GPI
Greenman-Pedersen, Inc.
Engineering and Construction Services

Community Development Block Grant – Disaster Recovery (CDBG-DR)
Governor's Office of Storm Recovery (GOSR)
Community Reconstruction Project No. 332960

Drainage Study – FINAL
February 9, 2018

Lido Beach and Point Lookout Drainage Study

Hamlets of Lido Beach and Point Lookout,

Town of Hempstead, Nassau County, New York

Subrecipient: Dormitory Authority of the State of New York (DASNY)

DASNY Contract No. 149336

Work Authorization Nos. 15 and 18

Co-Beneficiaries: Town of Hempstead & Nassau County

Table of Contents

Acknowledgements and Notes:

1. Cover Page: Map courtesy of NYRCRP Lido Beach and Point Lookout Conceptual Plan, October 2013. GPI modified the map solely by adding callouts for Long Beach High School and Lido Elementary/Long Beach Middle School.

2. All elevations provided in this report and its appendices are in the North American Vertical Datum of 1988 (NAVD88) unless otherwise noted. Much of the plan information reviewed by GPI for the preparation of this report contained elevations in the National Geodetic Vertical Datum of 1929 (NGVD29). Within the drainage study area, the relationship between the two vertical datums can generally be given as:
    - (NGVD29 Elevation, ft.) - 1.126 ft. = (NAVD88 Elevation, ft.)
    - (NAVD88 Elevation, ft.) + 1.126 ft. = (NGVD29 Elevation, ft.)

3. Report Section 3.0 History/Background: A considerable amount of the information within this section of the report was obtained forthright from the NYRCR Plan for Lido Beach/Point Lookout dated March 2014.

This document was developed and prepared by the following GPI Consultant Team members:

- Greenman-Pedersen, Inc. (GPI) – Engineering and Construction Consultants
- Gayron deBruin (GdB) – Land Surveying and Engineering, PC

Abbreviations/Acronyms

BFE: Base Flood Elevation
BMP: Best Management Practices
CB: Catch Basin
CBA: Cost-Benefit Analysis
CDBG-DR: Community Development Block Grant – Disaster Recovery
DASNY: Dormitory Authority of the State of New York
DEM: Digital Elevation Models
DHAP: Disaster Housing Assistance Program
DMH: Drainage Manhole
EGL: Energy Grade Line
EPA: Environmental Protection Agency
FEMA: Federal Emergency Management Agency
Fig: Figure
F.L.: Flowline
GdB: Gayron deBruin
GOSR: Governor's Office of Storm Recovery
GPI: Greenman-Pedersen, Inc.
GPS: Global Positioning System
GSI: Green Stormwater Infrastructure
HGL: Hydraulic Grade Line
HSG: Hydrologic Soil Group
HTFC: Housing Trust Fund Corporation
HUD: Department of Housing and Urban Development
LBCSD: Long Beach City School District
LIDAR: Light Detection And Ranging
LE/LBMS: Lido Elementary/Long Beach Middle School
LF: Linear Feet
NRCS: Natural Resource Conservation Service
NYRCR Program: New York Rising Community Reconstruction Program
NYS: New York State
NYS DEC: New York State Department of Environmental Conservation
NYS DOS: New York State Department of State
NYS DOT: New York State Department of Transportation
NYSSMDM: New York State Stormwater Management Design Manual
ROW: Right-of-Way
RCP: Reinforced Concrete Pipe
RTK: Real-Time Kinematic
SCS: Soil Conservation Service (an agency within the USDA that is presently known as NRCS)
SSA: Sole Source Aquifer
TOH: Town of Hempstead
TR-55: USDA Technical Release 55 (Urban Hydrology for Small Watersheds)
USACE: U.S. Army Corps of Engineers
USDA: United States Department of Agriculture
USGS: United States Geological Survey

1.0 Executive Summary

This drainage study and report concerning the Lido Beach / Point Lookout area was prepared by Greenman-Pedersen, Inc. (GPI) of Babylon New York at the request of the Dormitory Authority State of New York (DASNY) under the auspices of the New York State Governors Office of Storm Recovery (GOSR).

GPI, in coordination with approved sub-consultant Gayron de Bruin, Land Surveying and Engineers (GdB), performed a comprehensive engineering inventory and hydraulic analysis of existing stormwater collection, conveyance and discharge elements of the Lido Beach / Point Lookout community drainage areas. This study has been funded and conceived through the New York Rising Community Reconstruction (NYRCR) Program of the Governor's Office of Storm Recovery (GOSR).

The intent of this report is to evaluate the hydrology and hydraulic performance of the existing stormwater conveyance networks within the hamlets of Lido Beach and Point Lookout. Both of these hamlets are located on a barrier island along the south shore of Nassau County, New York. This report also seeks to determine and prioritize cost effective solutions to improve hydraulic efficiency in critical areas. This study evaluates critical drainage elements such as watersheds, drainage structures, and pipes to better understand flooding occurrences potentially caused by inadequate drainage systems, as determined by hydraulic analysis. Proposed flooding mitigation solutions and their associated costs are included in this report. Final design and construction of the identified solutions is envisioned to be completed under future projects. These identified solutions will be comprised of element specific components such as tidal gates, check valves, pipe replacements, system repairs, and cleaning; along with other mitigation treatments such as potential green infrastructure improvements to enhance the overall hydraulic efficiency of the systems to mitigate potential flooding.

This current report is focused on the area of concern previously identified in the March 2014 New York Rising Community Reconstruction (NYRCR) Program Report for Lido Beach/Point Lookout, as "Lido Boulevard Location 3A (from Maple Boulevard to Harrogate Street)", identified as a critical evacuation route. The NYRCR Program Report identified (6) locations in total (3A through 3F) that the NYRCR Committee and Lido Beach/Point Lookout residents believe to be the most problematic, flood-prone areas. Locations 3A through 3F are shown in Figure 1 - General Location Map, of this current report.

The overall project watershed study area being studied under this current report includes all of Lido Beach—from its border with the City of Long Beach at Maple Boulevard to the shared border of Point Lookout at the Town Park at Malibu, and all of Point Lookout, from the Town Park at Malibu on the west to Jones Inlet on the east. The communities are bounded by Reynolds Channel to the north and the Atlantic Ocean to the south. The limits of this comprehensive drainage study are identified as "NYRCR Community" in Figure 1 - General Location Map. A general summary of the described Lido Boulevard Location 3A project area is contained herein under report Section 2.0 - Purpose and Need.

The primary alternative improvements proposed and identified in this current report were selected after careful review of detailed hydraulic analysis of the existing drainage systems servicing Location

3A. However, the hydraulic analysis performed under this study also reported on findings relating not only to Location 3A, but to Locations 3B through 3F, also located within the study area.

The hydraulic analysis used information supplied from the Town of Hempstead, Nassau County, and the local community. The preliminary alternative improvements level of detail, relating to Location 3A is sufficient for establishing the feasibility of the alternatives being presented along with probable construction costs.

The potential alternative improvements to the Location 3A drainage systems are proposed to provide increased hydraulic efficiency and resiliency for the project area. The range of proposed potential alternative improvements as a result of this study and analysis, are briefly described as follows:

- Alternative A - Installation of in-line backflow protection devices, to mitigate tidal flooding and tidal influence on existing drainage systems.

- Alternative B – Installation of access structures to facilitate the serviceability of existing inverted siphons crossing transversely beneath Lido Boulevard between Blackheath Road and Regent Drive.

- Alternative C – Remove and replace single curb-opening inlet drainage structures to increase surface inlet capacity, between Blackheath Road and Harrogate Street.

- Alternative D – Remove and replace the existing drainage structures and pipe within the original pre-1960's alignment of Lido Boulevard (South Side – Off Road) between Greenway Road and Regent Drive.

- Alternative E – Implementation and construction of Green Stormwater Infrastructure (GSI) practices within the Town of Hempstead Lido West Park Property, providing storage, infiltration, evapotranspiration and wet meadow habitat.

- Alternative F – Provide improved access from the Lido Elementary/Long Beach Middle School property to the existing NCDPW drainage easement located on private properties off Regent Drive, to facilitate serviceability of the existing manhole structures and pipes.

Regarding the effects of sea level rise, while there is widespread agreement that global sea level is rising, the magnitudes of the predictions vary and are site specific. Within the Lido Beach/Point Lookout overall project area, flooding is caused by rainfall, tides (including storm surge) or a combination of both. Sea level rise will exacerbate these flooding mechanisms. Many of the drainage system outfalls within the project area are partially or fully submerged during the low and high tide cycles. As such, these drainage systems operate on hydraulic slope, not physical pipe slope. Sea level rise will act to reduce the hydraulic slope of the existing drainage systems, thereby decreasing their respective conveyance capacities.

The implementation of the considered tidal backflow prevention (check valve) alternative will prohibit the rising tide from entering the upland piping system and more importantly permit the draining of the upland piping system into downstream surface waters during low tide events. The draining of the upland piping systems will increase upland storage capacity between storm events. This in turn will help to attenuate or lessen the impacts of a particular storm event by providing a time delay for the piping system to fill up prior to discharge, thereby minimizing or eliminating potential flooding and increasing the resiliency of the drainage system.

The use of backflow prevention devices to effectively provide additional stormwater storage within the existing drainage pipe network and mitigate the negative effects of rising tides, is far more economical and less disruptive than creating additional storage by removing and replacing existing pipes with larger pipes. The use of tidal check valves offer the greatest positive effects to flooding mitigation, aside from raising the topography of the land above flood elevation, which generally results in the greatest impacts to private property.

The implementation and construction of Green Stormwater Infrastructure (GSI) practices is also an effective way to provide additional stormwater storage to mitigate flooding, and is also proposed for consideration.

As the potential alternative improvements proposed as a result of this study and analysis focus on Location 3A, it is noted that this report also described the findings of the hydraulic analyses performed within Locations 3B through 3F. Potential flooding areas located within Locations 3B through 3F are noted in report Section 6, although specific alternative improvements were not provided for these locations within this report. However, as we have reported that flooding throughout the Lido Beach/Point Lookout area is related to tide cycles, and the existing drainage systems generally operate on hydraulic slope, reducing the tidal impacts by using backflow prevention devices at all outfalls will help to mitigate flooding within these areas. If future funding becomes available, the installation of backflow protection devices at all outfall structures would be an effective start to flood mitigation in areas 3B through 3F.

2.0 Purpose and Need (Study Goals and Objectives)

The NY Rising Community Reconstruction (NYRCR) Planning Committee identified numerous problems with the stormwater system in both Lido Beach and Point Lookout. Alleviating flooding due to stormwater issues and increasing the resiliency of the stormwater system has been a top priority for the Committee since the first Planning Meeting in September 2013 and was reaffirmed by the NYRCR Community during all (3) Public Engagement Events. The extensive flooding that occurred as a result of Superstorm Sandy on October 29, 2012 has prompted the NYRCR Program to sanction a detailed study of Lido Beach and Point Lookout's stormwater conveyance network. The overall project being studied under this current report consists of a comprehensive engineering hydraulic modeling and analysis of the existing stormwater system(s) within the Lido Beach and Point Lookout areas and the presentation of alternative proposed improvements for consideration.

Image above is courtesy of the NYRCR Plan for Lido Beach/ Point Lookout dated October 2013 (Public Engagement Meeting, October 15, 2013).

The limits of this comprehensive drainage study are identified below in Figure 1 - General Location Map, as "NYRCR Community". This current report presents the findings of this investigation and analysis for the entire project area. However, the detailed potential alternative improvements suggested in Report Section 8.0 of this current report are limited to only that portion of Lido Boulevard identified as Location 3A in Figure 1 below. Lido Boulevard Location 3A is bounded by Maple Boulevard to the west and Harrogate Street to the east. It is approximately 3,800 linear feet (0.7 miles) in length and lies within the hamlet of Lido Beach. This current report will also discuss the findings and results of our investigation and analysis of the existing stormwater infrastructure at five other locations (3B, 3C, 3D, 3E, 3F) identified by the Committee and residents as the most flood-prone areas located within the Lido Beach-Point Lookout project area (See Figure 1 below). The results of the stormwater system comprehensive analysis will be used as the basis for the presentation of proposed alternative improvements within Lido Boulevard Location 3A, as identified through the engineering hydraulic analysis performed under this current project report. Location 3A was identified as the project's primary and first site for construction due to Lido Boulevard being a major roadway and serving as the primary evacuation route for Lido Beach, Point Lookout and the adjacent City of Long Beach. See Figure-1 General Location Map below, which identifies the critical locations to be incorporated in this complex drainage study.

Figure-1: General Location Map

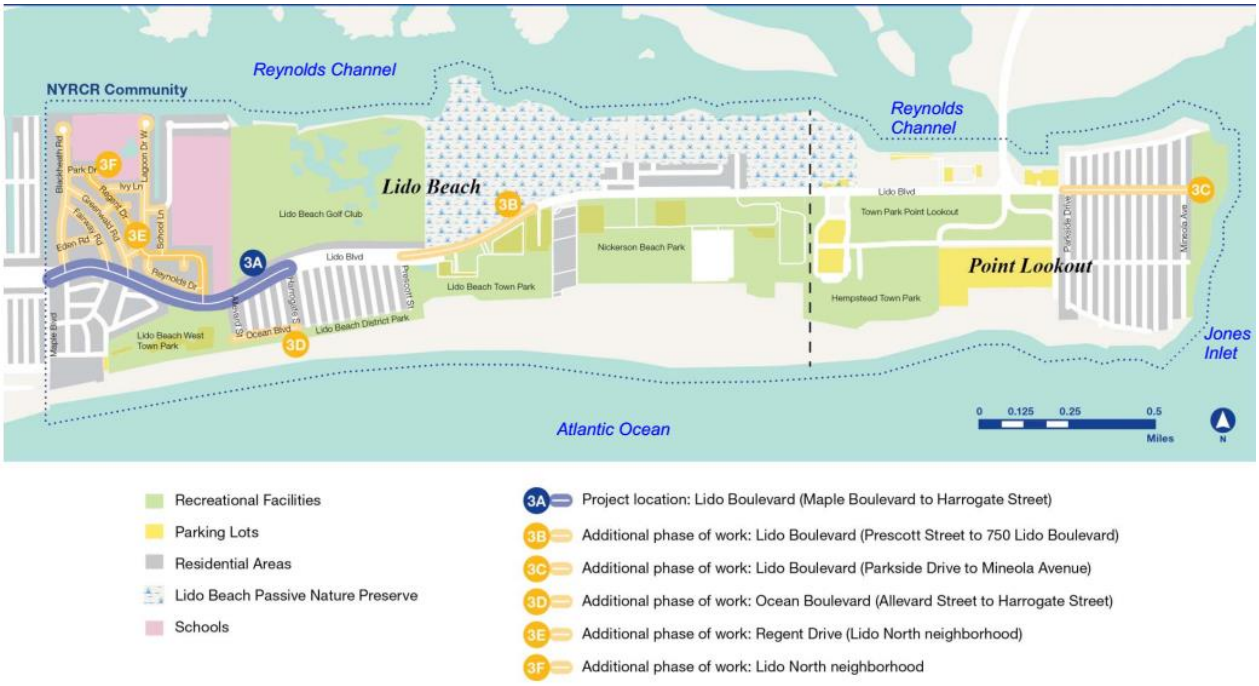


Figure 1 above is courtesy of the NYRCR Plan for Lido Beach/Point Lookout dated March 2014 (Figure IV-8, Drainage Improvements).

The primary focus of this hydraulic study is to analyze all of the closed drainage systems within the project area that outlet directly into the surface waters of Reynolds Channel or indirectly into Reynolds Channel via connected interior channels and or wetland areas. The reader is directed to report Figures 5 through 17 and Appendix C for graphic depictions of the outfall locations and associated drainage systems comprising the project area. The reader is also directed to Table 4 located in Section 6 of the report for a comprehensive table of outfall locations within the project area corresponding to the Figures and Appendix C noted above.

For drainage modeling purposes, the complex drainage network was partitioned into (7) individual drainage systems or networks of varying sizes that carry stormwater north and into Reynolds Channel (See Appendix C). Within these (7) studied drainage systems/networks, there are (6) critical areas identified above in Figure-1 General Location Map (Location 3A through 3F).

3.0 History/Background

In the span of approximately one year, the State of New York experienced three extreme weather events. Hurricane Irene (Aug2011), Tropical Storm Lee (Sep2011), and Superstorm Sandy (Oct2012) unleashed havoc on the lives of New Yorkers and their communities. These tragic disasters signaled that New Yorkers are living in a new reality defined by rising sea levels and extreme weather events that are likely to occur with increased frequency and power. They also signaled the need to rebuild communities in a way that will mitigate future flood risks and increase flood resilience.

As a response to these extreme weather events and immediately following Superstorm Sandy in 2012, Governor Andrew M. Cuomo established The New York Rising Community Reconstruction (NYRCR)

Program. The NYRCR Program was established to provide additional rebuilding and revitalization assistance to affected communities damaged by Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee. The program empowers communities to prepare locally-driven recovery plans which identify innovative reconstruction projects and other needed actions. These reconstruction projects and other needed actions are to be implemented and managed through the Governor's Office of Storm Recovery (GOSR), in conjunction with New York State Homes and Community Renewal and the New York State Department of State (NYS DOS). The NYRCR Program consists of both planning and implementation phases, to assist communities in making informed recovery decisions.

The funding for these projects is provided through the Community Development Block Grant – Disaster Recovery (CDBG-DR) Program of the U.S. Department of Housing and Urban Development (HUD). Through the NYRCR Program, the NYRCR Lido Beach/Point Lookout Community (Community) was allocated funding for the implementation of resiliency projects identified in the March 2014 NYRCR Program for Lido Beach/Point Lookout.

The Community includes all of Lido Beach—from its border with the City of Long Beach at Maple Boulevard to the shared border of Point Lookout at the Town Park at Malibu—and all of Point Lookout—from the Town Park at Malibu on the west to Jones Inlet on the east. The communities are bounded by Reynolds Channel to the north and the Atlantic Ocean to the south.

The Community was heavily damaged by Superstorm Sandy, which was a classic late-season hurricane. It was the largest storm to land ashore in New York's history and it battered Long Island on October 29, 2012. The National Hurricane Center reported that this historic storm brought a surge of 3 to 6 feet above ground level in Nassau County. Sandy was an extraordinarily large hurricane, its size growing considerably from the time it reached the Bahamas until its final landfall as an extratropical cyclone along the mid-Atlantic coast on October 29, 2012.

Image above was taken following Sandy, facing east along Lido Blvd. Notice High-water mark visible on the chain link fence.

Due to its tremendous size Sandy drove a catastrophic storm surge into the New Jersey and New York coastlines. A high water mark of EL 10.2 ft. (NAVD88) was recorded by the U.S. Geological Survey (USGS) in the Lido Dunes neighborhood of Lido Beach. In Point Lookout, the USGS recorded a high water mark of EL 9.3 ft. (NAVD88). Within the Community, anecdotal observations during the storm indicate floodwater from the bayfront (Reynolds Channel) met floodwater from the Atlantic Ocean. Lido Boulevard, a major thoroughfare and primary evacuation route for Point Lookout, Lido Beach, and the adjacent City of Long Beach were observed to be covered by more than a foot of water. The Community, as expressed in the March 2014 report, believed the flooding was exacerbated by additional water that was forced back through (backflow) the outfall pipes discharging into Reynolds Channel and back through the stormwater piping system and out of the catch basin structures located on neighborhood streets.

As part of the NYRCR Program, each NYRCR Community has a Planning Committee to take the lead in

developing the content of the NYRCR Plan. The NYRCR Lido Beach/Point Lookout Planning Committee (the Committee) is composed of community representatives from Lido Beach and Point Lookout partnered with planning experts from GOSR and NYS DOS. The Committee used a community-based planning process to develop an NYRCR Plan that addresses repair of existing flood damage and mitigation of future flood threats to create a safer and more resilient community. The Committee developed the NYRCR Plan in coordination with the State Planner, State Region Lead, and Consultant Team through Committee meetings, Public Engagement Events, and meetings with stakeholder representatives.

The Committee, with input from the public, developed goals for enhancing resiliency of Community assets that were aligned with the Community's core values. The Community Vision Statement and NYRCR Plan recommendations were shaped in a public engagement process that included (11) Planning Committee Meetings, (3) Public Engagement Events, and outreach through a variety of mediums and methods. The (3) Public Engagement Events were held from October 2013 through March 2014 to share project information and solicit feedback from the Community to shape NYRCR Plan recommendations.

Goals and associated strategies were developed through the Planning Committee Meetings, the (3) Public Engagement Events, an online survey, an asset inventory, a risk assessment, and a needs and opportunities analysis for Lido Beach and Point Lookout. Strategies guided the development of projects to increase the resiliency of assets and reduce future risk due to storm events. Metrics such as resiliency, time frame, and technical feasibility were used to develop a series of capital projects, and regional cooperation initiatives for recovering and rebuilding from the impacts of Superstorm Sandy and Hurricane Irene. The Plan includes three sets of projects to address critical community needs: Proposed Projects, Featured Projects, and Additional Resiliency Recommendations. NYRCR Plan projects are classified in the following ways:

- **Proposed Project:** Proposed Projects are proposed for funding through a Community's allocation of CDBG-DR funding.
- **Featured Project:** Featured Projects are innovative projects for which an initial study or discrete first phase of the project is proposed for CDBG-DR funding or other identified funding that does not involve capital expenditures.
- **Additional Resiliency Recommendations:** Additional Resiliency Recommendations are resiliency projects and actions the Committee would like to highlight and are not categorized as Proposed or Featured Projects.

In the March 2014 Lido Beach/Point Lookout NYRCR Plan, the Committee, with guidance from the Community, identified the need to improve the stormwater system infrastructure as one of the most important resiliency strategies for residents and businesses in the Community. The Committee reported numerous problems with the stormwater system in both Lido Beach and Point Lookout. Alleviating flooding due to stormwater issues and increasing the resiliency of the stormwater management system has been a top priority for the Committee since the first Planning Committee Meeting in September 2013. This was reaffirmed by the Community during all (3) Public Engagement Events.

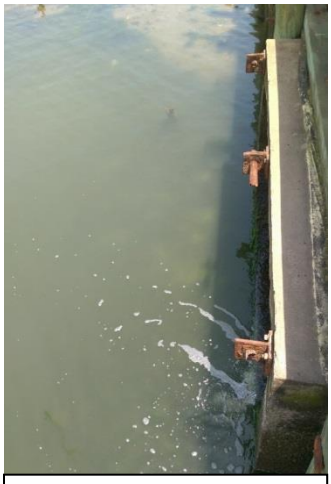


Image above showing remnants of tidal gate at existing outfall location.

The Committee has suggested tidal floodwaters and storm surge from Hurricane Irene and Superstorm Sandy were forced through bayfront (Reynolds Channel) storm drain outfalls and into the Lido Beach and Point Lookout stormwater drainage systems. The extra water forced through the stormwater systems added to the existing volume of water in the streets and caused some stormwater conveyance structures to fill with sand and others to collapse or break. The floodwaters hindered access to evacuation routes for residents and first responders.

The Committee has also suggested the Reynolds Channel drainage system outfalls tend to backflow with water during high tide and elevated tides at full and new moons. These tides force water into the outfalls and back through the stormwater system, resulting in flooding along secondary streets that lead to evacuation routes and critical facilities.

In the March 2014 Lido Beach/Point Lookout NYRCR Plan, multiple stormwater drainage improvement projects were identified as Proposed Projects. Drainage Improvements within Lido Boulevard Section 3A (from Maple Boulevard to Harrogate Street), as shown in Figure 1 - General Location Map, was categorized as a Proposed Project and described as a comprehensive stormwater study to identify drainage infrastructure improvements to reduce flooding along evacuation routes, primary roadways, low-lying areas, and economic corridors. Drainage improvements specifically within Lido Boulevard Section 3A are further identified as the first phase of construction for proposed drainage infrastructure improvements. The NYRCR Plan also proposes phased improvements to the stormwater system at (5) other locations throughout the Community that the Committee and residents identified as experiencing the most visible flooding, those being Locations 3B through 3F, discussed in report Section 2 – Purpose and Need (Study Goals and Objectives).

In summary, the inception of the Comprehensive Drainage Study, which is the subject of this report, can be traced to the March 2014 Lido Beach/Point Lookout NYRCR Plan. The results of this Comprehensive Drainage Study will be used as the foundation, in conjunction with the investigation and evaluation performed under this report, for the future design of drainage infrastructure improvements within Lido Boulevard Location 3A (from Maple Boulevard to Harrogate Street) area. Location 3A as described has been selected as the first and primary site for construction due to Lido

Boulevard's critical importance as the primary evacuation route for Lido Beach, Point Lookout and portions of the City of Long Beach. For this reason, that portion of Lido Boulevard described as Location 3A is the focus of alternative improvements that will be presented for consideration in this report. The results and findings of this Comprehensive Drainage Study, as it relates to the remaining five (5) locations within the Community identified as Locations 3B through 3F, will also be discussed and reported on. However, proposed alternative improvements suggested within this report are limited to Location 3A.

This Comprehensive Drainage Study entailed the development of an existing drainage infrastructure digital model for the entire Community study area. Included in this digital infrastructure model are those areas that have been identified by the Committee and the Community as experiencing frequent, nuisance flooding from tidal and rain events. This Study seeks to identify the hydraulically deficient components of the existing drainage infrastructure within the entire project area as discussed. This report proposes cost-effective solutions consistent with the Community and Committee goals stated in the March 2014 NYRCR Plan with focus on Location 3A.

4.0 Data Collection

The first steps to ensure GPI's understanding of the drainage issues in the project area was to engage in discussions with Nassau County and Town of Hempstead (TOH) representatives. Both municipalities are beneficiaries of the intended project. These discussions helped identify critical drainage concerns and past problems within the project area. During these discussions, GPI was provided various amounts of digital information to assist in our understanding of the existing stormwater drainage infrastructure within the project area. The information provided included digital and hard copy information consisting of construction plans, record/as-built plans, sketches, overall drainage/watershed area plans, and limited drainage easement information.

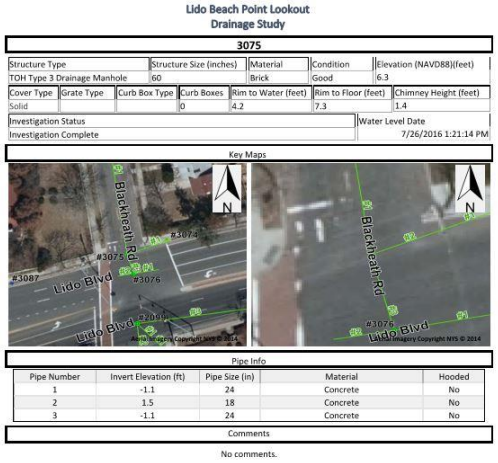
Using tools available on the internet, such as Google Maps Street View and Bing Maps Streetside View, in conjunction with a preliminary review of electronic and hard-copy data furnished by Nassau County, the TOH and Long Beach City School District (LBCSD), GPI generated preliminary digital mapping of the entire project area including both surface and subsurface drainage infrastructure components. GPI developed the digital mapping on a backdrop of NYS Aerial Ortho Imagery and 2014 USGS-LIDAR Data (United States Geological Survey-Light Detection and Ranging) elevation contours. The LIDAR data, which was used to generate Digital Elevation Models (DEM) of the project area terrain, was acquired and processed by the USGS under the requirements of task name "Long Island New York Sandy LIDAR", in response to Superstorm Sandy. This data was also used in the evaluation of storm damage and erosion of the local environment as part of the USGS Hurricane Sandy response.

The review of this preliminary mapping assisted GPI in demarcating the watershed area boundaries and the individual drainage systems situated within the NYRCR Community, as shown in Figure 1 - General Location Map.

Once the preliminary mapping and its review were complete, GPI had a better general understanding

of the project area and the existing drainage infrastructure within the study area. With this preliminary task complete, GPI was able to identify locations where the previously furnished electronic and hard-copy drainage system information was either missing or incomplete. The preliminary mapping was essential in outlining the limits within which the consultant team surveyor, Gayron deBruin (GdB), would be collecting all field data.

GdB located all visible drainage structures and drainage system outfalls using a real-time kinematic global positioning system (RTK GPS), which provided both horizontal coordinate (X, Y) positioning and vertical elevation (Z) positioning, for each identifiable structure and outfall. GdB further investigated the accessible drainage structures by removing the existing grates and covers and recording the structure type, size and visible condition. Additionally, within these drainage structures, GdB recorded pipe invert elevations, diameters and materials. Similarly, at drainage system outfall locations, GdB recorded pipe invert elevations, diameters, and materials.



Lido Beach Point Lookout
Drainage Study

3075

Structure Type	Structure Size (inches)	Material	Condition	Elevation (NAVD88)(feet)
TOH Type 3 Drainage Manhole	60	Brick	Good	6.3

Cover Type	Grate Type	Curb Box Type	Curb Boxes	Rim to Water (feet)	Rim to Floor (feet)	Chimney Height (feet)
Solid			0	4.2	7.3	1.4

Investigation Status	Water Level Date
Investigation Complete	7/26/2016 1:21:14 PM

Key Maps

Pipe Info

Pipe Number	Invert Elevation (ft)	Pipe Size (in)	Material	Hooded
1	-1.1	24	Concrete	No
2	1.5	18	Concrete	No
3	-1.1	24	Concrete	No

Comments

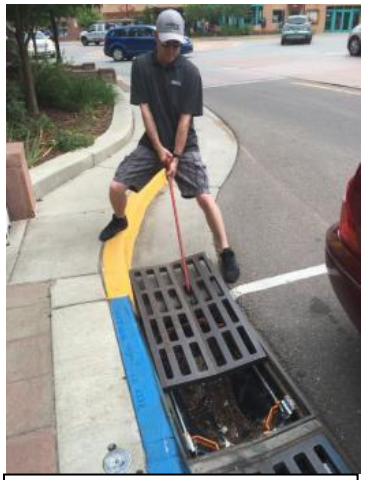
No comments.

Sample Gdb Field Data Collection Inventory sheet contained in Appendix D of this report

As the field-collected data was transmitted by GdB, GPI carefully reviewed and compared the data to the preliminary drainage infrastructure mapping developed by GPI. The following is a brief summary of the challenges encountered by the GPI/GdB project team while trying to develop an accurate and comprehensive existing drainage infrastructure model.

- **<u>Existing Town of Hempstead Catch Basins Equipped with Filter Bag Inserts</u>**

  During field investigations, GdB encountered filter bag inserts (Storm Sack™) within nearly all Town of Hempstead (TOH) catch basins in the comprehensive project study area. The purpose of these filter bag inserts is to improve stormwater runoff quality by capturing the sediment and floatables from stormwater runoff prior to it entering the drainage system, and ultimately the adjacent receiving waters. These filter bag inserts presented a drainage structure interior obstruction, which prohibited GdB from observing and thereby recording the type and condition of the existing drainage structure, the number of pipes penetrating the structure, the invert elevations of each pipe penetration, the diameter, and material type of each of the pipe(s) in the structure. Essentially, none of the information required for the drainage system engineering analysis could be obtained at those structures containing the filter bag inserts.



Existing Filter Bag Inserts filled with sediment and debris.

  GPI contacted the TOH to request the assistance of Town forces in removing the filter bag

inserts so that GdB could obtain necessary drainage structure information. The Town assisted GdB in the field by cleaning, removing and reinstalling the filter bag inserts in several key structures in the Point Lookout area. The Town's assistance enabled GdB to perform the required inspection, observation, and recording of the drainage elements within each of the drainage structures. Upon completion of GdB's survey work, Town forces then reinstalled the filter bag inserts within the existing drainage structure.

In addition to the drainage structures that were inaccessible due to the presence of these filter bag inserts, there were some structures whose grate/cover could not be removed due to corrosion, the repeated presence of a parked vehicle or the accumulation of fine silt between the drainage frame and its respective grate/cover, which essentially served in securing the grate/cover in place.

In those instances where GdB was unable to obtain necessary drainage survey information, GPI reviewed considerable electronic and hard-copy documentation furnished by Nassau County and the TOH. This documentation was comprised of bid-issued construction documents and As-Built Record Plans. The volume of electronic documentation received was considerable. As such, it was necessary for GPI to cull the relevant electronic files from the extensive collection received. Once the pertinent documentation was located, GPI reviewed it to determine if the necessary drainage system information could be obtained. During GPI's review of the documentation, it was noted that various construction/as-built plan sets contained contradictory information.

To establish the existing drainage systems within the approximate 550-acre project study area, GPI reviewed the extensive documentation in conjunction with the GdB field survey data. In those areas where the existing drainage infrastructure could not be confirmed with documentation or GdB field data, GPI exercised professional judgement in establishing the existing drainage network.

- **Lido Elementary/Long Beach Middle School Property (Refer to Figure-2)**

  During the scoping phase of this project, there was limited understanding of the critical importance the Lido Elementary/Long Beach Middle School (LE/LBMS) property would play in this drainage study. It was known there were drainage trunk lines traversing the school property. However, the actual number of drainage trunk lines, their respective locations, pipe materials and sizes were not known. Nassau County and the TOH had no electronic or hard-copy information regarding the drainage trunk lines passing through the school property. From GPI's review of the documentation provided by Nassau County, TOH, and LBCSD in conjunction with review of GdB's survey data, it became evident that upstream and downstream of the LE/LBMS property, there are Nassau County and TOH drainage systems connected to the drainage trunk lines that pass through the school.

  GPI coordinated with the Facilities & Operations Division of the LBCSD in an effort to get an understanding (and history) of the existing drainage trunk lines and appurtenances that

traverse the LE/LBMS property. The LBCSD was able to provide GPI with a mixture of digital and hard-copy documentation for GPI's use in discerning the existing drainage network within the LE/LBMS property. This documentation was comprised mostly of LBCSD bid-issued construction documents and some As-Built Record Plans. There was minimal information regarding the drainage trunk lines passing through the school property. GPI reviewed the electronic and hard-copy documentation provided by the LBCSD in an effort to develop a basic understanding of the existing drainage network within the LE/LBMS property.

As the project progressed, it became apparent there are two drainage trunk lines traversing the LE/LBMS property that are main components of the drainage system servicing Lido Boulevard flooding/work Location 3A, as identified in the March 2014 NYRCR Plan for Lido Beach/Point Lookout. These two trunk lines consist of a 24-inch diameter pipe and a 30-inch diameter pipe. The March 2014 NYRCR Plan for Lido Beach/Point Lookout was prepared post-Superstorm Sandy and identified Lido Boulevard Location 3A as the main subject of this comprehensive drainage system study.

In the course of GPI's review of the LBCSD-supplied documentation, inconsistencies were noted between the various LBCSD drawings. This was especially true with regard to the locations and alignments of the 24-inch RCP and the 30-inch RCP drainage trunk lines.

