- Small Footprint Structures – Structures under 500 square feet were not considered in the building inundation analysis; this includes park sheds, boat houses, pool houses, parking lot booths, security guard huts, etc.

- Private Developments – Flooding problems on private roadways and within private communities are the responsibility of the developer or homeowners' association to correct based on the terms of their individual construction/development permits.

4.2 Challenges and Constraints for CIP Implementation

Inherent challenges and constraints, many unique to the Hollywood area, which add complexity and greatly increase the cost of implementing and permitting effective stormwater management systems within the City's service area include the factors discussed below:

Low-Lying, Relatively Flat, Undulating Topography

Many areas of the City are at an elevation too low to allow effective exfiltration or positive gravity systems to function properly. These areas are typically surrounded by small ridges that capture the runoff, and many of the existing buildings' finished-floor elevations in these areas are below the FEMA floodplain elevation. These areas, which can be envisioned as "bottoms of the bowls" will require local gravity collection systems to collect stormwater to centrally located pump stations to provide the energy to move the stormwater out of the confined areas and "uphill" to outfalls or into other systems in dedicated pressure pipes (force mains). Pump stations are more costly to operate and maintain and require dedicated land, easements, proper power supply in the area, standby power generation systems and fuel storage for when power goes out during a storm, pollution control systems, landscape for aesthetics, and large force mains for the station discharge. Installation of pump stations may still not fully resolve flooding issues for areas where structures or roads were built at too low an elevation to effectively lower stages further or where off-site flow into the City from other areas consumes a portion of the station's capacity.

High Groundwater Table Elevation

One of the most cost-effective stormwater management components for South Florida area systems is exfiltration systems and stormwater wells due to their comparatively quick and simple design, permitting, and construction, and their capacity for disposal of stormwater runoff with critical treatment credits. These systems rely on the hydraulic grade of the water collected at the land surface to infiltrate stormwater into the porous, surficial aquifer below the City providing both disposal and treatment. Because of the naturally high groundwater table elevation in the City, just below the ground surface in many of the lower-lying areas, these systems will not work everywhere as there is not sufficient hydraulic grade to effectively overcome the driving head required to flow into the aquifer below, and thus other, more expensive system are required in those areas. Broward County EPD has issued a "future groundwater elevation prediction map" that must be used on all stormwater projects to be permittable, and the future GWEL data are thus used in this analysis.

Salinity Front and Aquifer Classification Constraints for Underground Disposal

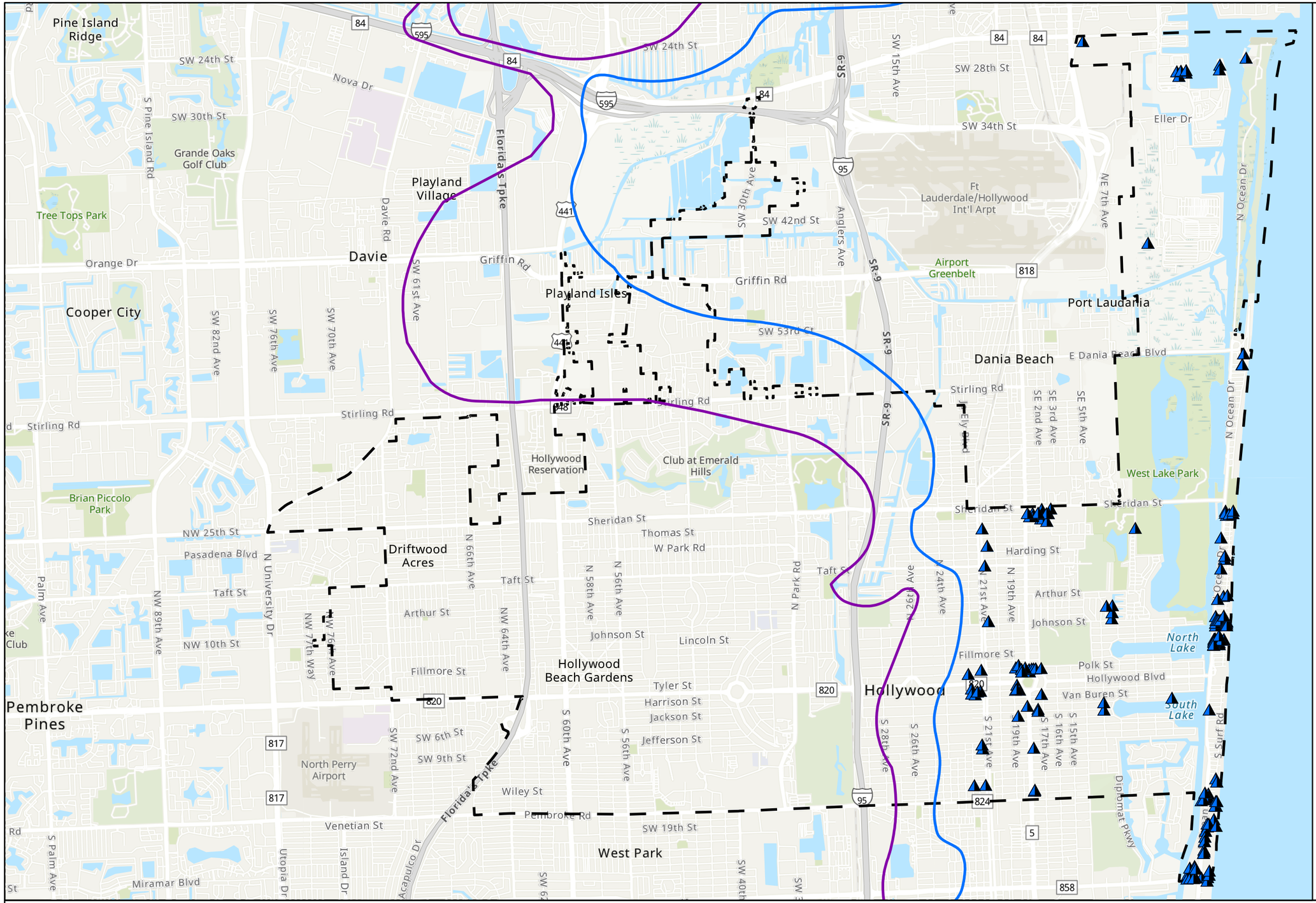
Restrictions on allowable locations where stormwater wells to recharge the aquifer and treat stormwater runoff can be installed in the City is another constraint on City CIP projects. Three applicable FDEP/BC EPD regulatory rules govern where these systems can be installed:

1. A saltwater/freshwater interface exists beneath the City where the ocean meets the inland freshwater aquifer (a situation commonly referred to as saltwater intrusion as it detrimentally affects the area's potable water supply), the exact location of which inland varies from North to South with seasonal rainfall, tides, canal operations, potable water well pumping, rainfall, and sea-level rise. The saltier layer where stormwater is permitted to be injected into the ground is defined as groundwater with a TDS (total dissolved solids) concentration of 10,000 PPM (parts per million or mg/L) or greater. This area is generally the eastern portions of the City from just east of I-95 to the ocean. Several government agencies publish salinity front data that are updated from time to time. These data were analyzed along with subsurface hydrogeology to determine the approximate front for the SWMP analysis.

