 4-2: Intracoastal Waterway South Ground Surface Flooding Depth 100-Year 72-Hour Storm Event

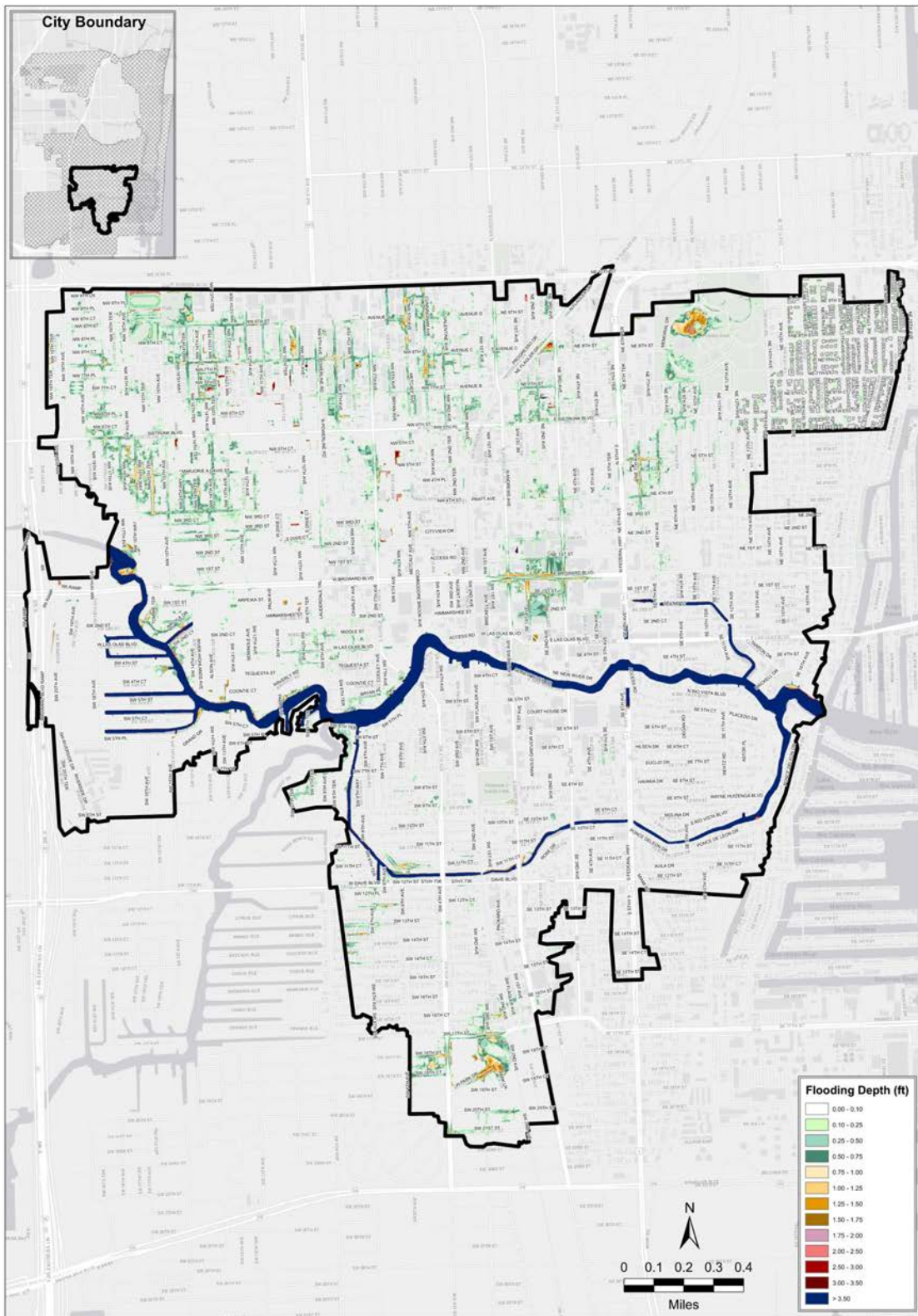


Figure 4-3: New River Ground Surface Flooding Depth 10-Year 24-Hour Storm Event

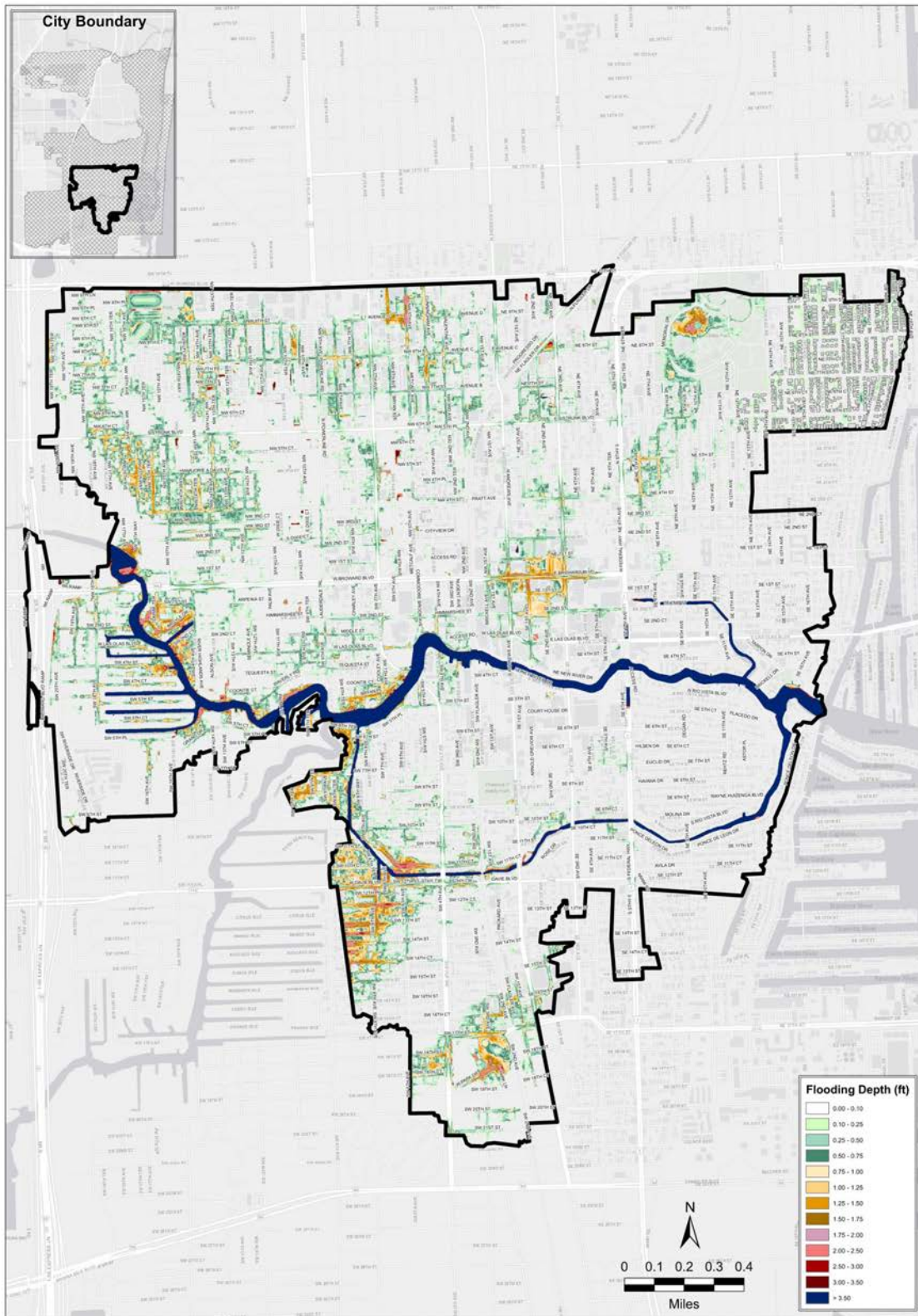


Figure 4-4: New River Ground Surface Flooding Depth 100-Year 72-Hour Storm Event

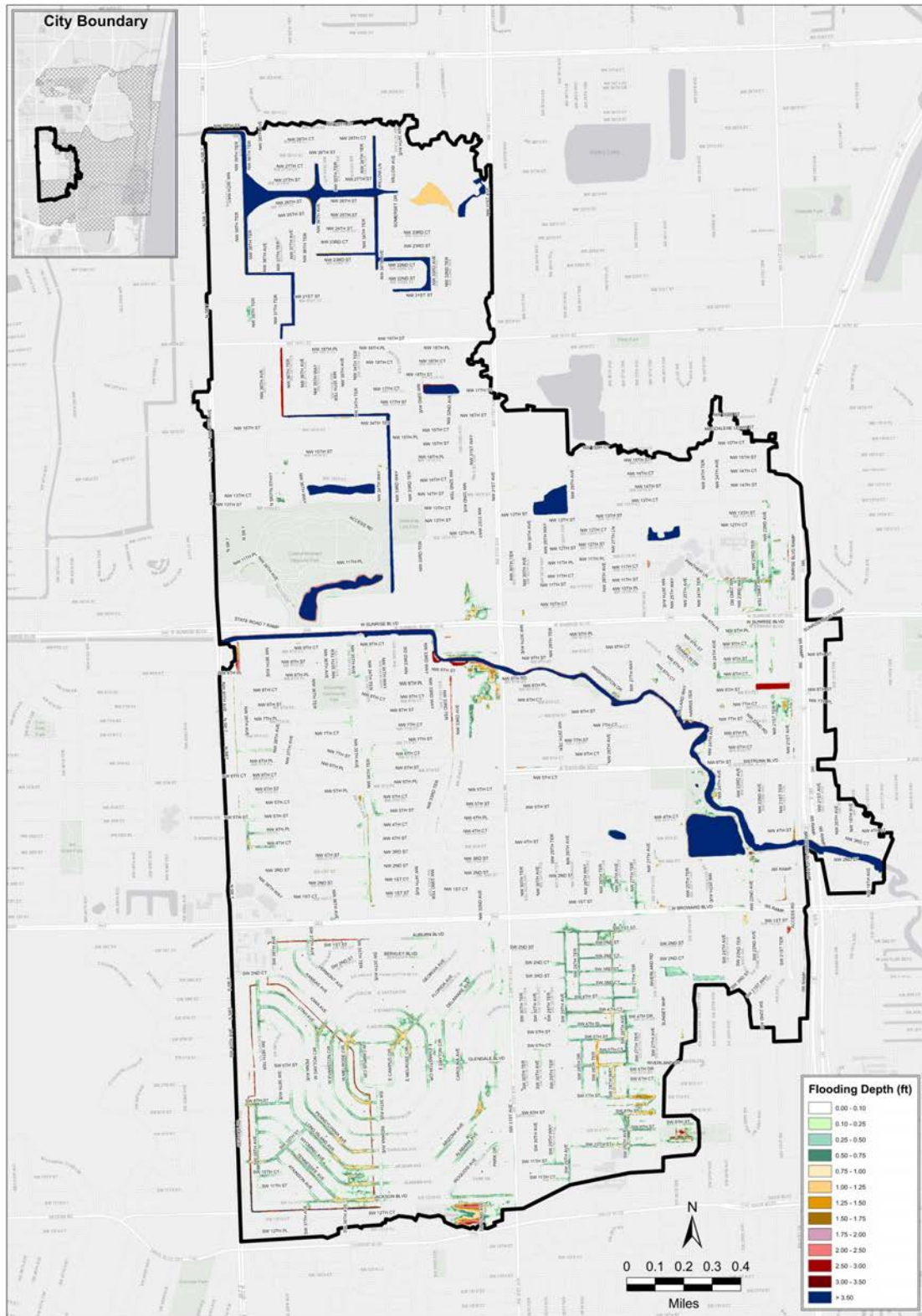


Figure 4-5: North Fork New River Ground Surface Flooding Depth 10-Year 24-Hour Storm Event

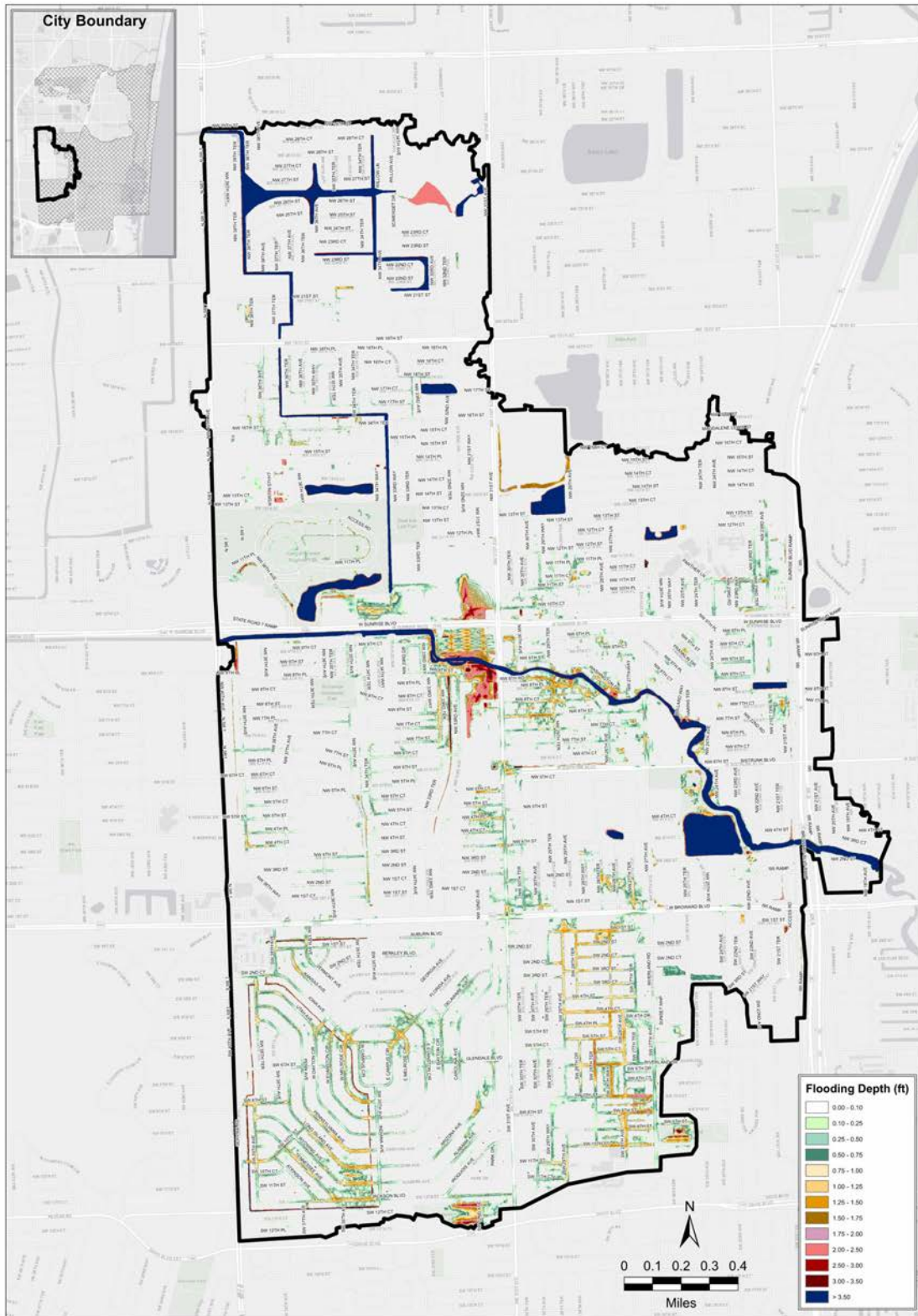


Figure 4-6: North Fork New River Ground Surface Flooding Depth 100-Year 72-Hour Storm Event

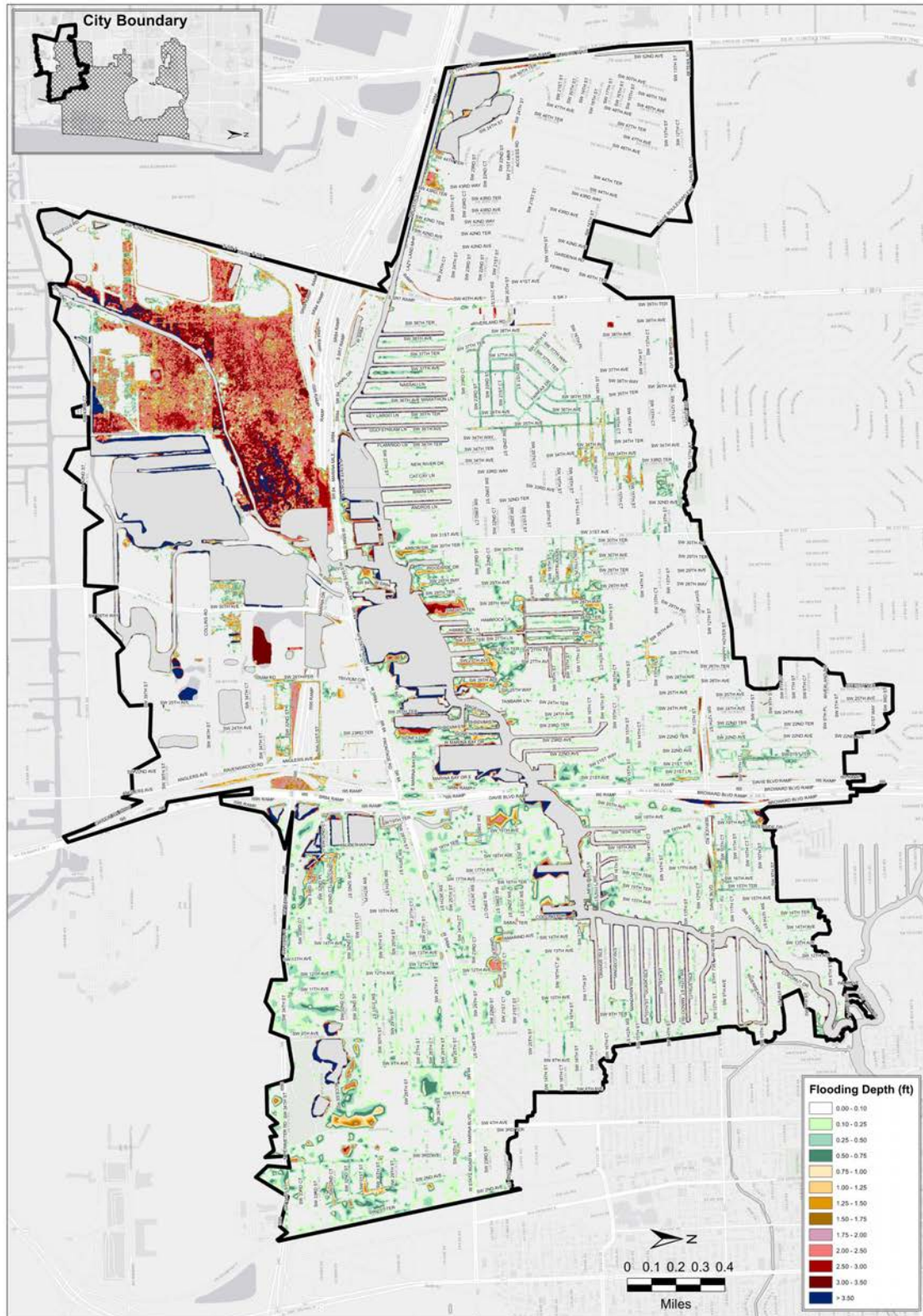


Figure 4-7: South Fork New River Ground Surface Flooding Depth 10-Year 24-Hour Storm Event

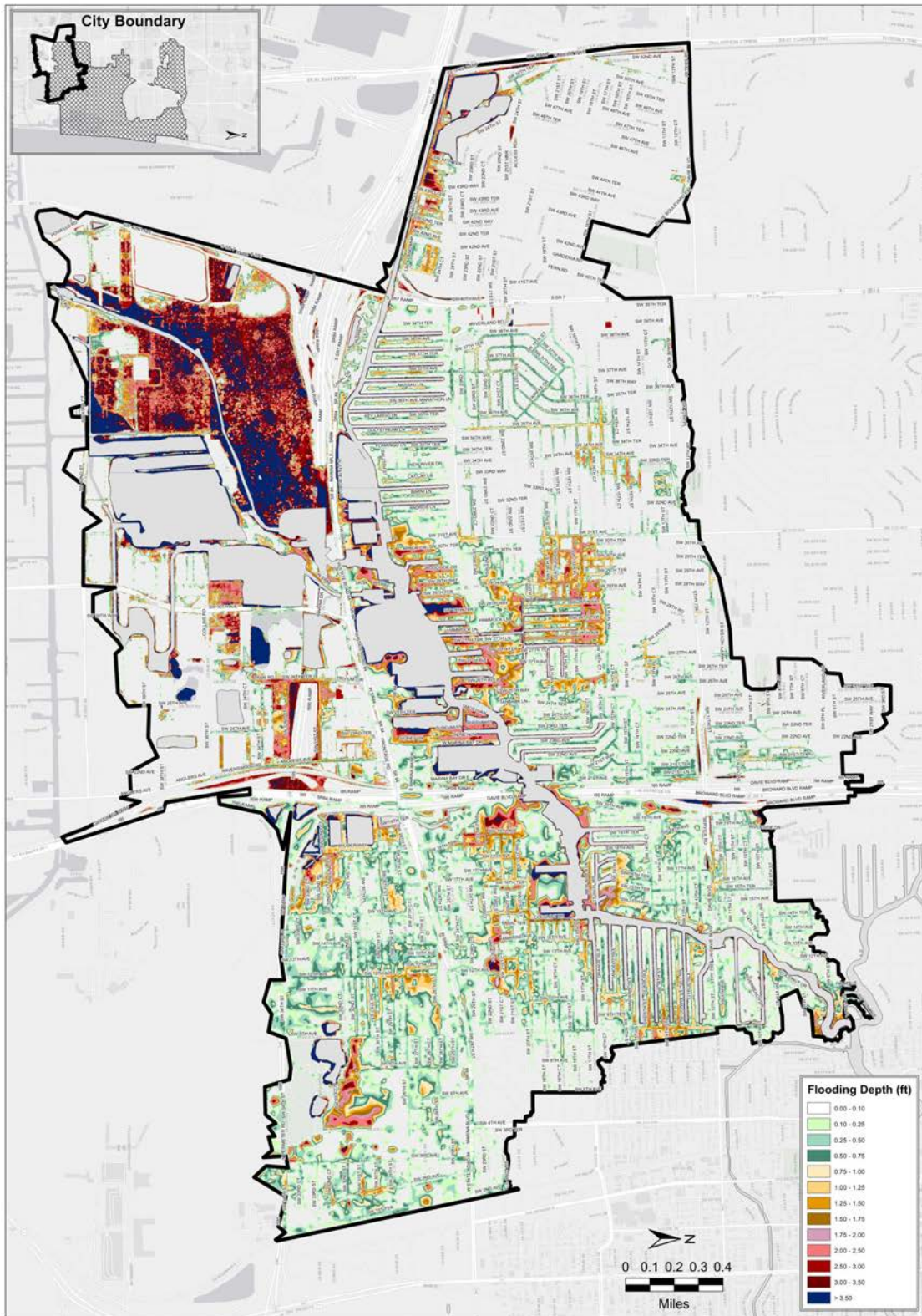


Figure 4-8: South Fork New River Ground Surface Flooding Depth 100-Year 72-Hour Storm Event

4.2 Planning Beyond the Seven Priority Neighborhoods

The modeling effort provides a basis for stormwater investment beyond the seven priority neighborhoods. Depictions of model-predicted flooding for the balance of the 10 watersheds are shown in **Figures 4-9 through 4-18**. As noted previously, the included flood maps reflect 10-year, 24-hour and 100-year, 72-hour storm event simulations based on current conditions, and similar simulations were conducted for future conditions (2035 and 2060). While specific improvements have not yet been planned for these areas, the City has begun financially planning for improvements in these areas. City consultant, Stantec, in its “FY 2020 Stormwater Fund Financial Sustainability Analysis (December 15, 2020)” planned for \$200M in funding for the seven priority neighborhoods and (starting in 2026) \$232M in funding for further stormwater infrastructure investment (beyond the seven priority neighborhoods).

It is anticipated that this second wave of funding (approximately \$232M) would be used for stormwater infrastructure investments in the next 7 to 10 neighborhoods (of the over 50 which exist in the City). The data collected to date (LiDAR, conventional survey, as-builts, etc.), the Citywide watershed modeling completed, and the standard design details and specifications developed were done so to support the program for the long-term. Thus, they will support the planning and design of these further investments. Similar to the seven priority neighborhoods, these investments are expected to take the better part of a decade to move through the entire cycle, from planning to construction/start up.

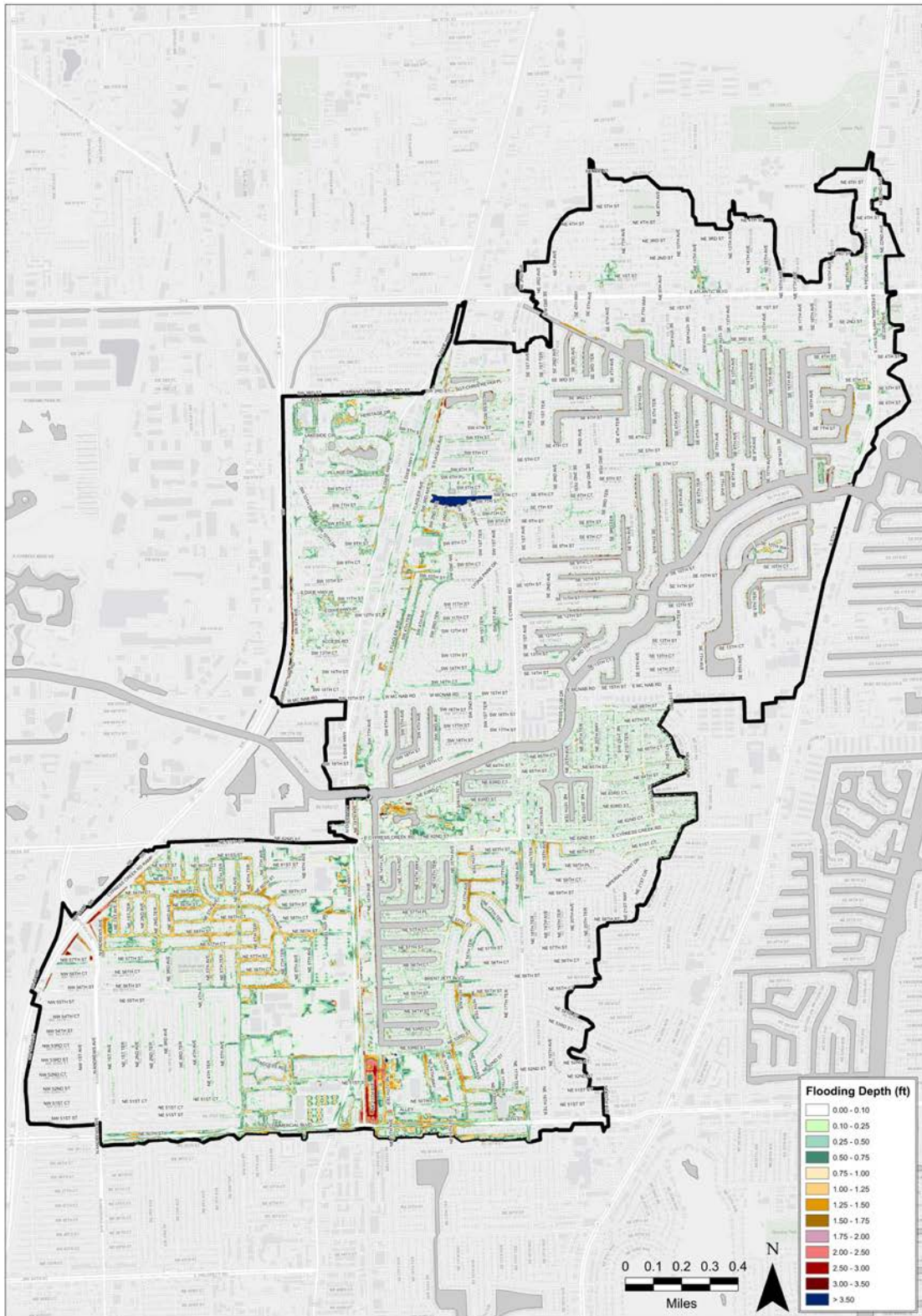


Figure 4-9: Cypress Creek Ground Surface Flooding Depth 10-Year 24-Hour Storm Event

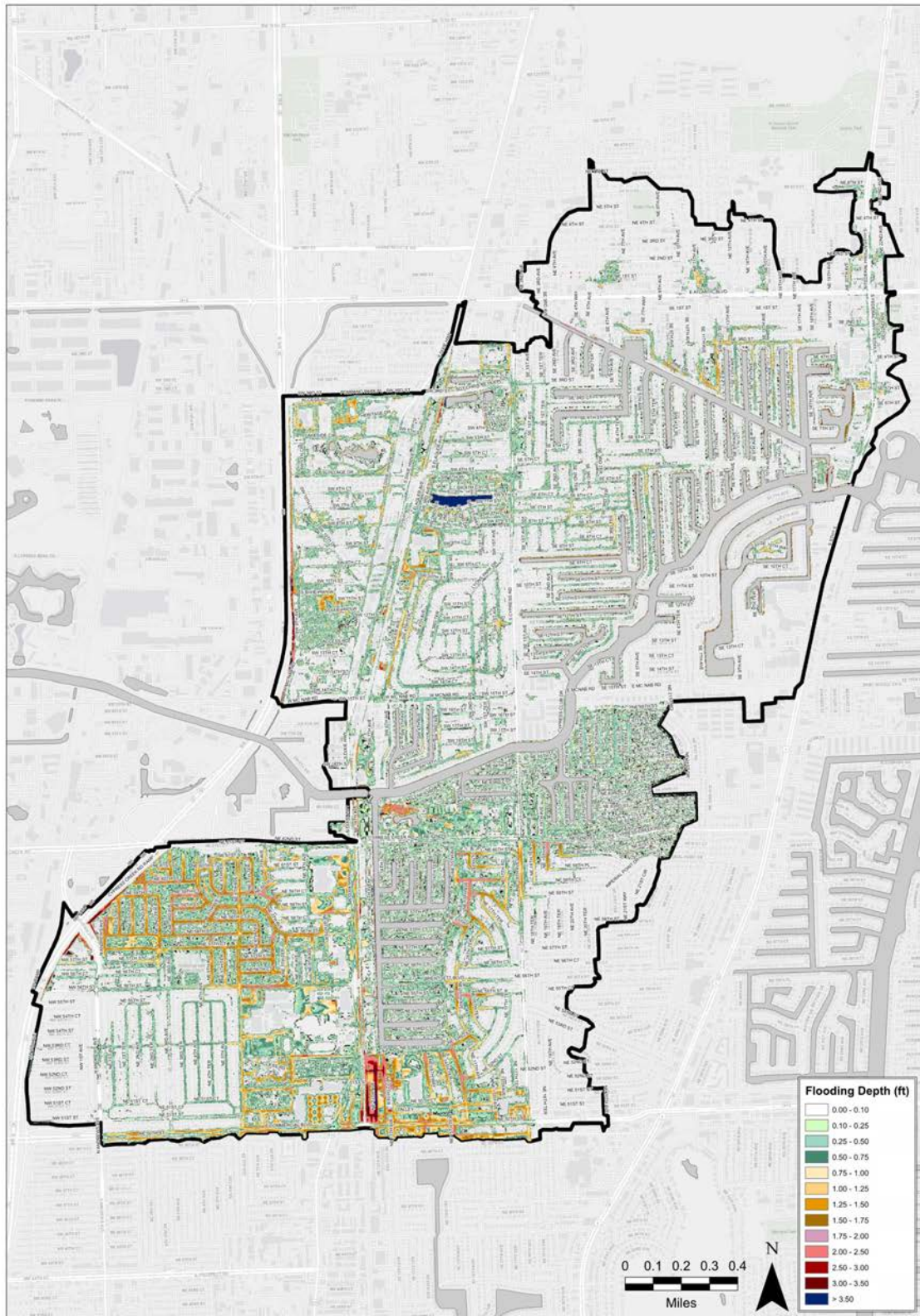


Figure 4-10: Cypress Creek Ground Surface Flooding Depth 100-Year 72-Hour Storm Event

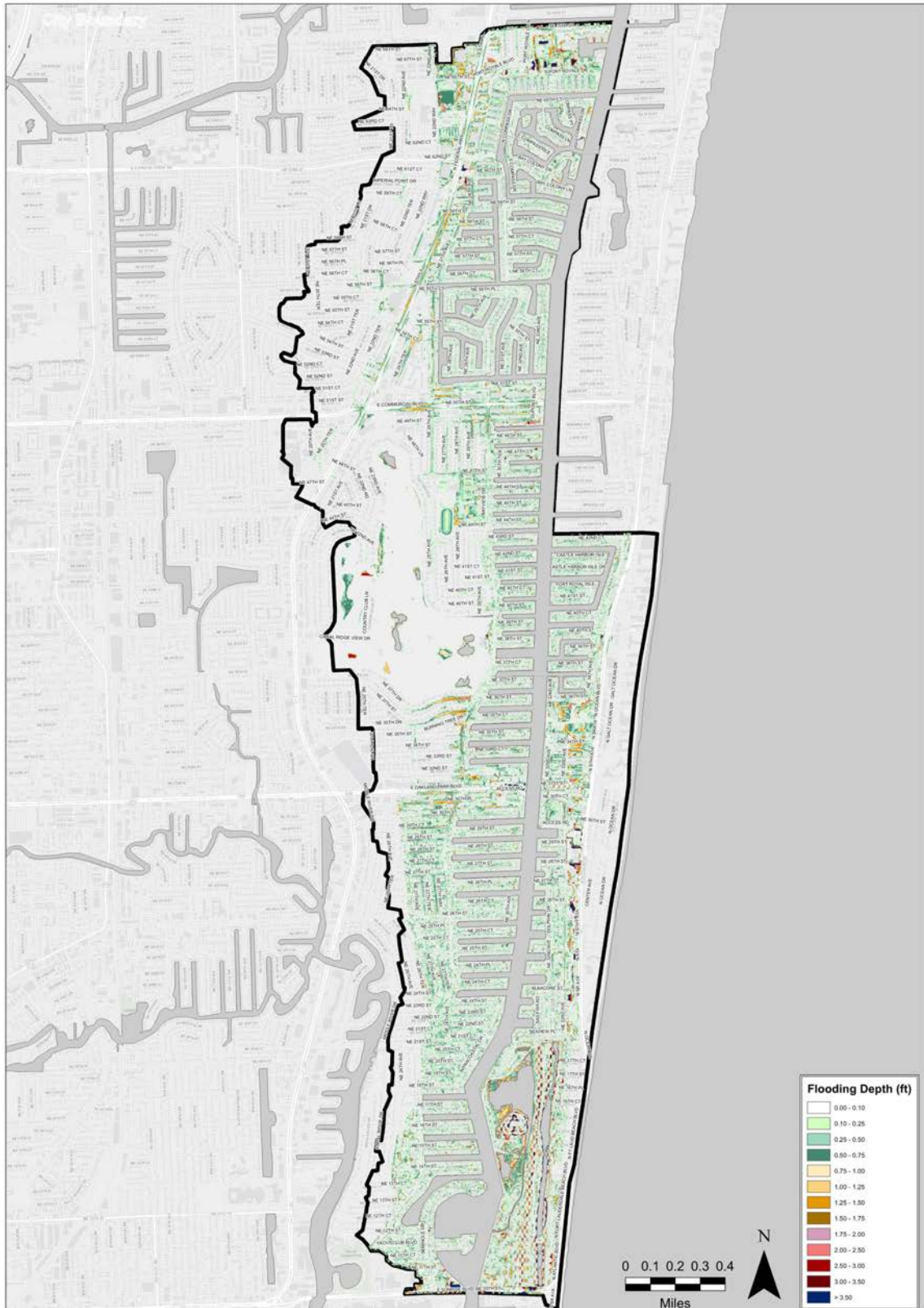


Figure 4-11: Intracoastal Waterway North Ground Surface Flooding Depth 10-Year 24-Hour Storm Event

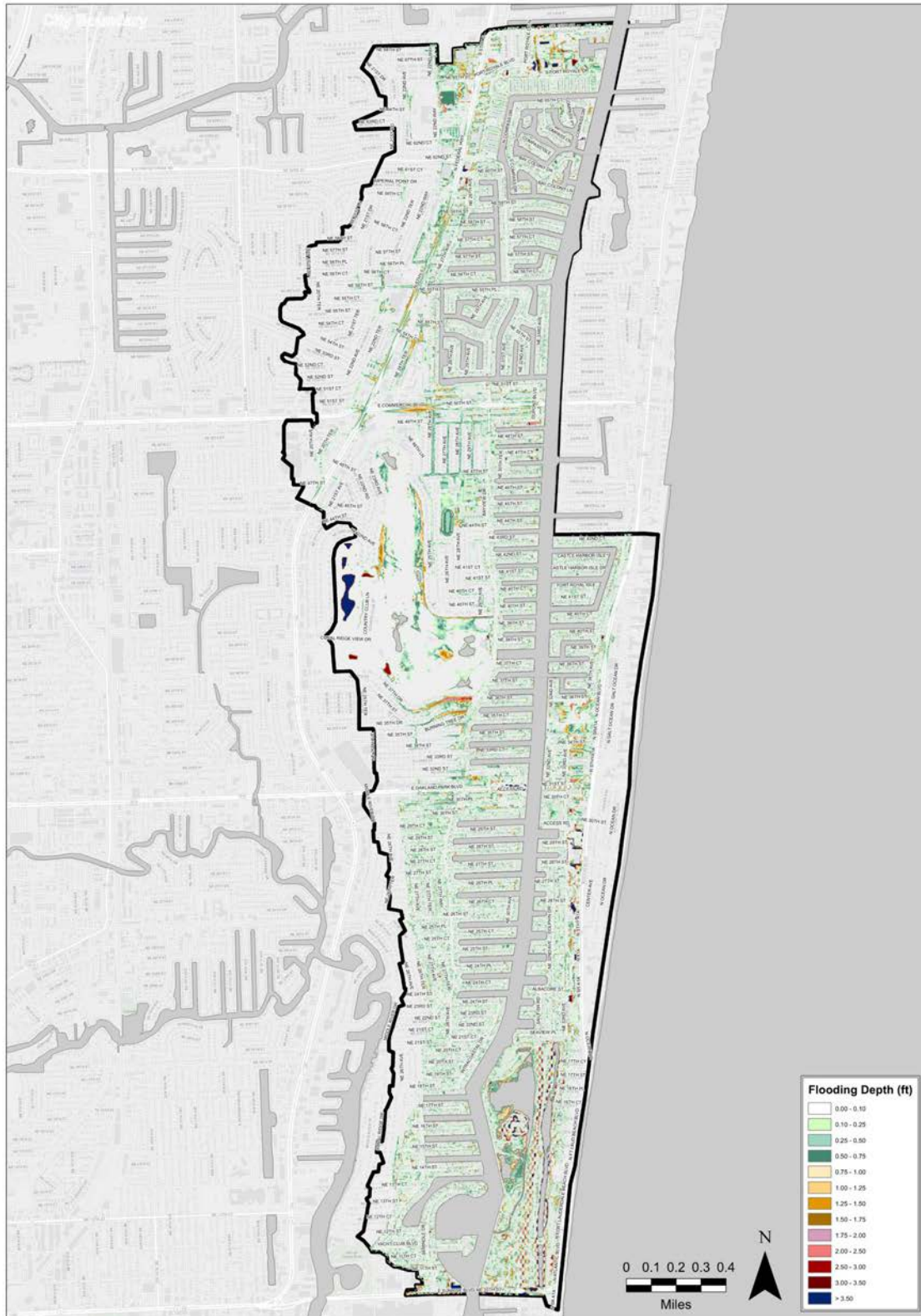


Figure 4-12: Intracoastal Waterway North Ground Surface Flooding Depth 100-Year 72-Hour Storm Event

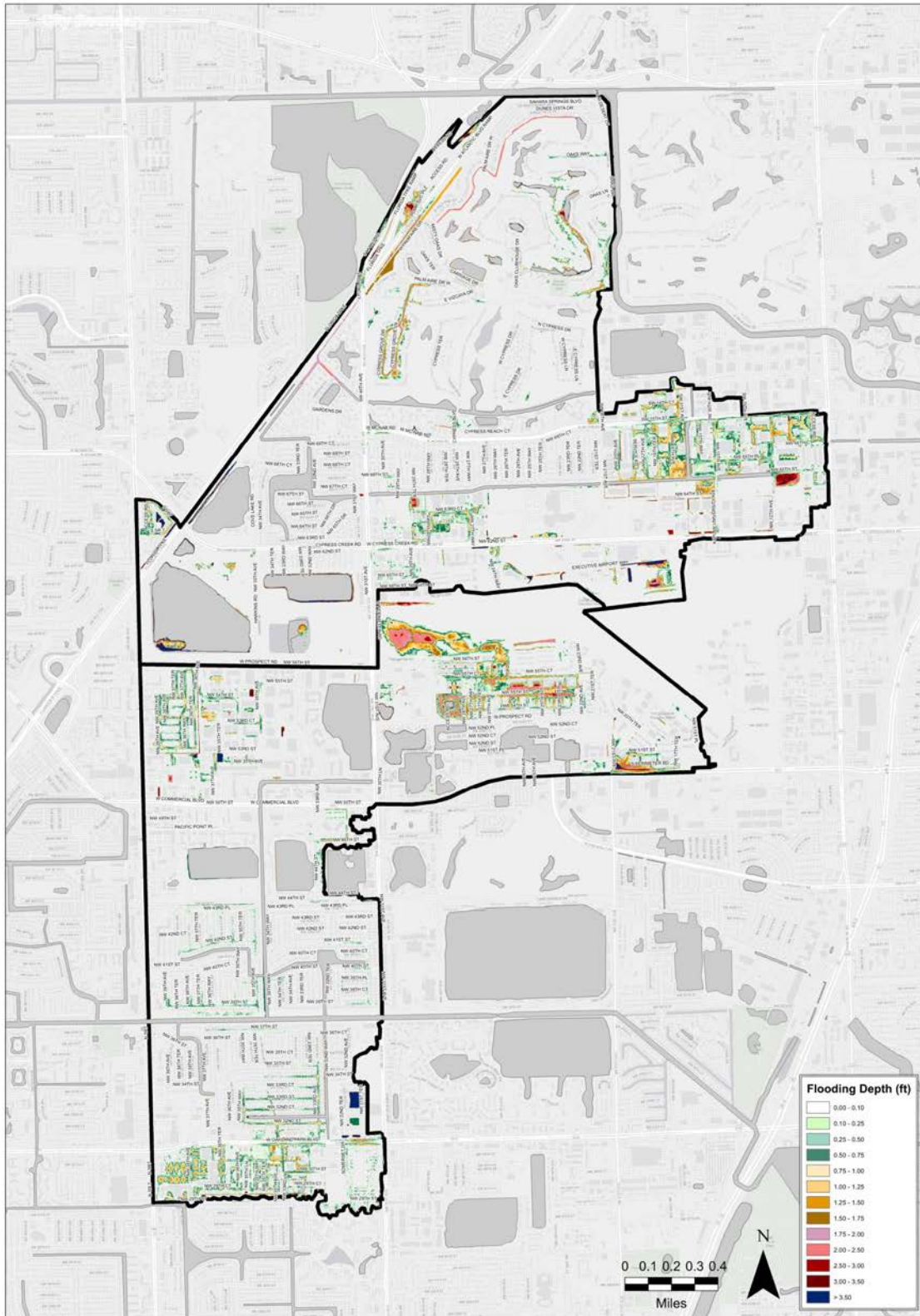


Figure 4-13: Prospekt Recharge & S-36 Ground Surface Flooding Depth 10-Year 24-Hour