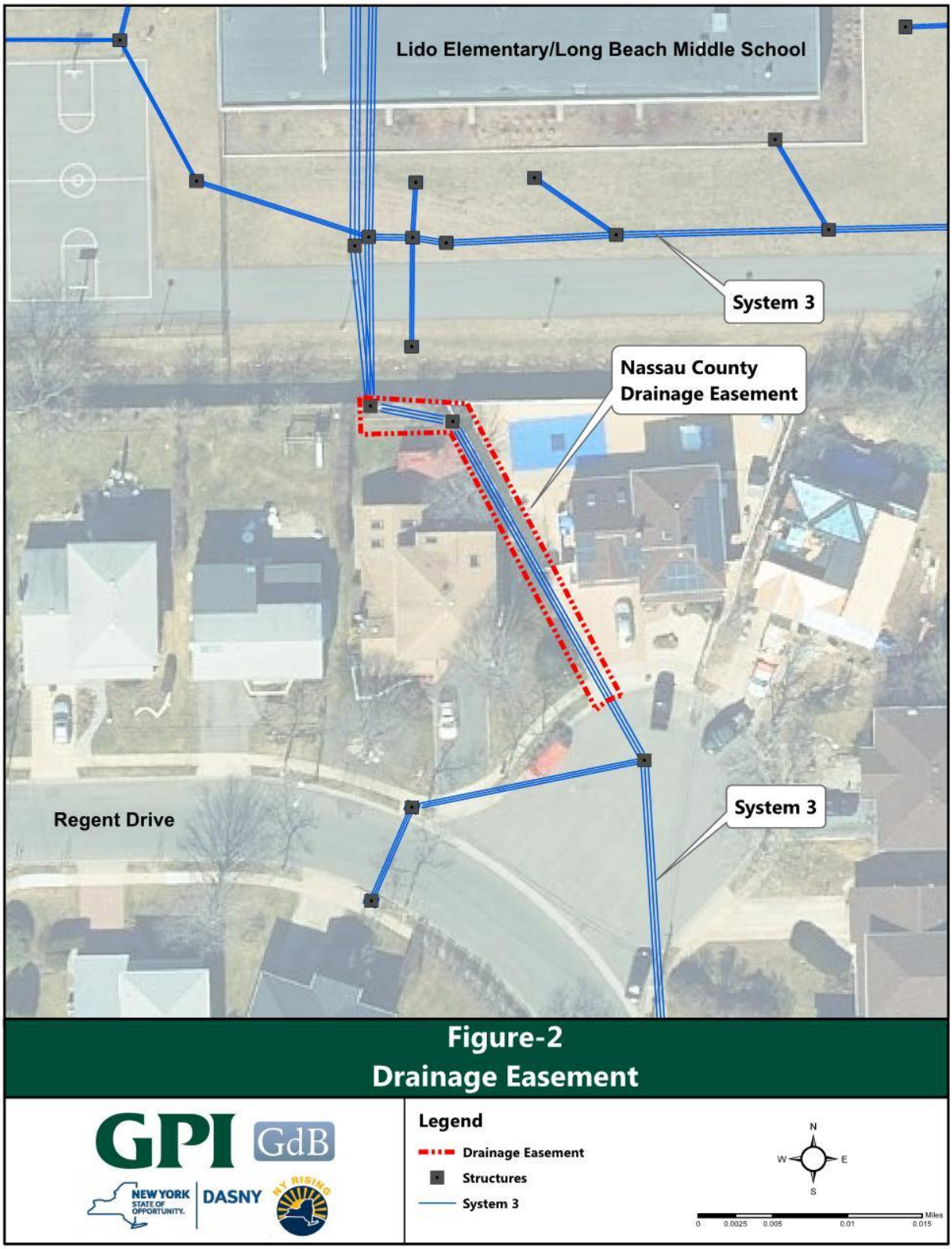
GPI pieced together the existing drainage infrastructure within the LE/LBMS property based on review of the LBCSD-supplied documentation, anecdotal information provided by school administrators and maintenance staff, and professional judgement. GPI then prepared an updated LE/LBMS property drainage infrastructure map and provided this updated map to our surveyor GdB, who began to investigate the many existing drainage structures identified through GPI's comprehensive review of the LBCSD-furnished documentation. GdB was able to clarify many, but not all, of the inconsistencies identified by GPI during review of the LBCSD-furnished materials. In those areas where GdB was unable to field-verify the existing drainage system infrastructure, GPI carefully reviewed all available documentation/survey data and exercised professional judgement in establishing the existing drainage network.

- **Nassau County Drainage Easement (Refer to Figure-2)**

  Documentation provided by Nassau County and TOH identified an existing Nassau County Drainage Easement contiguous to the LE/LBMS southern property line and the north property line of Residence #82 Regent Drive. Through coordination with GOSR, Nassau County and the assistance of NCDPW maintenance forces at one of the locations, the GPI team performed additional investigations at two (2) separate locations within the above noted Nassau County Drainage Easement. GPI surveyor GdB located and unearthed buried manhole covers located within landscaped areas of the existing drainage easement. The manhole covers were buried beneath at least 12-inches of soil, and one cover was situated directly beneath an existing decorative vinyl fence located on the property line within the drainage easement. Once the manhole covers were removed GdB performed video inspection within each manhole. GPI

interpreted the video inspection and further updated the existing infrastructure drainage map. GdB's video inspection of these critical manholes confirmed the existence of the 24-inch diameter and the 30-inch diameter trunk lines within the LE/LBMS property.

Figure-2: School Property and Drainage Easement



At several existing drainage structures, including those described above within the Nassau County drainage easement, GdB lowered a camera into the structure and recorded digital video. This was especially true of several drainage manholes in proximity to the LE/LBMS property, where the existing drainage infrastructure layout was not well documented. GPI's review of the video enabled GPI to confirm the number, size, material and alignment of the existing drainage pipes within the structures. The general condition of the drainage structures (and pipes to a limited extent) could also be ascertained from the drainage structure digital video.

GPI's review of the digital video recorded in the structures in proximity to the LE/LBMS property and the above noted Nassau County drainage easement revealed medium/heavy sedimentation within the structures and pipes, which is indicative of difficult drainage system maintenance and/or a direct result of damage caused by Superstorm Sandy, Hurricane Irene and Tropical Storm Lee. Robust maintenance practices, which remove sediment, trash, and debris from roadways and drainage pipe networks, can help mitigate flooding and related damage and erosion. Additionally, these practices can also help protect stormwater, stream, and surface water quality. Sediment removal is particularly important because metals, pesticides, and other pollutants are often physically or chemically bound to the dirt and organic leaf materials that wash from roadways and other paved surfaces. Measures employed to facilitate the cleaning of difficult to reach areas will enable a robust maintenance program to be continued. A robust maintenance program will maintain drainage system functionality, especially within this project area where tidal influences can deposit sediment into the drainage infrastructure more rapidly and with greater volume than areas not influenced by tidal action. A robust maintenance program which removes this sediment before it is discharged into storm sewers and drainage courses helps improve water quality, and is consistent with current stormwater Best Management Practices (BMP).

Manhole within the Nassau County Drainage Easement located immediately south of the Lido Elementary School/Long Beach Middle School Property.

In summary, to construct the existing drainage infrastructure network and create the hydraulic model that was used to evaluate the various existing drainage systems throughout the entire project area, GPI carefully reviewed the extensive documentation supplied by Nassau County, TOH and LBCSD to ascertain critical invert elevations that could not be obtained in the field by team surveyor GdB due to high water, sediment, obstructions, presence of filter bag inserts within drainage structures, or simply depth of view. In these instances, GPI used construction plans/record plans (if available), and best engineering judgement to determine missing drainage structures, invert elevations and pipe sizes necessary to advance and create the drainage model for engineering analysis.

Briefly described, the hydraulic model created within the project area consists of the following existing drainage infrastructure elements; approximately (18) outfall pipes, (410) inlet structures, (272)

manhole structures, and (684) connecting pipes representing approximately (1,456) invert elevations. As discussed above, the existing hydraulic model elements were compiled and entered into the hydraulic model first using field survey. When field survey was unable to obtain the critical elements needed for entry into the hydraulic model, record research accompanied by best engineering judgement was used. Of the (18) outfall pipes noted, 100% were recorded based on field survey. Of the (410) inlet structure locations noted, approximately 94% were recorded based on field survey and the remaining 6% were recorded by record research. Of the (275) manhole locations noted, approximately 94% were recorded based on field survey and the remaining 6% were recorded by record research. Lastly, of the (1,456) invert elevations noted, approximately 70% were recorded based on field survey and the remaining 30% were recorded by record research and the use of best engineering judgement.

The existing hydraulic model simulates all components of the drainage system(s) including watersheds, inlets, manholes, pipes, and outlets, within the entire project area. See report Section 6.0 – Project Locations (Identify Study Locations and Drainage Systems) for more details on the drainage system models.

5.0 Hydrology (Modeling and Hydraulic Analysis)

The hydrologic and hydraulic studies that were performed as part of this report analyze the performance of the existing drainage networks to manage stormwater runoff in the project area. This evaluation includes all inlets, manholes, pipes, and contributing runoff watershed subareas. The study of the total project watershed area encompasses the watershed subareas that are individual to each inlet structure based on the available subarea's topography. Within the total project watershed, there are (7) individual drainage systems (network of pipes and structures) that manage the stormwater runoff. These (7) individual drainage systems lie within the total project watershed area, which includes all of Lido Beach, from its border with the City of Long Beach at Maple Boulevard to the shared border with Point Lookout at the Town Park at Malibu, and all of Point Lookout, from the Town Park at Malibu on the west to Jones Inlet on the east. Lido Beach and Point Lookout are bounded by Reynolds Channel to the north and the Atlantic Ocean to the south. Refer to Figure-1.

Due to the overall project watershed size (approximately 550 acres) and the complexity of the individual drainage systems (network of pipes and structures), GPI utilized USDA's "Urban Hydrology for Small Watersheds", Technical Release 55 (TR-55) to determine runoff that could be expected from both the 2-year and 10-year design storm recurrence intervals. TR-55 presents a simplified procedure to calculate stormwater runoff volumes, peak rate of discharges, hydrographs, and storage volumes. TR-55 procedures are applicable for this size watershed especially considering both Lido Beach and Point Lookout are located within a highly urbanized setting.

The individual drainage systems (1 through 7) are comprised of many pipe and structure networks. The individual drainage systems each have their own drainage model which manages variable alternatives of its respective drainage network systems. These major variable alternatives include

runoff values based on storm recurrence intervals along with tidal backwater conditions present in both existing and proposed conditions due to submerged discharges. In addition to these variables, the model includes extensive analysis of all components within each system. These components include storm data, soil data, watershed subareas, inlets, manholes, pipes, and discharge points.

The planning and design of storm drainage facilities is related to the degree of protection required, which is usually expressed in terms of the storm recurrence interval in years. Commonly, the emphasis is placed on a 2-year or 10-year storm return frequency for the design of the drainage conveyance systems. Current Town of Hempstead and Nassau County standard practices utilize a 2-year and a 10-year design storm return frequencies respectively. This provides a balance between benefits and an economical drainage system. It is understood that the design of drainage systems using larger, although less frequent storm events, will result in an increase in the required number of inlets and larger pipe/culvert sizes to accommodate the larger flows generated from a storm event greater than a 10 year frequency occurrence. For this project all of the drainage systems have been analyzed with both the smaller 2-year and the larger 10-year storm events.

Cornell University's Extreme Precipitation Data Explorer (http://precip.eas.cornell.edu/index.php) was used to determine the 24 hr. rainfall values for both the 2-year and 10-year design storms. See Table-1 below for the values obtained. For additional information, see Appendix A.

Table-1 Rainfall Data (Inches)						
STORM RECURRENCE INTERVAL	1 YR	**2 YR**	**10 YR**	25 YR	50 YR	100 YR
TR-55 METHOD (INCHES/24HR)	2.78	**3.36**	**4.99**	6.25	7.41	8.80

The Natural Resources Conservation Service (NRCS) Web Soil Survey (http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm) was utilized to identify the various soil types throughout the Lido Beach/Point Lookout comprehensive project area. The NRCS classifies soils into four Hydrologic Soil Groups (HSG) based on the soil's runoff potential. The four HSG are Types A, B, C and D. Type A soils generally have the smallest runoff potential and Type D soils the greatest. The Natural Resources Conservation Service (NRCS) Web Soil Survey indicated that the soil within the project area was classified as Type A and Not Rated Soils. Not Rated Soils are typical in project locations exhibiting large areas of urban development, such as the project study area. Further investigation of the soil within the study area was required due to the large quantity of Not Rated Soils (Table-2). The general geographic project location and surrounding areas exhibit a majority of Type A soils based on the review of aerial imagery, soil maps, and project site survey. Therefore, it can be reasoned that the Not Rated soil regions within the study area can also be classified as Type A soils, which are well/excessively drained sands or gravelly sands. This soil survey determination indicates that there is a low potential for runoff, as most runoff quickly infiltrates into the ground. See Figure-3 below.

Figure-3: Project Limit Hydrologic Soil Group

Using TR-55 drainage analysis, the HSG is used to determine the runoff curve number associated with a given cover/development type (e.g., lawn, pavement, residential ¼ acre, etc.). The runoff curve numbers are used to estimate direct runoff from rainfall. As such, the soil type determination plays a large factor in the selection of the curve number (CN) required for the TR-55 methodology. See Table-2 below for a summary of the overall project area's HSG classifications. Refer to Appendix B for additional soil data.

Table-2: Hydrologic Soil Group (HSG) by Area (Acres)

Watershed	Type A	Not Rated/Urban
Lido Beach/ Point Lookout Comprehensive Project Area	117	434.9*

* Reasoned to be Type A soils, as discussed earlier in this report.

Each drainage system contributing watershed subareas were delineated utilizing a combination of aerial imagery, available LIDAR, GPS site survey by GdB, and site reconnaissance. Refer to Appendix C for additional information on the watershed subareas contributing to the individual drainage systems. The contributing drainage areas within the overall project area are a combination of urban and residential development. The United States Department of Agriculture (USDA) "Urban Hydrology for Small Watersheds "(TR-55) methodology was used to determine the runoff flows contributing to the individual drainage structures from the adjacent watershed subareas. The runoff-discharge analysis used a NRCS rainfall distribution to generate a synthetic storm event. Due to the project's Long Island, New York location, the Soil Conservation Service (SCS) Type III 24 hr. rainfall distribution is appropriate for the analysis, as shown in Figure-4. Refer to Figure-4 and Appendix A for additional rainfall information.

Figure-4: Rainfall Distribution

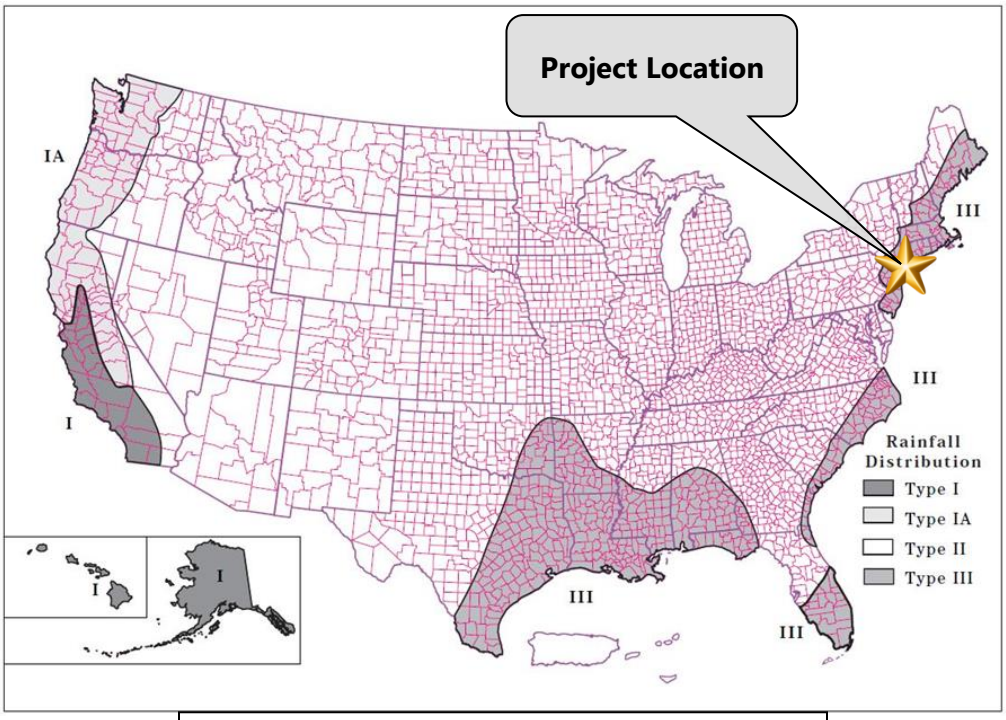


Figure 4 above is courtesy of USDA Urban Hydrology for Small Watersheds (TR-55), June 1986; Appendix B, Figure B-2

The closed drainage systems were analyzed using Bentley's CivilStorm® computer modeling program. CivilStorm® performs analysis of all aspects of stormwater systems including rainfall, runoff, inlet capture, gravity and pressure pipes, culverts, and outlet structures. CivilStorm® has provided a hydraulic model of the systems by incorporating the hydrology with the physical drainage system components. This hydraulic drainage model aided GPI in verifying critical locations within the comprehensive area identified as the "NYRCR Community" in Figure-1 of this report. The model mirrored the existing conditions of the drainage systems within the NYRCR Community. To accurately identify the critical areas, it was necessary to model all drainage systems situated within these areas to assure all hydraulic components of the adjacent drainage systems were included in this analysis. Although the entire drainage system was modeled to determine if there are hydraulic deficiencies within the identified locations, each section of this report only addresses the specific critical hydraulic deficiencies within that location.

A critical component of the drainage systems in the comprehensive project area is the elevations of the discharge points (outfalls) due to the sea level elevation affected by tidal impacts. All the systems that service the comprehensive area identified as the "NYRCR Community" (Figure-1) discharge either directly or indirectly through secondary channels and canals to the north into Reynolds Channel (See report Figures 5 through 17 and Appendix C for additional information regarding outfalls and drainage systems). Additionally, the reader is directed to Table 4 in Section 6 of this report, for a table and description of outfall locations within the project area. GPI utilized the USGS's Gauge station

01310740 (Reynolds Channel at Point Lookout NY) along with input from the Town of Hempstead for all tidal water surface elevations. See Table-3 below for a summary of the surface water elevations implemented in this drainage study.

Table-3: Tidal Elevations used in the Drainage Analyses		
Tidal Descriptions	**Tidal Water Surface Elevation (Feet)**	**Vertical Datum**
Minor Coastal Flood Elevation	3.36	NAVD 88
Mean High Water	2.25	NAVD 88
Mean Low Water	-2.48	NAVD 88

Drainage Modeling requires extensive understanding of the hydrologic and hydraulic principles and behaviors of the drainage areas and fluids. Hydraulic models are not exact simulations of the properties within the systems but rather approximate representations of the data collected within the system. To provide accurate outputs along with reliable data from the drainage model, it is necessary to input the most precise data available. The CivilStorm® stormwater modeling analysis uses a dynamic StormWater Management Model (SWMM) solver to analyze all of the data entered in to the model. The outputs from the model produce approximate representations of the actual conditions in nature.

For the scope of this drainage study, the main focus was on the HGL lines within each of the drainage models. For each of the (6) locations identified within Figure-1, a drainage model was generated for both the existing and alternative conditions. Once the drainage models were complete, they were analyzed with the dynamic SWMM solver. The results of the analyses were then reviewed by GPI staff to determine the critical locations. The primary data output consists of tabular format and pipe profiles that can be reviewed in Appendix C, Appendix D, and Appendix E of this report.

The review of a combination of both tabular outputs and drainage system profiles assisted in determining potential locations of flooding, within the drainage systems studied. These locations consist of areas within the drainage systems modeled that are open to the atmosphere such as catch basin inlets. The combination of the geography/topography of the project location and the tidal backwater conditions at the outlets potentially increases the possibility of flooding at the inlet locations.

When reviewing the outputs of the drainage system analyses, it was observed that in some inlet sag locations a large jump in the HGL line would occur. The cause of this HGL jump is due to the stage storage of the water that cannot enter the system at that specific time due to surcharge of the system. The jumps and differences in HGL elevation do not represent the actual depth of flooding adjacent to that structure but a relationship to the volume of water, as further explained below.

An example of this HGL jump condition is a 5 ft. X 4 ft. rectangular inlet structure with an HGL line 2.5

ft. above the rim elevation. At this stage, the system is surcharged and cannot accept any additional stormwater until the system recedes. Rather than allowing the water to exit the system, the hydraulic model is forced to depict this circumstance by storing the water above the structure, in what is represented by a theoretical column of water approximately equal to the "flooding" volume of water that would be occupied by the adjacent topography. The equivalent volume of water is calculated using the internal surface area of the drainage structure in question multiplied by the theoretical column of water (height) above the structure rim elevation. The 5 ft. X 4 ft. internal structure dimensions equate to a constant surface area of 20 square feet and the HGL is 2.5 ft. above the structure resulting in a volume of 50 cubic feet or 375 gallons of water in storage. The jump in the HGL line helps the reviewer identify the area of the potential flooding during the specific time of the storm event. The sometimes large difference in elevation between the HGL and the structure rim elevation presented in the tables found in Appendix D falsely convey a larger sense of the magnitude of the potential "flooding" than really exists. In the example provided above, 50 cubic feet of water or 375 gallons of calculated "flood waters" would equate to about 3/16 inch depth of water over a road segment approximately 100 feet long by 30 feet wide; this is not a very significant roadway flooding condition. Therefore, the larger the roadway segment associated with this "potential flooding", the greater the surface area will be available to store or distribute the calculated volume of water at any given identified structure. The larger the roadway surface area adjacent to a structure where "flooding" is identified, the potential depth of ponding will be reduced.

6.0 Project Locations – Existing and Proposed Analysis (Identify Study Locations and Drainage Systems)

As noted earlier in this report, Locations 3A, 3B, 3C, 3D, 3E, and 3F (Figure-1) were previously identified by the Lido Beach/Point Lookout NYRCR Planning Committee and Community as locations that warranted further investigation as part of this comprehensive hydraulic study. GPI inventoried, investigated (as per Section 4.0) and analyzed the existing stormwater drainage systems (network of pipes and structures) within these locations, as well as throughout the "NYRCR Community" as identified in Figure-1. The system investigations and analyses consisted of identifying the existing conditions and analyzing the current hydraulic capacities of these drainage networks. Locations 3A through 3F are shown in Figure-1. Each of these individual locations is discussed in this section of the report accompanied by a more detailed map of each location.

Within each of the above noted (6) locations, there are drainage networks which directly relate to the available hydraulic capacity of each location. The drainage networks consist of one or more independent drainage systems which have been modeled and analyzed by GPI. The system models were generated from a combination of preliminary survey, a detailed drainage structure survey, review of construction/as-built plans, and verification field audits, as described in Section 4.0 of this report. As is customary, the systems have been analyzed assuming all drainage pipes between the inlets and outfalls are fully functional.

To generate a computer model that produces accurate hydraulic scenarios throughout the project locations identified in "NYRCR Community" in Figure-1, GPI analyzed all of the existing drainage

systems for both the 2-yr. and 10-yr. storm recurrence intervals, as identified in Table-1. GPI also analyzed all of the drainage systems using a dynamic outfall tail water control scenario consistent with the tidal elevations provided in Table-3.

Table-4: Existing Drainage System Outfalls				
Drainage System 1				
Outfall ID	**Backflow Prevention Device**	**Location**	**Water Body**	**Outfall Size**
7011	No	Northern terminus of Blackheath Road	Bob Jones Canal	36" RCP
Drainage System 2				
Outfall ID	**Backflow Prevention Device**	**Location**	**Water Body**	**Outfall Size**
7007	No	South end of Hudson Channel	Hudson Channel	24" RCP
7008	No	West side of Hudson Channel, 890 feet south of Hudson Channel and Reynolds Channel confluence	Hudson Channel	18" CPP
7009	No	West side of Hudson Channel, 415 feet south of Hudson Channel and Reynolds Channel confluence	Hudson Channel	15" CPP

Table-4: Existing Drainage System Outfalls (Cont'd)				
Drainage System 3				
Outfall ID	**Backflow Prevention Device**	**Location**	**Water Body**	**Outfall Size**
7003	No	South Shore of Reynolds Channel, 200 feet east of Hudson Channel and Reynolds Channel confluence	Reynolds Channel	18" RCP
7004	No	South Shore of Reynolds Channel, 950 feet east of Reynolds Channel and Reynold's Channel confluence	Reynolds Channel	15" RCP
7005	No	East side of Hudson Channel, 950 feet south of Hudson Channel and Reynolds Channel confluence	Hudson Channel	36" RCP
7006	No	East side of Hudson Channel, 780 feet south of Hudson Channel and Reynolds Channel confluence	Hudson Channel	15" RCP
13076	No	South Shore of Reynolds Channel, 575 feet east of Hudson Channel and Reynolds Channel confluence	Reynolds Channel	24" RCP
Drainage System 4				
Outfall ID	**Backflow Prevention Device**	**Location**	**Water Body**	**Outfall Size**
4047	No	South shore of Reynolds Channel, along the eastern boundary of the Lido Golf Course property, 3950 feet east of Hudson Channel	Reynolds Channel	48" RCP

Table-4: Existing Drainage System Outfalls (Cont'd)				
Drainage System 5				
4030	No	Northern terminus of Donna Lane	Reynolds Channel	36" RCP
4031	No	Northern terminus of Sharen Drive	Reynolds Channel	36" RCP
4032	No	600 feet east of Daniel Drive along Gerry Avenue between Residence #945 and Residence #951	Reynolds Channel	24" RCP
4033	No	Western terminus of Neptune Road	Reynolds Channel	24" RCP
Drainage System 6				
Outfall ID	**Backflow Prevention Device**	**Location**	**Water Body**	**Outfall Size**
5073	No	South shore of Reynolds Channel, 2,200 feet west of Loop Parkway Bridge	Reynolds Channel	36" RCP
7001	No	South shore of Reynolds Channel, 200 feet west of Loop Parkway Bridge	Reynolds Channel	48" RCP
7010	No	South shore of Reynolds Channel, 950 feet west of Loop Parkway Bridge	Reynolds Channel	30" RCP
Drainage System 7				
Outfall ID	**Backflow Prevention Device**	**Location**	**Water Body**	**Outfall Size**
4075	No	Bayside Drive	Reynolds Channel	36" x 120" Box Culvert

For the reader to better interpret the information provided in the tables contained within this report section and Appendices C and D, as well as the profiles contained in Appendix E, the following definitions/clarifications of terms are provided:

- **2 Storm Event (2-Yr):** A storm event that occurs, on average, once every two years, or has a 50% probability of occurring or being exceeded in any given year.
- **10 Storm Event (10-Yr):** A storm event that occurs, on average, once every ten years, or has a 10% probability of occurring or being exceeded in any given year.
- **Outfall Water Surface (W.S.) Elevation (Ft):** This is the water surface elevation at the drainage system outfall, which is dependent on the tidal cycle in the Lido Beach/Point Lookout area. This is the water surface elevation of the project receiving waters (Reynolds Channel, Bob Jones Canal).
- **Tidal Gate:** A device typically installed at or near a drainage system outfall that prevents tidal waters from backflowing into the drainage pipe network. Refer to Section 8 of this report for additional information on Tidal Gates.
- **Flood Elevation (Ft):** For the Location analyses presented in this report, this represents the elevation at which visible ponding will start to occur. This elevation will vary for each of the individual drainage systems due to differing drainage grate elevations.
- **Max HGL Elevation (Ft):** The maximum water surface elevation that can be expected within the structures of the same drainage pipe network during a given storm event. To prevent visible ponding on a roadway, this elevation must be lower than the drainage structure grate elevations.
- **Location flooding:** The hydraulic capacity of the drainage system is maxed and visible ponding has started to occur within the roadway.
- **Flood Location:** For the Location analyses presented in this report, this is the specific intersection where ponding can be expected to occur.
- **Profile ID:** The title of the profile applicable to the results given.
- **Mean Low Tide:** The Mean Low Tide Elevation for the Lido Beach/Point Lookout area based on USGS tidal data. For this comprehensive watershed area, this is EL. -2.48 ft.
- **Mean High Tide:** The Mean High Tide Elevation for the Lido Beach/Point Lookout area based on USGS tidal data. For this comprehensive watershed area, this is EL. 2.25 ft.
- **Minor Coastal Flooding Elevation:** The water surface elevation developed by the National Weather Service at which 1 ft. to 2 ft. of inundation can be expected in shoreline and vulnerable areas. There is a low threat of property damage and no direct threat to life. A few shoreline and vulnerable roadways and adjacent properties will experience shallow flooding. For the Lido Beach/Point Lookout area this is EL. 3.36 ft.

The following report section describes the results of the existing and proposed hydraulic analyses performed on Drainage Systems 1 through 7 contained within the total project area. The proposed hydraulic analysis is noted in this report as Alternative "A" Analysis, and includes the use of a proposed backflow prevention device (check valve). The primary reporting focus of these analyses

will be on locations previously described in this report as Lido Boulevard Locations 3A, 3B, 3C, Ocean Boulevard Location 3D, Regent Drive Location 3E, and Lido North Community Location 3F. It is noted that a complete tabular reporting of the results at each and every drainage structure known to exist within the total project area (regardless of specific location area), under both the existing and proposed analysis scenarios, is contained in Appendix C and Appendix D.

As can be seen in Table 4 - Existing Drainage System Outfalls above, none of the (7) drainage systems investigated within the project area were found to have backflow prevention devices associated with them. The clear distinction between the existing and proposed (Alternative "A") analyses performed under this study, was the use of backflow prevention devices under all proposed conditions.

It is noted that under the existing conditions scenario for certain drainage systems, there is no reported flooding. However, at these locations (and at all system analyses) the study investigation included hydraulic simulations with backflow prevention devices (check valves) in place under the proposed condition. This was done to demonstrate the value of the use of backflow prevention.

The hydraulic modeling and analysis prepared under this study report has demonstrated that the implementation and use of backflow prevention devices, to prevent the tidal surge from backing up into the existing drainage system, in general will allow for more storage within the drainage system thereby increasing the capacity of the pipe during a storm event. This action in turn will help to reduce and mitigate potential stormwater encroachment onto low lying areas, which could result in potential flooding.

The potential flooding reduction is a result of lowering the hydraulic grade line and offsetting the peak tidal event from the peak storm event.

The use of backflow prevention devices, even at drainage systems that do not exhibit flooding under the existing conditions analyses, demonstrate their ability to add resiliency and an additional level of protection to the existing drainage infrastructure.

Lido Boulevard Location 3A

Location 3A is comprised of the approximately 3,800 LF (0.7 mile) section of Lido Boulevard between Maple Boulevard and Harrogate Street. This section of Lido Boulevard is a high traffic arterial that makes the connection between the City of Long Beach, Lido Beach, and Point Lookout. This section of Lido Boulevard provides primary access for educational facilities, municipal, residential and commercial properties. It also serves as an emergency evacuation route for the barrier island.

Location 3A passes through portions of four of the modeled drainage systems. These systems have been designated as Systems 1, 2, 3, and 4. Refer to Figure-5.1 and Figure 5.2 below for a detailed overview of the drainage systems situated within Location 3A. Although Lido Boulevard Location 3A is only affected by portions of Drainage Systems 1, 3, and 4, it is mandatory to completely

model these systems to fully analyze the drainage systems of interest. It is noted that Drainage System 2, although situated adjacent to Lido Boulevard Location area 3A, does not provide any direct service to Location 3A.

North side of Lido Boulevard looking west toward intersection with Regent Drive

North side of Lido Boulevard looking east toward intersection with Greenway Road

Figure-5.1: Location 3A-1 Map

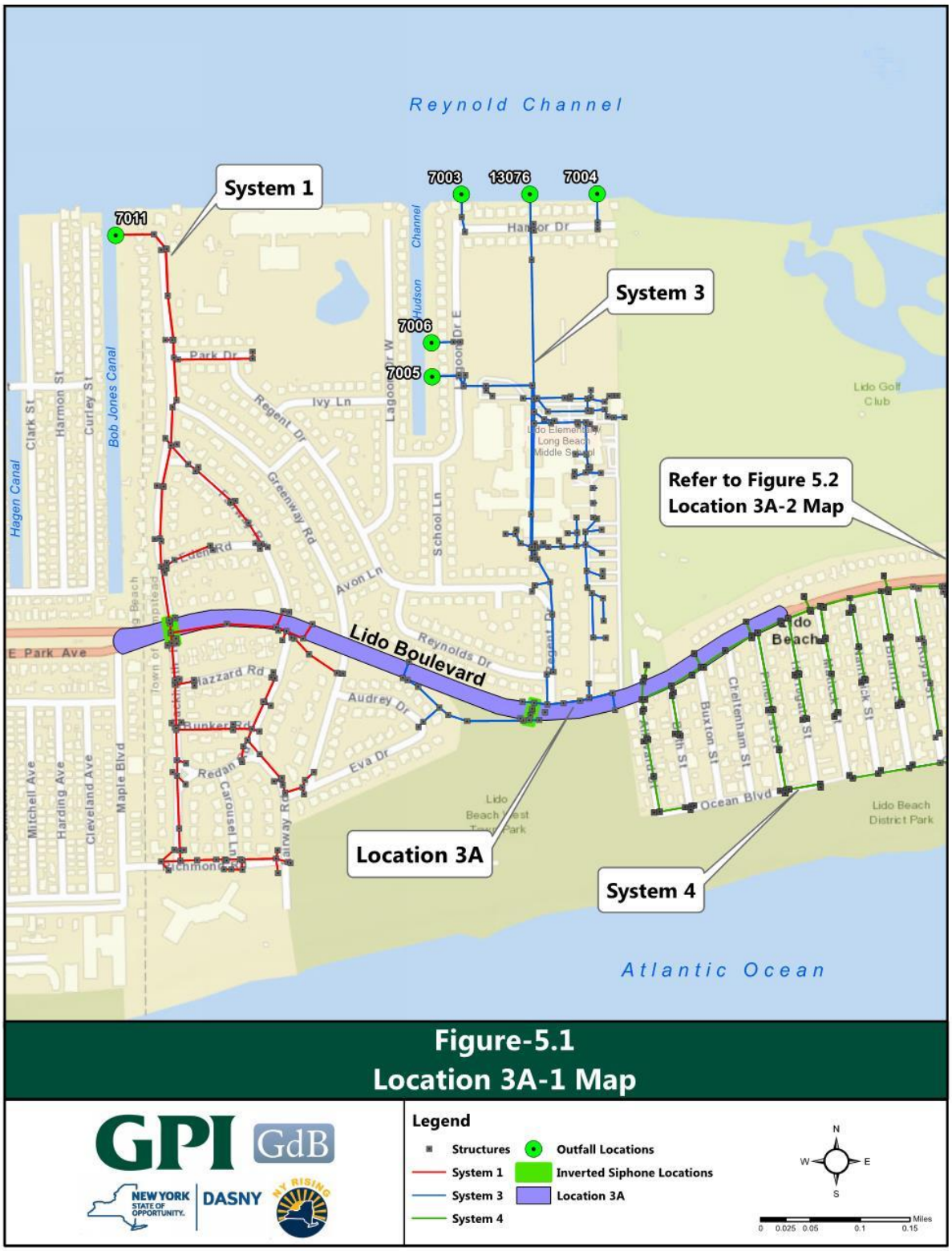


Figure-5.2: Location 3A-2 Map

- **Drainage System 1 Existing Analysis**

  Drainage System 1 is one of the largest systems within the comprehensive area of study; it contains (72) inlet structures, (55) manholes, and (128) connecting drainage pipes. The outlet of System 1 discharges into Bob Jones Canal at the northern end of Blackheath Road, Outfall-7011. As noted earlier, the March 2014 Lido Beach/Point Lookout NYRCR Plan identified Lido Boulevard Location 3A as a priority area to be studied, as it is also the primary focus of this report. As such, GPI concentrated our review analysis of Drainage System 1 to the areas within and immediately adjacent to Lido Boulevard Location 3A. These areas consist of System 1 drainage structures along Lido Boulevard between the intersections of Blackheath Road and Greenway Road. Currently Drainage System 1 does not appear to be equipped with any tidal backflow prevention devices. Therefore, System 1 existing analysis did not include backflow prevention at the outfall. See Table-5 for the results from the Drainage System 1 existing hydraulic analysis.