2. The use of the Biscayne Aquifer for recharge wells is permittable in areas as long as injection of runoff is also restricted to zones where there are no impacts to Class G-II potable water supply aquifers, (i.e., water treatment plant wellfield water supply sources). These areas will normally coincide with the zones where chloride concentrations exceed the saltwater intrusion front rule from restriction 1 above. Well field zones of influence are also published for public recorded in the individual well field permits and were used in this analysis.

3. Areas of known groundwater contamination based on identification and coverages from Broward County/FDEP which may potentially be moved within the aquifer by creating a gradient have an exclusion zone of no injection.

A hydrologic analysis was performed to determine the approximate location of the 10,000 TDS line so that the CIP elements can be proposed. Using historical data from existing wells in Broward County and the 250 mg/L salinity line data, a surface front was estimated as shown in **Figure 4-3**. Stormwater wells will need to be east of this line on to be permittable in Broward County by FDEP for stormwater use. **Figure 4-4** shows a hydrologic cross section of the subsurface geology of the type of rock and approximate depths required for the wells to be viable. Designers will need to demonstrate the actual TDS and optimal hydraulic depth for permitting in individual final designs. Areas of known contamination were also identified and excluded from stormwater recharge.



Legend

- Existing Non-ASR Wells
- 250 mg/L Saltwater Intrusion Line
- Estimated 10,000 TDS Line
- Hollywood City Limits

Estimated 10,000 TDS Line in Broward County

0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan
Figure 4-3
10/10/2022

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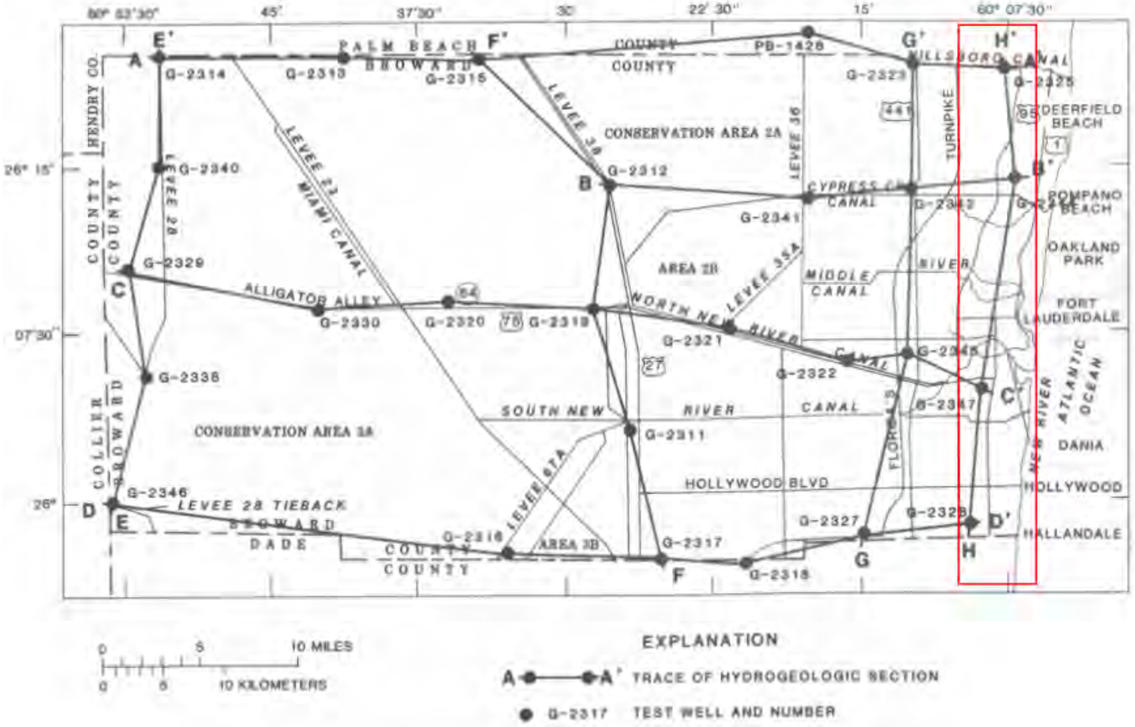


Figure 3. Location of test drilling sites and hydrogeologic sections (from Causaras, 1985). Well numbers and site names are listed in table 1

