



CITY OF FORT LAUDERDALE

DRAFT
MEETING MINUTES
CITY OF FORT LAUDERDALE
INFRASTRUCTURE TASK FORCE ADVISORY COMMITTEE
VIRTUAL MEETING
MONDAY, OCTOBER 19, 2020 – 2:00 P.M. TO 5:00 P.M.

February 2020-January 2021

Attendance

Marilyn Mammano, Chair	P	3	0
Gerald Angeli	P	3	0
Shane Grabski	P	3	0
Charlie Ladd (arr. 2:18)	P	2	1
Michael Marshall	P	3	0
Norm Ostrau	P	3	0
Peter Partington	P	3	0
Jacquelyn Scott	P	3	0
Roosevelt Walters	P	3	0
Ralph Zeltman	P	3	0

As of this date, there are 10 appointed members to the Committee, which means 6 would constitute a quorum.

Staff

- Aneisha Daniel, Deputy Director of Public Works
- Dr. Nancy Gassman, Assistant Director of Public Works – Sustainability
- Rick Johnson, Utilities Distribution and Collection Systems Manager
- Talal Abi-Karam, Assistant Director of Public Works -- Utilities
- Omar Castellon, Chief Engineer
- Jill Prizlee, Chief Engineer
- Pauline Ricketts, Senior Administrative Assistant
- Kymerly Holcombe, Business Operations Manager
- Gary Foster, Senior Project Manager
- Shannon Barrett, Financial Administrator
- Jerry Jean-Philippe, Moderator
- D’Wayne Spence, Assistant City Attorney
- Crysta Parkinson, Recording Secretary, ProtoType, Inc.

Communication to the City Commission

None.

1. Call to Order

i. Roll Call

Chair Mammano called the meeting to order at 2:00 p.m. Roll was called and it was noted a quorum was present.

ii. Approval of Agenda

Motion made by Ms. Scott, seconded by Mr. Walters, to approve. In a voice vote, the **motion** passed unanimously.

iii. Approval of Previous Meeting Minutes – September 21, 2020

Motion made by Mr. Walters, seconded by Ms. Scott, to approve with or without corrections.

The Committee members noted the following changes:

- P.8, paragraph 5: change “memorandum” to “email”
- P.7, paragraph 4: clarify that 25% and 65% refer to percentages of the \$200 million bond
- P.11, paragraph 3: correct opening speaker from Mr. Abi-Karam to Mr. Arroyo

In a voice vote, the **motion** passed unanimously.

2. General Discussion and Comments by Committee Members

Mr. Partington recalled that he had heard discussion of the use of inflatable bladders for temporary flood prevention in the Florida Keys, and asked if this was something the City should consider. Dr. Nancy Gassman, Assistant Director of Public Works (Sustainability), advised that this method has been tested in the past but was not effective against tidal flooding.

3. Old Business

i. Water / Sewer Consent Budget / Expenditures Update

Mr. Ladd joined the meeting at 2:18 p.m.

Aneisha Daniel, Deputy Director of Public Works, showed a PowerPoint presentation addressing questions the Committee had previously asked regarding the Reiss report, which estimated a cost of \$1.4 billion for infrastructure improvements, and \$200 million in bond funds appropriated in 2018 for improvements to plants, inflow and infiltration (I&I) systems, water, and sewer projects.

Ms. Daniel explained that as of October 15, 2020, roughly \$21 million in appropriations has been used thus far. While the original appropriation in 2018 was for \$200 million, an additional \$4.5 million in earned interest has been added to this total over the life of the bond.

Kymerly Holcombe, Senior Financial Administrator, noted that \$10 million and \$1.5 million have been appropriated to the bond for projects or costs completed toward those projects within 180 days of the bond's official appropriation. A funding gap of \$9.7 million was appropriated for Master Plans, reports, and assessments throughout the City, including the following needs:

- Water and sewer mapping
- Force main assessments
- Asset management
- Capacity Management, Operations, and Maintenance (CMOM) programs
- Sewer capacity analysis for gravity and force mains

These reports and assessments are not considered capital expenditures, although the conclusions reached in them may initiate some capital repairs and/or replacements. Because they are eligible bond expenditures but are not projects, the City was able to reimburse itself for their costs.

Ms. Daniel reviewed a list of upgrades to the Fiveash and Peele Dixie Water Treatment Plants, noting that the only one of these projects including substantial changes is the excavation and disposal of dry lime sludge. The appropriation started at \$2.6 million; however, an additional \$2 million was added to this project to address construction engineering and inspection (CEI) costs and other in-house project management fees. It is not uncommon to identify additional costs as a project gets underway.

The \$32 million appropriated for Fiveash reliability projects reflects a slight decrease from its original appropriation of \$33.5 million. Because the City is considering a major project involving a new plant, value engineering has identified only the most critical projects at Fiveash. Another \$120,000 was added to Fiveash expenditures for engineering inspection services and in-house project management. Peele Dixie projects remain as budgeted in the original appropriation, with no changes.

I&I projects were originally appropriated \$11.291 million and have increased to \$14.435 million. These include basin and rehabilitation projects, which have undergone changes. One I&I project has increased substantially from its original estimate and has been included as part of the City's 2019 capital budget. Ms. Daniel further clarified that while some projects have additional funds allocated to them through the Capital Improvement Plan (CIP), only the funds appropriated from the \$200 million bond are reflected in the presentation.

Mr. Walters requested clarification of the reason funds allocated to the Rio Vista sewer basin have doubled from their original amount. Shannon Barnett of the Public Works Department advised that approximately \$2.8 million in water and sewer funds were allocated to this project in addition to bond funds. Chief Engineer Omar Castellon reported that closed circuit television (CCTV) inspection of this site showed that a number of areas required additional work.

Ms. Daniel explained that once Staff goes into the field and assesses projects, those assessments may show that more work needs to be done and more funds should be allocated to those projects. She noted that the Rio Vista project to which Mr. Walters had referred increased substantially as part of the 2019 CIP budget. \$4.5 million in interest has been appropriated for some projects. Other projects not allocated funds from the original \$200 million bond have been added to the list of projects as well.

Ms. Daniel continued that while some projects came in at lower costs than originally estimated, allowing the difference to be appropriated elsewhere, emergency projects have also been identified, and other projects have experienced cost overruns. Many of the overruns resulted in re-prioritization of projects.

Ms. Holcombe addressed the Master Plan report mentioned earlier in the presentation, which lists the \$9.7 million associated with asset management, CMOM, sewer capacity analysis, gravity and force main assessments, and water/wastewater system mapping. While these costs were initially appropriated to projects, the City Auditor determined that these items are not capital in nature and should be appropriated back to the City's fund balance to be addressed as operational expenses. They are both bond-eligible and Consent Order-related items.

Ms. Daniel moved on to sewer basin projects, noting a project that was not included in the original appropriation but was included later on at a cost of \$478,000. Another rehabilitation project listed at \$169,000 was reprioritized and added to the 2019 CIP. Two projects in this category are in the construction stages, while a third project is currently out for bid.

Sewer force main projects include emergency repair of a 30 in. force main, which has been completed at a cost of \$2.697 million, which is significantly under its original estimate of \$8.5 million. The overage has been reappropriated to other projects. Some projects on this list have been combined, and funds have been moved between projects as part of a budget amendment.

Mr. Partington asked if it would be accurate to say the City has taken \$65 million from the \$200 in bond funds to pay for north/south force main lines on which work is currently underway. Ms. Daniel explained that money was moved from sewer force main projects to the north/south project. The force main projects have been pushed back and will need to be re-funded from either the next tranche of bond funds or from operations.

Mr. Partington asked if it was likely that additional bond funds would have to be issued in addition to the current \$200 million issuance. Ms. Daniel reiterated that the costs of construction are known to fluctuate: some projects thought to be relatively minor have come in at higher costs, while other projects were understated and required cost adjustments. A number of projects intended for inclusion in the second tranche of bond funding, such as the placement of redundant line, have been moved up on the list.

Mr. Partington recalled that at the end of calendar year 2019, the City had to award \$61.5 million in contracts. He felt the “big picture” for the Committee was whether or not this award would have a substantial effect on the \$200 million bond issuance. Ms. Daniel advised that a number of these emergency projects drew from the City’s operating fund balance and did not affect the bond.

Ms. Daniel reviewed actual expenses and encumbrances, which show that \$88.8 million has been spent and \$41.3 million encumbered through purchase orders. Funds in the encumbrance stage may be in the pipeline to be moved into actual expenses. Information in the presentation was current as of October 15, 2020. \$65 million in projects are in the construction stage, with another \$40 million in the design stage and \$4 million in the bidding stage. Several of the projects discussed in the presentation have enterprise fund dollars appropriated to them from the City’s Water/Sewer Fund.

The City’s five-year CIP shows a number of projects already slated in the 2023 CIP as anticipated to use bond funds. This was approved as part of the CIP budget in September. The CIP budget breaks out the source of funds for projects. Some costs are not yet known, as CCTV and other inspections are not complete for all projects.

Ms. Daniel stated that the \$1.4 billion mentioned in the Reiss report does not lay out expenses on a project-by-project basis. The City continues to fine-tune project allocations as it works through the \$200 million bond issuance, adding more information as it becomes available. Each year the City issues its five-year CIP, which includes projects whose costs may change from one year to the next due to changes in construction costs or re-prioritization.

Chair Mammano asked if it will eventually be possible to see a full list of all projects in prioritized order. Ms. Daniel confirmed that this is part of the City’s annual CIP process. The Reiss report is taken into consideration as a planning document as the CIP is developed, along with the Consent Order as well as emergency projects that arise. Not all dollars in the later years of the CIP are readily available at any given time, such as future tranches of the \$200 million bond.

Mr. Ladd asked if the Committee could be emailed a copy of the presentation, along with the five-year CIP. He felt a summary of the plan, as well as an indication of where the City currently stands with its progress, would be helpful to the Committee in understanding it. Ms. Daniel advised that she would send a link to the CIP as well as copies of the presentation.

Paul Chettle, member of the public, noted that the Consent Order includes a request to install a permanent emergency generator at the George C. Lohmeyer Wastewater Treatment Plant, which has been included in the City’s CIP for several years. His concern was that a previous Consent Order had given the City 24 months to install this generator, which was later pushed back to 40 months in a subsequent Consent Order.

He asked for an update on the status of this item, expressing concern with the repeated delay of its installation.

Talal Abi-Karam, Assistant Director of Public Works (Utilities), explained that the current negotiated Consent Order, which will be presented at the October 20, 2020 City Commission meeting, addresses power at the Lohmeyer plant in two components, one of which is a backup generator as temporary power source, which will be acquired and installed within nine months. In addition, in 2017, the City realized that backup power at the Fiveash plant is an issue, and initiated a project at that time by including “seed money” for engineering and design in the CIP.

After the emergency incidents in December 2019/January 2020, the City has listed full backup power for all five pumps at the Lohmeyer plant among its projects. The original 24-month time frame set forth by the state was very stringent, as this project will require design and procurement processes in addition to construction. The 40-month time period to which Mr. Chettle had referred is the shortest physically possible duration to accommodate the logistics of the procurement process as well as preliminary and full design and construction of the project.

ii. City Attorney’s Office – Follow-Up

Assistant City Attorney D’Wayne Spence recalled that at the September 2020 meeting, the Chair has asked if a moratorium can be tied to the completion of a capital improvement project. He advised that there is no appellate case law in the state of Florida addressing the use of a moratorium in relation to the completion of capital improvement projects.

Attorney Spence continued that an article in the *Florida Bar Journal* regarding concurrency addresses the timing component of a moratorium. The article states there is the threat of a moratorium being deemed a taking unless certain factors related to timing are weighed:

- The time period of the delay in development cannot be due to a lack of adequate infrastructure
- The time period of the delay may not be indefinite
- The local government must be attempting to solve the infrastructure problems: the more aggressively it attempts to do so, the less likely the moratorium is to be considered a taking
- If the moratorium is necessary due to local government’s failure to provide for growth, it is more likely to be deemed a taking

Attorney Spence emphasized that the moratorium would need to be of limited duration, and the government must act promptly to address infrastructure issue(s). This is complicated because in the state of Florida, Capital Improvement Plans (CIPs) are established annually by cities in accordance with State Statute 163180. Any governing body establishing a moratorium must refer to data in the infrastructure element of the

City's Comprehensive Plan to determine whether or not the City adequately maintains the level of service adopted in that Plan, and whether or not it can develop a program to expeditiously address these issues during a moratorium.

Mr. Zeltman recalled that during the discussion of a moratorium at the September 2020 meeting, he had considered this issue in different terms: for example, if the Fiveash plant lacks sufficient capacity to meet the needs of proposed additional development, a moratorium could be enacted until the plant achieves greater capacity. He noted that in some areas along the Fort Lauderdale Beach, there are existing 8 in. water mains that were sufficient to service one- to two-story developments; however, as development continued, the need for service has increased not only for domestic usage but for fire service usage as well, particularly with regard to the flow and pressure necessary to serve high-rise development.