  The profile displayed in Appendix E shows an inverted siphon in the existing drainage system as it crosses beneath Lido Boulevard. An inverted siphon is constructed to allow stormwater to flow beneath obstructions, such as utilities. The siphon flows at full capacity and is under pressure and ideally must have a velocity greater that 3 ft/sec to maintain a self cleaning velocity. Inverted siphons do not operate on physical pipe slope, but rather hydraulic slope, or the difference in the water surface elevations within the manholes on each end of the inverted siphon. Under these conditions, inverted siphons inherently require regular maintenance as they act as a "trap" for sediment carried in stormwater runoff. In this instance, the 30-inch diameter RCP drainage pipe could not be installed on a continuous grade beneath Lido Boulevard due to the presence of an existing 36-inch diameter sanitary sewer interceptor that runs parallel to Lido Boulevard. To get the drainage trunk line across Lido Boulevard, it was necessary to construct an abrupt vertical drop in the drainage pipe profile (i.e., construct an inverted siphon) so that it would pass beneath the existing sanitary sewer interceptor. See Figure-6 for System 1 location, watershed area and inverted siphon location.

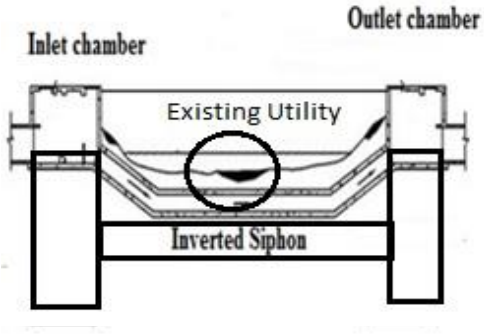


Figure-6: Drainage System 1 Map

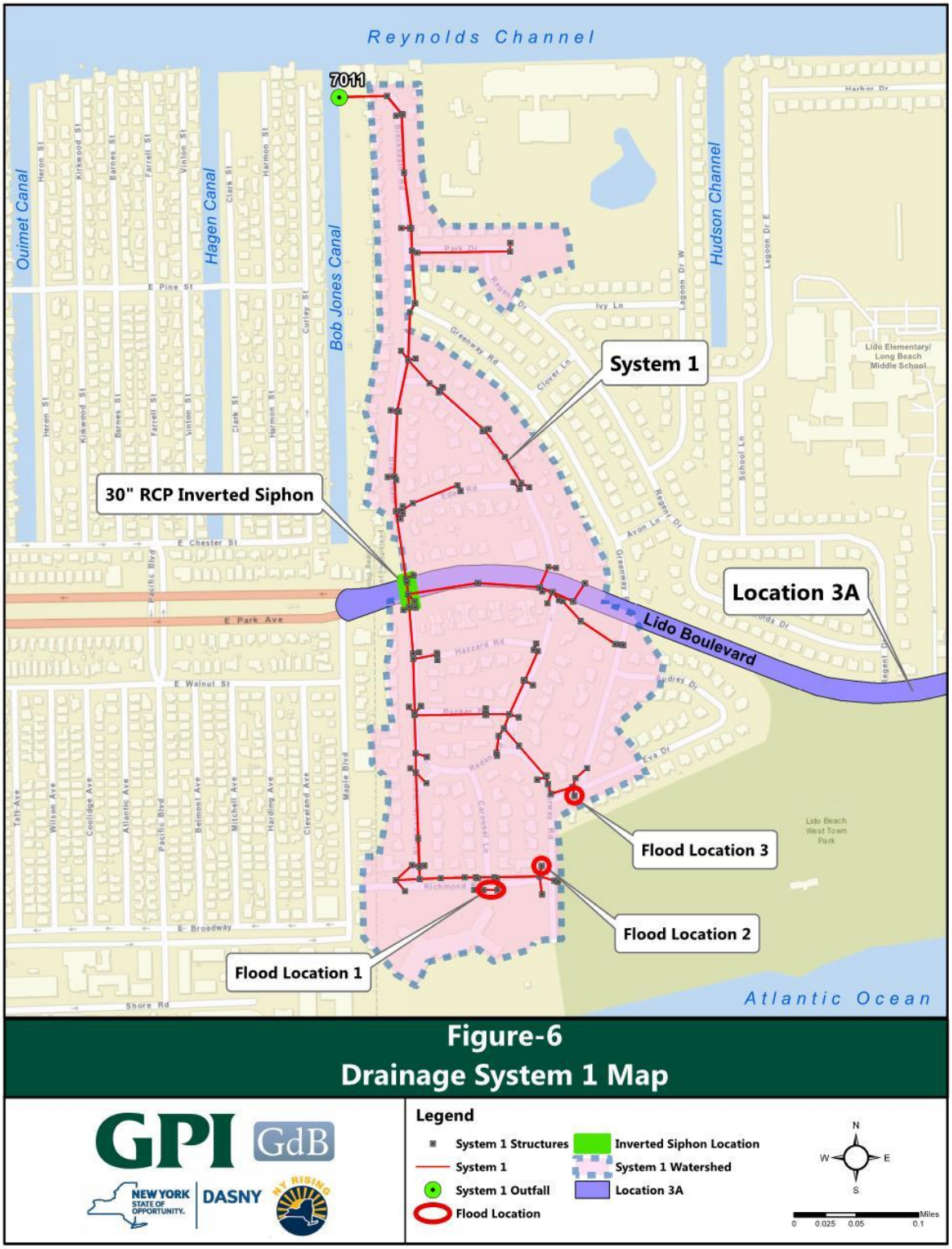


Table 5: Drainage System 1 Existing Location 3A Analysis Results Summary						
Storm Event (Yr.)	**Scenario**	**Tidal Gate**	**Flooding**	**Structure ID and Flowline (F.L.) Elevation (Ft.)** *See Note 1*	**Flood Location**	**HGL Elevation (Ft.)** *See Note 1*
2	Mean Low Tide Existing	No	No	CB 3069 F.L. 5.63	N/A	2.69
2	Mean High Tide Existing	No	No	CB 3069 F.L. 5.63	N/A	2.69
2	Minor Coastal Flood Existing	No	No	CB 3069 F.L. 5.63	N/A	3.16
10	Mean Low Tide Existing	No	No	CB 3069 F.L. 5.63	N/A	2.76
10	Mean High Tide Existing	No	No	CB 3069 F.L. 5.63	N/A	4.14
10	Minor Coastal Flood Existing	No	No	CB 3069 F.L. 5.63	N/A	4.78

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowLine elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 1 Existing hydraulic analyses revealed that for both the 2-year and 10-year storm events, there are **no** System 1 hydraulic deficiencies within Lido Boulevard Location 3A for all (3) tidal parameters. Although outside of Lido Boulevard Location 3A, it is noted that Drainage System 1 existing hydraulic analysis indicates flooding does occur south of Lido Boulevard Location 3A, as shown on Figure 6. Refer to Appendix D for tabular results.

- **Drainage System 1 - Alternative "A" Analysis**

  The proposed alternative analysis of System 1 consists of the same drainage network as the existing system, but with the addition of a tidal backflow prevention device at the outfall location. See Table-6 for the results from the Drainage System 1 - Alternative "A" hydraulic analysis.

Table 6: Drainage System 1 Alternative "A" Location 3A Analysis Results Summary						
Storm Event (Yr.)	**Scenario**	**Tidal Gate**	**Flooding**	**Structure ID and Flowline (F.L.) Elevation (Ft.)** *See Note 1*	**Flood Location**	**HGL Elevation (Ft.)** *See Note 1*
2	Mean Low Tide Existing	Yes	No	CB 3069 F.L. 5.63	N/A	2.69
2	Mean High Tide Existing	Yes	No	CB 3069 F.L. 5.63	N/A	2.69
2	Minor Coastal Flood Existing	Yes	No	CB 3069 F.L. 5.63	N/A	2.69
10	Mean Low Tide Existing	Yes	No	CB 3069 F.L. 5.63	N/A	2.76
10	Mean High Tide Existing	Yes	No	CB 3069 F.L. 5.63	N/A	3.18
10	Minor Coastal Flood Existing	Yes	No	CB 3069 F.L. 5.63	N/A	3.56

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 1 Alternative "A" hydraulic analyses revealed that for the 2-year and 10-year storm events, there are **no** System 1 hydraulic deficiencies within Lido Boulevard Location 3A for all (3) tidal parameters. Although outside of Lido Boulevard Location 3A, it is important to note

the existing conditions stormwater ponding at Flood Locations 1, 2, and 3 (Figure-6), south of Lido Boulevard, for the 10-year storm event with Mean High Tide or Minor Coastal Flooding tidal conditions, has been eliminated with the implementation of a tidal backflow preventer. Refer to Appendix D for tabular results.

- **Drainage System 3 - Existing Analysis**

  Drainage System 3 is one of three (3) existing drainage systems servicing the New York Rising Community Reconstruction Plan area known as Lido Boulevard Location 3A. This system is comprised of multiple drainage network components, as can be seen in Figure-7. Briefly described, Drainage System 3 network components are located along Lido Boulevard both west and east of Regent Drive on the north and south sides of Lido Boulevard, crossing underneath Lido Boulevard west of Regent Drive, and continuing north along Regent Drive through Nassau County easements located on residential properties north of Regent Drive. From the Nassau County easement at the north end of Regent Drive at the Long Beach School's southern property line, the single 24" diameter pipe develops into two pipes through a large manhole structure.

  The two pipes (24" and 30" diameters), continue to traverse northerly through the Long Beach School property underneath the Lido Elementary School and Long Beach Middle School buildings. The 24" diameter pipe continues north past the Middle School and through the remaining school property and residential easements located off Harbor Drive, eventually discharging into Reynolds Channel at its northerly terminus. The 30" diameter pipe turns sharply to the west, at a point north of the Long Beach Middle School, and continues through the remaining school property and residential easements located off Lagoon Drive East, continuing westerly and discharging into Hudson Channel at its westerly terminus.

  It is noted that field investigations observed an existing partially collapsed catch basin drainage structure located along Drainage System 3's existing 24-inch RCP trunk line which discharges to Reynolds Channel. This partially collapsed drainage structure (No. 13002) is located at the northern end of the Lido Elementary/Long Beach Middle School (LE/LBMS) property, just south of the residences lining the south side of Harbor Drive. The GPI team was unable to determine the severity of the collapsed structure and the extent of its potential impact to operation of the 24-inch RCP trunk line at the bottom of the collapsed structure. The collapsed structure may be partially obstructing or impeding the free flow of stormwater through the existing 24-inch RCP trunk line. The partially collapsed structure is located approximately 2,400 feet north of the Lido Boulevard/Regent Drive intersection. The debris from this partially collapsed structure could significantly reduce the conveyance capacity of the existing 24-inch RCP trunk line. This downstream trunk line potential obstruction could result in Drainage System 3 exhibiting poorer hydraulic performance than the drainage model indicates.

  It is noted that the hydraulic model simulations and analysis assess the theoretical capacity of

any existing pipe system to adequately convey the collected stormwater draining to it. The hydraulic model does not evaluate the condition of the pipe. The hydraulic model assumes the existing pipe is in good repair and functioning under ideal conditions. The various model simulations indicate whether the existing pipe has sufficient capacity under the model input parameters (design storm frequency, dynamic tidal conditions, physical pipe slope and size), and does not address pipe condition.

Hydraulic simulations do not result in recommendations regarding pipe rehabilitation (condition), as pipe condition is not known and therefore not considered when running the hydraulic simulations. As an example, the replacement of existing pipe to satisfy a pipe diameter or pipe slope capacity requirement are typical resultant recommendations that might be made based on hydraulic modeling and simulations.

Miscellaneous drainage network components and outfalls are also located along Lagoon Drive East, Harbor Drive, and within the Long Beach School Property, all modelled as part of Drainage System 3. This system contains a mixture of pavement, residential, and grassy areas. It consists of (93) inlets, (34) manholes, and (128) pipes and drains into Reynolds Channel and Hudson Channel.

The 18-inch diameter RCP drainage pipe could not be installed on a continuous grade beneath Lido Boulevard due to the presence of an existing 18-inch diameter sanitary sewer pipe that runs parallel to Lido Boulevard. To get the drainage trunk line across Lido Boulevard, it was necessary to construct an inverted siphon. See prior discussions in Drainage Section 1 of this report on the hydraulic principles in which inverted siphons work and their maintenance considerations. See Figure-7 for System 3 location, watershed area and inverted siphon location.

Drainage System 3 existing analysis did not include tidal gates at the outfalls. See Table-7 for results from the existing system 3 hydraulic analysis. See Figure-7 for System 3 location and watershed area. Note that outfalls 7003, 7004 and 7006 do not provide direct service to Location 3A but are included in the existing hydraulic model used to evaluate potential flooding conditions within the Drainage System 3 watershed area.

At the request of DASNY and GOSR representatives GPI was asked to run additional hydraulic model simulations for Drainage System 3, specifically through the school property, and to provide a summary of findings as it relates to potential flooding within project Location 3A. Discussion regarding the findings of the additional hydraulic modeling simulations conducted by GPI can be found in report Section 7.0 – Identified Drainage Problems, subsection Location 3A – Drainage System 3.

Figure-7: Location 3A- Drainage System 3 Map

Table 7: Drainage System 3 Existing Location 3A Analysis Results Summary						
Storm Event (Yr.)	**Scenario**	**Tidal Gate**	**Flooding**	**Structure ID and Flowline (F.L.) Elevation (Ft.)** *See Note 1*	**Flood Location**	**HGL Elevation (Ft.)** *See Note 1*
2	Mean Low Tide Existing	No	No	CB 2083 F.L. 4.42	N/A	1.84
2	Mean High Tide Existing	No	No	CB 2083 F.L. 4.42	N/A	2.02
2	Minor Coastal Flood Existing	No	No	CB 2083 F.L. 4.42	N/A	3.08
10	Mean Low Tide Existing	No	No	CB 2083 F.L. 4.42	N/A	2.95
10	Mean High Tide Existing	No	No	CB 2083 F.L. 4.42	N/A	3.56
10	Minor Coastal Flood Existing	No	Yes	CB 2083 CB 2085 CB 2087	Flood Location 1 (Fig-7). Flood Location 2 (Fig-7). Flood Location 2 (Fig-7).	N/A

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 3 Alternative "A" hydraulic analyses revealed that the system can adequately handle the 2 year storm event for all (3) tidal parameters. For the 10-year storm event, there are no hydraulic deficiencies evident for the Mean Low Tide and Mean High Tide scenarios. However, for the 10-year storm event under Minor Coastal Flooding outfall parameters the hydraulic grade line exceedes the rim elevations of multiple structures along Lido Boulevard. Ponding can be expected to occur along Lido Boulevard Location 3A during a combination of a 10-year storm event and a minor coastal flood tide elevation. See Appendix D for tabular results.

It should be noted the Lido Boulevard Drainage System 3 low point, just west of Regent Drive, is the lowest section of Lido Boulevard within Lido Boulveard Location 3A. This is where the first signs of

Drainage System 3 hydraulic deficiencies would be expected to appear within Lido Boulveard Location 3A.

- **Drainage System 3 - Alternative "A" Analysis**
  The proposed alternative analysis of System 3 consists of the same drainage network as the existing system, but with the addition of tidal backflow prevention devices at the outfall locations. See Table-8 for the results from the Drainage System 3 - Alternative "A" hydraulic analysis.

Table 8: Drainage System 3 Alternative "A" Location 3A Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID and Flowline (F.L.) Elevation (Ft.) *See Note 1*	Flood Location	HGL Elevation (Ft.) *See Note 1*
2	Mean Low Tide Existing	Yes	No	CB 2083 F.L. 4.42	N/A	-0.41
2	Mean High Tide Existing	Yes	No	CB 2083 F.L. 4.42	N/A	-0.41
2	Minor Coastal Flood Existing	Yes	No	CB 2083 F.L. 4.42	N/A	-0.41
10	Mean Low Tide Existing	Yes	No	CB 2083 F.L. 4.42	N/A	2.95
10	Mean High Tide Existing	Yes	No	CB 2083 F.L. 4.42	N/A	3.23
10	Minor Coastal Flood Existing	Yes	No	CB 2083 F.L. 4.42	N/A	3.80

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 3 Alternative "A" hydraulic analyses revealed that for both the 2-year and 10-year storm events, there are **no** System 3 hydraulic deficiencies within Lido Boulevard Location 3A for all (3) tidal parameters. It is important to note the existing conditions stormwater

ponding at Flood Locations 1 and 2 (Figure-7) for the 10-year storm event with Minor Coastal Flooding tidal conditions, has been eliminated with the implementation of a tidal backflow preventer. Refer to Appendix D for tabular results.

- **Drainage System 4 - Existing Analysis**

  Drainage System 4 begins at the Lido Boulevard/Allevard Street intersection and extends east along Lido Boulevard until approximately 470 feet west of the Lido Boulevard/Bay Lane intersection. This area mostly consists of pavement and residential lots, but there are small pockets of commercial and grass areas. There are (90) inlets, (76) manholes, and (166) pipes which drain into Reynolds Channel. Only a small portion of System 4 services Lido Boulevard Location 3A. One 48-inch diameter RCP pipe that traverses northerly along the easterly boundary of the Lido Golf course property discharges all flow collected by System 4. The System 4 existing analysis will not include tidal backflow prevention at the outfalls. See Table-9 for results from the Drainage System 4 existing hydraulic analysis. See Figure-8 for System 4 location and watershed area.

Figure-8: Drainage System 4

Table 9: Drainage System 4 Existing Location 3A Analysis Results Summary						
Storm Event (Yr.)	**Scenario**	**Tidal Gate**	**Flooding**	**Structure ID and Flowline (F.L.) Elevation (Ft.)** *See Note 1*	**Flood Location**	**HGL Elevation (Ft.)** *See Note 1*
2	Mean Low Tide Existing	No	No	CB 3040 F.L. 5.66	N/A	1.78
2	Mean High Tide Existing	No	No	CB 3040 F.L. 5.66	N/A	2.14
2	Minor Coastal Flood Existing	No	No	CB 3040 F.L. 5.66	N/A	3.22
10	Mean Low Tide Existing	No	No	CB 3040 F.L. 5.66	N/A	3.33
10	Mean High Tide Existing	No	No	CB 3040 F.L. 5.66	N/A	3.93
10	Minor Coastal Flood Existing	No	No	CB 3040 F.L. 5.66	N/A	4.46

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 4 Existing hydraulic analyses revealed that for the 2-year and 10-year storm events, there are **no** System 4 hydraulic deficiencies within Lido Boulevard Location 3A for all (3) tidal parameters. Although outside of Lido Boulevard Location 3A, it is noted that Drainage System 4 existing hydraulic analysis indicates flooding does occur south of Location 3A, as shown on Figure 8. The flooding occurs within an area identified as Ocean Boulevard Location 3D, which is discussed later in this report. Refer to Appendix D for tabular results.

- **<u>Drainage System 4 - Alternative "A" Analysis</u>**
  The proposed alternative analysis of System 4 consists of the same drainage network as the existing system, but with the addition of tidal backflow prevention devices at the outfall locations. See Table-10 for the results from the Drainage System 4 - Alternative "A" hydraulic analysis.

Table 10: Drainage System 4 Alternative "A" Location 3A Analysis Results Summary						
Storm Event (Yr.)	**Scenario**	**Tidal Gate**	**Flooding**	**Structure ID and Flowline (F.L.) Elevation (Ft.)** *See Note 1*	**Flood Location**	**HGL Elevation (Ft.)** *See Note 1*
2	Mean Low Tide Existing	Yes	No	CB 3040 F.L. 5.66	N/A	1.78
2	Mean High Tide Existing	Yes	No	CB 3040 F.L. 5.66	N/A	1.78
2	Minor Coastal Flood Existing	Yes	No	CB 3040 F.L. 5.66	N/A	1.78
10	Mean Low Tide Existing	Yes	No	CB 3040 F.L. 5.66	N/A	3.05
10	Mean High Tide Existing	Yes	No	CB 3040 F.L. 5.66	N/A	3.04
10	Minor Coastal Flood Existing	Yes	No	CB 3040 F.L. 5.66	N/A	3.04

<u>Note 1:</u> The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

<u>Conclusion:</u> The results of the System 4 Alternative "A" hydraulic analyses revealed that for the 2-year and 10-year storm events, there are **<u>no</u>** System 4 hydraulic deficiencies within Lido Boulveard Location 3A for all (3) tidal parameters. A comparison of the HGL elevations presented in Tables 9 and 10, particularly for the 10-year storm event, clearly indicates the implementation of tidal backflow

prevention devices significantly lowers the HGL elevation for the Drainage System 4 structures positioned within Lido Boulevard Location 3A. This reduction in HGL elevation provides Drainage System 4 with additional stormwater storage and conveyance capacity. Refer to Appendix D for tabular results.

Lido Boulevard Location 3B

Location 3B is comprised of the approximately 2,500 LF (0.5 mile) section of Lido Boulevard between Prescott Street and Address # 750 Lido Boulevard (Towne House at Lido Beach). Like Location 3A this section of Lido Boulevard is a major arterial that provides primary access for educational facilities, municipal, residential and commercial properties. It also serves as an emergency evacuation route for the barrier island.

Lido Boulevard Location 3B is serviced by Drainage System 4. Refer to Figure 9 below for a detailed overview of the Drainage System 4 components situated within Location 3B. Although Location 3B is only serviced by a portion of Drainage System 4, it was mandatory to completely model the system in order to fully analyze its performance.

South side of Lido Boulevard looking east from the intersection with Prescott Street

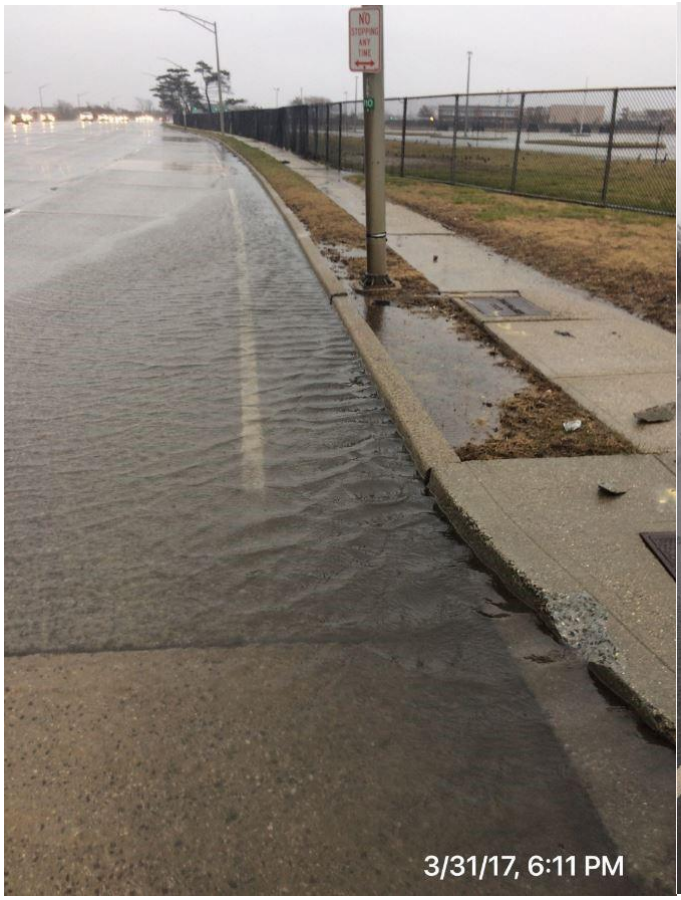
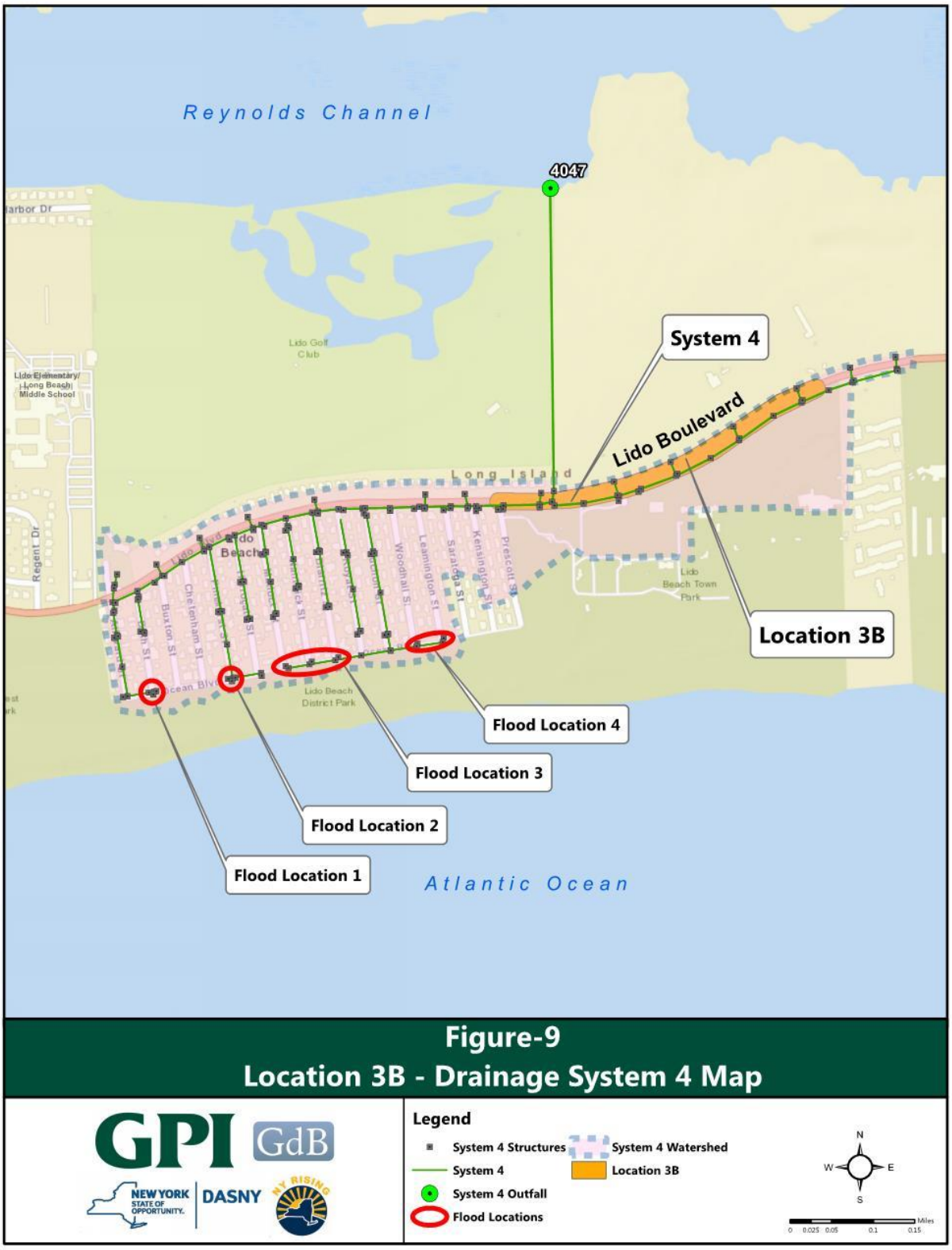


Figure-9: Location 3B – Drainage System 4 Map



- **Drainage System 4 - Existing Analysis**

  Drainage System 4 begins at the Lido Boulevard/Allevard Street intersection and extends east on Lido Boulevard until approximately 470 feet west of the Lido Boulevard/Bay Lane intersection. Location 3B encompasses multiple catch basins, manhole structures, and the 48-inch trunk line along Lido Boulevard. The areas adjacent to System 4 are made up of a combination of residential lots, community parks, and pockets of commercial and grass areas. There are (90) inlets, (76) manholes, and (166) pipes which drain into Reynolds Channel. The System 4 existing analysis will not include tidal backflow prevention at the outfalls. See Table-11 for results from the Drainage System 4 existing hydraulic analysis. See Figure-9 for System 4 location and watershed area.

Table 11: Drainage System 4 Existing Location 3B Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID and Flowline (F.L.) Elevation (Ft.) *See Note 1*	Flood Location	HGL Elevation (Ft.) *See Note 1*
2	Mean Low Tide Existing	No	No	CB 3027 F.L. 4.94	N/A	1.70
2	Mean High Tide Existing	No	No	CB 3027 F.L. 4.94	N/A	1.97
2	Minor Coastal Flood Existing	No	No	CB 3027 F.L. 4.94	N/A	3.07
10	Mean Low Tide Existing	No	No	CB 3027 F.L. 4.94	N/A	1.89
10	Mean High Tide Existing	No	No	CB 3027 F.L. 4.94	N/A	2.99
10	Minor Coastal Flood Existing	No	No	CB 3027 F.L. 4.94	N/A	3.92

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the

proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 4 Existing hydraulic analyses revealed that for both the 2-year and 10-year storm events, there are **no** System 4 hydraulic deficiencies within Lido Boulevard Location 3B for all (3) tidal parameters. Although outside of Lido Boulevard Location 3B, it is noted that Drainage System 4 Existing hydraulic analysis indicates flooding does occur southwest of Location 3B, as shown on Figure 9. The flooding occurs within an area identified as Ocean Boulevard Location 3D, which is discussed later in this report. Refer to Appendix D for tabular results.

- **Drainage System 4 - Alternative "A" Analysis**

  The proposed alternative analysis of System 4 consists of the same drainage network as the existing system, but with the addition of a tidal backflow prevention device at the outfall location. See Table-12 for the results from the Drainage System 4 - Alternative "A" hydraulic analysis.

Table 12: Drainage System 4 Alternative "A" Location 3B Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID and Flowline (F.L.) Elevation (Ft.) *See Note 1*	Flood Location	HGL Elevation (Ft.) *See Note 1*
2	Mean Low Tide Existing	Yes	No	CB 3027 F.L. 4.94	N/A	1.70
2	Mean High Tide Existing	Yes	No	CB 3027 F.L. 4.94	N/A	1.70
2	Minor Coastal Flood Existing	Yes	No	CB 3027 F.L. 4.94	N/A	1.70
10	Mean Low Tide Existing	Yes	No	CB 3027 F.L. 4.94	N/A	1.89
10	Mean High Tide Existing	Yes	No	CB 3027 F.L. 4.94	N/A	1.89
10	Minor Coastal Flood Existing	Yes	No	CB 3027 F.L. 4.94	N/A	1.89

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 4 – Alternative "A" hydraulic analyses revealed that for both the 2-year and 10-year storm events, there are **no** hydraulic deficiencies within Lido Boulevard Location 3B for all (3) tidal parameters. A comparison of the HGL elevations presented in Tables 11 and 12,

particularly for the 10-year storm event, clearly indicates the implementation of tidal backflow prevention devices significantly lowers the HGL elevation for the Drainage System 4 structures positioned within Lido Boulevard Location 3B. This reduction in HGL elevation provides Drainage System 4 with additional stormwater storage and conveyance capacity. Refer to Appendix D for tabular results.

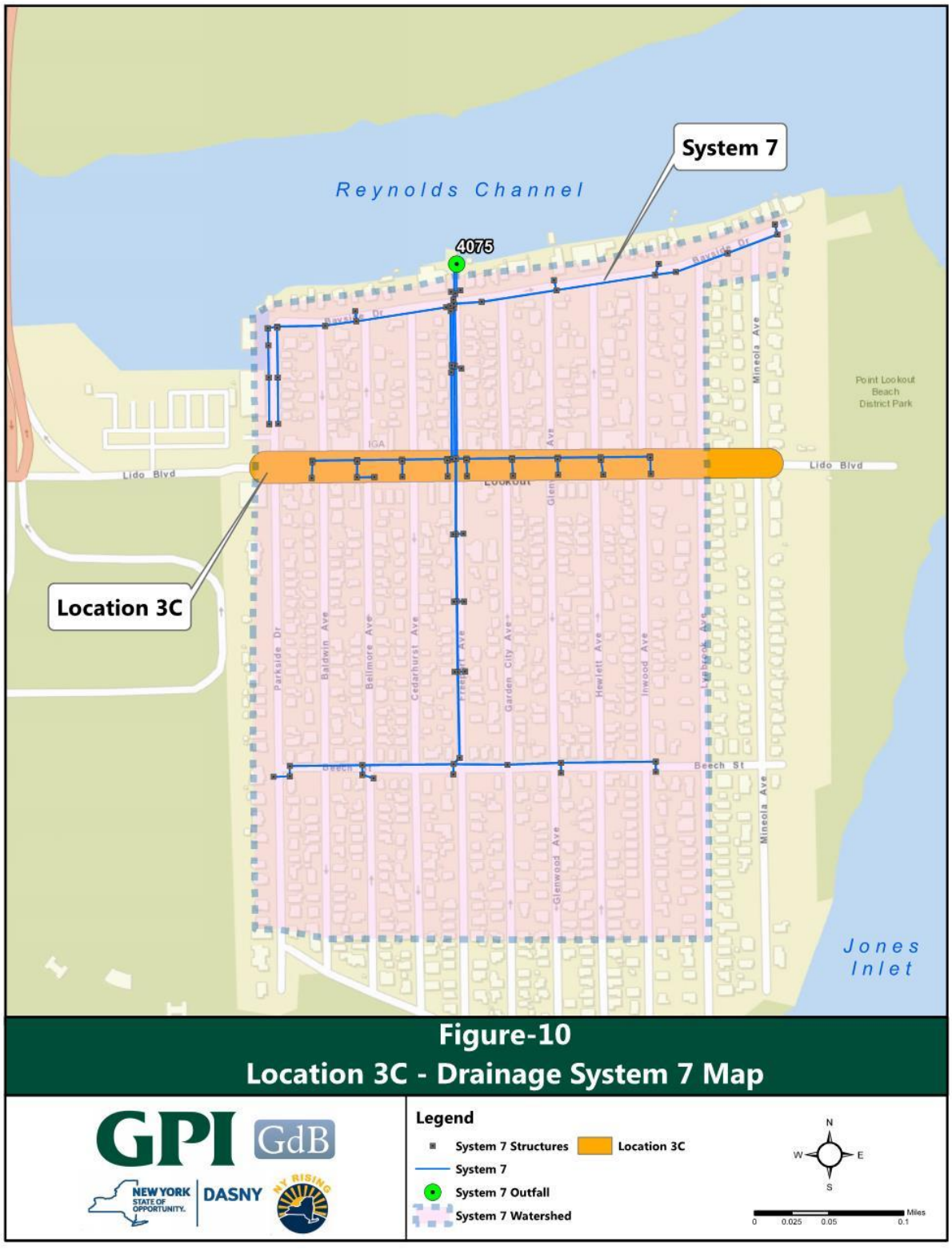
Lido Boulevard Location 3C

Location 3C is comprised of the approximately 1,900 LF (0.36 mile) section of Lido Boulevard between Parkside Drive and Mineola Avenue within the community of Point Lookout. Lido Boulevard within Location 3C is a minor arterial that provides primary access for municipal facilities, residential, and commercial properties. It also serves as an emergency evacuation route for the barrier island.