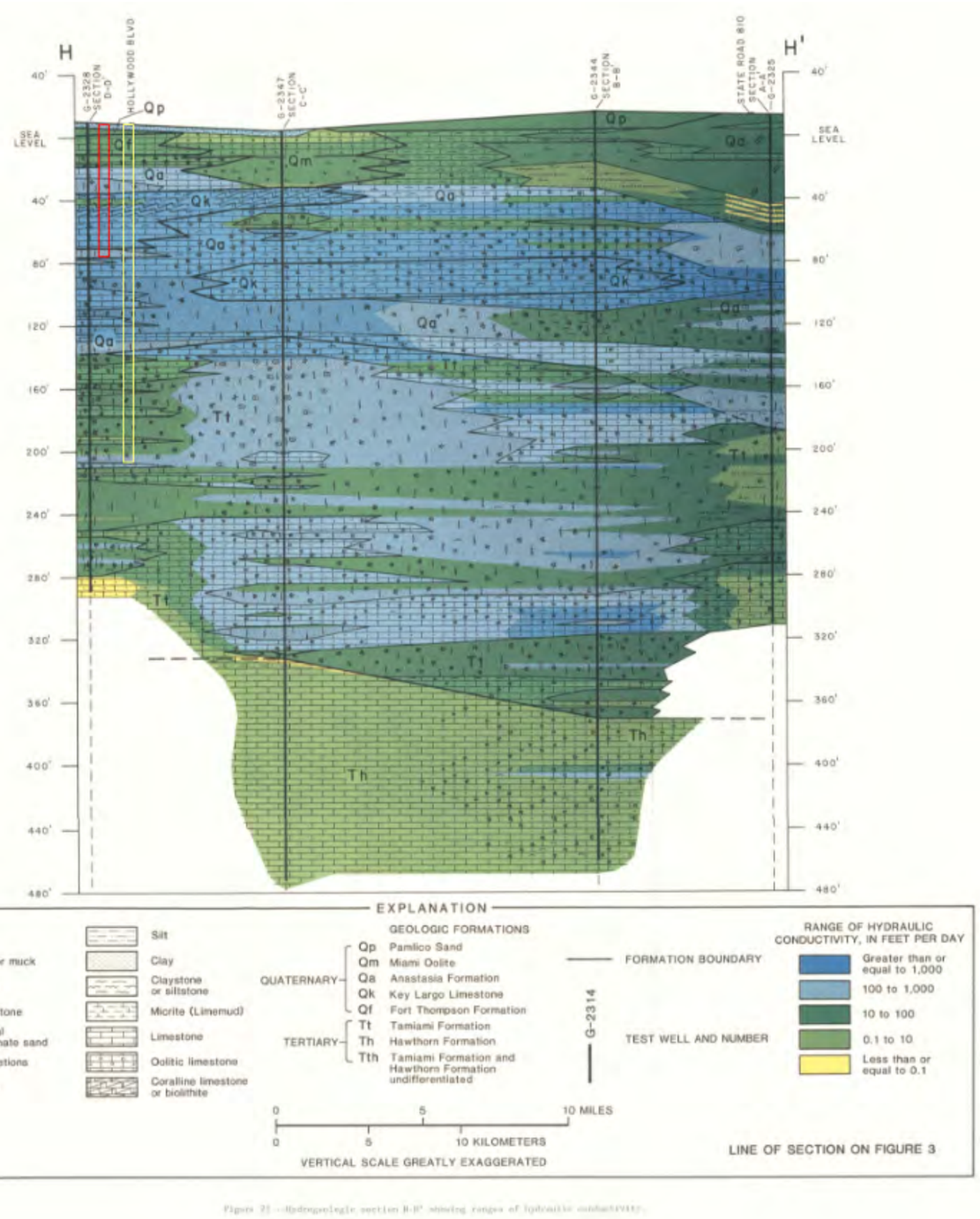


Figure 21.--Hydrogeologic section H-H' showing ranges of hydraulic conductivity.

Hydrologic Cross Section of Subsurface Geology for Viable Well Depth

City of Hollywood Stormwater Master Plan
Figure 4-4
10/07/2022

Build-Out Level Development and High Impervious Area

As the City is effectively near buildout and is highly impervious (paved and compacted) with dense development citywide, few dedicated stormwater catchment lands or storage areas exist to provide additional stormwater pond retention or detention to hold and treat stormwater runoff. There are a limited number of remaining available existing large undeveloped areas citywide that are useable to allow stored stormwater to attenuate peaks and percolate into the ground naturally and/or treat and temporarily hold and release it slowly back into the systems downstream, coupled with the inability to convert large tracts of developed lands into dedicated stormwater management areas, results in greater quantities of runoff being generated and higher peak flows at the peak of a storm, both increasing the size and capacity of stormwater system components required, increasing water quality treatment requirements, and increasing the cost of CIP programs.

Tidal Backflow, Tidal Surge, and Future Increasing Tide

As sea level trends to continue to rise, several detrimental effects occur in the City's existing and future stormwater management system:

- The boundary conditions at the stormwater outfalls rise and will become less conducive to non-pumped systems, restricting the hydraulics that allow gravity flow from upstream, exacerbating flooding over time. Citywide, the remaining and new outfalls will be required to be retrofitted with backflow prevention devices to prevent the flow of the rising sea levels backward into the land areas through the open stormwater pipe system (a.k.a., sunny day flooding). These devices add additional headloss to the pipe system and often require larger conveyance systems and storage to balance the additional driving head required to push water through the valves, adding more cost to the systems.

- Groundwater elevations inland will rise concurrently with sea levels, although at a tapering level as it proceeds inland away from the coast or from the rivers, rendering the exfiltration and gravity recharge well systems nearest these areas less effective, also requiring eventual additional pumped systems. A requirement for new exfiltration trenches to consider a future higher groundwater elevation in the design (i.e., 1-foot above today's GWEL) will result in additional trench length to be designed in addition to an already costly and extensive proposed exfiltration network in the CIP.

- The resiliency initiatives being implemented for shoreline protection in the form of armoring (i.e., seawalls) will also, as a side effect, trap stormwater runoff from flowing into the Bay that previously free-flowed overland, requiring additional measures and higher cost pumped systems in these areas.

Regulatory Requirements for Maintaining Historic Flows and Levels

Two regulatory factors add additional complexity to the permitability of any new stormwater management solutions in this study area. By regulation, for new systems or developments to be permittable, the SFWMD requires:

1. Demonstration of no impact from new development or stormwater capital improvements on the existing peak stages in the conveyance canals (C-10, C-11, etc.). This is enforced to protect existing service areas from exacerbated flooding over the banks of the canals due to new introduced flow to the canal systems. For the City's CIP, this means that in order to drain flooding areas of the City to the nearest conveyance canal, a portion of, or all of the stormwater runoff flow must be infiltrated or stored and attenuated by means other than directing it to the canal via outfalls, so as not to increase the hydraulic stages in the canal systems, which adds additional cost to the CIP.

2. Demonstration of maintaining historic flow paths for overland flow of runoff pre-post capital improvement, meaning that if stormwater flow from off-site (i.e. neighboring municipalities) historically entered the City's service area through a natural or existing channeled pathway, it cannot be severed, blocked, or diverted. That additional capacity must also be considered in the City's CIP, increasing the size and cost of the City's proposed stormwater system improvements. This becomes a greater issue in the areas where new proposed infrastructure that is intended to relieve the flooding in the City's service area hydraulically favors the off-site inflow due to either the natural existing topography or system interconnections, and the off-site conditions are improved, while the City's flooding conditions remain. These areas will be identified in the stormwater models and joint projects will be proposed with the neighboring municipalities for shared projects and costs.

Water Quality Treatment Requirements

Nonpoint source pollution is described as stormwater pollution that results from the accumulation of pollutants from a broad area of land surfaces, erosion of soils, debris, atmospheric deposition, suspended sediments, and dissolved contaminants. Rainfall runoff washes off the settled pollution and contaminants created by urban activities, conveying the pollutants, trash, oils, fertilizers, and other chemicals that wash off of the roads and ground surfaces into the receiving waters. The initial few minutes of steady rain in a storm will release most the accumulated contaminants and holds the highest concentration of runoff pollution, which is also known as the "first flush." Without dedicated treatment systems, the runoff can convey the pollutants and trash via stormwater systems to the receiving waters. Stormwater pollution can be harmful to water quality, aquatic plants and animals, and over time, can result in detrimental effects to marine ecosystems. Citywide, this is regulated by the NPDES MS4 permitting process. As a part of the Federal National Pollutant Discharge Elimination System Program (NPDES) for Municipal Separate Stormwater Systems (MS4) permit, the City is required by enforceable penalty of law to treat stormwater flowing off the City land areas to "the maximum extent practicable prior to discharge to the receiving waters."