Attorney Spence stated that the City's Unified Land Development Regulations (ULDR) has a concurrency review finding of adequacy requirement for all projects reviewed by the City's Development Review Committee (DRC). Every project is reviewed by Public Works to determine whether or not capacity is sufficient for that project. Evidence of this review is presented to both the DRC and the Planning and Zoning Board (PZB). If data exists suggesting that Fiveash lacks capacity to accommodate development, permits could not be issued under that reviewing system.

Mr. Zeltman reiterated that while Fiveash appears to have sufficient capacity to accommodate development, undersized water mains remain in areas along the Fort Lauderdale Beach. Chair Mammano agreed that there is significantly greater development in this area of the City than when these water mains were installed; however, City Staff continues to provide adequacy letters to the DRC and PZB stating that the infrastructure is sufficient to serve greater development, which she characterized as counterintuitive.

Mr. Ladd advised that any building higher than three to four stories has a fire pump that assists in providing water the top of the structure in the event of a fire. In addition, one of the requirements for permitting is a flow test in proximity to the construction of a project. Mr. Zeltman explained that if fire tests are being done in accordance with the requirements of insurance services to determine flow capability and residual pressure, this suggests that the 8 in. water mains have been supplemented with other water main infrastructure in these areas. His concern was for those areas that have not been supplemented or improved with additional mains to meet insurance requirements.

Mr. Grabski pointed out that when the City performs capacity analysis, they take conveyance pipes into account through a model that considers their sizing. Some new developments are required to upgrade their water mains as a result of this analysis. Chair Mammano reiterated that the Committee members who are less familiar with this process would benefit from a presentation showing how this analysis is conducted.

Mr. Ostrau commented that the question the Committee asked is whether or not a moratorium could be imposed if there is not sufficient infrastructure in place to meet the capacity needs of development. Attorney Spence's response showed that this would be very difficult, as the time frame required to provide the appropriate infrastructure would likely result in a lawsuit alleging a taking.

Chair Mammano suggested that a change in the City's adequacy analysis process could lead to a safe way to declare a moratorium; however, it would be problematic to declare a moratorium based upon the replacement or rehabilitation of a given piece of infrastructure. Attorney Spence advised that if a new system for capacity evaluation were expected to be developed within a relatively short time frame, it may be possible to tie the new process to a moratorium, but this could not occur over an indefinite time period.

Chair Mammano commented that if there is data identifying a piece of high-risk infrastructure, she felt it was not unreasonable to refrain from putting more strain on that infrastructure until it has been addressed. Attorney Spence clarified that data must first demonstrate that the infrastructure in question will fail before an applicant can be denied a development permit.

Mr. Zeltman commented that the Fire Department conducts hydrant flow tests to determine flow rate and residual pressure. He felt this information could easily be used to identify inadequacy in certain areas of the City, including the capabilities of existing lines as well as what design would best produce the flows and pressures necessary for firefighting capabilities.

Ms. Daniel asked if the Committee wished to see a presentation from the Department of Sustainable Development on how capacity and adequacy are evaluated. Chair Mammano asserted that she would like to see how Staff arrives at a conclusion of adequacy, reiterating that the findings seem to be counterintuitive without further information.

4. New Business and Public Comments

i. In Person Meetings Post-November 1 Requirements Quorum and Attendance

Ms. Daniel explained that at this point, no determination has been made on whether or not the City's advisory bodies will resume in-person meetings, although there has been discussion of their resumption after November 1, 2020. There have also been discussions of a hybrid meeting format and whether or not members attending virtually would be counted toward a quorum. These issues are still being evaluated, and changes to advisory bodies' governing Ordinances may be necessary.

Attorney Spence advised that the current state of law is based on an opinion by Florida's Attorney General, which asserts that Florida's Sunshine Law requires the physical presence of a quorum. Given the ongoing COVID-19 pandemic, some of the City's attorneys are revisiting whether or not the Attorney General's position on physical quorums is a legal requirement of the Sunshine Law or only the Attorney General's opinion.

If the Governor does not extend his Emergency Order permitting communications technology meetings, all advisory bodies would have to resume an in-person quorum if the City follows the Attorney General's past opinion(s) on the subject. A hybrid meeting format would be made available; however, each entity's members would have to determine how they would meet the quorum requirement, as some members may need to continue virtual attendance.

Chair Mammano noted that the City's quasi-judicial advisory bodies were more likely to be affected by the requirement of a physical quorum. Since the Infrastructure Task Force Committee is not quasi-judicial, she had asked if they were less likely to be subject to the requirement; however, no conclusion has been reached thus far. She concluded that she wanted the Committee members to be aware that this is an ongoing issue, and that she is aware some members will not be able or willing to attend in person.

Mr. Ostrau asked if the City, or other governmental entities such as the Broward League of Cities, plans to challenge the Attorney General's opinion in court. Attorney Spence replied that an opinion is not law until it is adopted as such by a judge. A number of city attorneys are discussing this issue and hope to arrive at a collective decision on how to proceed. A court action is not necessary in this case. He felt more direction would be provided in the coming weeks.

Mr. Ostrau pointed out that non-quasi-judicial bodies are still subject to the Sunshine Law. Attorney Spence confirmed this. He added that the Governor's Emergency Order is set to expire on November 1, and reiterated that additional direction is expected before that time.

Chair Mammano noted that if the Committee is asked to meet in person for a physical quorum, attendance of six members would be required.

The following Item was taken out of order on the Agenda.

Chair Mammano briefly left the meeting at 3:49 p.m. and ceded the gavel to Mr. Partington at this time.

iii. Police Station Update

Project Manager Gary Foster stated that contracts for the new facility have been signed and a construction vendor has been selected. Pre-contract negotiations are underway. The City is reaffirming the space allocations for the Police Department, which were first made two years ago and may require updates. It is hoped that the station's parking garage will be constructed before spring 2021.

Mr. Partington asked if the contract is for design/build. Mr. Foster replied that AECOM will design the project, while Moss Construction will serve as construction manager at-risk. The construction contractor is involved in the design process in order to prevent budget discrepancies. The project is expected to take no more than one year to design.

Chair Mammano rejoined the meeting at 3:57 p.m.

Chair Mammano noted that the existing Police Station is considered a City historic landmark, and asked if the construction timeline includes acknowledgement of the additional layer of review this designation requires. Mr. Foster replied that this process is part of AECOM's contract.

Patrick Dirindin, member of the public, advised that the City's Historic Preservation Planner has declassified the Police Station as a building of historical significance due to substantial rehabilitation.

ii. Capacity Management Operations and Maintenance (CMOM) Maps / Capacity and Condition Review

Patricia Carney, Program Manager with consultant Hazen and Sawyer, briefly addressed the issues covered under the discussion of a moratorium, advising that a water model is currently underway for the City. This model takes into consideration current and future conditions, including population projections. The model is run against three conditions:

- Actual water use and maintenance of pressures in system during peak hours
- Fire flow analysis
- Water age analysis, which ensures sufficient chlorine in the system

The model update is expected to be complete in December 2020. The consulting team is concurrently assisting the City in updating its standard operating procedures for the approval and concurrency of new development.

Ethan Heijn, also representing Hazen and Sawyer, stated that the Asset Management/Capacity Management, Operations, and Maintenance (AM-CMOM) was a requirement of the Consent Order and must be done within Environmental Protection Agency (EPA) guidelines. The asset management (AM) portion of the report resulted in maps that show risks of failure within the collection and transmission system and the life cycle of assets, while the CMOM portion is tied to everyday operations of this system.

Risk is calculated using Likelihood of Failure (LOF) and Consequence of Failure (COF) in gravity mains, pump stations, and force mains. The criteria used to quantify LOF and COF help determine the risk associated with a given asset. The goal is detailed knowledge of the condition of an asset, which can be difficult when dealing with underground lines. If there is not detailed knowledge of an asset's condition, the age and material of the asset are typically used as a surrogate to make assumptions about its condition and useful life. Pipe break information and environmental factors also help to estimate the life of an asset.

COF includes financial and community impacts, including the number of residents affected by the loss of essential services, along with environmental compliance concerns.

Mr. Partington asked if it is standard methodology to determine risk through LOF and COF. Mr. Heijn confirmed that this is standard for asset management programs. There are community impacts for gravity mains, pump stations, and force mains.

LOF, COF, and risk scores were calculated for the various assets. Some items were graded with a low LOF: for example, recently installed PVC pipe is unlikely to fail relative to other pipes in the system. Medium LOF applies to unknown material that is approaching 50 years of age and for which there is little information on record. High LOF occurs in cast-iron pipe installed before 1970 that is affected by saltwater intrusion, which makes corrosion more likely. Mr. Zeltman commented that this is likely to be vitrified clay pipe, which was installed in the 1950s-1960s.

Chair Mammano asked if infrastructure with a high LOF is prioritized for replacement. Mr. Heijn advised that priority is also determined by COF, which also has low, medium, and high categories. Items with low COF are not located in proximity to essential services or bodies of water that could be affected by a failure, while medium COF applies to larger pipes in the vicinity of public buildings that would affect a greater number of people. High COF is determined for larger pipes, often 15 in. or more in diameter, that are buried deep, would be difficult to repair, and are located on a busy roadway.

Mr. Partington commented that Fort Lauderdale may be unique due to its large number of bodies of water, which could be affected by sewage intrusion in the event of a break. Mr. Heijn agreed, pointing out that this is particularly true when dealing with force mains, which are a more challenging asset to repair and would discharge more material than a gravity main in the event of a break.

Dr. Gassman requested additional information on the environmental parameters associated with LOF/COF. Orlando Castro, also representing Hazen and Sawyer, confirmed that this was also a consideration when determining priority: any infrastructure that breaks is assumed to drain into the nearest storm sewer and discharge into the nearest canal.

The LOF and COF are used to generate a risk score for each asset. An asset with a low LOF and COF is assigned a low risk, while high LOF and COF means the asset will become a high-priority project. The risk score helps the consulting team and Staff to prioritize different types of intervention, such as condition assessment, repairs, replacement, or other activity.

Chair Mammano asked if the maps shown by the consulting team correspond to the City's current program to repair or replace assets and prevent seawater intrusion. Mr. Heijn advised that the most urgent focus has been on force mains, while gravity mains are a lesser priority. Chair Mammano noted, however, that gravity main repair/replacement has been included in the City's CIP for at least five years, and asked if there is a relationship between the CIP and the maps shown by the consulting team. Mr. Heijn advised that areas with the highest I&I are currently the areas of focus for the team to reduce inflow and infiltration. A different map is used to prioritize I&I work.

Mr. Zeltman observed that if gravity mains are submerged in a saltwater intrusion area, intrusion into that line is carried to pump and lift stations and ultimately the treatment plant; however, the pressure associated with force mains makes those assets more likely to rupture and pollute the general area, while a gravity main is more likely to take in intrusive material such as saltwater or sand.

Mr. Heijn noted that a similar process to the assignment of risk to gravity mains is used to determine the risks for pump stations, which are aboveground and therefore make it easier to collect good information regarding their condition. City Staff has already done a great deal of work in prioritizing the needs of these assets. LOF and COF were considered to calculate estimated risk.

The force main risk score also considers LOF and COF. Force mains are a major focus of both the Consent Order and the asset management program. Most force mains fall into the medium risk category, with relatively few determined to be high-risk. Mr. Castro noted that the Consent Order specifically addressed force main condition assessments and required the identification of projects to be added to Phase 2 of the Consent Order. A separate list of pipelines was recommended by the consulting team for addition to the City's CIP.

Chair Mammano asked if the Phase 2 projects are one of the reasons for the increased cost of compliance with the Consent Order. Mr. Castro confirmed this, clarifying that the projects recommended for addition to the CIP are not tied to the Consent Order. The two groups of projects included in the Consent Order must be completed by September 2026. An updated cost of corrective action was reported to the Florida Department of Environmental Protection (DEP) once the Phase 2 projects were included in the Consent Order. The City has already encumbered funds for some of these individual projects.

Mr. Partington asked if the risk scores for force mains could be compared directly to information within the Reiss report identifying high-risk force mains. Ms. Carney advised that the consultants' analysis used a more current model than the Reiss report. She was confident that the team had used the best data available to assign risk, stating that the team can provide a comparison of their analysis with the Reiss report if that is the Committee's wish.

Sean Fitzgerald, also representing Hazen and Sawyer, observed that much of the information used to determine risk is not based on actual testing and CCTV data. This means they cannot express significant confidence in the probability of failure, but instead identify areas in which the City should work more directly to develop a condition assessment. The team cannot make a firm prediction of failure if a greater load is placed on the existing infrastructure.

Mr. Fitzgerald continued that the team typically considers where development pressure exists and further prioritizes its assessments from both a capacity and condition standpoint to ensure there are no unidentified issues there. Ms. Carney added that the team can make an assessment from a capacity standpoint, but cannot do so from a condition standpoint.