Location 3C is serviced by Drainage System 7. Refer to Figure 10 below for a detailed overview of Drainage System 7 components situated within Location 3C. Although Location 3C is only serviced by a portion of Drainage System 7, it was mandatory to model the entire system to fully analyze its performance.

Lido Boulevard looking east from the intersection with Inwood Avenue

Figure-10: Location 3C – Drainage System 7 Map



- **Drainage System 7 - Existing Analysis**

  The portion of Drainage System 7 that services Location 3C begins at the Lido Boulevard/Baldwin Avenue intersection and extends easterly on Lido Boulevard approximately 1,200 feet to the intersection of Lido Boulevard/Inwood Avenue. In addition to Lido Boulevard Location 3C, Drainage System 7 also has trunk lines and collection basins along Beech Street, Freeport Avenue, Parkside Drive, and Bayside Drive. The Point Lookout community consists mostly of residential development with minor commercial and municipal development. There are (61) inlets, (25) manholes, and (86) conduits which drain into Reynolds Channel. The System 7 existing analysis will not include tidal backflow prevention at the outfalls. See Table-13 for results from the Drainage System 7 existing hydraulic analysis. See Figure-10 for System 7 location and watershed area.

Table 13: Drainage System 7 Existing Location 3C Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID and Flowline (F.L.) Elevation (Ft.) *See Note 1*	Flood Location	HGL Elevation (Ft.) *See Note 1*
2	Mean Low Tide Existing	No	No	CB 1007 F.L. 5.60	N/A	1.85
2	Mean High Tide Existing	No	No	CB 1007 F.L. 5.60	N/A	1.85
2	Minor Coastal Flood Existing	No	No	CB 1007 F.L. 5.60	N/A	3.08
10	Mean Low Tide Existing	No	No	CB 1007 F.L. 5.60	N/A	3.14
10	Mean High Tide Existing	No	No	CB 1007 F.L. 5.60	N/A	3.14
10	Minor Coastal Flood Existing	No	No	CB 1007 F.L. 5.60	N/A	3.14

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is

higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 7 Existing hydraulic analyses revealed that for both the 2-year and 10-year storm events, there are **no** System 7 hydraulic deficiencies within Lido Boulevard Location 3C for all (3) tidal parameters. Refer to Appendix D for tabular results.

- **Drainage System 7 - Alternative "A" Analysis**

  The proposed alternative analysis of System 7 consists of the same drainage network as the existing system, but with the addition of a tidal backflow prevention device at the outfall location. See Table-14 for the results from the Drainage System 7 - Alternative "A" hydraulic analysis.

Table 14: Drainage System 7 Alternative "A" Location 3C Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID and Flowline (F.L.) Elevation (Ft.) *See Note 1*	Flood Location	HGL Elevation (Ft.) *See Note 1*
2	Mean Low Tide Existing	No	No	CB 1007 F.L. 5.60	N/A	1.85
2	Mean High Tide Existing	No	No	CB 1007 F.L. 5.60	N/A	1.85
2	Minor Coastal Flood Existing	No	No	CB 1007 F.L. 5.60	N/A	1.85
10	Mean Low Tide Existing	No	No	CB 1007 F.L. 5.60	N/A	3.14
10	Mean High Tide Existing	No	No	CB 1007 F.L. 5.60	N/A	3.14
10	Minor Coastal Flood Existing	No	No	CB 1007 F.L. 5.60	N/A	3.14

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conculsion: The results of the System 7 – Alternative "A" hydraulic analyses revealed that for the 2-year and 10-year storm events, there are **no** hydraulic deficiencies within Lido Boulevard Location 3C for all (3) tidal parameters. Refer to Appendix D for tabular results.

Ocean Boulevard Location 3D

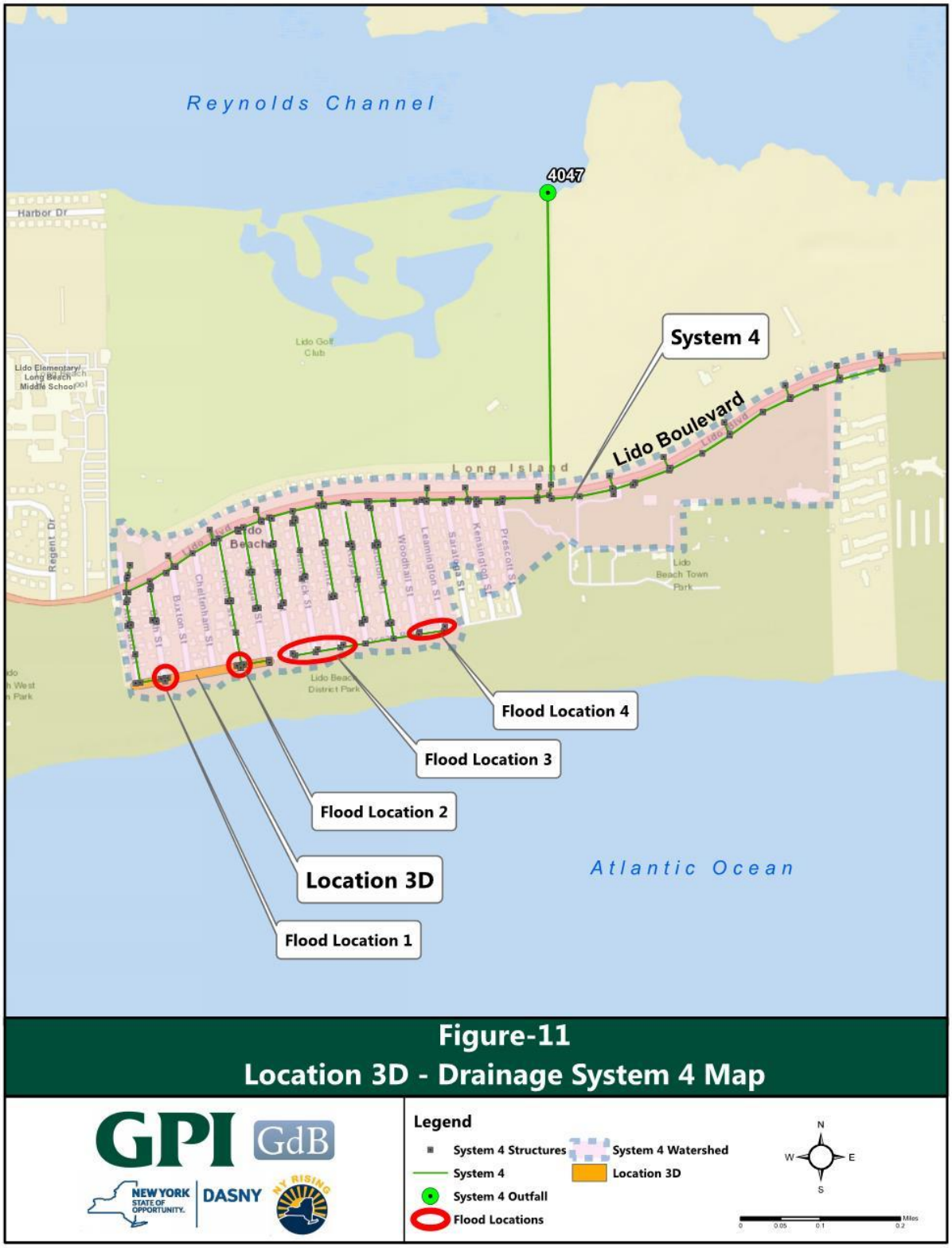
The residential development south of Lido Boulevard between Allevard Street and Prescott Street is known as the Lido Dunes neighborhood. Ocean Boulevard Location 3D is located in the Lido Dunes neighborhood and is comprised of the approximately 900 LF (0.2 mile) section of Ocean Boulevard between Allevard Street and Harrogate Street. Since Ocean Boulevard is not the primary access to the southernmost residential properties fronting on Allevard, Bath, Buxton, Cheltenham, Pinehurst, and Harrogate Streets, flooding on Ocean Boulevard Location 3D would not result in a "critical access issue" to these properties.

Location 3D is serviced by Drainage System 4. Refer to Figure 11 below for a detailed overview of the Drainage System 4 components situated within Location 3D. Although Ocean Boulevard Location 3D is only serviced by a portion of Drainage System 4, it was mandatory to model the entire system to fully analyze its performance.

Ocean Blvd. looking west from the intersection with Bath Street

Ocean Blvd. looking west at the intersection with Allevard Street

Figure-11: Location 3D – Drainage System 4 Map



- **Drainage System 4 - Existing Analysis**

  Within the 900 LF section of Location 3D there is a high point along Ocean Boulevard at approximately the intersection of Cheltenham Street. From the high point, the stormwater run-off flows to the east and west eventually ending at the System 4 drainage system discharging north to Lido Boulevard. In addition to Location 3D, Drainage System 4 also has trunk lines and collection basins along Lido Boulevard, and a majority of the local streets within the Lido Beach community. Ocean Boulevard is a local connector street providing access primarily to a residential neighborhood. There are (90) inlets, (76) manholes, and (166) pipes which drain into Reynolds Channel. Only a small portion of Drainage System 4 services Ocean Boulevard Location 3D. The System 4 existing analysis will not include tidal backflow prevention at the outfalls. See Table-15 for results from the Drainage System 4 existing hydraulic analysis. See Figure-11 for System 4 location and watershed area.

Table 15: Drainage System 4 Existing Location 3D Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID and Flowline (F.L.) Elevation (Ft.) *See Note 1*	Flood Location	HGL Elevation (Ft.) *See Note 1*
2	Mean Low Tide Existing	No	No	CB 4066/4077 F.L. 4.36	N/A	2.26
2	Mean High Tide Existing	No	No	CB 4066/4077 F.L. 4.36	N/A	2.26
2	Minor Coastal Flood Existing	No	No	CB 4066/4077 F.L. 4.36	N/A	3.24
10	Mean Low Tide Existing	No	No	CB 4066/4077 F.L. 4.36	N/A	4.06
10	Mean High Tide Existing	No	Yes	CB 4069	Flood Location 1 (Fig-11).	N/A
10	Minor Coastal Flood Existing	No	Yes	CB 4066/4077 CB 4064/4065 CB 4063	Flood Location 1 (Fig-11). Flood Location 2 (Fig-11). Flood Location 2 (Fig-11).	N/A

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is

higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 4 Existing hydraulic analyses within Ocean Boulevard Location 3D revealed the system can adequately handle the 2-year storm event for all (3) tidal parameters. For the 10-year storm event, there are no System 4 hydraulic deficiencies evident within Ocean Boulevard Location 3D for the Mean Low Tide scenario. However, for the 10-year storm event under Mean High Tide and Minor Coastal Flood tidal conditions, the hydraulic grade line exceeds the rim elevations of multiple structures along Ocean Boulevard. Ponding can be expected to occur along Location 3D during a combination of a 10-year storm event and either a Mean High Tide or Minor Coastal Fooding Tidal event.

Figure-11 shows Flood Locations 1 and 2, which lie within Ocean Boulevard Location 3D. Flood Locations 3 and 4 are outside the Ocean Boulevard Location 3D limits and are situated at the southern terminus of the residential streets, just north of what used to be Ocean Boulevard. In Flood Locations 3 and 4, the Ocean Boulevard roadway pavement has been completely removed and vegetated sand dunes have been constructed. The complete Drainage System 4 existing hydraulic analyses indicate Flood Location 3 experiences stormwater ponding for the 10-year storm event under all (3) tidal outfall conditions modeled. Flood Location 4 experiences stormwater ponding for the 10-year storm event only under Mean High Tide and Minor Coastal Flooding tidal conditions.

For Drainage System 4 detailed tabular results, please refer to Appendix D.

- **Drainage System 4 - Alternative "A" Analysis**

  The proposed alternative analysis of System 4 consists of the same drainage network as the existing system, but with the addition of a tidal backflow prevention device at the outfall location. See Table-16 for the results from the Drainage System 4 - Alternative "A" hydraulic analysis.

Table 16: Drainage System 4 Alternative "A" Location 3D Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID and Flowline (F.L.) Elevation (Ft.) *See Note 1*	Flood Location	HGL Elevation (Ft.) *See Note 1*
2	Mean Low Tide Existing	Yes	No	CB 4066/4077 F.L. 4.36	N/A	2.26
2	Mean High Tide Existing	Yes	No	CB 4066/4077 F.L. 4.36	N/A	2.26
2	Minor Coastal Flood Existing	Yes	No	CB 4066/4077 F.L. 4.36	N/A	2.26
10	Mean Low Tide Existing	Yes	No	CB 4066/4077 F.L. 4.36	N/A	3.75
10	Mean High Tide Existing	Yes	No	CB 4066/4077 F.L. 4.36	N/A	3.76
10	Minor Coastal Flood Existing	Yes	No	CB 4066/4077 F.L. 4.36	N/A	3.76

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 4 Alternative "A" hydraulic analyses within Ocean Boulevard Location 3D reveal the system can adequately handle the 2-year and 10-year storm events for all (3) tidal parameters.

Figure-11 shows Flood Locations 1 and 2, which lie within Ocean Boulevard Location 3D. Under Alternative "A," the installation of a tidal check valve eliminates the ponding previously experienced at Flood Locations 1 and 2 for the 10-year storm event under Mean High Tide and Minor Coastal Flooding tidal conditions.

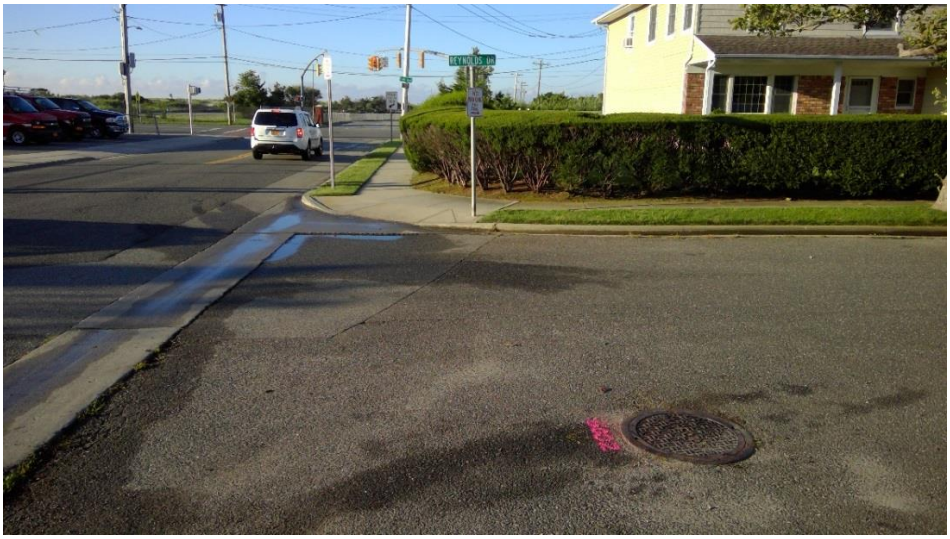
For Drainage System 4 detailed tabular results, please refer to Appendix D.

Regent Drive Location 3E

Location 3E is comprised of the approximately 2,900 LF (0.5 mile) section of Regent Drive between Lido Boulevard and Park Drive. Location 3E is a local urban street within the Lido North neighborhood that provides primary access for municipal facilities and residential properties.

Location 3E is serviced by Drainage Systems 2 and 3. Refer to Figure-12 below for a detailed overview of the drainage systems situated within Location 3E. Although only portions of Drainage Systems 2 and 3 service Location 3E, it is mandatory to model the entire systems to fully analyze their performance.

Regent Drive looking south at the signalized intersection with Lido Blvd.



Regent Drive Cul-de-sac looking south at Regent Drive

Figure-12: Location 3E Map

- **Drainage System 2 - Existing Analysis**

  The portion of Drainage System 2 that services Location 3E begins at the Regent Drive/School Lane intersection and extends west on Regent Drive approximately 1,300 feet to the intersection of Regent Drive/Ivy Lane. In addition to Regent Drive Location 3E, Drainage System 2 also has trunk lines and collection basins along Clover Lane, Greenway Road, Avon Lane, Reynolds Drive, Lagoon Drive West and Lagoon Drive East. There are (27) inlets, (18) manholes, and (45) pipes which drain into Hudson Channel. The System 2 existing analysis will not include tidal backflow prevention at the outfalls. See Table-17 for results from the Drainage System 2 existing hydraulic analysis. See Figure-13 for System 2 location and watershed area.

Figure-13: Location 3E- Drainage System 2 Map

Table 17: Drainage System 2 Existing Location 3E Analysis Results Summary						
Storm Event (Yr.)	**Scenario**	**Tidal Gate**	**Flooding**	**Structure ID and Flowline (F.L.) Elevation (Ft.)** *See Note 1*	**Flood Location**	**HGL Elevation (Ft.)** *See Note 1*
2	Mean Low Tide Existing	No	No	CB 6030 F.L. 4.75	N/A	1.08
2	Mean High Tide Existing	No	No	CB 6030 F.L. 4.75	N/A	2.05
2	Minor Coastal Flood Existing	No	No	CB 6030 F.L. 4.75	N/A	3.18
10	Mean Low Tide Existing	No	No	CB 6030 F.L. 4.75	N/A	3.41
10	Mean High Tide Existing	No	Yes	CB 6008 CB 6030	Flood Location 2 (Fig-13). Flood Location 5 (Fig-13).	N/A
10	Minor Coastal Flood Existing	No	Yes	CB 6009 CB 6021 CB 6030 CB 6057	Flood Location 2 (Fig-13). Flood Location 4 (Fig-13). Flood Location 5 (Fig-13). Flood Location 7 (Fig-13).	N/A

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 2 Existing hydraulic analyses within Regent Drive Location 3E revealed the system can adequately handle the 2-year storm event for all (3) tidal outfall parameters. For the 10-year storm event, there are no System 2 hydraulic deficiencies evident within Regent Drive Location 3E for the Mean Low Tide scenario. However, for the 10-year storm event under Mean High Tide and Minor Coastal Flooding tidal conditions, the hydraulic grade line exceeds the rim elevations of multiple structures along Regent Drive. Ponding can be expected to occur within Regent Drive Location 3E during a 10-year storm event coupled with either Mean High Tide or Minor Coastal Flooding tidal conditions.

Figure-13 shows (7) Drainage System 2 Flood Locations. Flood Locations 2, 4, 5 and 7 lie within Regent Drive Location 3E. Flood Locations 2 and 5 experience stormwater ponding for the 10-year storm event occuring with Mean High Tide outfall conditions. Flood Locations, 2, 4, 5 and 7 all experience ponding conditions for the 10-year storm occuring with Minor Coastal Flooding tidal conditions.

Flood Locations 1, 3 and 6 are serviced by Drainage System 2, but lie outside Regent Drive Location 3E. All (3) of these flood locations experience stormwater ponding for the 10-year storm event occuring with Mean High Tide or Minor Coastal Flooding tidal conditions.

For Drainage System 2 detailed tabular results, please refer to Appendix D.

- **Drainage System 2 - Alternative "A" Analysis**

  The proposed alternative analysis of System 2 consists of the same drainage network as the existing system, but with the addition of a tidal backflow prevention device at the outfall location. See Table-18 for the results from the Drainage System 2 - Alternative "A" hydraulic analysis.

Table 18: Drainage System 2 Alternative "A" Location 3E Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID and Flowline (F.L.) Elevation (Ft.) *See Note 1*	Flood Location	HGL Elevation (Ft.) *See Note 1*
2	Mean Low Tide Existing	Yes	No	CB 6030 F.L. 4.75	N/A	1.08
2	Mean High Tide Existing	Yes	No	CB 6030 F.L. 4.75	N/A	1.08
2	Minor Coastal Flood Existing	Yes	No	CB 6030 F.L. 4.75	N/A	1.08
10	Mean Low Tide Existing	Yes	No	CB 6030 F.L. 4.75	N/A	3.41
10	Mean High Tide Existing	Yes	Yes	CB 6007 CB 6008	Flood Location 2 (Fig-13).	N/A
10	Minor Coastal Flood Existing	Yes	Yes	CB 6030 CB 6057	Flood Location 5 (Fig-13). Flood Location 7 (Fig-13).	N/A

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 2 Alternative "A" hydraulic analyses within Regent Drive Location 3E revealed the system can adequately handle the 2-year storm event for all (3) tidal outfall

parameters. For the Alternative "A" 10-year storm event, there are no System 2 hydraulic deficiencies evident within Regent Drive Location 3E for the Mean Low Tide scenario. However, for the 10-year storm event under Mean High Tide and Minor Coastal Flooding tidal conditions, the hydraulic grade line exceeds the rim elevations of several structures along Regent Drive. Under Alternative "A," ponding can be expected to occur within Regent Drive Location 3E during a 10-year storm event coupled with either Mean High Tide or Minor Coastal Flooding tidal conditions.

Figure-13 shows (7) Drainage System 2 Flood Locations. Flood Locations 2, 4, 5 and 7 lie within Regent Drive Location 3E. Under Alternative "A," only Flood Location 2 experiences stormwater ponding for the 10-year storm event occuring with Mean High Tide outfall conditions. The ponding that had occurred at Flood Location 5 under existing conditions for these same storm and tidal parameters has been eliminated. Under Alternative "A," only Flood Locations 5 and 7 experience ponding conditions for the 10-year storm occuring with Minor Coastal Flooding tidal conditions. The ponding that had occurred at Flood Locations 2 and 4 under existing conditions for these same storm parameters has been eliminated.

Flood Locations 1, 3 and 6 are serviced by Drainage System 2, but lie outside Regent Drive Location 3E. Under Alternative "A," only Flood Locations 3 and 6 experience stormwater ponding for the 10-year storm event occuring with Mean High Tide or Minor Coastal Flooding tidal conditions. The ponding that had occurred at Flood Location 1 under existing conditions for these same storm parameters has been eliminated.

When compared to existing conditions, it can be readily seen that Alternative "A" (introduction of check valves) eliminated flooding at multiple locations within the Drainage System 2 service area.

For Drainage System 2 detailed tabular results, please refer to Appendix D.

- **Drainage System 3 - Existing Analysis**

The portion of Drainage System 3 that services Location 3E begins at the Regent Drive/Lido Boulevard intersection and extends north on Regent Drive approximately 650 feet to the Regent Drive cul-de-sac, which is adjacent to the Nassau County drainage easement. In addition to Regent Drive Location 3E, Drainage System 3 also has trunk lines and collection basins throughout the Lido Elementary/Long Beach Middle School property, Lido Boulevard, Audrey Drive, Lagoon Drive East, and Harbor Drive. There are (93) inlets, (34) manholes, and (128) pipes which drain into both Hudson Channel and Reynolds Channel. The System 3 existing analysis does not include tidal backflow prevention at the outfalls. See Table-19 for results from the Drainage System 3 existing hydraulic analysis. See Figure-14 for System 3 location and watershed area.

Figure-14: Location 3E- Drainage System 3 Map

Table 19: Drainage System 3 Existing Location 3E Analysis Results Summary						
Storm Event (Yr.)	**Scenario**	**Tidal Gate**	**Flooding**	**Structure ID and Flowline (F.L.) Elevation (Ft.)** *See Note 1*	**Flood Location**	**HGL Elevation (Ft.)** *See Note 1*
2	Mean Low Tide Existing	No	No	CB 6006 F.L. 5.05	N/A	2.42
2	Mean High Tide Existing	No	No	CB 6006 F.L. 5.05	N/A	2.42
2	Minor Coastal Flood Existing	No	No	CB 6006 F.L. 5.05	N/A	3.04
10	Mean Low Tide Existing	No	No	CB 6006 F.L. 5.05	N/A	2.70
10	Mean High Tide Existing	No	No	CB 6006 F.L. 5.05	N/A	2.98
10	Minor Coastal Flood Existing	No	No	CB 6006 F.L. 5.05	N/A	3.95

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 3 Existing hydraulic analyses revealed that for the 2-year and 10-year storm events, there are no System 3 hydraulic deficiencies within Regent Drive Location 3E for all (3) tidal parameters. Refer to Appendix D for tabular results.

- **Drainage System 3 - Alternative "A" Analysis**

  The proposed alternative analysis of System 3 will consist of the same drainage network as the existing system, but with the addition of a tidal backflow prevention device at the outfall location. See Table-20 for the results from the Drainage System 3 - Alternative "A" hydraulic analysis.

Table 20: Drainage System 3 Alternative "A" Location 3E Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID and Flowline (F.L.) Elevation (Ft.) *See Note 1*	Flood Location	HGL Elevation (Ft.) *See Note 1*
2	Mean Low Tide Existing	Yes	No	CB 6006 F.L. 5.05	N/A	2.42
2	Mean High Tide Existing	Yes	No	CB 6006 F.L. 5.05	N/A	2.42
2	Minor Coastal Flood Existing	Yes	No	CB 6006 F.L. 5.05	N/A	2.42
10	Mean Low Tide Existing	Yes	No	CB 6006 F.L. 5.05	N/A	2.70
10	Mean High Tide Existing	Yes	No	CB 6006 F.L. 5.05	N/A	2.80
10	Minor Coastal Flood Existing	Yes	No	CB 6006 F.L. 5.05	N/A	3.43

Note 1: The information shown in this table column is presented to demonstrate to the reader a sample of the technical data presented and found in Appendix D of this report. Appendix D provides information on each drainage structure located within all drainage systems, as modeled and evaluated under each of the "Scenarios" described within the table. The specific drainage structure selected for placement into this table represents the lowest rim/flowline elevation within the drainage system and Location Area described in the Table. The relationship shown between the existing rim/flowline elevation and the reported HGL, suggests where flooding may occur (where the HGL elevation is higher than the rim/flowline elevation). The information presented in these columns also serves to provide data that may be used to compare the results reported under the existing condition and the proposed condition, after implementation of Alternative "A".

Conclusion: The results of the System 3 Alternative "A" hydraulic analyses revealed that for the 2-year and 10-year storm events, there are no System 3 hydraulic deficiencies within Regent Drive Location

3E for all (3) tidal parameters. Refer to Appendix D for tabular results.

When compared to existing conditions, it can be seen that Alternative "A" (introduction of check valves) lowered the HGL elevations of the Drainage System 3 structures situated within Regent Drive Location 3E.

Lido North Community Location 3F

Location 3F is comprised of the entire Lido North Community minus the segment of Regent Drive previously analyzed as Location 3E. The Lido North Community includes all local roads north of Lido Boulevard between its intersections with Blackheath Road and Regent Drive. The local roads within Location 3F serve as primary access to educational facilities and residential properties.

Lido North Community Location 3F is serviced by Drainage Systems 1 and 2. Refer to Figure-15 below for a detailed overview of the drainage systems situated within Lido North Community Location 3F. Although only a portion of Drainage Systems 1 and 2 service Location 3F, it was mandatory to model the complete systems to fully analyze their performance.

Lagoon Drive East looking easterly at the intersection with School Lane

Blackheath Road looking north and adjacent to Long Beach High School

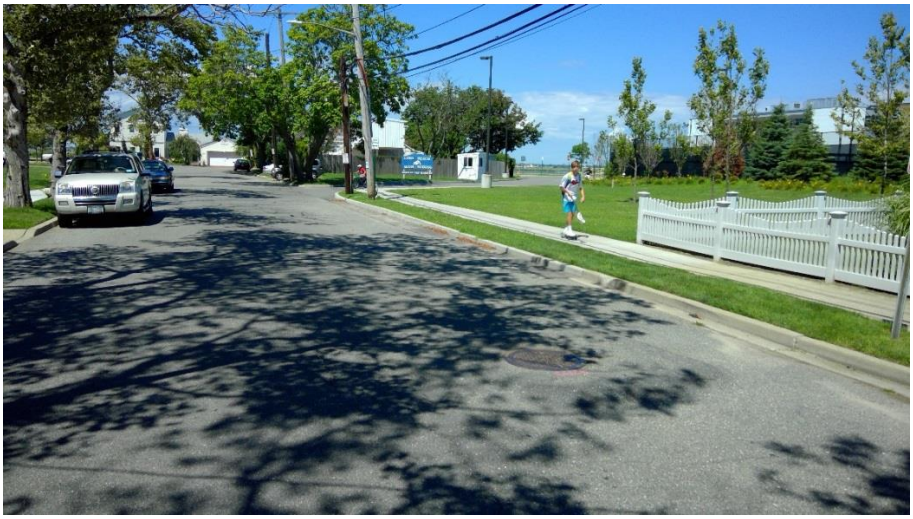


Figure-15: Location 3F Map

- **Drainage System 1 - Existing Analysis**

  The portion of Drainage System 1 that services Lido North Community Location 3F begins at the Lido Boulevard/Blackheath Road intersection and extends north along Blackheath Road and its intersection roads. The North Lido Community consists mostly of residential and educational development. There are (72) inlets, (55) manholes, and (128) pipes which drain into Bob Jones Canal at the north end of Blackheath Road. The System 1 existing analysis does not include tidal backflow prevention at its outfall. See Table-21 for results from the Drainage System 1 existing hydraulic analysis. See Figure-16 for System 1 location and watershed area.

Figure-16: Location 3F- Drainage System 1 Map

Table 21: Drainage System 1 Existing Location 3F Analysis Results Summary					
Storm Event (Yr.)	**Scenario**	**Tidal Gate**	**Flooding**	**Structure ID**	**Flood Location**
2	Mean Low Tide Existing	No	No	N/A	N/A
2	Mean High Tide Existing	No	No	N/A	N/A
2	Minor Coastal Flood Existing	No	No	N/A	N/A
10	Mean Low Tide Existing	No	No	N/A	N/A
10	Mean High Tide Existing	No	No	N/A	N/A
10	Minor Coastal Flood Existing	No	No	N/A	N/A

Conclusion: The results of the System 1 Existing hydraulic analyses reveal that for both the 2-year and 10-year storm events, there are **no** Drainage System 1 hydraulic deficiencies within Lido North Community Location 3F for all (3) tidal parameters. Although outside of Location 3F, it is noted that Drainage System 1 existing hydraulic analysis indicates flooding does occur south of Lido Boulevard, as shown on Figure 16. See Appendix D for tabular results.

- **Drainage System 1 - Alternative "A" Analysis**

  The proposed alternative analysis of System 1 consists of the same drainage network as the existing system, but with the addition of a tidal backflow prevention device at the outfall location. See Table-22 for the results from the Drainage System 1 - Alternative "A" hydraulic analysis.

Table 22: Drainage System 1 Alternative "A" Location 3F Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID	Flood Location
2	Mean Low Tide Existing	Yes	No	N/A	N/A
2	Mean High Tide Existing	Yes	No	N/A	N/A
2	Minor Coastal Flood Existing	Yes	No	N/A	N/A
10	Mean Low Tide Existing	Yes	No	N/A	N/A
10	Mean High Tide Existing	Yes	No	N/A	N/A
10	Minor Coastal Flood Existing	Yes	No	N/A	N/A

Conclusion: The results of the Drainage System 1 – Alternative "A" hydraulic analyses reveal that for both the 2-year and 10-year storm events, there are no hydraulic deficiencies within Lido North Community Location 3F for all (3) tidal parameters. See Appendix D for tabular results.

From a review of the tabular results within Appendix D, it can be seen that the implementation of the tidal check valve under Alternative "A" reduces flooding. The catch basin flood locations identified under the existing conditions 10-year storm event coupled with Mean High Tide and Minor Coastal Flooding outfall conditions have been eliminated with the tidal check valve installation. Although the catch basin flood locations are outside Lido North Community Location 3F, they serve to show the clear benefit of tidal check valve installation.

- **Drainage System 2 - Existing Analysis**

  The elements of Drainage System 2 that service Lido North Community Location 3F can be found on the local streets adjacent to Regent Drive throughout the Lido North Community. These local streets include Greenway Road, Clover Lane, Avon Lane, Reynolds Drive, Lagoon Drive West, and Lagoon Drive East. The Lido North Community consists mostly of residential and educational development. There are (27) inlets, (18) manholes, and (45) pipes which drain directly into Hudson Channel. The System 2 existing analysis will not include tidal backflow prevention at the outfalls. See Table-23 for results from the Drainage System 2 existing hydraulic analysis. See Figure-17 for System 2 location and watershed area.

Figure-17: Location 3F- Drainage System 2 Map

Table 23: Drainage System 2 Existing Location 3F Analysis Results Summary					
Storm Event (Yr.)	**Scenario**	**Tidal Gate**	**Flooding**	**Structure ID**	**Flood Location**
2	Mean Low Tide Existing	No	No	N/A	N/A
2	Mean High Tide Existing	No	No	N/A	N/A
2	Minor Coastal Flood Existing	No	No	N/A	N/A
10	Mean Low Tide Existing	No	No	N/A	N/A
10	Mean High Tide Existing	No	Yes	CB 6012 CB 6022 CB 6023 CB 6074 CB 6075	Flood Location 1 (Fig-17) Flood Location 3 (Fig-17) Flood Location 3 (Fig-17) Flood Location 6 (Fig-17) Flood Location 6 (Fig-17)
10	Minor Coastal Flood Existing	No	Yes	CB 6013 CB 6022 CB 6023 CB 6025 CB 6074 CB 6075	Flood Location 1 (Fig-17) Flood Location 3 (Fig-17) Flood Location 3 (Fig-17) Flood Location 3 (Fig-17) Flood Location 6 (Fig-17) Flood Location 6 (Fig-17)

Conclusion: The results of the System 2 Existing hydraulic analyses within Lido North Community Location 3F revealed the system can adequately handle the 2-year storm event for all (3) tidal outfall parameters. For the 10-year storm event and Mean Low Tide outfall conditions, there are no System 2 hydraulic deficiencies evident within Lido North Community Location 3F.