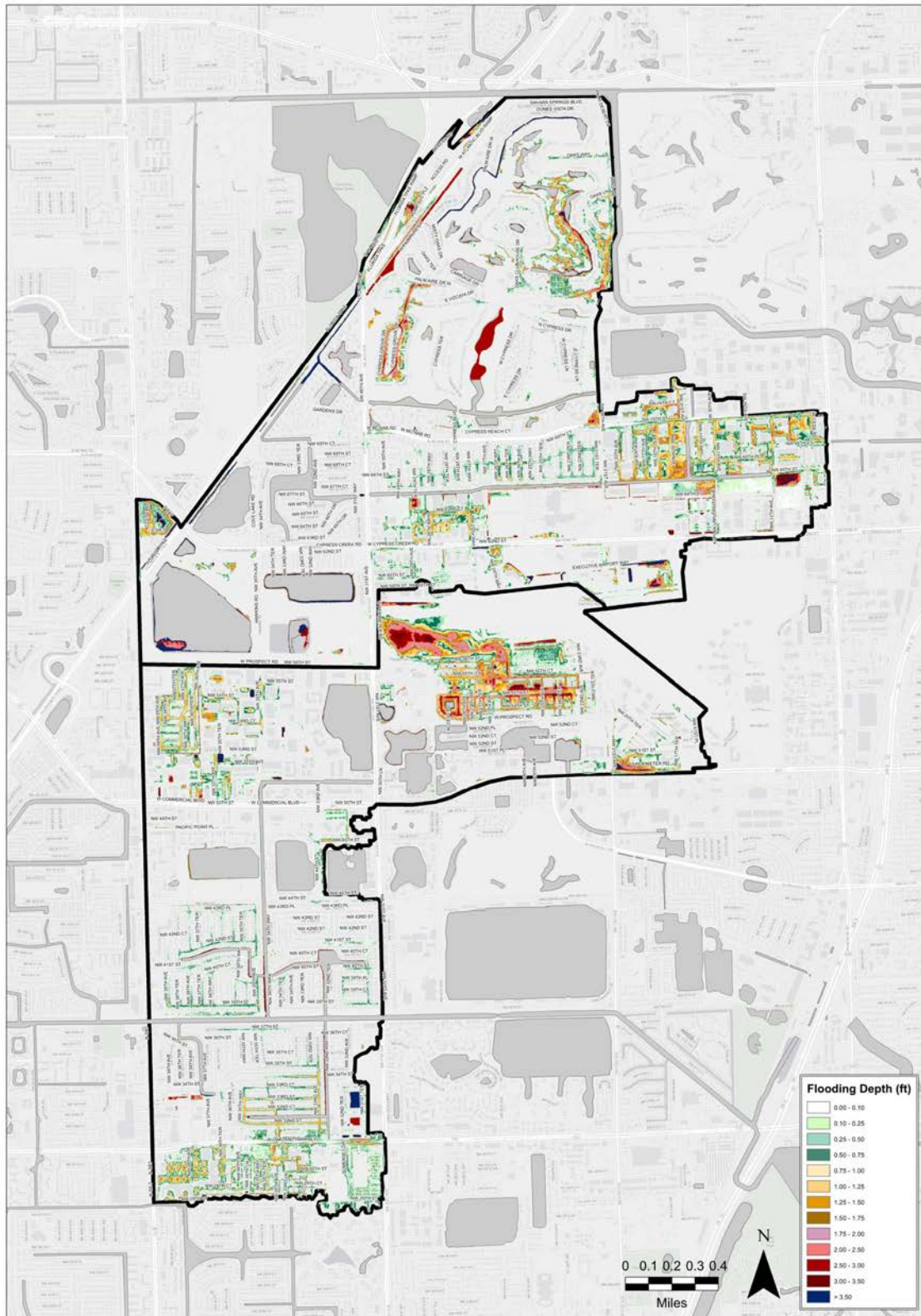


Figure 4-14: Prospect Recharge & S-36 Ground Surface Flooding Depth 100-Year 72-Hour

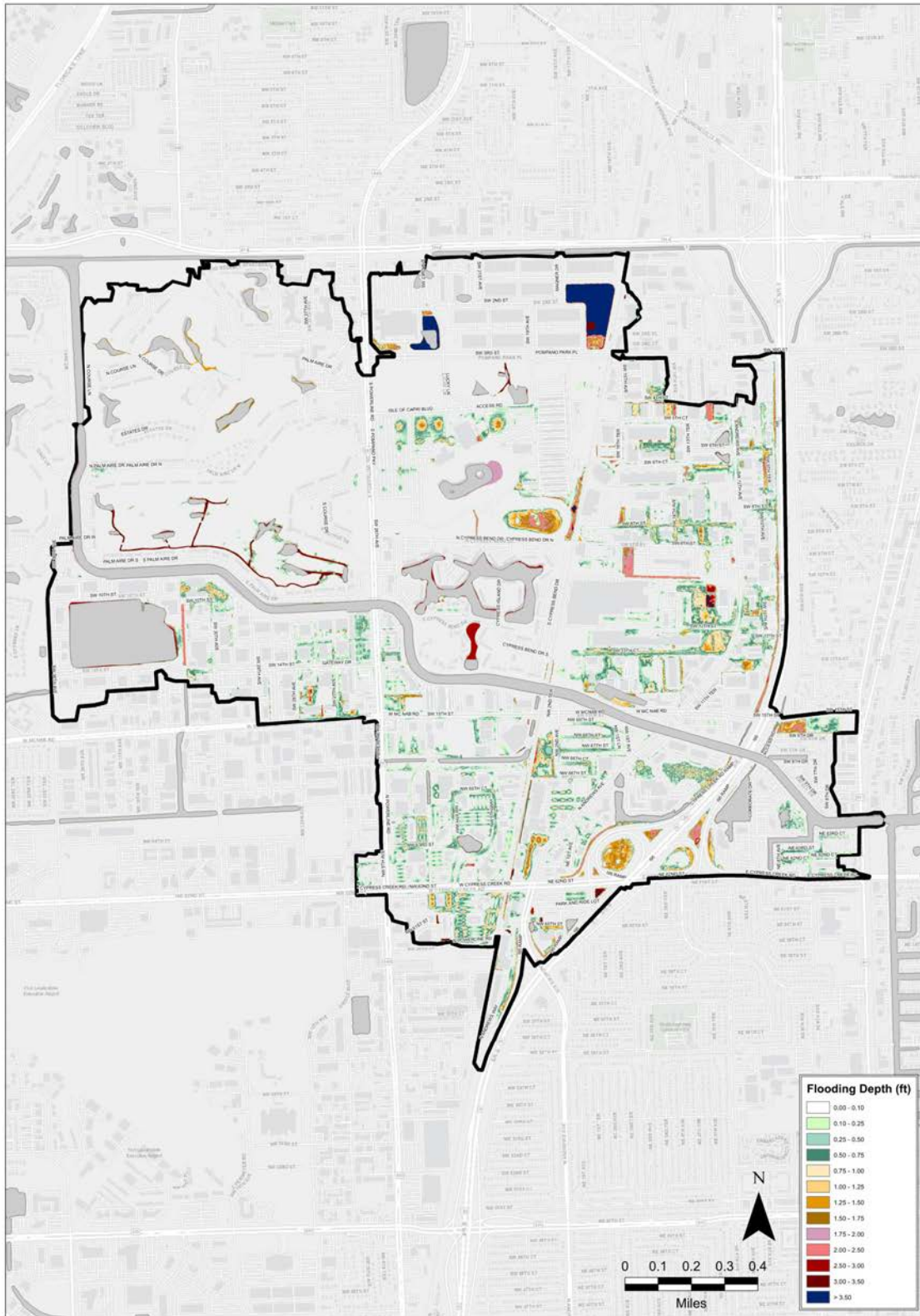


Figure 4-15: S-37A Ground Surface Flooding Depth 10-Year 24-Hour

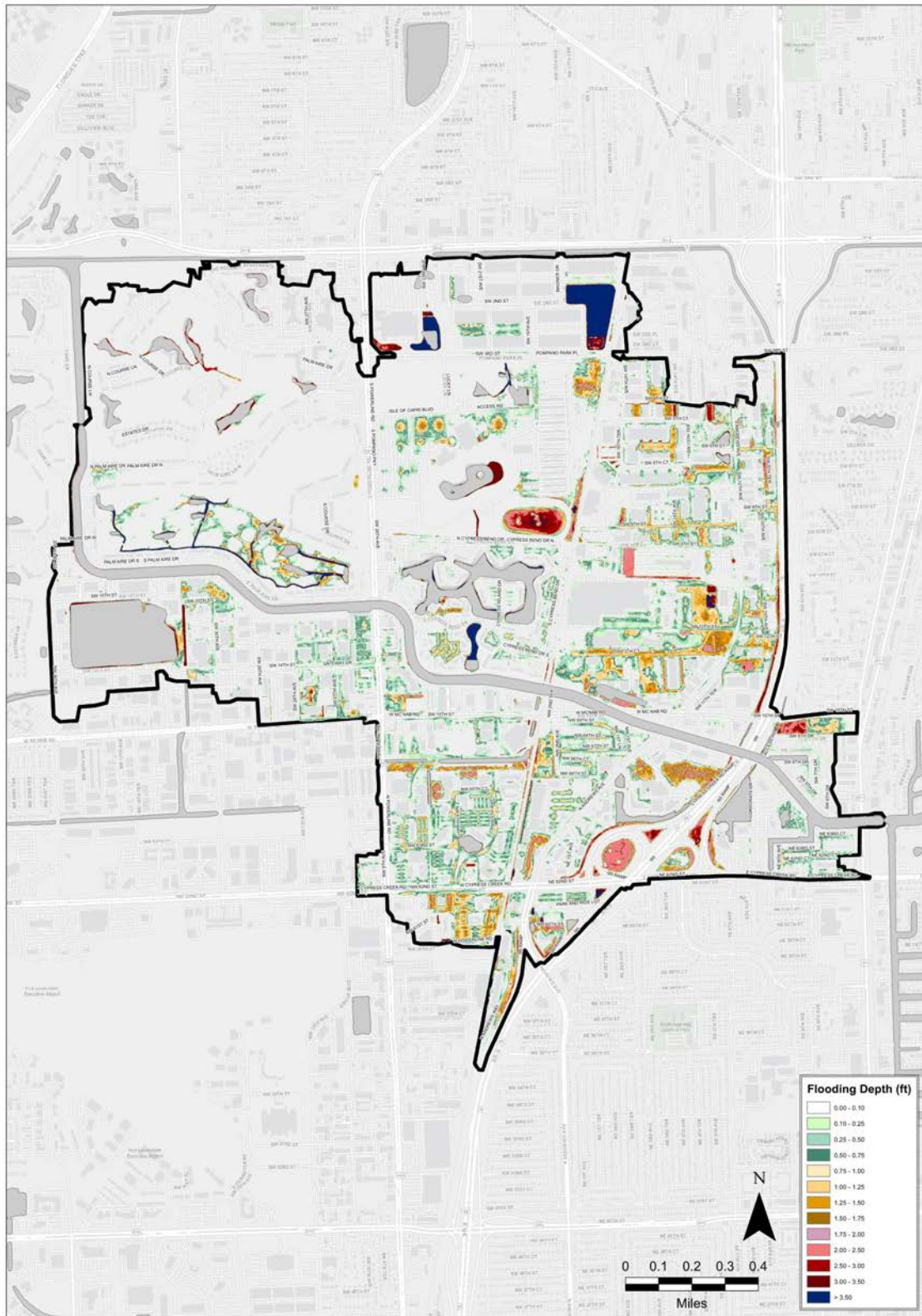


Figure 4-16: S-37A Ground Surface Flooding Depth 100-Year 72-Hour

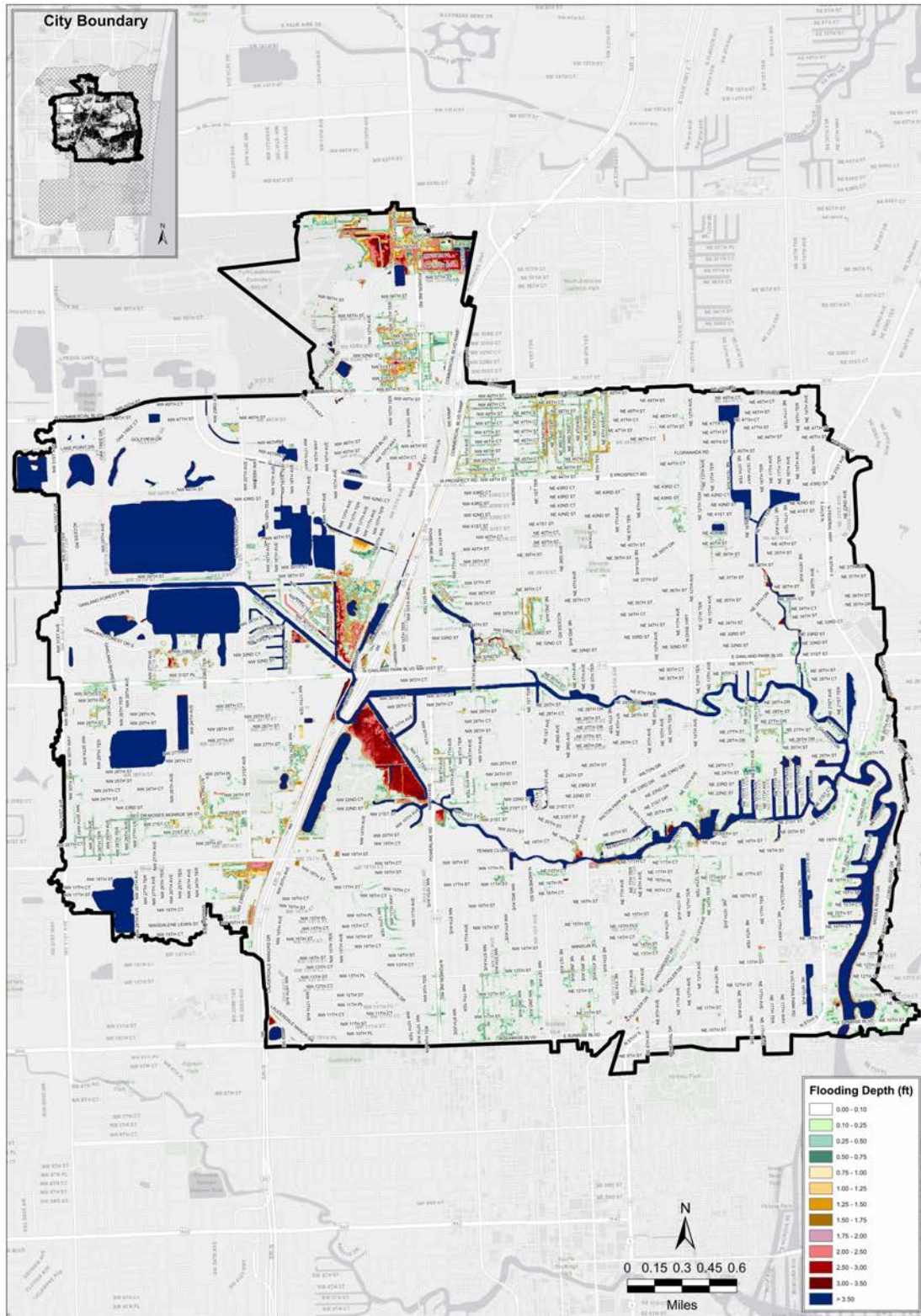


Figure 4-17: Middle River Ground Surface Flooding 10-Year 24-Hour

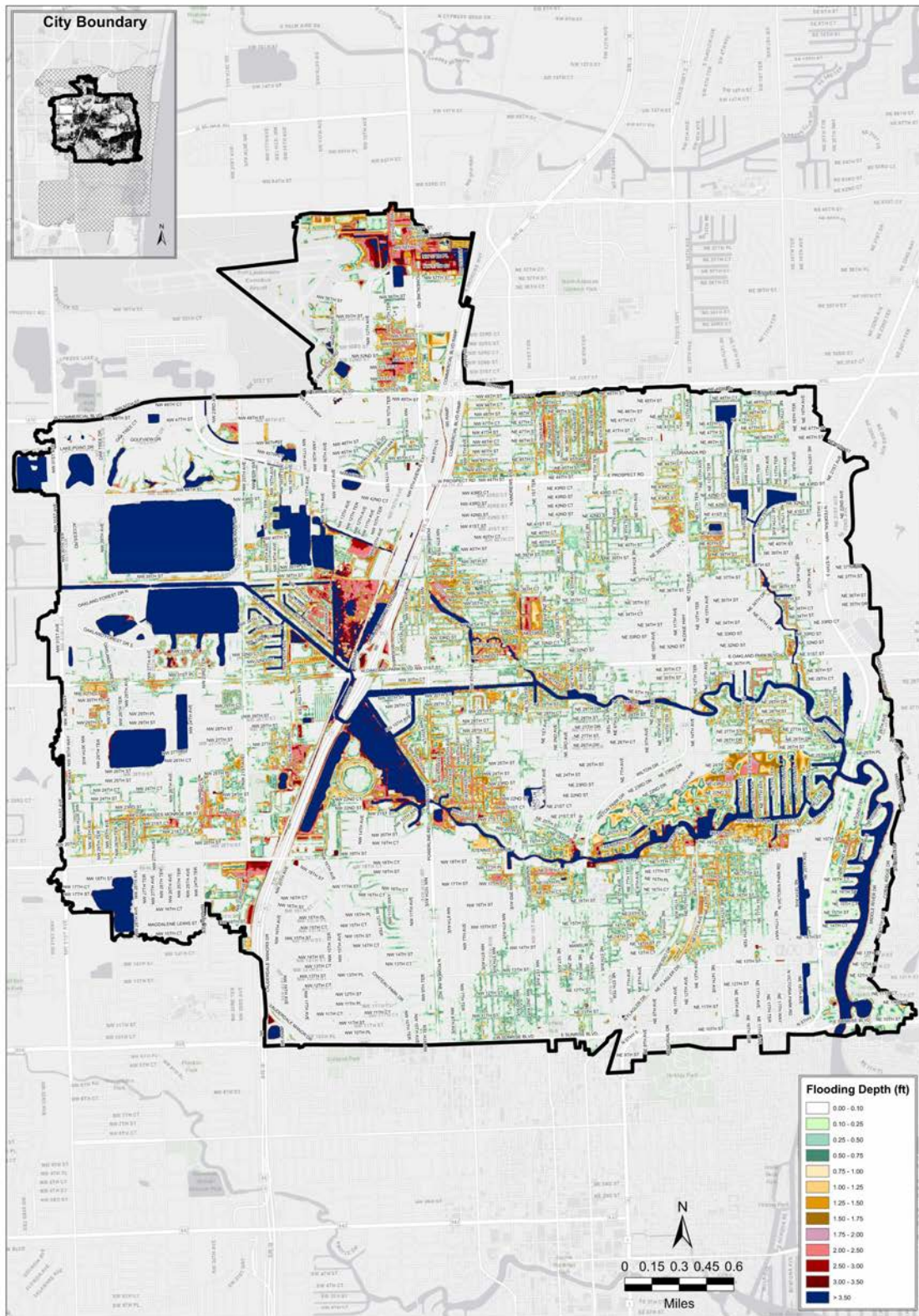


Figure 4-18: Middle River Ground Surface Flooding 100 Year 72 Hour

4.3 Identifying the Next Areas of Investment

It is recommended that the further identification of and planning for the next slate of 7 - 10 neighborhoods (identified in 4.2) to receive stormwater/resiliency infrastructure investment begin in calendar year 2022. Doing so will allow the appropriate time for modeling, conceptual plan development, design and permitting, and bidding, such that those projects will be ready to move into construction once the first seven neighborhoods are complete (or near complete).

4.4 Melrose Manors/Riverland

An additional geographic area which the model simulations surfaced as highly vulnerable to stormwater flooding was the area within the Melrose Manors and Riverland neighborhoods (see **Figure 4-19**). This vulnerability was strongly confirmed during the notable Fall 2020 rainfall events. In particular, that period of rainfall showed the significant impacts of an extreme multi-day rainfall event occurring following a period of saturating antecedent precipitation. As such, it was recommended that the Melrose Manors/Riverland area be elevated into consideration for infrastructure investment along with the seven priority neighborhoods.

4.5 General Citywide Benefits

In addition to the obvious benefits associated with the specific neighborhood stormwater infrastructure investments, there are a variety of other more general benefits the City will realize via the Stormwater Program investments made to date. The following are among those benefits:

- Improved quality of important City Waterways – the addition water quality treatment best management practices (BMPs) to serve areas with previously untreated stormwater discharges will provide general benefits to residents.
- Reallocation of operation and maintenance resources – capital (stormwater) investment in the seven priority neighborhoods will free up resources formerly consumed attending to flooding and other drainage related issues in the seven priority neighborhoods. These resources can then be reallocated to manage similar issues in other City neighborhoods and commercial areas.
- Application of Citywide Stormwater Model and LiDAR – these resources, developed in the initial phases of the program, can be used to evaluate and solve operational issues and implement smaller/routine capital projects to address localized drainage problems.
- Asset Management - use of data collected and geodatabase developed early in the program for broader stormwater/watershed asset management.
- Use of standardized stormwater construction details and specifications – these work products, developed for the seven priority neighborhoods, can be reused for both future City investments and for private development projects.

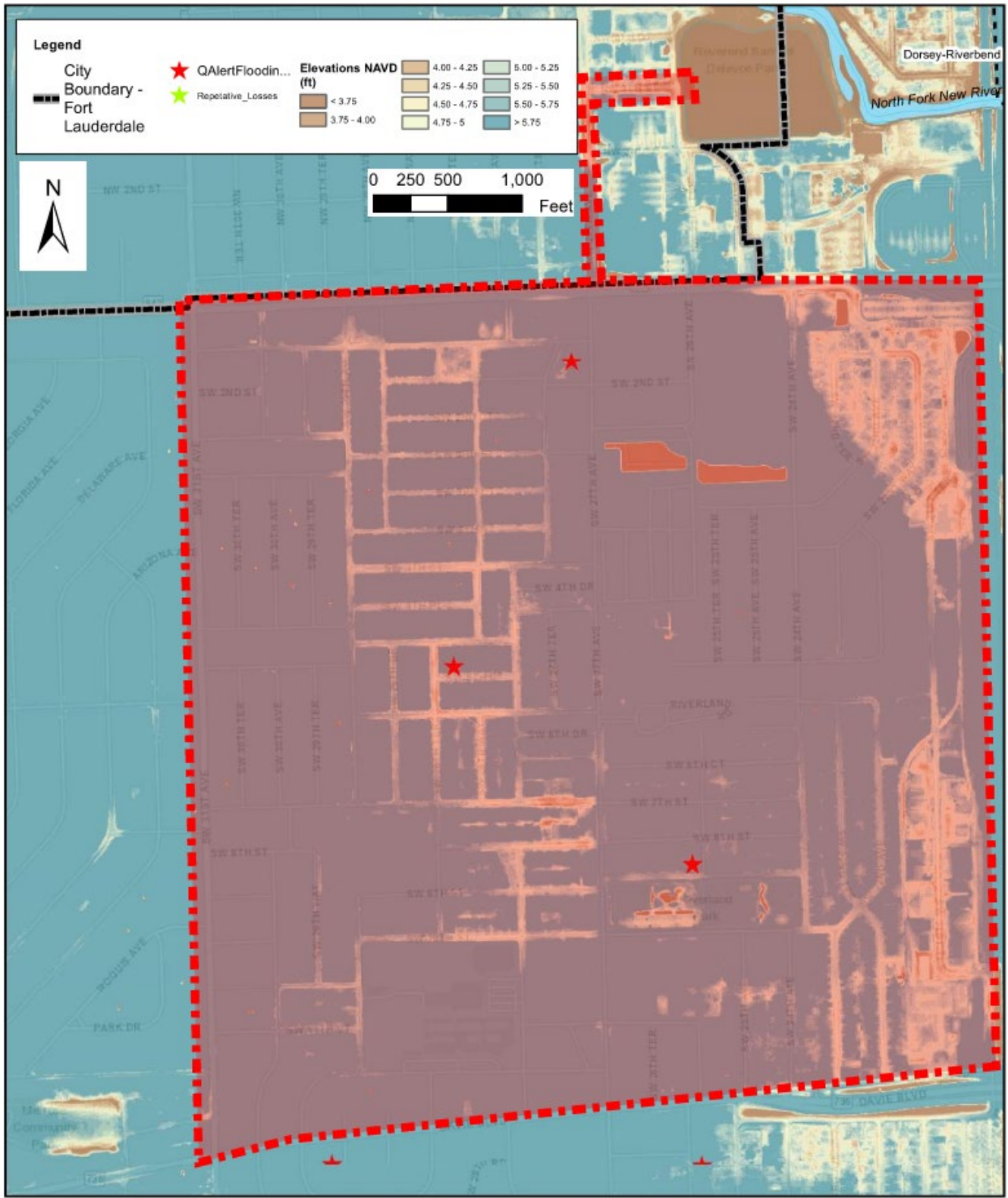


Figure 4-19: Melrose Manors and Riverland Neighborhoods

5. Seven Priority Neighborhoods – Design and Permitting

5.1 Neighborhood Overviews

As noted previously, seven neighborhoods were identified as priorities for initial stormwater infrastructure investments. This section provides an overview of those areas, including the design and permitting approach and efforts to date. **Figure 5-1** shows the location and limits of the seven neighborhoods.

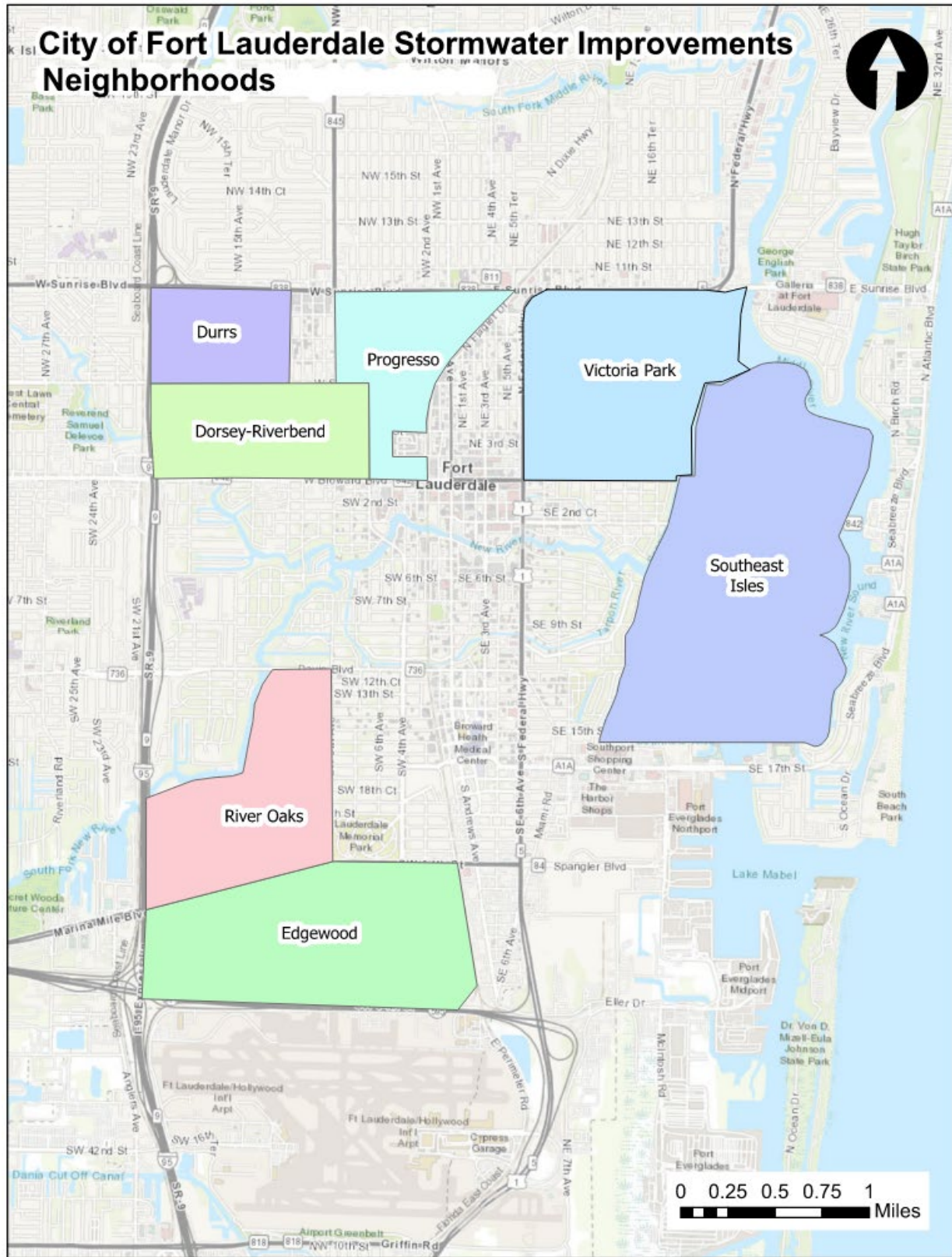


Figure 5-1: Location and Limits of the Neighborhoods

Dorsey - Riverbend

The Dorsey-Riverbend neighborhood is located east of I-95 and is bounded by NW 7th Avenue to the east, NW 6th Street (W. Sistrunk Boulevard) to the north, and State Road 842 (W. Broward Boulevard) to the south. The North Fork New River (NFNR) passes through the southwest portion of the neighborhood. The neighborhood occupies a total area of approximately 380 acres (0.6 mi²). The elevations in the neighborhood range from approximately 3.6 feet NAVD 88 to approximately 10.6 feet NAVD 88, with lower elevations generally located within the central portion of the neighborhood.

The neighborhood is primarily served by two City-owned stormwater systems (divided approximately along NW 11th Avenue) but is also served by private drainage collection systems and the FDOT drainage collection system on W. Broward Boulevard¹. Many segments of the storm sewer drainage system, particularly in northern areas of the neighborhood, are undersized for their respective drainage areas.

The western stormwater system serves a significant portion of the neighborhood (approximately 0.3 mi²). The Durrs neighborhood, located directly north of Dorsey-Riverbend, discharges its stormwater into Dorsey-Riverbend's primary collector line at the intersection of NW 15th Avenue and W. Sistrunk Boulevard. Moving south, secondary drainage lines feed into the main collector line, before reaching the outfall to the NFNR, near the intersection of NW 15th Way and NW 3rd Court, and adjacent to North Fork Elementary School.

The eastern stormwater system serves approximately 0.2 mi² in the northeast portion of the neighborhood. This system contributes stormwater flow eastward along NW 5th Street (Marjorie A. Davis Street) and discharges to the Progresso Village neighborhood stormwater system.

Durrs

The Durrs Neighborhood is located on the western side of central Fort Lauderdale, bounded by I-95 on the west, Sunrise Boulevard (State Road 845) on the north, NW 12th Avenue on the east, and Sistrunk Boulevard/NW 6th Street on the south. The neighborhood is comprised of approximately 237 acres (0.37 mi²). The elevations in the neighborhood range from approximately 1.0 feet NAVD 88 to approximately 12.5 feet NAVD 88; low areas are dispersed throughout the neighborhood.

The existing storm water system for the Durrs Neighborhood generally consists of drainage inlets, small diameter storm drainage pipes and roadside swales. The majority of the storm drainage systems are located within the City of Fort Lauderdale's right-of-way and the majority of the storm drainage pipes within Durrs are less than eighteen (18") inches in diameter.

Progresso Village

The Progresso Village neighborhood is bounded by State Road 838 (W. Sunrise Boulevard) to the north, the FEC Railway to the east, NW 9th Avenue (Powerline Road) north of NW 6th Street (W. Sistrunk Boulevard) and NW 7th Avenue (Avenue of the Arts) south of NW 6th Street (W. Sistrunk Boulevard) to the west, and State Road 842 (W. Broward Boulevard) to the south. The neighborhood occupies a total area

¹ An area of approximately 0.03 mi² in the southwest portion of the neighborhood (south of the NFNR) drains into the Florida Department of Transportation collection system on W. Broward Boulevard.

of approximately 315 acres (0.5 mi²). The elevations in the neighborhood range from approximately 1.1 feet NAVD 88 to approximately 12.7 feet NAVD 88.

The neighborhood is primarily served by a City-owned stormwater system but is also served by private drainage systems (mainly exfiltration trenches), the FDOT drainage systems on W. Broward Boulevard and W. Sunrise Boulevard, and the Broward County drainage systems along NW 9th Avenue (Powerline Road) and NW 7th Avenue (Avenue of the Arts).

Stormwater in Progresso Village is collected and conveyed on the ground surface through a combination of swales, roadway shoulders and curb and gutter systems to catch basin and curb inlets. Once collected, stormwater runoff is conveyed through underground piping which is comprised of tertiary, secondary and primary drainage pipes which exit the neighborhood and outfall to the North Fork New River (NFNR).

The County-owned primary line on Powerline Road collects stormwater runoff along its route and from secondary lines (including from the Dorsey-Riverbend neighborhood) and conveys the stormwater southward through a pipe network. The FDOT system collects stormwater runoff along its route and conveys the stormwater southward through a pipe network. This line then combines with the City collection system at the intersection of NW 5th Avenue and NW 2nd Street. This primary line collects stormwater runoff along its route and from secondary lines and conveys the water southward along SW 5th Avenue through a pipe, which leads to an outfall at the NFNR located behind the Broward Center for the Performing Arts.

Victoria Park

The Victoria Park neighborhood is bounded by Federal Highway to the west, Sunrise Boulevard to the north, Broward Boulevard to the south, and the Middle River to the east. The neighborhood encompasses approximately 668 acres of total land area and approximately 3,600 individual parcels (primarily residential). The existing stormwater system within the Victoria Park neighborhood is generally comprised of two independent drainage systems on each side of the coastal ridge. The existing stormwater system on the east side of the coastal ridge primarily consists of multiple outfalls which discharge into the Middle River. The existing stormwater system on the west side of the coastal ridge primarily consists of multiple independent pipe networks, which either do not have an outfall or are interconnected to other stormwater systems, such as the FDOT stormwater systems along Federal Highway and Sunrise Boulevard. Significant roadway segments throughout the Victoria Park neighborhood do not have any existing stormwater infrastructure.

Edgewood

The Edgewood neighborhood is located east of I-95 and is bounded by I-595 to the south, State Road (SR) 84 to the north and the FEC Railroad to the east. The neighborhood occupies a total area of approximately 750 acres (1.17 mi²). The elevations in the neighborhood range from approximately 1.9 feet NAVD 88 to approximately 12.2 feet NAVD 88, with most of the lower elevation areas in the central section and adjacent to Osceola Creek. The eastern section is primarily industrial and commercial, while the remainder of the neighborhood is primarily residential. Snyder Park and the Edgewood Passive Park provide large open spaces for recreation.

Most of the existing stormwater management infrastructure exists in the eastern section of Edgewood, with relatively little infrastructure in the majority of the residential (central and western) areas. The eastern section has storm drainage systems that connect to the SR 84 drainage system, as well as isolated sections of exfiltration trench.

River Oaks

The River Oaks neighborhood is located east of I-95 and South Fork New River and is bounded by State Road 84 to the south, Davie Road to the north, and SW 9th Avenue to the east. The neighborhood occupies a total area of approximately 518 acres (0.81 mi²). The elevations in the neighborhood range from approximately 1.5 feet NAVD 88 to approximately 13.0 feet NAVD 88, with most of the lower elevation areas occurring south of SW 20th Street and adjacent to the Preserve Park. Adjacent to South Fork New River and State Road 84 are primarily industrial and commercial land uses, while the rest of the neighborhood is primarily residential.

The overall existing storm drainage system is disconnected with many separate drainage systems located throughout the neighborhood. The northern portion of the neighborhood, north of SW 17th Street, has several individual outfalls (to the canals) that function well in providing discharge of stormwater runoff. However, there are many areas that lack any type of conveyance system. A seventy-two (72”) inch diameter storm drain exists in SW 12th Avenue from State Road 84 to a residential canal. This trunk line is a Florida Department of Transportation (FDOT) storm drain that does not capture or convey runoff from within the River Oaks neighborhood. It is strictly used for FDOT roadways and does not appear to have additional capacity for the River Oaks neighborhood. There is an outfall to an existing canal along the west right-of-way of Coconut Drive that does serve the southeastern portion of the neighborhood. There are several independent systems located in the southwestern portion of the neighborhood that consist of exfiltration trenches and swales to disperse the collected runoff. The southwestern section was designed primarily for swale drainage and surface flow towards the Preserve Park. Osceola Creek is located on the western edge of the neighborhood and drains to the South Fork New River under I-95.

Southeast Isles

The Southeast Isles neighborhood is located in the southeast section of Fort Lauderdale. The area includes many coastal neighborhoods, situated on narrow islands, which typically contain one street. The islands are connected by small strips of land or bridges to facilitate pedestrian and automobile traffic. Private homes line the streets and are fronted by canals that provide dock access. The land surface in the Southeast Isles neighborhood is relatively flat with a range of elevations from below sea level to 9.8 ft NAVD. The total area of the neighborhood is approximately 1,240 acres (1.94 mi²), which includes both the land and the vast amount of water within the neighborhood.

The Southeast Isles stormwater system consists of inlets and outfalls with the majority of the pipe diameters ranging from 6-inches to 18-inches. Most of the storm drainage systems connect the street level inlets to an outlet that drains directly into the canals. There are two stormwater pump stations within the Southeast Isles area; one is located off SE 25th Ave and the other is located off Coconut Isle Dr. In addition, the system includes about 88 tidal valves.

5.2 Flooding Evaluations

Past flooding reports were reviewed to better understand drainage concerns. Data from the City's QAlert service, FEMA Repetitive Loss records, neighborhood outreach meetings, and the 2009 Stormwater Master Plan was compiled to ascertain where to focus the improvement efforts.

In addition, field visits were conducted during dry and wet conditions to ascertain the general condition of facilities as well as areas of poor drainage and more pronounced flooding. The right of way (and particularly swale) conditions were observed (paved, vegetated, encroachments, etc.).

Lastly, in conjunction with the information gained from the flooding reports and field reconnaissance, the neighborhood stormwater management system's performance under a suite of storm events and present/future climatological conditions was simulated using the new, comprehensive City Stormwater Model. The sum of this information was considered in development of proposed system improvements.

5.3 Proposed System Improvements

Proposed system improvements varied amongst the different neighborhoods, but included: new, expanded and/or upsized stormwater collection and conveyance systems; new or restored swale systems, exfiltration trenches, water quality structures, one-way valves (for backflow prevention), raised seawalls, created wetlands, and stormwater pumping stations. Approximated asset investments associated with the seven priority neighborhoods are reported below:

- 100,000 linear feet of new storm drainage pipe
- 31,000 linear feet of replaced storm drainage pipe
- 21,000 linear feet of exfiltration trench
- 75,000 square feet of new and restored swales
- 2 drainage wells
- 11 water quality structures
- 7 pump stations
- 150 backflow preventers
- 3,500 square yards of permeable pavement
- 9 acres of created wetlands
- 6,000 linear feet of seawall replacement
- 3,500 linear feet of canal and creek maintenance

These proposed improvements are intended to reduce flood stage and time of inundation above road crowns for a 10-year, 24-hour design storm event and to protect against structural flooding in a 100-year, 72-hour storm event wherever feasible.

5.4 Water Quality

Some level of water quality treatment is being provided in each of the seven neighborhood improvement projects, based on the ability to integrate such features given existing conditions and constraints. Such conditions and constraints include limited and congested rights of way, built out conditions, and relatively high-water tables. While different water quality based best management practices (BMP's) were used (to varying degrees) in the different locations, commonly used elements include exfiltration trenches, restored swales, permeable pavement, and specifically designed water quality structures located upstream of certain pump stations and outfalls. Adequate water quality treatment was a requirement for permitting.

5.5 Neighborhood Outreach

Community involvement is a key factor in the long-term success of the stormwater improvement initiatives. For each of the seven neighborhoods, public outreach was conducted throughout the planning and design process. Three individual meetings were held with each of the respective Neighborhood Associations. Public input was actively sought, and neighbors provided information regarding flooding conditions and previous experiences. Meetings during the design phase were used to communicate design concepts and expectations, as well as answer residents' questions.

5.6 Design

Design efforts have been completed for those neighborhood improvement projects which have already been bid (River Oaks, Edgewood, and several of the Seawall Replacements in the Southeast Isles). For the majority of the other neighborhoods, designs have been substantially completed and require only modifications to address condition changes associated with the passage of time and to ready the documents for final bidding. This effort will likely be most considerable for the Victoria Park and Southeast Isles neighborhoods.

5.7 Permitting

The primary permitting effort associated with the designs for the seven priority neighborhoods was through the Broward County Environmental Protection Permitting and Growth Management Department. The main approvals necessary included Environmental Resource Permits/Surface Water Management Licenses (ERP/SWML) and Environmental Resource Licenses (ERL). ERL's were not necessary for all neighborhoods. In addition, an overall Conceptual Permit for the seven-neighborhood program was obtained using the comprehensive City-wide stormwater model. **Table 5-1** reflects the status of permitting for each of the neighborhoods. Note that final construction permit applications and issuance have been timed to (closely) coincide with the schedule for construction contract bidding.

Table 5-1: Permitting Status

Neighborhood	Conceptual ERP/SWML	Construction ERP/SWML	ERL
Southeast Isles ²	Obtained	Pending	Pending
River Oaks	Obtained	Obtained	Obtained
Edgewood	Obtained	Obtained	Obtained
Dorsey/Riverbend	Obtained	Obtained	Obtained
Durrs	Obtained	Obtained	N/A
Progresso Village	Obtained	Obtained	N/A
Victoria Park	Obtained	Pending	Pending
Melrose Manors / Riverland	N/A	Pending	Pending

5.8 Construction Cost Estimates and Tentative Scheduling

Construction cost estimates were developed for each of the seven neighborhoods in 2018. These estimates were used by Stantec in the aforementioned “FY 2020 Stormwater Fund Financial Sustainability Analysis (December 15, 2020)”. Those estimates were revised in 2021 based on finalization of the plans for certain neighborhoods and receipt of bids on others. For remaining neighborhoods, costs were escalated based on the associated passage of time. The respective 2018 and 2021 construction cost estimates are shown in **Tables 5-2 and 5-3**. In addition, estimates were made for remaining professional services, including construction inspection and engineering services during construction (see **Table 5-4**). Note that due to anticipation of some cost reductions in the seven priority neighborhood costs, the 2021 estimates also include the Melrose Manors/Riverland project.

² Certain seawall replacements within the Southeast Isles neighborhood have been permitted and constructed or are in construction.