Mr. Ladd asked if the addition of capacity puts more strain on pressurized pipes. Mr. Zeltman replied that rust or other discharge inside a pipe, for example, creates a turbulent rather than a streamlined flow, which carries a greater risk of harm to the pipe. This is particularly true for older cast-iron pipes and can lead to discoloration of water.

Chair Mammano asked if the City would need to know the risk assessment for certain pipes in order to take it into consideration when determining adequacy. Ms. Scott stated that when the PZB receives capacity letters, there is no mention of whether or not a project is located in a high-risk area.

Chair Mammano expressed concern for the cumulative impact of many developments over the years. Mr. Ladd explained that the issue is more complicated: a force main is pressurized, with pressure created by the pump station to push sewage through the pipe. The addition of more units is unlikely to be a factor in the failure of this pipe.

Mr. Zeltman added that the intrusion of sand into infrastructure, including pump stations and force mains, creates a grinding effect on the bottom of those pipes. Another consideration is the surge created by pump stations switching on and off, which places more stress on pipes, particularly at joints or bends in the system.

Mr. Walters stated that another concern was for the identification of the material intruding into the lines, as identification of this material will show its effect on capacity and the lifespan of infrastructure. Ms. Carney explained that when the team encountered an unknown factor, such as intrusive material or age of the infrastructure, it was assigned a higher risk score. The diameter of infrastructure also affects the

capacity, pressure, and velocity of a given line. While the size of a pipe may be known, it may not be possible to identify its age and material without digging up the asset.

Mr. Castellon further clarified that Public Works maintains a database of new and potential development so they can keep track of the cumulative effects of development on infrastructure in a given area. A capacity letter is good for one year from its issuance: if a project is not in the ground within one year, the developer must request another capacity letter. Chair Mammano requested that this be included in the Committee's upcoming presentation regarding capacity letters.

Ms. Scott asked if there would be further discussion of a possible moratorium after the Committee has seen a presentation on the issue of capacity letters. Chair Mammano stated that the Committee should first learn more about the process for capacity letters, as there is currently no data that might support a moratorium.

Mr. Walters requested clarification of the terms "short-term" and "temporary" as used by Attorney Spence regarding the moratorium. Chair Mammano noted that a moratorium is typically issued for a very specific amount of time in order to come to a conclusion that results in its being lifted.

5. Public Works Update

i. Breaks Since September 2020 Meeting

Mr. Abi-Karam reported that a number of sewer incidents have occurred, including one next to the Himmarshee Canal on September 19. A broken testing port installed in the original pipe resulted in a discharge. Another incident occurred next to the Downtown pump station A-7, where a 12 in. cast-iron pipe failed due to age. A small sanitary sewer overflow (SSO) occurred at pump station D-54.

Rick Johnson, Utilities Distribution and Collection Systems Manager, stated that since the Committee's September meeting, nine water main breaks have occurred, most of which were in smaller 6 in. mains and due to corrosion or age. Most of these were cast-iron pipes and were subject to saltwater intrusion. A new 10 in. water main experienced a leak as well.

Chair Mammano asked if it would be possible to keep a running tab on sewer and water main breaks from the beginning of 2020. Ms. Daniel confirmed this could be done.

ii. Wastewater Consent Order & Water Quality

Ms. Daniel noted that this Item will be on the City Commission Conference Agenda for October 20, 2020. It will include discussion of the amended Consent Order and water quality assessment in the Tarpon River and the lake at George English Park. Chair

Mammano encouraged interested parties to virtually attend the Conference Agenda meeting.

iii. Details on Owner's Representative Role

Ms. Daniel stated that the position of owner's representative continues to evolve. The City has assigned this issue to a project manager for preparation of a request for qualifications (RFQ) for an owner's representative. She anticipated that more information on the specifications of this position would be available by the next Committee meeting.

Chair Mammano requested a presentation from the project manager overseeing preparation of the owner's representative RFQ at the next Committee meeting.

6. Information

Boyd Corbin, member of the public, stated that the Fiveash Water Treatment Plant fails secondary EPA standards by producing green water, which turns yellow as it flows through older transmission lines. He asserted that while some believe green water is not harmful, this is not the case once its organic material is mixed with chlorine and other chemicals, resulting in disinfectant by-products. The Reiss report includes information on techniques that cost-effectively filter out the organic material. He concluded that the existing process harms infrastructure and exposes consumers to bacteria and chemicals.

Mr. Corbin asked if any steps have been taken toward the pilot study recommended by the Reiss report. Mr. Castellon replied that the City is considering a full pilot study.

7. Adjournment – Next Regular Meeting TBA

There being no further business to come before the Committee at this time, the meeting was adjourned at 5:05 p.m.

Any written public comments made 48 hours prior to the meeting regarding items discussed during the proceedings have been attached hereto.



Capacity Availability Analysis





Capacity Availability Analysis

- When a potential development goes through the Development Review Committee (DRC) process it must exhibit that it can provide fire protection, potable water, and wastewater service once complete per the City's adequacy requirements outlined in the Unified Land Development Code.
- An analysis is performed by the City to determine if the existing water and wastewater infrastructure can provide these services.





Capacity Availability Analysis – Proposed Demand

- The proposed demand resulting from the development is determined through Equivalent Residential Connection (ERC) calculations using ‘Table A’ from the City’s *Guidelines for the Calculation of Sanitary Sewer Connection Fees*:
 - 1 ERC = 300 **maximum** gallons per day (GPD) of water demand
 - 1 ERC = 175 **average** GPD of sewer demand
 - Credits for existing uses are also calculated resulting in a net demand



Table A

TYPE OF USE	UNIT OF MEASURE	ERC per UNIT	REF. CODE
Equivalent Residential Connection	----	1.000	----
Single Family House, Duplex, Triplex	each	1.000	R01
Condominium, Apartment	each	0.805	R03
Mobile Home	lot	0.559	R04
Vehicular Repair	1000 SF	0.473	C01
Gas Station (fueling only)	fuel pump	0.550	C02
Laundry and/or Dry Cleaning (staff operated machines)	1000 SF	2.773	C03
Laundry (coin operated machines)	1000 SF	8.659	C04
Merchandising	1000 SF	0.550	C05
Warehouse (mixed use)	1000 SF	0.368	C06
Warehouse (homogenous, bulk storage use)	1000 SF	0.177	C07
Self Service Storage	1000 SF	0.068	C08
Restaurant	1000 SF	2.495	C09
Fast Food Service	1000 SF	3.455	C10
Bar, Cocktail Lounge	1000 SF	1.236	C11
Office	1000 SF	0.636	C12
Day Child Care	1000 SF	0.632	C13
Place of Worship	1000 SF	0.523	C14
School	student	0.042	C15
Hotel (with restaurant and/or meeting rooms)	rental room	0.868	C16
Hotel (without restaurant and meeting rooms)	rental room	0.255	C17
Movie Theater	seat	0.009	C18





Capacity Availability Analysis – Water/Sewer

Transmission/distribution networks

- The networks between the connection points at the development to the treatment plants are evaluated to ensure there is enough capacity to handle the proposed and existing demand.
- This includes water mains, gravity sewer mains, wastewater pumping stations, force mains, etc.
- The condition of the pipe at the point of connection is also reviewed.

Treatment Plants

- Proposed demand, previously committed demand, and current demand are reviewed to determine capacity availability at water and wastewater treatment plants.



Capacity Availability Analysis - Recommended Improvements

- If the existing water and wastewater infrastructure is deemed to lack capacity then improvements are recommended.
- Examples include:
 - Upsizing of gravity sewer mains or water mains
 - Rehabilitation or improvement of pump station





Capacity Availability Analysis - Recommended Improvements

Subject: **WATER AND WASTEWATER CAPACITY AVAILABILITY LETTER**
FAT Village East & West – DRC Case Nos. R19059 & R19060
501 NW 1st Avenue, Fort Lauderdale, Florida 33311

Dear Mr. Harrison,

According to the information submitted, the project is a mixed-use development consisting of a total of 437 residential units (312 units for the East and 125 units for the West), restaurants, general retail space, an art studio, office spaces, and a 145-room hotel. There are proposed water and sewer connections to City of Fort Lauderdale (City) utilities along NW 1st Avenue, NW 5th Street, and NW 6th Street as well as a proposed gravity main along North Andrews Avenue. According to the information submitted, this project lies within the City's Pump Station (PS) A-21 basin and will increase water and sewer demand by approximately 0.163 million gallons per day (MGD).

A review of the utility services impacted by the proposed development indicate that the existing sewer infrastructure would not be able to serve the proposed development and improvements would be necessary. A proposed pump station to serve the project and approximately 1,500 linear feet of upstream gravity mains is recommended in order to accommodate the proposed flow.

Once the required improvements are completed, there will be sufficient capacity in the sanitary sewer system to accommodate the proposed development. The capacities shall not be considered available and the Certificate of Occupancy will not be issued until all required improvements are complete and approved by the regulatory agencies that have jurisdiction.

DEPARTMENT OF SUSTAINABLE DEVELOPMENT
700 NW 19 AVENUE, FORT LAUDERDALE 33311
TELEPHONE (954) 828-6520 | WWW.FORTLAUDERDALE.GOV





Capacity Availability Analysis – Recommended Improvements

Evaluation of impact of Permitted Wastewater Plant Capacity: The City of Fort Lauderdale owns and operates the George T. Lohmeyer Regional Wastewater Treatment Plant (GTL), which provides wastewater treatment for the City of Fort Lauderdale. The Broward County’s Environmental Protection and Growth Management Department’s (EPGMD) Environmental Licensing & Building Permitting Division’s licensed capacity for GTL is 48 MGD-AADF (Million Gallons per Day – Annual Average Daily Flow). The annual average daily flow (AADF) to the plant is 35.942 MGD. Combining the committed flows for previously approved projects of 4.593 MGD plus the 0.115 MGD net contribution from the project results in a total projected flow of 40.65 MGD. This is less than the permitted treatment plant capacity of 48 MGD. Therefore, the treatment plant has sufficient capacity to serve this project. See Figure 6 below.

Recommended Wastewater Infrastructure Improvements: Approximately 1,270 linear feet (LF) of 10-inch sewer along NW 7th Terrace needs to be upsized to at least a 12-inch sewer, 440 LF of 12-inch sewer along NW 4th Street needs to be upsized to at least a 14-inch sewer, and 40 LF of 12-inch sewer immediately upstream of PS A-36 needs to be upsized to at least a 16-inch sewer. Additionally, improvements to PS A-36 are needed to prevent excessive runtimes.

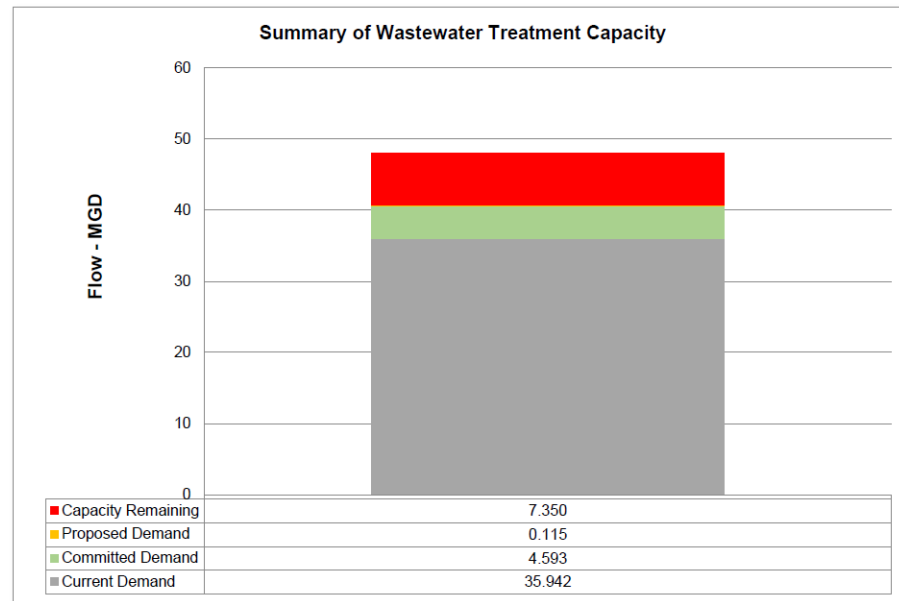


Figure 6

DEPARTMENT OF SUSTAINABLE DEVELOPMENT
700 NW 19 AVENUE, FORT LAUDERDALE 33311
TELEPHONE (954) 828-6520 | WWW.FORTLAUDERDALE.GOV





Capacity Availability Analysis – Recommended Improvements



WATER CAPACITY ANALYSIS

Requested Demand: Based on the applicant's site plan and building use information, the estimated potable water demand will increase approximately 28,442 gallons per day (GPD) which equates to 0.028 million gallons per day (MGD). Water use demands are calculated based on the City's "Guidelines for the Calculations of Sanitary Sewer Connection Fees".