An Environmental Resource Permit (ERP) is required for development or construction activities to prevent flooding, protect the water quality of Florida's lakes and streams from stormwater pollution, and protect wetlands and other surface waters. SFWMD, FDEP, and BC EPD co-regulate these activities. Projects developed or implemented in phases such as the citywide SWMP will be required to have an approved (commission adopted) stormwater master plan showing the applicant's contiguous land holdings and providing assurance that a viable funding mechanism for the program is in place. The primary focus of concern of the regulatory agencies is to ensure continuity between phases and satisfactory completion and operation of individual phases if the overall project is not completed as planned. Current permits require a water quality treatment volume of 2.5 inches over the project impervious area, or 1 inch over the full site area (whichever volume is greater) implementing an approved method before release into the conveyance system, increased by the factors below.

Adding new treatment systems citywide in addition to the infrastructure proposed to reduce flooding is costly and may result in certain projects being potentially cost-prohibitive or not implementable under the available budget. Exfiltration systems, swales and recharge wells provide treatment with stormwater collection, and attenuation. Discussions with regulators should be commenced early-on in the stormwater master planning effort to understand regulatory constraints and open a dialog for future requirements so the CIP is aligned with each regulatory jurisdiction. For multi-phased programs such as this, the District allows the submittal of a "Conceptual ERP." Issuance of a conceptual approval permit is a regulatory determination that the conceptual plan is, within the extent of detail provided in the application, consistent with applicable rules at the time of issuance. The conceptual approval permit then provides the permit holder (City) with a rebuttable presumption that, during the duration of the conceptual approval permit, the design and environmental concepts upon which the conceptual approval permit is based will meet applicable rule criteria for issuance of permits for subsequent phases of the project, barring any significant deviations. The purpose of obtaining the conceptual permit is to be able to expedite and reduce the information required for individual project construction permits as they are designed and constructed in accordance with the approved master plan conceptual ERP. A conceptual ERP is intended to be pursued by the City for this SWMP.

Septic Systems Considerations

Septic systems are privately owned, on-property devices used for residential sanitary waste disposal in areas where no sewer service is available. Many of these systems are still in use throughout Broward County. Since a septic system is a buried tank that is attached to the waste drains of a dwelling used to capture and partially treat raw domestic sanitary wastewater and employs the use of a "drainfield" that requires that the groundwater elevation be lower than it to function properly and not backup into the house or flood onto the ground with sewage, these systems can be affected by groundwater levels that rise during storm periods under flooding conditions. Septic systems and their timeline for removal (due to new sewer system installation) have been identified throughout the City and discussions are in progress with regulators to determine the impact on the permitability of SWMP-proposed CIP for exfiltration and well systems

in these areas. Removal of septic tanks offers benefits of reduced groundwater mounding and increased infiltration as well as reduced nutrients in groundwater that can migrate to surface waters.

4.3 Flood Mitigation Strategy for Desired LOS

The strategy to address and alleviate flooding under the conditions and constraints within the City as discussed above requires a multi-tiered solution that, on a high-level, includes:

1. Maximizing catchment of runoff on the existing "uphill" areas and ridges to minimize the flow of runoff down into the lower-lying areas where it accumulates and ponds in swales and exfiltration systems.

2. Installation of systems that direct stormwater into the ground and out of the primary system with restored swales and new exfiltration systems, positive gravity drainage systems, and recharge wells in non-storm sewered areas where conditions (groundwater elevation and hydraulics allow) thus reducing localized flooding with treatment and recharge and creating capacity in the existing system, and

3. Adding new pump stations (and recharge injection wells where required) into areas that are too low to positively drain by gravity and uphill catchment is not sufficient due to topography, and in areas where new required seawalls will block and catch historic overland flows and result in ponding.

These citywide systems will need to work in conjunction to meet the chosen LOS goals as each provides a portion of the water quantity and water quality solution, and none of these elements by themselves are sufficient to resolve all areas of the City.

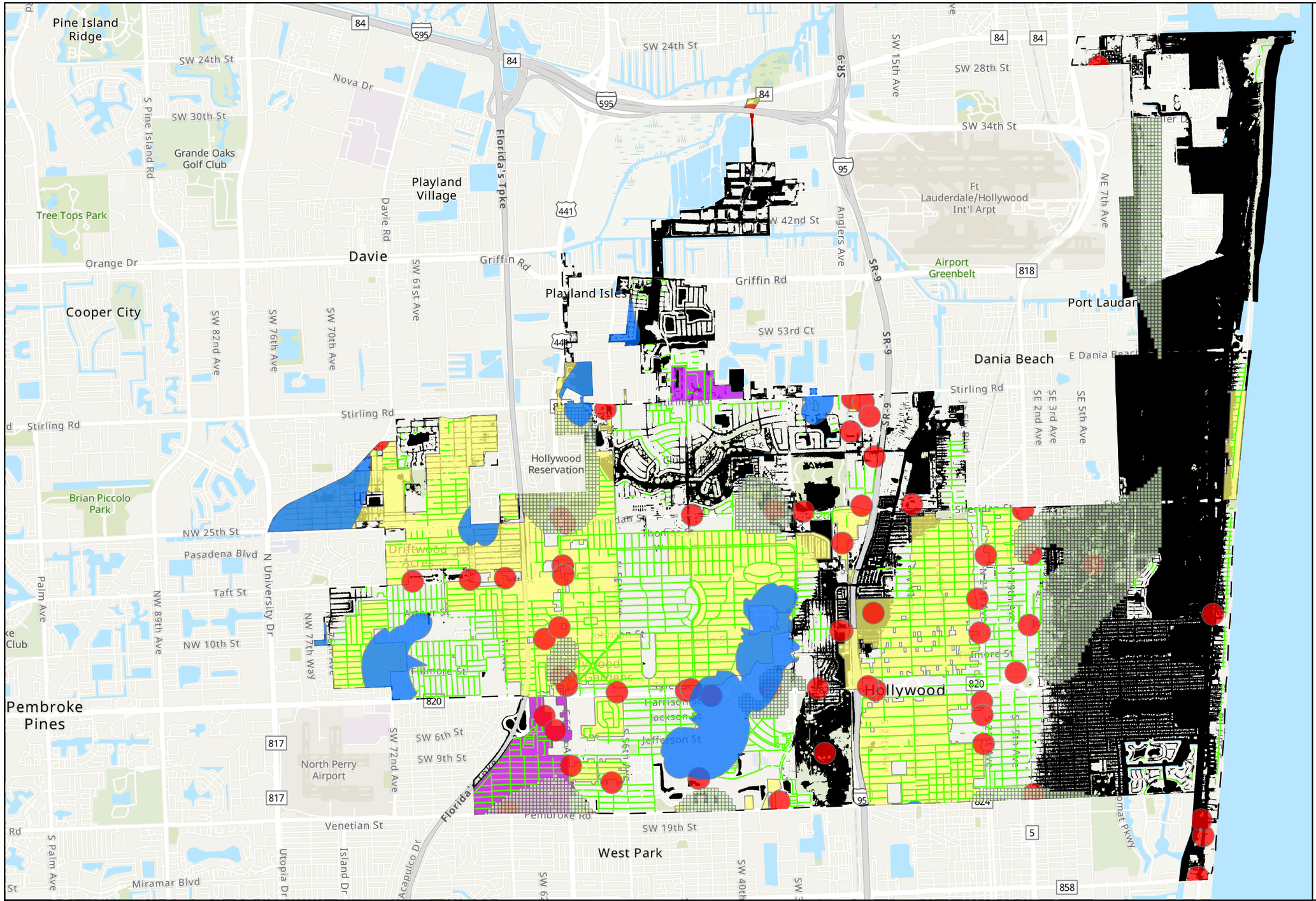
To meet the desired LOS for each alternative and develop the proposed CIP, the following methodology is implemented iteratively in the modeling analyses in a synergistic manner until the flooding depths met the LOS goals, or until the addition of more or larger CIP projects did not further alleviate the remaining flooding (the point of diminishing return discussed earlier):