**Table 5-2: City of Fort Lauderdale - Stormwater Master Plan Priority Neighborhoods
Opinion of Probable Construction Cost (OPCC)
(January 2018)**

Neighborhood	OPCC with 20% Contingency	OPCC with 20% Contingency (+15%)	OPCC with 20% Contingency (-10%)
Southeast Isles ³	\$36,924,000	\$42,462,600	\$33,231,600
River Oaks	\$32,912,900	\$37,849,900	\$29,621,600
Edgewood	\$26,208,000	\$30,139,200	\$23,587,200
Dorsey/Riverbend	\$17,307,500	\$19,903,700	\$15,576,800
Durrs	\$18,060,000	\$20,769,000	\$16,254,000
Progresso Village	\$23,257,800	\$26,746,500	\$20,932,000
Victoria Park	\$15,887,100	\$18,270,200	\$14,298,400
Total	\$170,557,300	\$196,141,100	\$153,501,600

³ The Southeast Isles Neighborhood opinion of probable cost includes individual seawall projects that are in various design and construction phases in addition to the overall neighborhood improvements project.

**Table 5-3: City of Fort Lauderdale - Stormwater Master Plan Priority Neighborhoods
Plus Melrose Manors/Riverland
(Updated through July 2021)**

Neighborhood	Opinion of Probable Construction Cost	Opinion of Probable Construction Cost (+15%)	Opinion of Probable Construction Cost (-10%)
Southeast Isles ⁴	\$42,512,700	\$47,709,100	\$39,048,400
River Oaks	\$32,444,000	\$37,310,600	\$29,199,600
Edgewood	\$20,650,200	\$23,747,700	\$18,585,200
Dorsey/Riverbend	\$19,270,900	\$22,161,500	\$17,343,800
Durrs	\$20,108,800	\$23,125,100	\$18,097,900
Progresso Village	\$25,896,200	\$29,780,600	\$23,306,500
Victoria Park	\$17,689,300	\$20,342,700	\$15,920,400
Melrose Manors / Riverland	\$30,050,600	\$34,558,200	\$27,045,600
Total	\$208,622,700	\$238,735,500	\$188,547,400

Note: Opinions of probable construction cost are estimated and are subject to adjustment depending on changes in project scope and specific improvement elements. They include a 20% contingency, except for those projects that have already gone to bid (Edgewood and River Oaks).

⁴ The Southeast Isles Neighborhood opinion of probable cost includes individual seawall projects that are in various design and construction phases in addition to the overall neighborhood improvements project.

Table 5-4: City of Fort Lauderdale - Stormwater Master Plan Priority Neighborhoods Plus Melrose Manors/Riverland Anticipated Professional Services Remaining

Neighborhood	Anticipated Professional Services Remaining (\$)		Total (\$)
	Design/Permit/Bid	Const. Services	
Southeast Isles ⁵	\$762,100	\$3,424,100	\$4,186,200
River Oaks	\$68,100	\$3,149,300	\$3,217,400
Edgewood	\$87,800	\$2,379,300	\$2,467,100
Dorsey/Riverbend	\$482,000	\$1,761,800	\$2,243,800
Durrs	\$238,600	\$1,575,600	\$1,814,200
Progresso Village	\$445,400	\$2,504,200	\$2,949,600
Victoria Park	\$304,300	\$1,710,600	\$2,014,800
Melrose Manors / Riverland	\$2,824,200	\$2,905,900	\$5,730,100
Total	\$5,212,500	\$19,410,800	\$24,623,200

Note: Anticipated costs for remaining professional services are estimated and are subject to adjustment depending on detailed design/construction management activities and the City’s desired level of service

In addition, a tentative implementation schedule (including approximate fund encumbrance timing) is shown in **Figure 5-2**.

⁵ The Southeast Isles Neighborhood opinion of probable cost includes individual seawall projects that are in various design and construction phases in addition to the overall neighborhood improvements project.

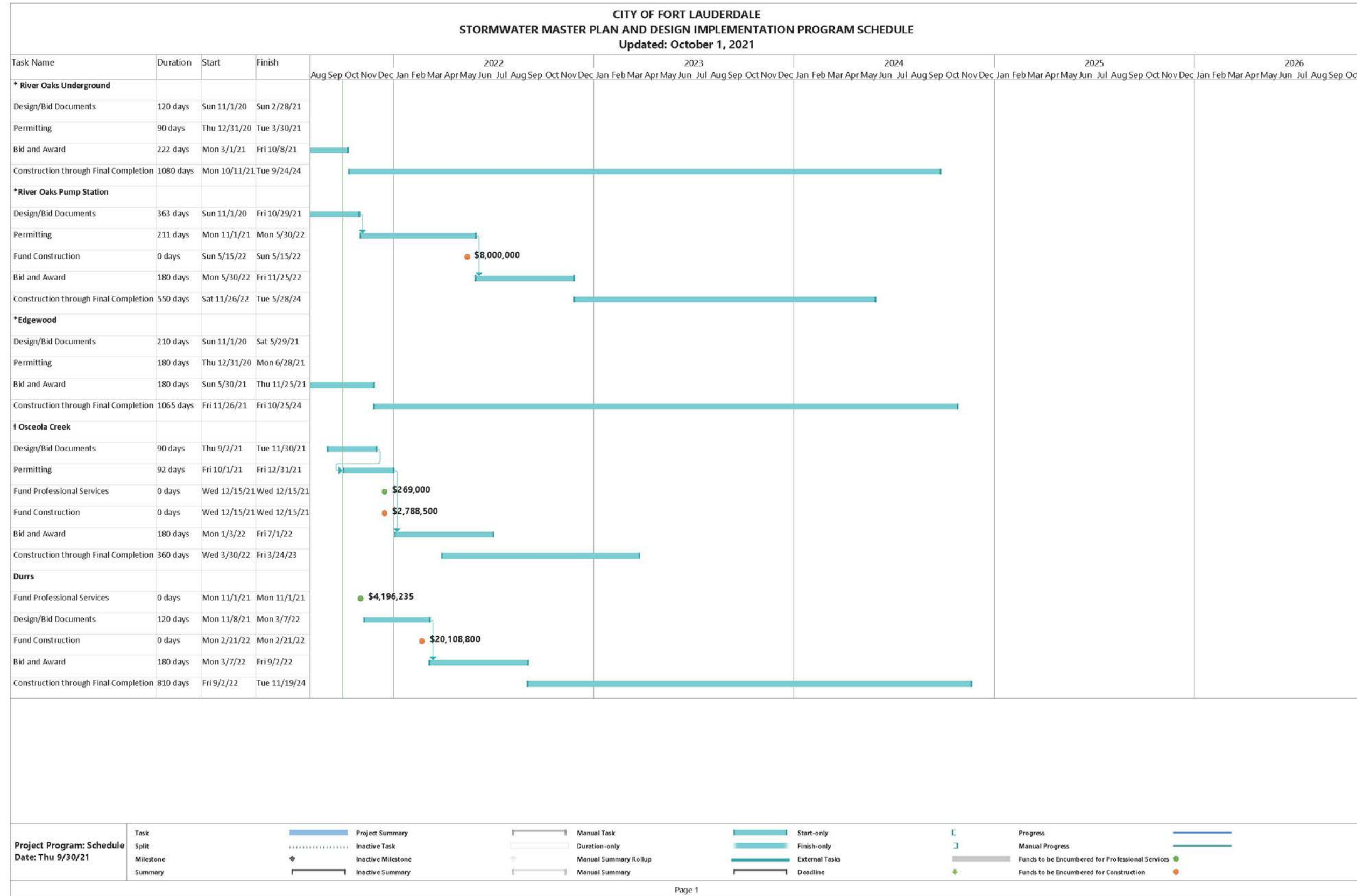
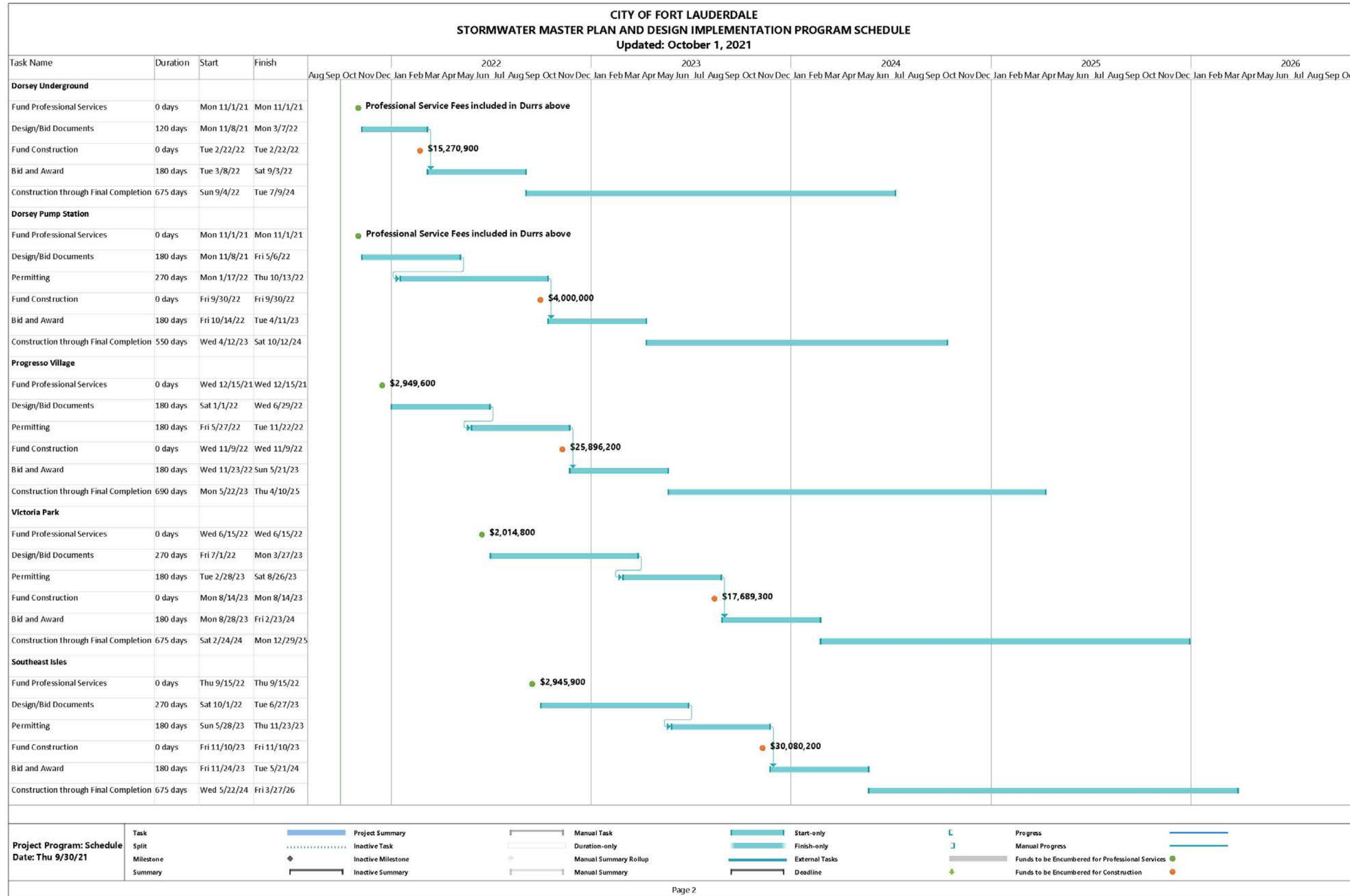
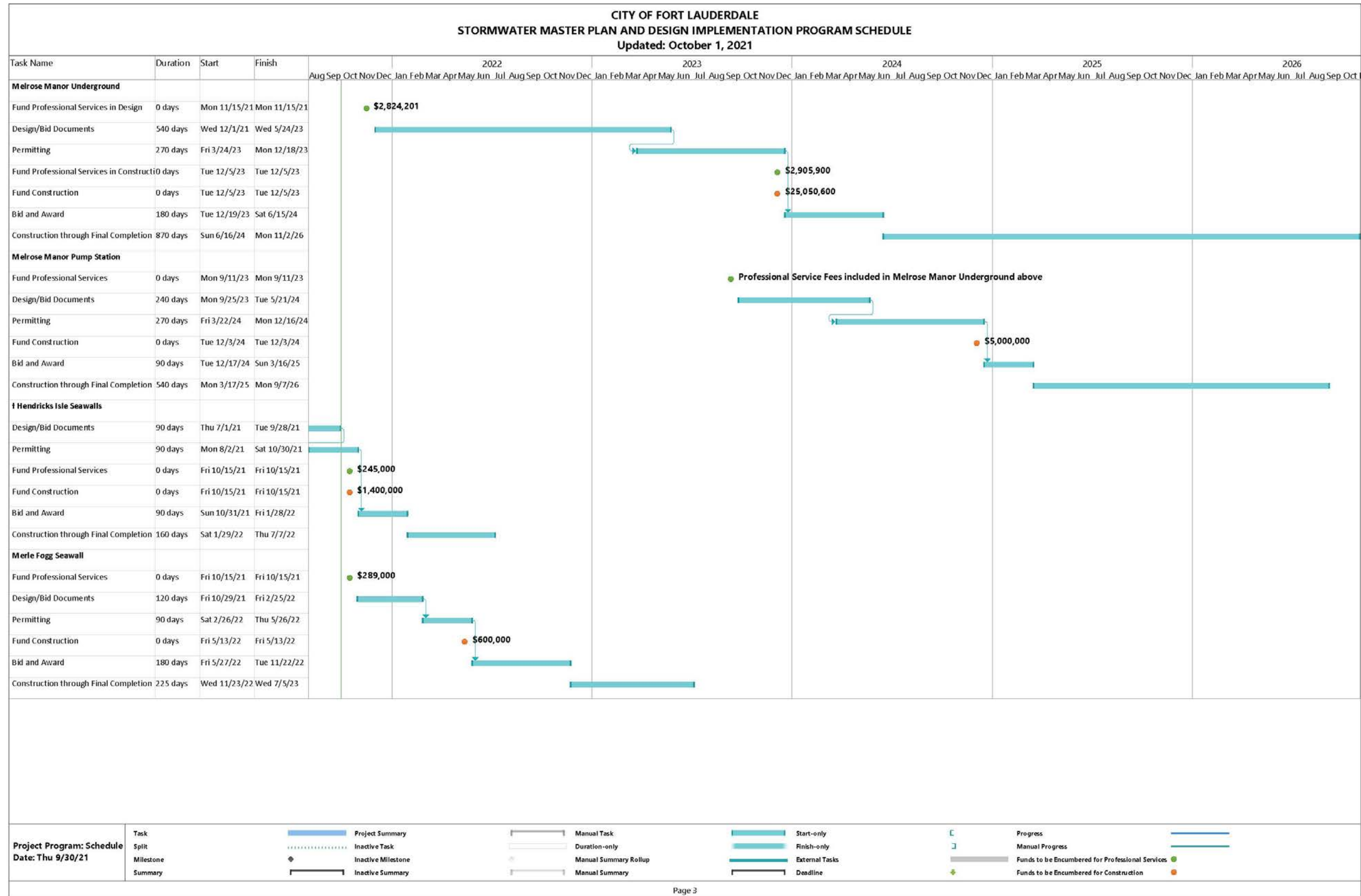


Figure 5-2: Implementation Schedule





Appendix A: Conceptual Improvement Exhibits

GENERAL NOTE: Additional details regarding drainage wells, exfiltration trenches, discharge baffles, control structures, and manatee grating shall be included in the modification to the conceptual, joint application, along with the neighborhood construction documents.

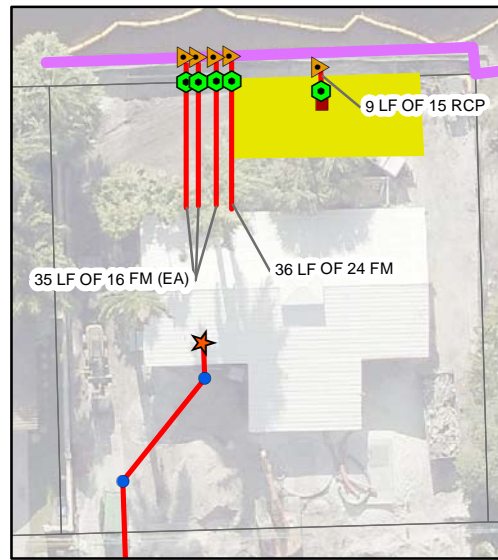


Figure A: Lido Pump Station

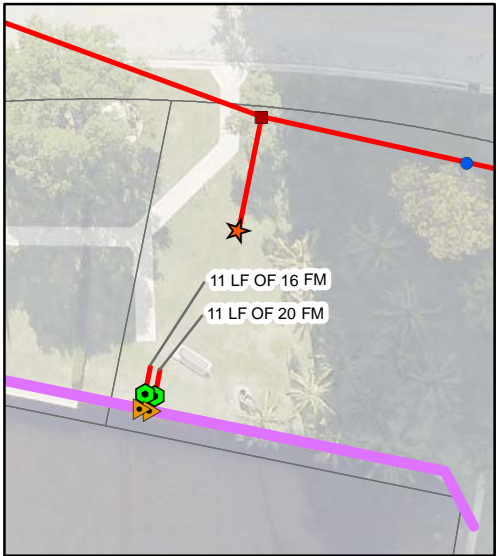
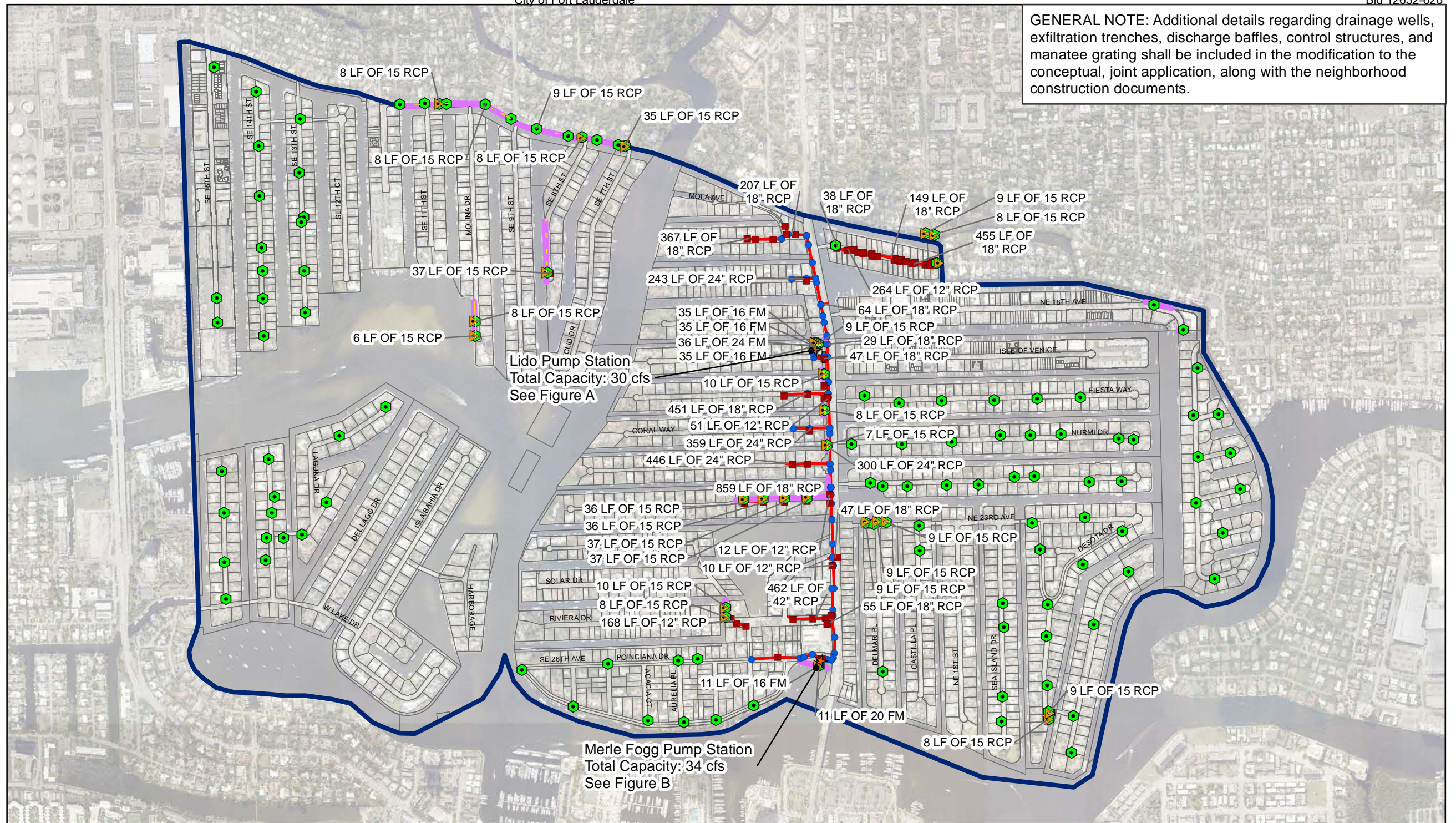
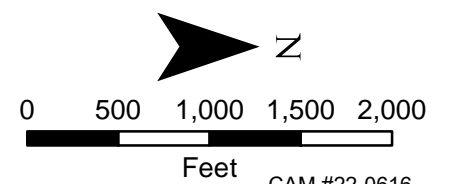


Figure B: Merle Fogg Pump Station



Southeast Isles Proposed Stormwater Improvements

- Catch Basin
 - Backflow Preventers
 - Exfiltration Trench
 - New/Restored Swale
 - Created Wetland
 - Manhole
 - ◆ Drainage Wells
 - Storm Sewer
 - Permeable Pavement
 - Southeast Isles Neighborhood Boundary
 - ▲ Outfall
 - ★ Pump Stations
 - Existing Storm Sewer
 - ▨ Canal Improvements
 - Parcel
 - + Water Quality Structure
 - Seawall Replacement
- RCP = Reinforced Concrete Pipe
 ET = Exfiltration Trench
 CIP = Cast Iron Pipe
 FM = Force Main



Discharge Point ID	Type of Discharge	Do the proposed improvements increase the amount of discharge at this point? [Y/N]	Proposed backflow preventer? [Y/N]
D-001	Existing Outfall	N	Y
D-002	Existing Outfall	N	Y
D-003	Existing Outfall	N	Y
D-004	Existing Outfall	N	Y
D-005	Existing Outfall	N	Y
D-006	Existing Outfall	N	Y
D-007	Existing Outfall	N	Y
D-008	Existing Outfall	N	Y
D-009	Existing Outfall	N	Y
D-010	Existing Outfall	N	Y
D-011	Existing Outfall	N	Y
D-012	Existing Outfall	N	Y
D-013	Existing Outfall	N	Y
D-014	Existing Outfall	N	Y
D-015	Existing Outfall	N	Y
D-016	Existing Outfall	N	Y
D-017	Existing Outfall	N	Y
D-018	Existing Outfall	N	Y
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D-060	Existing Outfall	N	Y

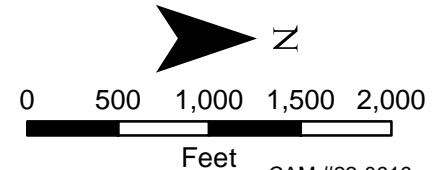


Discharge Point ID	Type of Discharge	Do the proposed improvements increase the amount of discharge at this point? [Y/N]	Proposed backflow preventer? [Y/N]
D-061	Existing Outfall	N	Y
D-062	Existing Outfall	N	Y
D-063	Existing Outfall	N	Y
D-064	Existing Outfall	N	Y
D-065	Existing Outfall	N	Y
D-066	Existing Outfall	N	Y
D-067	Existing Outfall	N	Y
D-068	Existing Outfall	N	Y
D-069	Existing Outfall	N	Y
D-070	Existing Outfall	N	Y
D-071	Existing Outfall	N	Y
D-072	Existing Outfall	N	Y
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D-075	Existing Outfall	N	Y
D-076	Existing Outfall	N	Y
D-077	Existing Outfall	N	Y
D-078	Existing Outfall	N	Y
D-079	Proposed Outfall	Y	Y
D-080	Proposed Outfall	Y	Y
D-081	Existing Outfall	N	Y
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D-107	Proposed Outfall	N	Y
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D-116	Proposed Outfall	Y	Y
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D-134	Existing Outfall	N	Y

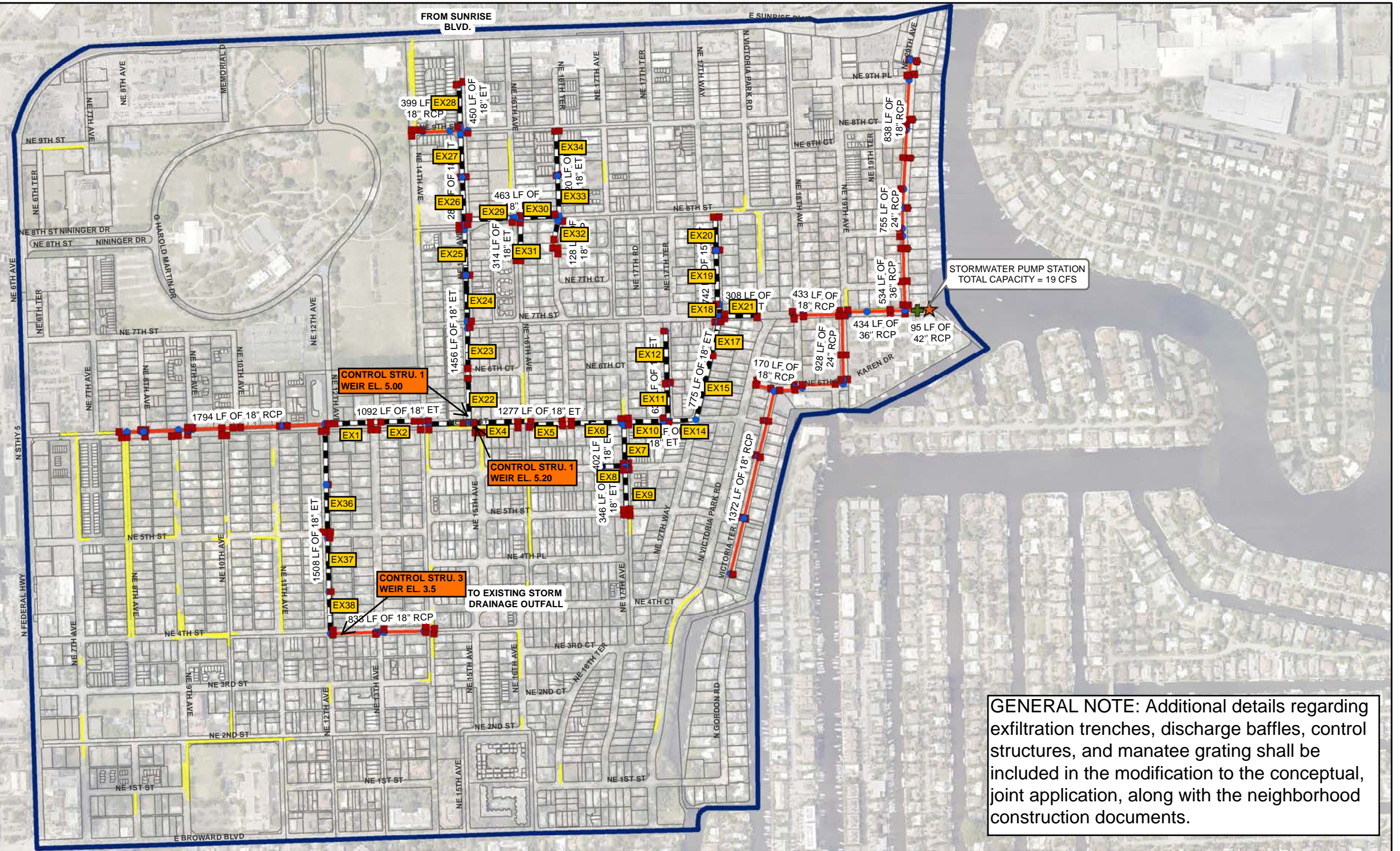
The noted pump stations are the only locations within the project site where discharge will increase. The installation of tidal valves is associated with providing water quality benefit for the entire neighborhood.

Southeast Isles Proposed Water Quality Treatment for Discharge

- Catch Basin
- Backflow Preventers
- Exfiltration Trench
- New/Restored Swale
- Created Wetland
- Manhole
- ◆ Drainage Wells
- Storm Sewer
- Permeable Pavement
- Southeast Isles Neighborhood Boundary
- ▲ Outfall
- ★ Pump Stations
- Existing Storm Sewer
- Canal Improvements
- Parcel
- + Water Quality Structure
- Seawall Replacement
- RCP = Reinforced Concrete Pipe
- ET = Exfiltration Trench
- CIP = Cast Iron Pipe
- FM = Force Main

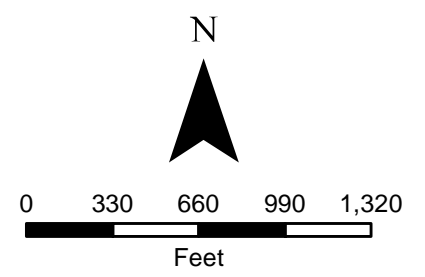


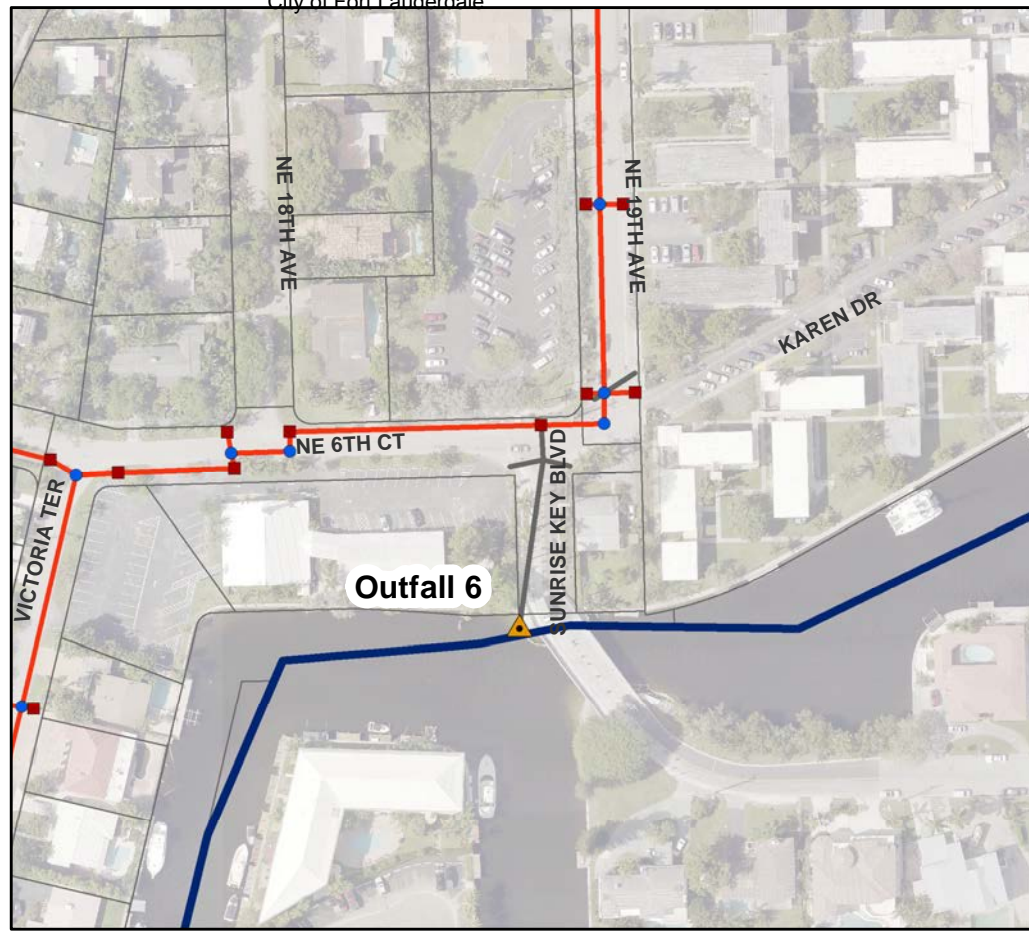
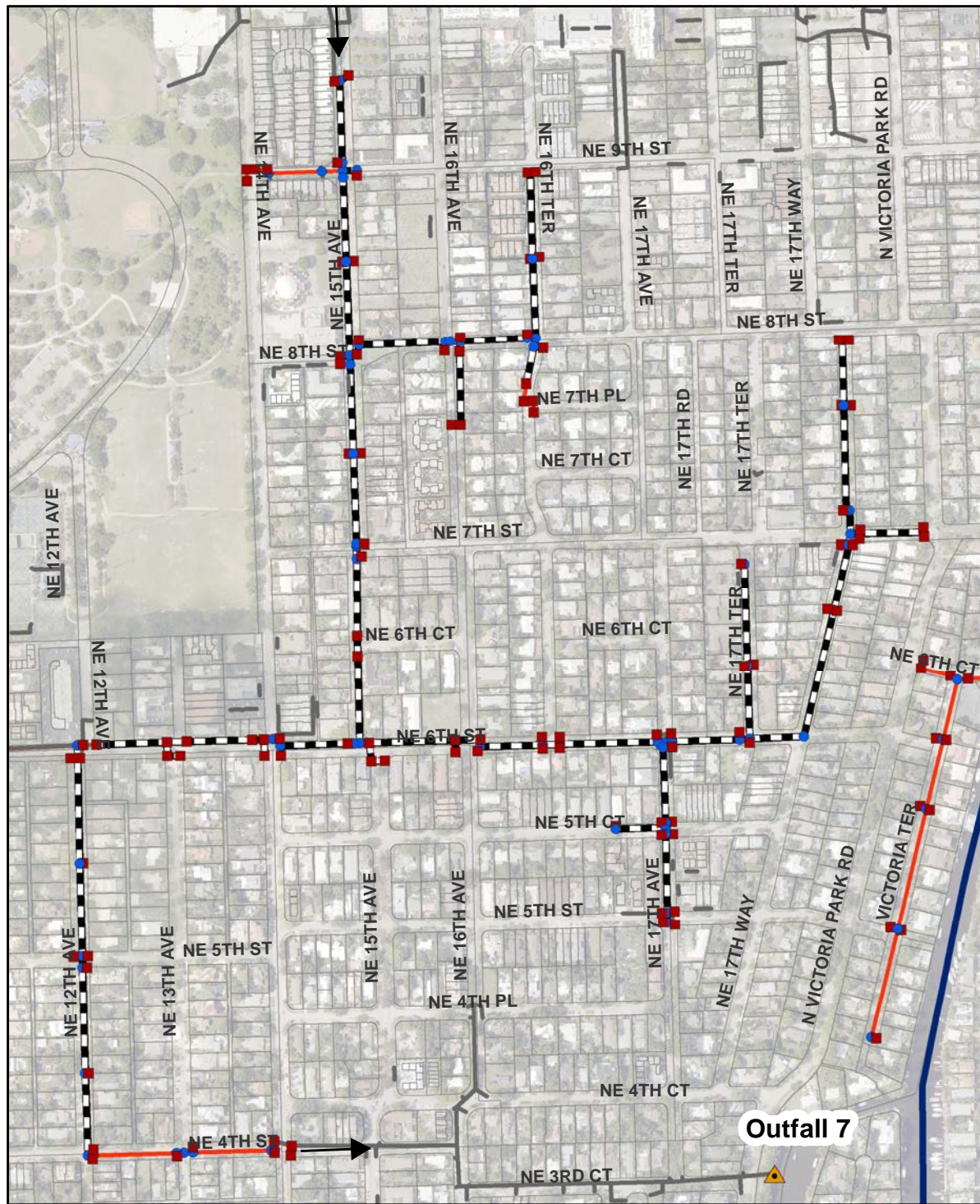
Trench Name	Width (ft)	Invert EL. (NAVD)	TOP EL. (NAVD)	BOT EL. (NAVD)
EX1	4.00	1.18	3.39	-0.03
EX2	4.00	2.18	4.39	0.97
EX4	4.00	1.60	3.81	0.39
EX5	4.00	3.08	5.29	1.87
EX6	4.00	1.06	3.27	-0.15
EX7	4.00	1.10	3.31	-0.11
EX8	4.00	1.18	3.39	-0.03
EX9	4.00	1.53	3.74	0.32
EX10	4.00	1.33	3.54	0.12
EX11	4.00	1.18	3.39	-0.03
EX12	4.00	1.18	3.39	-0.03
EX14	4.00	3.08	5.29	1.87
EX15	4.00	1.63	3.84	0.42
EX17	4.00	1.63	3.84	0.42
EX18	4.00	1.68	3.89	0.47
EX19	4.00	1.28	3.49	0.07
EX20	4.00	2.40	4.61	1.19
EX21	4.00	2.08	4.29	0.87
EX22	4.00	2.18	4.39	0.97
EX23	4.00	2.77	4.98	1.56
EX24	4.00	2.47	4.68	1.26
EX25	4.00	2.47	4.68	1.26
EX26	4.00	2.11	4.32	0.90
EX27	4.00	1.80	4.01	0.59
EX28	4.00	0.85	3.06	-0.36
EX29	4.00	1.48	3.69	0.27
EX30	4.00	1.80	4.01	0.59
EX31	4.00	2.17	4.38	0.96
EX32	4.00	1.74	3.95	0.53
EX33	4.00	1.85	4.06	0.64
EX34	4.00	1.79	4.00	0.58
EX36	4.00	1.03	3.24	-0.18
EX37	4.00	0.92	3.13	-0.29
EX38	4.00	1.07	3.28	-0.14



Victoria Park Proposed Stormwater Improvements

- Catch Basin
- Backflow Preventers
- ▬ Exfiltration Trench
- New/Restored Swale
- Created Wetland
- Manhole
- ◆ Drainage Wells
- Storm Sewer
- Permeable Pavement
- Victoria Park Neighborhood Boundary
- ▲ Outfall
- ★ Pump Stations
- RCP = Reinforced Concrete Pipe
- ▨ Canal Improvements
- Parcel
- + Water Quality Structure
- ET = Exfiltration Trench
- CIP = Cast Iron Pipe
- Seawall Replacement
- FM = Force Main





Discharge Point ID	Type of Discharge	Do the proposed Improvements Increase the amount of discharge at this point? [Y/N]	Total Length of New/Restored Swales (ft)	Total WQ Swale Treatment [acres]	Total Length of Proposed Exfiltration Trench [ft]	Total WQ Exfiltration Trench Treatment [acres]	Total WQ Treatment Provided for Discharge [acres]
Outfall 1	Ex Outfall	N	--	--	--	--	--
Outfall 2	Ex Outfall	N	--	--	--	--	--
Outfall 3	Ex Outfall	N	--	--	--	--	--
Outfall 4	Ex Outfall	N	--	--	--	--	--
Outfall 5	Ex Outfall	N	--	--	--	--	--
Pump Station*	Prop. Pump Station	Y	--	--	--	--	--
Outfall 6	Ex Outfall	N	--	--	--	--	--
Outfall 7	Ex Outfall	Y	--	--	8700	26.28	26.28

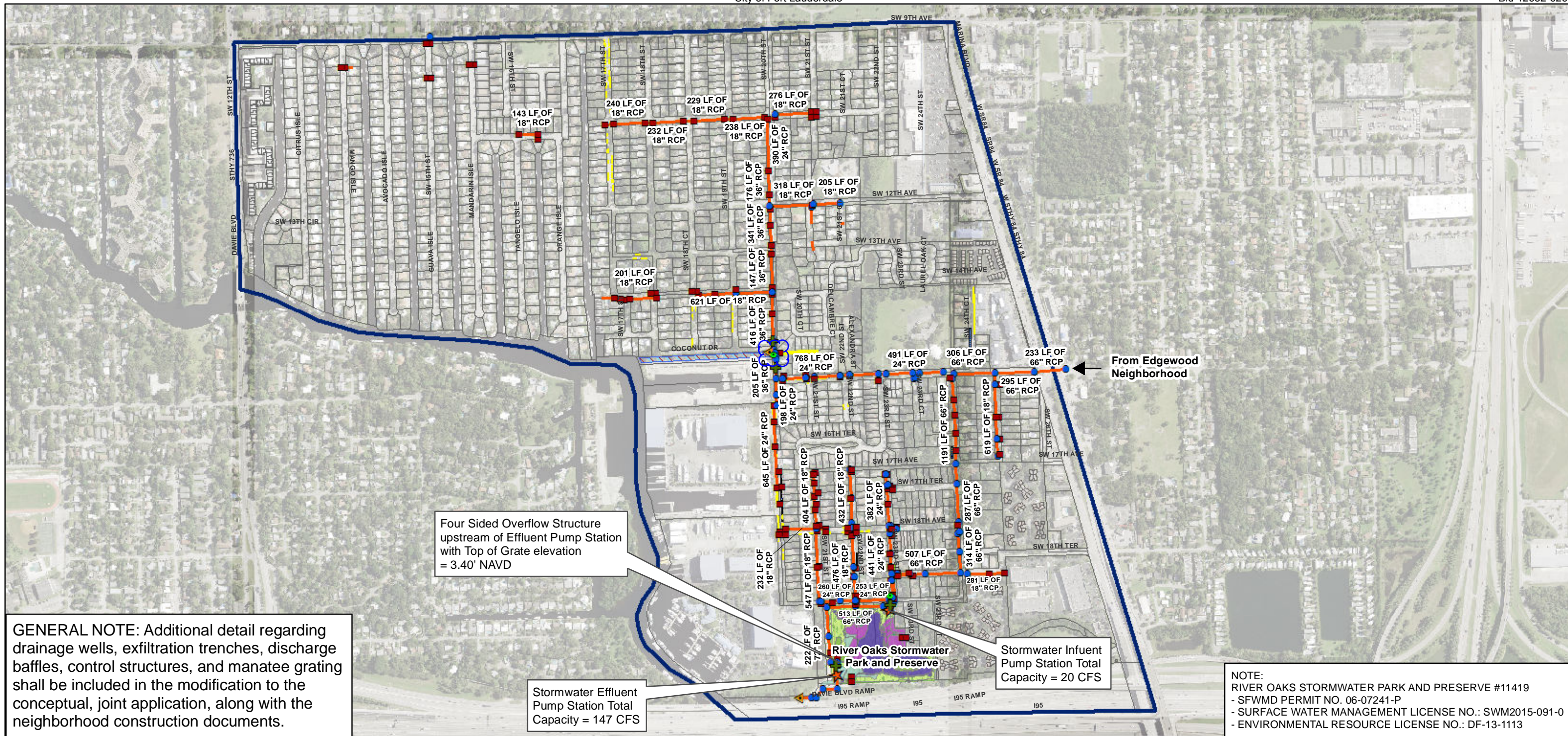
* Refer to Attached Document Detailing Water Quality Treatment for Victoria Park

Victoria Park Water Quality Treatment for Discharge

- Catch Basin
- Backflow Preventers
- - - Exfiltration Trench
- New/Restored Swale
- Created Wetland
- Manhole
- ◆ Drainage Wells
- Storm Sewer
- Permeable Pavement
- Victoria Park Neighborhood Boundary
- ▲ Outfall
- ★ Pump Stations
- Ex Storm Sewer
- Canal Improvements
- Parcel
- + Water Quality Structure
- Seawall Replacement



RCP = Reinforced Concrete Pipe
 ET = Exfiltration Trench
 CIP = Cast Iron Pipe
 FM = Force Main
 EX = Existing



Four Sided Overflow Structure
upstream of Effluent Pump Station
with Top of Grate elevation
= 3.40' NAVD

GENERAL NOTE: Additional detail regarding drainage wells, exfiltration trenches, discharge baffles, control structures, and manatee grating shall be included in the modification to the conceptual, joint application, along with the neighborhood construction documents.