Evaluation of impact on existing distribution pipe (flow & capacity): According to the site plan, the applicant is proposing to utilize the existing water mains and existing service connections along SE 17th Street to the south of the property. The InfoWater hydraulic model was analyzed to determine the impact of this project on the local distribution network and the results showed that the existing network could handle the proposed flow. However, after discussing the development and proposed service connections with City Utilities staff, various improvements to the local distribution network are recommended to accommodate the desired service connections. These improvements would replace aging CIP water mains, improve redundancy of the network, and improve constructability of proposed services (meters, fire service lines, etc.). The specifics of these improvements are described below.

Evaluation of impact of Permitted Water Plant Capacity: The Fiveash and the Peele Dixie Water Treatment Plants are designed to treat 70 MGD and 12 MGD of raw water respectively (82 MGD total). The total permitted Biscayne aquifer water withdrawals for these plants is limited to 52.55 MGD per the South Florida Water Management District (SFWMD) permit number 06-00123-W.

The current twelve-month rolling average production at the two plants is 39.57 MGD. The previously committed demand from the development projects in the permitting or the construction stage is 4.402 MGD. Combining these figures with the demand from the proposed project of 0.028 MGD, the required production would be 44.00 MGD. This is less than the allowable withdrawal limit of 52.55 MGD. Therefore, the water plants have sufficient capacity to serve this project. See Figure 5 on the next page.

Recommended Water Infrastructure Improvements: The 16-inch CIP water main on the south side of SE 17th Street should be replaced with DIP from the connection with the 24-inch main and should be extended to connect to the 12-inch CIP main to the east replacing roughly 620 LF of aging CIP and installing a total of 1200 LF of DIP. Additionally, the 180 LF 8-inch service main on the west side of the site should be upsized to a 16-inch main and the 10-inch service main on the east side of the site should be disconnected from the 12-inch CIP main and reconnected to the proposed 16-inch DIP main.

DEPARTMENT OF SUSTAINABLE DEVELOPMENT
700 NW 19 AVENUE, FORT LAUDERDALE 33311
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CONSENT ORDER UPDATE

to City of Fort Lauderdale Infrastructure Task Force

January 7, 2020 - 2 pm



CITY OF FORT LAUDERDALE

Presented by: **Omar Castellon, PE, PMP**
City of Fort Lauderdale
Chief Engineer

Patricia Carney PE, BCEE, DBIA
Hazen and Sawyer
Program Manager

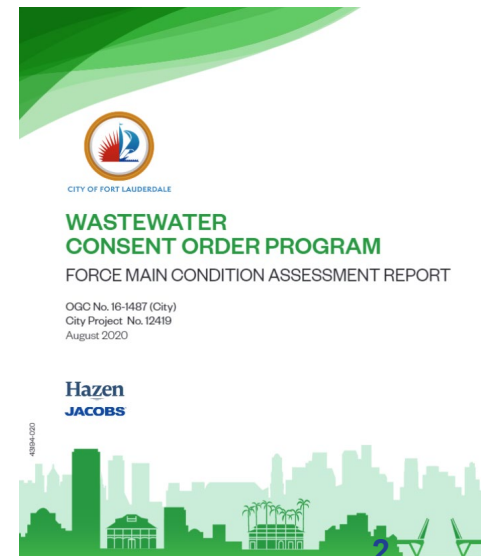
Force Main Condition Assessment



CITY OF FORT LAUDERDALE

In their October 19, 2020 meeting, the Infrastructure Task Force requested a presentation of:

- the Reiss report high-risk force mains and,
- the risk scores for force mains presented to the FDEP in fulfillment of the Consent Order.



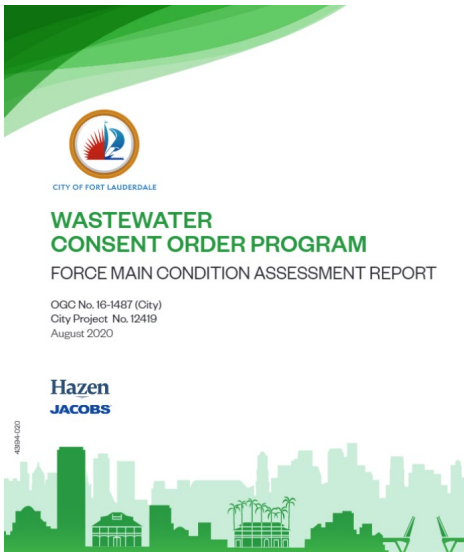
Force Main Condition Assessment and Repair /Replacement Recommendations