However, for the 10-year storm event under Mean High Tide and Minor Coastal Flooding tidal conditions, the hydraulic grade line exceeds the rim elevations of several structures within Lido North Community Location 3F.

Figure-17 shows (7) Drainage System 2 Flood Locations. Flood Locations 2, 4, 5 and 7 lie within Regent Drive Location 3E, which has been discussed earlier in this report. Flood Locations 1, 3 and 6 are serviced by Drainage System 2 and lie within Lido North Community Location 3F. All (3) of these flood locations experience stormwater ponding for the 10-year storm event occuring with either Mean High Tide or Minor Coastal Flooding tidal conditions.

For Drainage System 2 detailed tabular results, please refer to Appendix D.

- **Drainage System 2 - Alternative "A" Analysis**

  The proposed alternative analysis of System 2 consists of the same drainage network as the existing system, but with the addition of a tidal backflow prevention device at the outfall location. See Table-24 for the results from the Drainage System 2 - Alternative "A" hydraulic analysis.

Table 24: Drainage System 2 Alternative "A" Location 3F Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID	Flood Location
2	Mean Low Tide Existing	Yes	No	N/A	N/A
2	Mean High Tide Existing	Yes	No	N/A	N/A
2	Minor Coastal Flood Existing	Yes	No	N/A	N/A
10	Mean Low Tide Existing	Yes	No	N/A	N/A
10	Mean High Tide Existing	Yes	Yes	CB 6022 CB 6074 CB 6075	Flood Location 3 (Fig-17) Flood Location 6 (Fig-17) Flood Location 6 (Fig-17)
10	Minor Coastal Flood Existing	Yes	Yes	CB 6022 CB 6074	Flood Location 3 (Fig-17) Flood Location 6 (Fig-17)

Conclusion: The results of the System 2 Alternative "A" hydraulic analyses within Lido North Community Location 3F revealed the system can adequately handle the 2-year storm event for all (3) tidal outfall parameters. For the Alternative "A" 10-year storm event, there are no System 2 hydraulic deficiencies evident within Lido North Community Location 3F for the Mean Low Tide scenario. However, for the 10-year storm event under Mean High Tide and Minor Coastal Flooding tidal conditions, the hydraulic grade line exceeds the rim elevations of several Greenway Road and Reynolds Drive structures. Under Alternative "A," ponding can be expected to occur within Lido North Community Location 3F during a 10-year storm event coupled with either Mean High Tide or Minor Coastal Flooding tidal conditions.

Figure-17 shows (7) Drainage System 2 Flood Locations. Flood Locations 2, 4, 5 and 7 lie within Regent Drive Location 3E, which has been discussed earlier in this report. Flood Locations 1, 3 and 6 are serviced by Drainage System 2 and lie within Lido North Community Location 3F. Under Alternative "A," only Flood Locations 3 and 6 experience stormwater ponding for the 10-year storm event occuring with Mean High Tide or Minor Coastal Flooding tidal conditions. The ponding that had

occurred at Flood Location 1 under existing conditions for these same storm and tidal parameters has been eliminated.

When compared to existing conditions, it can be readily seen that Alternative "A" (introduction of check valves) eliminated flooding at multiple locations within the Drainage System 2 service area.

For Drainage System 2 detailed tabular results, please refer to Appendix D.

Additional Project Study Areas

In addition to the study areas that were identified by the NYRCR Plan in Figure-1 General Location Map, data was collected for two additional drainage systems during survey operations conducted within the project area. Once the data collection and mapping was complete, it was determined that neither of the two additional drainage systems (System 5 and System 6) directly affected Locations 3A though 3F identified in Figure-1. In the effort to completely analyze all of the closed drainage systems within the Lido Beach and Point Lookout area, it was necessary to investigate the hydraulic capacities of System 5 and System 6. The additional study area serviced by Drainage Systems 5 and 6 begins at the intersections of Lido Boulevard and Bay Lane and extends easterly to the intersection of Lido Boulevard and the Loop Parkway.

Refer to Figure-18 and Figure-19 below for a detailed overview of the drainage systems situated within these additional study areas. All components of Drainage Systems 5 and 6 were modeled to fully analyze and to determine if there are deficiencies within the existing drainage systems.

- **Drainage System 5 - Existing Analysis**

  The Drainage System 5 service area begins at the Lido Boulevard/Bay Lane intersection and extends easterly along Lido Boulevard to just east of the Donna Lane intersection. As can be seen from Figure-18, Drainage System 5 is comprised of (4) independent drainage systems. The (4) independent outfalls are 4030, 4031, 4032 and 4033. The Drainage System 5 trunk lines pass through the residential community to the north of Lido Boulevard ultimately connecting to the (4) outfalls along Reynolds Channel. Drainage System 5 services Lido Boulevard and the various residential streets to its north. These streets include Channel Road, Neptune Road, Anchor Road, Sharen Drive, Gerry Avenue, Marginal Road, Daniel Drive, Bay Lane, and Donna Lane. Drainage System 5 also services 60 acres (+/-) of the Nassau County Nickerson Beach Park property situated on the south side of Lido Boulevard. The Nickerson Beach property is serviced through a series of pipe connections from the park property to several drainage structures on the south side of Lido Boulevard. There are (44) inlets, (19) manholes, and (64) pipes which drain into Reynolds Channel at the north end of the community. The System 5 existing analysis does not include tidal backflow prevention at the outfalls. See Table-25 for results from the Drainage System 5 existing hydraulic analysis. See Figure-18 for System 5 location and watershed area.

Figure-18: Drainage System 5 Map

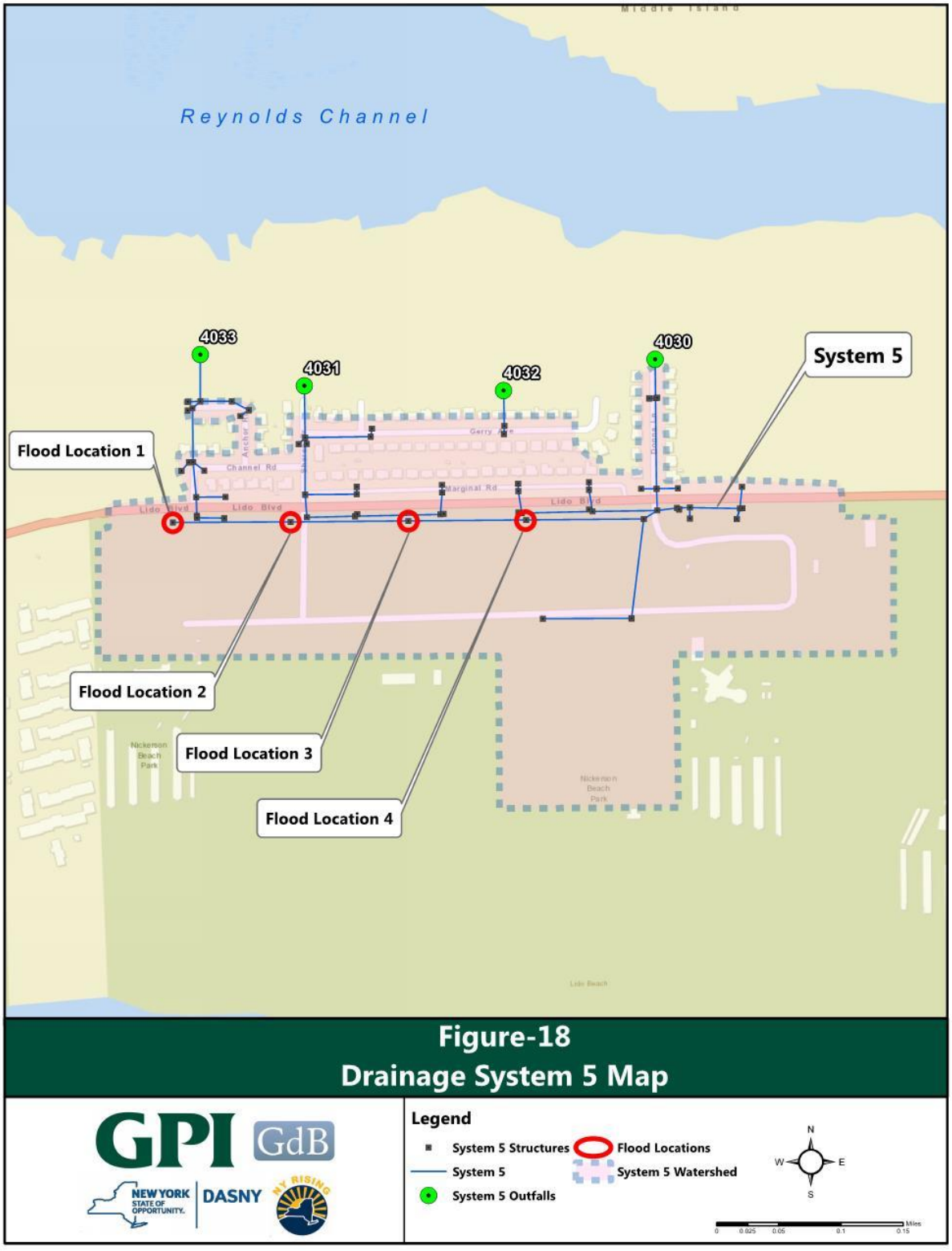


Table 25: Drainage System 5 Existing Analysis Results Summary					
Storm Event (Yr.)	**Scenario**	**Tidal Gate**	**Flooding**	**Structure ID**	**Flood Location**
2	Mean Low Tide Existing	No	No	N/A	N/A
2	Mean High Tide Existing	No	No	N/A	N/A
2	Minor Coastal Flood Existing	No	No	N/A	N/A
10	Mean Low Tide Existing	No	Yes	CB 2010E CB 2010F CB 2010G	Flood Location 3 (Fig-18) Flood Location 2 (Fig-18) Flood Location 1 (Fig-18)
10	Mean High Tide Existing	No	Yes	CB 2010D CB 2010E CB 2010F CB 2010G	Flood Location 4 (Fig-18) Flood Location 3 (Fig-18) Flood Location 2 (Fig-18) Flood Location 1 (Fig-18)
10	Minor Coastal Flood Existing	No	Yes	CB 2010D CB 2010E CB 2010F CB 2010G	Flood Location 4 (Fig-18) Flood Location 3 (Fig-18) Flood Location 2 (Fig-18) Flood Location 1 (Fig-18)

Conclusion: The results of the System 5 Existing hydraulic analyses reveal that for both the 2-year and 10-year storm events, there are no System 5 hydraulic deficiencies on Lido Boulevard or within the residential community north of Lido Boulevard. All (4) flood locations identifed in Figure-18 are located off-road and within the Nassau County Nickerson Beach Park property. Drainage structure field survey was inconclusive within this property and record/construction plan information was not available. For drainage modeling purposes, an implicit drainage network was established within the park property. The network was established to ensure the total runoff from the park property's 60 (+/-) acres was included in the System 5 drainage analysis. The exact existing drainage network and connections within the park property are unknown. However, assuming complete capture of the park property runoff is a very conservative approach to the drainage model and its results.

For Drainage System 5 detailed tabular results, please refer to Appendix D.

- **Drainage System 5 - Alternative "A" Analysis**

  The proposed alternative analysis of System 5 consists of the same drainage network as the existing system, but with the addition of a tidal backflow prevention devices at the outfall locations. See Table-26 for the results from the Drainage System 5 - Alternative "A" hydraulic analysis.

Table 26: Drainage System 5 Alternative "A" Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID	Flood Location
2	Mean Low Tide Existing	Yes	No	N/A	N/A
2	Mean High Tide Existing	Yes	No	N/A	N/A
2	Minor Coastal Flood Existing	Yes	No	N/A	N/A
10	Mean Low Tide Existing	Yes	Yes	CB 2010E CB 2010F CB 2010G	Flood Location 3 (Fig-18) Flood Location 2 (Fig-18) Flood Location 1 (Fig-18)
10	Mean High Tide Existing	Yes	Yes	CB 2010D CB 2010E CB 2010F CB 2010G	Flood Location 4 (Fig-18) Flood Location 3 (Fig-18) Flood Location 2 (Fig-18) Flood Location 1 (Fig-18)
10	Minor Coastal Flood Existing	Yes	Yes	CB 2010D CB 2010E CB 2010F CB 2010G	Flood Location 4 (Fig-18) Flood Location 3 (Fig-18) Flood Location 2 (Fig-18) Flood Location 1 (Fig-18)

Conclusion: The results of the System 5 – Alternative "A" hydraulic analyses reveal that for both the 2-year and 10-year storm events, there are no System 5 hydraulic deficiencies on Lido Boulevard or within the residential community north of Lido Boulevard. All (4) flood locations identifed in Figure-18 are located off-road and within the Nassau County Nickerson Beach Park property. Drainage structure field survey was inconclusive within this property and record/construction plan information was not available. For drainage modeling purposes, an implicit drainage network was established within the park property. The network was established to ensure the total runoff from the park property's 60 (+/-) acres was included in the System 5 drainage analysis. The exact existing drainage network and connections within the park property are unknown. However, assuming complete capture of the park property runoff is a very conservative approach to the drainage model and its results.

When compared to existing conditions, it can be seen that Alternative "A" (introduction of check

valves) reduced the HGL elevations for the drainage structures situated within Flood Locations 1 through 4 in Figure-18, particularly for the 10-year storm event under Minor Coastal Flooding tidal conditions. A reduction in HGL is directly related to a reduction in the magnitude of flooding.

For Drainage System 5 detailed tabular results, please refer to Appendix D.

- **Drainage System 6 - Existing Analysis**

  The Drainage System 6 service area begins at the Lido Boulevard/Malibu Town Park access/egress road intersection and extends easterly along Lido Boulevard to the westerly boundary of Point Lookout.

  As can be seen from Figure-19, Drainage System 6 is comprised of (3) independent drainage systems. The (3) independent outfalls are 5073, 7001 and 7010. The Drainage System 6 trunk lines pass through the properties lining the north side of Lido Boulevard ultimately connecting to the (3) outfalls along Reynolds Channel. The properties north of Lido Boulevard consist of the Town of Hempstead Lido Beach Marine Conservation Area, the Lido-Point Lookout Water District property, the Town of Hempstead West Marina, the Town of Hempstead Department of Conservation and Waterways, and the Town of Hempstead East Marina. Drainage System 6 services Lido Boulevard, Loop Parkway (at its Lido Boulevard intersection), and the above noted properties lining the north side of Lido Boulevard. In addition, Drainage System 6 also services the properties lining the south side of Lido Boulevard. These southerly properties are comprised of 21 (+/-) acres of Malibu Town Park, and 83 (+/-) acres of the Town Park at Point Lookout. The southerly properties are serviced through a series of pipe connections from the properties to several drainage structures on the south side of Lido Boulevard. There are (44) inlets, (23) manholes, and (67) pipes which drain into Reynolds Channel. The System 6 existing analysis does not include tidal backflow prevention at the outfalls. See Table-27 for results from the Drainage System 6 existing hydraulic analysis. See Figure-19 for System 6 location and watershed area.

Figure-19: Drainage System 6 Map

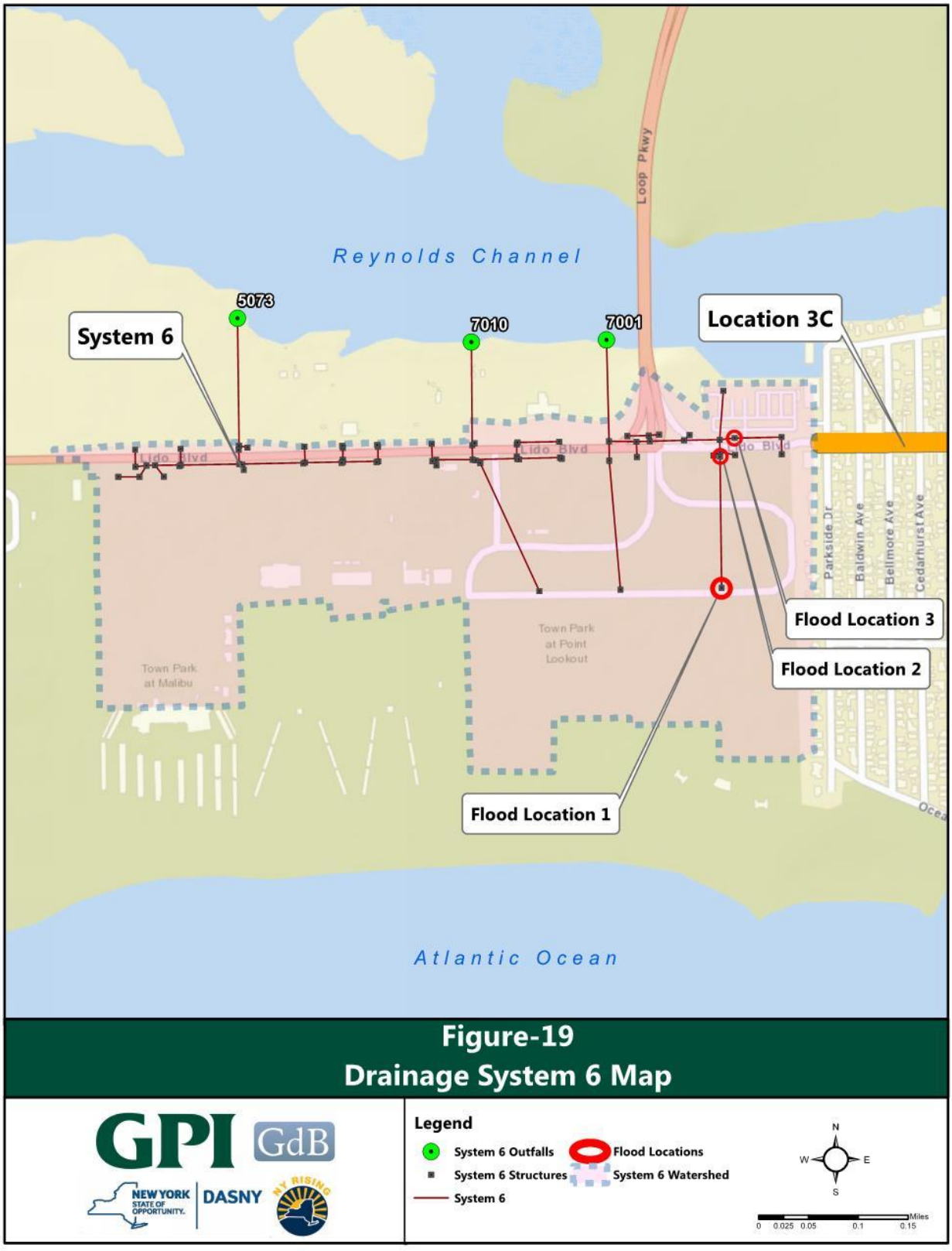


Table 27: Drainage System 6 Existing Analysis Results Summary					
Storm Event (Yr.)	**Scenario**	**Tidal Gate**	**Flooding**	**Structure ID**	**Flood Location**
2	Mean Low Tide Existing	No	No	N/A	N/A
2	Mean High Tide Existing	No	No	N/A	N/A
2	Minor Coastal Flood Existing	No	No	N/A	N/A
10	Mean Low Tide Existing	No	No	N/A	N/A
10	Mean High Tide Existing	No	Yes	CB 1016B	Flood Location 1 (Fig-19)
10	Minor Coastal Flood Existing	No	Yes	CB 1015 CB 1016B CB 1020	Flood Location 2 (Fig-19) Flood Location 1 (Fig-19) Flood Location 3 (Fig-19)

Conclusion: The results of the System 6 Existing hydraulic analyses reveal that the system can adequately handle the 2 year storm event for all (3) tidal parameters. For the 10-year storm event, there are no hydraulic deficiencies evident for the Mean Low Tide scenario.

However, for the 10-year storm event under Mean High Tide conditions, ponding can be expected to occur within Flood Location 1, as identified in Figure-19. Flood Location 1 is off-road and within the Town Park at Point Lookout property. Drainage structure field survey was inconclusive within this property and record/construction plan information was not available. For drainage modeling purposes, an implicit drainage network was established within the park property. The network was established to ensure the total runoff from the park property's 83 (+/-) acres was included in the System 6 drainage analysis. The exact existing drainage network and connections within the park property are unknown. However, assuming complete capture of the park property runoff is a very conservative approach to the drainage model and its results.

It is only for the 10-year storm event under Minor Coastal Flooding tidal conditions that ponding occurs on Lido Boulevard. This ponding occurs at Flood Locations 2 (CB 1015) and 3 (CB 1020), which are curb inlets located on the south and north sides of Lido Boulevard, respectively.

For Drainage System 6 detailed tabular results, please refer to Appendix D.

- **Drainage System 6 - Alternative "A" Analysis**

  The proposed alternative analysis of System 6 consists of the same drainage network as the existing system, but with the addition of a tidal backflow prevention device at the outfall locations. See Table-28 for the results from the Drainage System 6 - Alternative "A" hydraulic analysis.

Table 28: Drainage System 6 Alternative "A" Analysis Results Summary

Storm Event (Yr.)	Scenario	Tidal Gate	Flooding	Structure ID	Flood Location
2	Mean Low Tide Existing	Yes	No	N/A	N/A
2	Mean High Tide Existing	Yes	No	N/A	N/A
2	Minor Coastal Flood Existing	Yes	No	N/A	N/A
10	Mean Low Tide Existing	Yes	No	N/A	N/A
10	Mean High Tide Existing	Yes	Yes	CB 1016B	Flood Location 1 (Fig-19)
10	Minor Coastal Flood Existing	Yes	Yes	CB 1016B	Flood Location 1 (Fig-19)

Conclusion: The results of the System 6 Alternative "A" hydraulic analyses reveal that the system can adequately handle the 2 year storm event for all (3) tidal parameters. For the 10-year storm event, there are no hydraulic deficiencies evident for the Mean Low Tide scenario.

However, for the 10-year storm event under Mean High Tide conditions, ponding can still be expected to occur within Flood Location 1, as identified in Figure-19. Flood Location 1 is off-road and within the Town Park at Point Lookout property. Drainage structure field survey was inconclusive within this property and record/construction plan information was not available. For drainage modeling purposes, an implicit drainage network was established within the park property. The network was established to ensure the total runoff from the park property's 83 (+/-) acres was included in the System 6 drainage analysis. The exact existing drainage network and connections within the park property are unknown. However, assuming complete capture of the park property runoff is a very conservative approach to the drainage model and its results.

When compared to existing conditions, it can be seen that Alternative "A" (introduction of tidal check valves) has eliminated the ponding at Lido Boulevard Flood Locations 2 and 3 for the 10-year storm event under Minor Coastal Flooding tidal conditions.

7.0 Identified Drainage Problems

As noted previously in this report, Locations 3A, 3B, 3C, 3D, 3E, and 3F (Figure-1) have all been previously identified by the Lido Beach/Point Lookout NYRCR Planning Committee and Community as locations which warranted further investigation as part of this comprehensive hydraulic study. GPI has inventoried, investigated (as per Section 4.0) and analyzed the stormwater drainage systems within these locations, as well as throughout the entire "NYRCR Community" as identified in Figure 1.

This report specifically addresses the results of the analyses performed on the existing drainage systems situated within Lido Boulevard Location 3A. Additionally, the hydraulic analyses of the existing drainage systems situated within Locations 3B through 3F (Figure-1), as well as the remainder of the entire Lido Beach/Point Lookout NYRCR Community (Figure-1) project area are reported in Appendix D. However, possible alternative drainage improvements are presented within this report which focus only on Lido Boulevard Location 3A.

Lido Boulevard Location 3A (Refer to Figure-5.1 & 5.2)

To ascertain the mechanisms behind the flooding observed within Location 3A, GPI has fully analyzed the hydraulic models for individual Drainage Systems 1, 3, and 4 as discussed above and shown in Figures 5.1 and 5.2 of this report. These three drainage systems are the priority means of stormwater removal and management within Lido Boulevard Location 3A. GPI focused the review of the individual drainage systems to the critical areas where these systems cross beneath Lido Boulevard Location 3A or have drainage structures within Lido Boulevard Location 3A. These critical areas include Lido Boulevard at its intersections with Blackheath Road (System 1), Fairway Road (System 1), Regent Drive (System 3) and Allevard Street (System 4). Stormwater ponding at each of the above noted intersections is plausible due to their proximity to drainage low points on Lido Boulevard.

The tables within Section 6.0 of this report identify the individual drainage systems and the specific areas within Lido Boulevard Location 3A where flooding is most likely to occur. The hydraulic performance of the individual drainage systems models is discussed further below.

Drainage System 1 (Refer to Figure-6)

Drainage System 1 does not exhibit any hydraulic deficiencies within Lido Boulevard Location 3A during either of the design storm events for all three tidal parameters (Table-3) implemented. System 1 exhibited sufficient existing capacity for all imposed design storm and tidal conditions within Location 3A. Although Location 3A did not exhibit any hydraulic deficiencies, the current model results confirm potential flooding along Richmond Road at the most southerly portion of System 1. GPI nevertheless analyzed System 1 with the addition of a tidal backflow preventer (tidal gate/in-line check valve) at the outfall. System 1 with the backflow preventer in-place was designated in this report as System 1 – Alternative "A." A review of the drainage model results revealed that with the addition of a tidal backflow preventer, the system is less vulnerable to tidal surcharge and the water surface elevations (HGL) within the system decrease. The reduction in the HGL effectively gives System 1 additional stormwater storage capacity. Depending on the tidal cycle, the HGL reduction could also

provide System 1 with additional stormwater conveyance capacity (over that available in System 1 without the backflow prevention device in-place).

Drainage System 3 (Refer to Figure-7)

The results of the System 3 hydraulic analyses reveal that the current system operating at 100% capacity can adequately handle the 2-year storm event for all three tidal parameters. For the 10-year storm event, there are no hydraulic deficiencies evident for the Mean Low Tide and Mean High Tide scenarios. However, for the 10-year storm event with Minor Coastal Flooding tidal conditions, ponding occurs at the two Lido Boulevard locations identified in Figure 7. Flood Location 1 is situated at the Lido Boulevard low point, just west of Regent Drive. Flood Location 2 is situated at the Lido Boulevard low point, east of Greenway Road. See Appendix D for tabular results.

As noted in Section 6.0, the Lido Boulevard low point, just west of Regent Drive, is the lowest section of Lido Boulevard within NYRCR-designated Location 3A. As such, this would be where the first indications of System 3 hydraulic deficiencies would be expected to occur (i.e., ponding) within Location 3A.

Drainage System 3 was also evaluated with the addition of a tidal backflow prevention device (System 3 – Alternative "A"). As with System 1, the installation of the tidal backflow preventer in System 3 does lower the HGL of the entire system considerably, thereby giving System 3 additional stormwater attenuation capacity. The introduction of a tidal backflow prevention device eliminated the (2) above noted Lido Boulevard flooding locations for the 10-year storm event with Minor Coastal Flooding tidal conditions.

Additional Hydraulic Modeling Simulations – Drainage System 3

Initial discussions regarding Drainage System 3 and Lido Boulevard Location 3A can be found in report Section 6.0 – Project Locations – Existing and Proposed Analysis (Identify Study Locations and Drainage Systems).

Additional hydraulic modeling simulations and analysis were conducted by GPI at the request of DASNY and GOSR representatives, with specific interest in that portion of Drainage System 3 that traverses through the Lido Elementary/Long Beach Middle School (LE/LBMS) property.

A brief summary of the findings of those simulations follow. A more complete description of these additional simulations and findings can be found in Appendix G - Memorandum of Findings (GPI to DASNY (3/8/17) Regarding Special Hydraulic Modeling Simulations Conducted Through School Property), contained within this report.

The additional hydraulic modeling simulations conducted by GPI centered about the existing 24-inch and 30-inch diameter pipes that traverse north and west through the LE/LBMS property. These two pipes emanate from a common drainage manhole (Structure DMH No. 13091) located in the Nassau County Easement, just south of the school property.

GPI was asked to run the hydraulic model under various simulation scenarios and modeling

parameters suggested by DASNY and GOSR representatives, as noted herein. GPI was to conduct these hydraulic model runs and report our findings on the potential flooding within the Lido Boulevard Location 3A area, given the scenarios suggested.

The suggested scenarios and modeling parameters ranged from:

- Retention of both the 24-inch and 30-inch pipes intact, as they currently exist.
- Assume only the 24-inch pipe was closed-off and taken out-of-service.
- Assume only the 30-inch pipe was equipped with a tidal check valve.
- Using modeling parameters which included:
  - 10-Year Storm Recurrence Interval Event
  - At the following Tide Elevations (Mean Low, Mean High and Minor Coastal Flood).

The results of the various simulations conducted indicate that bulkheading of the 24-inch RCP has very minor effects on the Maximum HGL Elevations (i.e., hydraulic performance) of the Lido Boulevard drainage system. However, GPI also reasoned that if either the 24-inch RCP or 30-inch RCP downstream drainage pipes become obstructed, the other pipe will provide a discharge path for the Lido Boulevard drainage system. The two existing downstream pipes provide redundancy and resiliency for the Lido Boulevard drainage system located upstream of the Common DMH No. 13091.

Additionally, the results of the simulations reveal that the installation of a tidal backflow preventer (check valve), eliminated the stormwater ponding expected under the 10 year storm event under Minor Coastal Flooding tidal tailwater conditions. The tidal check valve does lower the HGL, which effectively gives the drainage system additional capacity, also noted earlier in the results of this report section.

Drainage System 4 (Refer to Figure 8)

Drainage System 4, similar to System 1, does not exhibit any hydraulic deficiencies within Location 3A during either of the design storm events for all three tidal parameters (Table 3) implemented.

Consistent with Systems 1 and 3, System 4 was analyzed with the addition of a tidal backflow prevention device (System 4 – Alternative "A"). A review of the drainage model results revealed that with the addition of the tidal backflow preventer, the system is less vulnerable to tidal surcharge, and the water surface elevations (HGL) within the system itself decrease. The reduction in HGL effectively gives System 4 additional stormwater storage capacity. Depending on the tidal cycle, the HGL reduction could also provide System 4 with additional stormwater conveyance capacity (over that available in System 4 without the backflow prevention device in-place).

Table-9 and Table-10 "Drainage System 4 Hydraulic Analysis Results Summary" indicate System 4's HGL was lower than its corresponding drainage structure grate elevations (within Location 3A). If the HGL were higher than the grate elevation, ponding would have been occurring at the drainage structures on Lido Boulevard. See Appendix D for tabular results.

Although System 4 does not exhibit signs of flooding within Lido Boulevard Location 3A, it should be noted that the System 4 model does result in potential flooding within Ocean Boulevard Location 3D.

Like the rest of System 4, the addition of a tidal backflow prevention device will be beneficial to the system performance.

Regarding the potential for flooding as reported and presented in Tables 5 through 28 and Appendix D tabular reporting, the reader is referred to Section 5.0 – Hydrology (Modeling and Hydraulic Analysis) for a fuller explanation and interpretation of the potential magnitude of the flooding reported. The explanation and discussion are presented below Table 3 within Section 5.0 of this report.

8.0 Potential Proposed Alternative Improvements (Lido Boulevard Location 3A only) (See figures that follow at the end of this section.)

Table 29

Proposed Alternative Improvements Considered For Location 3A

Alternative	Brief Description of Work
A	Installation of in-line backflow prevention devices (check valves) for existing drainage systems 1, 3, and 4 at associated outfall locations, to mitigate tidal flooding and tidal influence on existing drainage systems.
B	Installation of access structures to facilitate the serviceability of existing inverted siphons crossing beneath Lido Boulevard between Blackheath Road and Regent Drive.
C	Remove and replace single curb-opening inlet drainage structures along Lido Boulevard with double grate inlets (with curb boxes) drainage structures, to increase surface inlet capacity, between Blackheath Road and Harrogate Street.
D	Remove and replace the existing drainage structures and pipe within the original pre-1960's alignment of Lido Boulevard (South Side - Off Road) between Greenway Road and Regent Drive, to update aged piping system and facilitate future serviceability and functionality.
E	Implementation and construction of Green Stormwater Infrastructure (GSI) practices within the Town of Hempstead Lido West Park property, providing storage, infiltration, evapotranspiration and wet meadow habitat.
F	Provide improved access from the Lido Elementary/Long Beach Middle School property to the existing NCDPW drainage easement located on private properties off Regent Drive, to facilitate serviceability of the existing manhole structures and pipes.

Alternative A – Install Backflow Prevention Devices (In-Line Check Valves)

The hydraulic modeling and alternative analysis indicate that the installation of tidal backflow prevention devices (tidal gates / in-line check valves) located at or just upstream of the outfall pipe discharge point will greatly reduce the tidal surcharge within the existing drainage systems. Tidal backflow prevention devices only allow flow through the outfall in one direction.

In general, the backflow prevention device closes during incoming tides to prevent tidal waters from moving through the closed drainage system. They open during outgoing (ebb) tides to allow upland water to flow through the culvert and discharge into surface waters.

There are several types of commercially available backflow prevention devices that could be employed to provide backflow prevention, such as tide gates, flapper valves or lids, "duckbill" or in-line check valves. Tidal gates, lids, and duckbill valves are generally attached at the exterior discharge end of a closed drainage system to control water flow.

These types of backflow prevention devices are installed at the outfall end of a pipe. The placement of these external backflow prevention devices is generally avoided in areas where there are navigable waterways and the backflow prevention device itself might become an impediment to marine travel and navigation. Often times the external backflow prevention devices are located within drainage easements, where access through private properties may be required to service these valves.

Sample Installation of external "duckbill" backflow prevention device.

In-line check valves which are installed and inserted into existing outfall pipes at their interface with a proposed access drainage structure (manhole or catch basin), prior to the outfall discharge end, are widely used. In fact, this is currently the preferred choice of backflow prevention device/installation methodology by the Town of Hempstead, to facilitate serviceability of the backflow prevention device, within the public roadway right-of-way.

It has been estimated to install new access (service) structures where new backflow prevention devices (check valves) are being proposed, rather than utilize existing adjacent structures. Generally, the proposed access (service) structures will be larger in size than existing adjacent structures (where shown on Figures 20 through 23). The larger proposed access structures will facilitate check valve installation and the future serviceability of the proposed check valves. If during final design adjacent existing structures are found to be in good condition and large enough to accommodate the check valve installation and desired serviceability, they may be considered for use in lieu of new structures.

The hydraulic modeling and analysis demonstrated that the implementation and use of backflow prevention devices to prevent the tidal surge from backing up into the existing drainage system, will generally allow for more storage within the drainage system. The additional storage increases the capacity of the pipe during a storm event. This action in turn will help to reduce and mitigate potential stormwater encroachment onto low-lying areas, which otherwise could result in potential

flooding.

The potential flooding reduction is a result of lowering the hydraulic grade line and offsetting the peak tidal event from the peak storm event.