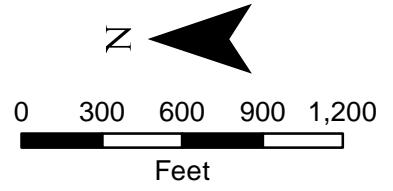
Stormwater Effluent
Pump Station Total
Capacity = 147 CFS

Stormwater Inflow
Pump Station Total
Capacity = 20 CFS

NOTE:
RIVER OAKS STORMWATER PARK AND PRESERVE #11419
- SFWMD PERMIT NO. 06-07241-P
- SURFACE WATER MANAGEMENT LICENSE NO.: SWM2015-091-0
- ENVIRONMENTAL RESOURCE LICENSE NO.: DF-13-1113

River Oaks Proposed Stormwater Improvements

- Catch Basin
- Backflow Preventers
- Exfiltration Trench
- New/Restored Swale
- Created Wetland
- Manhole
- Drainage Wells
- Storm Sewer
- Permeable Pavement
- River Oaks Neighborhood Boundary
- ▲ Outfall
- ★ Pump Stations
- Canal Improvements
- Parcel
- + Water Quality Structure
- RCP = Reinforced Concrete Pipe
- ET = Exfiltration Trench
- CIP = Cast Iron Pipe
- FM = Force Main
- Seawall Replacement

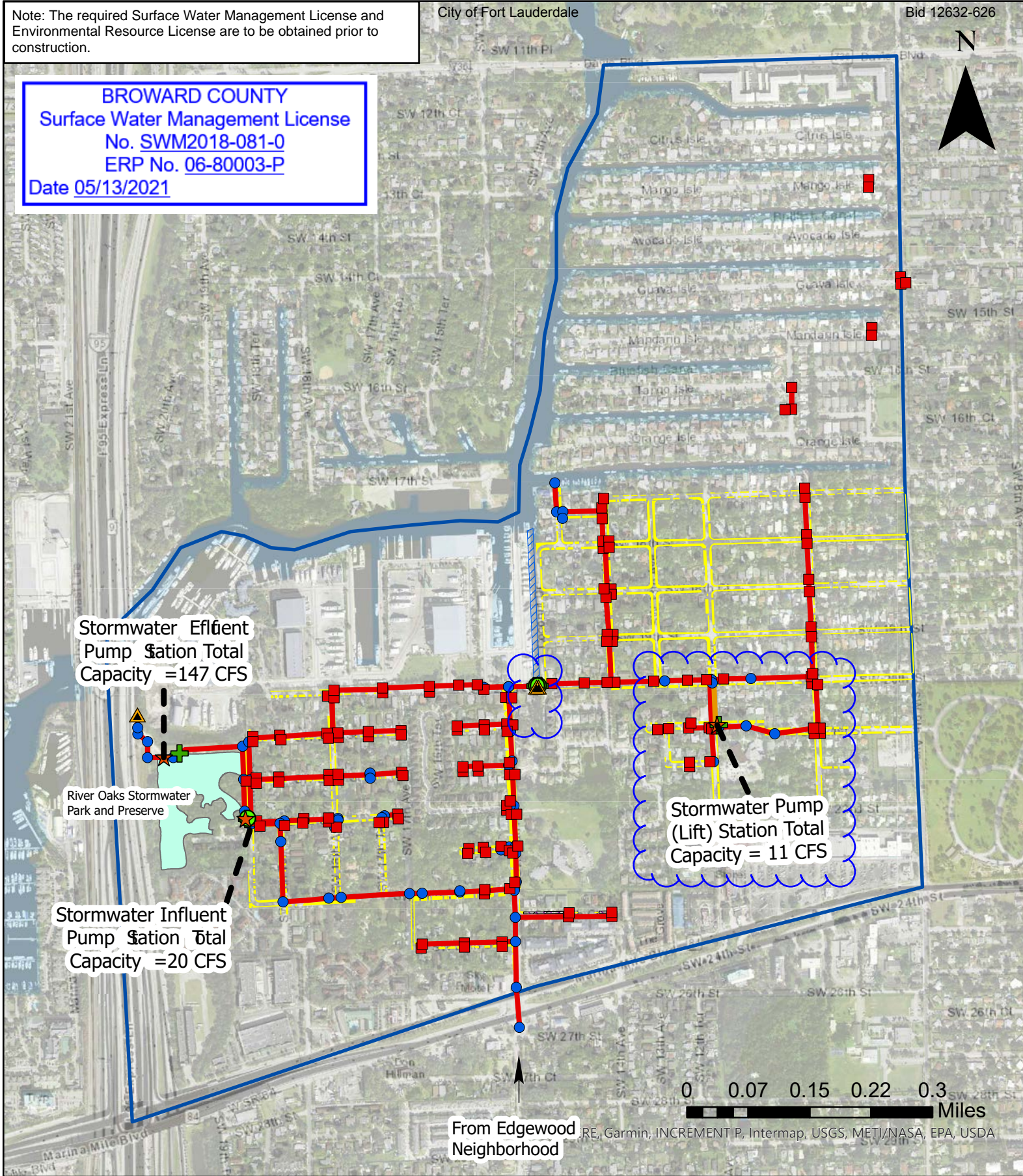


Note: The required Surface Water Management License and Environmental Resource License are to be obtained prior to construction.

City of Fort Lauderdale

Bid 12632-626

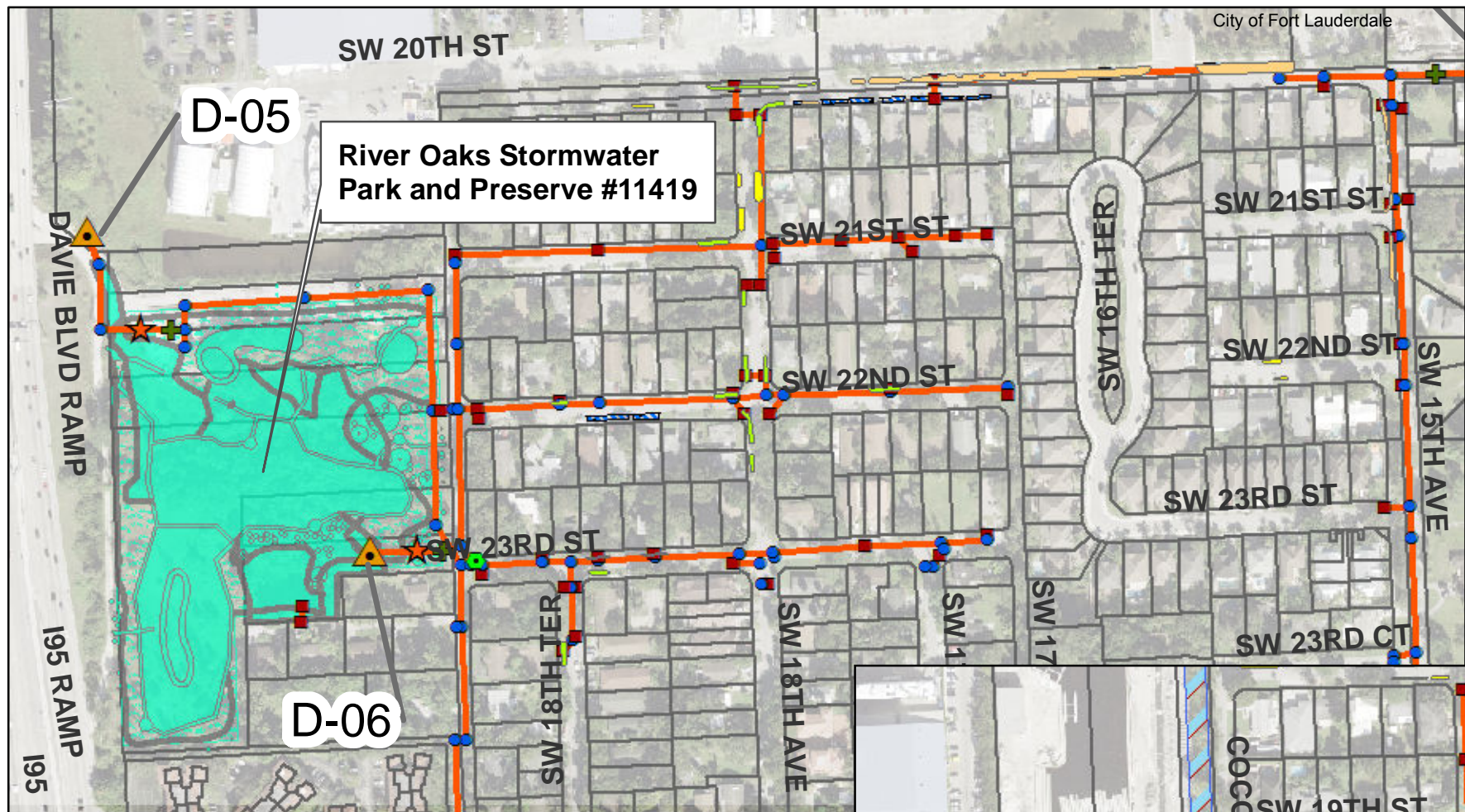
BROWARD COUNTY
Surface Water Management License
 No. SWM2018-081-0
 ERP No. 06-80003-P
 Date 05/13/2021



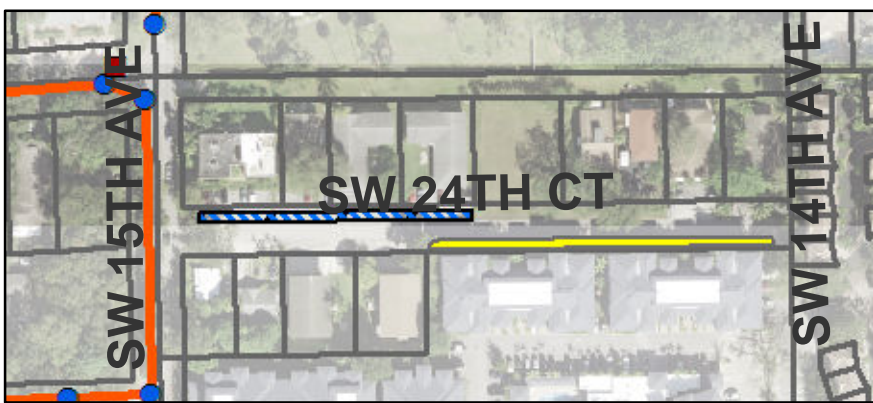
River Oaks Proposed Stormwater Improvements

- | | | | |
|--------------------|---|----------------------------------|--------------------------------|
| Backflow Preventer | Water Quality Structure | River Oaks Neighborhood Boundary | RCP = Reinforced Concrete Pipe |
| Catch Basin | Storm Force Main | Canal Improvements | FM = Force Main |
| Manhole | Storm Sewer | Swales | |
| Outfall | River Oaks Stormwater Park and Preserve | Permeable Pavement | |
| Pump Station | | | |

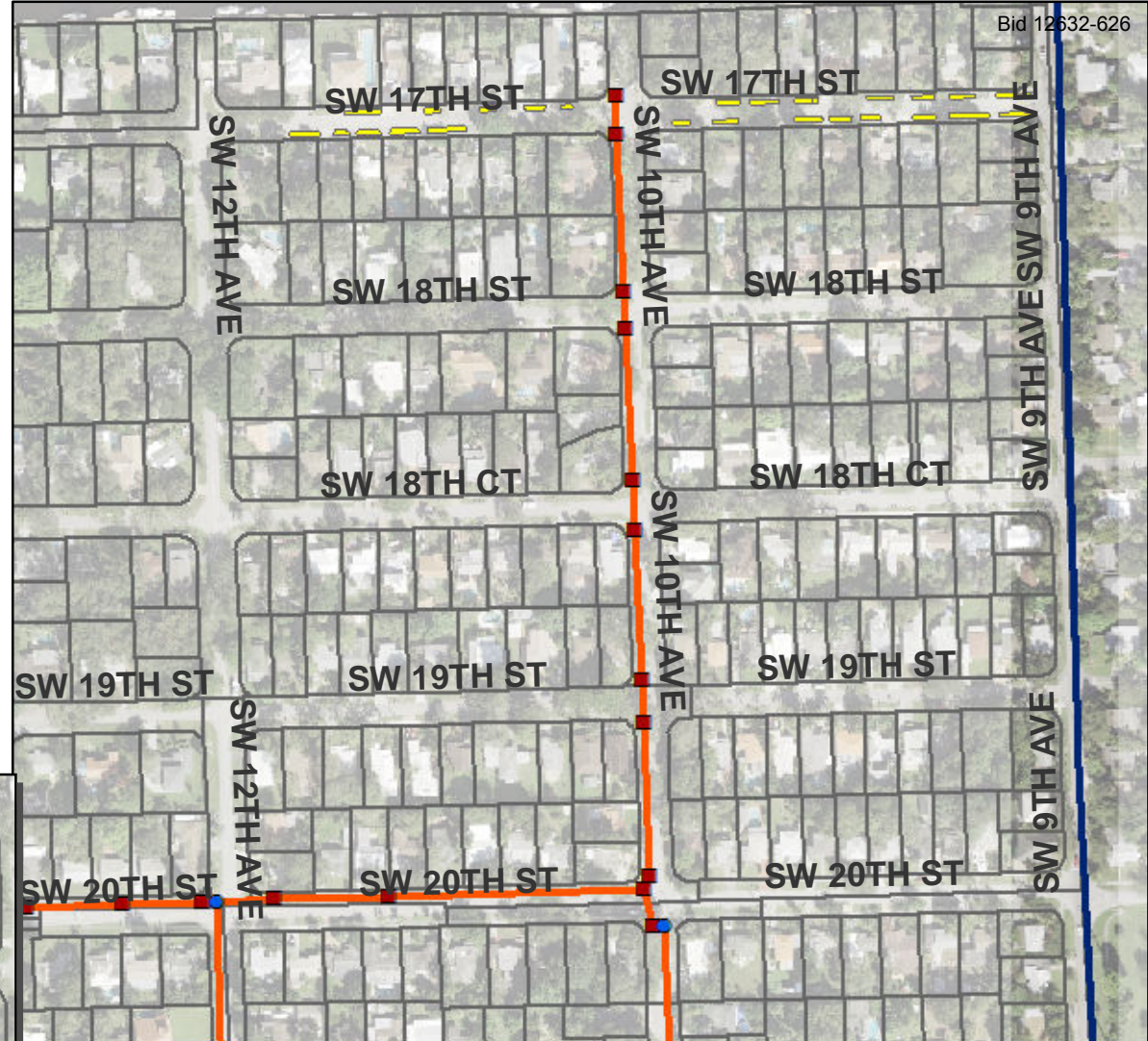
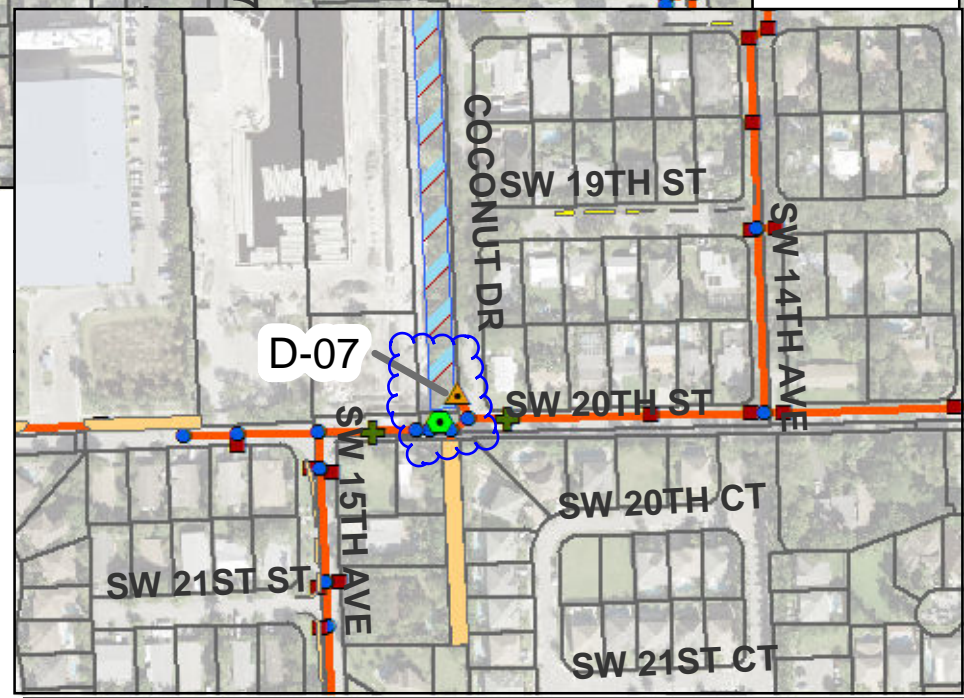
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D-05/D-06 Water Quality



D-05 Water Quality



D-07 Water Quality

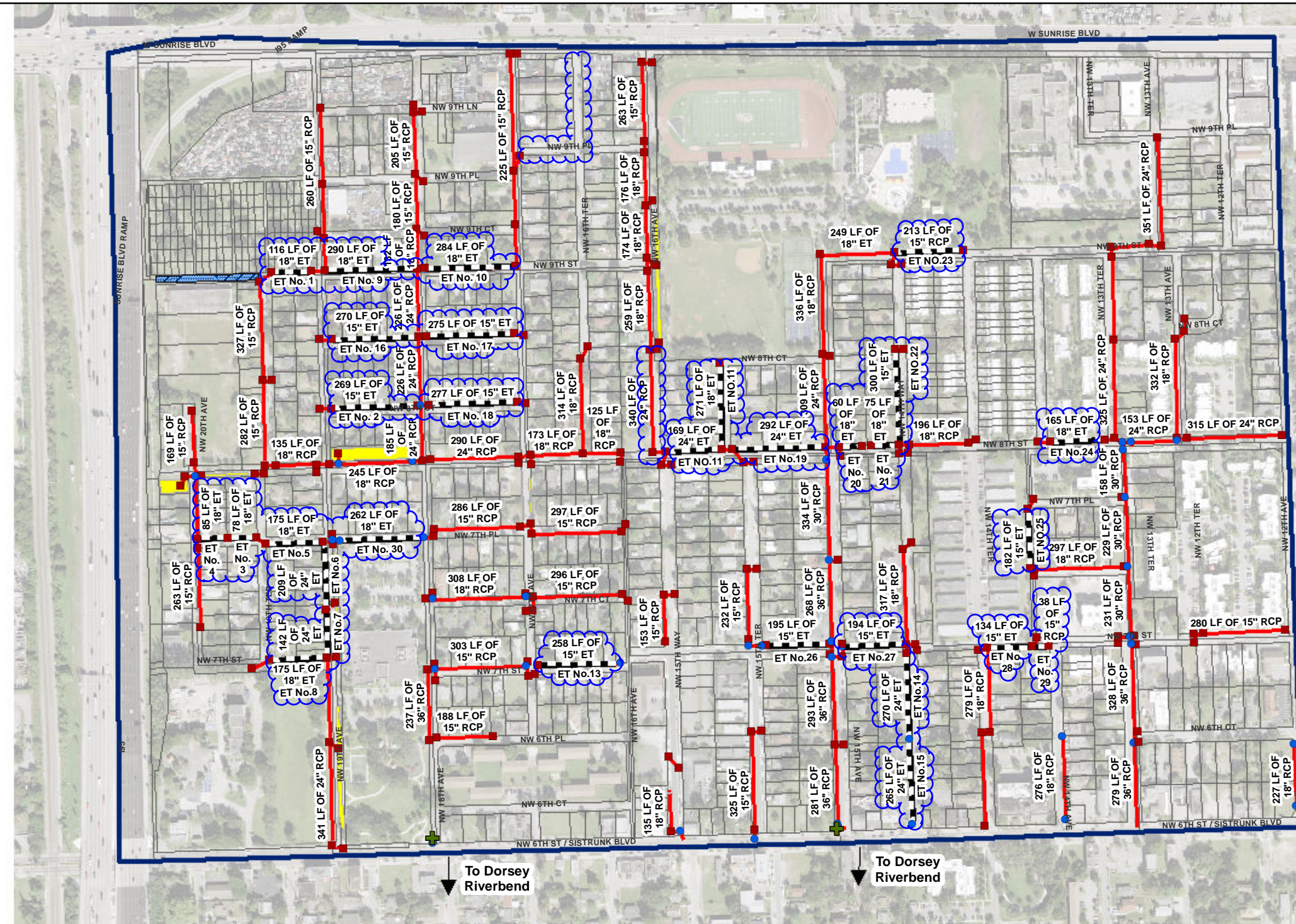
Discharge Point ID	Type of Discharge	Do the proposed improvements increase the amount of discharge at this point? [Y/N]	Total Length of New/Restored Swales [ft]	Total WQ Swale Treatment [acres]	Total Length of Proposed Exfiltration [ft]	Total WQ Treatment Provided for Discharge [acres]	Total WQ Treatment Provided by Wetland Preserve [acres/ft]
D-05	Outfall	Y	1000	1.5	--	1.5	7.2
D-06	Outfall	Y	800	0.5	--	0.5	--
D-07	Outfall	Y	1620	1.0	--	1.0	--

River Oaks Water Quality Treatment for Discharge

- Catch Basin
- Backflow Preventers
- Exfiltration Trench
- New/Restored Swale
- ▨ Canal Improvements
- Manhole
- Drainage Wells
- Storm Sewer
- Unassociated Swales
- Created Wetland
- ▲ Outfall
- ★ Pump Stations
- D-06 Swales
- River Oaks Neighborhood Boundary
- + Water Quality Structure
- D-07 Swales
- Parcel



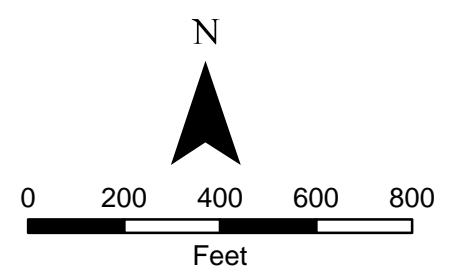
GENERAL NOTE: Additional detail regarding drainage wells, exfiltration trenches, discharge baffles, control structures, and manatee grating shall be included in the modification to the conceptual, joint application, along with the neighborhood construction documents.

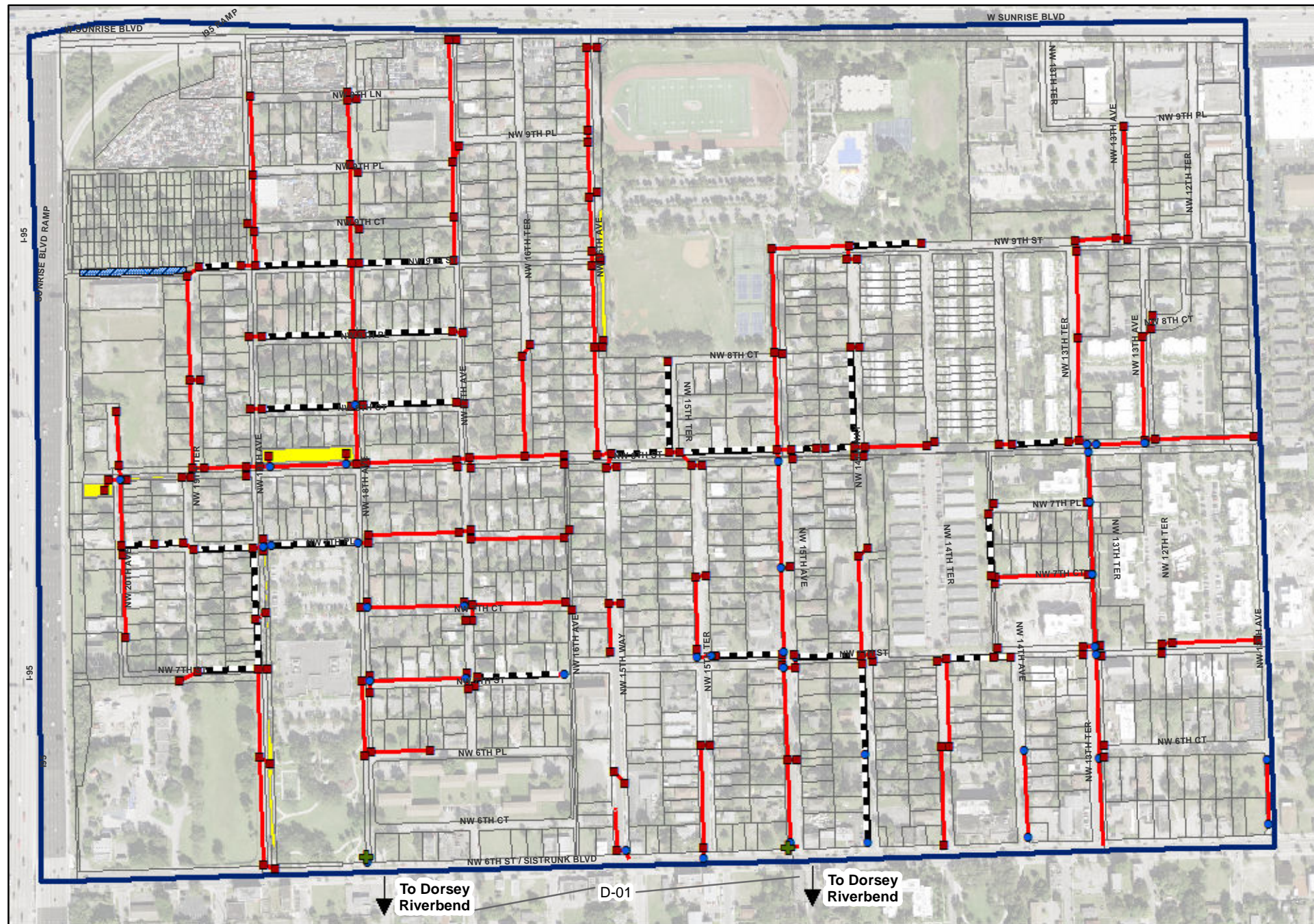


ET No.	Sheet No.	Length (LF)	Pipe Dia. (ft)	Width (ft)	Invert Elev. (ft. NAVD)	Top of Pipe (ft. NAVD)	Top Elev. (ft. NAVD)	Elev. (ft. NAVD)
1	CU-ST-15	116	1.50	4.00	1.08	2.58	3.58	0.08
2	CU-ST-19	269	1.25	4.00	0.52	1.77	2.77	-0.48
3	CU-ST-24	78	1.50	4.00	0.93	2.43	3.43	-0.07
4	CU-ST-24	85	1.50	4.00	1.03	2.53	3.53	0.03
5	CU-ST-24	175	1.50	4.00	0.59	2.09	3.09	-0.41
6	CU-ST-03	209	2.00	4.00	0.79	2.79	3.79	-0.21
7	CU-ST-02	142	2.00	4.00	0.79	2.79	3.79	-0.21
8	CU-ST-28	175	1.50	4.00	1.34	2.84	3.84	0.34
9	CU-ST-15	290	1.50	4.00	0.25	1.75	2.75	-0.75
10	CU-ST-16	284	1.50	4.00	0.50	2.00	3.00	-0.50
11	CU-ST-49	169	2.00	4.00	0.45	2.45	3.45	-0.55
12	CU-ST-36	271	1.50	4.00	0.18	1.68	2.68	-0.82
13	CU-ST-32	258	1.25	4.00	0.00	1.25	2.25	-1.00
14	CU-ST-46	270	2.00	4.00	0.00	2.00	3.00	-1.00
15	CU-ST-46	265	2.00	4.00	0.00	2.00	3.00	-1.00
16	CU-ST-17	270	1.25	4.00	1.00	2.25	3.25	0.00
17	CU-ST-18	275	1.25	4.00	0.00	1.25	2.25	-1.00
18	CU-ST-20	277	1.25	4.00	0.00	1.25	2.25	-1.00
19	CU-ST-49	292	2.00	4.00	-0.36	1.64	2.64	-1.36
20	CU-ST-50	60	1.50	4.00	-0.20	1.30	2.30	-1.20
21	CU-ST-50	75	1.50	4.00	-0.20	1.30	2.30	-1.20
22	CU-ST-48	300	1.25	4.00	0.00	1.25	2.25	-1.00
23	CU-ST-44	213	1.25	4.00	0.35	1.60	2.60	-0.65
24	CU-ST-61	165	1.50	4.00	-0.25	1.25	2.25	-1.25
25	CU-ST-56	182	1.25	4.00	-0.45	0.80	1.80	-1.45
26	CU-ST-52	195	1.50	4.00	-0.50	1.00	2.00	-1.50
27	CU-ST-53	194	1.25	4.00	0.00	1.25	2.25	-1.00
28	CU-ST-55	134	0.25	4.00	1.25	1.50	2.50	0.25
29	CU-ST-55	38	0.25	4.00	1.25	1.50	2.50	0.25
30	CU-ST-25	262	1.50	4.00	-0.61	0.89	1.89	-1.61

Durrs Proposed Stormwater Improvements

- Catch Basin
- Manhole
- ▲ Outfall
- ⊕ Water Quality Structure
- Backflow Preventers
- ◆ Drainage Wells
- ★ Pump Stations
- ▬ Exfiltration Trench
- Storm Sewer
- RCP = Reinforced Concrete Pipe
- ET = Exfiltration Trench
- CIP = Cast iron Pipe
- FM = Force Main
- New/Restored Swale
- ▨ Permeable Pavement
- ▨ Canal Improvements
- Seawall Replacement
- Created Wetland
- ▭ Durrs Neighborhood Boundary
- ▭ Parcel





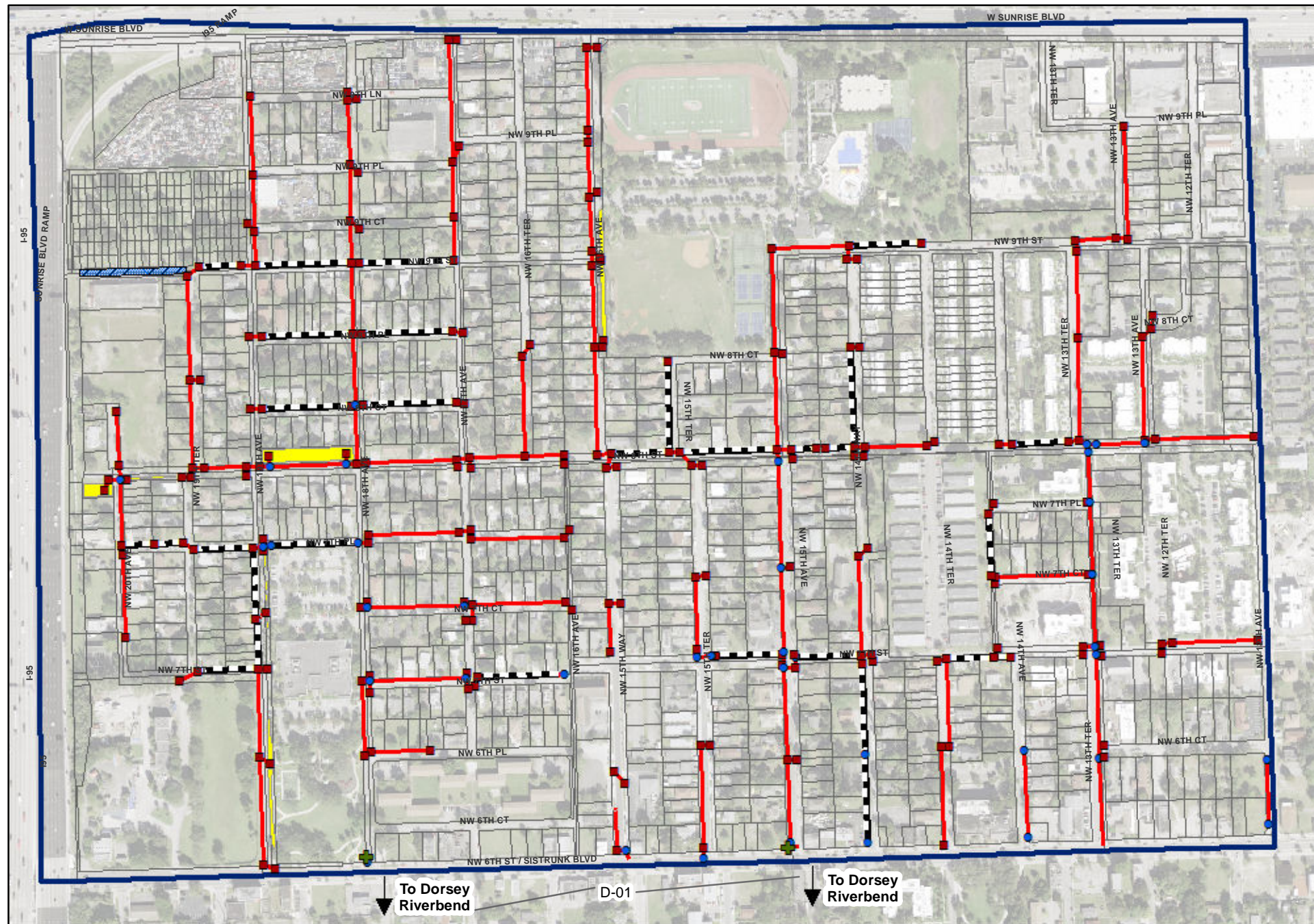
**D-01 Water Quality
(through Dorsey Riverbend)**

Discharge Point ID	Type of Discharge	Do the proposed improvements increase the amount of discharge at this point? [Y/N]	Total Length of New/Restored Swales [ft]	Total WQ Swale Treatment [acres]	Total Length of Proposed Exfiltration [acres]	Total WQ Treatment Provided for Discharge [acres]
D-01	Outfall via Dorsey Riverbend	Y	3624	1.0	5988	7.02

Durrs Water Quality Treatment for Discharge

- Catch Basin
- Manhole
- ▲ Outfall
- + Water Quality Structure
- Backflow Preventers
- ◆ Drainage Wells
- ★ Pump Stations
- - - Exfiltration Trench
- Storm Sewer
- New/Restored Swale
- D-01 Swales
- Permeable Pavement
- Canal Improvements
- Created Wetland
- Durrs Neighborhood Boundary
- Parcel





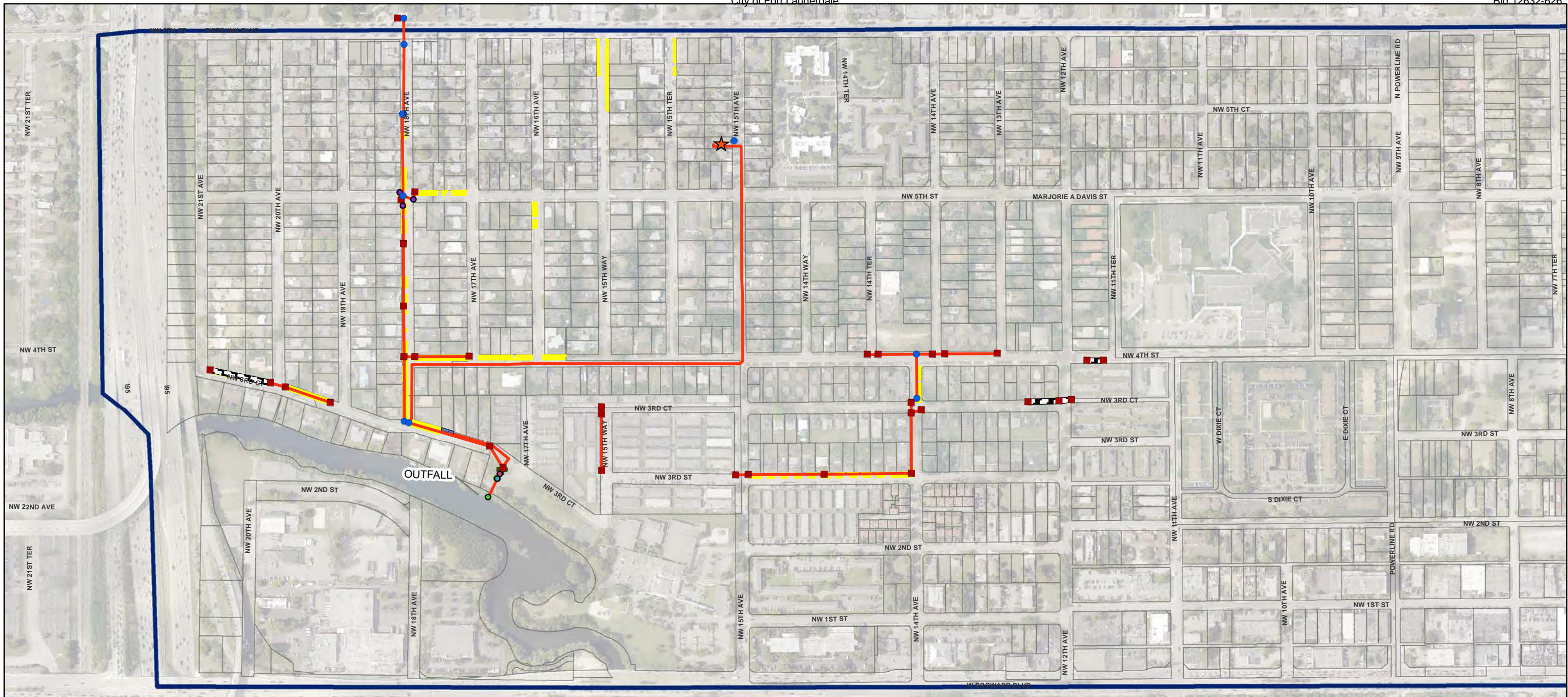
**D-01 Water Quality
(through Dorsey Riverbend)**

Discharge Point ID	Type of Discharge	Do the proposed improvements increase the amount of discharge at this point? [Y/N]	Total Length of New/Restored Swales [ft]	Total WQ Swale Treatment [acres]	Total Length of Proposed Exfiltration [acres]	Total WQ Treatment Provided for Discharge [acres]
D-01	Outfall via Dorsey Riverbend	Y	3624	1.0	5988	7.02

Durrs Water Quality Treatment for Discharge

- Catch Basin
- Manhole
- ▲ Outfall
- + Water Quality Structure
- Backflow Preventers
- ◆ Drainage Wells
- ★ Pump Stations
- - - Exfiltration Trench
- Storm Sewer
- New/Restored Swale
- D-01 Swales
- Permeable Pavement
- Canal Improvements
- Created Wetland
- Durrs Neighborhood Boundary
- Parcel





Outfall Water Quality

Dorsey-Riverbend Proposed Water Quality Treatment for Discharge

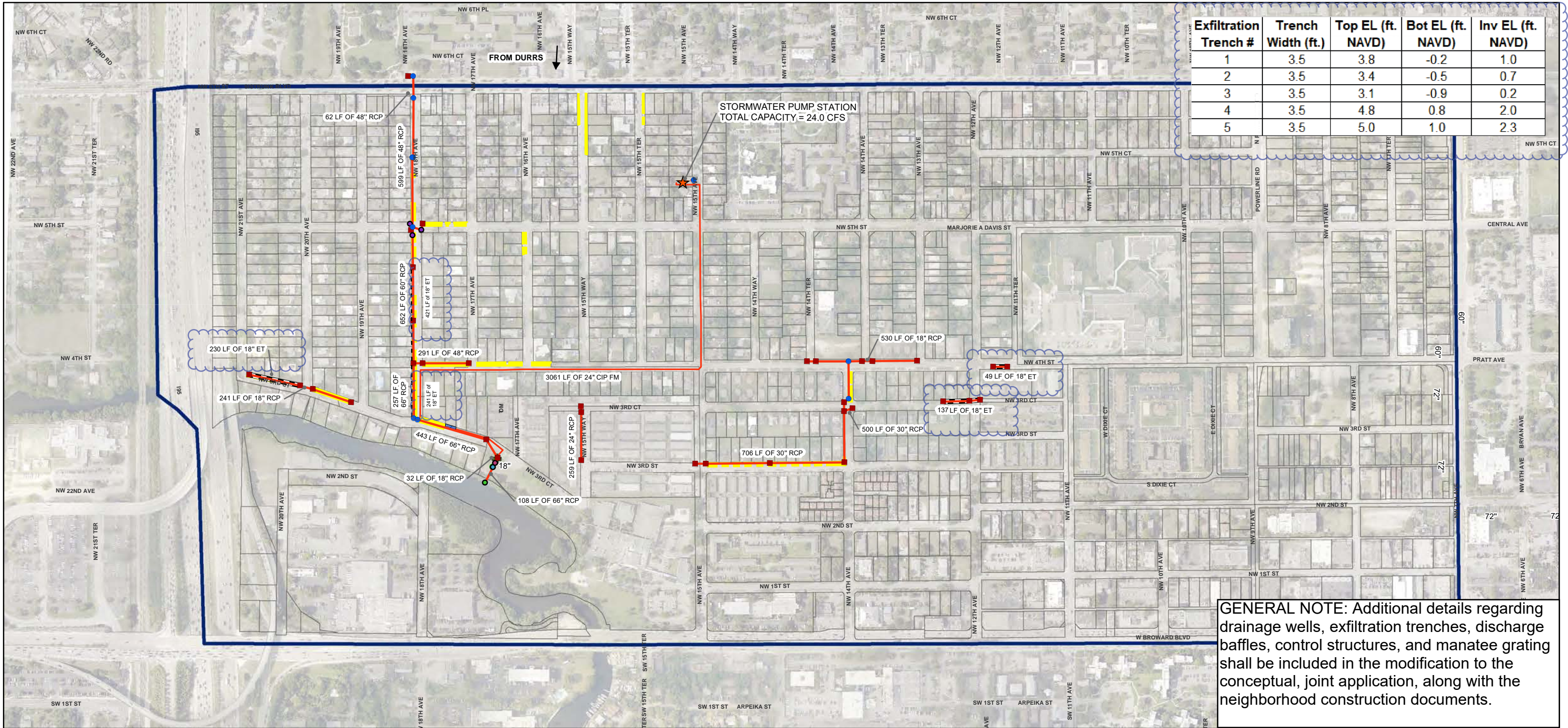
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02-07-2020

- Backflow_Preventer
- Drainage Wells
- ★ Pump Stations
- Exfiltration Trench
- Storm Sewer
- New/Restored Swale
- Permeable Pavement
- Dorsey Neighborhood Boundary
- Parcel



Discharge Point ID	Type of Discharge	Do the proposed improvements increase the amount of discharge at this point? [Y/N]	Total Length of New/Restored Swales (ft.)	Total WQ Swale Treatment (acres)	Total Length of Proposed Exfiltration Trench (ft.)	Total WQ Exfiltration Trench Treatment (acres)	Total WQ Provided for Discharge (acres)
Outfall	Ex Outfall	Y	3850	1.46	1078	4.81	6.28