CITY OF FORT LAUDERDALE



**Comprehensive Utilities Strategic Master Plan (CUSMP), 2017
AKA – the Reiss Report**

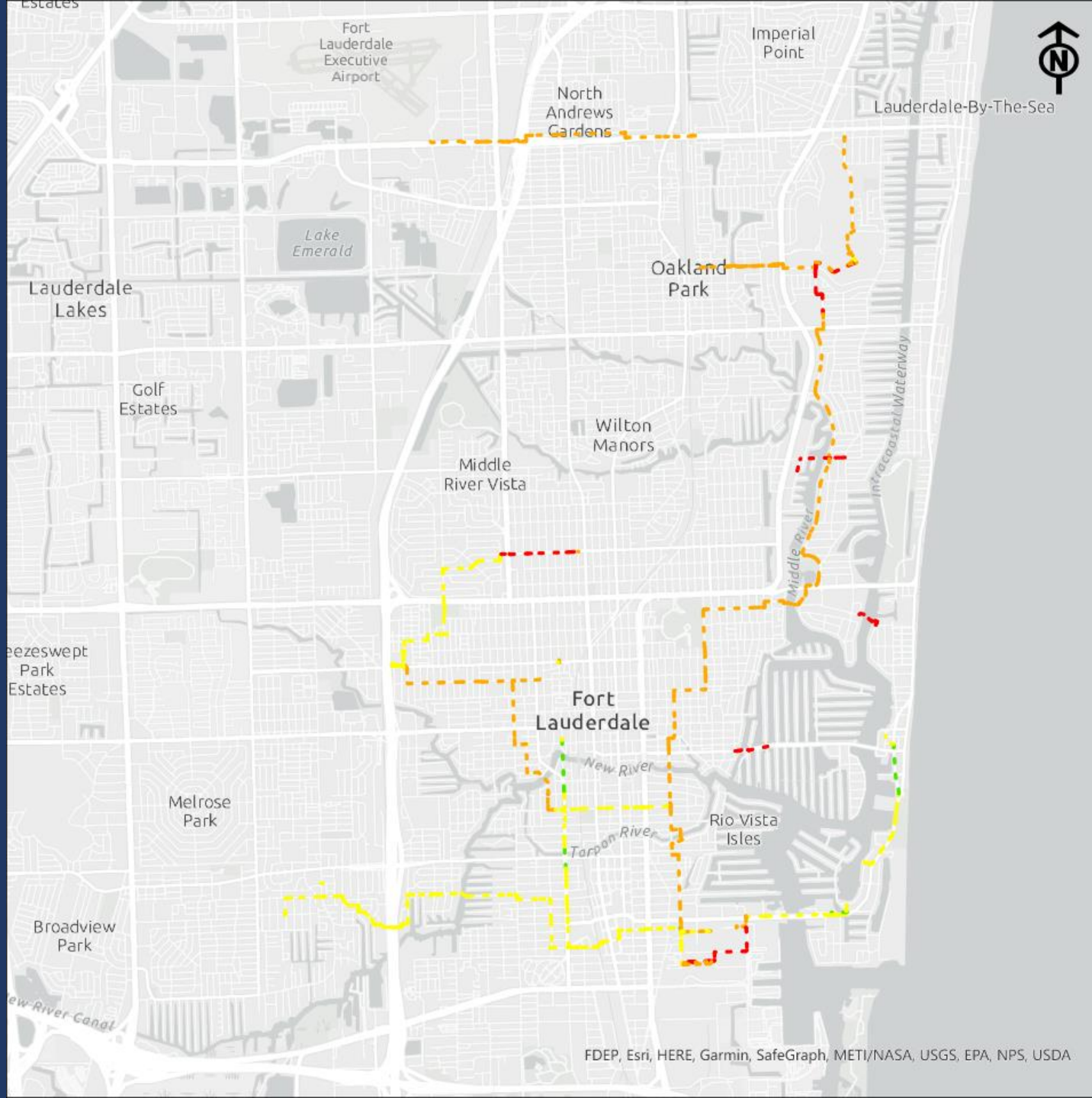


Force Main Condition Assessment Report (FMCA), 2020*

***** *required as part of the consent order*

Results Summary

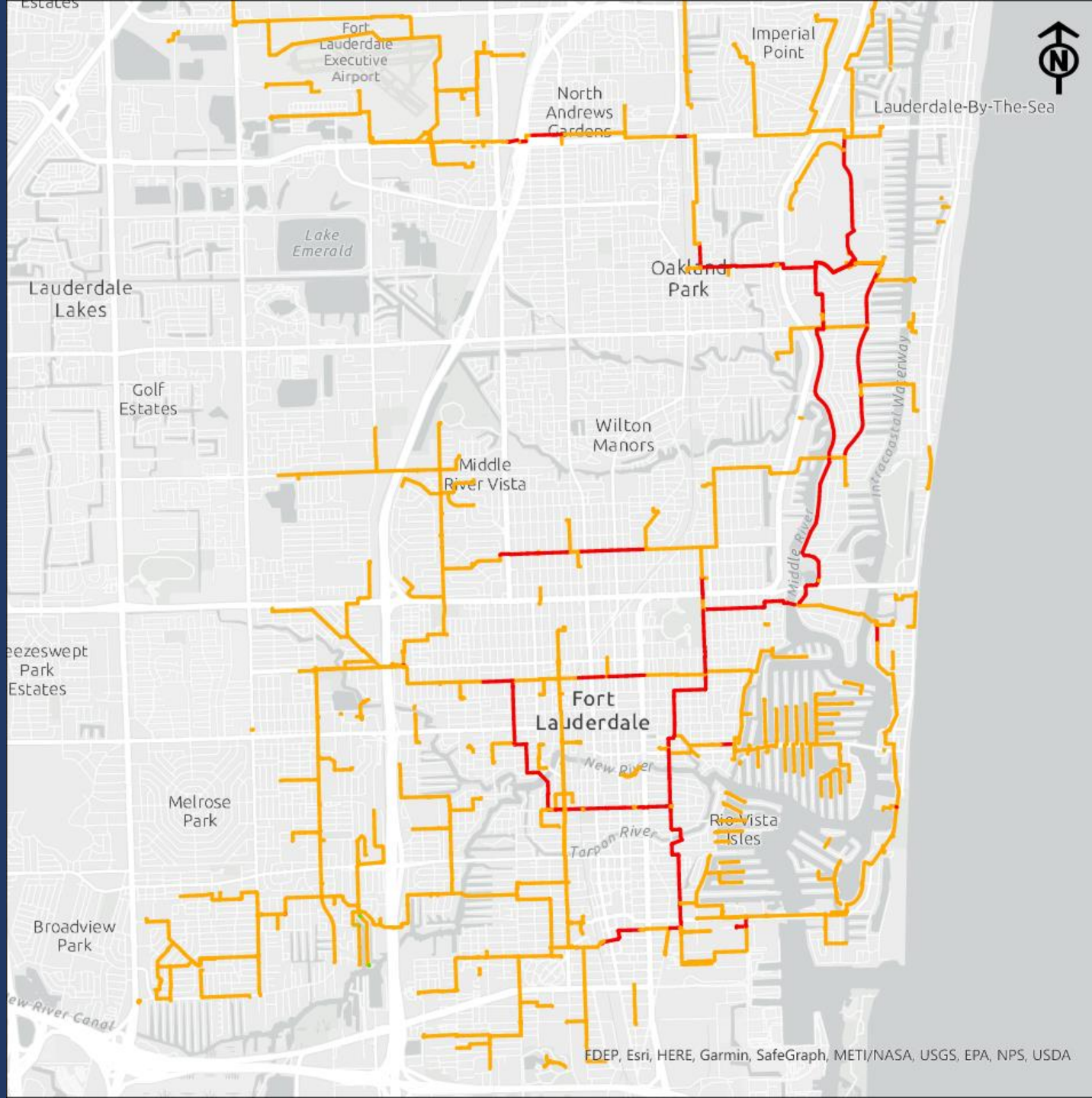
CUSMP Risk Scores



CITY OF FORT LAUDERDALE

Results Summary

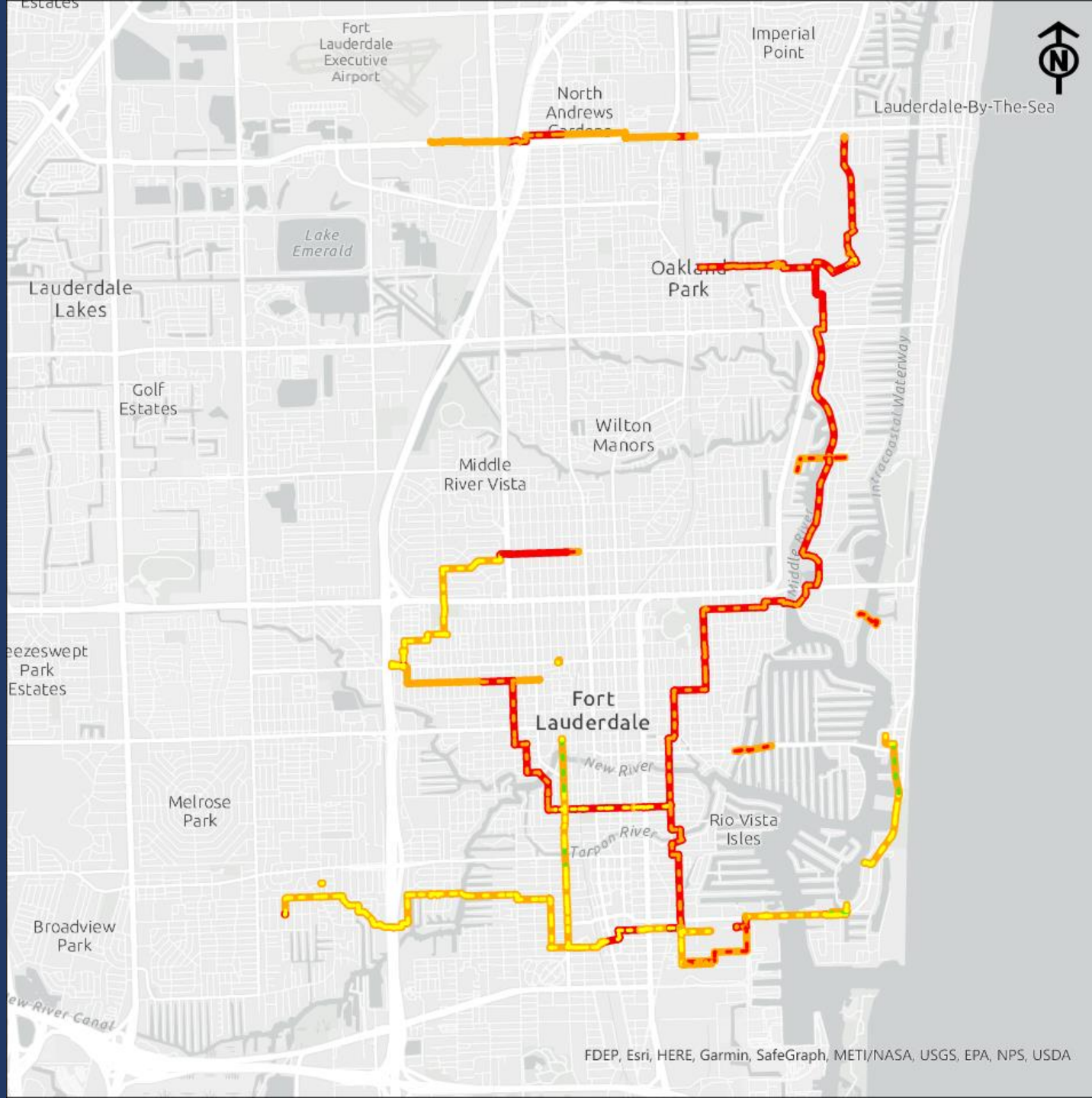
FMCA Scores



CITY OF FORT LAUDERDALE

Results Summary

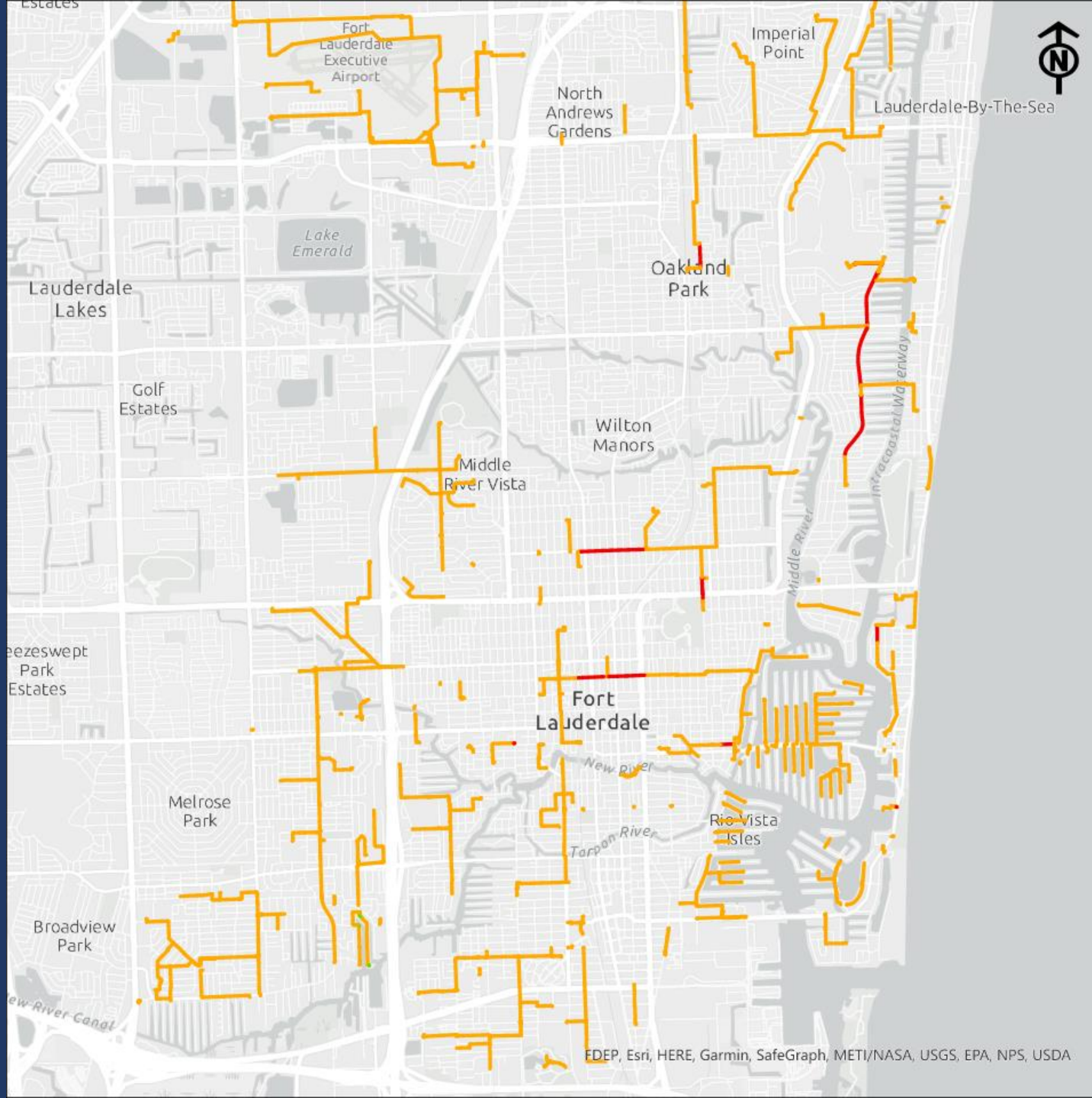
CUSMP vs FMCA Scores



CITY OF FORT LAUDERDALE

Results Summary

FMCA Scores for Force Mains not Evaluated by CUSMP



CITY OF FORT LAUDERDALE

Summary of Miles of Force Main in Various Risk Categories in CUSMP and FMCA



CITY OF FORT LAUDERDALE

CUSMP Risk Category	Miles of Force Main		FMCA Risk Category	Miles of Force Main
Low	1.14		Low	0.04
Low-Medium	10.59	25.19	Medium	91.87
Medium-High	14.61			
High	3.12		High	16.85
Total Analyzed	29.45		Total Analyzed	108.76
Not Analyzed	79.31		Not Analyzed	0.00
Total	108.76		Total	108.76



Comparison of Scope of Assessment



CITY OF FORT LAUDERDALE

System Components Analyzed and Data Sources



CITY OF FORT LAUDERDALE

Reiss Report (CUSMP)

- 24" and greater diameter pipe and pipe within 1 mile of WWTP
- 30 of 109 miles assessed
- City GIS, staff interviews, limited site visits, uncalibrated hydraulic model

Force Main Condition Assessment (FMCA)

- All active City-owned force mains
- 109 miles assessed
- City GIS, staff interviews, limited site visits, calibrated hydraulic model, field soil resistivity and pipe to soil potential measurements

Analysis (Likelihood and Consequence of Failure)



CITY OF FORT LAUDERDALE

Reiss Report (CUSMP)

- LoF score 1 to 5
 - material, age, 2035 max hr flow
- CoF score 1 to 5
 - Diameter and redundancy

Force Main Condition Assessment (FMCA)

- LoF score 1 to 10
 - material, age, operating pressure, break history, pipe profile, corrosion potential, maintenance
- CoF score 1 to 10
 - Diameter and reliability
 - Proximity to Potable Well Field
 - Environmental Compliance
 - Residential / Essential Services Impact
 - Financial and Community Impact



CITY OF FORT LAUDERDALE



Backup Slides



CITY OF FORT LAUDERDALE

Reiss Risk Criteria



Table WW6-1. Risk Prioritization Criteria – Large-Diameter Pipes

Category	Basis	Weighting	Low Probability				High Probability
			1	2	3	4	5
Likelihood of Failure	Pipe Material ¹	33.3%	PVC or HDPE	--	Unknown or DIP	RCP	PCCP, VCP, CIP
	Installation Date	33.3%	2000 or later	1990 - 2000	1980-1990, Unknown	1970 - 1980	Earlier than 1970
	LOS Requirements ^{2,3}	33.3%	Velocity < 5 fps (Meets LOS requirements)	--	Velocity 5-6 fps (Almost meets LOS requirements)	--	Velocity > 6 fps (Fails LOS requirements)
Consequence of Failure	Pipe Diameter	50%	<24"	--	24" – 36"	--	>36"
	Redundancy	50%	Full Redundancy	--	Partial Redundancy	--	No backup/redundancy

¹PVC=PolyVinyl Chloride pipe, HDPE=High Density PolyEthylene pipe, DIP=Ductile Iron Pipe, RCP=Reinforced Concrete Pipe, PCCP=Pre-stressed Concrete Cylinder Pipe, VCP=Vitrified Clay Pipe, CIP= Cast Iron Pipe.

²Level of service assessed from the 2035 Max Hour forced flow output.

³Gravity pipelines assessment does not include velocity.