The consideration given to the installation of tidal backflow preventers is that for these devices to adequately reduce the impact of tidal backflow, they must be vigorously maintained to ensure effective operation.

Large diameter Tideflex™ in-line check valve, being installed inside an existing drainage pipe. The existing pipe is then connected to a new access drainage structure. (Courtesy of the Red Valve Company)

Alternative B – Installation Of Access Structures – To Facilitate Serviceability of Existing Inverted Siphons Transversely Crossing Lido Boulevard – Location 3A

There are inverted siphons situated within two of the existing major drainage lines that cross beneath (and perpendicular to) Lido Boulevard.

Inverted siphons are constructed to convey drainage or sewage flows across obstructions, where such crossings cannot be attained by a pipe placed on a continuous grade. Inverted siphons do not operate on physical pipe slope, but rather hydraulic slope, or the difference in the water surface elevations within the manholes on each end of the inverted siphon. As such, an inverted siphon is always submerged and the flow within it is always surcharged. Since they operate under submerged flow conditions, the chance of silt accumulation is much higher than normal because they act as a 'trap' for sediment-laden stormwater runoff. Regular flushing is advised to reduce the accumulation of

silt.

Drainage System 1 has an inverted siphon situated within the Lido Boulevard at Blackheath Road intersection. In this instance, the 30-inch diameter RCP drainage trunk line (beneath Blackheath Road) could not be installed on a continuous grade as it crossed beneath Lido Boulevard due to the presence of an existing 36-inch diameter sanitary sewer interceptor that runs parallel to Lido Boulevard. This sanitary sewer interceptor predates the 1960's realignment and reconstruction of Lido Boulevard. The Blackheath Road drainage trunk line was installed in the mid 1950's. To get the 30-inch diameter RCP drainage trunk line successfully across Lido Boulevard, it was necessary to construct an abrupt 3.5 ft. (+/-) vertical drop in the drainage line profile (i.e., construct an inverted siphon) so that it would pass beneath the existing sanitary sewer interceptor. The invert of the 30-inch diameter RCP drainage trunk line as it passes beneath the sanitary sewer interceptor is approximately 11 ft. below the Lido Boulevard roadway pavement elevation. The inlet and outlet structures of this inverted siphon are comprised of 4 ft. (+/-) diameter brick manholes furnished with 2-ft diameter access castings.

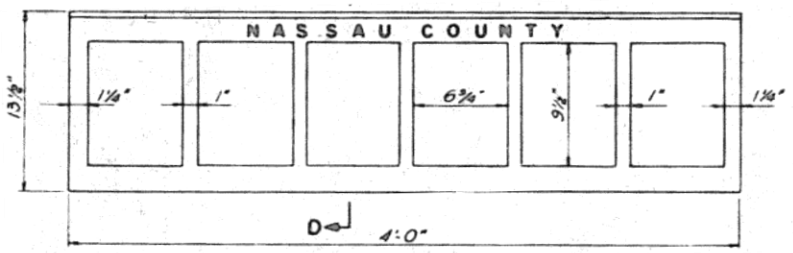
Drainage System 3 has an inverted siphon situated beneath Lido Boulevard, just west of the Regent Drive intersection. In this instance, the 18-inch diameter RCP drainage line could not be installed on a continuous grade as it crossed beneath Lido Boulevard due to the presence of an existing 18-inch diameter sanitary sewer pipe that runs parallel to Lido Boulevard. This sanitary sewer pipe predates the 1960's realignment and reconstruction of Lido Boulevard, which was when this 18-inch RCP drainage pipe crossing was installed. To get the 18-inch diameter RCP drainage line successfully across Lido Boulevard, it was necessary to construct an abrupt 3 ft. (+/-) vertical drop in the drainage line profile (i.e., construct an inverted siphon) so that it would pass beneath the existing sanitary sewer pipe. The invert of the 18-inch diameter RCP drainage pipe as it passes beneath the sanitary sewer line is approximately 8 ft. below the Lido Boulevard roadway pavement elevation. The inlet and outlet structures of this inverted siphon are comprised of 4 ft. (+/-) diameter manholes furnished with 2 ft. diameter access castings. The inlet structure is constructed of brick and the outlet structure is constructed of concrete.

The 2 ft. diameter MH access castings of the inlet and outlet structures for the Blackheath Road and Regent Drive inverted siphons are not conducive to regular maintenance, and actually are quite restrictive. The limited 4 ft. (+/-) diameters of the inlet and outlet structures are not accommodating to maintenance. To facilitate the recommended regular maintenance and servicing of the inverted siphons, Alternative B proposes the replacement of the inlet and outlet structures at both of the inverted siphons. The limited 4-ft diameter structures would be replaced with larger NYSDOT Type P drainage structures, which have an internal square dimension of 6'-8" x 6'-8". Access to these new structures would be through an H-20 load-compliant access hatch, approximately 4-ft x 4-ft. Internally, the structures would be furnished with wall mounted ladders for easier access. Additionally, the structures will be furnished with 2-ft deep sumps (below the inverted siphon) for sedimentation collection purposes. The larger structures, larger access hatches, and the sedimentation sumps are essential appurtenances for convenient flushing and maintenance. The larger inlet and outlet

structures will enhance access for both personnel and the equipment necessary to perform the inherent maintenance associated with inverted siphons.

Alternative C – Increase Surface Inlet Capacity - Lido Boulevard – Location 3A

The existing catch basins on Lido Boulevard were initially installed in the 1960's when Lido Boulevard was widened and realigned. These catch basins consist primarily of curb inlets, which solely make use of vertical openings in the curb to intercept stormwater runoff. These structures do not have grates. The curb inlets on Lido Boulevard make use of a single curb inlet casting, which consists of six vertical openings that are 6.75-inches wide and 9.5-inches height. A single curb inlet casting is shown below.



Typical Curb Inlet Casting

Curb inlets perform best when located at dead-low points in the roadway profile and when as much of the 9.5-inch curb opening height is maintained. The curb inlet openings tend to operate as an orifice, and as water ponds in front of the inlet (as it could at a dead-low point in the roadway profile), the hydraulic efficiency of the openings (i.e., orifices) increases. In summary, the efficiency of this type of structure will increase as water ponds in the roadway. This is why curb inlets are best suited for dead-low points in the roadway profile. For on-grade interception of stormwater runoff, curb inlets are not very efficient at all.

Another drawback of these structures is that narrow curb inlet openings tend to collect and trap debris, which will reduce the hydraulic performance of the structure. Since these structures do not have grates, there is no inherent backup to collect the water that will be ponding in the roadway due to the debris that has accumulated in the openings. Additionally, their proximity to the travel lane makes the large depression in front of the inlet, when present, potentially an impediment to rider comfort and safety. Curb opening inlets depend heavily upon an adjacent depression in the gutter for effective flow interception. However, on Lido Boulevard, a large gutter depression in front of each curb inlet is not practical from a safety standpoint. The right travel lane in both Lido Boulevard directions is directly adjacent to the curb line and any gutter depression can adversely affect automobile and bicycle operation.

A single asphalt overlay (without milling the existing roadway surface) will reduce the clear height of the curb inlet openings, thereby reducing the hydraulic efficiency of the structure. Since the 1960's Lido Boulevard has received multiple asphalt overlays, and each overlay has incrementally decreased

the hydraulic capacity of each curb inlet. However, it is noted that although the hydraulic efficiency of the inlet is reduced, an increase in rider safety and comfort is achieved as a by-product of reducing the severe depression in front of the inlet. The clear heights of the curb inlet openings and roadway profile depression at the inlets have been significantly reduced as shown in the image below.

Multiple Lido Boulevard asphalt overlays have significantly reduced the hydraulic efficiency of the existing curb inlets.

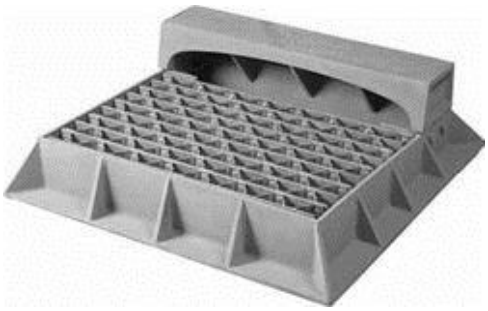
This opening reduction coupled with debris accumulation in front of the curb inlet castings will cause runoff to more readily pond in front of the inlet. The drainage model did not indicate an inlet capacity problem within Lido Boulevard Location 3A. However, as discussed on previous occasions, the drainage model assumes the curb inlet opening remains clear; it does not account for debris accumulating in front of the curb inlet casting, or decreased inlet capacity due to decreased inlet openings. To reduce stormwater ponding occurrences on Lido Boulevard, more hydraulically efficient drainage structures can be installed. Combination catch basins equipped with reticuline grates and curb boxes will have markedly improved hydraulic efficiency over the limited capabilities of the existing curb inlets. Combination catch basins consist of a horizontal grate placed in the gutter and a vertical curb opening inlet on the curb face. The advantage to adopt a combination inlet is to reduce the risk of being completely clogged by debris. For instance, if the grate becomes clogged, the curb opening remains functional or vice versa.

In the March 2014 New York Rising Community Reconstruction (NYRCR) Program for Lido Beach/Point Lookout, the prime area of concern was identified as Lido Boulevard Location 3A, which consists of the approximately 3,800 linear feet (0.7 miles) length of Lido Boulevard between Blackheath Road and Harrogate Street.

Presently, on Lido Boulevard between Blackheath Road and Matlock Street, there are (29) existing curb inlet structures that collect stormwater runoff. Some of these structures are located on intersecting streets in proximity to Lido Boulevard. Between Harrogate Street and Matlock Street, there is a low point in the Lido Boulevard roadway profile. For Alternative C presented in this report, the potential curb inlet replacements were extended just east of Harrogate Street, to address the above noted Lido Boulevard roadway profile low point. Three curb inlet replacements east of Harrogate Street, although just outside the limits of Lido Boulevard Location 3A, were included to ensure new structures are installed at this Lido Boulevard low point.

For Alternative C, the intent is to replace the existing curb inlets with new catch basins. Each curb inlet

will be replaced with drainage structures equipped with reticuline grates and curb boxes. The combination grate and curb box has a much greater hydraulic capacity than a curb inlet casting, particularly for on-grade installations. To reduce the potential for Lido Boulevard stormwater ponding, the intent is to replace each single curb inlet casting with (2) standard NYSDOT reticuline grates and curb boxes. This proposed alternative will increase the surface inlet capacity and the ability of stormwater runoff to enter the drainage system. This action will decrease the spread width of slow moving stormwater runoff travelling against the curb line of the relatively flat Lido Boulevard roadway profile gradients. The installation of reticuline grates with curb boxes will also minimize roadway profile depressions at grate locations, in turn maintaining rider comfort and safety. Additionally, maintenance of combination inlets is facilitated by the fact the grate is removable, providing easy access to the inlet drainage structure and associated storm drain system, through the 2.5-ft. X 4-ft. rectangular opening. The same cannot be said of curb inlets, whose sole access is through the 2 ft. diameter manhole casting in the top slab of the curb inlet drainage structure. Given the critical function of Lido Boulevard as a coastal evacuation route, the redundancy provided by combination inlets and their improved maintenance access are advantageous drainage system characteristics consistent with Lido Boulevard's critical function. A typical NYSDOT reticuline grate and curb box is shown below.



Standard NYSDOT reticuline grate with curb box.

<u>Alternative D – Drainage Structure and Pipe Replacement – Along South Side Of "Old Lido Boulevard Alignment" (Off Road) – Between Greenway Road and Regent Drive</u>

In the 1960's, Lido Boulevard was realigned and reconstructed. Between Fairway Road and Regent Drive, the Lido Boulevard alignment was shifted to the north to eliminate its original curvilinear alignment. Even though Lido Boulevard was realigned, the County retained the original pre-1960's right-of-way (ROW). Within that original ROW were some existing drainage facilities that were retained and incorporated into the realigned and reconstructed Lido Boulevard drainage system. The westerly limit of the retained drainage facilities consists of an existing drainage manhole located just south of present-day Lido Boulevard, and approximately 360 ft. east of Greenway Road's centerline. The easterly limit of the retained drainage facilities consists of an existing drainage manhole located

just south of present-day Lido Boulevard, approximately 150 ft. west of the Lido West Town Park Entrance/Exit road's double-yellow centerline pavement markings.

The retained drainage facilities consist of approximately 720 LF of 15-inch RCP drainage pipe and (6) drainage manholes.

Since these facilities have already met or possibly exceeded their anticipated service life (70± years), it is proposed under Alternative D to completely replace the structures and pipe. The 15-inch RCP pipe will be replaced with 18-inch RCP. The increase in pipe size will also provide an increase in storage and hydraulic capacity. At first glance the increase in pipe diameter from 15-inches to 18-inches may not seem significant; however, the cross-sectional area of an 18-inch pipe is 44 percent greater than that of a 15-inch RCP.

The drainage model did not indicate a capacity problem within this segment of existing drainage infrastructure. However, as pointed out on previous occasions, the drainage model assumes the system is clean and functioning properly.

The intent of this proposed work is to install the new drainage facilities along the alignment and within the footprint of the existing facilities. The existing drainage pipe alignment is being retained to avoid conflicts with major subsurface utilities in the area, such as an 18-inch diameter sanitary sewer line and multiple Verizon conduit systems housing telecommunications facilities including fiber optics. The existing drainage structures and pipes will be removed as part of the new drainage system installations.

This section of existing drainage infrastructure was identified for replacement after consideration of the following:

- The existing drainage facilities predate the early 1960's realignment of Lido Boulevard, but their exact age is not known. However, subdivision mapping received from the Town of Hempstead indicates development began along this segment of Lido Boulevard circa 1920 (+/-). The drainage manholes are constructed of red brick or masonry block, which are materials known to deteriorate more rapidly than precast concrete drainage structures.
- The existing drainage facilities lie directly within Lido Boulevard Location 3A, which was identified as the priority location for future proposed drainage improvements in the March 2014 New York Rising Community Reconstruction Program (NYRCRP) Report.
- The limits of the proposed drainage infrastructure replacement are readily definable.
- Replacement of this aged drainage infrastructure is consistent with the goals of the NYRCRP, one of which is to improve the resiliency of the existing community infrastructure.
- The anticipated construction cost of this alternative is consistent with the Community Development Block Grant–Disaster Recovery (CDBG-DR) funding allocated for this project.

Alternative E – Implement Green Stormwater Infrastructure (GSI)

Urbanization has altered the natural landscape and affected the hydrologic cycle. Where the natural hydrologic cycle maintains a balance of water circulation through evaporation, precipitation,

infiltration/groundwater recharge, and absorption and transpiration by plants, urbanization has resulted in an altered hydrologic cycle through construction of impervious surfaces such as buildings, roads and parking lots. The amount of groundwater recharge has been reduced while the volume and rate of runoff has been increased. For decades, the philosophy of urban stormwater management was to collect runoff as quickly as possible, remove it from the surface and discharge it with minimal, if any, pretreatment directly to receiving waters.

Green Stormwater Infrastructure (GSI) includes a range of soil-water-plant systems that intercept stormwater, infiltrate a portion of it into the ground, evaporate a portion of it into the air, and/or harvest and reuse stormwater runoff from impervious surfaces, on or near the site where it is generated.

Many agencies and municipalities have established GSI as a critical aspect of sustainable drainage systems. GSI treats stormwater runoff as a resource to be incorporated into the urban environment instead of as a waste product requiring rapid removal and treatment.

The GSI stormwater management practices address the same stormwater management goals as conventional piped or "gray", infrastructure and accomplish these ends by mimicking native hydrology. By altering the way stormwater is managed, a broad range of benefits can be expected.

- Small, decentralized green stormwater infrastructure systems introduce vegetated areas back into a paved landscape. These systems provide localized storage to reduce the flows within the existing stormwater network.
- Routing stormwater to GSI can slow down the flow, which provides some opportunity for infiltration and evaporation, partially restoring the natural hydrologic cycle.
- Vegetated practices filter runoff, thereby improving runoff water quality.
- Infiltrating systems reduce the volume of runoff that enters the "gray" stormwater collection system, thereby reducing the collection system's hydraulic loading.

Some GSI practices have already been implemented within the project area. For example, a planting strip has been incorporated within the Lido Boulevard hardscape/GSI median between Blackheath Road and Prescott Street, which is a length of approximately one mile. The planting strip is consistent with the "depaving" concepts of GSI practices. The planting strip is several feet wide and consists of planting soil media and hardy ground cover plantings, which can endure temporary water inundation. The planting strip intercepts and infiltrates median stormwater runoff and reduces the hydraulic loading on the existing drainage collection systems. The combination of the hardscape (stamped concrete) median and the GSI planter strip is beneficial to the community and the environment. In cross section, the median of Lido Boulevard is the roadway's highest feature elevation-wise, and is, therefore, less susceptible to flooding. Discussions with the Lido-Point Lookout Fire District revealed that during the historical tidal surge of Superstorm Sandy, in order to respond to calls the fire department had to drive their vehicles on the hardscape median of Lido Boulevard to traverse the tidal roadway flooding. The median's stamped concrete hardscape and ground cover plantings enable

the fire department to use the median to respond to calls during historical tidal events. At all other times, the median's GSI planting strip will manage stormwater through interception, infiltration and evapotranspiration, all of which are environmentally beneficial and reduce the burden placed on the existing "gray" stormwater collection systems.

Within the Point Lookout community at the east end of the project study area, the Town of Hempstead has implemented the use of permeable shoulder pavement. The longitudinal gradient on many of the roads within Point Lookout is less than 0.30 percent. Longitudinal slopes this flat tend to generate large flowline "spreads" during rainfall events. The large spreads in-turn lead to puddle encroachment into the automobile travel way. The permeable shoulder pavement's interception and infiltration/groundwater recharge of stormwater runoff is an effective GSI practice to reduce flowline spreads and the resulting street ponding. Discussions with the Town indicate they have had mixed success with the implementation of permeable shoulder pavement in the Point Lookout community. The prevalence of windblown beach sand throughout the community results in sediment-laden runoff, which tends to clog the openings within the permeable pavement relatively quickly. A regimented maintenance schedule is required to preserve the functionality of the permeable shoulder pavement in the Point Lookout environment.

The March 2014 NYRCR report entitled, "Lido Beach/Point Lookout Community Reconstruction Plan" identified a 0.7 mile ± mile section of Lido Boulevard between Blackheath Road and Harrogate Street as the priority location for future proposed drainage improvements. The Lido Boulevard low point, just west of Regent Drive, is the lowest section of Lido Boulevard within NYRCR-designated Location 3A. As such, GPI conducted a preliminary investigation of potential proposed GSI practices to implement within this critical area.

The existing one-half acre Nassau County property on the south side of Lido Boulevard, just west of Regent Drive was screened for the possible implementation of GSI practices for stormwater management. In the early-to-mid 1960's Nassau County realigned Lido Boulevard to improve its horizontal alignment. The roadway alignment was shifted to the north and a green area was developed within the old roadway footprint on the south side of Lido Boulevard, west of Regent Drive. A review of documentation received from Nassau County, the Town of Hempstead and various utility companies revealed there are major existing subsurface utilities situated beneath the old roadway footprint. These utilities consist of an 18-inch diameter sanitary sewer line and multiple Verizon conduit systems filled with telecommunications facilities including fiber optics. Due to the critical nature of the existing utilities and the need for the respective owners to be able to access and maintain these facilities, this property was removed from further GSI consideration.

Another site screened for possible GSI practices is an area within the Town of Hempstead's Lido West Town Park, which is located on the south side of Lido Boulevard, opposite Regent Drive. The park falls under the jurisdiction of the Town of Hempstead Parks and Recreation Department. The specific area considered for GSI practices is located west of the Parks' entrance/exit road, north of the Park's tennis courts and east of the Audrey Drive/Eva Drive residential properties. The GSI area is comprised of approximately 2.8 acres. In late March 2017, at GPI's request, the Town Parks and Recreation

Department took no exception to the preliminary investigation and possible implementation of GSI practice(s) within the above noted 2.8 acre area. As the GSI design concept progresses, close coordination with the Town will be essential to ensure the GSI drainage practice does not interfere with any of the park activities.

A comprehensive review of available USGS, NYS DEC and Record Plan information was conducted by GPI to develop an approximate groundwater elevation in the potential GSI area. GPI developed an average groundwater elevation of EL 2.70 ft. This was independently verified as a valid groundwater elevation through historical well information provided to GPI (upon request) by the Nassau County Department of Public Works Water Resources Unit in late April 2017. The County has a well within Lido West Town Park, approximately 125 ft. south of the potential GSI area.

In cross-section, the median of Lido Boulevard is at the highest elevation. In each travel direction on Lido Boulevard, stormwater runoff flows from the median toward the north and south roadway curb lines. There is a dead-low point on eastbound Lido Boulevard's south curb line, approximately 170 ft. west of the centerline of Regent Drive. This roadway flowline low point is at EL 4.6 ft. ± and is located directly in front of the potential GSI area within Lido West Town Park. The longitudinal gradient of Lido Boulevard in this area is only 0.30 percent.

In developing the dimensions for the potential GSI within Lido West Town Park, the following was taken into consideration:

- The relatively high groundwater EL 2.70 ft., which is only 2 ft. ± below the eastbound Lido Boulevard south curb line roadway pavement low point elevation (EL 4.6 ft. ±).
- The requirements and recommendations contained within the New York State Stormwater Management Design Manual (NYSSMDM) updated by the New York State Department of Environmental Conservation (NYS DEC) in January 2015.
- The existing 15-inch RCP drainage line that runs along the Nassau County Lido Boulevard southern right-of-way boundary, directly north of the proposed GSI, lies partially within groundwater. This particular drainage line comprises the upstream limit of Drainage System 3, which ultimately discharges into Hudson Channel (via Outfall 7005) and Reynold's Channel (via Outfall 13076).

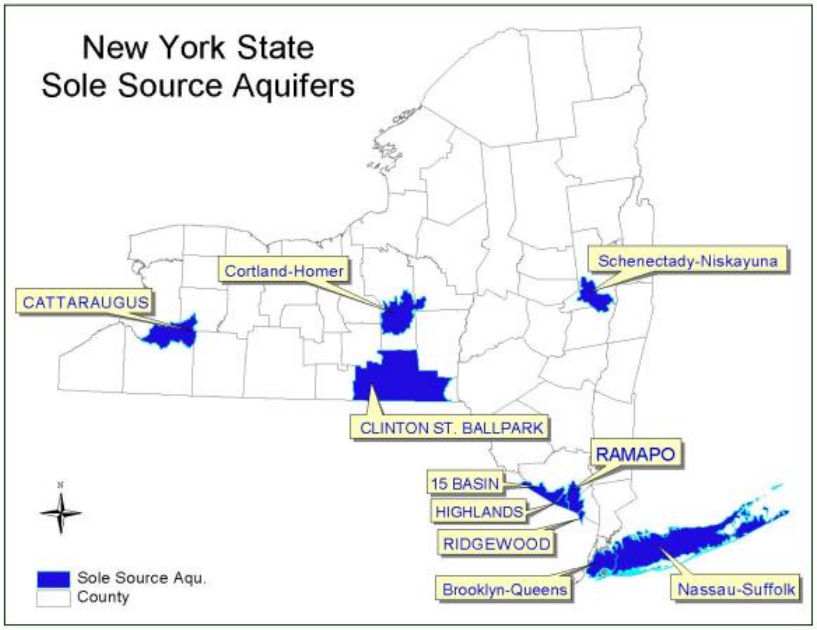
Due to the high groundwater elevation (and its fluctuations with the tidal cycle), any effective GSI practice will involve the interception of stormwater surface runoff. A potential GSI practice is shown in Figure 29.

The bottom of the proposed GSI practice has been set to EL 3.70 ft. As noted previously, the average groundwater elevation in the area is EL 2.70 ft. There will be approximately 12 inches vertical separation between the bottom of the GSI practice and the water table. Due to the potential for increased pollutant loading from Lido Boulevard stormwater runoff, it is recommended some vertical separation distance be maintained between the bottom of the GSI practice and the water table. The above noted 12± inches vertical separation does not comply with the requirements and

recommendations contained within the NYSSDM updated by the NYS DEC in January 2015, as summarized below.

Applicable NYSSDM Section	Applicable Vertical Separation Criteria
Chapter 6: Performance Criteria; Section 6.1 Stormwater Ponds; Subsection 6.1.1 – Feasibility	Provide minimum two feet separation between the pond bottom and groundwater in sole source aquifer recharge areas.
Chapter 6: Performance Criteria; Section 6.3 – Stormwater Infiltration Facility; Subsection 6.3.1 - Feasibility	The bottom of the infiltration facility shall be separated by at least three feet vertically from the seasonally high water table or bedrock layer, as documented by on-site soil testing. (Four feet in sole source aquifers)
Chapter 7: Stormwater Management Practice Selection; Section 7.2 - Physical Feasibility Factors; Table 7.2 – Physical Feasibility Matrix; Stormwater Wetland (constructed wetland)	Two foot separation if hotspot (an area where land use or activities generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater) or aquifer

Note: The aquifer beneath Nassau and Suffolk Counties has been classified as a Sole Source Aquifer (SSA). Below is Figure 7.1, " Sole Source Aquifers in New York State" as found in the NYSSMDM, updated by the NYS DEC in January 2015.



Due to the reduced vertical separation between the bottom of the GSI practice and the water table, it is believed a NYS DEC permit will be required for the construction of this GSI practice.

Based on the criteria and guidelines set forth in the New York State Stormwater Management Design Manual (NYSSDM), further guidance will be required from the NYS DEC regarding the particular

permits warranted for the proposed GSI construction and its post-construction operation.

Due to variations in the water table elevation, it is anticipated the proposed GSI practice will provide a combination of infiltration (through the bottom) and evapotranspiration (through its various landscape plantings). At certain times, the bottom of the GSI practice may be dry due to infiltration, and at other times it may have the characteristics of a wet meadow.

With regard to shallow infiltration basins, Section 6.3.1 and Table 7.2 of the NYSSDM indicate a shallow infiltration basin must have 3 ft. clearance to the water table, as measured from the bottom of the infiltration basin. This distance should be increased to 4 ft. in sole source aquifers. The aquifer beneath Nassau and Suffolk Counties has been classified as a Sole Source Aquifer (SSA), as shown in Figure 7.1 of the NYSSDM.

Guidance provided on the NYS DEC website (http://www.dec.ny.gov/docs/water_pdf/techfaq.pdf ; Item 37) asserts stormwater recharge is encouraged in some areas of the state such as Long Island since the entire region depends on the underlying aquifers for potable water. At the same time, it is understood the aquifers must be protected from possible contamination. In acknowledging that there are areas where the 4 ft. separation distance is not feasible, NYS DEC indicates a 2 ft. separation distance *may be requested and accepted on a case-by-case basis*.

The bottom of the proposed GSI will be only approximately 12 inches above the water table. Since even the reduced 2 ft. separation criteria is not met, it is believed a site-specific SPDES permit will be required from NYS DEC for the GSI construction and its post-construction operation. If a site-specific SPDES permit is deemed not necessary, it is anticipated the reduced clearance to the water table will, at a minimum, trigger a NYS DEC 60-day review period for the proposed GSI construction and its post-construction operation.

NYS DEC encourages dischargers of stormwater runoff that need a permit to seek coverage under a general permit, wherever possible. NYS DEC simply cannot process the estimated tens of thousands of applications for individual site-specific SPDES permits, were they to be made. The site-specific SPDES permit application must be submitted 180 days prior to the commencement of construction. In addition, completing an application for an individual permit requires a federal form 2F, which can involve a significant sampling expense for the applicant. Lastly, the fees associated with site-specific SPDES permits are higher than for general permits.

The proposed GSI practice described, and shown in report Figure 29 is preliminary in-nature. The area and depth of the GSI are all subject to revisions should the proposed GSI alternative be selected for advancement into a future design phase. The High Water Mark El 4.70 ft. as shown in Report Figure 29, was established to be compliant with the buffer requirements stated in the following sections of the NYSSDM:

- Section 6.1 (Stormwater Ponds): Provide a 25 ft. pond buffer.
- Section 6.2 (Stormwater Wetlands): Wetland buffer 25 feet from maximum surface elevation, with 15 foot additional setback for structures.
- Section 6.3 (Stormwater Infiltration): 25 ft. separation from structures.

If the design progresses, it is strongly recommended NYS DEC be consulted with regard to the type of permits required. Coordination with NYS DEC will ensure compliance with critical design elements (i.e., water table clearance, required pretreatment, etc.)

The expected function of the proposed GSI practice is summarized below.

- The proposed GSI will intercept the stormwater surface runoff destined for the two catch basins on the south side of Lido Boulevard, just west of the Lido West Town Park entrance/exit roadway. These two drainage structures receive surface runoff from approximately 2 acres. The proposed GSI practice will serve as the primary means of stormwater management for the runoff generated by the 2 acre area.
- The Lido Boulevard surface runoff will be intercepted upstream of the two existing catch basins through the use of two (2) shallow vegetated channels, which will intersect the Lido Boulevard south curb line at right angles. The vegetated channels will transport the intercepted runoff to a shallow low-lying area that will be constructed within the proposed GSI area. The Town Park property within the proposed GSI area is 3.5 ft. ± higher (EL 8.0 ft. ±) than the low point pavement elevation on eastbound Lido Boulevard's south curb line (EL 4.6 ft. ±). As such, it will be necessary to construct (via excavation) the GSI shallow low-lying area.
- As noted earlier, the bottom of the GSI practice has been set to EL 3.70 ft., which is approximately 12 inches above the water table.
- The high water elevation within the GSI practice has been set to EL. 4.70 ft.
- The stormwater volume generated by the 2 acre tributary area (and the area occupied by the GSI practice itself) for the 2 year and 10 year storm events is summarized below.

Storm Return Frequency Period	24 hr Precipitation Total	Stormwater Runoff Volume Generated	Available GSI Practice Stormwater Storage Volume	Percentage of Available GSI Practice Stormwater Storage Volume Occupied by Stormwater Runoff
2 Year	3.36 inches (0.28 ft.)	31,084 cubic feet	73,318 cubic feet	42%
10 Year	4.99 inches (0.42 ft.)	46,182 cubic feet	73,318 cubic feet	63%

- If the water level within the GSI practice should rise above EL 4.7 ft., it will begin to flow out to the south flowline of Lido Boulevard (via the westernmost vegetated channel) and will then flow to the east and enter the drainage collection system (Drainage System 3) via the catch basin on the south side of Lido Boulevard.
- If the water level within the GSI practice should continue to rise to EL 5.0 ft., it will begin to flow out to the south flowline of Lido Boulevard via the easternmost vegetated channel and will then flow to the west and enter the drainage collection system (Drainage System 3) via the catch basins on the south side of Lido Boulevard.
- The excess capacity of the GSI practice noted in the table above will limit the occurrences, if any, that water will flow out of the GSI practice and into the drainage system on Lido Boulevard (Drainage System 3). The GSI practice will also act as a safety valve for the Lido Boulevard drainage system (Drainage System 3). A flow restriction within the Lido Boulevard drainage system, downstream of Lido Boulevard, could cause ponding at the drainage structures on the south side of Lido Boulevard directly in front of the GSI practice. However, the extent of the Lido Boulevard ponding would be limited. Once the Lido Boulevard ponded water rose to EL 4.7 ft., it would begin to flow into the GSI practice via the westernmost vegetated channel. If the Lido Boulevard ponded water continued to rise to EL 5.0 ft., it would then begin to flow into the GSI practice via the easternmost vegetated channel. The GSI practice will restrict and mitigate the degree of ponding on Lido Boulevard by intercepting and redirecting ponded water to the GSI practice.

The reader is directed to Appendix F made a part of this report, where further technical information and exhibits can be found which present the technical elements of the GSI analysis presented above.

It should be noted like any GSI installation, the proposed GSI practice would require routine maintenance to stay in working order. This maintenance is required to ensure vegetation, infiltration and evapotranspiration are preserved to ensure maximum performance.

Alternative F – Provide Improved Access to Nassau County Drainage Easement (North End Of Regent Drive Cul-de-Sac) - From South Side Of the Lido Elementary/Long Beach Middle School Property

The existing Nassau County (NC) drainage easement located on private property at house numbers 76 and 82 Regent Drive (cul-de-sac) contains two critical drainage manhole structures and connecting pipe as part of project Drainage System 3, which services a portion of Lido Boulevard Location 3A *(See report Figure 30)*.

These critical drainage structures are currently very difficult to access due to the development of these private properties over time and because of the various home improvements constructed on these private properties. Difficult access translates to challenges in maintaining and cleaning these structures and the pipes within them. During the data collection phase of the study, these manholes were not visible by simple inspection of the house back yards. The manhole covers that provide access to the drainage structures for inspection and maintenance were buried under an excess of 12 inches of earth, and were located directly below the decorative vinyl fence separating the two properties. Miscellaneous shrubberies and portions of underground sprinklers had to be moved out of the way to gain access to perform inspections inside the structures.

Note decorative brick pavers, built-in pool, decorative vinyl fencing and wood deck

Note buried manhole under existing decorative vinyl fence

The intent of this proposed alternative is to provide improved access to these critical existing drainage manhole structures and pipe. Improved access would facilitate the future servicing and/or cleaning of these critical structures and pipe, which will help to improve the overall hydraulic efficiency of Drainage System 3.

It is proposed to provide this improved access from the Lido Elementary / Long Beach Middle school property adjacent to the NC drainage easement, immediately to the north. Discussions with the School District and development of a Memo of Understanding (MOU) with the School District, should be prepared to permit periodic access by NC to these critical drainage structures and pipe through the school property. Additional discussions with the homeowners at House No. 76 and House No. 82 Regent Drive will be necessary to advise them of the right of access by Nassau County to service the County facilities, by nature of the covenants and restrictions typically outlined in a permanent easement.

The actual work proposed to facilitate this improved access includes raising the height of the existing manhole covers to match finished grade. It also includes removing the existing fence(s) and installing a sleeved post system that will enable the appropriate number of new fence sections to be readily removed to access the manhole covers for inspection and service. Other miscellaneous work includes clearing the area of shrubs and relocating underground sprinkler piping and sprinkler heads.