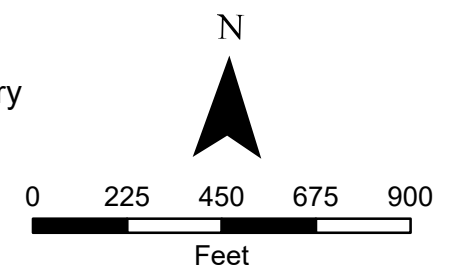
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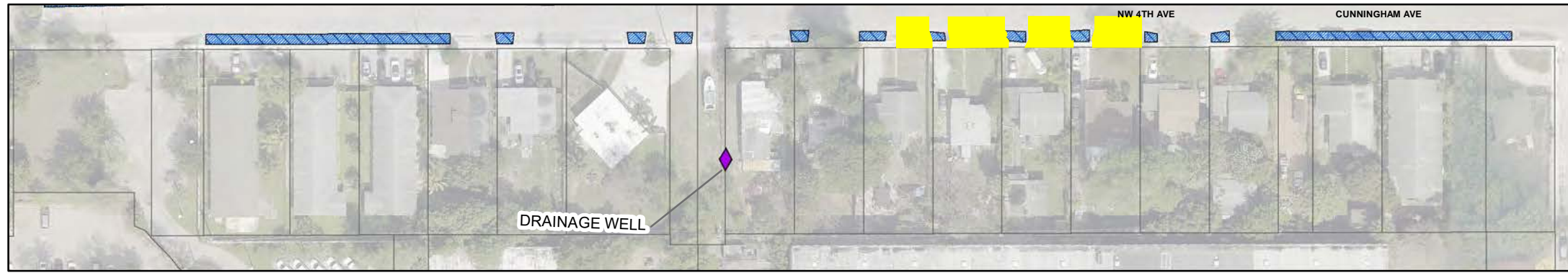
Dorsey-Riverbend Proposed Stormwater Improvements

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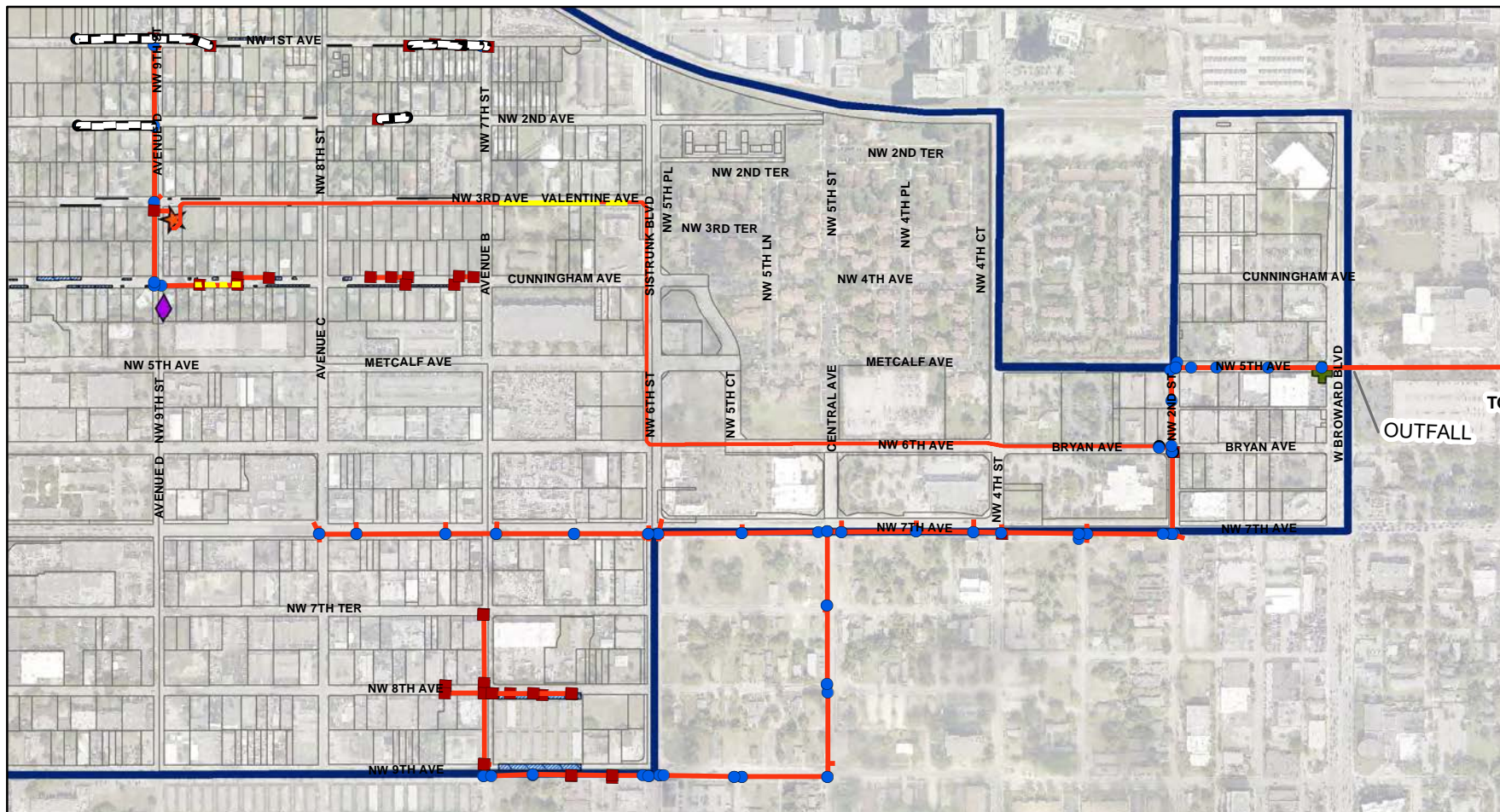
02-07-2020

- Catch Basin
- Backflow_Preventer
- ◆ Drainage Wells
- ★ Pump Stations
- + Water Quality Structure
- ▬ Exfiltration Trench
- ▬ Storm Sewer
- RCP = Reinforced Concrete Pipe
ET = Exfiltration Trench
CIP = Cast Iron Pipe
FM = Force Main
- New/Restored Swale
- ▨ Permeable Pavement
- ▨ Canal Improvements
- Seawall Replacement
- Created Wetland
- ▭ Dorsey Neighborhood Boundary
- ▭ Parcel





Drainage Well Water Quality



Outfall Water Quality

Discharge Point ID	Type of Discharge	Do the proposed improvements increase the amount of discharge at this point? [Y/N]	Total Length of New/Restored Swales (ft.)	Total WQ Swale Treatment (acres)	Total Length of Proposed Exfiltration Trench (ft.)	Total WQ Exfiltration Trench Treatment (acres)	Total WQ Provided for Discharge (acres)
Outfall	Ex Outfall	Y	769	0.24	1195	4.48	4.72
Drainage Well	Prop. DW	Y	89	0.02	0	0	0.02

- Catch Basin
- Manhole
- ▲ Outfall
- + Water Quality Structure
- ◆ Drainage Wells
- Exfiltration Trench
- Storm Sewer
- New/Restored Swale
- Permeable Pavement
- Parcel
- Progresso Neighborhood Boundary

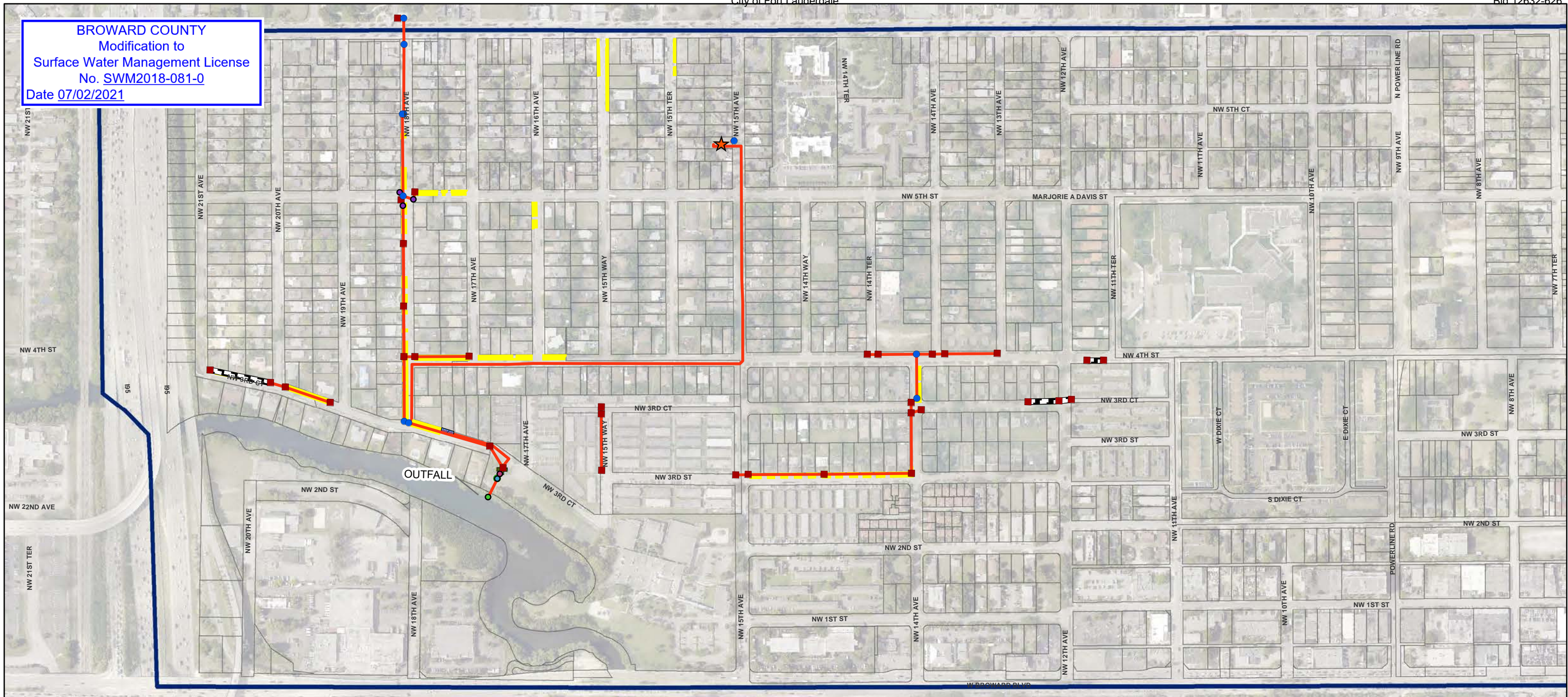
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02-07-2020



Progresso Village Proposed Water Quality Treatment for Discharge

BROWARD COUNTY
 Modification to
 Surface Water Management License
 No. SWM2018-081-0
 Date 07/02/2021



Outfall Water Quality

Dorsey-Riverbend Proposed Water Quality Treatment for Discharge

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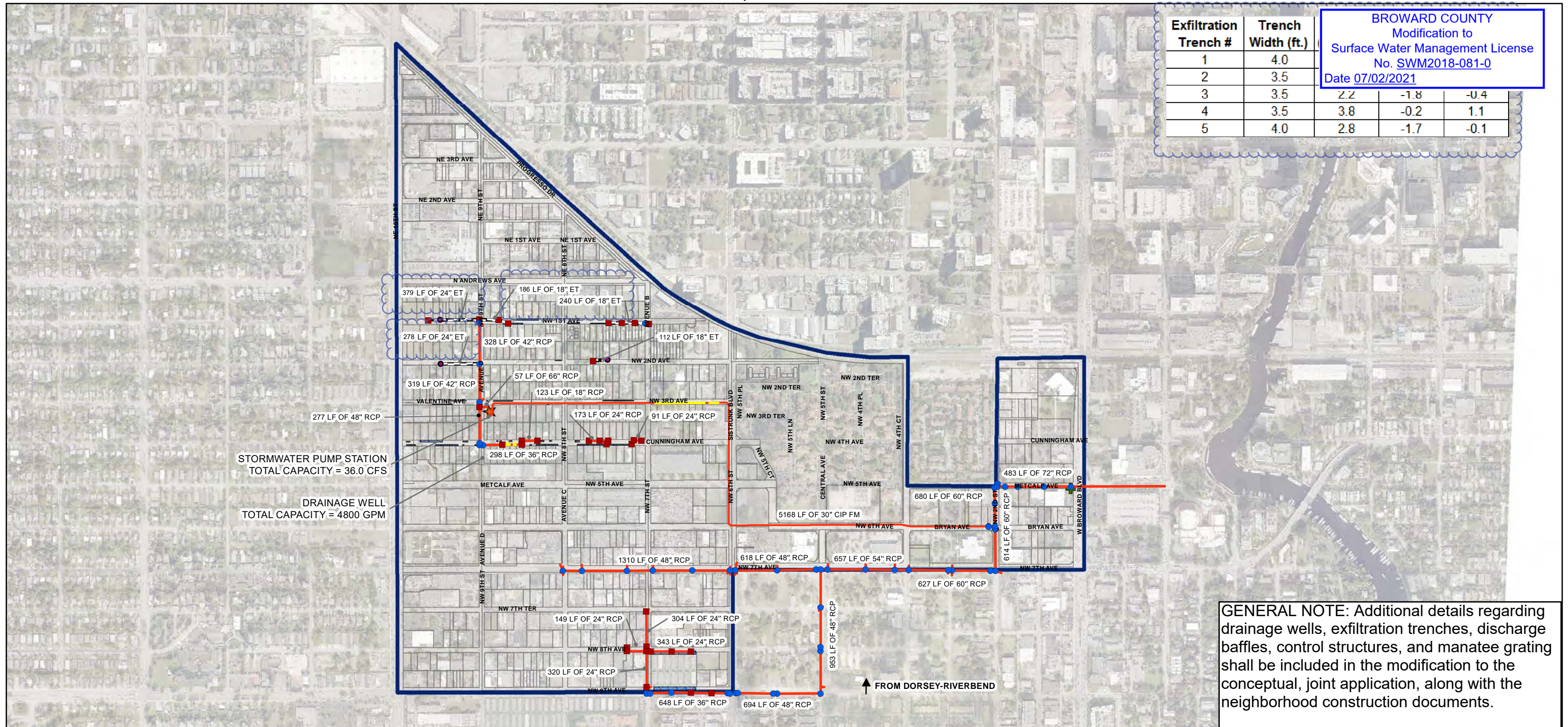
02-07-2020

- Backflow_Preventer
- Drainage Wells
- ★ Pump Stations
- ▬ Exfiltration Trench
- ▬ Storm Sewer
- ▬ New/Restored Swale
- ▨ Permeable Pavement
- ▭ Dorsey Neighborhood Boundary
- ▭ Parcel



Discharge Point ID	Type of Discharge	Do the proposed improvements increase the amount of discharge at this point? [Y/N]	Total Length of New/Restored Swales (ft.)	Total WQ Swale Treatment (acres)	Total Length of Proposed Exfiltration Trench (ft.)	Total WQ Exfiltration Trench Treatment (acres)	Total WQ Provided for Discharge (acres)
Outfall	Ex Outfall	Y	3850	1.46	1078	4.81	6.28

Exfiltration Trench #	Trench Width (ft.)	BROWARD COUNTY Modification to Surface Water Management License No. SWM2018-081-0 Date 07/02/2021		
1	4.0			
2	3.5			
3	3.5	2.2	-1.8	-0.4
4	3.5	3.8	-0.2	1.1
5	4.0	2.8	-1.7	-0.1



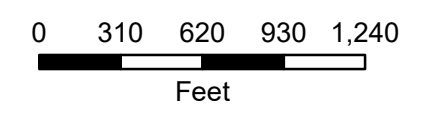
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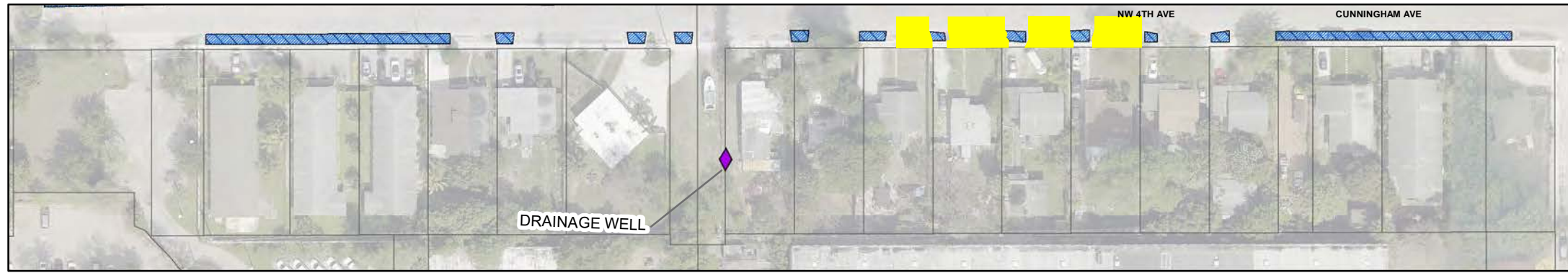
Progresso Village Proposed Stormwater Improvements

- Catch Basin
- Manhole
- ▲ Outfall
- ⊕ Water Quality Structure
- Backflow Preventers
- ◆ Drainage Wells
- ★ Pump Stations
- ▬ Exfiltration Trench
- Storm Sewer
- RCP = Reinforced Concrete Pipe
ET = Exfiltration Trench
CIP = Cast Iron Pipe
FM = Force Main
- New/Restored Swale
- ▨ Permeable Pavement
- ▨ Canal Improvements
- Seawall Replacement
- Created Wetland
- ▭ Progresso Neighborhood Boundary
- ▭ Parcel

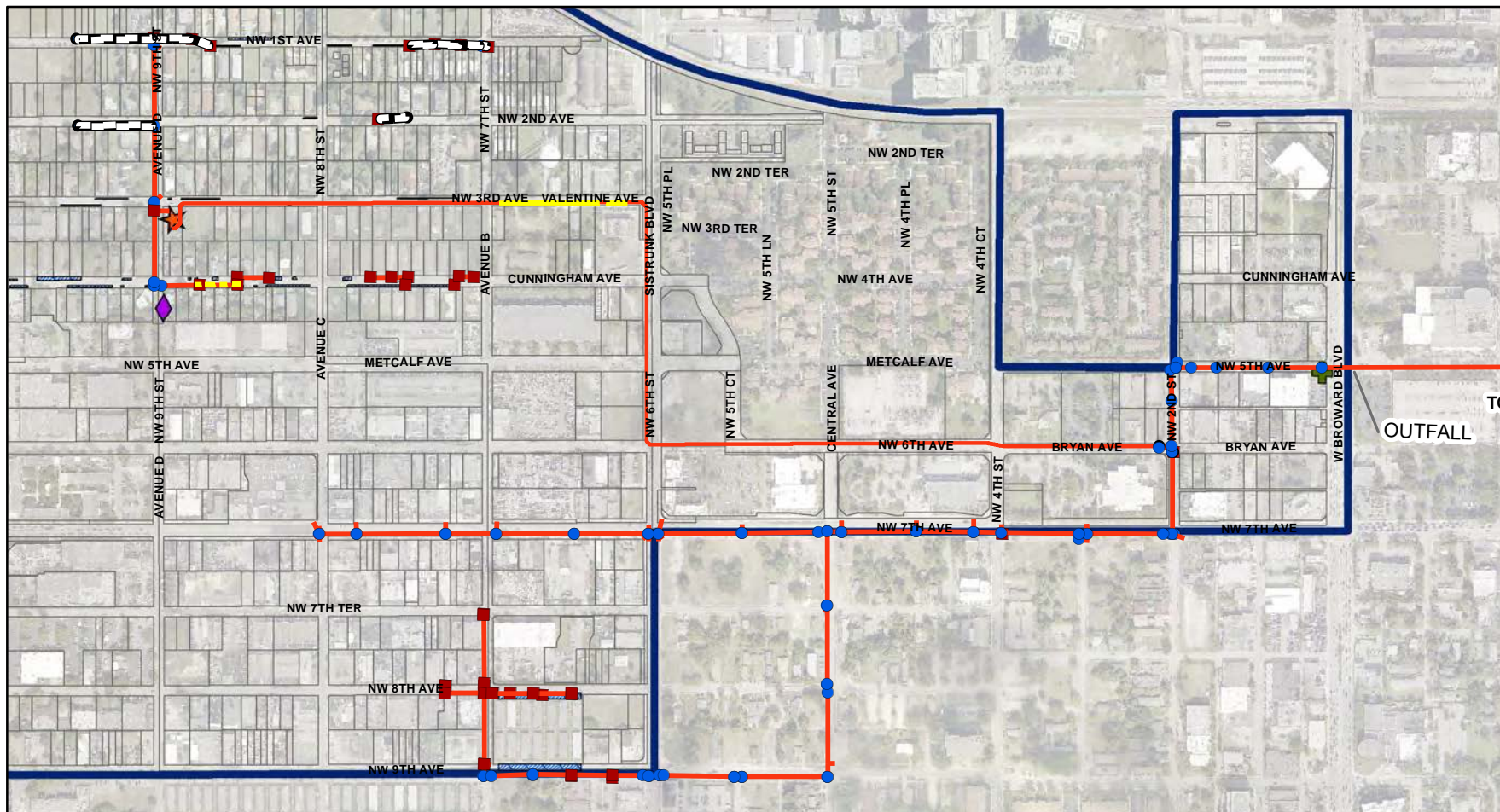
Daniel Steven Suarez, State of Florida, Professional Engineer, License No. 59096
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02-07-2020





Drainage Well Water Quality



Outfall Water Quality

Discharge Point ID	Type of Discharge	Do the proposed improvements increase the amount of discharge at this point? [Y/N]	Total Length of New/Restored Swales (ft.)	Total WQ Swale Treatment (acres)	Total Length of Proposed Exfiltration Trench (ft.)	Total WQ Exfiltration Trench Treatment (acres)	Total WQ Provided for Discharge (acres)
Outfall	Ex Outfall	Y	769	0.24	1195	4.48	4.72
Drainage Well	Prop. DW	Y	89	0.02	0	0	0.02

- Catch Basin
- Manhole
- ▲ Outfall
- + Water Quality Structure
- ◆ Drainage Wells
- Exfiltration Trench
- Storm Sewer
- New/Restored Swale
- Permeable Pavement
- Parcel
- Progresso Neighborhood Boundary

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02-07-2020



Progresso Village Proposed Water Quality Treatment for Discharge



Exfiltration Trench ID	Width [ft]	TOP EL. [NAVD]	BOT EL. [NAVD]
E-01	3.5	3.34	-1.16
E-02	3.5	4.84	0.34
E-03	3.5	5.04	0.54
E-04	3.5	5.04	0.54
E-05	3.5	4.60	0.10
E-06	3.5	4.60	0.10
E-07	3.5	3.74	-0.76
E-08	3.5	3.74	-0.76
E-09	3.5	0.84	-3.66
E-10	3.5	3.32	-1.18
E-11	3.5	1.57	-2.93
E-12	3.5	3.32	-1.18
E-13	3.5	2.30	-2.20
E-14	3.5	3.50	-1.00
E-15	3.5	2.30	-2.20
E-16	3.5	3.00	-1.50
E-17	3.5	4.50	0.00
E-18	3.5	4.90	0.40
E-19	3.5	4.90	0.40
E-20	3.5	4.90	0.40
E-21	3.5	4.90	0.40
E-22	3.5	2.75	-1.75
E-23	3.5	2.75	-1.75
E-24	3.5	2.75	-1.75
E-25	3.5	2.75	-1.75
E-26	3.5	4.50	0.00
E-27	3.5	4.50	0.00
E-28	3.5	4.50	0.00
E-29	3.5	5.00	0.50
E-30	3.5	5.00	0.50
E-31	3.5	1.00	-3.50
E-32	3.5	1.00	-3.50
E-33	3.5	1.00	-3.50
E-34	3.5	1.00	-3.50
E-35	3.5	2.00	-2.50
E-36	3.5	2.00	-2.50
E-37	3.5	2.50	-2.00
E-38	3.5	2.50	-2.00

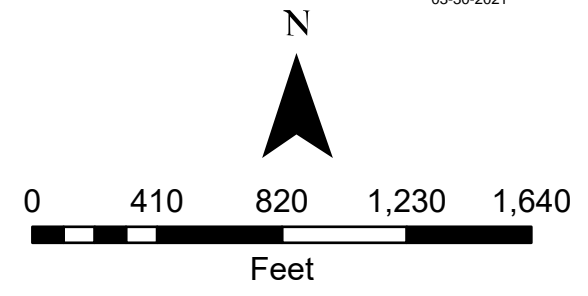
Edgewood Proposed Stormwater Improvements

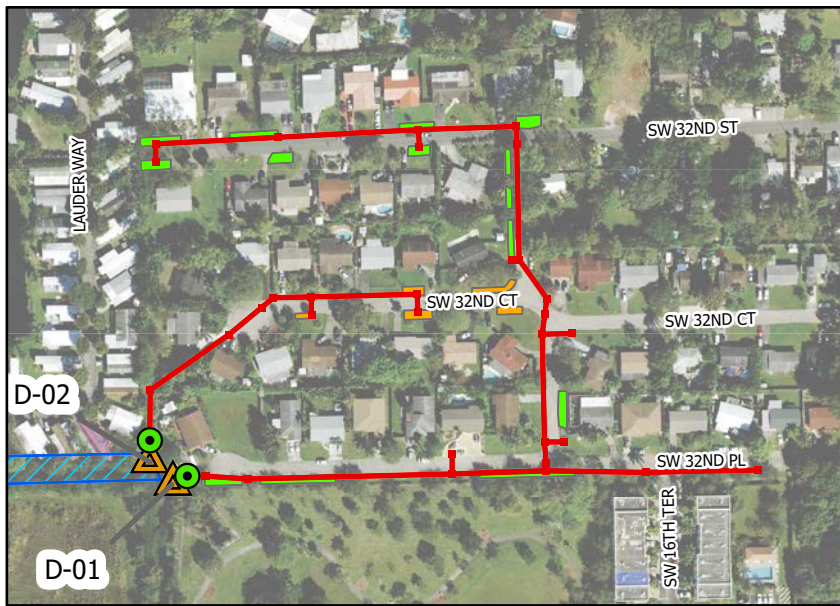
- Catch Basins
- Manholes
- Backflow Preventers
- ▲ Outfalls
- Exfiltration Trench
- Storm Sewer
- New/Restored Swales
- Canal Improvements
- Edgewood Neighborhood Boundary

RCP = Reinforced Concrete Pipe
ET = Exfiltration Trench

Robert B. Taylor, Jr., State of Florida, Professional Engineer, License No. 44165
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03-30-2021





D-01/D-02 Water Quality



D-03 Water Quality



D-05 Water Quality (through River Oaks)

Discharge Point ID	Type of Discharge	Do the proposed improvements increase the amount of discharge at this point? [Y/N]	Total Area of New/Restored Swales [sq ft]	Total WQ Swale Treatment [acres]	Total Length of Proposed Exfiltration Trench [ft]	Total WQ Exfiltration Trench Treatment [acres]	Total WQ Treatmentmet Provided for Discharge [acres]
EDGEWOOD OUTFALLS							
D-01	Outfall	Y	10,409	0.85	--	--	0.85
D-02	Outfall	Y	2,342	0.36	--	--	0.36
D-03	Outfall	Y	10,420	1.48	--	--	1.48
RIVER OAKS OUTFALLS							
D-05A	Proposed Outfall via River Oaks	Y	89,158	3.15	1,280	4.49	7.64
D-05B	Existing Outfall via River Oaks	Y	--	--	1,458	9.54	9.54
TOTAL			112,329	5.84	5,323	29.31	35.15

Edgewood Proposed Water Quality Treatment for Discharge

- Catch Basins
- ▲ Outfalls
- New/Restored Swales
- ▨ Canal Improvements
- Manholes
- ▬ Exfiltration Trench
- D-01
- ▬ Edgewood Neighborhood Boundary
- Backflow Preventers
- Storm Sewer
- D-02
- D-03
- D-05
- ◆ Drainage Wells



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Hazen *Technical Memorandum*

July 28, 2016

To: Rares V. Petrica (Project Manager II, Public Works Department)

From: Robert Taylor (Hazen and Sawyer)

cc: Ronald Geiger (HDR, Inc.)
Elizabeth Perez (Collective Water Resources, LLC)
Stephanie Y. Dunham (Collective Water Resources, LLC)

Stormwater Master Plan Modeling and Design Implementation

Literature Review and Inventory of Existing Stormwater Studies



This memorandum summarizes reports, data, and models associated with existing studies relevant to developing a City-wide stormwater quantity model for the City of Fort Lauderdale and satisfies the deliverable under Subtask 3.2 of the City of Fort Lauderdale's Stormwater Master Plan Modeling and Design Implementation contract, City Contract 11869, Task Order Number 1.

Introduction

The Hazen and Sawyer Project Team (Hazen Team), obtained and reviewed reports, data, and models associated with existing studies relevant to developing a stormwater water quantity model for the City of Fort Lauderdale (City).

This effort was performed as part of the Stormwater Master Plan Modeling and Design Implementation contract, City Contract 11869, Task Order Number 1. This memorandum satisfies a deliverable under Subtask 3.2.

The following reports and associated data and models, where applicable, were collected and reviewed:

- City's 2009 Stormwater Master Plan (2009),
- Federal Emergency Management Agency (FEMA) Broward County Flood Insurance Study (2014),
- Broward County's numerous reports related to its Integrated Surface and Groundwater Models (2002, 2005, 2006, 2011),

- United States Geological Service (USGS) Scientific Investigations Report 2016-5022, Potential Effects of Alterations to the Hydrologic System on the Distribution of Salinity in the Biscayne Aquifer in Broward County, Florida (2016),
- South Florida Water Management District (SFWMD) South Florida Water Management Model, and
- SFWMD's Lower East Coast Subregional MODFLOW Model Documentation (2006).

At this time, the report and model are not available from the USGS and Broward County associated with inundation modeling that has been performed for portions of Fort Lauderdale and Davie. The results of the analysis must undergo an independent peer review, and publication is not anticipated until 2017. Additionally, it was confirmed with Broward County staff that no updates or revisions have been made or are in progress to the flood event hydrologic and hydraulic model since it was issued by FEMA in 2014.

Literature Search and Review

Summaries of the results of the literature and studies reviewed - as well as recommendations - are presented below. Discussion within the memorandum focuses on the information that may be applied to the current project and usability in the proposed stormwater quantity model to be developed under subsequent subtasks. The Hazen Team understands that this is a well-studied system, but review was limited to studies that are directly applicable to stormwater management or flood protection within the City as well as regional studies that could provide key input parameters for the City's proposed model.

City of Fort Lauderdale, Stormwater Master Plan 2009

The Stormwater Master Plan report, available as a PDF document, and associated Storm Water Management Model (SWMM) prepared by CDM Smith (formerly Camp Dresser & McKee (CDM)) for the City were reviewed to determine data, parameters, and/or results that may be leveraged in the City's current stormwater master plan modeling and study efforts. In 2006-2009, CDM Smith used U.S. Environmental Protection Agency (USEPA) SWMM Version 5.0.013 to develop a surface water model to evaluate flooding problem areas and flood control level of service, at a City-wide level. Specifically, the SWMM model was used to evaluate performance of the City's primary stormwater management system during the 2-, 5-, and 10-year/24-hour design storm events and the 25- and 100-year/72-hour storm events. The 2009 SWMM model is City-wide and essentially regional in scale. Per the City's request and current interests, the Hazen Team will be developing a City-wide model with a higher resolution of detail and leveraging newer data sources. As such, it will be difficult to use significant data from the SWMM model. However, the 2009 Stormwater Master Plan report and SWMM model offer some helpful information in terms of locations of major hydrologic and hydraulic features, as well as illuminating potential calibration issues. The following summarizes findings regarding the report and review of the SWMM model:

July 28, 2016

Data Compilation and Evaluation (Section 2)

- Newer topographic data are available compared to the data source used by CDM Smith. For areas within the City limits, high-resolution 2016 Light Detection and Ranging (LiDAR) data are currently being processed for this project. For areas outside of the City limits, LiDAR data collected by the Florida Department of Emergency Management (FDEM) in 2007 will be used.
- The same National Resources Conservation Services (NRCS) soils and SFWMD land use/land cover data will be utilized. Both of these data sets will be updated to reflect current conditions and checked for topological errors.
- More recent future land use data, to be provided by the City, will need to be utilized.
- More recent and higher resolution aerial imagery will be available for the current project.
- Rainfall gauge data referenced in the report will only be used to identify calibration and verification events. Next-Generation Radar (NEXRAD) rainfall data, available from SFWMD, will be used as inputs for calibration and verification simulations, which will be performed under a future task order.
- Stage, discharge, and tidal data stations remain valid sources.
- Cross-section data, originally obtained from Broward County's draft version of MIKE SHE/11 model for the County's Integrated Water Resources Management Master Plan, will be leveraged in this project. This data will be supplemented with cross sections developed from LiDAR data currently being collected within the City limits (for dry channels) as well as bathymetric survey data of the City's canals provided by the City.
- Stormwater infrastructure data were limited. Spatial location and attribute data should be based on currently ongoing field surveys of the City's stormwater management system.
- Bridge data will be refined and checked. When necessary, bridges will be modeled to adequately capture hydraulic conditions (using accepted bridge modeling techniques that are complimentary to ICPRv4).
- Overflow weirs will be checked and refined as necessary. Overflow weirs for the ICPRv4 model will reflect localized topography based on the most recent topographic information.
- Areas of know flooding problems will be utilized and updated to reflect newer complaints and projects that have been implemented to address problem areas. The City will provide the point shapefile developed by CDM Smith along with more recent complaints and repetitive loss data.
- An update to the City's stormwater engineering projects that have occurred or are in development since fiscal year (FY) 2004-2005 will be provided by the City.

City-wide Regional Surface Water Quantity Evaluation (Section 3)

- The vertical datum conversion value to convert from the National Geodetic Vertical Datum of 1929 (NGVD29) to the North American Vertical Datum of 1988 (NAVD88) is given as negative (-) 1.58 feet. This value should be confirmed and verified to be consistent with City's current approach as well as that of adjacent communities.
- Basin (or hydrologic unit, HU) boundaries, overland flow slopes, over-bank channel cross sections, critical or warning flood elevations, and stage-area storage relationships were generated from the digital elevation model (DEM) available at the time. All the hydrologic model parameters for the current modeling effort will be based on the City's 2016 high-

resolution LiDAR data for areas within the City limits. For areas outside of the City's limits, the DEM available from FDEM will be utilized.

- Hurricane Irene, which occurred on October 15, 1999, was used for the calibration event. More recent calibration and verification event(s) should be utilized for the current project. Rather than analyze Thiessen polygons based on five rain gauges, NEXRAD data, available from SFWMD, covering the entire modeling extents will be used as inputs for calibration and verification simulations to be performed under a future task order.
- Rainfall depth-frequency amounts were obtained from SFWMD for five design storms. The same source will be utilized, SFWMD's Environmental Resource Permit Information Manual. Rather than determine rainfall depths for northern, central, and southern portions of the City, rainfall depths will be determined for each watershed.
- A total of 255 hydrologic units (HUs), or basins, along with associated hydrologic parameters were generated for the City-wide SWMM model. Number of HUs were primarily driven by defining contributing areas for City stormwater pipes 36-inches or greater, generally representing the City's primary stormwater system. A higher resolution model will be developed to analyze the City's primary and intermediate stormwater management system. The 255 HUs will be used for quality assurance of basin delineations.
- Horton soil parameters were developed to account for infiltration. All of the HUs within the project area were assigned the same aquifer parameters while the boundary HUs were assigned different aquifer parameters. ICPRv4 does not utilize Horton equations, but offers the Green-Ampt method or Richard's equation as solution options. Therefore, soil parameters from the 2009 study cannot be leveraged directly.
- Regional groundwater baseflow was accounted for by simulating surface runoff for large upstream areas and loading to unconnected nodes and the resulting baseflow from these HUs were linked to nodes within the canals. This was done as part of the calibration process. It is recommended that regional baseflow contributions be addressed more explicitly. Groundwater regions within ICPRv4 may need to extend beyond the City's watersheds and/or baseflows estimated from regional modeling (such as Broward County's integrated surface water and groundwater model or SFWMD's Lower East Coast Subregional MODFLOW model) should be evaluated.
- Impervious area (IA) and directly connected impervious area (DCIA) percentages were determined for nine land use categories. These will be verified and additional land use categories added as needed.
- Overland Manning's roughness coefficients were established for the same nine land use categories. Overland roughness will be developed for an expanded list of land use categories consistent with all the land use types within the watersheds.
- Bathymetric portions of cross sections should be leveraged; however, it is recommended that original sources of cross section data (i.e. Broward County's MIKE 11 model and pre-dredging survey of the North Fork New River) be utilized, since SWMM utilizes a cross section to represent the entire reach but ICPR requires cross sections to represent both the upstream and downstream portions of a reach. Overbank portions of the cross sections will be developed from the most current digital topographic information.
- Stage-area relationships will be generated from the most current digital topographic information and generated using modern GIS methodologies.

- Culvert and pipe parameters will be based on as-built data and ongoing field surveys, to the greatest extent possible (based on engineering judgement).
- Hydraulic overland flow cross sections will be generated from the most current digital topographic information.
- Bridges were simulated as custom conduits and geometries were generalized. For complex bridge geometries, bridges will be modeled within HEC-RAS to develop rating curves for input into ICPRv4. Rating curves should be compared to SWMM modeling results for quality control purposes. In some cases of basic geometries (i.e. no piers or sloped abutments), it might be possible to directly model bridges in ICPR. Methodologies for bridge modeling will be based on engineering judgement once survey data is obtained for the bridges in question.
- SFWMD-managed hydraulic structures were modeled based on data provided by SFWMD. A meeting will be held with SFWMD to verify sizes, inverts, and operations of all SFWMD's structures within the modeling domain (including boundary conditions) since modifications may have occurred. SWMM model results at the structures may be used for quality control purposes, if applicable.
- Calibration boundary conditions will likely not be applicable, since more recent calibration and verification events will be utilized when performed under a future task order.
- For design storm boundary conditions, outfall conditions were estimated to 2.5 feet NGVD. This was taken from estimates of the 100- and 500-year stillwater elevations taken from the FEMA Flood Insurance Study for Broward County along with NOAA tidal datums. These will be updated to account for sea level rise that has occurred, but is not currently accounted for in tidal datums or stillwater elevations used by CDM Smith. For future conditions scenarios, these tidal-based boundary conditions will reflect future projections of sea level rise.
- Inflow boundary conditions were developed by generating equivalent HUs for upstream area and adjusted during the calibration process. A similar approach may be utilized along with flows taken from neighboring models.
- Stage and flow results will be utilized when evaluating starting water elevations as well as reviewing results from the current modeling effort for reasonableness.

FEMA Flood Insurance Study of Broward County and Incorporated Areas (2014)

In August 2014, a revised and updated Flood Insurance Study (FIS) for Broward County and incorporated areas was published based on flood event hydrologic and hydraulic modeling. AECOM obtained the "Baseline" MIKE SHE/MIKE 11 model (BLM) from Broward County. Broward County originally developed this integrated surface water and groundwater BLM to evaluate alternative water supply projects. The BLM has a cell resolution of 500 feet by 500 feet. This BLM was modified by AECOM, under contract with FEMA, to create the flood event models to determine flood elevations associated with the 10-, 50-, 100-, and 500-year storm events. **Figure 1** reflects the primary and secondary canal systems that were included in the model as taken from the report (AECOM, 2011).

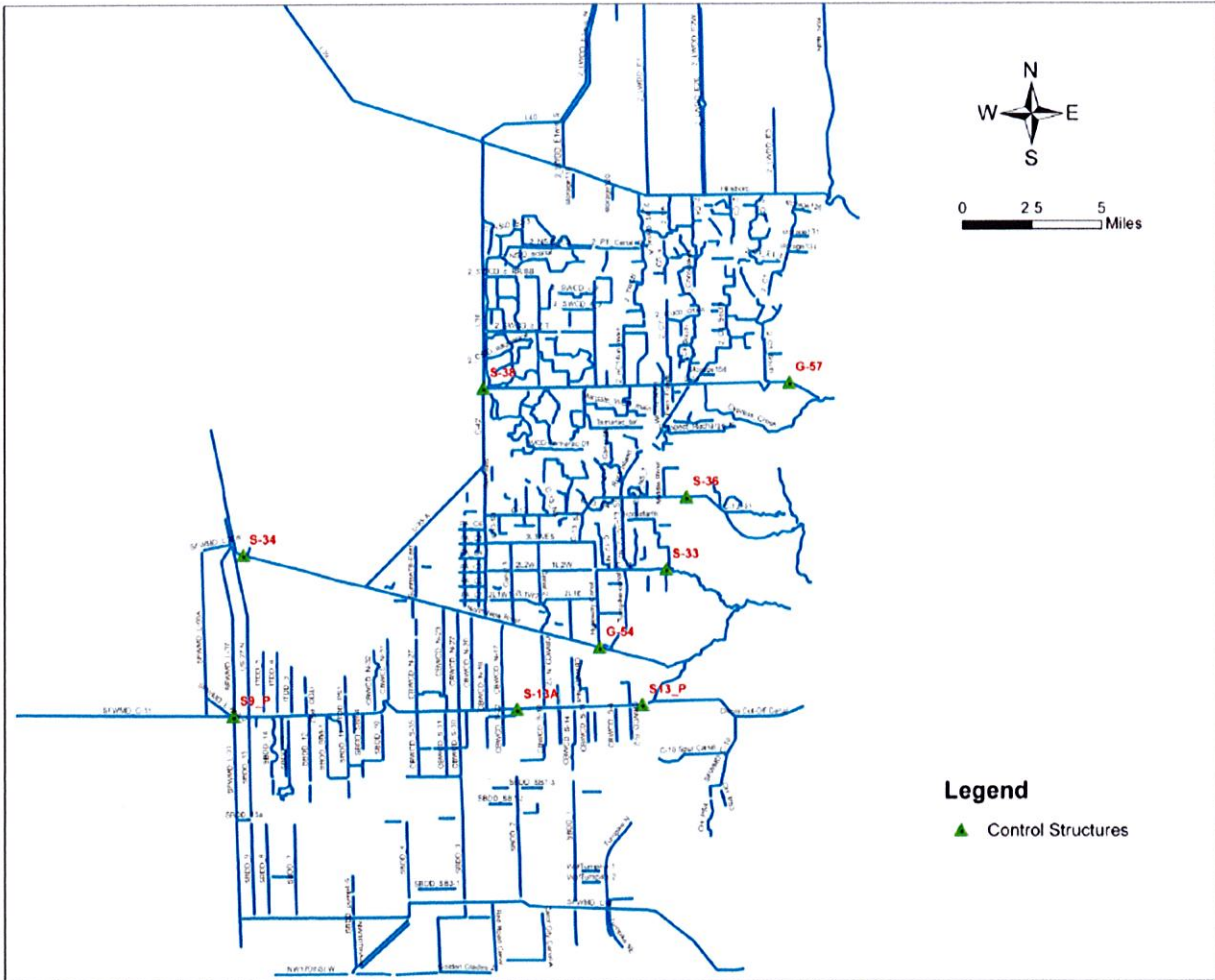


Figure 1. MIKE 11 Canal System (AECOM, 2011)

The report summarizing the modification completed by AECOM to the BLM was reviewed. This report is similar to the information contained within the FIS report, but includes some additional details and graphs of discharge and stage results. The following summarizes findings regarding the report and recommendations:

MIKE SHE Modifications

- NEXRAD rainfall files for Hurricane Irene (October 1999), collected from SFWMD, were used for calibration. Rainfall for design storm simulations (10-, 50-, 100-, and 500-year) utilized SFWMD’s 72-hour distribution according to the report. SFWMD does not have a 72-hour design rainfall event for the 10- or 50-year storms. A total of 10.0 inches, 14.0 inches, 16.0 inches, and 20.1 inches of rainfall were used for the 10-, 50-, 100-, and 500-year design storms respectively. The 500-year rainfall amount was based on a logarithmic extrapolation of the 10, 50, and 100-year rainfall amounts. As previously discussed, more recent calibration/verification events would be recommended for this project. SFWMD rainfall depth-

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- frequency estimates will be used; however, varying amounts for a given storm event will be applied across the City to reflect the spatial distribution of rainfall.
- Reference evapotranspiration was included for the time period October 1-31, 1999 for the Hurricane Irene simulation. Evapotranspiration was based on three stations LOXWS_RW485 for October 1999 data, S140W_OH516 for October 2001 data, and 3AS3WX_OH515 for October 2001 data). As previously discussed, evapotranspiration will not be accounted in the current projects for design storm simulations due to the limited time scale associated with each. Evapotranspiration may need to be modeled within ICPRv4 for calibration and verification events to be performed under a future task order.
 - A 10-foot grid DEM based on LiDAR data were utilized along with levee elevations along the Water Conservation Areas. These data will not support the current project.
 - Edits were performed to the land use vegetation file, but no specifics are included in the report as to what was modified. Edits may have been performed to update the vegetation file due to land use differences from the original version (dated 1/1/2006) to the calibration time frame (dated 1/1/1999).
 - The overland groundwater leakage coefficient file was modified during calibration, but no specifics are included as to what edits were made.
 - Horizontal and vertical conductivity and leakage coefficient were modified in all layers to increase surface water and groundwater interchange. Specifics on these modifications are not provided to determine appropriateness.
 - The drainage level was set at 1.5 feet below ground for urban areas and 2.5 feet below ground for “green” and undeveloped areas. The spatial distribution of the drainage level from the coast to inland areas should be represented.