FMCA LoF Criteria

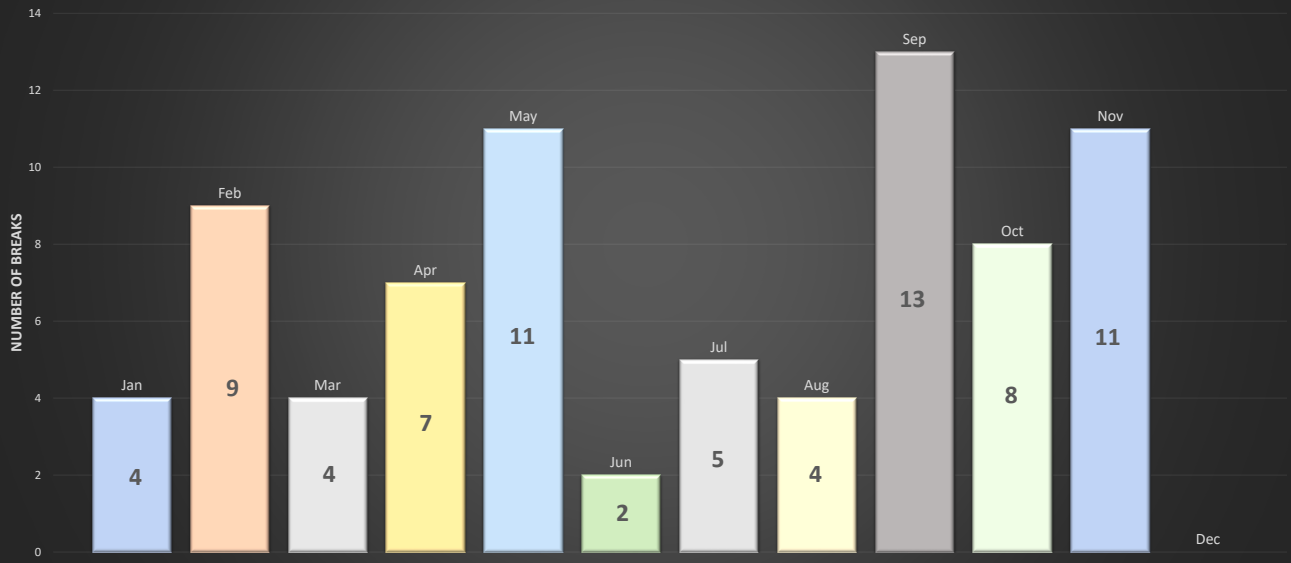


CITY OF FORT LAUDERDALE

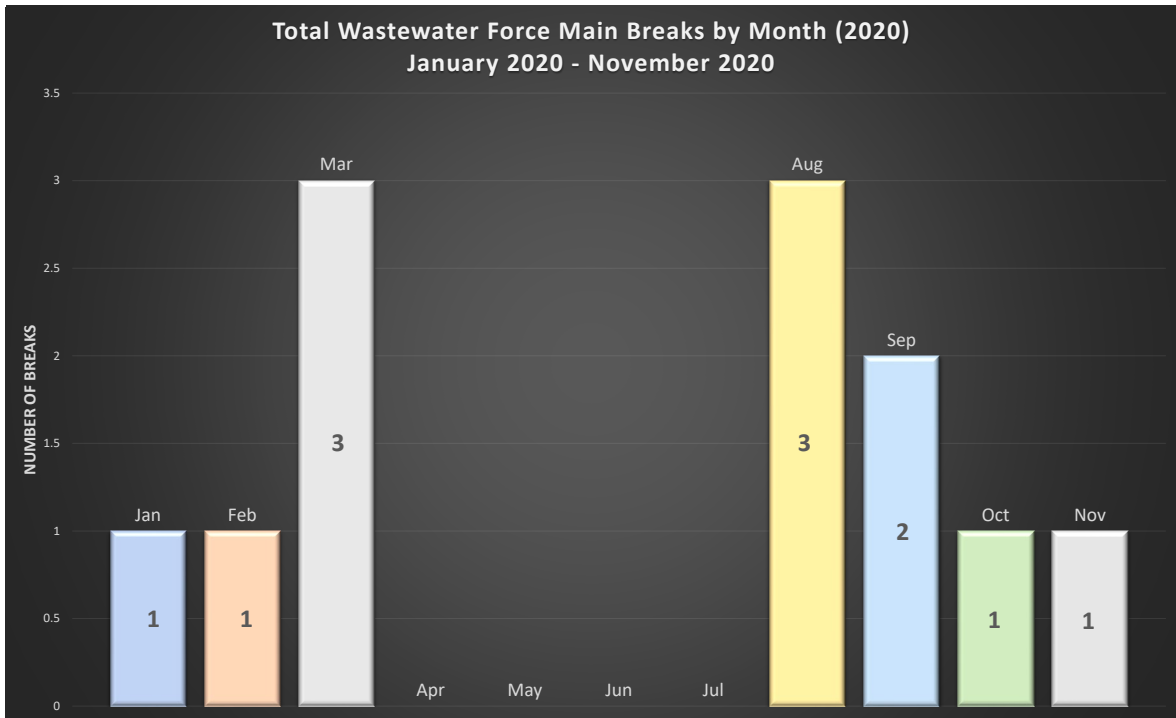
Table 1 - LOF Scoring Criteria

Likelihood Category	Negligible = 1	Unlikely = 2	Possible = 4	Likely = 7	Very Likely = 10
Years since pipe installation	< 20 years	≥ 20 years to < 30 years	≥ 30 years to < 40 years	≥ 40 years to < 50 years	≥ 50 years or unknown
Pipe material	HDPE, PVC, or PE	DIP ≤ 30 years old	Cast-iron pipe	<ul style="list-style-type: none"> DIP ≥ 30 years old/DIP without date of installation AC pipe Prestressed concrete cylinder pipe installed in the 1970s 	Unknown
Pipe break information (from 2014 through 2018)	0 breaks	Not used	No historical pipe break information available/provided from 2014 through 2018	At least one break in pipe segment	Two or more breaks in pipe segment
FM peak operating pressures	Modeled FM peak operating pressure < 60 psi	Not used	Modeled FM peak operating pressure between 60 and 100 psi	Not used	Modeled FM peak operating pressure > 100 psi
Pipe layout profile	No ARV/high point on segment	Not used	One ARV/high point on segment	Not used	Not used
Pipe maintenance	Not used	Not used	Pipe maintenance records are not available	Not used	Not used
External and internal physical factors affecting the asset/proximity to salt water intrusion	<ul style="list-style-type: none"> Pipe is above water table and outside the salt water intrusion line. PVC, HDPE, and PE are the pipe materials. 	Pipe is below the water table and outside of the salt water intrusion line.	Pipe is above water table and in salt water intrusion line.	Pipe is within groundwater and inside the salt water intrusion line or brackish.	Pipe is within groundwater and inside the salt water intrusion line.

Total Water Main Breaks by Month (2020) January 2020 - November 2020



Water Mains 4 inch to 60 inch



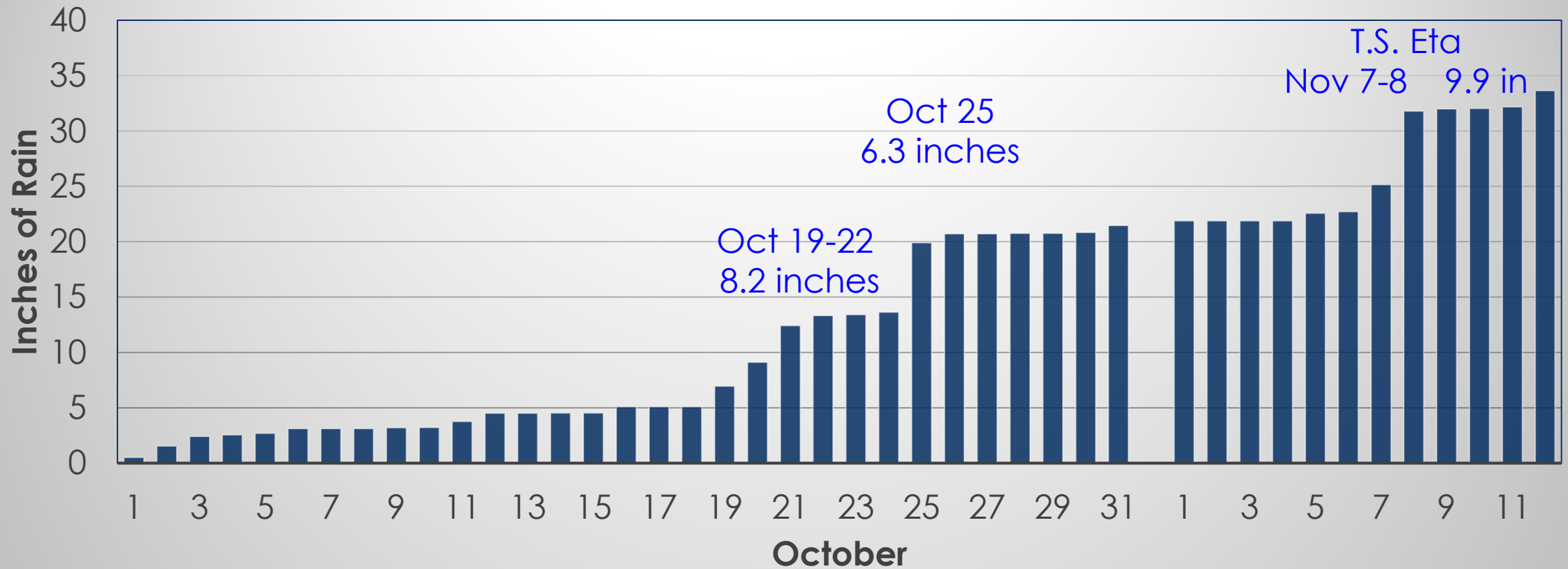
Wastewater Mains	6 inch to 60 inch
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BRIEF OVERVIEW OF RECENT RAIN EVENTS AND IMPACTS TO THE WASTEWATER TREATMENT SYSTEM



RAINFALL OCT 1 – NOV 12, 2020

Cumulative Rain - GTL Oct 1-Nov 12

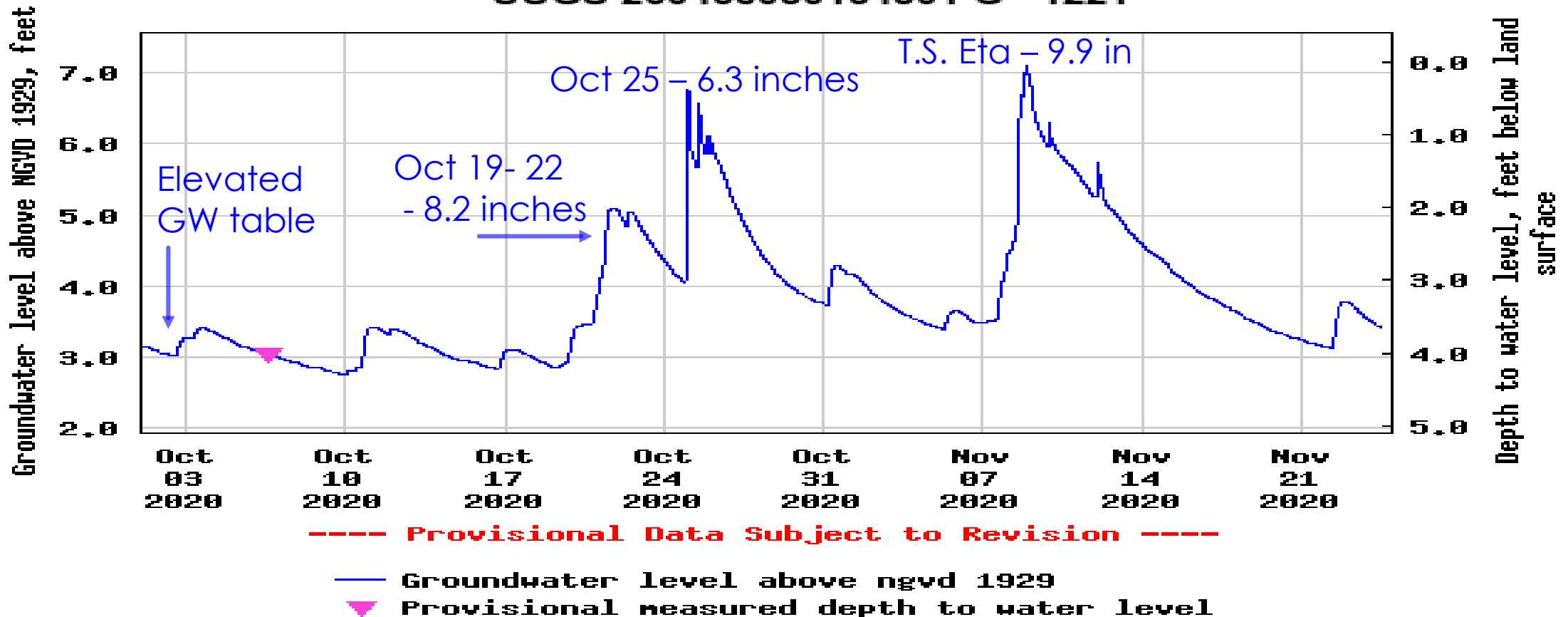


From Oct 1 – Nov 10, GTL recorded 32 inches of rainfall, nearly 60% of the annual rainfall total in 40 days. Rainfall amounts were higher in other areas of the City.

GROUNDWATER IN OCT-NOV 2020

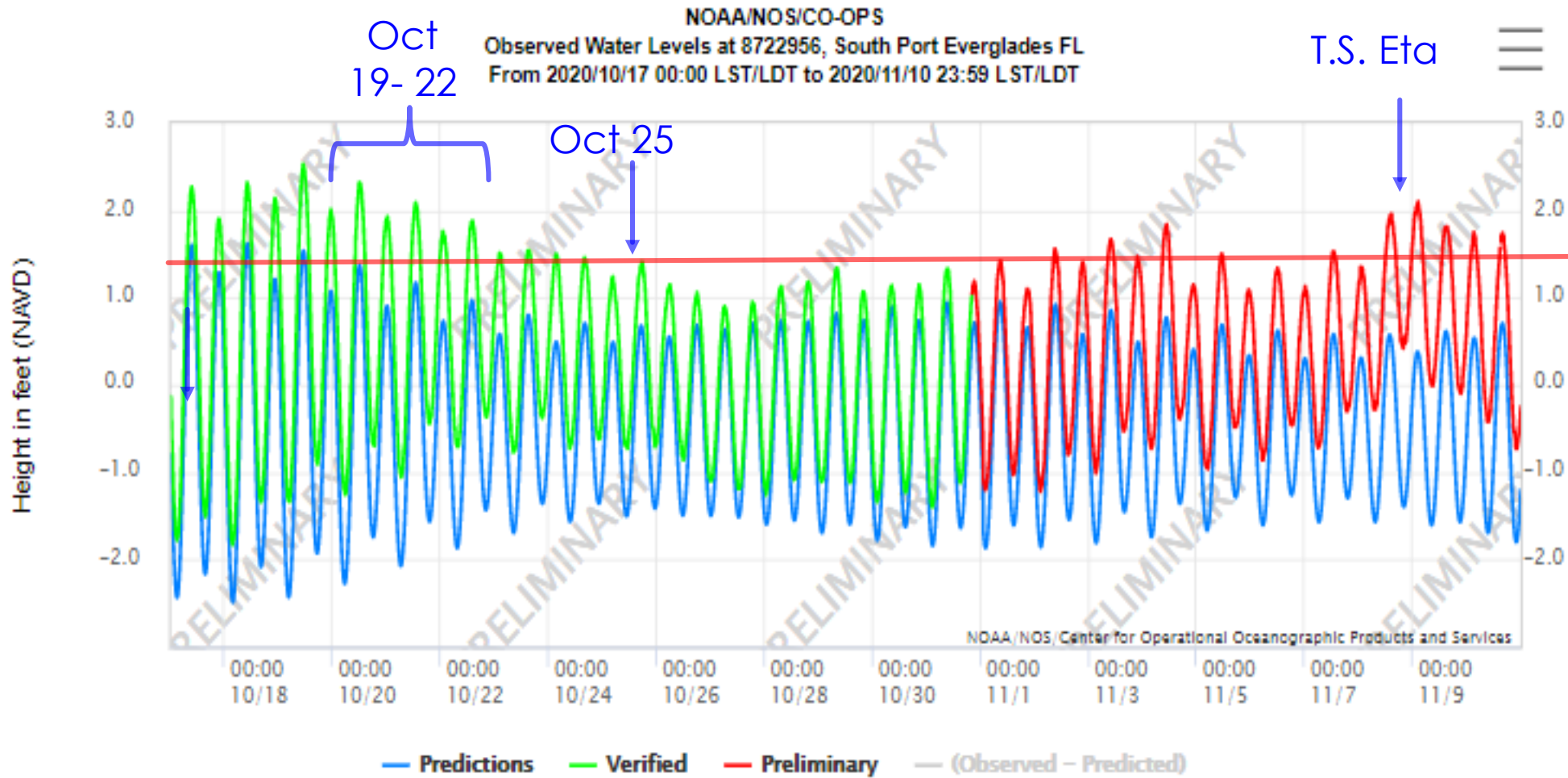


USGS 260458080134801 G -1221



We entered into October with an elevated GW table which was already contributing to Inflow and Infiltration (I & I). The rains in mid October exacerbated the impact prior to the fully saturated conditions achieved during T.S. Eta. The GW table is still high on Nov 24.