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LIDO BEACH AND POINT LOOKOUT DRAINAGE STUDY
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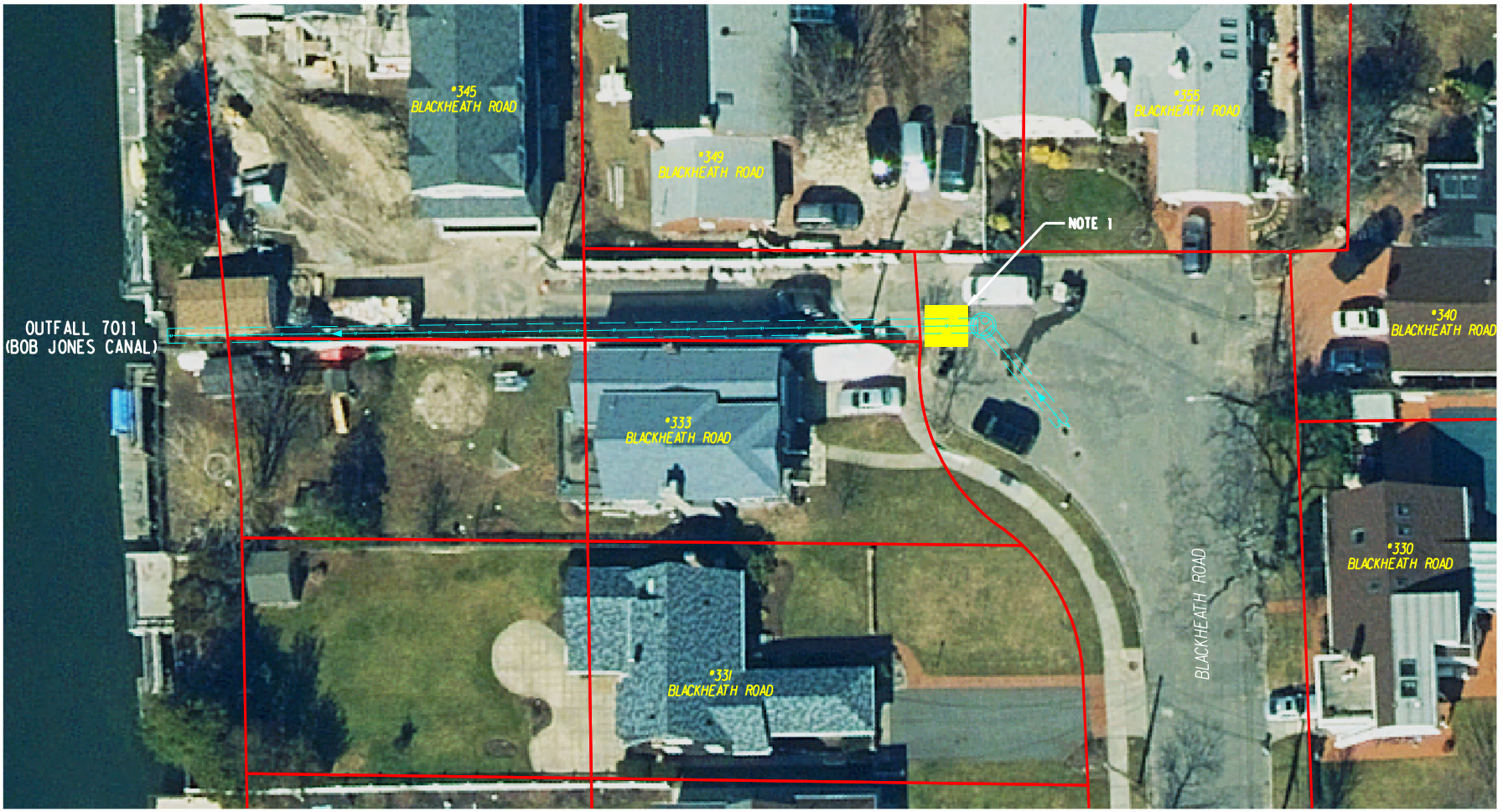
DASNY CONTRACT NO. 149336
CO-BENEFICIARIES: TOWN OF HEMPSTEAD AND NASSAU COUNTY

GRID NORTH



20 0 20 40 60 80'
SCALE

NOTES:

1. INSTALL PROPOSED SERVICE DRAINAGE STRUCTURE WITH PROPOSED IN-LINE CHECK VALVE INSTALLED INSIDE THE EXISTING OUTFALL PIPE.

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FIGURE 20
ALTERNATIVE - A.1
SYSTEM 1 - LOCATION 3A - CHECK VALVE

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GRID NORTH

20 0 20 40 60 80'
SCALE

FIGURE 21
ALTERNATIVE - A.2
SYSTEM 3 - LOCATION 3A - CHECK VALVE

NOTES:

1. INSTALL PROPOSED SERVICE DRAINAGE STRUCTURE WITH PROPOSED IN-LINE CHECK VALVE INSTALLED INSIDE THE EXISTING OUTFALL PIPE.

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GRID NORTH

20 0 20 40 60 80'
SCALE

NOTES:

1. INSTALL PROPOSED SERVICE DRAINAGE STRUCTURE WITH PROPOSED IN-LINE CHECK VALVE INSTALLED INSIDE THE EXISTING OUTFALL PIPE.

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FIGURE 22
ALTERNATIVE - A.3
SYSTEM 3 - LOCATION 3A - CHECK VALVE

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GRID NORTH

50 0 50 100 150 200'
SCALE

FIGURE 23
ALTERNATIVE - A.4
SYSTEM 4 - LOCATION 3A - CHECK VALVE

NOTES:

1. INSTALL PROPOSED SERVICE DRAINAGE STRUCTURE WITH PROPOSED IN-LINE CHECK VALVE INSTALLED INSIDE THE EXISTING OUTFALL PIPE.

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GRID NORTH

NOTES:

1. ALTERNATIVE B - PROPOSED ACCESS STRUCTURE INSTALLATIONS TO FACILITATE THE SERVICEABILITY OF THE EXISTING INVERTED SIPHONS TRANSVERSELY CROSSING BENEATH LIDO BOULEVARD.
2. ALTERNATIVE C - PROPOSED LIDO BOULEVARD SURFACE INLET CAPACITY IMPROVEMENTS TO BE IMPLEMENTED THROUGH DRAINAGE STRUCTURE REPLACEMENTS.
3. ALTERNATIVE D - PROPOSED DRAINAGE STRUCTURE AND PIPE REPLACEMENTS ALONG THE SOUTH SIDE OF LIDO BLVD (OFF-ROAD AREA) BETWEEN GREENWAY ROAD AND REGENT DRIVE; INSTALL NEW DRAINAGE FACILITIES ALONG SAME ALIGNMENT AS EXISTING FACILITIES; REPLACE 15-INCH RCP WITH 18-INCH RCP AT SAME INVERT ELS (+/-).
4. ALTERNATIVE E - PROPOSED GREEN STORMWATER INFRASTRUCTURE (GSI) WITHIN THE TOWN OF HEMPSTEAD LIDO WEST PARK PROPERTY.
5. FOR POTENTIAL TREATMENT OPTIONS, WHERE THE SIDEWALK INTERSECTS THE DRAINAGE SWALE, SEE FIGURE 29A.

50 0 50 100 150 200'
SCALE

FIGURE 24
ALTERNATIVES - B, C, D, E

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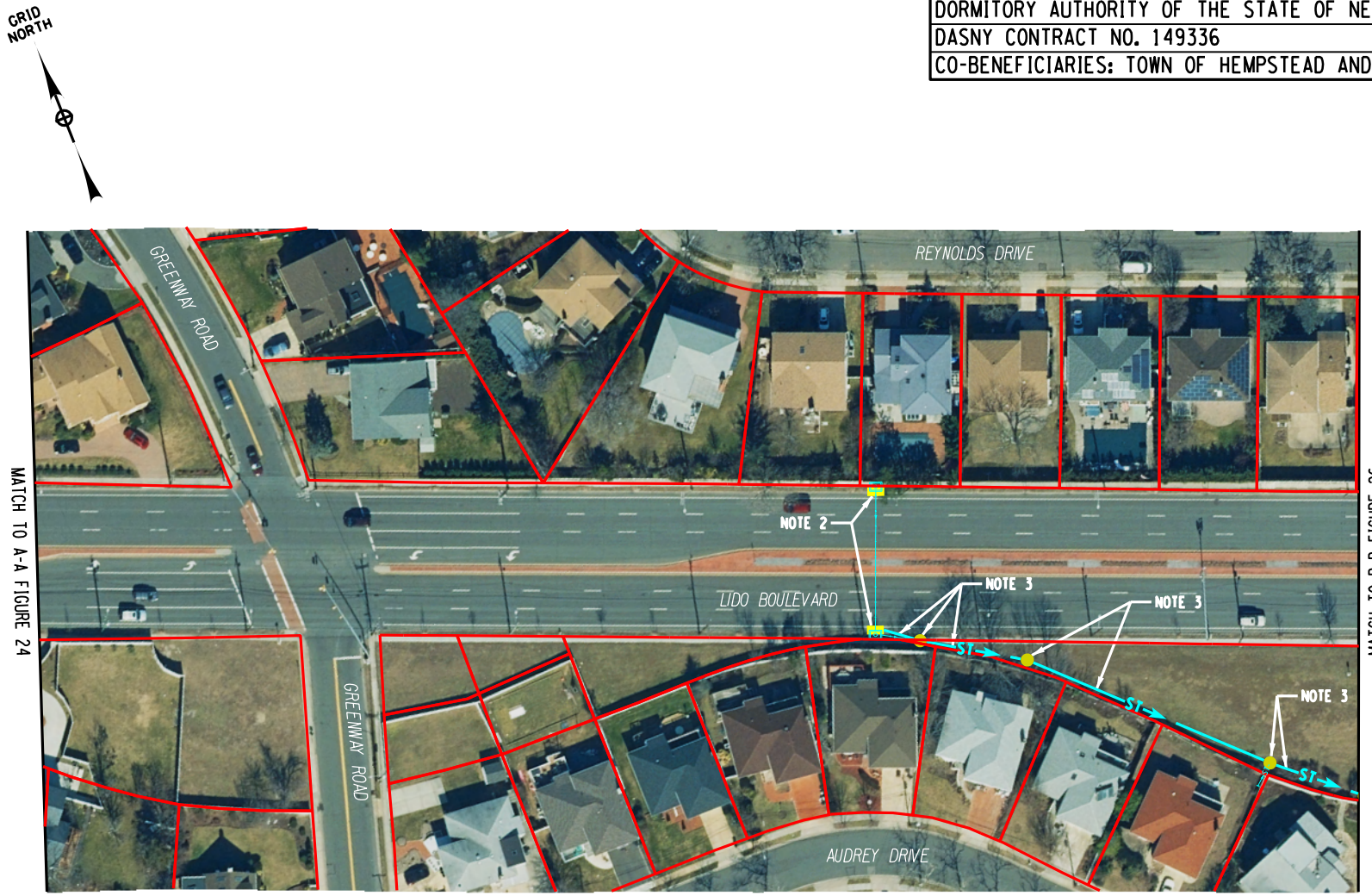

NOTES:

1. ALTERNATIVE B - PROPOSED ACCESS STRUCTURE INSTALLATIONS TO FACILITATE THE SERVICEABILITY OF THE EXISTING INVERTED SIPHONS TRANSVERSELY CROSSING BENEATH LIDO BOULEVARD.
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4. ALTERNATIVE E - PROPOSED GREEN STORMWATER INFRASTRUCTURE (GSI) WITHIN THE TOWN OF HEMPSTEAD LIDO WEST PARK PROPERTY.
5. FOR POTENTIAL TREATMENT OPTIONS, WHERE THE SIDEWALK INTERSECTS THE DRAINAGE SWALE, SEE FIGURE 29A.

50 0 50 100 150 200'
SCALE

FIGURE 25
ALTERNATIVES - B, C, D, E

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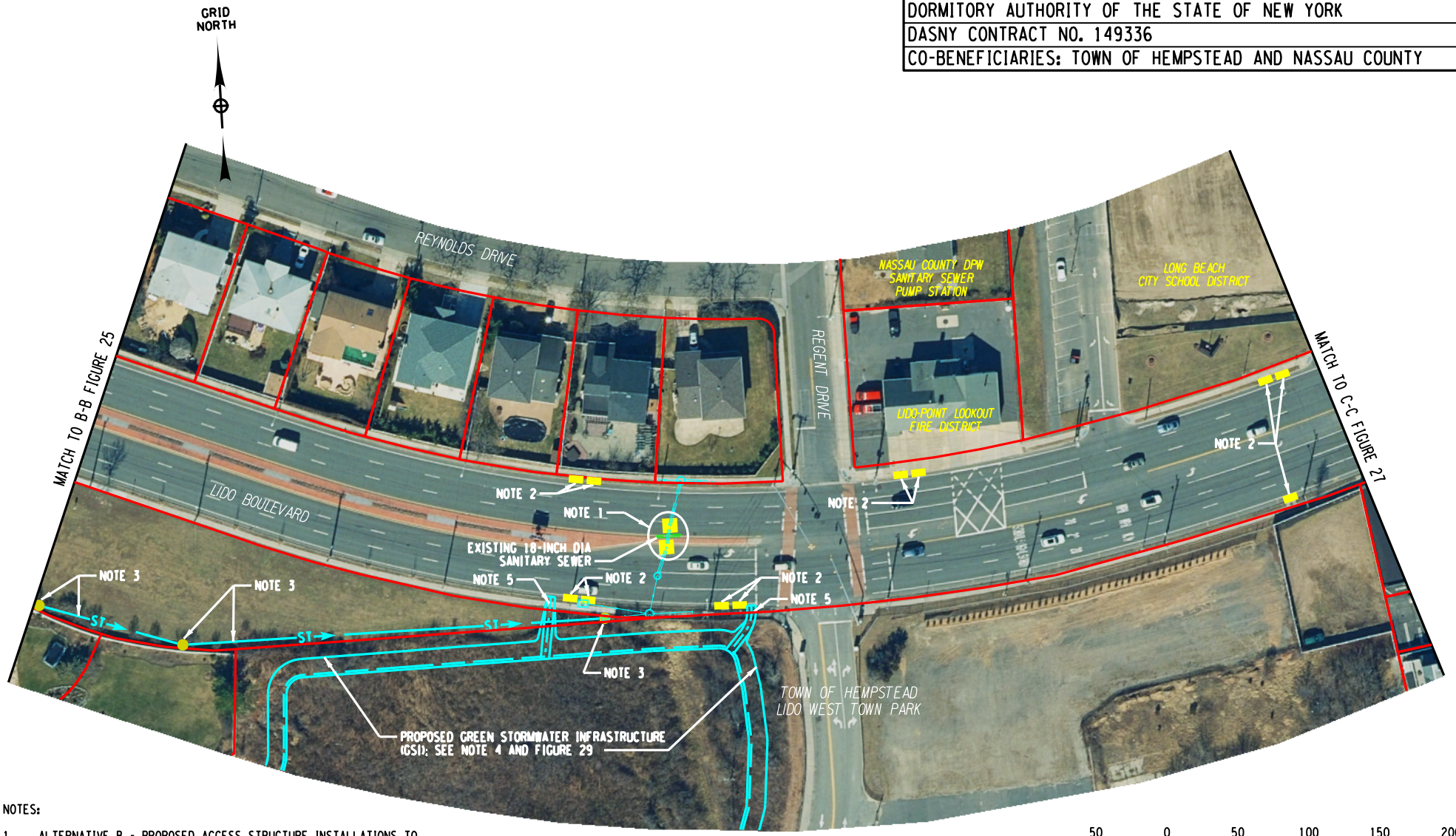

NOTES:

1. ALTERNATIVE B - PROPOSED ACCESS STRUCTURE INSTALLATIONS TO FACILITATE THE SERVICEABILITY OF THE EXISTING INVERTED SIPHONS TRANSVERSELY CROSSING BENEATH LIDO BOULEVARD.
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5. FOR POTENTIAL TREATMENT OPTIONS, WHERE THE SIDEWALK INTERSECTS THE DRAINAGE SWALE, SEE FIGURE 29A.

50 0 50 100 150 200'
SCALE

FIGURE 26
ALTERNATIVES - B, C, D, E

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NOTES:

1. ALTERNATIVE B - PROPOSED ACCESS STRUCTURE INSTALLATIONS TO FACILITATE THE SERVICEABILITY OF THE EXISTING INVERTED SIPHONS TRANSVERSELY CROSSING BENEATH LIDO BOULEVARD.
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5. FOR POTENTIAL TREATMENT OPTIONS, WHERE THE SIDEWALK INTERSECTS THE DRAINAGE SWALE, SEE FIGURE 29A.

50 0 50 100 150 200'
SCALE

FIGURE 27
ALTERNATIVES - B, C, D, E

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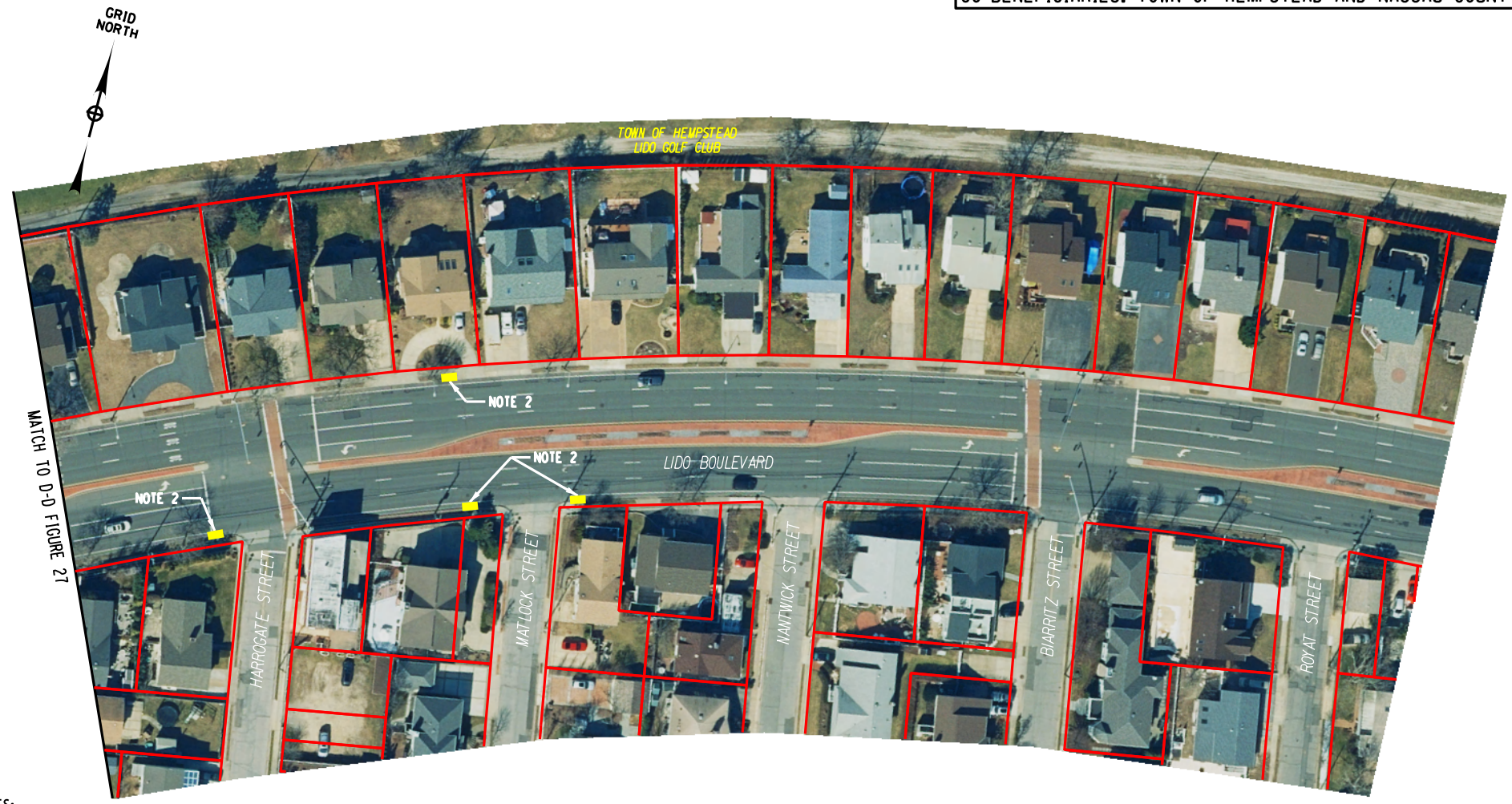

NOTES:

1. ALTERNATIVE B - PROPOSED ACCESS STRUCTURE INSTALLATIONS TO FACILITATE THE SERVICEABILITY OF THE EXISTING INVERTED SIPHONS TRANSVERSELY CROSSING BENEATH LIDO BOULEVARD.
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5. FOR POTENTIAL TREATMENT OPTIONS, WHERE THE SIDEWALK INTERSECTS THE DRAINAGE SWALE, SEE FIGURE 29A.

50 0 50 100 150 200'
SCALE

FIGURE 28
ALTERNATIVES - B, C, D, E

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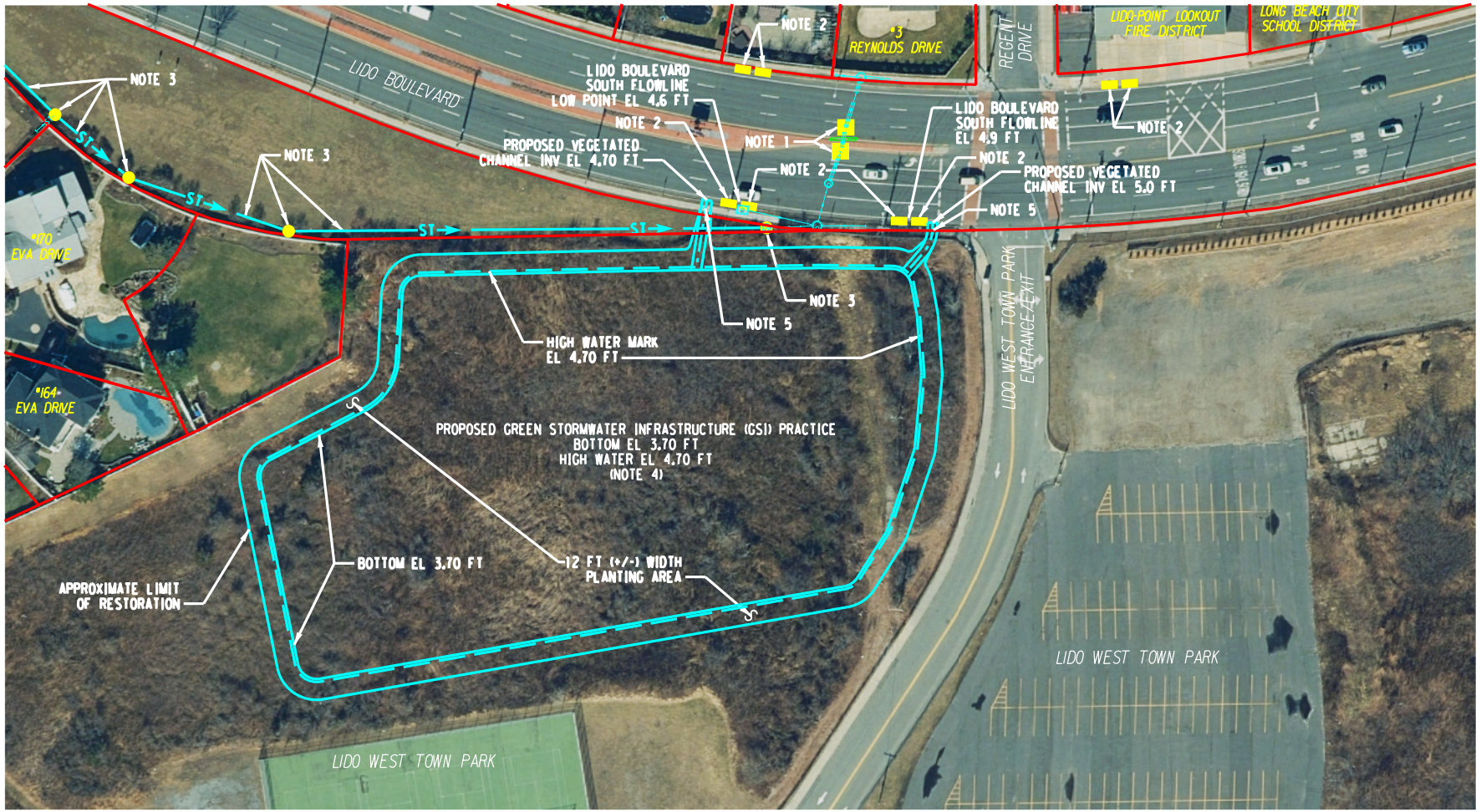
GRID NORTH



NOTES:

1. ALTERNATIVE B - PROPOSED ACCESS STRUCTURE INSTALLATIONS TO FACILITATE THE SERVICEABILITY OF THE EXISTING INVERTED SIPHONS TRANSVERSELY CROSSING BENEATH LIDO BOULEVARD.
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4. ALTERNATIVE E - PROPOSED GREEN STORMWATER INFRASTRUCTURE (GSI) WITHIN THE TOWN OF HEMPSTEAD LIDO WEST PARK PROPERTY.
5. FOR POTENTIAL TREATMENT OPTIONS, WHERE THE SIDEWALK INTERSECTS THE DRAINAGE SWALE, SEE FIGURE 29A.

50 0 50 100 150 200'
SCALE

FIGURE 29
ALTERNATIVE - E
PROPOSED GSI

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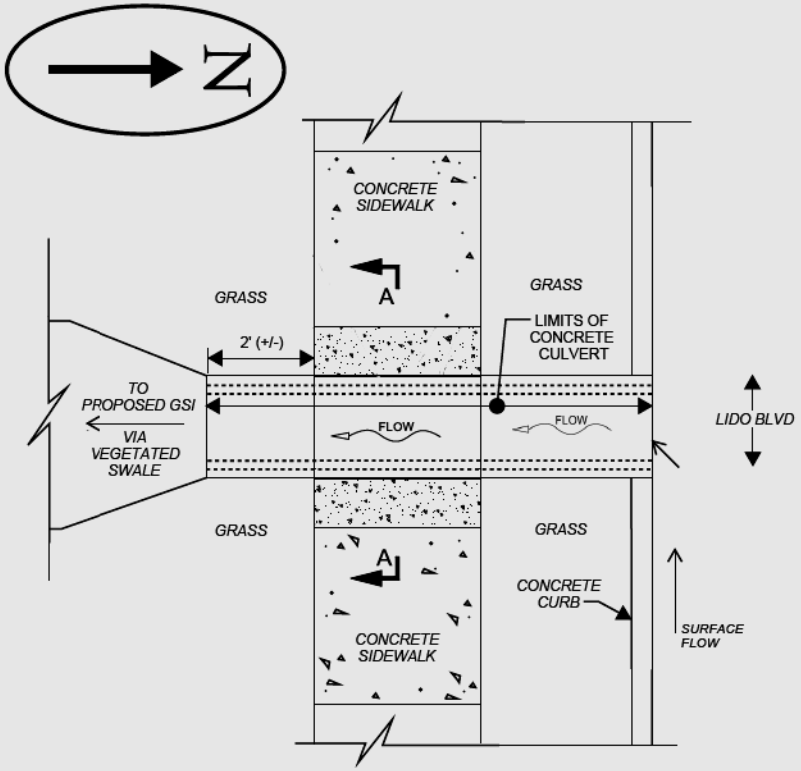
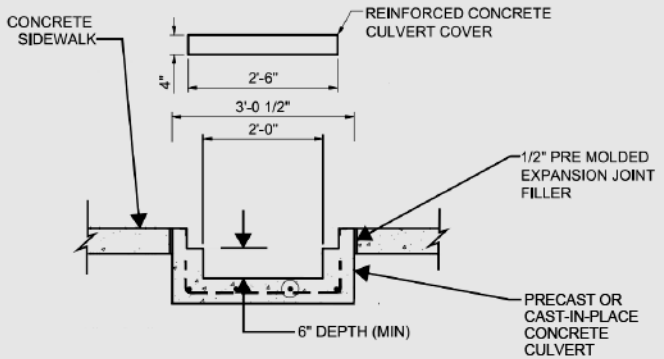


CONCRETE SIDEWALK
PLAN VIEW



CONCRETE SIDEWALK
SECTION A-A

SIDEWALK TREATMENT #1
SHALLOW CONCRETE CULVERT PASSES BENEATH THE SIDEWALK
(SCALE: NOT TO SCALE)

SIDEWALK TREATMENT #2
SIDEWALK BRIDGE SPANS THE VEGETATED SWALE
NOTE: FOR MAINTENANCE PURPOSES, THE SWALE WILL BE HARDSCAPED IN THE IMMEDIATE VICINITY OF THE PROPOSED SIDEWALK BRIDGE.
(SCALE: NOT TO SCALE)

PROPOSED GSI SIDEWALK TREATMENT OPTIONS

FIGURE 29A
ALTERNATIVE - E
PROPOSED GSI

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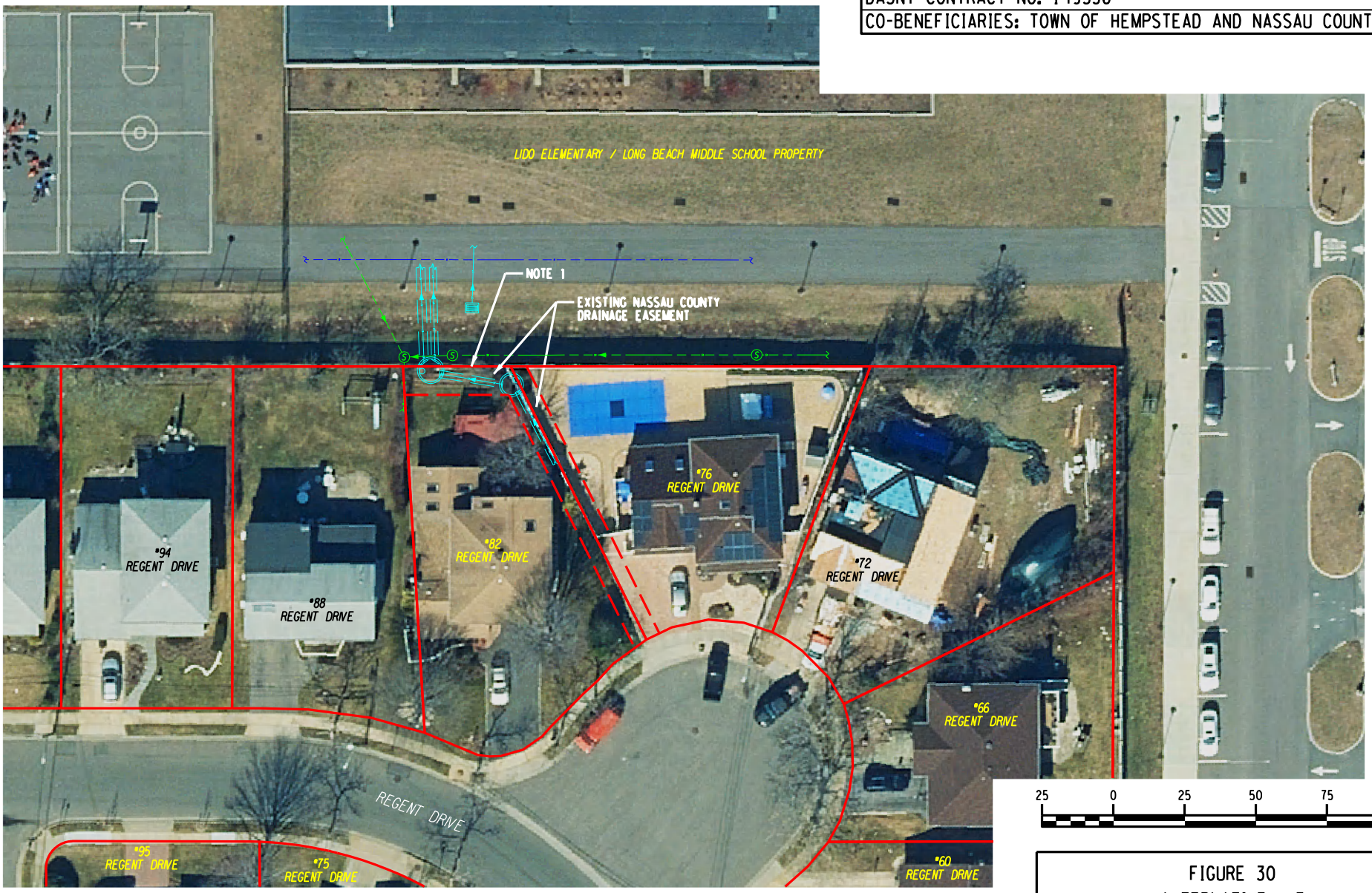
DORMITORY AUTHORITY OF THE STATE OF NEW YORK
DASNY CONTRACT NO. 149336
CO-BENEFICIARIES: TOWN OF HEMPSTEAD AND NASSAU COUNTY

GRID NORTH



NOTES:

1. PROVIDE MISCELLANEOUS PRIVATE PROPERTY MODIFICATIONS TO IMPROVE AND FACILITATE ACCESS AND EASE OF MAINTENANCE TO THE EXISTING DRAINAGE STRUCTURES AND PIPE LOCATED WITHIN THE EXISTING NASSAU COUNTY DRAINAGE EASEMENT. PRIVATE PROPERTY MODIFICATIONS INCLUDE BUT ARE NOT LIMITED TO INSTALLING REMOVABLE FENCE SECTIONS, IN ORDER TO PROVED ACCESS FROM THE SCHOOL PROPERTY LOCATED TO THE NORTH.

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FIGURE 30
ALTERNATIVE - F
IMPROVED ACCESS TO NC DRAIN EASEMENT

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DATE: 09/22/2017

9.0 Estimated Construction Cost of Potential Alternative Improvements

The estimated construction costs provided in Table 30 represents the probable construction cost of each Alternative (A through F) presented in Section 8 – Proposed Alternative Improvements, provided herein for consideration.

Table 30 - Estimated Construction Costs For Proposed Alternative Improvements Considered For – Location 3A

Alternative	Brief Description of Work	Estimated Construction Cost
A	Installation of in-line backflow prevention devices (check valves) for existing drainage systems 1, 3, and 4 at associated outfall locations, to mitigate tidal flooding and tidal influence on existing drainage systems.	$ 399,777
B	Installation of access structures to facilitate the serviceability of existing inverted siphons crossing beneath Lido Boulevard between Blackheath Road and Regent Drive.	$ 542,501
C	Remove and replace single curb-opening inlet drainage structures along Lido Boulevard with double grate inlets (with curb boxes) drainage structures, to increase surface inlet capacity, between Blackheath Road and Harrogate Street.	$ 1,775,043
D	Remove and replace the existing drainage structures and pipe within the original pre-1960's alignment of Lido Boulevard (South Side - Off Road) between Greenway Road and Regent Drive, to update aged piping system and facilitate future serviceability and functionality.	$ 393,589
E	Implementation and construction of Green Stormwater Infrastructure (GSI) practices within the Town of Hempstead Lido West Park property, providing storage, infiltration, evapotranspiration and wet meadow habitat.	$ 1,258,855
F	Provide improved access from the Lido Elementary/Long Beach Middle School property to the existing NCDPW drainage easement located on private properties off Regent Drive, to facilitate serviceability of the existing manhole structures and pipes.	$ 25,926
Total		**$ 4,395,691**

10.0 Conclusions

The extensive data collection, record research, field investigations and field survey performed for this study produced an accurate representation of the existing drainage infrastructure within the project area. This existing drainage infrastructure was broken down by watershed areas and further sub-divided into major drainage systems with sub-networks, and input into hydraulic modeling software as described in Section 5.0 – Hydrology (Modeling and Hydraulic Analysis), which was used to create the hydraulic model.