1. Installation of Exfiltration Systems to the Maximum Extent Possible – In South Florida, exfiltration systems are the most cost-effective and easily implemented BMP/CIP for both water quantity and water quality purposes. Exfiltration trenches are perforated pipes buried in trenches that have been backfilled with stone or sand/aggregate. Runoff is diverted into the pipe from street-level catch basins and infiltrates through the pipe into the trench and into the subsoil, eventually reaching the porous ground water aquifer. A filter cloth surrounding the rock trench is used to minimize clogging. Both physical filtration and some bacteriological treatment is provided as well as disposal of the runoff underground where the introduction of fresh water recharges the aquifer and helps displace the salinity front back toward the ocean. Exfiltration is the most cost-effective CIP for water quantity and water quality and needs to be maximized in the CIP. Exfiltration systems are considered a "best

management practice" or BMP because pollutants in stormwater can be treated and/or removed by way of natural sand/soil filtration and then the treated stormwater is allowed to percolate and recharge the groundwater aquifer. Exfiltration systems can be used in place of conventional storm sewer pipes, where topography, water table depth, and water quality conditions are suitable. The multiple benefits of these systems include flood mitigation, storage, water quality treatment credits, and aquifer recharge for reduction of saltwater intrusion and protection of groundwater supplies. The exfiltration systems are strategically placed in the master plan to capture runoff stormwater "uphill" and reduce the flooding in lower-lying areas as well as reducing the ultimate runoff flow to the receiving canals, thus freeing up space (volume/stage) for other required CIP that may be required to outfall to those waterways. Flooding in many areas of the City are able to be resolved with the new exfiltration systems alone.

An analysis was performed in this master plan to locate all available areas of the City that did not currently have exfiltration systems and that could implement exfiltration systems considering design requirements, elevation, and required hydraulics per SFWMD permit design guidelines. The proposed systems were laid out on the City streets and provided in a GIS layer for implementation by designers at the proper length for the required runoff volume by CIP area so that there is flexibility in final design for underground utility conflict. The analysis used GIS thematic mapping analyses for design factors such as minimum land surface elevation and depth to groundwater, saturated hydraulic conductivity, and soils, coupled with exclusionary zones for potable water well fields' cone of influence, areas of know contamination, and existing exfiltration areas, new exfiltration was placed under roadways and rights of way. Areas of co-located septic tank systems were also noted for future discussion with regulators. The model design storms were simulated, and the results were iteratively analyzed for capture effectiveness, and the total length of proposed exfiltration was optimized by sub-basin so that unnecessary CIP was not proposed. **Figure 4-5** illustrates the exfiltration areas and exclusionary zones citywide. **Figure 4-6** provides the exfiltration CIP with the percent of the total available length required for the CIP in each basin.

2. Installation of Gravity Stormwater Wells to the Maximum Extent Possible – Gravity recharge/drainage wells are shallow wells that take advantage of the unconfined conditions and high vertical permeability of the Biscayne Aquifer, which allows rapid recharge by infiltration/exfiltration. Gravity recharge wells are cost effective "shallow" bore holes drilled into the subsurface aquifer and are used in the stormwater collection systems where hydrogeological conditions allow (sufficient driving head and the injection does not endanger a USDW). Gravity recharge wells are typically 24-inches in diameter, 40-80 feet in depth, and are limited to areas of the City where the chloride concentrations of the native aquifer waters below exceed the 10,000 TDS regulatory limit and there is no underground contamination. The wells are usually an off-line system attached to the primary or secondary stormwater systems and consist of a baffle box for trash capture and sedimentation, and a well structure.