HIGH TIDE IN OCT 17-NOV 10 2020



**Threshold for
low lying
streets to
flood**

King tides contributed to the elevated groundwater table and localized street flooding. T.S. Eta created a mild storm surge.

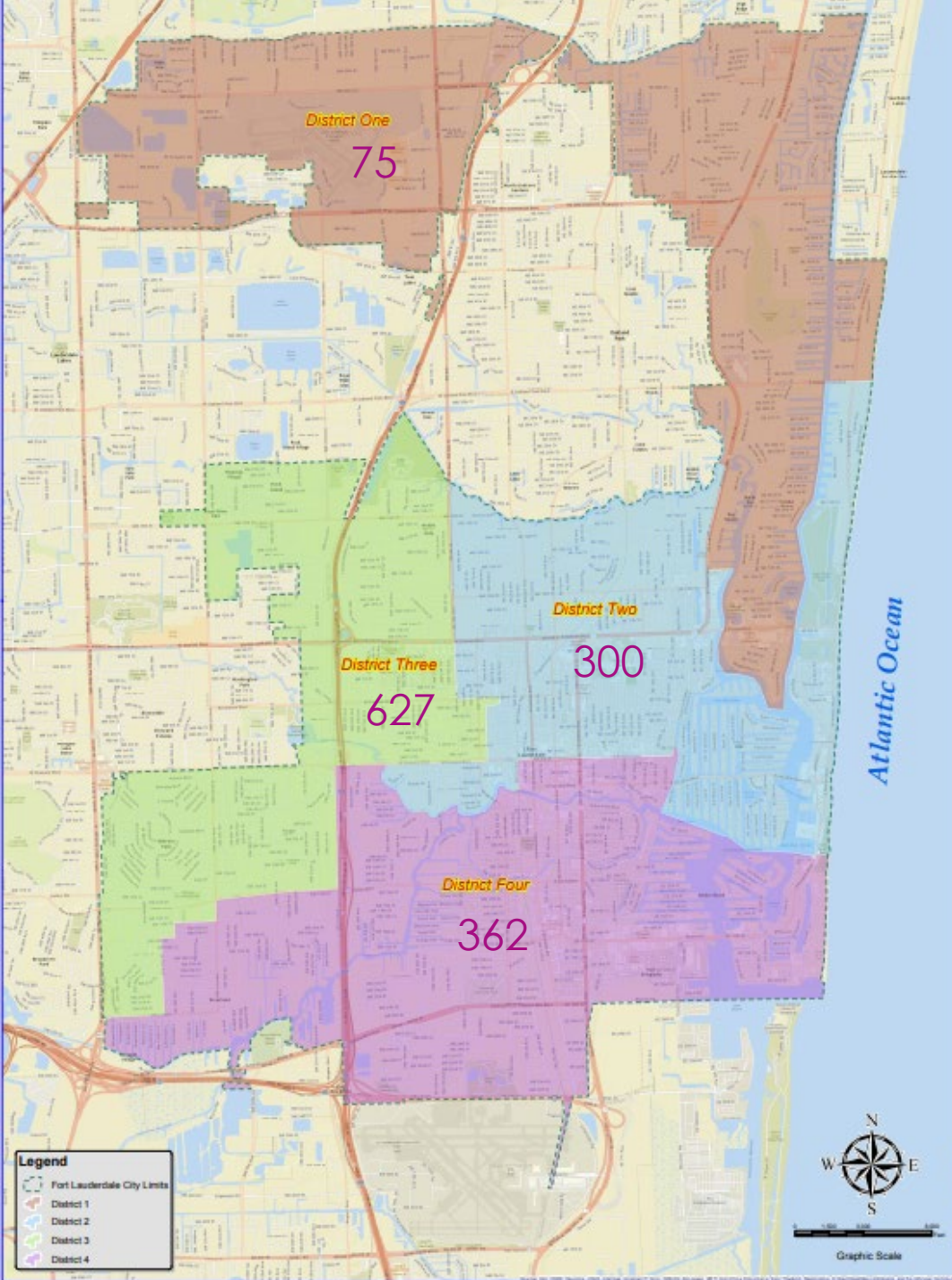
SYSTEM CAPACITY, FLOODING CRITERIA AND NEIGHBOR EXPECTATIONS

Stormwater System Capacity - Generally speaking, roadways remain clear and passable following three (3) inches of rain in a 24 hour period. 30+ inches in 40 days and >9 inches in 24 hours during T.S. ETA exceeded the capacity of the system.

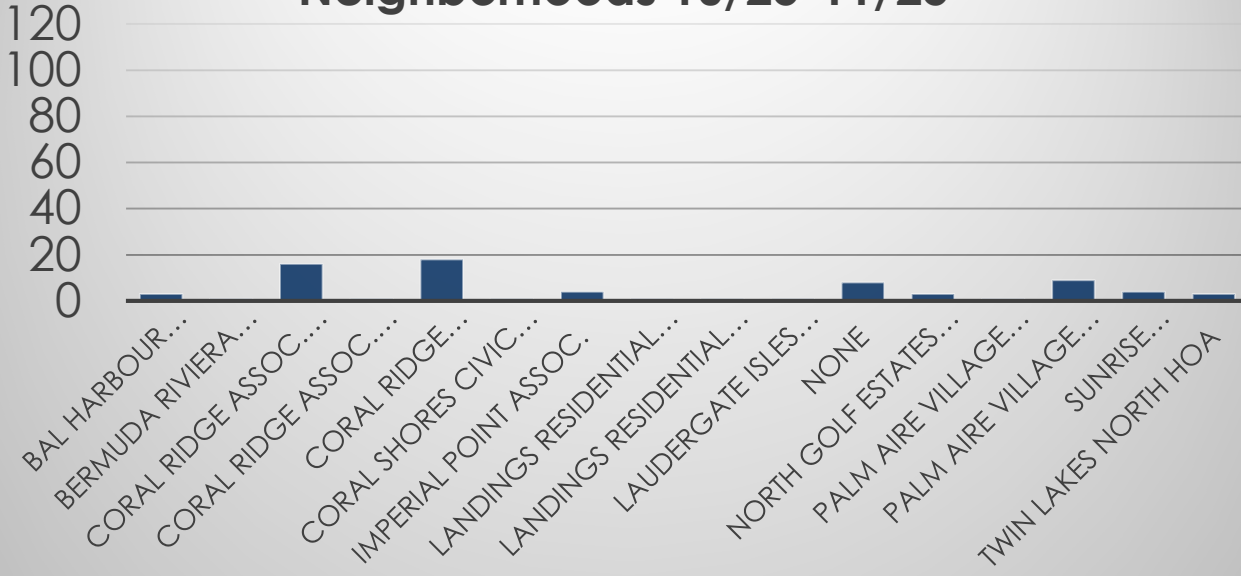
Flooding Criteria – Ponding on roadways clears within a 72-hour period. Most neighborhoods met this criteria after the Oct 25 and the Nov 7-8 rainfall events.

Neighbor Expectations – Generally expect limited ponding that lasts <24 hours regardless of the amount of rainfall.

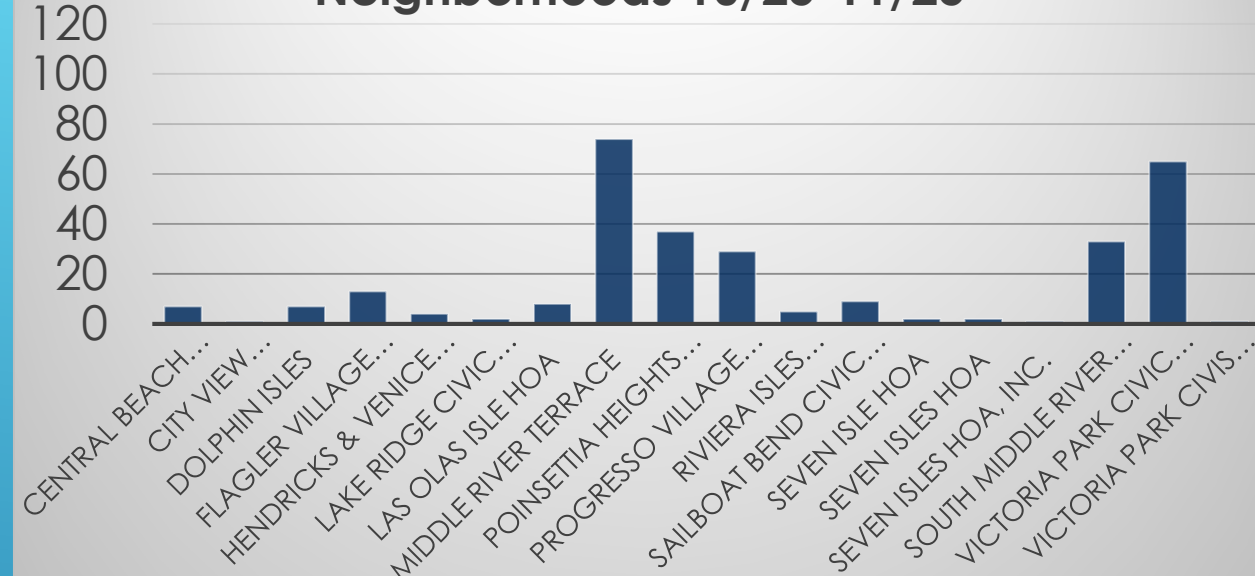
FLOODING COMPLAINTS RELATED TO OCT 25 AND T.S. ETA THROUGH NOV 25



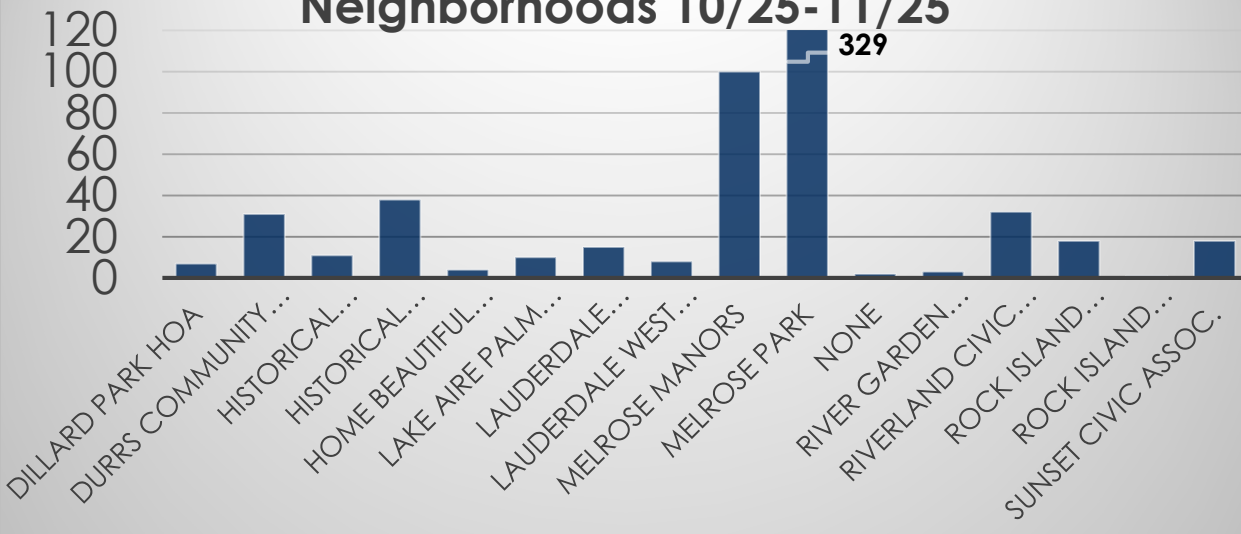
District 1 Flooding Complaints by Neighborhoods 10/25-11/25