MIKE 11 Modifications

- Cross sections for secondary canals and tributaries were modified based on the 10-foot DEM. Edits may have been to modify or add overbank portions using the DEM. The bathymetric portions of these secondary canals and tributaries may be useful as inputs in the current modeling effort. Overbank portions should be based on current topographic information.
- New cross section surveys were performed for the primary canals (C-11, C-13, C-14, C-42, and North New River Canal) as illustrated in **Figure 2** (AECOM, 2011). Cross section survey data for C-11, C-13, C-14, and North New River within the modeling extents for the City should be utilized. Preferably, the survey documentation would be requested from FEMA.
- The Virginia tidal gauge was utilized for downstream boundary conditions for the C-11, C-13, C-14, and North New River.
- During calibration some SFWMD structure operations were modified with effective gate openings based on historic stage and flow relationships. For the design simulations, the structures were modeled as described by SFWMD operation controls.

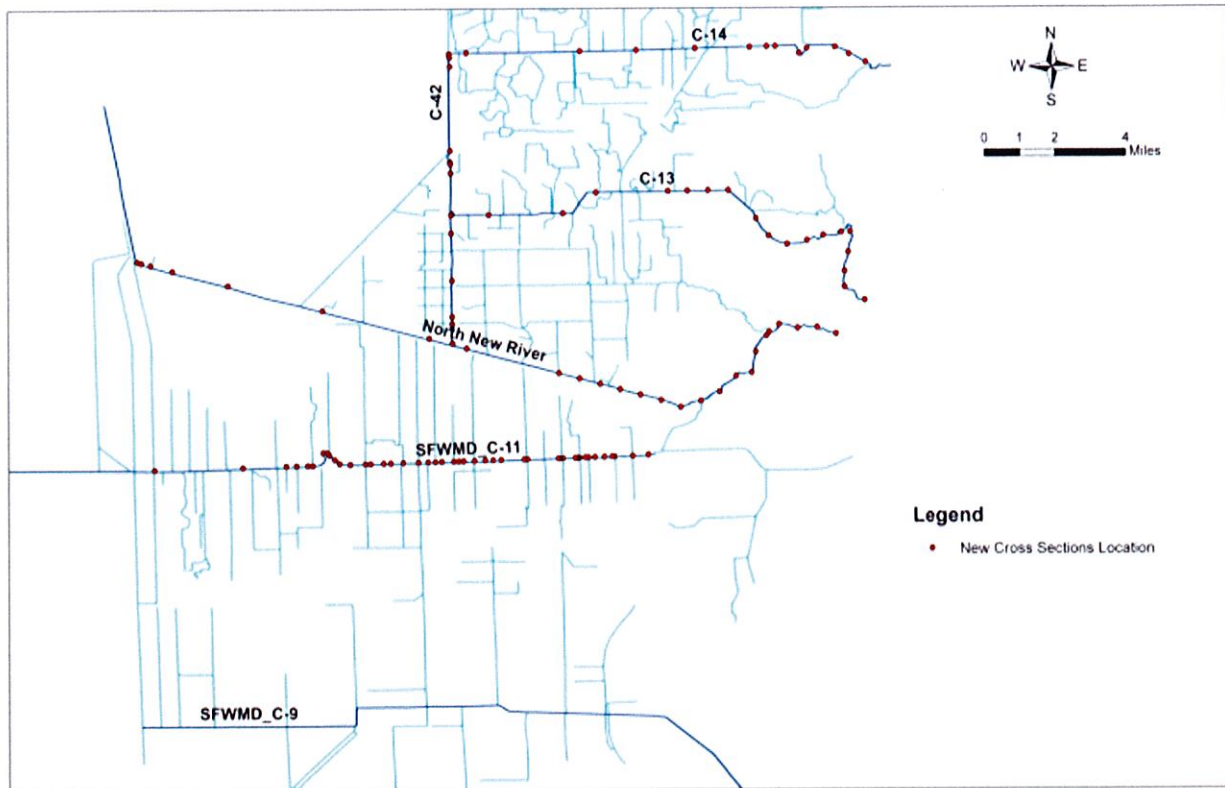


Figure 2. Locations of Cross Section Surveys for Flood Insurance Study (AECOM, 2011)

The input MIKE SHE/MIKE 11 files prepared by AECOM were reviewed and the following represent findings:

- Unsaturated soil parameters within MIKE SHE include hydraulic conductivity and soil water retention curves establishing the relationship between moisture content to matric potential. There are 56 soil units included. However, without documentation it is unclear what these soil units represent. Only 25 of the 56 soil units are documented in the Modeling Water Management Practices in Central Broward County, Florida, Phase 2 Numerical Model Building in Central Broward County, Florida report (2002). Additionally, the input files provide no information on the functions used to define the soil moisture relationships (e.g. Green-Van Genuchten). Original documentation associated with Broward County's North Area Drainage Assessment, Central Area Drainage Assessment, and South Area Drainage Assessment indicates the unsaturated zone is simulated using the Two-Layer Water Balance method; and saturate, field capacity and wilting point moisture contents were estimated based on soil type. However, these reports are not consistent in the breakdown of soil types and the documentation associated with the consolidated version of these models does not indicate how these differences were resolved.
- The groundwater zone was modeled as five layers, however no specifics are provided in the available report as to what stratigraphic units are represented in these layers. Depth to the bottom, horizontal and vertical conductivities, primary storage, and specific yield are provided for all five layers. In reviewing the model input files, the bottom layer depth ranges from 122

to 235 feet below the ground surface for Layer 5. These values are similar to values reported by SFWMD in the Lower East Coast Subregional MODFLOW model for the bottom of the Biscayne aquifer. Horizontal hydraulic conductivity for Layer 5 ranges from around 400 to over 15,000 feet per day, which is not consistent with the range of values used by SFWMD. Hydraulic conductivities have limited spatial distribution across a single layer. Original documentation from Broward County on the BLM has been collected and reviewed (CDM Smith and DHI, 2011) to determine what the layers represent and compare parameters to other published values. The five saturated zones of the Biscayne Aquifer are as follows:

- Layer 1 = Pamlico Sands (equivalent to Perkins' Quaternary Period 5 unit discussed in sections below)
- Layer 2 = Anastasia Formation
- Layer 3 = Biscayne Aquifer
- Layer 4 = Upper unit of the Tamiami Formation (Pinecrest Sands)
- Layer 5 = Grey Limestone for west/lower cells and Tamiami in the east

These model stratigraphy and parameters were obtained from the MODFLOW model developed by SFWMD for Broward County (CDM Smith and DHI, 2002, 2005a, and 2005b).

- Cross sections were included as station-elevation relationships and were assigned to either upstream or downstream ends of links. There is no spatial data contained within the model inputs to determine exact locations of the cross sections. However, cross sections can be associated with a reach length. As previously recommended, only data points within the main channel should be leveraged. Overbank elevations should be established from the most current topographic information.
- Lake bathymetric data were included as an input file and may be useful for editing the City's digital elevation model.
- The model contains the following hydraulic structures that were associated with 4986 nodes and 350 links:
 - Weirs: 101
 - Culverts: 190
 - Bridges: 1 (State Road 7 bridge crossing the C-13)
 - Pump: none
 - Control Structures: 114

These may be used as inputs for hydraulic elements that are located outside the City's limits and do not have field survey, as-builts, or other data sources available from the applicable owner. If used, structures will be field verified.

The following reports were reviewed to determine if they could provide appropriate groundwater input parameters for the City compared to what is available from the MIKE SHE/11 model developed by Broward County and subsequently modified by FEMA. Based on comments in the Broward County reports on the various iterations of the MIKE SHE/11 model, the saturated layers likely were pulled from a predecessor of the Lower East Coast Subregional MODFLOW model summarized below. In 2016 a three-dimensional model developed by the USGS in cooperation with Broward County was released. This model presents alternate layering divisions at a similar horizontal resolution to the MIKE SHE/11 models.

In comparing the reports and available documentation, the Hazen Team recommends the hydrogeological parameters utilized within the USGS model should serve as inputs for the City's ICPRv4 model, especially given all the necessary parameters are provided.

USGS Scientific Investigations Report 2016-5022, Potential Effects of Alterations to the Hydrologic System on the Distribution of Salinity in the Biscayne Aquifer in Broward County, Florida

In March 2016, the USGS published Scientific Investigations Report (SIR) 2016-5022 along with associated reference data and models documenting an analysis of the effects of sea level rise and alternate water management practices on saltwater intrusion within Broward County. A three-dimensional, variable-density solute-transport model (SEAWAT) was developed to evaluate these impacts. Given the modeling objectives, much of the report discusses previous salinity intrusion studies, salinity conditions, as well as results of the current analysis. The report was reviewed to determine if the study could provide hydrogeological parameters for the ICPRv4 groundwater component. This study provides many of the data parameters necessary for simulating groundwater flow with ICPRv4. Compared to the MIKE SHE/11 study, documentation is extensive for the hydrogeological parameters. The ability to extract the coarse and fine groundwater parameters in a format that can be leveraged for the City's project will need to be determined. The following summarizes information and parameters relevant to the hydrogeology of the City's watersheds:

- The Biscayne aquifer in Broward County is unconfined to semiconfined, except along the coastline where the aquifer overlays the Grey Limestone aquifer.
- The aquifer is more than 300 feet deep along the coast and thins to the west as illustrated in **Figure 3** below, taken from the report (USGS, 2016). The base of the surficial aquifer system ranges from -143 to -220 feet NAVD88.
- Eastward to southeastward groundwater flow gradient may be greater in the wet season (December – May) compared to the dry season (June-November) due to current water management; however, the general regional direction of the potentiometric surface of the surficial aquifer remains from the northwest to southeast.

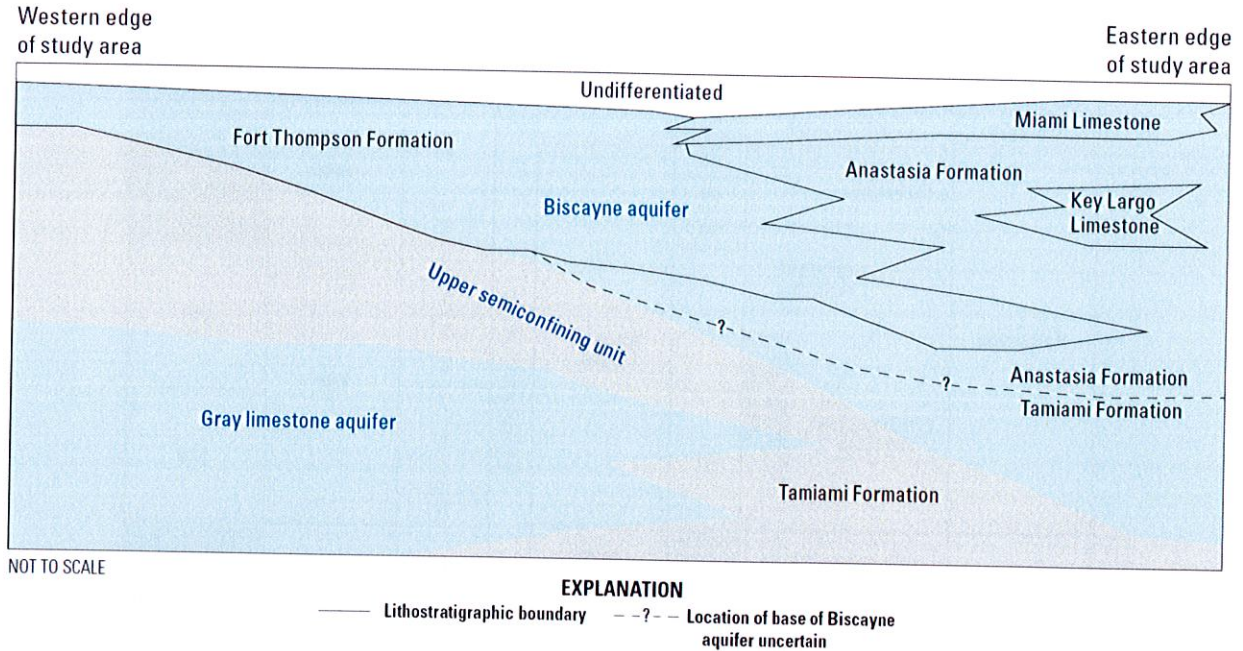


Figure 3. Cross Section of Typical Stratigraphy within Broward County (USGS, 2016)

- The model was divided the surficial aquifer system into 12 vertical layers as illustrated in **Figure 4** and is subdivided into 500x500 foot cells horizontally. However, some parameters are more generalized into coarse or fine parameters:
 - Horizontal hydraulic conductivity generalized for fine parameter layers: UPR, PD1, PD2, and LWR
 - Vertical hydraulic conductivity generalized for fine parameter layers: UPR, PD1, PD2, and LWR
 - Specific Yield generalized for coarse parameter layers: UPR, PRD, and LWR.
 - Porosity generalized for fine parameter layers: UPR, PD1, PD2, and LWR
- Distributions of layer thickness were determined by applying anisotropic variogram modeling to control points representing 117 wells.
- Figures are presented in the report illustrating ranges in the top elevations of various layers, with Fort Lauderdale having elevations towards the lower end of the range:
 - Top of Layer 2 (top of Perkins' Q3 unit): -10 to -47 feet NAVD88.
 - Top of Layer 3 (Q2 unit): -22 to -72 feet NAVD88.
 - Topo of Layer 7 (Q1 unit): -40 to -113 feet NAVD88.
 - Top of Layer 11 (Pinecrest Sand/Tamiami Formation): -50 to -130 feet NAVD88.



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Series	Lithostratigraphic units	Perkins' Q units	Hydrogeologic units	Model layer	Coarse parameter prefix	Fine parameter prefix
Holocene	Undifferentiated					
Pleistocene	Miami Limestone	Q5	Biscayne aquifer	1	UPR	
		Q4		2		
		Q3		3		
	Anastasia Formation	Q2		4	PRD	
				5		
		Q1		6		
	Fort Thompson Formation			7		
				8		
				9		
				10		
Pliocene	Tamiami Formation		Upper semiconfining unit	11	LWR	
			Gray limestone aquifer	12		

EXPLANATION

UPR Upper unit PD1 Upper production unit
 PRD Production units PD2 Lower production unit
 LWR Lower unit -?-?- Uncertain lithostratigraphic or hydrogeologic boundary

Figure 4. Units and Associated Model Layers within SEAWAT model (USGS, 2016)

- Daily data for 15 monitoring stations were used to established water table elevations for calibration of the model. The following USGS wells were used:
 - 260515080202101
 - 260752080084701 (located within the City limits)
 - 260025080230401
 - 260219080141101
 - 260032080135701
 - 261122080083401
 - 261441080111301
 - 255918080091801
 - 255807080224301
 - 260821080185101
 - 261141080163401
 - 260040080104401
 - 261147080114501
 - 260325080113901
 - 255616080180301
- Water levels are highest in the northwestern part of the model. Relatively high water levels in the northwestern and western parts are influenced by the water conservation areas.

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- Calibrated riverbed conductance values ranged from 2.1×10^6 to 2.6×10^6 square feet per day and had a median value of 4.8×10^4 square feet per day (P25= 2.2×10^4 square feet per day; P75= 1.1×10^5 square feet per day).
- The hydraulic conductivity in the Biscayne aquifer ranges from 75 to 78,000 feet per day, but a uniform value hydraulic conductivity of 1,000 feet per day was assigned to each model layer at the start of the calibration effort.
- The calibrated horizontal conductivities ranged from approximately 1.6×10^2 to 3.2×10^4 feet per day for the UPR unit, 1.7×10^2 to 3.2×10^4 feet per day for the PD1 unit, and 2.1×10^2 to 2.3×10^4 feet per day for the PD2 unit. Core samples of the Tamiami Formation in Broward County indicate a porosity range from 0.37 to 0.4; median values of porosity for three pore-types differentiated based on Biscayne aquifer core samples from north-central Miami-Dade County range from 0.18 to 0.33; effective porosity determined from tracer tests in the Biscayne aquifer in north-central Miami-Dade County ranges from 0.04 to 0.41. Table 1 from the report (as shown below) summarizes initial, specified and calibrated ranges for the various parameters. Parameter for the groundwater regions within ICPRv4 will be consistent with these values.
- Hydraulic properties from filed data or laboratory samples are also given for Ft. Thompson Formation, Tamiami Formation, Anastasia Formation, and gray limestone aquifer.
- The calibrated horizontal conductivities for Biscayne aquifer are within the range of values (7.1×10^1 to 7.8×10^4 feet per day) estimated for the aquifer from aquifer performance tests.

Parameter	Initial value	Constrained or specified	Calibrated range	Units
kh UPR	500 layer 1, 1,000 layer 2	1.0×10^{-3} to 3.2×10^4	1.6×10^2 to 3.2×10^4	ft/d
kv UPR	500 layer 1, 1,000 layer 2	1.0×10^{-3} to 3.2×10^4	8.8×10^{-1} to 3.2×10^1	ft/d
kh PD1	1,000	1.0×10^{-3} to 3.2×10^4	1.7×10^2 to 3.2×10^4	ft/d
kv PD1	1,000	1.0×10^{-3} to 3.2×10^4	1.6×10^0 to 2.6×10^1	ft/d
kh PD2	1,000	1.0×10^{-3} to 3.2×10^4	2.1×10^2 to 2.3×10^4	ft/d
kv PD2	1,000	1.0×10^{-3} to 3.2×10^4	2.6×10^0 to 1.6×10^1	ft/d
kh LWR	500	1.0×10^{-3} to 3.2×10^4	1.9×10^2 to 2.6×10^4	ft/d
kv LWR	500	1.0×10^{-3} to 3.2×10^4	2.8×10^0 to 9.1×10^0	ft/d
Ss UPR, PRD, LWR	3.28×10^{-5}	4.2×10^{-7} to 1.0×10^{-4}	6.4×10^{-6} to 1.3×10^{-5}	ft ⁻¹
Storage coefficient	N/A	N/A	N/A	N/A
Sy UPR	0.2	0.01 to 0.40	0.03 to 0.40	Unitless
Porosity UPR, PD1, PD2, LWR	0.3	0.01 to 0.40	0.01 to 0.40	Unitless
Riverbed conductance	(¹)	(¹)	2.1×100 to 2.6×10^6	ft ² /d
DRN conductance	N/A	Specified	6×10^7 (undeveloped), 2.5×10^4 (developed)	ft ² /d
Tidal boundary conductance	N/A	Specified	100	ft ² /d
Northern and southern GHB conductance	N/A	Specified	100	ft/d
Wetland GHB hydraulic conductivity	N/A	Specified	100	ft/d
Diffusion coefficient	N/A	Specified	1×10^{-9}	ft ² /d
Dispersivity	N/A	Specified	0	ft

Table 1. Saturated Soil Parameters for SEAWAT Model (USGS, 2016)

SFWMD South Florida Water Management Model

The SFWMD has developed a model of major hydrologic and hydraulic systems within SFWMD jurisdiction, referred to as the South Florida Water Management Model (SFWMM) model. The SFWMM is applicable for evaluating regional response to operational changes and proposed water management control structures. Hydrologic components include rainfall, evapotranspiration, infiltration, overland and groundwater flow, canal flow, canal-groundwater seepage, levee seepage and groundwater pumping. Hydraulic systems include the District's current water management structures and associated operational rules. The model simulations are performed on a daily time step using 2 mile x 2 mile cells.

The report entitled *Documentation of the South Florida Water Management Model Version 5.5* (2005) was reviewed to determine if the study could provide hydrogeological parameters for developing the City's groundwater regions within ICPRv4. The SFWMM simulates groundwater based on a vertically aggregated, single layer to represent the surficial aquifer. While assuming a vertically homogeneous soil column for modeling may be an approach taken within the City, this report provides no specifics on the data or the development of the unsaturated or saturated soil layers used with the SFWMM.

SFWMD Lower East Coast Sub Regional Model

To evaluate sub-regional scale water management projects, SFWMD has developed a higher resolution, sub-regional groundwater flow model for several areas including the lower east coast, referred to as the Lower East Coast sub regional Model (LECsR). The model cells are 704 feet x 704 feet, and the model is capable of simulating groundwater flow of the surficial aquifer system, wetland hydroperiods, water deliveries, canal and aquifer interactions, and operations of SFWMD's management system on a daily time step. Based on calibration results, the model is capable of responding to extreme drought as well as extreme wet conditions. Documentation on the LECsR is available from SFWMD as a draft report, *Lower East Coast Subregional MODFLOW Model Documentation*, dated March 2006. The report was reviewed to determine if the study could provide hydrogeological parameters for the ICPRv4 groundwater component.

- The Biscayne aquifer extends down to 50 to 150 feet below sea level. The base of the Biscayne aquifer is generally the contact between the Fort Thompson Formation and the Tamiami Formation.
- The vertical layers of the surficial aquifer were delineated along the stratigraphic boundaries with differentiation based on periods with exposure to terrestrial processes including:
 - Lake Flirt Marl/Undifferentiated Soil and Sand (Holocene series) approximately 0-5 feet thick,
 - Pamlico Sand (Quaternary Period 5, or Q5) approximately 0-50 feet thick,
 - Miami Limestone (Q4) approximately 0-30 feet thick,
 - Fort Thompson Formation (Q3) approximately 0-100 feet thick,
 - Anastasia Formation (Q2) approximately 0-140 feet thick,
 - Key Largo Limestone (Q1) approximately 0-20 feet thick,
 - Pinecrest Sand (Tamiami Formation 2, or T2) approximately 0-90 feet thick, and
 - Ochopee Limestone (T1) approximately 0-130 feet thick.

In general, changes in thickness of the zones can be seen from west to east, but relatively little change from north to south. These stratigraphic zones were represented in the model as three layers based on grouping similar hydrostratigraphic properties:

- Layer 1: H, Q5, and Q4
- Layer 2: Q3, Q2, and Q1
- Layer 3: T2 and T1
- The Biscayne aquifer is confined to semiconfined by the Pinecrest Sand layer, except along the coast where the Biscayne aquifer directly overlays the Gray Limestone aquifer, or the Ochopee Limestone unit.
- Horizontal hydraulic conductivity (feet/day) was determined for the model domain based on numerous sample/test points. Figures are presented reflecting the spatial variation of horizontal hydraulic conductivity for the H, Q5-Q1, and T2-T1 layers.
- Hydraulic conductivities are summarized by various layers of the aquifer. **Table 2** summarizes values for the Fort Lauderdale area:

Perkins' Unit (starting with surface layer)	Hydraulic Conductivity near Fort Lauderdale (feet/day)
Holocene Sediments	21-25
Q5	11-50
Q4	3-100
Q3	51-15,000
Q2	51-1000
Q1	1-25000
T2	0-800
T1	50-1000

Table 2. Hydraulic Conductivity Ranges, by Perkin's Units, within Fort Lauderdale area

- Values are presented showing the elevations of the tops of the model Layers 2 and 3 (referenced to NGVD29). Around Fort Lauderdale the figures generally show the elevation of the top of Layer 2 is roughly -38 feet to -24 feet NGVD29, the top of Layer 3 ranges in elevation from -130 feet to -99 feet NGVD29, and the bottom of Layer 3 ranging from -223 feet to -177 feet NGVD29. There are values representing the thickness of the layers as well.
- Hydraulic conductivity for each model layer was determined for each sample point by summing the transmissivities for each unit (e.g. H+Q5+Q4 for Layer 1) divided by the thickness of the layer. The spatial distribution was developed by using inverse distance weighting on the points. However, for Layer 2 hydraulic conductivity was derived from geologic control wells. Around Fort Lauderdale the values generally show hydraulic conductivity ranging from 20 to 960 feet per day for Layer 1, from 1 to 22,900 feet per day for Layer 2, and from 2 to 770 feet per day for Layer 3.
- Appendix A of SFWMD's report provides a summary list of horizontal hydraulic conductivity and thickness/depth values from aquifer performance tests as well as USGS core data. Additionally, the report's Appendix A summarizes the layer properties for each model source point.
- Vertical conductivity coefficients are defined to control the vertical flow between layers based on a relationship of the thickness of the layers and the horizontal hydraulic conductivities.
- Canal cross sections were based on previous sub-regional models (North Palm Beach, South Palm Beach, Broward, and South Miami-Dade), typical cross sections obtained from permits, and field measurements. In some agricultural areas, cross sections were estimated based on typical operational procedures.
- Modeled tidal elevations were based on the WANT hydrodynamic model rather than limited measured tidal data from NOAA. According to the LECsR report, "the modeled tidal data characterize the best representative daily value while minimizing the number of stations used." The reference provided in report, *Long-Term Tidal Analysis for Subregional Modeling* by S. C. Hagen (2005), cannot be located for further review.

Contact Information

Should you require any further detail or have any questions or comments, please do not hesitate to contact Robert Taylor, with Hazen and Sawyer, at (954) 987-0066, or Stephanie Dunham, with Collective Water Resources, at (561) 353-6971.

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References

- AECOM, July 2011. Broward County, Florida MIKE SHE – MIKE 11 Models.
- CDM Smith, August 2009. City of Fort Lauderdale Stormwater Master Plan Report.
- CDM Smith and DHI, December 2002. Broward County Department of Planning and Environmental Protection, Modeling Water Management Practices in Central Broward County, Florida, Phase 2 Numerical Model Building and Model Results.
- CDM Smith and DHI, April 2005. Broward County Environmental Protection Department Task 4.2 South Area Drainage Assessment MIKE SHE Model Report Broward County, Florida.
- CDM Smith and DHI, May 2005. Broward County Environmental Protection Department Modeling Water Management Practices in North Broward County, Florida
- CDM Smith and DHI, April 2011. Broward County Integrated Water Resource Management Master Plan Task 16 – Integrated Water Resource Management Master Plan – Final.
- FEMA, August 2014. [Flood Insurance Study for Broward County, Florida, and Incorporated Areas.](#)
- SFWMD, November 2005. [Documentation of the South Florida Water Management Model, Version 5.5.](#)
- SFWMD, March 2006. [Lower East Coast Subregional MODFLOW Model Documentation.](#)
- USGS, 2016. [Potential Effects of Alterations to the Hydrologic System on the Distribution of Salinity in the Biscayne Aquifer in Broward County, Florida.](#) Scientific Investigation Report 2016-5022.

**CITY OF FORT LAUDERDALE
GENERAL CONDITIONS**

These instructions and conditions are standard for all contracts for commodities or services issued through the City of Fort Lauderdale Procurement Services Division. The City may delete, supersede, or modify any of these standard instructions for a particular contract by indicating such change in the Invitation to Bid (ITB) Special Conditions, Technical Specifications, Instructions, Proposal Pages, Addenda, and Legal Advertisement. In this general conditions document, Invitation to Bid (ITB), Request for Qualifications (RFQ), and Request for Proposal (RFP) are interchangeable.

PART I BIDDER PROPOSAL PAGE(S) CONDITIONS:

- 1.01 BIDDER ADDRESS:** The City maintains automated vendor address lists that have been generated for each specific Commodity Class item through our bid issuing service, BidSync. Notices of Invitations to Bid (ITB'S) are sent by e-mail to the selection of bidders who have fully registered with BidSync or faxed (if applicable) to every vendor on those lists, who may then view the bid documents online. Bidders who have been informed of a bid's availability in any other manner are responsible for registering with BidSync in order to view the bid documents. There is no fee for doing so. If you wish bid notifications be provided to another e-mail address or fax, please contact BidSync. If you wish purchase orders sent to a different address, please so indicate in your bid response. If you wish payments sent to a different address, please so indicate on your invoice.
- 1.02 DELIVERY:** Time will be of the essence for any orders placed as a result of this ITB. The City reserves the right to cancel any orders, or part thereof, without obligation if delivery is not made in accordance with the schedule specified by the Bidder and accepted by the City.
- 1.03 PACKING SLIPS:** It will be the responsibility of the awarded Contractor, to attach all packing slips to the OUTSIDE of each shipment. Packing slips must provide a detailed description of what is to be received and reference the City of Fort Lauderdale purchase order number that is associated with the shipment. Failure to provide a detailed packing slip attached to the outside of shipment may result in refusal of shipment at Contractor's expense.
- 1.04 PAYMENT TERMS AND CASH DISCOUNTS:** Payment terms, unless otherwise stated in this ITB, will be considered to be net 45 days after the date of satisfactory delivery at the place of acceptance and receipt of correct invoice at the office specified, whichever occurs last. Bidder may offer cash discounts for prompt payment but they will not be considered in determination of award. If a Bidder offers a discount, it is understood that the discount time will be computed from the date of satisfactory delivery, at the place of acceptance, and receipt of correct invoice, at the office specified, whichever occurs last.
- 1.05 TOTAL BID DISCOUNT:** If Bidder offers a discount for award of all items listed in the bid, such discount shall be deducted from the total of the firm net unit prices bid and shall be considered in tabulation and award of bid.
- 1.06 BIDS FIRM FOR ACCEPTANCE:** Bidder warrants, by virtue of bidding, that the bid and the prices quoted in the bid will be firm for acceptance by the City for a period of one hundred twenty (120) days from the date of bid opening unless otherwise stated in the ITB.
- 1.07 VARIANCES:** For purposes of bid evaluation, Bidder's must indicate any variances, no matter how slight, from ITB General Conditions, Special Conditions, Specifications or Addenda in the space provided in the ITB. No variations or exceptions by a Bidder will be considered or deemed a part of the bid submitted unless such variances or exceptions are listed in the bid and referenced in the space provided on the bidder proposal pages. If variances are not stated, or referenced as required, it will be assumed that the product or service fully complies with the City's terms, conditions, and specifications.
- By receiving a bid, City does not necessarily accept any variances contained in the bid. All variances submitted are subject to review and approval by the City. If any bid contains material variances that, in the City's sole opinion, make that bid conditional in nature, the City reserves the right to reject the bid or part of the bid that is declared by the City as conditional.
- 1.08 NO BIDS:** If you do not intend to bid please indicate the reason, such as insufficient time to respond, do not offer product or service, unable to meet specifications, schedule would not permit, or any other reason, in the space provided in this ITB. Failure to bid or return no bid comments prior to the bid due and opening date and time, indicated in this ITB, may result in your firm being deleted from our Bidder's registration list for the Commodity Class Item requested in this ITB.
- 1.09 MINORITY AND WOMEN BUSINESS ENTERPRISE PARTICIPATION AND BUSINESS DEFINITIONS:** The City of Fort Lauderdale wants to increase the participation of Minority Business Enterprises (MBE), Women Business Enterprises (WBE), and Small Business Enterprises (SBE) in its procurement activities. If your firm qualifies in accordance with the below definitions please indicate in the space provided in this ITB.

Minority Business Enterprise (MBE) "A Minority Business" is a business enterprise that is owned or controlled by one or more socially or economically disadvantaged persons. Such disadvantage may arise from cultural, racial, chronic economic circumstances or background or other similar cause. Such persons include, but are not limited to: Blacks, Hispanics, Asian Americans, and Native Americans.

The term "Minority Business Enterprise" means a business at least 51 percent of which is owned by minority group members or, in the case of a publicly owned business, at least 51 percent of the stock of which is owned by minority group members. For the purpose of the preceding sentence, minority group members are citizens of the United States who include, but are not limited to: Blacks, Hispanics, Asian Americans, and Native Americans.

Women Business Enterprise (WBE) a "Women Owned or Controlled Business" is a business enterprise at least 51 percent of which is owned by females or, in the case of a publicly owned business, at least 51 percent of the stock of which is owned by females.

Small Business Enterprise (SBE) "Small Business" means a corporation, partnership, sole proprietorship, or other legal entity formed for the purpose of making a profit, which is independently owned and operated, has either fewer than 100 employees or less than \$1,000,000 in annual gross receipts.

BLACK, which includes persons having origins in any of the Black racial groups of Africa.

WHITE, which includes persons whose origins are Anglo-Saxon and Europeans and persons of Indo-European decent including Pakistani and East Indian.
 HISPANIC, which includes persons of Mexican, Puerto Rican, Cuban, Central and South American, or other Spanish culture or origin, regardless of race.
 NATIVE AMERICAN, which includes persons whose origins are American Indians, Eskimos, Aleuts, or Native Hawaiians.
 ASIAN AMERICAN, which includes persons having origin in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.

1.10 MINORITY-WOMEN BUSINESS ENTERPRISE PARTICIPATION

It is the desire of the City of Fort Lauderdale to increase the participation of minority (MBE) and women-owned (WBE) businesses in its contracting and procurement programs. While the City does not have any preference or set aside programs in place, it is committed to a policy of equitable participation for these firms. Proposers are requested to include in their proposals a narrative describing their past accomplishments and intended actions in this area. If proposers are considering minority or women owned enterprise participation in their proposal, those firms, and their specific duties have to be identified in the proposal. If a proposer is considered for award, he or she will be asked to meet with City staff so that the intended MBE/WBE participation can be formalized and included in the subsequent contract.

1.11 SCRUTINIZED COMPANIES

As to any contract for goods or services of \$1 million or more and as to the renewal of any contract for goods or services of \$1 million or more, subject to *Odebrecht Construction, Inc., v. Prasad*, 876 F.Supp.2d 1305 (S.D. Fla. 2012), affirmed, *Odebrecht Construction, Inc., v. Secretary, Florida Department of Transportation*, 715 F.3d 1268 (11th Cir. 2013), with regard to the "Cuba Amendment," the Contractor certifies that it is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, and that it does not have business operations in Cuba or Syria, as provided in section 287.135, Florida Statutes (2019), as may be amended or revised. As to any contract for goods or services of any amount and as to the renewal of any contract for goods or services of any amount, the Contractor certifies that it is not on the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2019), and that it is not engaged in a boycott of Israel. The City may terminate this Agreement at the City's option if the Contractor is found to have submitted a false certification as provided under subsection (5) of section 287.135, Florida Statutes (2019), as may be amended or revised, or been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2019), or is engaged in a boycott of Israel, or has been engaged in business operations in Cuba or Syria, as defined in Section 287.135, Florida Statutes (2019), as may be amended or revised.

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1.12 DEBARRED OR SUSPENDED BIDDERS OR PROPOSERS

The bidder or proposer certifies, by submission of a response to this solicitation, that neither it nor its principals and subcontractors are presently debarred or suspended by any Federal department or agency.

Part II DEFINITIONS/ORDER OF PRECEDENCE:

2.01 BIDDING DEFINITIONS The City will use the following definitions in its general conditions, special conditions, technical specifications, instructions to bidders, addenda and any other document used in the bidding process:

INVITATION TO BID (ITB) The solicitation document used for soliciting competitive sealed bids for goods or services.

INVITATION TO NEGOTIATE (ITN) All solicitation documents, regardless of medium, whether attached to or incorporated by reference in solicitations for responses from firms that invite proposals from interested and qualified firms so the city may enter into negotiations with the firm(s) determined most capable of providing the required goods or services.

REQUEST FOR PROPOSALS (RFP) A solicitation method used for soliciting competitive sealed proposals to determine the best value among proposals for goods or services for which price may not be the prevailing factor in award of the contract, or the scope of work, specifications or contract terms and conditions may be difficult to define. Such solicitation will consider the qualifications of the proposers along with evaluation of each proposal using identified and generally weighted evaluation criteria. RFPs may include price criteria whenever feasible, at the discretion of the city.

REQUEST FOR QUALIFICATIONS (RFQ) A solicitation method used for requesting statements of qualifications in order to determine the most qualified proposer for professional services.

BID – a price and terms quote received in response to an ITB.

PROPOSAL – a proposal received in response to an RFP.

BIDDER – Person or firm submitting a Bid.

PROPOSER – Person or firm submitting a Proposal.

RESPONSIVE BIDDER – A firm who has submitted a bid, offer, quote, or response which conforms in all material respects to the competitive solicitation document and all of its requirements.

RESPONSIBLE BIDDER – A firm who is fully capable of meeting all requirements of the solicitation and subsequent contract. The respondent must possess the full capability, including financial and technical, ability, business judgment, experience, qualifications, facilities, equipment, integrity, capability, and reliability, in all respects to perform fully the contract requirements and assure good faith performance as determined by the city.

FIRST RANKED PROPOSER – That Proposer, responding to a City RFP, whose Proposal is deemed by the City, the most advantageous to the City after applying the evaluation criteria contained in the RFP.

SELLER – Successful Bidder or Proposer who is awarded a Purchase Order or Contract to provide goods or services to the City.

CONTRACTOR – Any firm having a contract with the city. Also referred to as a "Vendor".

CONTRACT – All types of agreements, including purchase orders, for procurement of supplies, services, and construction, regardless of what these agreements may be called.

CONSULTANT – A firm providing professional services for the city.

- 2.02 SPECIAL CONDITIONS:** Any and all Special Conditions contained in this ITB that may be in variance or conflict with these General Conditions shall have precedence over these General Conditions. If no changes or deletions to General Conditions are made in the Special Conditions, then the General Conditions shall prevail in their entirety,

PART III BIDDING AND AWARD PROCEDURES:

- 3.01 SUBMISSION AND RECEIPT OF BIDS:** To receive consideration, bids must be received prior to the bid opening date and time. Unless otherwise specified, Bidders should use the proposal forms provided by the City. These forms may be duplicated, but failure to use the forms may cause the bid to be rejected. Any erasures or corrections on the bid must be made in ink and initialed by Bidder in ink. All information submitted by the Bidder shall be printed, typewritten or filled in with pen and ink. Bids shall be signed in ink. Separate bids must be submitted for each ITB issued by the City in separate sealed envelopes properly marked. When a particular ITB or RFP requires multiple copies of bids or proposals they may be included in a single envelope or package properly sealed and identified. Only send bids via facsimile transmission (FAX) if the ITB specifically states that bids sent via FAX will be considered. If such a statement is not included in the ITB, bids sent via FAX will be rejected. Bids will be publicly opened in the Procurement Office, or other designated area, in the presence of Bidders, the public, and City staff. Bidders and the public are invited and encouraged to attend bid openings. Bids will be tabulated and made available for review by Bidder's and the public in accordance with applicable regulations.
- 3.02 MODEL NUMBER CORRECTIONS:** If the model number for the make specified in this ITB is incorrect, or no longer available and replaced with an updated model with new specifications, the Bidder shall enter the correct model number on the bidder proposal page. In the case of an updated model with new specifications, Bidder shall provide adequate information to allow the City to determine if the model bid meets the City's requirements.
- 3.03 PRICES QUOTED:** Deduct trade discounts, and quote firm net prices. Give both unit price and extended total. In the case of a discrepancy in computing the amount of the bid, the unit price quoted will govern. All prices quoted shall be F.O.B. destination, freight prepaid (Bidder pays and bears freight charges, Bidder owns goods in transit and files any claims), unless otherwise stated in Special Conditions. Each item must be bid separately. No attempt shall be made to tie any item or items contained in the ITB with any other business with the City.
- 3.04 TAXES:** The City of Fort Lauderdale is exempt from Federal Excise and Florida Sales taxes on direct purchase of tangible property. Exemption **number for EIN is 59-6000319, and State Sales tax exemption number is 85-8013875578C-1.**
- 3.05 WARRANTIES OF USAGE:** Any quantities listed in this ITB as estimated or projected are provided for tabulation and information purposes only. No warranty or guarantee of quantities is given or implied. It is understood that the Contractor will furnish the City's needs as they arise.
- 3.06 APPROVED EQUAL:** When the technical specifications call for a brand name, manufacturer, make, model, or vendor catalog number with acceptance of APPROVED EQUAL, it shall be for the purpose of establishing a level of quality and features desired and acceptable to the City. In such cases, the City will be receptive to any unit that would be considered by qualified City personnel as an approved equal. In that the specified make and model represent a level of quality and features desired by the City, the Bidder must state clearly in the bid any variance from those specifications. It is the Bidder's responsibility to provide adequate information, in the bid, to enable the City to ensure that the bid meets the required criteria. If adequate information is not submitted with the bid, it may be rejected. The City will be the sole judge in determining if the item bid qualifies as an approved equal.
- 3.07 MINIMUM AND MANDATORY TECHNICAL SPECIFICATIONS:** The technical specifications may include items that are considered minimum, mandatory, or required. If any Bidder is unable to meet or exceed these items, and feels that the technical specifications are overly restrictive, the bidder must notify the Procurement Services Division immediately. Such notification must be received by the Procurement Services Division prior to the deadline contained in the ITB, for questions of a material nature, or prior to five (5) days before bid due and open date, whichever occurs first. If no such notification is received prior to that deadline, the City will consider the technical specifications to be acceptable to all bidders.
- 3.08 MISTAKES:** Bidders are cautioned to examine all terms, conditions, specifications, drawings, exhibits, addenda, delivery instructions and special conditions pertaining to the ITB. Failure of the Bidder to examine all pertinent documents shall not entitle the bidder to any relief from the conditions imposed in the contract.
- 3.09 SAMPLES AND DEMONSTRATIONS:** Samples or inspection of product may be requested to determine suitability. Unless otherwise specified in Special Conditions, samples shall be requested after the date of bid opening, and if requested should be received by the City within seven (7) working days of request. Samples, when requested, must be furnished free of expense to the City and if not used in testing or destroyed, will upon request of the Bidder, be returned within thirty (30) days of bid award at Bidder's expense. When required, the City may request full demonstrations of units prior to award. When such demonstrations are requested, the Bidder shall respond promptly and arrange a demonstration at a convenient location. Failure to provide samples or demonstrations as specified by the City may result in rejection of a bid.
- 3.10 LIFE CYCLE COSTING:** If so specified in the ITB, the City may elect to evaluate equipment proposed on the basis of total cost of ownership. In using Life Cycle Costing, factors such as the following may be considered: estimated useful life, maintenance costs, cost of supplies, labor intensity, energy usage, environmental impact, and residual value. The City reserves the right to use those or other applicable criteria, in its sole opinion that will most accurately estimate total cost of use and ownership.
- 3.11 BIDDING ITEMS WITH RECYCLED CONTENT:** In addressing environmental concerns, the City of Fort Lauderdale encourages Bidders to submit bids or alternate bids containing items with recycled content. When submitting bids containing items with recycled content, Bidder shall provide documentation adequate for the City to verify the recycled content. The City prefers packaging consisting of materials that are degradable or able to be recycled. When specifically stated in the ITB, the City may give preference to bids containing items manufactured with recycled material or packaging that is able to be recycled.