Potential Exfiltration Areas and Exclusion Zones

0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan

Figure 4-5

10/10/2022

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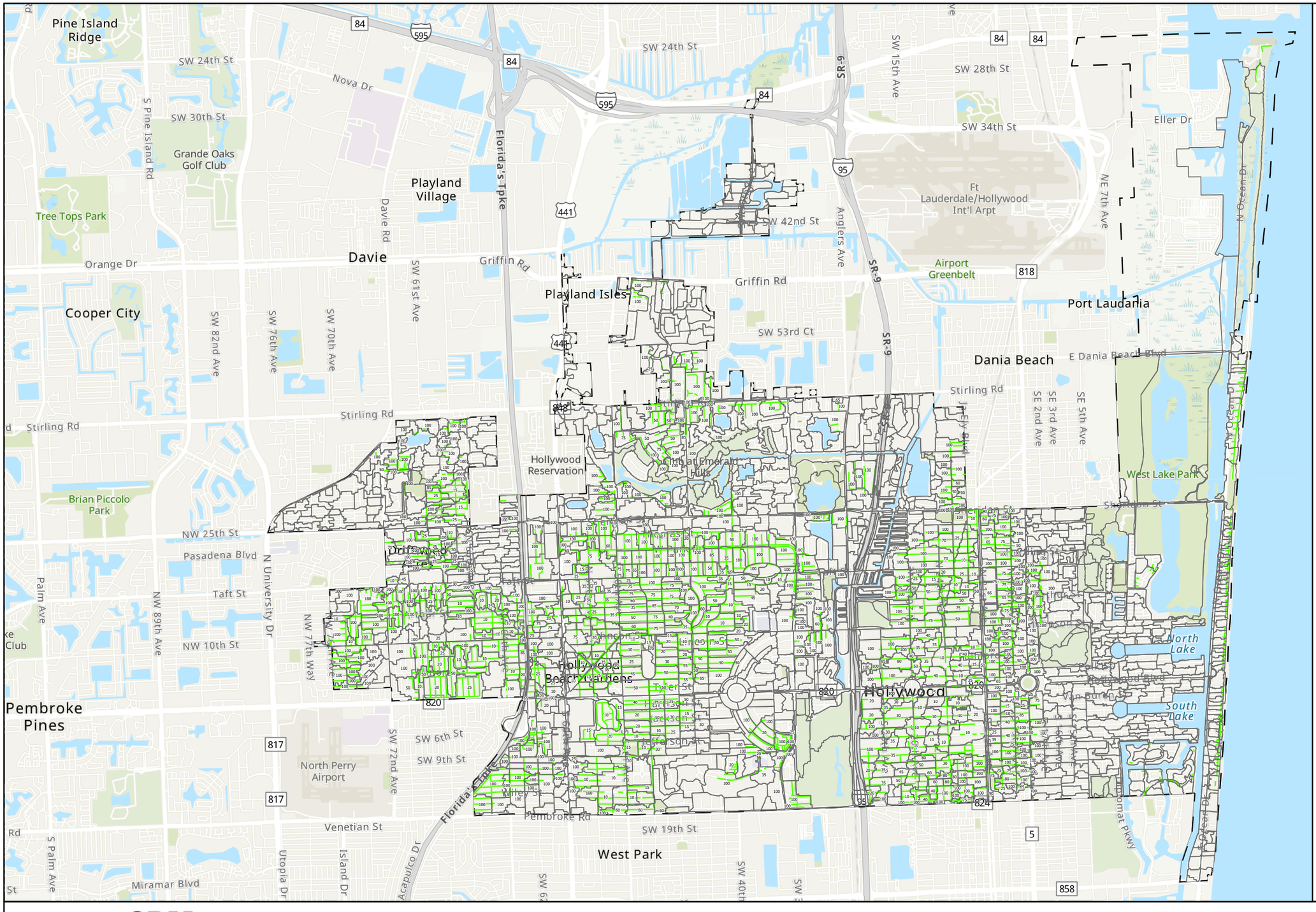

Proposed Maximum Exfiltration w/ Percentages

0 2,000 4,000 8,000 Feet

Scale: 1:53,000

City of Hollywood Stormwater Master Plan

Figure 4-6

10/10/2022

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Gravity stormwater wells were added to existing and new stormwater drainage systems in areas where favorable hydraulics exist and exhibit typical flow rates in the range of 2 cfs, at an installed density spacing recommended at a minimum of 250 ft. Gravity stormwater wells are another cost-effective and easily implementable CIP for both water quantity and water quality purposes. Gravity wells require a minimum spacing so as not to interfere with each other and have a pollution control element such as a weir box and screens. The wells take the overflow from the PSMS in a relatively compact space. Gravity wells are added to the CIP after exfiltration systems to compliment the aquifer recharge element or in areas where exfiltration will not work and the flow to the outfall needs to be reduced.

3. Installation of New Gravity Storm Sewers, Catch Basin Inlets, Pump Stations, Force Mains, and Outfalls – Piping bottlenecks in the existing system were identified in the model and will be eliminated by increasing equivalent pipe size; areas with no positive drainage system were piped with new gravity storm sewer collection systems; isolated areas were either interconnected to areas with existing positive drainage where hydraulics were favorable; new pump stations and force mains were added to areas where the LOS is still not met and positive drainage by gravity could not be achieved due to grades, and new outfalls were created where connections to other systems was not hydraulically achievable.

4. Addition of Pumped Injection Wells – Stormwater injection wells are added to the pumped conveyance systems' discharge force mains to discharge stormwater into the aquifer (recharge) for the purpose of both lowering canal stages raised by the large volumes of water generated under the proposed CIP to meet regulatory pre-post stage conditions and to meet water quality requirements for Biscayne Bay. Pumped wells are generally 24 to 36 inches in diameter, are drilled to a depth of approximately 80-120 feet below the land surface to discharge into the porous Biscayne Aquifer, and typical flows range near 8 cfs depending on the pump pressure. Pumped wells can be configured either as in-line wells directly on the primary discharge force mains, or off-line wells, which branch out into dedicated well field areas such as in parks or medians. As water is disposed of along the force main route, the discharge pipe size is also able to be reduced. Typically, a weir structure or gate is required at the end of the pipe to add back pressure to force the water into the wells. Recommended typical spacing of injection wells is 200 feet minimum, and a similar offset is required from the canals. Pumped injection wells require special permitting from FDEP due to underground injection restrictions in potable water source aquifers. Pumped wells were proposed in the SWMP only in areas where current regulatory and permitting constraints were able to be met.

5. Regional Storage, Control Gates, and Pre-Storm Forward Pumping – The CS-22 gate structure resides on the C-10 Canal at NW 46th Avenue. The gate was previously operated by Broward County, has not been used for salinity control for many years, and has been offered to the City for its use. Due to the location of the gate, the SWMP analysis is investigating the feasibility of lowering stages in the canals and lakes to the west of the structure by the use of a pump to

create additional stormwater storage and provide additional LOS increases to several CIP areas to the west.

4.4 Factors Affecting the Ultimate Implementation of CIP Projects

The final order of the eventual implementation of stormwater infrastructure capital improvements and prioritization of implementation will be discussed in subsequent workshops with the City and will deviate from the calculated LOS score ranking due to several influencing factors discussed below.

Funding Availability

The primary funding sources of the stormwater infrastructure CIP will be stormwater utility funds, grants, and CIP general obligation (GO) bonds. GO bond funds usually include many categories of shared pressing needs of capital funding for the City, of which only a portion would be dedicated to stormwater infrastructure. The bonds and grant funding will have a tightly controlled project selection process for its limited available total project funding, and the disbursement of these funds with City projects will ultimately control the implementation schedule and prioritization of the stormwater CIP projects, accelerating some and decelerating others depending on cost to meet the available funding draw over time.

It is likely that the funding initially available will be less that the funding need for the stormwater CIP to meet the desired LOS goal in most areas. In this case, an Immediate Action Plan (IAP) can be developed and tailored to available funding equitable among geographic, land use, and economic income-level areas. These IAP projects can be labeled as “Phase I” of a larger comprehensive multi-phased CIP project for the contiguous CIP area and be seamlessly integrated into the larger project as it progresses. The intent of the IAPs is to begin progress toward the construction of the ultimate CIP system required and not get stalled by revisiting individual project selection criteria to meet a dynamic and ever-changing budget allocation.