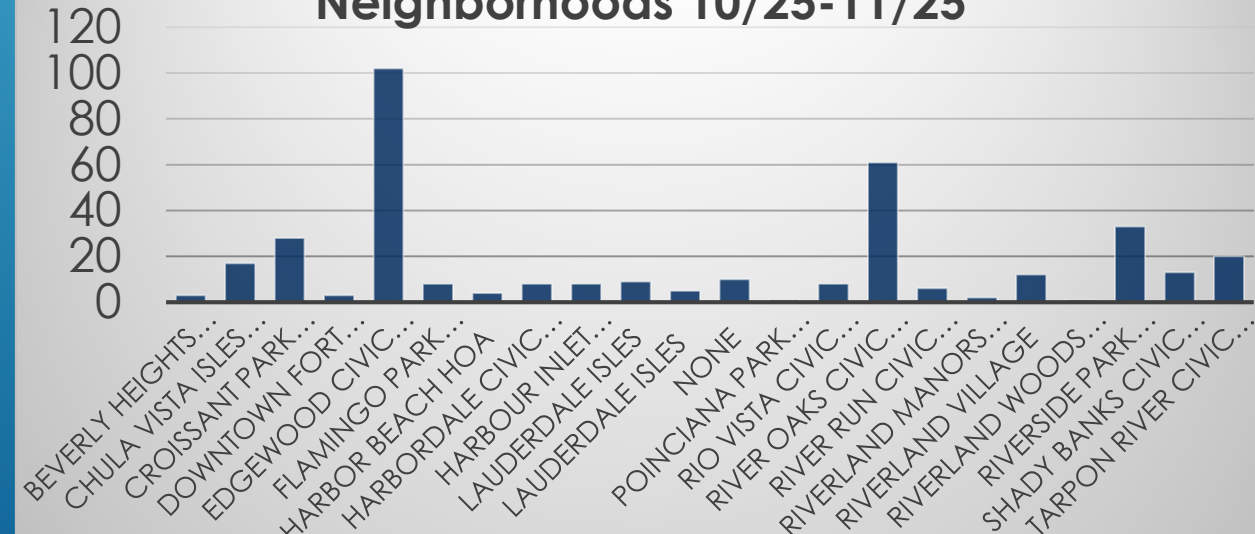
District 2 Flooding Complaints by Neighborhoods 10/25-11/25



District 3 Flooding Complaints by Neighborhoods 10/25-11/25



District 4 Flooding Complaints by Neighborhoods 10/25-11/25



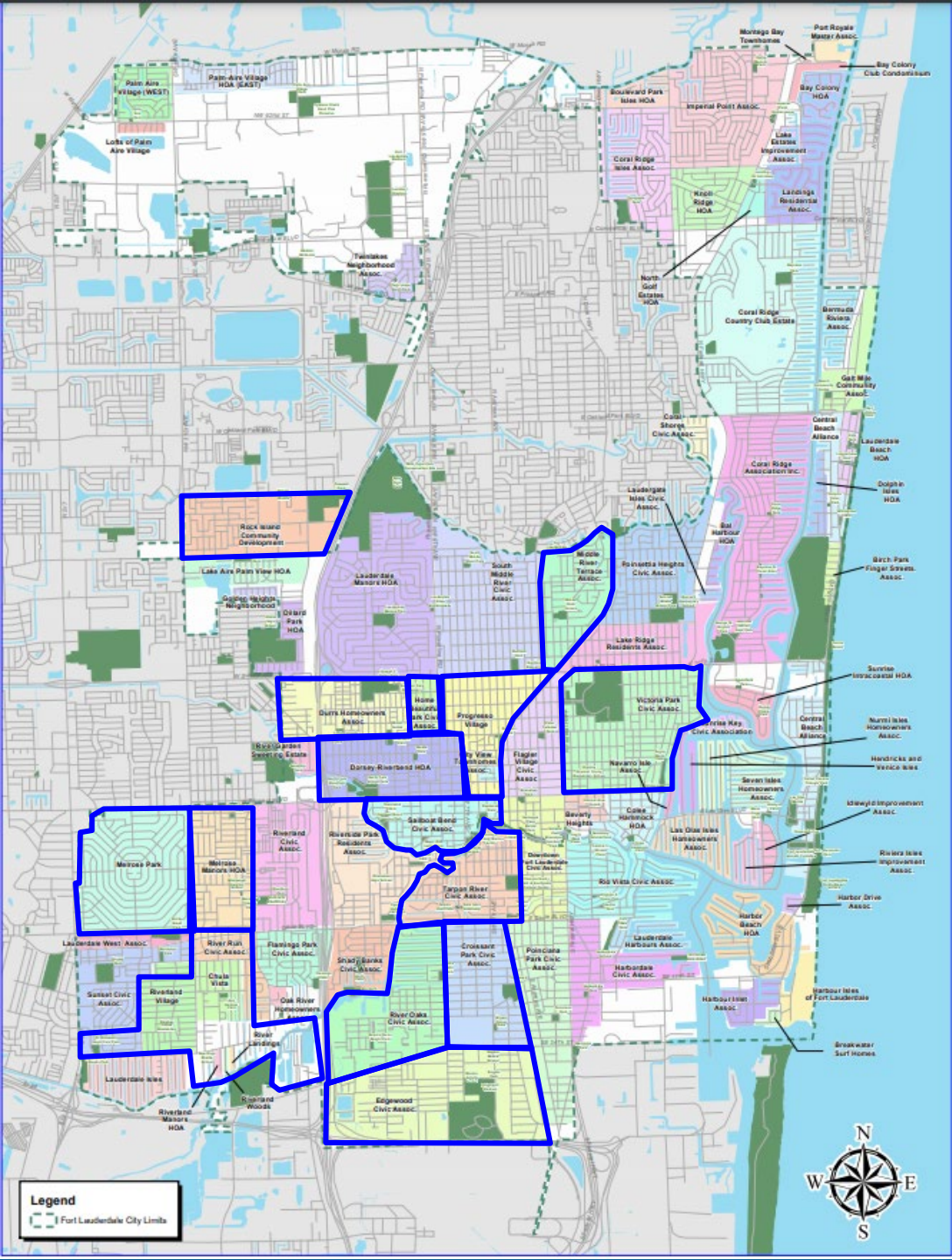
FLOODED NEIGHBORHOODS

Rock Island
Middle River Terrace
Durrs
Home Beautiful
Progresso Village
Victoria Park
Dorsey Riverbend

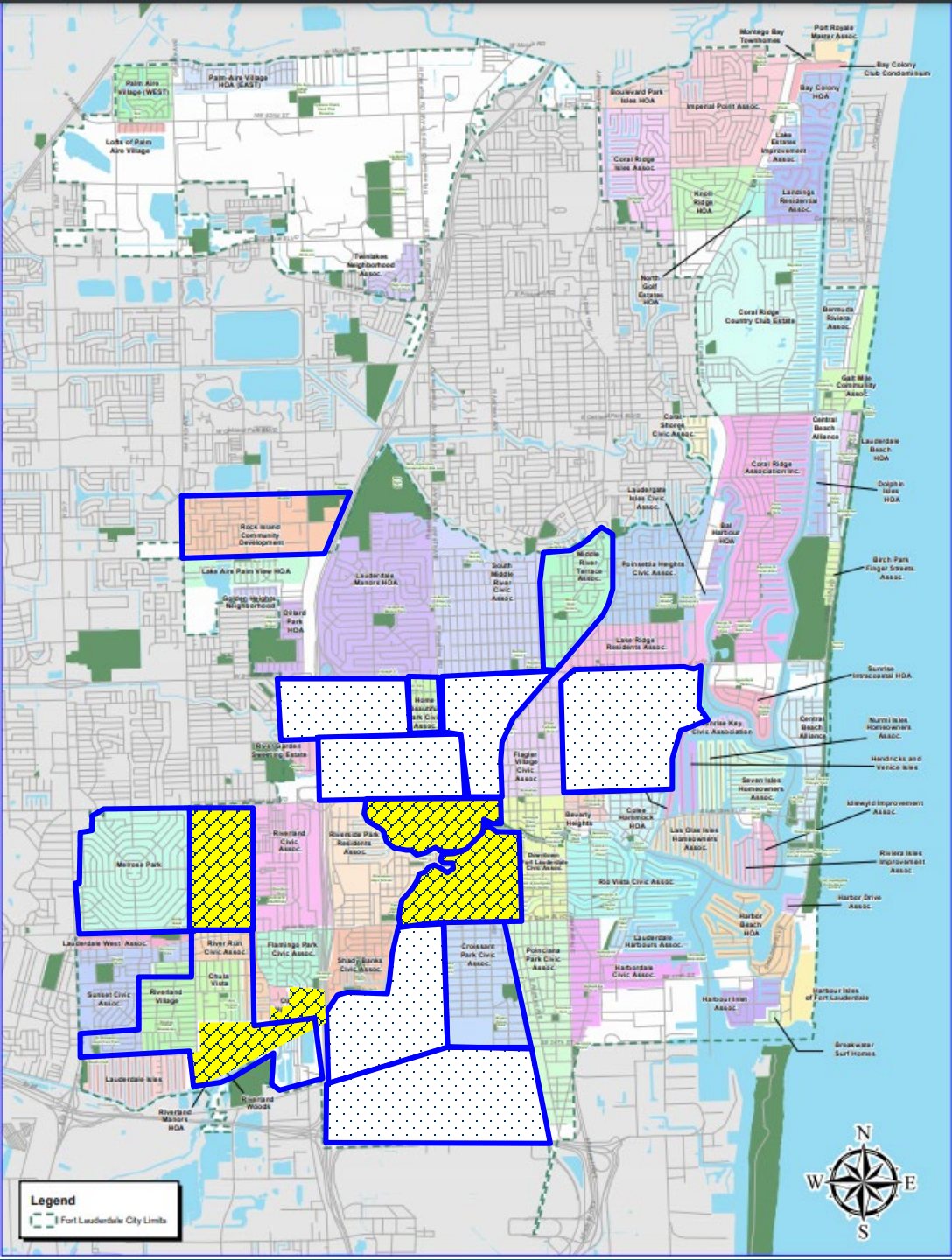
Some neighborhoods had homes that flooded but did not meet the flooding criteria (Shady Banks).

Melrose Park
Melrose Manor
Sailboat Bend
Tarpon River

Riverland Area
River Oaks
Croissant Park
Edgewood

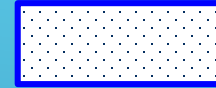


STORMWATER MASTER PLAN NEIGHBORHOODS



Pending Construction

Durrs



Dorsey Riverbend

Victoria Park

Southeast Isles (not shown)

Progresso Village

River Oaks

Edgewood

Prioritized for Planning/Design

Melrose Manor



Riverland Area

Sailboat Bend

Tarpon River

Flagler Village (not shown)

Harbour Inlet (not shown)

Harbour Isles (not shown)

Most impacted neighborhoods have been prioritized for stormwater improvements through the master planning process.

Other neighborhoods outside of the master plan neighborhoods could be address through future capital improvements or operational level projects.

Water & Sewer Master Plan 2017

Revenues Appropriated by City Commission
on 4.3.2018 (CAM #18-0336)

\$ 200,000,000.00
\$ 4,547,778.64

Total Appropriated Amount \$ 204,547,778.64

Bond Funded Projects by Category	Total Budget Amount	Actuals spent to Date as of November 23, 2020	% Spent to Date as of November 23, 2020	Encumbrances as of November 23, 2020	Balance as of November 23, 2020
Finance	30,828,221.00	16,745,836.00	54%	1,428,185.31	12,654,199.69
Fiveash Upgrades	25,928,046.00	5,117,769.08	20%	204,371.38	20,605,905.54
I&I	14,800,046.00	11,449,161.40	77%	2,619,888.14	730,996.46
Master Plan/Report	1,202,000.00	689,542.68	57%	175,913.99	336,543.33
Peele Dixie Upgrades	310,000.00	25,868.00	8%	71,505.00	212,627.00
Sewer Basin	3,933,133.00	1,948,879.43	50%	1,840,698.34	143,555.23
Sewer Force main	104,539,457.64	39,727,685.46	38%	31,606,586.32	33,205,185.86
Watermain	23,006,875.00	17,040,966.53	74%	1,533,241.68	4,432,666.79
Grand Total	204,547,778.64	92,745,708.58	45.34%	39,480,390.16	72,321,679.90