- 3.12 USE OF OTHER GOVERNMENTAL CONTRACTS:** The City reserves the right to reject any part or all of any bids received and utilize other available governmental contracts, if such action is in its best interest.
- 3.13 QUALIFICATIONS/INSPECTION:** Bids will only be considered from firms normally engaged in providing the types of commodities/services specified herein. The City reserves the right to inspect the Bidder's facilities, equipment, personnel, and organization at any time, or to take any other action necessary to determine Bidder's ability to perform. The Procurement Director reserves the right to reject bids where evidence or evaluation is determined to indicate inability to perform.
- 3.14 BID SURETY:** If Special Conditions require a bid security, it shall be submitted in the amount stated. A bid security can be in the form of a bid bond or cashier's check. Bid security will be returned to the unsuccessful bidders as soon as practicable after opening of bids. Bid security will be returned to the successful bidder after acceptance of the performance bond, if required; acceptance of insurance coverage, if required; and full execution of contract documents, if required; or conditions as stated in Special Conditions.
- 3.15 PUBLIC RECORDS/TRADE SECRETS/COPYRIGHT:** The Proposer's response to the RFP is a public record pursuant to Florida law, which is subject to disclosure by the City under the State of Florida Public Records Law, Florida Statutes Chapter 119.07 ("Public Records Law"). The City shall permit public access to all documents, papers, letters or other material submitted in connection with this RFP and the Contract to be executed for this RFP, subject to the provisions of Chapter 119.07 of the Florida Statutes.

Any language contained in the Proposer's response to the RFP purporting to require confidentiality of any portion of the Proposer's response to the RFP, except to the extent that certain information is in the City's opinion a Trade Secret pursuant to Florida law, shall be void. If a Proposer submits any documents or other information to the City which the Proposer claims is Trade Secret information and exempt from Florida Statutes Chapter 119.07 ("Public Records Laws"), the Proposer shall clearly designate that it is a Trade Secret and that it is asserting that the document or information is exempt. The Proposer must specifically identify the exemption being claimed under Florida Statutes 119.07. The City shall be the final arbiter of whether any information contained in the Proposer's response to the RFP constitutes a Trade Secret. The city's determination of whether an exemption applies shall be final, and the proposer agrees to defend, indemnify, and hold harmless the City and the City's officers, employees, and agents, against any loss or damages incurred by any person or entity as a result of the City's treatment of records as public records. In addition, the proposer agrees to defend, indemnify, and hold harmless the City and the City's officers, employees, and agents, against any loss or damages incurred by any person or entity as a result of the City's treatment of records as exempt from disclosure or confidential. Proposals bearing copyright symbols or otherwise purporting to be subject to copyright protection in full or in part may be rejected. The proposer authorizes the City to publish, copy, and reproduce any and all documents submitted to the City bearing copyright symbols or otherwise purporting to be subject to copyright protection.

EXCEPT FOR CLEARLY MARKED PORTIONS THAT ARE BONA FIDE TRADE SECRETS PURSUANT TO FLORIDA LAW, DO NOT MARK YOUR RESPONSE TO THE RFP AS PROPRIETARY OR CONFIDENTIAL. DO NOT MARK YOUR RESPONSE TO THE RFP OR ANY PART THEREOF AS COPYRIGHTED.

- 3.16 PROHIBITION OF INTEREST:** No contract will be awarded to a bidding firm who has City elected officials, officers or employees affiliated with it, unless the bidding firm has fully complied with current Florida State Statutes and City Ordinances relating to this issue. Bidders must disclose any such affiliation. Failure to disclose any such affiliation will result in disqualification of the Bidder and removal of the Bidder from the City's bidder lists and prohibition from engaging in any business with the City.
- 3.17 RESERVATIONS FOR AWARD AND REJECTION OF BIDS:** The City reserves the right to accept or reject any or all bids, part of bids, and to waive minor irregularities or variations to specifications contained in bids, and minor irregularities in the bidding process. The City also reserves the right to award the contract on a split order basis, lump sum basis, individual item basis, or such combination as shall best serve the interest of the City. The City reserves the right to make an award to the responsive and responsible bidder whose product or service meets the terms, conditions, and specifications of the ITB and whose bid is considered to best serve the City's interest. In determining the responsiveness of the offer and the responsibility of the Bidder, the following shall be considered when applicable: the ability, capacity and skill of the Bidder to perform as required; whether the Bidder can perform promptly, or within the time specified, without delay or interference; the character, integrity, reputation, judgment, experience and efficiency of the Bidder; the quality of past performance by the Bidder; the previous and existing compliance by the Bidder with related laws and ordinances; the sufficiency of the Bidder's financial resources; the availability, quality and adaptability of the Bidder's supplies or services to the required use; the ability of the Bidder to provide future maintenance, service or parts; the number and scope of conditions attached to the bid.

If the ITB provides for a contract trial period, the City reserves the right, in the event the selected bidder does not perform satisfactorily, to award a trial period to the next ranked bidder or to award a contract to the next ranked bidder, if that bidder has successfully provided services to the City in the past. This procedure to continue until a bidder is selected or the contract is re-bid, at the sole option of the City.

- 3.18 LEGAL REQUIREMENTS:** Applicable provisions of all federal, state, county laws, and local ordinances, rules and regulations, shall govern development, submittal and evaluation of all bids received in response hereto and shall govern any and all claims and disputes which may arise between person(s) submitting a bid response hereto and the City by and through its officers, employees and authorized representatives, or any other person, natural or otherwise; and lack of knowledge by any bidder shall not constitute a cognizable defense against the legal effect thereof.
- 3.19 BID PROTEST PROCEDURE:** Any proposer or bidder who is not recommended for award of a contract and who alleges a failure by the city to follow the city's procurement ordinance or any applicable law may protest to the chief procurement officer, by delivering a letter of protest to the director of finance within five (5) days after a notice of intent to award is posted on the city's web site at the following url: <https://www.fortlauderdale.gov/departments/finance/procurement-services/notices-of-intent-to-award>

The complete protest ordinance may be found on the city's web site at the following url: https://library.municode.com/fl/fort_lauderdale/codes/code_of_ordinances?nodeid=coor_ch2ad_artvfi_div2pr_s2-182direpr

PART IV BONDS AND INSURANCE

- 4.01 PERFORMANCE BOND:** If a performance bond is required in Special Conditions, the Contractor shall within fifteen (15) working days after notification of award, furnish to the City a Performance Bond, payable to the City of Fort Lauderdale, Florida, in the face amount specified in Special Conditions as surety for faithful

performance under the terms and conditions of the contract. If the bond is on an annual coverage basis, renewal for each succeeding year shall be submitted to the City thirty (30) days prior to the termination date of the existing Performance Bond. The Performance Bond must be executed by a surety company of recognized standing, authorized to do business in the State of Florida and having a resident agent.

Acknowledgement and agreement is given by both parties that the amount herein set for the Performance Bond is not intended to be nor shall be deemed to be in the nature of liquidated damages nor is it intended to limit the liability of the Contractor to the City in the event of a material breach of this Agreement by the Contractor.

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4.02 INSURANCE: The Contractor shall assume full responsibility and expense to obtain all necessary insurance as required by City or specified in Special Conditions.

The Contractor shall provide to the Procurement Services Division original certificates of coverage and receive notification of approval of those certificates by the City's Risk Manager prior to engaging in any activities under this contract. The Contractor's insurance is subject to the approval of the City's Risk Manager. The certificates must list the City as an ADDITIONAL INSURED for General Liability Insurance and shall have no less than thirty (30) days written notice of cancellation or material change. Further modification of the insurance requirements may be made at the sole discretion of the City's Risk Manager if circumstances change or adequate protection of the City is not presented. Bidder, by submitting the bid, agrees to abide by such modifications.

PART V PURCHASE ORDER AND CONTRACT TERMS:

5.01 COMPLIANCE WITH SPECIFICATIONS, LATE DELIVERIES/PENALTIES: Items offered may be tested for compliance with bid specifications. Items delivered which do not conform to bid specifications may be rejected and returned at Contractor's expense. Any violation resulting in contract termination for cause or delivery of items not conforming to specifications, or late delivery may also result in:

- Bidder's name being removed from the City's bidder's mailing list for a specified period and Bidder will not be recommended for any award during that period.
- All City Departments being advised to refrain from doing business with the Bidder.
- All other remedies in law or equity.

5.02 ACCEPTANCE, CONDITION, AND PACKAGING: The material delivered in response to ITB award shall remain the property of the Seller until a physical inspection is made and the material accepted to the satisfaction of the City. The material must comply fully with the terms of the ITB, be of the required quality, new, and the latest model. All containers shall be suitable for storage and shipment by common carrier, and all prices shall include standard commercial packaging. The City will not accept substitutes of any kind. Any substitutes or material not meeting specifications will be returned at the Bidder's expense. Payment will be made only after City receipt and acceptance of materials or services.

5.03 SAFETY STANDARDS: All manufactured items and fabricated assemblies shall comply with applicable requirements of the Occupation Safety and Health Act of 1970 as amended.

5.04 ASBESTOS STATEMENT: All material supplied must be 100% asbestos free. Bidder, by virtue of bidding, certifies that if awarded any portion of the ITB the bidder will supply only material or equipment that is 100% asbestos free.

5.05 OTHER GOVERNMENTAL ENTITIES: If the Bidder is awarded a contract as a result of this ITB, the bidder may, if the bidder has sufficient capacity or quantities available, provide to other governmental agencies, so requesting, the products or services awarded in accordance with the terms and conditions of the ITB and resulting contract. Prices shall be F.O.B. delivered to the requesting agency.

5.06 VERBAL INSTRUCTIONS PROCEDURE: No negotiations, decisions, or actions shall be initiated or executed by the Contractor as a result of any discussions with any City employee. Only those communications which are in writing from an authorized City representative may be considered. Only written communications from Contractors, which are assigned by a person designated as authorized to bind the Contractor, will be recognized by the City as duly authorized expressions on behalf of Contractors.

5.07 INDEPENDENT CONTRACTOR: The Contractor is an independent contractor under this Agreement. Personal services provided by the Proposer shall be by employees of the Contractor and subject to supervision by the Contractor, and not as officers, employees, or agents of the City. Personnel policies, tax responsibilities, social security, health insurance, employee benefits, procurement policies unless otherwise stated in this ITB, and other similar administrative procedures applicable to services rendered under this contract shall be those of the Contractor.

5.08 INDEMNITY/HOLD HARMLESS AGREEMENT: Contractor shall protect and defend at Contractor's expense, counsel being subject to the City's approval, and indemnify and hold harmless the City and the City's officers, employees, volunteers, and agents from and against any and all losses, penalties, fines, damages, settlements, judgments, claims, costs, charges, expenses, or liabilities, including any award of attorney fees and any award of costs, in connection with or arising directly or indirectly out of any act or omission by the Contractor or by any officer, employee, agent, invitee, subcontractor, or sublicensee of the Contractor. Without limiting the foregoing, any and all such claims, suits, or other actions relating to personal injury, death, damage to property, defects in materials or workmanship, actual or alleged violations of any applicable statute, ordinance, administrative order, rule or regulation, or decree of any court shall be included in the indemnity hereunder.

5.09 TERMINATION FOR CAUSE: If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Agreement, or if the Contractor shall violate any of the provisions of this Agreement, the City may upon written notice to the Contractor terminate the right of the Contractor to proceed under this Agreement, or with such part or parts of the Agreement as to which there has been default, and may hold the Contractor liable for any damages caused to the City by reason of such default and termination. In the event of such termination, any completed services performed by the Contractor under this Agreement shall, at the option of the City, become the City's property and the Contractor shall be entitled to receive equitable compensation for any work completed to the satisfaction of

the City. The Contractor, however, shall not be relieved of liability to the City for damages sustained by the City by reason of any breach of the Agreement by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the amount of damages due to the City from the Contractor can be determined.

- 5.10 TERMINATION FOR CONVENIENCE:** The City reserves the right, in the City's best interest as determined by the City, to cancel any contract by giving written notice to the Contractor thirty (30) days prior to the effective date of such cancellation.
- 5.11 CANCELLATION FOR UNAPPROPRIATED FUNDS:** The obligation of the City for payment to a Contractor is limited to the availability of funds appropriated in a current fiscal period, and continuation of the contract into a subsequent fiscal period is subject to appropriation of funds, unless otherwise authorized by law.
- 5.12 RECORDS/AUDIT:** The Contractor shall maintain during the term of the contract all books of account, reports and records in accordance with generally accepted accounting practices and standards directly related to this contract. The Contractor agrees to make available to the City Auditor or the City Auditor's designee, during normal business hours and in Broward, Miami-Dade or Palm Beach Counties, all books of account, reports, and records relating to this contract. The Contractor shall retain all books of account, reports, and records relating to this contract for the duration of the contract and for three years after the final payment under this Agreement, until all pending audits, investigations or litigation matters relating to the contract are closed, or until expiration of the records retention period prescribed by Florida law or the records retention schedules adopted by the Division of Library and Information Services of the Florida Department of State, whichever is later.
- 5.13 PERMITS, TAXES, LICENSES:** The successful Contractor shall, at his/her/its own expense, obtain all necessary permits, pay all licenses, fees and taxes, required to comply with all local ordinances, state and federal laws, rules and regulations applicable to business to be carried out under this contract.
- 5.14 LAWS/ORDINANCES:** The Contractor shall observe and comply with all Federal, state, local and municipal laws, ordinances rules and regulations that would apply to this contract.

NON-DISCRIMINATION: The Contractor shall not, in any of its activities, including employment, discriminate against any individual on the basis of race, color, national origin, age, religion, creed, sex, disability, sexual orientation, gender, gender identity, gender expression, marital status, or any other protected classification as defined by applicable law.

1. The Contractor certifies and represents that the Contractor will comply with Section 2-187, Code of Ordinances of the City of Fort Lauderdale, Florida, (2019), as may be amended or revised, ("Section 2-187"), during the entire term of this Agreement.
2. The failure of the Contractor to comply with Section 2-187 shall be deemed to be a material breach of this Agreement, entitling the City to pursue any remedy stated below or any remedy provided under applicable law.
3. The City may terminate this Agreement if the Contractor fails to comply with Section 2-187.
4. The City may retain all monies due or to become due until the Contractor complies with Section 2-187.
5. The Contractor may be subject to debarment or suspension proceedings. Such proceedings will be consistent with the procedures in section 2-183 of the Code of Ordinances of the City of Fort Lauderdale, Florida.

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- 5.15 UNUSUAL CIRCUMSTANCES:** If during a contract term where costs to the City are to remain firm or adjustments are restricted by a percentage or CPI cap, unusual circumstances that could not have been foreseen by either party of the contract occur, and those circumstances significantly affect the Contractor's cost in providing the required prior items or services, then the Contractor may request adjustments to the costs to the City to reflect the changed circumstances. The circumstances must be beyond the control of the Contractor, and the requested adjustments must be fully documented. The City may, after examination, refuse to accept the adjusted costs if they are not properly documented, increases are considered to be excessive, or decreases are considered to be insufficient. In the event the City does not wish to accept the adjusted costs and the matter cannot be resolved to the satisfaction of the City, the City will reserve the following options:
1. The contract can be canceled by the City upon giving thirty (30) days written notice to the Contractor with no penalty to the City or Contractor. The Contractor shall fill all City requirements submitted to the Contractor until the termination date contained in the notice.
 2. The City requires the Contractor to continue to provide the items and services at the firm fixed (non-adjusted) cost until the termination of the contract term then in effect.
 3. If the City, in its interest and in its sole opinion, determines that the Contractor in a capricious manner attempted to use this section of the contract to relieve Contractor of a legitimate obligation under the contract, and no unusual circumstances had occurred, the City reserves the right to take any and all action under law or equity. Such action shall include, but not be limited to, declaring the Contractor in default and disqualifying Contractor from receiving any business from the City for a stated period of time.

If the City does agree to adjusted costs, these adjusted costs shall not be invoiced to the City until the Contractor receives notice in writing signed by a person authorized to bind the City in such matters.

- 5.16 ELIGIBILITY:** If applicable, the Contractor must first register with the Florida Department of State in accordance with Florida Statutes, prior to entering into a contract with the City.
- 5.17 PATENTS AND ROYALTIES:** The Contractor, without exception, shall defend, indemnify, and hold harmless the City and the City's employees, officers, employees, volunteers, and agents from and against liability of any nature and kind, including cost and expenses for or on account of any copyrighted, patented or un-patented invention, process, or article manufactured or used in the performance of the contract, including their use by the City. If the Contractor uses any design, device, or materials covered by letters, patent or copyright, it is mutually agreed and understood without exception that the bid prices shall include any and all royalties or costs arising from the use of such design, device, or materials in any way involved in the work.

- 5.18 **ASSIGNMENT:** Contractor shall not transfer or assign the performance required by this ITB without the prior written consent of the City. Any award issued pursuant to this ITB, and the monies, which may become due hereunder, are not assignable except with the prior written approval of the City Commission or the City Manager or City Manager's designee, depending on original award approval.
- 5.19 **GOVERNING LAW; VENUE:** The Contract shall be governed by and construed in accordance with the laws of the State of Florida. Venue for any lawsuit by either party against the other party or otherwise arising out of the Contract, and for any other legal proceeding, shall be in the courts in and for Broward County, Florida, or in the event of federal jurisdiction, in the Southern District of Florida.
- 5.20 **PUBLIC RECORDS:**

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT PRRCONTRACT@FORTLAUDERDALE.GOV, 954-828-5002, CITY CLERK'S OFFICE, 100 N. ANDREWS AVENUE, FORT LAUDERDALE, FLORIDA 33301.

Contractor shall comply with public records laws, and Contractor shall:

1. Keep and maintain public records required by the City to perform the service.
2. Upon request from the City's custodian of public records, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes (2019), as may be amended or revised, or as otherwise provided by law.
3. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Contractor does not transfer the records to the City.
4. Upon completion of the Contract, transfer, at no cost, to the City all public records in possession of the Contractor or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public records to the City upon completion of the Contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City.



BORROWER GUIDE TO FEDERAL REQUIREMENTS

LAST UPDATED: OCTOBER 2021

DISCLAIMER

This document is intended as a guide for WIFIA borrowers to understand their general responsibilities for complying with federal requirements and is for informational purposes only. This document discusses a number of federal statutory and regulatory provisions and other federal requirements, but does not itself have legal effect, and is not a substitute for those provisions and any legally binding requirements that they may impose. It does not expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations or benefits to any person.

The information provided in this guide, including in any appendices, does not, and is not intended to, constitute legal advice. Users of this guide should not rely on this information to ensure compliance with federal requirements and should contact their legal counsel to obtain advice with respect to any particular legal matter, including such compliance. To the extent there is any inconsistency between this document and any legally binding federal requirements, the latter take precedence. EPA retains discretion to use or deviate from this document as appropriate.

This guide is subject to change without notice to address any new laws and regulations that impact the WIFIA program and its borrowers. The guide contains links to third-party websites. Such links are only for the convenience of the reader, and EPA does not recommend or endorse the content of the third-party sites.

VERSION HISTORY

Below documents substantive content updates to this Borrower Guide since its initial release.

October 2021:

- Added Table of Contents.
- Updated Environmental Authorities section, related to construction status of projects.
- Updated Economic and Miscellaneous Authorities section, related the Uniform Act and real property acquisition.
- Updated Labor Laws and Standards section, related to construction type generally used for water infrastructure projects.
- Updated hyperlinks to outside sources.

March 2021:

- Corrected hyperlinks to outside sources.

December 2020:

- Borrower Guide released.

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INTRODUCTION

Borrowers of loans provided under the Water Infrastructure Financing and Innovation Act (WIFIA), 33 U.S.C. § 3901 et seq., are required to comply with all federal laws and regulations. This document highlights important social and economic federal laws, regulations, and Executive Orders specifically listed in the WIFIA regulations (40 CFR Part 35 Subpart Q) as well as any relevant updates to the federal requirements. WIFIA borrowers have the prime responsibility for ensuring their staff and contractors comply with all federal requirements for a project. The project is subject to additional review of these federal requirements by the WIFIA Program during application processing and after loan execution.¹

This guide provides an overview of the following federal requirements and identifies key borrower responsibilities and additional resources that may be helpful to the borrower for implementing each requirement.

¹ Although the WIFIA program provides oversight on loans issued to state infrastructure financing authorities, the program does not conduct federal requirements reviews during application processing or loan monitoring for these borrowers. These requirements are monitored and managed through the individual SRF programs.

ENVIRONMENTAL AUTHORITIES

OVERVIEW

The **National Environmental Policy Act** (NEPA) and various environmental crosscutting authorities fall under the Environmental Authorities listed in the WIFIA regulations at 40 CFR Part 35 Subpart Q.

The NEPA of 1969, 42 U.S.C. § 4321, *et seq.* mandates that federal agencies consider the effects of their actions, including programs, regulations, policies, and grant-funded specific projects, on the quality of the human environment. The issuance of a loan under the WIFIA program constitutes an action that triggers an environmental review of the project scope covered by the loan. The status of NEPA determinations for WIFIA's loans is listed on the [WIFIA closed loan web page](#) under the environmental review status column.

Prior to issuing a loan, the WIFIA program must review the environmental impacts of the project and make an independent determination under NEPA. The Council of Environmental Quality has established NEPA implementing regulations at 40 CFR part 1500 for meeting these requirements and the WIFIA program is guided by EPA's implementing regulations at 40 CFR Part 6. The WIFIA program's environmental review considers project impacts and mitigation measures across various environmental crosscutting authorities, including but not limited to:

- Archaeological and Historic Preservation Act, as amended (54 U.S.C. §§ 312501-312508)
- Archaeological Resources Protection Act (16 U.S.C. § 470AA-MM)
- Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668-668C)
- Cleans Water Act (Section 404)
- Clean Air Act Conformity (42 U.S.C. § 7506(C))
- Coastal Zone Management Act (16 U.S.C. §§ 1451-1466)
- Coastal Barrier Resources Act (16 U.S.C. §§ 3501-3510)
- Endangered Species Act (16 U.S.C. §§ 1531-1599)
- Environmental Justice (Executive Order 12898)
- Essential Fish Habitat Consultation Process under the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801-1891)
- Farmland Protection Policy Act (7 U.S.C. §§ 4201-4209)
- Fish and Wildlife Coordination Act (16 U.S.C. § 661, *et seq.*)
- Flood Plain Management (Executive Order 11988, as amended by Executive Order 12148)
- Marine Mammal Protection Act (16 U.S.C. §§ 1361-1407)
- Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)
- National Historic Preservation Act (NHPA), as amended (54 U.S.C. § 300101, *et seq.*)
- Native American Graves Protection and Repatriation Act (25 U.S.C. § 3001, *et seq.*)
- Protection of Wetlands (Executive Order 11990, as amended by Executive Order 12608)
- Rivers and Harbors Act (Section 10)
- Safe Drinking Water Act (42 U.S.C. § 300F-300J-26)
- Wild and Scenic Rivers Act (16 U.S.C. §§ 1271-1287)
- Wilderness Act (16 U.S.C. § 1131, *et seq.*)

WIFIA borrowers do not need to have a completed environmental review prior to submitting a letter of interest to the program or when applying for a WIFIA loan; however, borrowers can expect to provide available environmental assessments, consultations, or other documentation to support the WIFIA

program's review of environmental impacts and mitigation measures as part of application processing. WIFIA projects must comply with all environmental cross-cutting authorities. Compliance with cross-cutting authorities is reviewed and documented by the WIFIA program. The WIFIA program may conduct additional consultations related to federal cross-cutting authorities, as necessary for the environmental review. Compliance with the environmental cross-cutting authorities is particularly important for projects where construction is already in progress or will be starting prior to loan close. Experience has shown that successful and timely completion of consultations under Section 106 of the National Historic Preservation Act and Section 7 of the Endangered Species Act can be difficult when initiated too late in the project schedule. To document the completion of the NEPA environmental review, the WIFIA program will issue one of the following determinations for the loan:

- **Categorical Exclusion (CATEX):** EPA's list of actions that may be categorically excluded is available at 40 CFR 6.204. The issuance of a CATEX does not require a public comment period.
- **Finding of No Significant Impact (FONSI) under WIFIA's Programmatic Environmental Assessment (PEA):** The WIFIA program has analyzed the typical potential environmental impacts related to the issuance of credit assistance under WIFIA in the PEA and associated FONSI, related to certain WIFIA water and wastewater projects eligible under 33 U.S.C. § 3905 and described in Section 4 of the PEA. Based on information supplied by the WIFIA borrower and the borrower responses to the WIFIA PEA Questionnaire (included as an appendix to the WIFIA application), the WIFIA program will evaluate the applicability of the project under the PEA. An additional 30-day public comment period is not required for projects that fall under the PEA.
- **FONSI under Environmental Assessment (EA):** If the project does not qualify for a CATEX or the PEA because the environmental impacts or the significance of the impacts are unknown, the WIFIA borrower will be asked to submit an environmental information document (EID) with a scope and level of detail commensurate with the magnitude and significance of the project. If deemed sufficient and acceptable by the WIFIA program, the borrower may submit a draft EA and supporting documents in lieu of an EID, or the WIFIA program will draft an EA. A FONSI determination under an EA is subject to a 30-day public comment period before it is finalized. EPA's NEPA implementing regulations for environmental assessments are found at 40 CFR 6.205.
- **Environmental Impact Statement (EIS):** If significant impacts are anticipated for the project during the environmental assessment, the WIFIA borrower will partner with the WIFIA program to assist in the preparation of an EIS describing the environmental impacts and reasonable alternatives. EPA may enter into a third-party agreement with the applicant to hire a consulting firm to prepare the EIS. A draft EIS is subject to a 45-day public comment period and the final EIS is subject to a 30-day waiting period before it is finalized and a record of decision (ROD) is issued for the project. EPA's NEPA implementing regulations for environmental impact statements are found at 40 CFR 6.207.

WHAT TO EXPECT

The WIFIA program has the responsibility to conduct an environmental review and issue a determination for the project scope covered by a WIFIA loan and to ensure any monitoring requirements are being implemented by the WIFIA borrower prior to and through construction. The WIFIA program must conduct

an environmental review prior to issuance of a WIFIA loan. When the WIFIA project is co-funded with other federal or state programs, the WIFIA program may work collaboratively with co-funding agencies to ensure compliance with environmental cross-cutting authorities. WIFIA borrowers should clearly communicate project construction schedules to ensure the environmental compliance requirements can be or have been met prior to conducting ground-disturbing activities or activities that may diminish or alter the character of historic properties. Components of the WIFIA project that do not or cannot comply with environmental cross-cutting authorities may be excluded from the WIFIA project. As part of its compliance monitoring activities, the WIFIA program will conduct periodic document reviews and site walk-throughs during project construction, where applicable, to ensure specific requirements outlined in the WIFIA environmental documentation are met.

Prospective borrowers are not required to submit environmental documentation or findings when submitting their letters of interest (LOI). However, as part of the WIFIA application, borrowers can expect to:

- ✓ Identify any consultations with cross-cutting agencies that have already been completed or are ongoing.
- ✓ Discuss the environmental review with the WIFIA program prior to submittal of the application. If it appears that the project may not qualify for a CATEX, the WIFIA program will request that the borrower submit a completed PEA Questionnaire along with the relevant supporting materials.

After the application is submitted, WIFIA applicants may be asked to:

- ✓ Provide additional materials relevant to the project environmental review, including project description and location, project maps, any reports, assessments, or consultations conducted for the project, NEPA determinations by other federal agencies or State Revolving Fund (SRF) programs, or other relevant documentation to support the environmental review.
- ✓ If an EA or EIS is required, consult with the WIFIA program to determine the scope and level of detail for the documentation, indicate any public meetings or hearings required as part of the process, and support the WIFIA program in responding to comments if the NEPA determination is subject to a public comment period.
- ✓ Verify accuracy of environmental review documents prepared by the WIFIA program and provided to the applicant at the completion of the environmental review. The signatory of the WIFIA application, or equivalent authority, must sign the Environmental Review Verification Memorandum to confirm the applicant's concurrence with the environmental documentation.

Environmental monitoring and reporting requirements prior to and during project construction will be outlined in the environmental review documents or the loan agreement. The WIFIA program has the responsibility to conduct checks on the borrower's environmental requirements during compliance monitoring activities.

Key borrower responsibilities for implementation include:

- ✓ Execute the requirements outlined in the environmental review documents or specified in the loan agreement. These requirements vary based on the scope of the project and may include

activities like submittal of approved environmental permits; use of construction methods to mitigate potential environmental impacts; environmental training for employees; submittal of biological assessments; or other requirements identified through consultations with other federal agencies.

- ✓ Notify the WIFIA program if the scope of activities under the existing environmental determination is modified and provide supporting documentation for the WIFIA program to initiate additional federal agency consultations, as needed, to maintain the borrower's environmental compliance with the project.

RESOURCES

- [CEQ Regulations for Implementing NEPA](#) (40 CFR part 1500)
- [EPA Procedures for Implementing NEPA and Assessing Environmental Effects](#) (40 CFR Part 6)
- [PEA for the WIFIA Program](#)
- [WIFIA PEA Questionnaires](#) for WIFIA Credit Assistance Projects and SRF Programs

ECONOMIC AND MISCELLANEOUS AUTHORITIES

The following federal requirements fall under the Economic and Miscellaneous Authorities listed in the WIFIA regulations at 40 CFR Part 35 Subpart Q.

DEBARMENT AND SUSPENSION AND PROHIBITIONS RELATING TO VIOLATIONS OF CWA AND CAA WITH RESPECT TO FEDERAL CONTRACTS, GRANTS, OR LOANS

Executive Order 12549 provides for a governmentwide system for debarment and suspension. A person or business who is debarred or suspended is excluded from activities in which grants, cooperative agreements, contracts of assistance, loans, and loan guarantees are being used to fund the activity. Borrowers must ensure their contractors and subcontractors are not suspended or debarred prior to issuing contracts. For prime contractors, registration under the governmentwide System for Award Management (SAM) is required and borrowers must check their registration under SAM. For lower tier contracts (i.e., subcontracts), OMB guidance under 2 CFR Part 180 Subpart C allows the borrower to verify whether subcontractors are debarred or suspended from government-funded activities using one of three options: (1) check subcontractor status on SAM; (2) collect a certification from the subcontractor; or (3) add a clause or condition to the covered transaction with the subcontractor.

Additionally, Section 306 of the Clean Air Act (CAA) and section 508 of the Clean Water Act (CWA), as implemented by Executive Order 11738 (1973), prohibit performance of Federal assistance agreements at facilities disqualified due to certain violations of the CAA or CWA. As described in the respective CAA and CWA sections, a person or entity who has been convicted of a criminal offense or has a serious pattern of civil violations may be barred from receiving Federal government contracts, loans, and grants. Statutory debarments occur by operation of law following criminal conviction under CWA (Section 508) or CAA (Section 306). The ineligibility lasts until the Debarring Official certifies that the condition giving rise to conviction has been corrected.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers are not debarred or suspended from receiving federal funds.

In its LOI submittal, WIFIA prospective borrowers are asked to:

- ✓ Disclose to EPA if they are currently debarred or suspended; proposed for debarment or suspension; or indicted, convicted, or had a civil judgment rendered against it for any of the offenses listed in the regulations governing debarment and suspension at 2 CFR Part 180 and Part 1532; or declared ineligible or excluded from participating in federal contracts or contracts paid for with federal funds. This disclosure is completed as part of the certification submitted with the LOI.

During application processing, WIFIA applicants are asked to:

- ✓ Disclose their debarment and suspension status as part of the WIFIA application and prior to loan closing.

For all contracts used on the project, WIFIA borrowers are expected to:

- ✓ Communicate to potential contractors the requirement to certify that the contractor is not debarred or suspended and to require their subcontractors to similarly certify. This is generally provided in bid advertisements and executed contracts. Although no specific contract language is required, sample contract language in the WIFIA specifications package is available for use by the borrower (see Resources below).
- ✓ Verify that the contractor and its subcontractors are not debarred or suspended. For prime contractors, access SAM to verify the awarded prime contractor is not disqualified or excluded. For lower tier contracts, ensure the prime contractor has verified their subcontractors are not suspended or debarred either by (1) checking exclusions in SAM, (2) collecting a signed certification from the subcontractor, or (3) including a clause or condition for the covered transaction with the subcontractor.

RESOURCES

- [Debarment and Suspension](#) (EO 12549)
- [Providing for administration of the Clean Air Act and the Federal Water Pollution Control Act with respect to Federal contracts, grants, or loans](#) (EO 11738)
- [OMB Guidelines to Agencies on Governmentwide Debarment and Suspension](#) (2 CFR Part 180)
- [Non-procurement Debarment and Suspension](#) (2 CFR part 1532)
- [System for Award Management \(SAM\)](#)
- Sample Contract Language in [WIFIA Specifications Package](#)

NEW RESTRICTIONS ON LOBBYING

Recipients of federal grants, cooperative agreements, contracts, and loans are prohibited by 31 U.S.C. § 1352 from using federal funds to pay any person for influencing or attempting to influence any officer or employee of an agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress with respect to the award, continuation, renewal, amendment, or modification of any of these instruments. This requirement also applies to the WIFIA program, which follows the EPA implementing regulations on lobbying restrictions prescribed at 40 CFR part 34.

WIFIA borrowers are required to certify that (1) they have not made, and will not make, such a prohibited payment, (2) they will be responsible for reporting the use of non-federal funds for such purposes, and (3) they will include these requirements in subsequent contracts and subcontracts that exceed \$100,000 and obtain necessary certifications from those entities.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers are not making prohibited payments related to lobbying using federal funds.

During application processing and prior to issuing a loan, WIFIA applicants are asked to:

- ✓ Provide completed “Certification Regarding Lobbying” (EPA Form 6600-06) form and if applicable, the “Disclosure of Lobbying Activities” (SF-LLL) form, which are included in the WIFIA Application. Use the WIFIA Loan ID as the EPA Project Control Number.

- ✓ Provide evidence of borrower communication to contractors and subcontractors of the need to also comply with restrictions on lobbying. This is generally provided in bid advertisements and executed contracts. Although no specific contract language is required, sample contract language in the WIFIA specifications package is available for use by the borrower (see Resources below).

Once a WIFIA loan is executed, key borrower responsibilities for implementation include:

- ✓ Continue to comply with and communicate to contractors and subcontractors of the need to comply with restrictions on lobbying. The WIFIA program will check advertised bids and executed construction contracts, which are a general reporting requirement of the loan, for this type of communication to contractors.

RESOURCES

- [Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions](#) (31 U.S.C 1352)
- [New Restrictions on Lobbying](#) (40 CFR part 34)
- [Certification regarding lobbying](#) (EPA Form 6600-06)
- [Disclosure of Lobbying Activities](#) (SF-LLL)
- Sample Contract Language in [WIFIA Specifications Package](#)

UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT

This authority applies to WIFIA borrowers who have acquired or will acquire real property, whether temporary or permanent, for the purpose of completing the WIFIA project. The acquisition itself does not need to be federally funded. If federal funds are used in any phase of the program or project, this statute applies.

The Uniform Relocation Assistance and Real Property Acquisition Policies Act (URA), 42 U.S.C 61, establishes a uniform policy for just compensation of acquired real property and for fair and equitable treatment of persons who are displaced from their homes, farms, or businesses to make way for federal or federally assisted projects. It provides basic guidelines for negotiating the acquisition of real property by the federal government. The URA also requires agencies to reimburse individuals for actual and reasonable expenses incident to relocation, such as moving costs, direct loss of tangible personal property associated with moving or discontinuing a business, and expenses involved in searching for a replacement home or business site. 49 CFR Part 24 is the government-wide regulation that implements the URA.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers comply with the requirements of the URA if land acquisition is relevant to the project.

During application processing and once the WIFIA loan is executed, WIFIA borrowers are asked to:

- ✓ Disclose to the WIFIA program if land acquisition has occurred or will occur.

- ✓ Certify that the acquisition complies with or will comply with the URA. This disclosure is completed as part of the certification submitted with the LOI and loan application and as part of disbursement requests to the WIFIA program.
- ✓ Provide evidence that URA requirements are met, if requested, which may include initial notification to the landowner, appraisal and appraisal reviews, and offer of just compensation related to the acquisition.

RESOURCES

- [URA implementing regulations for Department of Transportation](#), incorporated by reference in EPA regulations (49 CFR Part 24)
- [Guidance on Acquisition and Appraisal: Acquiring Real Property for Federal and Federal-Aid Programs and Projects](#), Federal Highway Administration Office of Real Estate Services
- [Federal-Aid Essentials for Local Public Agencies: Right of Way Requirements](#), Federal Highway Administration

DEMONSTRATION CITIES AND METROPOLITAN DEVELOPMENT ACT

Executive Order 12372 and Section 204 of the Demonstration Cities and Metropolitan Development Act, 42 U.S.C 3301 *et seq.*, aim to foster an intergovernmental partnership between federal, state, tribal, and local governments. The executive order encourages federal coordination with local officials on the planning and construction of public facilities within their jurisdiction.

WHAT TO EXPECT

The WIFIA program is not identified as a program requiring intergovernmental review under this Executive Order.

The WIFIA program does not conduct compliance monitoring activities related to this Act after loan execution.

RESOURCES

- [Intergovernmental Review of Federal Programs](#) (Executive Order 12372)
- [EPA Financial Assistance Programs Subject to Executive Order 12372](#)

DRUG-FREE WORKPLACE ACT

Under the Drug-free Workplace Act of 1988, 41 U.S.C. § 8101 *et seq.*, federal contractors or any program receiving federal grants is required to establish a drug-free workplace policy. Governmentwide implementation of the Act is prescribed at 2 CFR Part 182, Subparts A through F.

WHAT TO EXPECT

The WIFIA program is a federal loan program and therefore is not covered by this Act.

The WIFIA program does not conduct compliance monitoring activities related to this Act after loan execution.

RESOURCES

- [Drug-free workplace programs](#), Substance Abuse and Mental Health Services Administration
- [Governmentwide requirements for Drug-free Workplace](#) (2 CFR Part 182)

CIVIL RIGHTS, NONDISCRIMINATION, AND EQUAL EMPLOYMENT OPPORTUNITY AUTHORITIES

The following federal requirements fall under the Civil Rights, Nondiscrimination, and Equal Employment Opportunity Authorities listed in the WIFIA regulations at 40 CFR Part 35 Subpart Q.

AGE DISCRIMINATION ACT, SECTION 504 OF THE REHABILITATION ACT, AND TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

Three important laws prohibit discrimination in the provision of services or benefits, on the basis of race, color, national origin, sex, handicap or age, in programs or activities receiving federal financial assistance. These laws are:

- Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d *et seq.*, as amended, states that “No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.”
- Section 504 of the Rehabilitation Act of 1973, 29 U.S.C. § 794 *et seq.*, as amended and supplemented by Executive Orders 11914 and 11250, states that “(n)o otherwise qualified individual with a disability in the United States...shall, solely by reason of his or her disability, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving federal financial assistance...,” and
- The Age Discrimination Act of 1975, 42 U.S.C. § 6101 *et seq.*, as amended, states that “(n)o person in the United States shall, on the basis of age, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving financial assistance...”

Borrower compliance with these laws is not limited to the project funded by the WIFIA program. These laws apply to the WIFIA borrower and its operations in its entirety.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers are complying with civil rights laws and are developing projects, programs, and activities on a non-discriminatory basis.

During application processing and prior to issuing a loan, WIFIA applicants are asked to:

- ✓ Provide a completed “Pre-Award Compliance Review Report” (EPA Form 4700-4), which is included in the WIFIA Application, and if requested, additional information on any outstanding civil actions against the applicant.
- ✓ Provide evidence of communication to contractors and subcontractors of the need to also comply with civil rights laws. This is generally provided in bid advertisements and executed contracts. Although no specific contract language is required, sample contract language in the WIFIA specifications package is available for use by the applicant (see Resources below).

Once a WIFIA loan is executed, key borrower responsibilities for implementation include:

- ✓ Continue to comply with and communicate to contractors and subcontractors of the need to comply with civil rights laws and regulations. The WIFIA program will check advertised bids and executed construction contracts, which are a general reporting requirement of the loan, for this type of communication to contractors.
- ✓ Notify the WIFIA program of new civil suits that have been filed against the borrower that may have material adverse effect.

RESOURCES

- [Civil Rights Pre-Award Compliance Review Report](#) (EPA Form 4700-4)
- [Nondiscrimination on the Basis of Sex in Education Programs or Activities Receiving Federal Financial Assistance](#) (40 CFR Part 5)
- [Nondiscrimination in Programs or Activities Receiving Federal Assistance from the Environmental Protection Agency](#) (40 CFR Part 7)
- Sample Contract Language in [WIFIA Specifications Package](#)

SECTION 13 OF THE CWA

As codified in 42 U.S.C. § 1251, Section 13 provides that “No person in the United States shall on the ground of sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance...” EPA implementing regulations for this provision of the CWA is prescribed in 40 CFR part 7 and enforced similarly to those already established for racial and other discrimination under Title VI of the Civil Rights Act of 1964.

WHAT TO EXPECT

The WIFIA program has similar borrower expectations outlined in *Age Discrimination Act, Section 504 of the Rehabilitation Act, and Title VI of the Civil Rights Act of 1964* for implementing CWA Section 13.

RESOURCES

- [Nondiscrimination in Programs or Activities Receiving Federal Assistance from the Environmental Protection Agency](#) (40 CFR Part 7)

EQUAL EMPLOYMENT OPPORTUNITY

Through a series of Executive Orders, and a decision by the Equal Employment Opportunity Commission, the federal government established a national policy related to discrimination based on race, color, sex, religion, and national origin to enhance hiring, training, and promotion opportunities for minorities and women in construction programs financed, in part, by federal dollars.

Chief among these directives is Executive Order 11246, which requires all federal contracting agencies to include certain nondiscrimination and "affirmative action" provisions in all contracts and to require the recipients of federal contracts to include these provisions in subcontracts. The provisions apply to WIFIA borrowers, contractors and subcontractors who receive more than \$10,000 in federal dollars a year and commit these entities to maintaining a policy of non-discrimination in the treatment of employees, to

make this policy known to employees, and to recruit, hire, and train employees without regard to race, color, sex, religion, or national origin.

Section 301 of Executive Order 11246 requires that WIFIA borrowers undertake and agree to incorporate into contracts and subcontracts specific language outlining the eight principals and directives found in Section 202 of the Executive Order.

Implementing guidelines can be found in the Department of Labor’s regulations at 41 CFR Part 60. Compliance with Executive order 11246 is based on implementation of the Equal Opportunity Clause, and specific affirmative action obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers are complying with laws and regulations related to Equal Employment Opportunity.

During application processing and once the WIFIA loan is executed, WIFIA borrowers are asked to:

- ✓ Provide executed construction contracts (active and completed) that include specified EEO language. EEO law require specific language from Section 202 of Executive Order 11246 be included in bid documents and contracts. The specific language is included in the WIFIA specifications package, which is available for use by the borrower (see Resources below).
- ✓ In bid solicitations, provide an additional “Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity” as described at 41 CFR Part 60-4. The specific language is included in the WIFIA specifications package.
- ✓ Prominently post “Equal Opportunity is the Law” posters where it is accessible to all applicants for employment, employees, contractors, and subcontractors.
- ✓ Notify the Department of Labor’s Office of Federal Contract Compliance Programs within 10 working days of award of a construction contract or subcontract in excess of \$10,000.