Coordination with Other Utility Work

CIP projects may be accelerated or moved to an alternate schedule to coordinate with other utility work or projects being performed by the City of Hollywood, Broward County, FDOT, partnerships with neighboring municipalities and drainage districts, and with private developers. These could include water, sewer, septic to sewer, transportation, parks, landscaping and other projects that could be coordinated with stormwater improvements, primarily to take advantage of shared savings, avoid multiple contractor work area conflicts, and most importantly to not have to dig up a road twice (or be delayed by a roadway moratorium once new asphalt is lain). Meetings between the City and the other agencies and stakeholders should occur immediately after the CIP is adapted to discuss the timing and coordination of the projects in common or overlapping/connecting areas. The GIS layers of the Stormwater Infrastructure CIP projects can be superimposed with the work from other entities to quickly determine conflicts and commonality.

Coordination with New Seawall Areas

Areas of new seawalls will result in an acceleration of the SWMP CIP for those neighborhoods due to the fact that the seawalls and BFPs, while keeping the ocean out of the land, will also trap rainfall runoff on the inside of the walls in areas where the runoff previously sheet flowed off of the land into the sea. The walls can exacerbate flooding in the neighborhoods and will require the CIP (pumps and collection systems) to move the now trapped water past the walls and off the land areas.

Public-Private-Partnerships (PPP)

PPPs involve collaboration between a government agency and private-sector companies that can be leveraged to finance, build, and operate projects, such as public utilities. Public-private partnerships are found in large infrastructure projects such as municipal and environmental infrastructure including water resources. As the private entity takes on a significant amount of the risk, the PPPs typically result in faster project completions and reduced delays by including time-to-completion as a measure of performance and therefore of profit, thus they are in control of the timing and schedule of the design and construction.

Grant Funding

Certain projects may qualify for various grant monies and economic stimulus funding due to their type, location, or economic zone, including resiliency and hardening, green infrastructure, and infrastructure renewal. These projects may be required to be accelerated to meet the deadlines imposed for submission of "shovel-ready" contract documents to qualify for the funding.

Development Concurrency

The City may require large developments to improve City streets and utilities within their planned areas that may contain stormwater CIP projects, or portions of CIP projects, resulting in acceleration or deceleration of these projects.

NPDES/MS4 Program Requirements

Areas of lesser water quality identified in the City's NPDES/MS4 sampling program affecting stormwater discharge to the canals, lakes, or waterways or designated protected areas may be required to accelerate certain Best Management Practices (BMP) retrofit CIP projects for water quality specific improvements within a time schedule to avoid fines.

Sociopolitical Policy Decisions

The City may have other influencing factors originating at the City Commission District level that will raise or lower the priority of project(s) from the LOS rankings depending on the location or initiatives set in place by local governance under equity initiatives or disparity studies.

Design and Permitting Period Constraints

Depending on the type or size of the Stormwater CIP project, the time to design and the complexity of applying for and receiving the permit to construct will vary by project, sometimes significantly. An ERP is required for development or construction activities to prevent flooding, protect the water quality of Florida's lakes, aquifers, rivers/streams from stormwater pollution, and to protect wetlands and other surface waters. SFWMD and FDEP regulate these activities. Projects developed or implemented in phases over large areas, like the citywide SWMP CIP will require the submission of a master plan component showing the applicant's contiguous land holdings. The primary concerns of the regulatory agencies are to ensure continuity between phases and satisfactory completion and operation of individual phases if the overall project is not completed as planned. Thus, the City may wish to expedite certain long-lead time projects. One highly recommended method of streamlining the permitting process is to apply for a “Conceptual Permit” which, whence approved, serves as the guide for designers and expedites the processing of individual project permits that are covered under the approved conceptual permit. Issuance of a conceptual approval permit is a regulatory determination that the conceptual plan is, within the extent of detail provided in the application, consistent with applicable rules at the time of issuance. The conceptual approval permit then provides the permit holder with a rebuttable presumption that, during the duration of the conceptual approval permit, the design and environmental concepts upon which the conceptual approval permit is based will meet applicable rule criteria for issuance of permits for subsequent phases of the project. The purpose of obtaining the conceptual permit is to be able to expedite and reduce the information required for individual project construction permits, as they are designed and constructed in accordance with the approved master plan conceptual ERP.

Appendix A
Model Schematics

Legend

- Hollywood City Limits
- Hollywood Central
- Subcatchments
- Storages
- Well
- Outfalls
- Weirs
- Swale
- Channels
- Pumps

Conduit Shape

- Arch
- Circular
- Bridge (Low)
- Filled Circular
- Force Main
- Elliptical
- Box

Esri, NASA, NGA, USGS, FEMA, FDEP, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