RESOURCES

- [Equal Employment Opportunity posters](#)
- [Executive Order 11246 and amendments](#)
- [DOL Construction Contract Technical Assistance Guide](#)
- [DOL Construction Contract Award Notification](#)
- Sample Contract Language in [WIFIA Specifications Package](#)

PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES IN PROCUREMENT UNDER ENVIRONMENTAL PROTECTION AGENCY (EPA) FINANCIAL ASSISTANCE AGREEMENTS

The Disadvantaged Business Enterprise (DBE) Program is an EPA outreach, education, and goal program designed to increase and encourage the utilization and participation of DBEs in procurements funded by EPA assistance programs (73 FR 15904). The implementing regulations can be found at 40 CFR Part 33.

WIFIA borrowers are required to seek and encouraged to use small, minority and women-owned businesses for their procurement needs using EPA's six good faith efforts when contracting. The borrower must also ensure that its prime contractor(s) follow the same rules when subcontracting. The six good faith efforts include:

- Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Indian Tribal, State, and Local Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
- Make information on forthcoming opportunities available to DBEs, arrange time frames for contracts, and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
- Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Indian Tribal, State, and Local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
- Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
- Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.
- If the prime contractor awards subcontracts, require the prime contractor to take the steps in items 1 through 5.

There are no specific requirements for implementing each of the efforts as long as the effort is shown. Aside from these efforts, WIFIA borrowers do not have other administrative or reporting requirements of the DBE program under a WIFIA loan.

WHAT TO EXPECT

In implementing EPA's DBE program, WIFIA borrowers are asked to:

- ✓ Apply the six good faith efforts when in the process of seeking a prime contractor and ensure that its prime contractors apply the six good faith efforts when in the process of seeking subcontractors.
- ✓ Maintain proper records demonstrating that the six good faith efforts were applied during contract procurement.

RESOURCES

- [DBE Implementing regulations](#) (40 CFR part 33)
- [DBE Program resources and fact sheets](#)
- Sample Contract Language in [WIFIA Specifications Package](#)

AMERICAN IRON AND STEEL (AIS) REQUIREMENT

OVERVIEW

This requirement is specified in the WIFIA statute at 33 U.S.C. § 3914 and implementation of the federal requirement mirrors Clean Water and Drinking Water SRF programs.

WIFIA borrowers must install iron and steel products that are produced in the U.S. for the project. Products covered under the AIS requirement include:

- Lined or unlined pipes and fittings
- Manhole covers and other municipal castings
- Hydrants
- Tanks
- Flanges
- Pipe clamps and restraints
- Valves
- Structural steel
- Reinforced precast concrete
- Construction materials

If the listed products are permanently incorporated into the project and are primarily iron and steel material, then borrowers should obtain and keep record of the manufacturer's certification of AIS compliance for that product. If a product does not fall within one of the listed product categories, it does not need to comply with the AIS requirements.

The WIFIA statute allows EPA to grant project waivers in specific circumstances: (1) if the requirement is inconsistent with the public interest; (2) if the products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or (3) if the products will increase the cost of the project by 25% or more. **WIFIA borrowers can seek guidance from the program on waivers at any phase in project design and implementation to discuss borrower-specific circumstances and explore options to ensure compliance.**

Product availability waiver requests are most common because not all items covered under the AIS requirement may be produced in the U.S. Borrowers should notify the WIFIA program when product availability issues are identified and prior to product procurement and installation to ensure that the project maintains compliance with the AIS requirement. Although not required, identifying products during project design can help the borrower assess market availability and initiate a timely waiver process, where needed. The waiver process involves:

1. Independent product research. Before availability waivers are considered, the WIFIA program will conduct independent market review based on the borrower's technical specifications of the product.
2. Borrower assessment. The WIFIA program will notify the borrower of the results and confirm unavailability of the products or identify additional domestically available options for the borrower to assess against their project requirements. If there are feasible options, no further steps are taken.

3. Preparation and submission of waiver request package. If there are no feasible options, borrowers will prepare a waiver request package. The WIFIA program reviews the request for adequacy and submits the package for review and approval on the borrower's behalf.
4. Public comment period. Waiver requests are subject to a 15-day comment period and will be posted on the AIS webpage under [Waiver Requests Received by EPA](#).
5. Approval and notification. Once all comments have been addressed, an approval package will be routed for review and approval through the Office of Water management team. The WIFIA program will post the approved waiver on the AIS webpage under [Approved Project Waivers](#) and notify the borrower.

Waivers should only be sought when all avenues of procuring AIS-compliant products have been exhausted. In many cases, a borrower may find that an availability waiver is not needed.

Public interest and cost waivers are less common. Borrowers should initiate further discussions with the WIFIA program if they believe their project could qualify for a public interest or cost waiver. The waiver process is the same for these waivers except product research and assessment (Steps 1 and 2) do not apply.

There are also national waivers that are immediately available for borrower use and do not require additional approval. The National De Minimis Waiver can be used at the borrower's discretion for incidental and low-cost items; it is ultimately the borrower who decides which items to include under this national waiver. If there is any uncertainty, seek assistance from the WIFIA program.

WIFIA cannot close a loan with previously incurred construction costs that are not compliant with the AIS requirement.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers understand the AIS requirements and that those requirements are being properly implemented for the entire project. WIFIA will conduct periodic document reviews and site walk-throughs during project construction to check AIS implementation as part of its compliance monitoring activities.

During application processing, WIFIA applicants may be asked to:

- ✓ Provide evidence of communication on AIS requirements to contractors and subcontractors. Although not statutorily required, applicants can easily achieve this by including notification in advertised bids and executed contracts. Sample contract language in the WIFIA specifications package is available for use by the borrower (see Resources below).
- ✓ If a project has not yet executed contracts, provide a plan for communication on AIS requirements to contractors and subcontractors.
- ✓ If the project includes previously incurred costs for construction activities, provide additional documentation to help the WIFIA program check that incurred costs are compliant with this requirement. This request may include: (1) a list of iron or steel products purchased and installed; (2) a sample of AIS certifications for those items; (3) related project waivers; and/or (4) results of a third-party AIS audit.

As a WIFIA program check on compliance, WIFIA borrowers are asked to periodically submit documentation to demonstrate continued compliance with the AIS requirement. Key borrower responsibilities for implementation include:

- ✓ Communicate AIS requirements to contractors and ensure contractors are communicating the requirements to its subcontractors. This is generally included in advertised bids and executed contracts that are a general reporting requirement of the loan and checked by WIFIA. If communication is not included in the contract documents, provide additional evidence that communication has taken place.
- ✓ Submit draft or executed prime construction contracts for WIFIA review to ensure that adequate compliance language is included. The WIFIA program does not generally review subcontracts unless there is cause for further review.
- ✓ Identify products that must comply with AIS requirements and determine whether they can be procured domestically. Communicate to the WIFIA program when products cannot be procured domestically to initiate the program's independent market review and determine whether there is a need for an availability waiver. Submit additional documentation, such as technical specifications and product information, to support the WIFIA program's review and approval process, as needed.
- ✓ Maintain up-to-date records or frequently check with prime contractors on AIS certifications for products purchased and installed on the project. This can help the borrower prevent non-compliant products from being permanently incorporated into the project and triggering a non-compliance event. The WIFIA Program requires AIS documentation to be maintained for three years after project completion. **The key to borrower compliance is collecting adequate AIS documentation for installed products that are covered by the requirement.**
- ✓ Report any issue with noncompliance to the WIFIA program based on the borrower's review of purchased and installed products on contracts and subcontracts that must comply with the AIS requirement.

RESOURCES

- [AIS Implementation Memoranda](#) (four documents)
- [National Waivers](#), including [National De Minimis Waiver](#). See also [AIS Online Webinar on De Minimis](#), June 2020
- [Project Waiver Request Checklist](#)
- Sample Contract Language in [WIFIA Specifications Package](#)
- Sample Certification Letter (available in the AIS Implementation Memorandum, dated March 2014). See also [AIS Online Webinar on AIS Certification Letters](#), July 2020.

LABOR LAWS AND STANDARDS

OVERVIEW

This requirement is included in the WIFIA statute at 33 U.S.C. § 3909(e) by reference to Section 513 of the Federal Water Pollution Control Act (33 U.S.C. § 1372) and primarily covers requirements under the **Davis-Bacon and Related Acts** and the **Contract Work Hours Safety Standards Act**. Implementation of the federal requirements under these Acts are consistent with guidance provided to Clean Water and Drinking Water State Revolving Loan Programs.

Borrowers must comply with federal prevailing wage laws, commonly referred to as Davis-Bacon. While the Davis-Bacon Act itself only requires compliance for federal contracting, WIFIA falls under “related acts” that are also subject to Davis-Bacon requirements. For all prime contracts above the \$2,000 threshold, borrowers must enclose specific Davis-Bacon language into the prime contracts and ensure the prime contractor includes the same language in all associated subcontracts. Contracted laborers and mechanics are subject to wages at a rate no less than those determined by the U.S. Department of Labor (DOL).

Borrowers must obtain the wage determination for the locality in which a covered activity will take place prior to issuing requests for bids, proposals, quotes, or other methods for soliciting contracts for activities subject to Davis-Bacon. The wage determinations for water infrastructure projects generally fall under the “Heavy” construction type, although the “Building” construction type may also apply. The wage determinations shall be incorporated into solicitations and subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determinations incorporated into the prime contract.

Force Account laborers and mechanics employed by a governmental agency or political subdivision are not covered under this Act. Further, under the Contract Work Hours Safety Standards Act, borrowers must ensure contractors are receiving overtime pay for work in excess of forty hours for all contracts above the \$100,000 threshold. To ensure proper wages are paid, borrowers must collect certified payrolls from contractors and periodically conduct personnel interviews to verify proper wages are being paid under a contract.

Many states also have their own prevailing wage laws; however, state prevailing wage laws are not a substitute for federal prevailing wage laws. Requirements for both laws must be met and the greater of the two wages should be applied to the contracts (where equivalent state labor categories can be discerned). Where contracts include incorrect wage determinations, the borrower must take steps to reissue or amend the contract to retroactively incorporate the proper wage determination to the beginning of the contract and compensate for any increases in wages resulting from the wage determination correction.

WIFIA cannot close a loan that is not compliant or is not in remediation to return to compliance with this requirement.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers understand the Davis-Bacon requirements and that those requirements are being properly implemented for the entire project. The WIFIA program will conduct periodic document reviews and site walk-throughs during project construction to check for implementation of Davis-Bacon requirements as part of its compliance monitoring activities.

During application processing, WIFIA applicants may be asked to:

- ✓ Provide executed construction contracts (active and completed) that include specified Davis-Bacon contract language. DOL regulations require specific language and relevant wage determinations be included in bid documents and contracts. **Note that the specified language under 29 CFR §5.5 has been modified for the WIFIA program to also identify borrowers as authorized representatives to ensure compliance with the statute.** The modified language is included in the WIFIA specifications package, which is available for use by the applicant (see Resources below).
- ✓ Provide executed construction contracts (active and completed) that include relevant wage determinations. DOL publishes wage determinations that specify the minimum wage (including fringe benefits) for a given construction type, labor category, and locality in which the work is conducted. These wages are updated regularly on their website. If state prevailing wages also apply, show evidence that a comparison of labor wage rates and categories have been conducted and that the higher of the wages apply to the contract.
- ✓ If a project has not yet executed contracts, provide sample front-end documents that will be used in all relevant bids and contracts issued for the project.
- ✓ If the project includes previously incurred costs for construction activities, provide additional documentation to help the WIFIA program check that incurred costs are compliant with this requirement. This request may include: (1) results of a third-party Davis-Bacon audit of the project or specific contract(s); (2) a random sample of certified payroll reports and personnel interviews collected for the contract(s); and/or (3) other borrower evidence of compliance checks for reporting and paid wages (including fringe benefits).

As a WIFIA program check on compliance after loan execution, WIFIA borrowers are asked to periodically submit documentation to demonstrate continued compliance with the labor laws and standards. Key borrower responsibilities for implementation include:

- ✓ Communicate Davis-Bacon requirements to contractors and ensure contractors are relaying the requirements to their subcontractors. Statutorily, this communication is required in advertised bids and executed contracts that are a general reporting requirement of the loan and checked by WIFIA. While the WIFIA program may check borrower's prime contracts for this language, the onus is on borrowers and prime contractors to verify the same contract language is applied to all relevant subcontracts and that the subcontracts also comply with this requirement.

- ✓ Identify the proper wage rates to apply in advertised bids and subsequently in executed contracts. During advertisement, borrowers should monitor and update the bid with the latest applicable version of DOL's published wage determinations. Borrowers must award contracts within 90 days of bid close to "lock" the wage determinations included in the advertisement. Otherwise, an updated wage determination is required. Seek assistance from the WIFIA program on selecting proper wage determinations, as needed.
- ✓ For collaborative delivery contracts (e.g., Design-Build, Progressive Design-Build, Construction Management at Risk), there is "substantial and segregable amount[s] of construction work" that can be exercised using amendments or addenda to the contracts. These types of contracts should include a current wage determination at the time an amendment - with the purpose of initiating construction on a package or phase of a project - is exercised. See DOL's AAM157 guidance on 'Application of DBA to Contracts with Options.'
- ✓ Submit draft or executed prime construction contracts for WIFIA program review to ensure that adequate compliance language and the appropriate federal wage rates are included. The WIFIA program does not generally review subcontracts unless there is cause for further review.
- ✓ If a borrower encounters a unique situation at a site that presents uncertainties regarding Davis-Bacon applicability, the borrower must discuss the situation with EPA before authorizing work on that site. This includes any borrower requests for wage conformances for labor classifications that may not exist in the wage determinations. A conformance request must be initiated by the borrower, submitted by EPA, and approved by DOL.
- ✓ If state prevailing wages also apply, ensure that the certified payrolls reflect paid wages that are also, at a minimum, equal to the corresponding federal prevailing wage rates for the contract.
- ✓ Post proper Davis-Bacon signage and make readily available the applicable prevailing wage determinations at the construction site(s).
- ✓ Maintain up-to-date records for at least three years after project completion. Records should include:
 - Certified payrolls. Borrowers must collect certified payrolls from contractors weekly and check that payroll reports are accurate and paid wages are consistent with the contract's wage determination and overtime requirements.
 - Personnel interviews. Borrowers must conduct periodic interviews of workers to ensure proper wages are being paid and document the interviews by completing SF-1445: Labor Standards Interview. Although WIFIA does not require a specific number and frequency, interviews should occur throughout the course of construction and include a sufficient sample of job classifications represented on the job, as well as across various contracts.
 - Apprenticeship and Trainee Programs. Borrowers must confirm apprentice and trainee program registrations and check that ratio requirements under the approved program(s) are met.

RESOURCES

- [Davis-Bacon regulations](#) (29 CFR Part 5)
- [U.S. Department of Labor On-line Wage Determinations](#)
- [U.S. Department of Labor Guides, Forms, and Posters for Davis Bacon and Related Acts](#) (with additional resources)
- [AAM157 guidance on 'Application of DBA to Contracts with Options'](#)
- [Implementing Davis-Bacon Wage Rate Requirements: An EPA Guide for SRFs](#)
- Sample Contract Language in [WIFIA Specifications Package](#)

LATEST UPDATES ON FEDERAL REQUIREMENTS

The following federal requirements have been issued since the promulgation of the WIFIA implementation regulation (December 2016) and directly apply to EPA loan and grant programs, including WIFIA borrowers. The WIFIA program will periodically update this section with any notable laws and regulations and WIFIA's expectations for borrower compliance.

PROHIBITION ON CERTAIN TELECOMMUNICATION AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

In August 2018, the federal government enacted the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law, PL 115-232). Section 889(b)(1) of PL 115-232 prohibits an executive agency from obligating or expending loan or grant funds to procure or obtain or to enter into, extend, or renew a contract to procure or obtain "covered telecommunications equipment or services" that are substantial or essential to any system, or as critical technology to any system. Federal loan and grant programs are required to implement this requirement within two years of enactment.

"Covered telecommunications equipment or services" (PL 115-232, Section 889(f)(3)) include:

- Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
- For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- Telecommunications or video surveillance services provided by such entities or using such equipment.
- Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

The prohibition does not apply to:

- Procuring with an entity to provide a service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements.
- Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

Effective August 13, 2020, borrowers cannot submit these costs for WIFIA disbursement as they are no longer eligible costs and the WIFIA program, as a federal loan program, is prohibited from reimbursing for telecommunications equipment and services covered under this law.

WHAT TO EXPECT

To ensure compliance with this requirement, borrowers are asked to:

- ✓ Provide evidence of borrower communication to contractors and subcontractors of the need to comply with the prohibition. This is generally provided in bid advertisements and executed contracts. Although no specific contract language is required, sample contract language in the WIFIA specifications package is available for use by the borrower (see Resources below).
- ✓ Avoid procurement of “covered telecommunications equipment, services, and systems” on contracts that involve the use of federal funds. Access SAM to verify that entities providing telecommunications equipment, services, and systems on the WIFIA project are not listed on the exclusion list.

RESOURCES

- [John S. McCain National Defense Authorization Act for Fiscal Year 2019](#) (PL 115-232)
- [System for Award Management \(SAM\)](#)
- Sample Contract Language in [WIFIA Specifications Package](#)

GENERAL GUIDANCE ON COMPLIANCE WITH FEDERAL REQUIREMENTS

The WIFIA program is committed to supporting its borrowers with complying with federal requirements. In any case of uncertainty with implementation, the WIFIA borrower should seek timely clarification and assistance by contacting their respective WIFIA points of contact.

- For general inquiries on federal requirements for the WIFIA program, email: wifia@epa.gov
- For borrowers processing their loan applications, email the WIFIA engineering or environmental contact assigned to the transaction.
- For borrowers with executed loans, email: wifia_portfolio@epa.gov

GUIDING PRINCIPLES FOR COMPLIANCE

Below are guiding principles to support the borrower in ensuring compliance with federal requirements:

UNDERSTAND THE FEDERAL REQUIREMENTS. Reading through this Borrower Guide is a good first step towards understanding the federal requirements that apply to WIFIA borrowers. These requirements are very similar to those that would apply to other federal funding programs. If there is borrower uncertainty on the WIFIA program's expectations for compliance, seek clarifications by contacting the borrower's respective WIFIA point of contact. Borrowers may find that developing a plan for compliance with federal requirements early in project planning can ensure that potential issues are identified and remedied early or are avoided entirely.

IDENTIFY AND COMMUNICATE EARLY. Defining lines of communications and decision-making roles is also important. WIFIA borrowers are responsible for ensuring compliance with federal requirements and should be the ultimate decision-maker for the project. As frequently noted in this guide, the WIFIA program expects borrowers to communicate federal requirements as part of bid solicitations and in executed contracts when WIFIA funding is anticipated. This is particularly beneficial for construction-related work to avoid the need to retroactively address federal requirements with contractors. Timely communication between the borrower and the WIFIA program, as well as between the borrower and its contractors/subs, can help avoid issues of non-compliance. Throughout the course of the WIFIA project, borrowers should not hesitate to communicate potential issues with compliance to the WIFIA program and collectively explore available options and remedies with them.

MAINTAIN GOOD DOCUMENTATION. Good documentation is key to compliance. If there is no evidence that the borrower has complied with federal requirements, the WIFIA program finds it difficult to verify that the borrower is compliant. The WIFIA program does not require any specific software for borrowers to document compliance. There is no single approach to recordkeeping, and it can be as simple or complex as is appropriate for the project.

Borrowers may want to consider the following when establishing recordkeeping procedures:

1. The borrower is responsible for checking and ensuring compliance for their contractors and subcontractors. Organize documents such that they are easy to internally review against federal requirements.

2. The WIFIA program periodically requests review of documents to ensure compliance. This may include document requests for contracts, environmental monitoring reports, AIS certifications for specific items, and certified payrolls and wage determinations. Although the WIFIA program's review may not be inclusive of all contracts and subcontracts, documents should be easy to locate during compliance monitoring activities.
3. Some federal requirements have a minimum duration for maintaining project records, including AIS and Davis-Bacon. Local and state requirements may be longer or shorter. Be aware of recordkeeping requirements to ensure recordkeeping requirements are fully met.

CO-FUNDING WITH OTHER FEDERAL AND STATE PROGRAMS

As a supplementary financing program, WIFIA borrowers may also receive funds from other federally financed programs.

Some of these programs may have overlapping federal requirements; however, each program will have a separate responsibility (and monitoring procedures) to ensure their borrowers comply with the federal requirements outlined for that program. To the extent possible and reasonable, the WIFIA program will work with other federal programs that are co-funding its borrowers to share information on federal compliance activities that may be relevant across the programs. For example, WIFIA borrowers may also receive funding from their SRF program for a project. To help gain efficiencies for both programs, the WIFIA program might coordinate environmental reviews where there are overlapping elements with the state environmental review process. The WIFIA program might also work collaboratively with the state SRF on AIS-related matters.

On the other hand, some of these federally financed programs may have similar but different requirements. WIFIA borrowers should evaluate these separate requirements in its entirety such that implementation will satisfy both sets of requirements. For example, WIFIA borrowers may also receive financing from the Department of Transportation, which may trigger Buy American requirements. AIS and Buy American requirements are separate and distinct. One does not replace the other. WIFIA borrowers will have to satisfy both these requirements.

STATE LAWS AND REGULATIONS

Federal and state laws and regulations do not replace each other. WIFIA borrowers should evaluate federal and state requirements in their entirety such that implementation will satisfy both sets of requirements. For example, the Davis-Bacon Act requires that laborers and mechanics are at least paid the federal prevailing wage laws. If the state prevailing wage law provides higher wages than the federal prevailing wage for the locality and for an equivalent labor category, then the use of the state prevailing wage for that locality and equivalent labor category can satisfy both federal and state prevailing wage law requirements for paid wages. However, the use of higher state wage rates does not preclude the WIFIA borrower from having to comply with other requirements under the Davis-Bacon Act.

PROFESSIONAL SERVICE CONTRACTS VERSUS CONSTRUCTION CONTRACTS

All contracts issued for a project that is receiving a WIFIA loan are subject to a federal requirements review as part of the WIFIA program's compliance monitoring responsibilities. The review ensures that federal requirements are being communicated from borrower to contractors and from contractors to

subcontractors. During compliance monitoring, WIFIA targets this review on prime construction contracts as an initial assessment of the borrower's compliance; however, additional contracts may be requested if warranted.

Not all federal laws and regulations listed in this document apply to professional services contracts. In particular, contract language for American Iron and Steel requirements, Davis Bacon and Related Acts, and Equal Employment Opportunity (EEO), Executive Order 11246, do not apply to professional services contracts. On the other hand, professional services contracts do require reference to the economic and miscellaneous authorities listed in this document.

All contracts must abide by the civil rights and non-discrimination laws, whether they are referenced in contracts or not.

APPENDIX: WIFIA SPECIFICATION PACKAGE AND BID CONTRACT LANGUAGE

Last Updated: December 2020

This is a reference document that provides all necessary contract language for WIFIA funded projects. Please note that some of the contract language in this package is required and must be included verbatim and some is suggested. For *Suggested Contract Language*, you may use your own language so long as it still ensures that provisions are included to guarantee compliance with the federal requirements.

EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THE FEDERAL LANGUAGE PROVISIONS WITH RESPECT TO STATE OR LOCAL LAW.

ECONOMIC AND MISCELLANEOUS AUTHORITIES

DEBARMENT AND SUSPENSION AND PROHIBITIONS RELATING TO VIOLATIONS OF CWA AND CAA WITH RESPECT TO FEDERAL CONTRACTS, GRANTS, OR LOANS

Suggested Contract Language:

Debarment and Suspension. Contractor certifies that it will not knowingly enter into a contract with anyone who is ineligible under the 2 CFR part 180 and part 1532 (per Executive Order 12549, 51 FR 6370, February 21, 1986) or who is prohibited under Section 306 of the Clean Air Act or Section 508 of the Clean Water Act to participate in the [Project]. Suspension and debarment information can be accessed at <http://www.sam.gov>. Contractor represents and warrants that it has or will include a term or conditions requiring compliance with this provision in all of its subcontracts under this Agreement.

NEW RESTRICTIONS ON LOBBYING

Suggested Contract Language:

Federal Lobbying Restrictions (31 U.S.C 1352). Recipients of federal financial assistance may not pay any person for influencing or attempting to influence any officer or employee of a federal agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress with respect to the award, continuation, renewal, amendment, or modification of a federal grant, loan, or contract. These requirements are implemented for USEPA in 40 CFR Part 34, which also describes types of activities, such as legislative liaison activities and professional and technical services, which are not subject to this prohibition. Upon award of this contract, Contractor shall complete and submit to the City the certification and disclosure forms in Appendix A and Appendix B to 40 CFR Part 34. Contractor shall also require all subcontractors and suppliers of any tier awarded a subcontract over \$100,000 to similarly complete and submit the certification and disclosure forms pursuant to the process set forth in 40 CFR 34.110.

CIVIL RIGHTS, NONDISCRIMINATION, AND EQUAL EMPLOYMENT OPPORTUNITY AUTHORITIES

AGE DISCRIMINATION ACT, SECTION 504 OF THE REHABILITATION ACT, TITLE VI OF THE CIVIL RIGHTS ACT OF 1964, AND SECTION 13 OF THE CLEAN WATER ACT

Suggested Contract Language:

CIVIL RIGHTS OBLIGATIONS. Contractor shall comply with the following federal non-discrimination requirements:

- a. Title VI of the Civil Rights Act of 1964, which prohibits discrimination based on race, color, and national origin, including limited English proficiency (LEP). (42 U.S.C 2000D, *et. seq*)
- b. Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination against persons with disabilities. (29 U.S.C. 794, supplemented by EO 11914, 41 FR 17871, April 29, 1976 and EO 11250, 30 FR 13003, October 13, 1965)
- c. The Age Discrimination Act of 1975, which prohibits age discrimination. (42 U.S.C 6101 *et. seq*)
- d. Section 13 of the Federal Water Pollution Control Act Amendments of 1972, which prohibits discrimination on the basis of sex.
- e. 40 CFR Part 7, as it relates to the foregoing.

EQUAL EMPLOYMENT OPPORTUNITY

Required Contract Language. *This language must be included verbatim:*

Equal Employment Opportunity (EEO). The Contractor shall comply with Executive Order 11246, entitled 'Equal Employment Opportunity,' as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Part 60). (EO 11246, 30 FR 12319, September 28, 1965)

Contractor's compliance with Executive order 11246 shall be based on implementation of the Equal Opportunity Clause, and specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4.

During the performance of this contract, the contractor agrees as follows:

- 1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices

- to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.
- 2) The contractor will, in all solicitations or advancements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
 - 3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
 - 4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
 - 5) The contractor will comply with all provisions of Executive Order No. 11246 of Sept. 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
 - 6) The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
 - 7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of Sept. 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
 - 8) The contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States. [Sec. 202 amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 CFR, 1966-1970 Comp., p. 684, EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp.,

p. 230, EO 13665 of April 8, 2014, 79 FR 20749, EO 13672 of July 21, 2014, 79 FR 42971]

Standard Federal Equal Employment Opportunity Construction Contract Specifications. (41 CFR 60-4.3)

- 1) As used in these specifications:
 - a) "Covered area" means the geographical area described in the solicitation from which this contract resulted;
 - b) "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
 - c) "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
 - d) "Minority" includes:
 - i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
 - iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
- 2) Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
- 3) If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
- 4) The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area

where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

- 5) Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
- 6) In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
- 7) The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
 - a) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
 - b) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
 - c) Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
 - d) Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
 - e) Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs

funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

- f) Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h) Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
- i) Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- j) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
- k) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.
- l) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m) Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
- n) Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- o) Document and maintain a record of all solicitations of offers for subcontracts from minority and

- female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- p) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
- 8) Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.
- 9) A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).
- 10) The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.
- 11) The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
- 12) The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
- 13) The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
- 14) The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions

hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

- 15) Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

Segregated Facilities. (41 CFR 60-1.8) The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensuring that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. This obligation extends to all contracts containing the equal opportunity clause regardless of the amount of the contract. The term "facilities," as used in this section, means waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, wash rooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees; Provided, That separate or single-user restrooms and necessary dressing or sleeping areas shall be provided to assure privacy between the sexes.

Required language in bid solicitations (or equivalent):

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246) located at 41 CFR § 60-4.2:

- 1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.
- 2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables	Goals for minority participation for each trade	Goals for female participation in each trade
	Insert goals for each year ¹	6.9% ²

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work

¹ Goals can be found at: <https://www.dol.gov/agencies/ofccp/construction>

² Nationwide goal for all covered areas

in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.
4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical areas where the contract is to be performed giving the state, county and city, if any).

PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES IN PROCUREMENT UNDER EPA FINANCIAL ASSISTANCE AGREEMENTS

Note: The WIFIA program only requires use of the EPA DBE program's six good faith efforts during contract procurement. States may require additional DBE reporting.

Suggested Contract Language:

Disadvantaged Business Enterprises (DBE). The contractor must ensure that the DBE's six good faith efforts are used during the procurement of subcontractors for the [Project]. The six good faith efforts are found at: <https://www.epa.gov/grants/disadvantaged-business-enterprise-program-requirements#sixgoodfaithefforts>.

AMERICAN IRON AND STEEL (AIS) REQUIREMENT

Suggested Contract Language:

The Contractor acknowledges to and for the benefit of _____ (“Purchaser”) and the United States Environmental Protection Agency (“EPA”) that it understands the goods and services under this Agreement are being funded with monies made available by the Water Infrastructure Finance and Innovation Act program of the EPA that has statutory requirements commonly known as “American Iron and Steel” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents, warrants and covenants to and for the benefit of the Purchaser and the EPA that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the EPA. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or the EPA to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Purchaser or the EPA resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the EPA or any damages owed to the EPA by the Purchaser). While the Contractor has no direct contractual privity with the EPA, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the EPA is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the EPA.

LABOR LAWS AND STANDARDS

Note that the language below addresses Davis Bacon and Related Acts and incorporates the WIFIA borrower as an authorized representative, in accordance with the WIFIA loan agreement, to ensure compliance with this federal requirement.

Required Contract Language.

Compliance with Davis-Bacon and Related Acts.

(a) In any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in 29 C.F.R. § 5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, provided that such modifications are first approved by the Department of Labor):

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be

easily seen by the workers.

- (ii)
- (A) The WIFIA assistance recipient, [name of WIFIA borrower], on behalf of the U.S. Environmental Protection Agency (EPA), shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The WIFIA assistance recipient shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:
- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - (2) The classification is utilized in the area by the construction industry; and
 - (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the WIFIA assistance recipient agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent to the Administrator of the Wage and Hour Division (WHD Administrator), U.S. Department of Labor, Washington, DC 20210. The WHD Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the WIFIA assistance recipient or will notify the WIFIA assistance recipient within the 30-day period that additional time is necessary.
- (C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the WIFIA assistance recipient do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the WIFIA assistance recipient shall refer the questions, including the views of all interested parties and the recommendation of the WIFIA assistance recipient, to the WHD Administrator for determination. The WHD Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the WIFIA assistance recipient or will notify the WIFIA assistance recipient within the 30-day period that additional time is necessary.
- (D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
- (iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- (iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs

reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

- (2) Withholding. [name of WIFIA borrower], shall upon written request of the WIFIA Director or an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the WIFIA Director may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.
- (3) Payrolls and basic records.
- (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.
- (ii) {no text here}

- (A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to [name of WIFIA borrower] . The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <https://www.dol.gov/agencies/whd/forms/wh347> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to [name of WIFIA borrower], for transmission to the EPA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to [name of WIFIA borrower]).
- (B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
- (1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;
 - (2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;
 - (3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- (C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.
- (D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.
- (iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of [name of the borrower, EPA, or the Department of Labor, and shall permit such

representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the EPA may, after written notice to the [name of WIFIA borrower], take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees –

- (i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the WHD Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- (ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to

- and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the WHD Administrator determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- (iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.
- (5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.
- (6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.
- (7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.
- (8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.
- (9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and [name of WIFIA borrower], EPA, the U.S.

Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

- (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
 - (ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
 - (iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.
- (b) Contract Work Hours and Safety Standards Act. The following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section shall be inserted in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by § 5.5(a) or § 4.6 of part 4 of this title. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.
- (1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
 - (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of \$25 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.
 - (3) Withholding for unpaid wages and liquidated damages. The [name of WIFIA borrower] shall upon its own action or upon written request of an authorized representative of the Department of Labor, or the EPA, withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.
 - (4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors

to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

- (c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in § 5.1, the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the EPA shall cause or require the [name of WIFIA borrower] to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the [name of WIFIA borrower], EPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

LATEST UPDATES ON FEDERAL REQUIREMENTS

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

Suggested Contract Language:

Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment (Effective August 13, 2020). The John S. McCain National Defense Authorization Act for Fiscal Year 2019 (P.L. 115-232), at Section 889, prohibits EPA financial assistance recipients, including WIFIA borrowers, from expending loan funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in the Act, “covered telecommunications equipment or services” means:

- a) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
- b) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- c) Telecommunications or video surveillance services provided by such entities or using such equipment.
- d) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

The Act does not prohibit:

- a) Procuring with an entity to provide a service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements.
- b) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

REFERENCES

A minimum of three (3) references shall be provided:

1. Company Name:

Address:

Contact:

Phone #: Email:

Contract Value: Year:

Description:

2. Company Name:

Address:

Contact:

Phone #: Email:

Contract Value: Year:

Description:

3. Company Name:

Address:

Contact:

Phone #: Email:

Contract Value: Year:

Description:

4. **Company Name:**

Address:

Contact:

Phone #: Email:

Contract Value: Year:

Description:

5. **Company Name:**

Address:

Contact:

Phone #: Email:

Contract Value: Year:

Description:



DISADVANTAGED BUSINESS ENTERPRISE (DBE) PREFERENCE

Section 2-185, Code of Ordinances of the City of Fort Lauderdale, provides for a disadvantaged business enterprise preference.

In order to be considered for a DBE Preference, a bidder must include a certification from a government agency, as applicable to the DBE Preference class claimed **at the time of bid submittal**.

Upon formal request of the City, based on the application of a DBE Preference the Bidder shall, within **ten (10)** calendar days, submit the following documentation to the DBE Class claimed:

- a) Copy of City of Fort Lauderdale current year business tax receipt, **or** Broward County current year business tax receipt, **or** State of Florida active registration **and/or**
- b) List of the names of all employees of the bidder and evidence of employees' residences within the geographic bounds of the City of Fort Lauderdale or Broward County, as the case may be, such as current Florida driver license, residential utility bill (water, electric, telephone, cable television), or other type of similar documentation acceptable to the City.

Failure to comply at time of bid submittal shall result in the bidder being found ineligible for the disadvantaged business enterprise preference.

THE COMPLETE DBE PREFERENCE ORDINANCE MAY BE FOUND ON THE CITY'S WEB SITE AT THE FOLLOWING LINK: https://library.municode.com/fl/fort_lauderdale/codes/code_of_ordinances?nodeId=COOR_CH2AD_ARTVFI_DIV2PR_S2-185EQOPDIBUEN&showChanges=true

Definitions

- a. The term "disadvantaged class 1 enterprise" shall mean any disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the City, and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.
- b. The term "disadvantaged class 2 enterprise" shall mean any disadvantaged business enterprise that has established and agrees to maintain a permanent place of business within the limits of the City with full-time employees and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.
- c. The term "disadvantaged class 3 enterprise" shall mean any disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the Tri-County area and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.
- d. The term "disadvantaged class 4 enterprise" shall mean any disadvantaged business enterprise that does not qualify as a Class 1, Class 2, or Class 3 business, but is located in the State of Florida and provides supporting documentation of its disadvantaged certification as established in the City's Procurement Manual.

DISADVANTAGED BUSINESS ENTERPRISE CERTIFICATION STATEMENT

The Business identified below certifies that it qualifies for the disadvantaged business enterprise preference classification as indicated herein, and further certifies and agrees that it will re-affirm its preference classification annually no later than **thirty (30)** calendar days prior to the anniversary of the date of a contract awarded pursuant to this solicitation. Violation of the foregoing provision may result in contract termination.

(1)
 (Business Name) is a disadvantaged **Class 1** enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the City, and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.

(2)
 (Business Name) is a disadvantaged **Class 2** enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that has established and agrees to maintain a permanent place of business within the limits of the City with full-time employee(s) and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.

(3)
 (Business Name) is a disadvantaged **Class 3** enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the Tri-County area and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.

(4)
 (Business Name) is a disadvantaged **Class 4** enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that does not qualify as a Class 1, Class 2, or Class 3 business, but is located in the State of Florida and provides supporting documentation of its disadvantaged certification as established in the City's Procurement Manual.

(5)
 (Business Name) requests a **Conditional Class 1** classification as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. Written certification of intent to meet the requirements shall be provided to the City within three (3) months of entering into a contract with the City.

(6)
 (Business Name) requests a **Conditional Class 2** classification as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. Written certification of intent to meet the requirements shall be provided to the City within three (3) months of entering into a contract with the City.

BIDDER'S COMPANY:

AUTHORIZED COMPANY PERSON:

PRINT NAME

SIGNATURE

DATE

Forms Non-Iso – revised 7/2/2021

NON-COLLUSION STATEMENT:

By signing this offer, the vendor/contractor certifies that this offer is made independently and *free* from collusion. Vendor shall disclose below any City of Fort Lauderdale, FL officer or employee, or any relative of any such officer or employee who is an officer or director of, or has a material interest in, the vendor's business, who is in a position to influence this procurement.

Any City of Fort Lauderdale, FL officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement.

For purposes hereof, a person has a material interest if they directly or indirectly own more than 5 percent of the total assets or capital stock of any business entity, or if they otherwise stand to personally gain if the contract is awarded to this vendor.

In accordance with City of Fort Lauderdale, FL Policy and Standards Manual, 6.10.8.3,

3.3. City employees may not contract with the City through any corporation or business entity in which they or their immediate family members hold a controlling financial interest (e.g. ownership of five (5) percent or more).

3.4. Immediate family members (spouse, parents and children) are also prohibited from contracting with the City subject to the same general rules.

Failure of a vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the City Procurement Code.

NAME

RELATIONSHIPS

In the event the vendor does not indicate any names, the City shall interpret this to mean that the vendor has indicated that no such relationships exist.

Authorized Signature

Title

Name (Printed)

Date

**CONTRACTOR'S CERTIFICATE OF COMPLIANCE WITH
NON-DISCRIMINATION PROVISIONS OF THE CONTRACT**

The completed and signed form should be returned with the Contractor's submittal. If not provided with submittal, the Contractor must submit within three business days of City's request. Contractor may be deemed non-responsive for failure to fully comply within stated timeframes.

Pursuant to City Ordinance Sec. 2-187(c), bidders must certify compliance with the Non-Discrimination provision of the ordinance.

The Contractor shall not, in any of his/her/its activities, including employment, discriminate against any individual on the basis of race, color, national origin, religion, creed, sex, disability, sexual orientation, gender, gender identity, gender expression, or marital status.

1. The Contractor certifies and represents that he/she/it will comply with Section 2-187, Code of Ordinances of the City of Fort Lauderdale, Florida, as amended by Ordinance C-18-33 (collectively, "Section 2-187").
2. The failure of the Contractor to comply with Section 2-187 shall be deemed to be a material breach of this Agreement, entitling the City to pursue any remedy stated below or any remedy provided under applicable law.
3. The City may terminate this Agreement if the Contractor fails to comply with Section 2-187.
4. The City may retain all monies due or to become due until the Contractor complies with Section 2-187.
5. The Contractor may be subject to debarment or suspension proceedings. Such proceedings will be consistent with the procedures in section 2-183 of the Code of Ordinances of the City of Fort Lauderdale, Florida.

Authorized Signature

Print Name and Title

Date

E-VERIFY AFFIRMATION STATEMENT

RFP/Bid /Contract No:

Project Description:

Contractor/Proposer/Bidder acknowledges and agrees to utilize the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of,

- (a) all persons employed by Contractor/Proposer/Bidder to perform employment duties within Florida during the term of the Contract, and,
- (b) all persons (including subcontractors/vendors) assigned by Contractor/Proposer/Bidder to perform work pursuant to the Contract.

The Contractor/Proposer/Bidder acknowledges and agrees that use of the U.S. Department of Homeland Security's E-Verify System during the term of the Contract is a condition of the Contract.

Contractor/Proposer/ Bidder Company Name:

Authorized Company Person's Signature:

Authorized Company Person's Title:

Date:

9/15/2020

BID/PROPOSAL CERTIFICATION

Please Note: It is the sole responsibility of the bidder to ensure that his bid is submitted electronically through www.BidSync.com prior to the bid opening date and time listed. Paper bid submittals will not be accepted. All fields below must be completed. If the field does not apply to you, please note N/A in that field.

If you are a foreign corporation, you may be required to obtain a certificate of authority from the department of state, in accordance with Florida Statute §607.1501 (visit <http://www.dos.state.fl.us/>).

Company: (Legal Registration) EIN (Optional):

Address:

City: State: Zip:

Telephone No.: FAX No.: Email:

Delivery: Calendar days after receipt of Purchase Order (**section 1.02 of General Conditions**):

Total Bid Discount (**section 1.05 of General Conditions**):

Check box if your firm qualifies for MBE / SBE / WBE (**section 1.09 of General Conditions**):

ADDENDUM ACKNOWLEDGEMENT - Proposer acknowledges that the following addenda have been received and are included in the proposal:

<u>Addendum No.</u>	<u>Date Issued</u>	<u>Addendum No.</u>	<u>Date Issued</u>	<u>Addendum No.</u>	<u>Date Issued</u>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

VARIANCES: If you take exception or have variances to any term, condition, specification, scope of service, or requirement in this competitive solicitation you must specify such exception or variance in the space provided below or reference in the space provided below all variances contained on other pages within your response. Additional pages may be attached if necessary. No exceptions or variances will be deemed to be part of the response submitted unless such is listed and contained in the space provided below. The City does not, by virtue of submitting a variance, necessarily accept any variances. If no statement is contained in the below space, it is hereby implied that your response is in full compliance with this competitive solicitation. If you do not have variances, simply mark N/A. **You must also click the "Take Exception" button.**

The below signatory hereby agrees to furnish the following article(s) or services at the price(s) and terms stated subject to all instructions, conditions, specifications addenda, legal advertisement, and conditions contained in the bid/proposal.

I have read all attachments including the specifications and fully understand what is required. By submitting this signed proposal, I will accept a contract if approved by the City and such acceptance covers all terms, conditions, and specifications of this bid/proposal. The below signatory also hereby agrees, by virtue of submitting or attempting to submit a response, that in no event shall the City's liability for respondent's direct, indirect, incidental, consequential, special or exemplary damages,

expenses, or lost profits arising out of this competitive solicitation process, including but not limited to public advertisement, bid conferences, site visits, evaluations, oral presentations, or award proceedings exceed the amount of Five Hundred Dollars (\$500.00). This limitation shall not apply to claims arising under any provision of indemnification or the City's protest ordinance contained in this competitive solicitation.

Submitted by:

Name (printed)

Signature

Date

Title

Revised 4/28/2020

Question and Answers for Bid #12632-626 - Consultant Services for Melrose Manors Neighborhood Stormwater Improvements

Overall Bid Questions

There are no questions associated with this bid.