CDM Smith

CITY OF Hollywood FLORIDA

Hollywood Central Basin Model Schematic

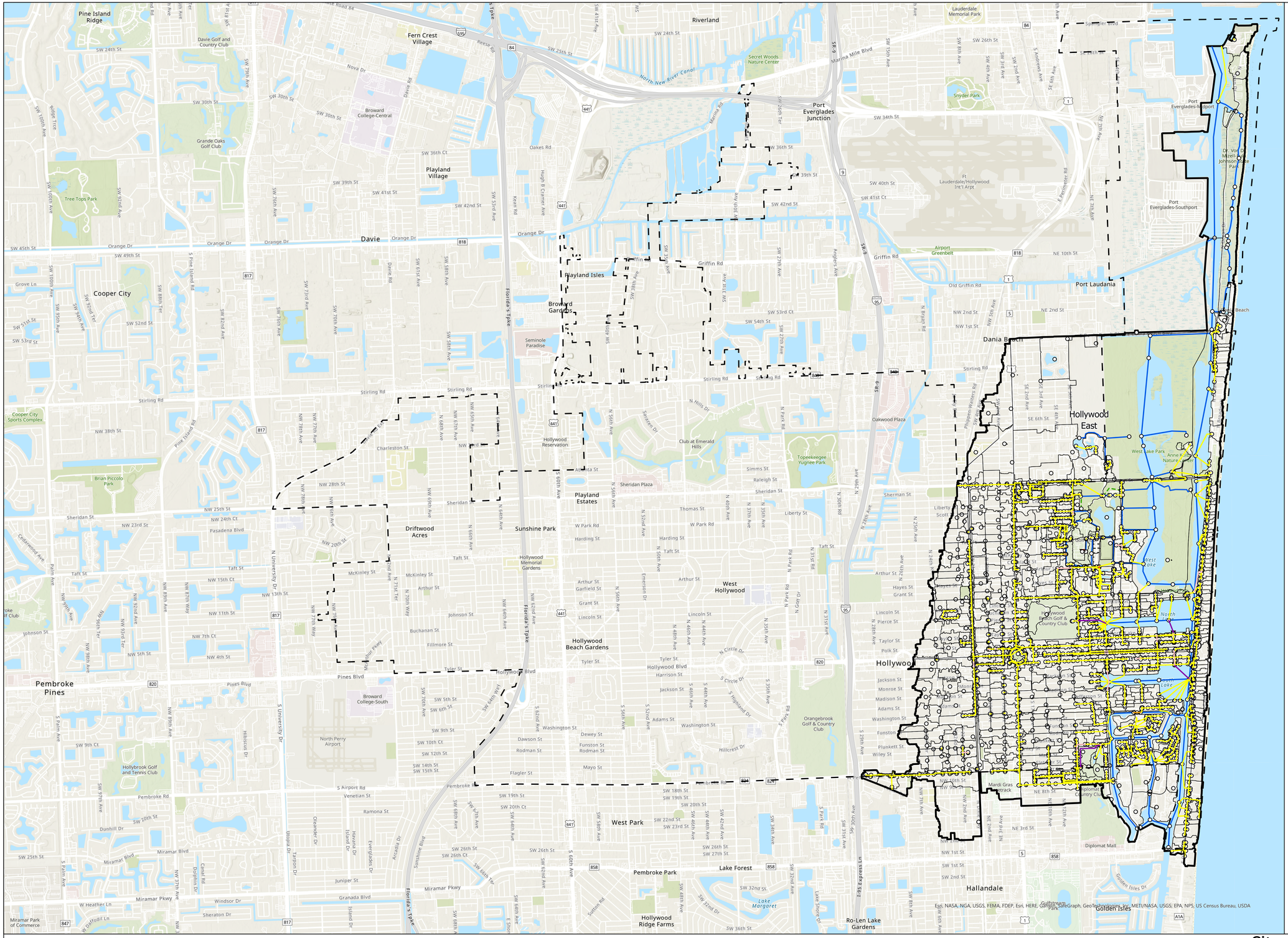
0 3,000 6,000 12,000 Feet

Scale: 1:25,000

City of Hollywood Stormwater Master Plan

Figure HC-EC in Appendix A

08/11/2022



Legend

- Hollywood City Limits
- Hollywood East
- Subcatchments
- Storages
- Well
- Outfalls
- Weirs
- Swale
- Channels
- Pumps

Conduit Shape

- Arch
- Circular
- Bridge (Low)
- Filled Circular
- Force Main
- Elliptical
- Box

Hollywood East Basin Model Schematic

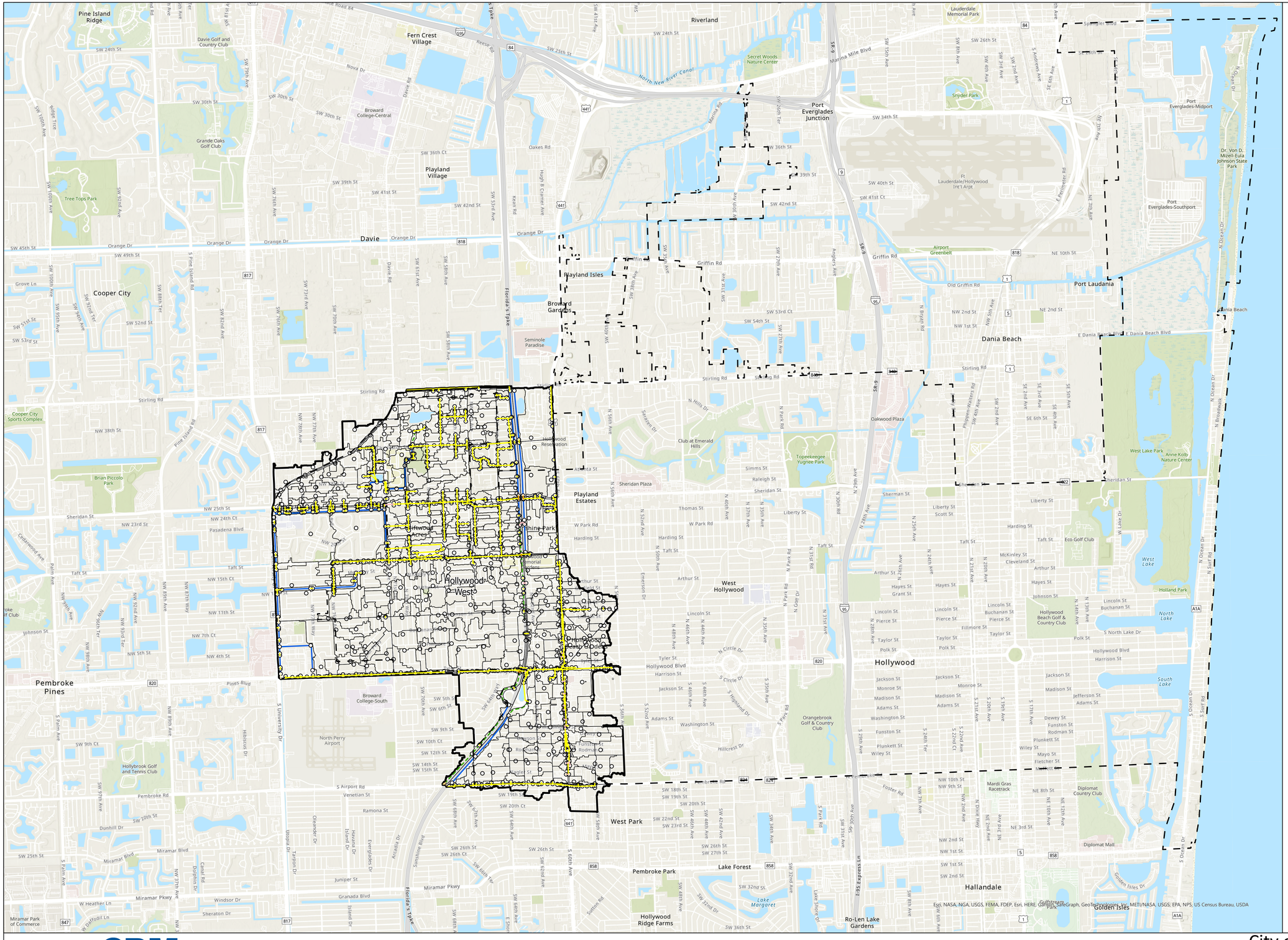
0 3,000 6,000 12,000 Feet

Scale: 1:25,000

City of Hollywood Stormwater Master Plan

Figure HE-EC in Appendix A

08/12/2022



Hollywood West Basin Model Schematic

0 3,000 6,000 12,000 Feet

Scale: 1:25,000

City of Hollywood Stormwater Master Plan

Figure HW-EC in Appendix A

08/12/2022

Appendix B

Hydrologic Parameters