The hydraulic model was used to analyze and evaluate the existing drainage systems under the 2-yr and 10-yr recurring storm events, under three different tidal events described as Mean Low Tide, Mean High Tide and Minor Coastal Flooding.

The hydraulic model and the produced results were used to evaluate the seven drainage systems (1 through 7) comprising the entire project area, for each of the parameters noted above, under two distinct conditions. The first condition analyzed was the existing drainage network with no backflow prevention devices in-place at the outfalls of each system. The second condition analyzed was the proposed condition described as "Alternative A", where a backflow prevention device was introduced at the outfall of each drainage system.

It was clearly evident from this analysis that flooding areas noted under existing conditions, with no backflow protection, are highly influenced by the rising tidal elevations. When backflow prevention devices were applied and input as part of the proposed dynamic modelling, it was again clearly evident that the number of potential flooding areas would be significantly reduced based on a lowering of the hydraulic grade line.

While there is widespread agreement that global sea level is rising, the magnitudes of the predictions vary and are site specific. Within the Lido Beach/Point Lookout overall project area, flooding is caused by rainfall, tides (including storm surge) or a combination of both. Sea level rise will exacerbate these flooding mechanisms. Many of the drainage system outfalls are partially or fully submerged during the low and high tide cycles. As such, these drainage systems operate on hydraulic slope, not physical pipe slope. Sea level rise will act to reduce the hydraulic slope of the existing drainage systems, thereby decreasing their respective conveyance capacities.

The implementation of the considered tidal backflow prevention (check valve) alternative will prohibit the rising tide from entering the upland piping system and more importantly permit the draining of the upland piping system into downstream surface waters during low tide events. The draining of the upland piping systems will increase upland storage capacity between storm events. This in turn will help to attenuate or lessen the impacts of a particular storm event by providing a time delay for the piping system to fill up prior to discharge, thereby minimizing or eliminating potential flooding and increasing the resiliency of the drainage system.

The use of backflow prevention devices to effectively provide additional stormwater storage within the existing drainage pipe network and to mitigate the negative effects of rising tides is far more economical and less disruptive than creating additional storage by removing and replacing existing

pipes with larger pipes.

Additionally, the implementation and construction of Green Stormwater Infrastructure (GSI) practices is an effective way to provide additional stormwater storage to mitigate flooding, and is also proposed for consideration.

It is concluded that the use of tidal check valves offer the greatest positive effects to flooding mitigation, aside from raising the topography of the land above flood elevation, which generally results in the greatest impacts to private property.

This report offers six (6) proposed alternative improvements for consideration, including the installation of proposed backflow protection devices and the implementation and construction of Green Stormwater Infrastructure (GSI) practices, and provides probable construction costs for each.

Appendix A

Rainfall Information

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	
Location	
Longitude	73.612 degrees West
Latitude	40.591 degrees North
Elevation	0 feet
Date/Time	Wed, 08 Jun 2016 13:43:15 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.35	0.53	0.66	0.86	1.08	1.34	**1yr**	0.93	1.27	1.53	1.88	2.29	2.78	3.12	**1yr**	2.46	3.00	3.47	4.13	4.81	**1yr**
2yr	0.41	0.63	0.79	1.04	1.31	1.63	**2yr**	1.13	1.53	1.86	2.28	2.77	3.36	3.70	**2yr**	2.97	3.56	4.10	4.84	5.49	**2yr**
5yr	0.48	0.75	0.94	1.26	1.61	2.02	**5yr**	1.39	1.89	2.33	2.86	3.48	4.21	4.68	**5yr**	3.72	4.50	5.22	6.06	6.76	**5yr**
10yr	0.54	0.84	1.07	1.45	1.88	2.38	**10yr**	1.62	2.22	2.75	3.39	4.12	4.99	5.58	**10yr**	4.41	5.37	6.26	7.17	7.91	**10yr**
25yr	0.62	0.99	1.26	1.74	2.32	2.97	**25yr**	2.00	2.75	3.44	4.25	5.19	6.25	7.06	**25yr**	5.53	6.79	7.96	8.97	9.74	**25yr**
50yr	0.70	1.13	1.44	2.02	2.71	3.51	**50yr**	2.34	3.24	4.08	5.05	6.15	7.41	8.44	**50yr**	6.56	8.12	9.55	10.63	11.41	**50yr**
100yr	0.79	1.28	1.65	2.34	3.18	4.14	**100yr**	2.75	3.81	4.83	6.00	7.31	8.80	10.09	**100yr**	7.79	9.70	11.47	12.60	13.37	**100yr**
200yr	0.89	1.45	1.89	2.70	3.74	4.90	**200yr**	3.22	4.48	5.73	7.12	8.69	10.45	12.07	**200yr**	9.25	11.60	13.78	14.93	15.67	**200yr**
500yr	1.06	1.74	2.27	3.30	4.62	6.11	**500yr**	3.99	5.57	7.16	8.93	10.90	13.12	15.29	**500yr**	11.61	14.70	17.57	18.70	19.33	**500yr**

Lower Confidence Limits

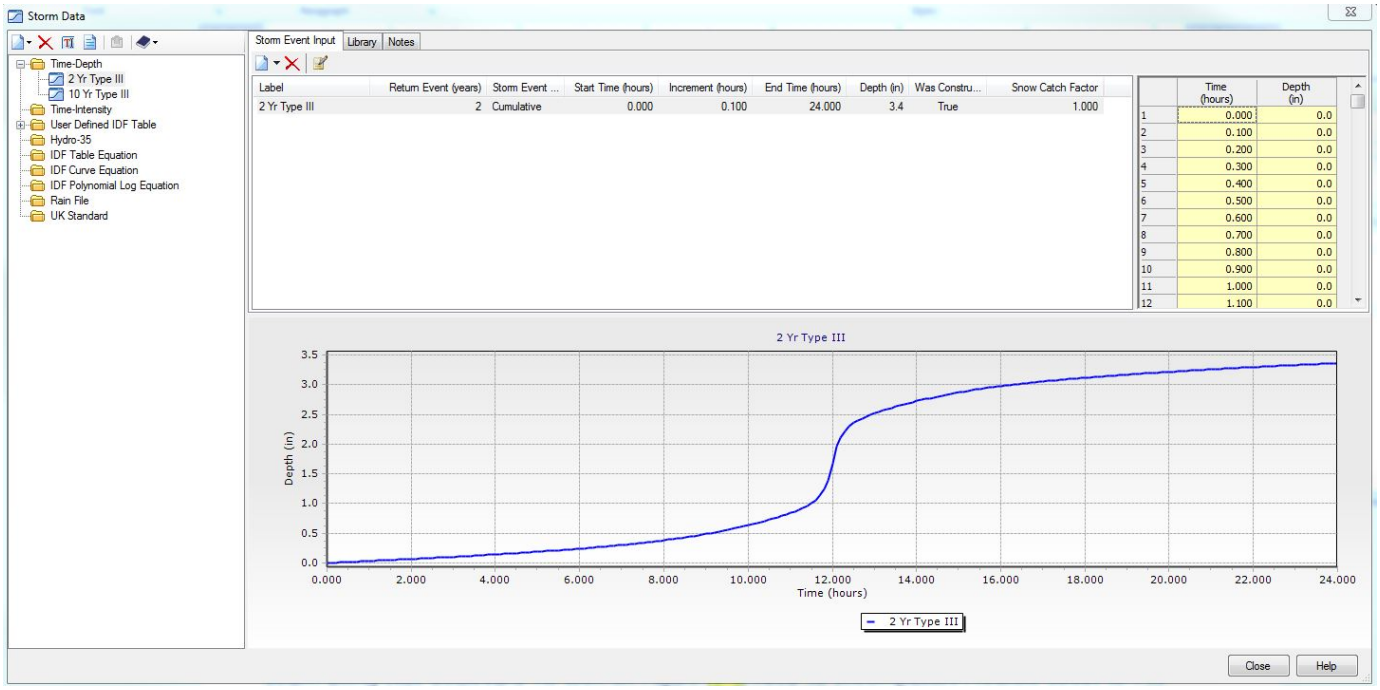
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.56	0.76	0.93	1.15	**1yr**	0.81	1.13	1.24	1.61	1.94	2.43	2.62	**1yr**	2.15	2.52	2.87	3.82	4.32	**1yr**
2yr	0.40	0.62	0.76	1.03	1.27	1.52	**2yr**	1.09	1.49	1.72	2.20	2.68	3.24	3.57	**2yr**	2.87	3.43	3.95	4.67	5.32	**2yr**
5yr	0.44	0.68	0.84	1.15	1.46	1.77	**5yr**	1.26	1.74	2.02	2.60	3.28	3.85	4.25	**5yr**	3.41	4.09	4.73	5.49	6.19	**5yr**
10yr	0.47	0.72	0.89	1.25	1.62	1.99	**10yr**	1.39	1.94	2.20	2.94	3.68	4.37	4.85	**10yr**	3.87	4.66	5.43	6.20	6.86	**10yr**
25yr	0.52	0.79	0.98	1.40	1.84	2.29	**25yr**	1.59	2.24	2.51	3.45	4.33	5.15	5.78	**25yr**	4.56	5.56	6.50	7.19	7.80	**25yr**
50yr	0.55	0.83	1.04	1.49	2.01	2.56	**50yr**	1.73	2.51	2.76	3.89	4.79	5.83	6.58	**50yr**	5.16	6.33	7.47	8.08	8.58	**50yr**
100yr	0.59	0.89	1.11	1.60	2.20	2.88	**100yr**	1.90	2.82	3.03	4.39	5.42	6.59	7.51	**100yr**	5.83	7.22	8.60	9.04	9.42	**100yr**
200yr	0.63	0.94	1.20	1.73	2.41	3.23	**200yr**	2.08	3.16	3.31	4.95	6.12	7.44	8.59	**200yr**	6.58	8.26	9.92	10.10	10.36	**200yr**
500yr	0.69	1.02	1.31	1.91	2.71	3.77	**500yr**	2.34	3.69	3.72	5.80	7.23	8.70	10.27	**500yr**	7.70	9.87	11.98	11.67	11.80	**500yr**

Upper Confidence Limits

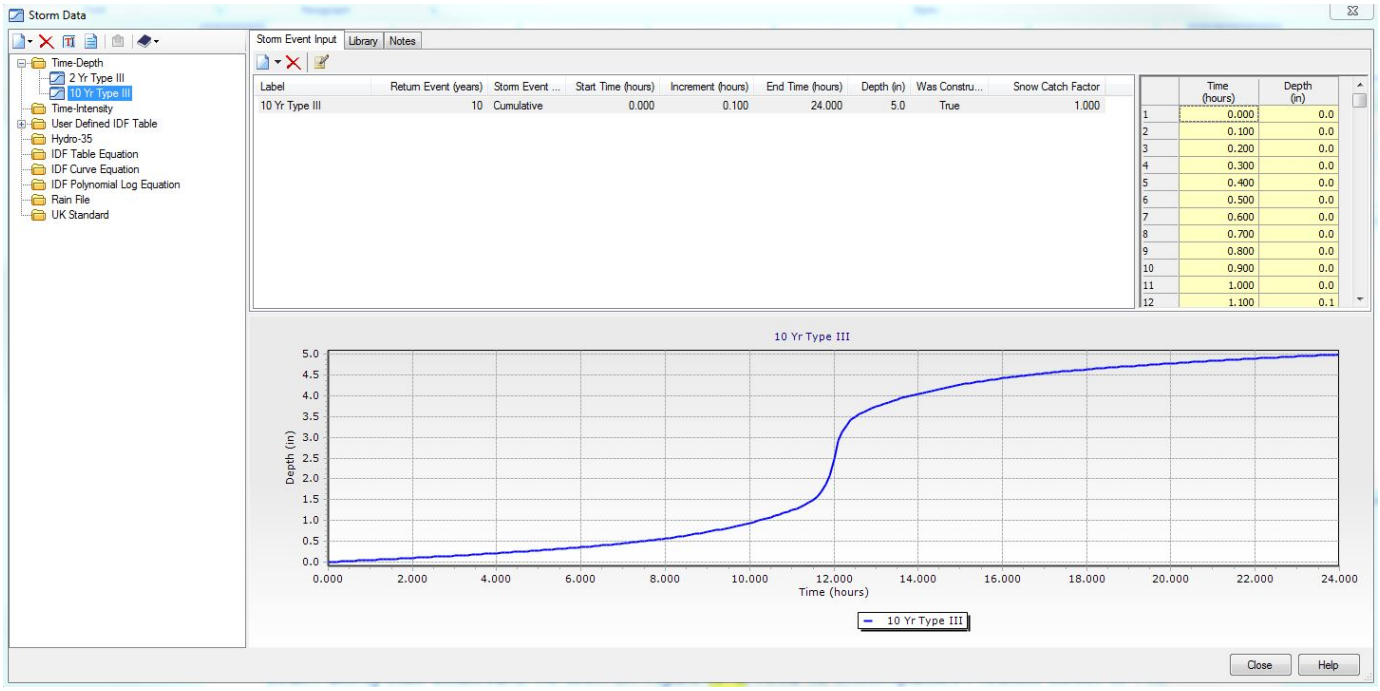
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.39	0.61	0.74	0.99	1.22	1.43	**1yr**	1.06	1.39	1.69	2.20	2.54	3.01	3.48	**1yr**	2.66	3.35	3.80	4.44	5.17	**1yr**
2yr	0.43	0.67	0.82	1.12	1.38	1.64	**2yr**	1.19	1.61	1.88	2.40	2.95	3.51	3.89	**2yr**	3.11	3.74	4.32	5.11	5.77	**2yr**
5yr	0.52	0.80	1.00	1.37	1.74	2.11	**5yr**	1.50	2.07	2.45	3.13	3.75	4.59	5.16	**5yr**	4.06	4.96	5.81	6.69	7.29	**5yr**
10yr	0.61	0.93	1.16	1.62	2.09	2.58	**10yr**	1.80	2.53	3.03	3.87	4.61	5.65	6.43	**10yr**	5.00	6.18	7.32	8.27	8.81	**10yr**
25yr	0.76	1.15	1.43	2.05	2.69	3.36	**25yr**	2.32	3.28	4.02	5.15	6.00	7.45	8.58	**25yr**	6.59	8.25	9.89	10.97	11.30	**25yr**
50yr	0.89	1.35	1.69	2.42	3.26	4.09	**50yr**	2.81	4.00	4.97	6.40	8.25	9.20	10.68	**50yr**	8.14	10.27	12.41	13.60	13.67	**50yr**
100yr	1.06	1.60	2.00	2.89	3.96	4.99	**100yr**	3.42	4.88	6.19	7.96	10.33	11.36	13.30	**100yr**	10.06	12.79	15.58	16.89	16.53	**100yr**
200yr	1.25	1.88	2.39	3.46	4.82	6.09	**200yr**	4.16	5.96	7.69	9.90	12.93	14.05	16.57	**200yr**	12.43	15.93	19.52	21.00	20.02	**200yr**
500yr	1.58	2.35	3.03	4.40	6.26	7.91	**500yr**	5.40	7.74	10.28	13.25	17.41	18.61	22.18	**500yr**	16.47	21.33	26.40	28.03	25.80	**500yr**

Powered by ACIS Northeast Regional Climate Center

2 Yr. Type III Rainfall Distribution Curve



10 Yr. Type III Rainfall Distribution Curve



National Water Information System: Web Interface

Click to hideNews Bulletins

Please see news on new formats
- Full News

Click to hide state-specific text
ALL DATA ARE EASTERN STANDARD TIME

USGS 01310740 REYNOLDS CHANNEL AT POINT LOOKOUT NY

PROVISIONAL DATA SUBJECT TO REVISION

Available data for this site Time-series: Current/Historical Observations | GO

Click to hidestation-specific text
The 6-minute meteorological data for this station are temporary and will only be displayed for 120 days. Although the instrumentation is calibrated at least once/year, the temporary classification means that documented routine inspections and other quality assurance measures are not performed that would make the data acceptable for archival, retrieval, or future use in general scientific or interpretive studies.

Funding for this site is provided by:

Town of Hempstead

NYS Department of Environmental Conservation

USGS - Cooperative Matching Funds

LOCATION.--Lat 40°35'36", long 73°35'03" referenced to North American Datum of 1927, Nassau County, NY, Hydrologic Unit 02030202, at Town of Hempstead East Marina, 750 ft east of Loop Parkway Bridge, in Point Lookout. Water-quality monitor at site 100 ft north.

PERIOD OF RECORD.--December 1997 to current year. January 1974 to June 1994, in files of Town of Hempstead Department of Conservation& Waterways. Precipitation, wind speed and direction, air temperature, relative humidity, and barometric pressure records for March 1998 to current year, and solar radiation records for August 2004 to current year, are unpublished and available in files of the Geological Survey.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. January 1974 to June 1994, water-stage recorder at site 150 ft northeast.

REMARKS.--ELEVATION WY 2014: Records rated good, except those for Oct. 1-22, Oct. 28 to Jan. 19, Jan. 29, June 21 to July 6, Aug. 12-18, 26-31, Sept. 11-20, which are fair, Oct. 23-27, Jan. 20-28, Jan. 30 to June 20, July 31 to Aug. 11, Sept. 1-10, 29-30, which are poor and July 7-30 which were deleted. Periods of missing record were estimated with MISTE using a linear regression with 01310521 and 01311143. Satellite and telephone elevation, precipitation, and wind speed and direction telemeters at station. Telephone telemeter for air temperature, relative humidity, barometric pressure, and solar radiation parameters at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 9.90 ft, Oct. 29, 2012; minimum elevation, -4.28 ft, Mar. 9, 2005.

EXTREMES OUTSIDE PERIOD OF RECORD.--Storm tide of Sept. 27, 1985, reached an elevation of 7.3 ft, from information provided by Town of Hempstead Department of Conservation & Waterways. Storm tide of Dec. 11, 1992, reached an elevation of 7.3 ft, from high-water mark at site 4.0 mi west. Minimum elevation recorded, -4.9 ft, Jan. 11, 1978, Mar. 16, 1980, from information provided by Town of Hempstead Department of Conservation & Waterways.

PERIOD OF RECORD[1].--October 2004 to current year. Water temperature records for March 1998 to September 2004, and sampling depth records for October 2004 to current year are unpublished and available in files of the Geological Survey.

PERIOD OF DAILY RECORD[1].--

WATER TEMPERATURE: October 2004 to current year.
SALINITY: October 2004 to current year.
DISSOLVED OXYGEN: October 2004 to current year.
TURBIDITY: October 2004 to current year.
CHLOROPHYLL: August 2006 to current year.

INSTRUMENTATION[1].--Water-quality monitor provides 12-minute-interval readings collected from 1.6 ft above bottom. October 2004 to February 2005, water-quality monitor provided 6-minute-interval readings. Salinity record computed from specific-conductance readings.

REMARKS[1].--Telephone telemeter for water temperature, specific conductance, dissolved oxygen, turbidity, chlorophyll, and sampling depth parameters at station. Interruptions of record were due to malfunction of water-quality monitor or sensors.
WATER TEMPERATURE WY 2016: Records excellent.
SALINITY WY 2016: Records excellent, except those for Nov. 8-10, May 3 to June 2, June 29 to July 3, July 8-15, Aug. 3, Sept. 7-19, which are good, July 4-5, 16-21, Aug. 4, Sept. 20-29, which are fair, and July 22 to Aug. 2, Aug. 5-8, which are poor.
DISSOLVED OXYGEN WY 2016: Records excellent, except those for Oct. 11 to Nov. 10, Dec. 19 to Jan. 6, Apr. 5-15, July 1-5, and July 20 to Aug. 2, which are good.
TURBIDITY WY 2016: Records excellent, except those for Oct. 15, 17, 20-21, 24-27, Nov. 2-5, 7, 10, Apr. 20-28, June 23 to July 5, July 17-26, which are good, Oct. 28 to Nov. 1, Nov. 6, 8-9, Apr. 29 to May 3, July 27 to Aug. 2, which are fair, May 4-25, which are poor, and May 26 to June 2, which were deleted.
CHLOROPHYLL WY 2016: Records excellent, except those for Nov. 5, 7-11, Feb. 6 to Mar. 2, Apr. 19-29, May 3-5, July 7-8, which are good, Apr. 30 to May 2, May 6-9, July 9-10, which are fair, May 10 to June 2, July 11-16, which are poor and July 17 to Aug. 2 which were deleted.
EXTREMES FOR PERIOD OF RECORD[1].--WATER TEMPERATURE: Maximum, 27.9 °C, July 18, 2013, Aug. 14, 2016; minimum, -2.1 °C, Jan. 16, 17, 30, 31, 2004.
SALINITY: Maximum, 35 psu, Aug. 19, 2014; minimum, 21 psu, Oct. 14, 15, 2005.
DISSOLVED OXYGEN: Maximum, 15.9 mg/L, Mar. 1, 2007; minimum, 1.5 mg/L, Sept. 3, 2014.
TURBIDITY: Maximum, 410 FNU, Sept. 14, 2013; minimum, <0.1 FNU several days each year 2005-2016.
CHLOROPHYLL: Maximum, 110 ug/L, May 22, 2014; minimum, <0.1 ug/L many days each year 2006-2016.
[1] Water-Quality Records
Derived from NY Annual Water-Data Report 2012

Peak Flow and Stage Information

Webcam view of Reynolds Channel Picture updated hourly

Webcam view of Atlantic Ocean shore

Elevation observations and tidal predictions for this station are reported to NGVD 1929. To convert data to NAVD 1988 subtract 1.13 ft. To convert data to MHHW datum subtract 3.53 ft. To convert data to MLLW datum add 1.10 ft. These corrections vary from site to site.

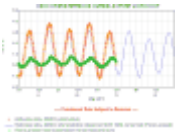
NGVD 1929 is the National Geodetic Vertical Datum of 1929, formerly called "mean sea level" or "Sea Level Datum of 1929." NGVD 1929 was a general adjustment of the first-order level nets fit to mean sea level at 26 tide gages in the US and Canada.

NAVD 1988 is the North American Vertical Datum of 1988, which is a geodetic datum derived from a general adjustment of the first-order level nets fit to 1 tide gage in eastern Canada.

MHHW is mean higher high water, which is a site-specific datum determined by averaging the highest of the 2 high tides that occur each day over a 19-year tidal epoch. For tide gages with less than 19 years of record, this datum is estimated by correlation with long-term tide gages.

MLLW is mean lower low water, which is a site-specific datum determined by averaging the lowest of the 2 low tides that occur each day over a 19-year tidal epoch. For tide gages with less than 19 years of record, this datum is estimated by correlation with long-term tide gages.

Additional sensor graph(s) available (click on graph or sensor name)



Water elevation, astronomical-tide elevation, and residual water level
Graph updated every 15 minutes
Alternate link to graph

Wind speed, wind gust speed, and barometric pressure
Graph updated hourly
Alternate link to graph

Station image

This station managed by the NY Water Science Center Coram.

Available Parameters	Available Period
☐ All 19 Available Parameters for this site	
☐ 00003 Sampling depth, monitor	2017-01-11 2017-05-11
☐ 00010 Temperature, water, monitor	2007-10-01 2017-05-11
☐ 00020 Temperature, air	2017-01-11 2017-05-11
☐ 00036 Wind direction	2017-02-01 2017-05-11

Available Parameters	Available Period
☐ 00045 Precipitation	2017-01-11 2017-05-11
☐ 00052 Relative humidity	2017-01-11 2017-05-11
☐ 00095 Specific cond at 25C, monitor	2007-10-01 2017-05-11
☐ 00300 Dissolved oxygen, monitor	2007-10-01 2017-05-11
☐ 61727 Wind gust speed	2017-01-11 2017-05-11
☐ 61729 Wind gust direction	2017-02-01 2017-05-11
☐ 62361 Chlorophyll, in situ, monitor	2007-10-01 2017-05-11
☐ 62608 Solar radiation down	2017-01-11 2017-05-11
☑ 62619 Elevation, ocean/est	2007-10-01 2017-05-11
☑ 62619 Elevation, ocean/est, tidal prediction	2017-01-11 2017-09-30
☐ 63680 Turbidity, Form Neph, monitor	2007-10-01 2017-05-11
☐ 75969 BarometricPressUncor	2017-01-11 2017-05-11
☐ 82127 Wind speed	2017-01-11 2017-05-11
☐ 90860 Salinity, at 25C, monitor	2007-10-01 2017-05-11
☐ 99067 Observed elev diff	2017-01-11 2017-05-11

Output format

- ◉ Graph
- ○ Graph w/ stats
- ○ Graph w/o stats
- ○ Graph w/ (up to 3) parms
- ○ Table
- ○ Tab-separated

Days (7) [ ] **Summary of all available data for this site** GO

Instantaneous-data availability statement

-- or --

Begin date

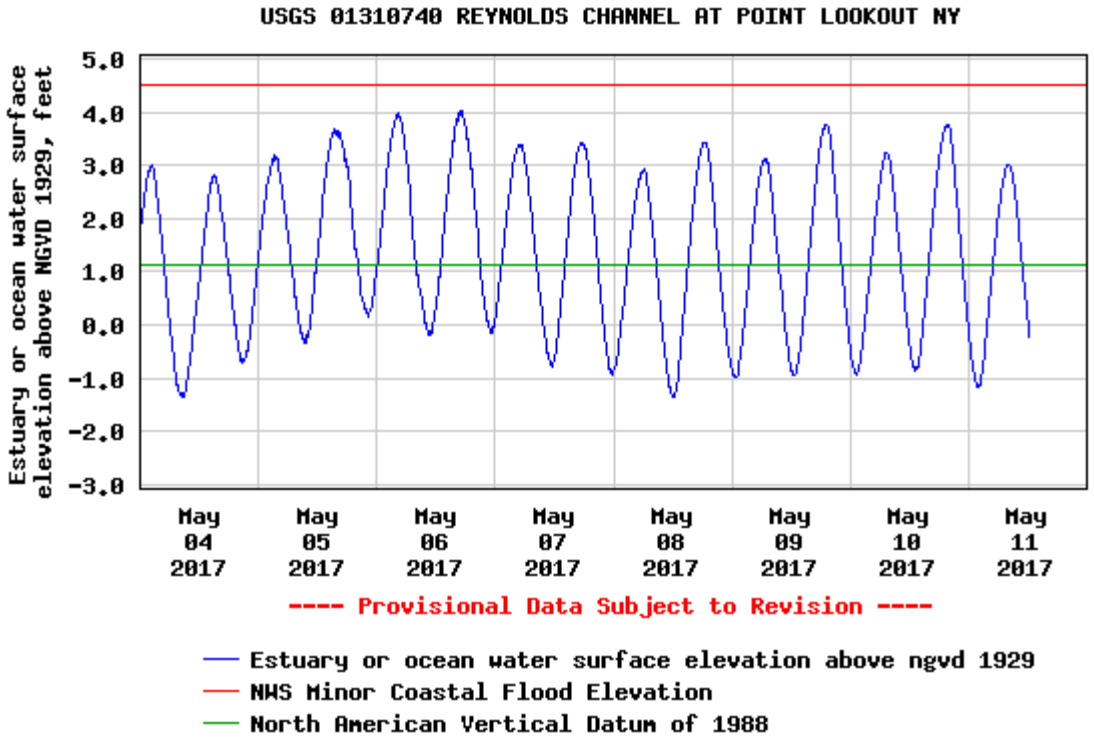
2017-01-04

End date

2017-05-11

Estuary or ocean water surface elevation above NGVD 1929, feet

Most recent instantaneous value: -0.22 05-11-2017 12:24 EST



Add up to 2 more sites and replot for "Estuary or ocean water surface elevation above NGVD 1929, feet"

?
Add site numbers
Note

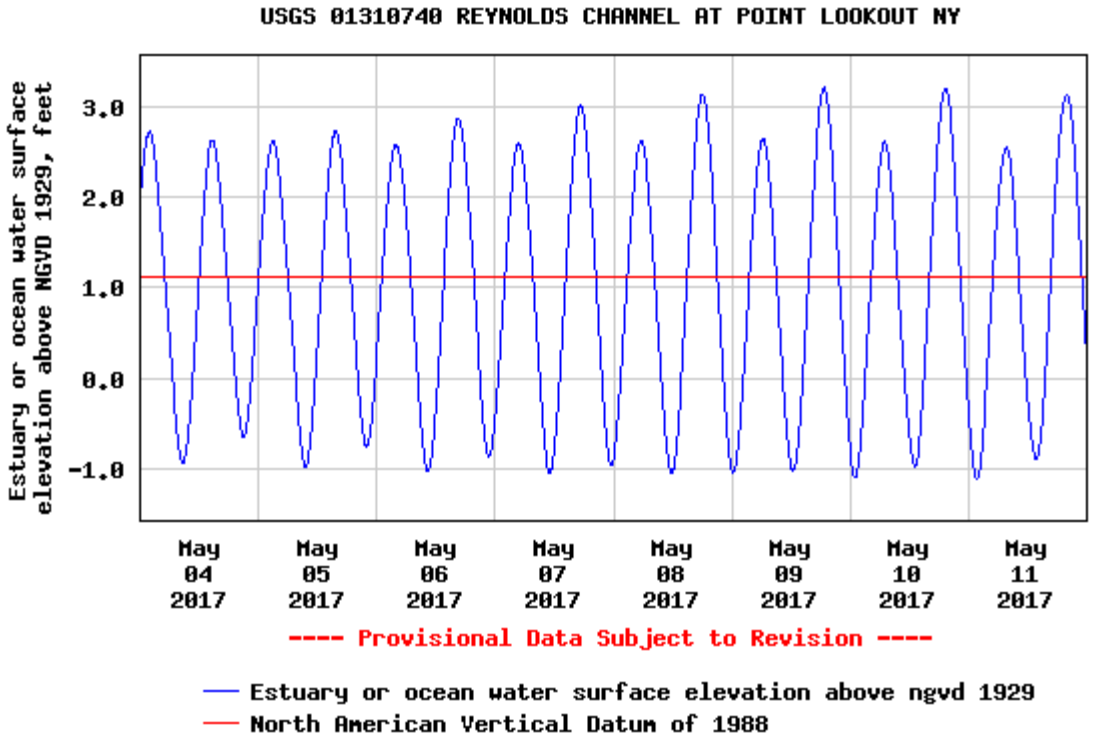
Enter up to 2 site numbers separated by a comma. A site number consists of 8 to 15 digits

GO

Create presentation-quality / stand-alone graph. Subscribe to
?
WaterAlert

Share this graph |

Estuary or ocean water surface elevation above NGVD 1929, feet, tidal prediction
Most recent instantaneous value: -0.61 05-11-2017 12:42 EST



Add up to 2 more sites and replot for "Estuary or ocean water surface elevation above NGVD 1929, feet, tidal prediction"

?
Add site numbers
Note

Enter up to 2 site numbers separated by a comma. A site number consists of 8 to 15 digits

GO

Create presentation-quality / stand-alone graph. Subscribe to
?
WaterAlert

Share this graph |

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help

Data Tips
Explanation of terms
Subscribe for system changes
News

Title: USGS Current Conditions for New York
URL: https://waterdata.usgs.gov/ny/nwis/uv?

Page Contact Information: New York Water Data Support Team
Page Last Modified: 2017-05-11 13:47:38 EDT
0.49 0.35 caww01

Appendix B

Soil Information

Hydrologic Soil Group—Nassau County, New York
(Watershed Boundary)

Map Scale: 1:28,200 if printed on A landscape (11" x 8.5") sheet.

N

0 400 800 1600 2400 Meters

0 1000 2000 4000 6000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Nassau County, New York
Survey Area Data: Version 13, Sep 23, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Oct 5, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Nassau County, New York (NY059)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
Du	Duneland-Udipsamments complex		3.5	0.6%
UdA	Udipsamments, nearly level	A	91.6	16.6%
Ue	Udipsamments, wet substratum	A	25.4	4.6%
Ug	Urban land		110.6	20.0%
Uu	Urban land-Udipsamments complex		219.4	39.8%
Uw	Urban land-Udipsamments, wet substratum complex		101.3	18.4%
Totals for Area of Interest			**551.9**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix C

Sub-Catchment Analysis (Watershed Areas)

Appendix C
System 1 Watershed Map

GPI GdB

NEW YORK STATE OF OPPORTUNITY. DASNY NY RISING

Legend

- System 1 Structures
- System 1
- System 1 Outfall
- Inverted Siphone Location
- System 1 Waterhsed
- Location 3A
- Location 3F

N W E S

0 0.025 0.05 0.1 Miles

System 1 (2 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	0.267		CB 8059	SCS CN	54	FAA	0.285	0.03
A 2	TRUE	1.243		CB 8056	SCS CN	54	FAA	0.393	0.11
A 3	TRUE	0.682		CB 13079	SCS CN	54	FAA	0.358	0.06
A 4	TRUE	1.091		CB 8061	SCS CN	54	FAA	0.453	0.09
A 5	TRUE	1.22		CB 8063	SCS CN	54	FAA	0.393	0.11
A 6	TRUE	0.393		CB 8064	SCS CN	54	FAA	0.358	0.04
A 7	TRUE	1.457		CB 8065	SCS CN	54	FAA	0.358	0.14
A 8	TRUE	1.533		CB 8066	SCS CN	54	FAA	0.424	0.13
A 9	TRUE	0.459		CB 8006	SCS CN	54	FAA	0.3	0.04
A 10	TRUE	2.285		CB 8016	SCS CN	54	FAA	0.465	0.18
A 11	TRUE	0.886		CB 8007	SCS CN	54	FAA	0.34	0.08
A 12	TRUE	0.777		CB 8010	SCS CN	54	FAA	0.393	0.07
A 13	TRUE	0.655		CB 8018	SCS CN	54	FAA	0.308	0.06
A 14	TRUE	0.885		CB 8014	SCS CN	54	FAA	0.22	0.09
A 15	TRUE	0.838		CB 8015	SCS CN	54	FAA	0.3	0.08
A 16	TRUE	0.614		CB 8023	SCS CN	54	FAA	0.304	0.06
A 17	TRUE	0.777		CB 8020	SCS CN	54	FAA	0.296	0.08
A 18	TRUE	1.166		CB 8045	SCS CN	54	FAA	0.358	0.11
A 19	TRUE	0.446		CB 8043	SCS CN	54	FAA	0.227	0.04
A 20	TRUE	0.674		CB 8037	SCS CN	54	FAA	0.34	0.06
A 21	TRUE	0.776		CB 8033	SCS CN	54	FAA	0.247	0.08
A 22	TRUE	0.236		CB 8035	SCS CN	54	FAA	0.201	0.02
A 23	TRUE	0.475		CB 8031	SCS CN	54	FAA	0.26	0.05
A 24	TRUE	0.989		CB 8030	SCS CN	54	FAA	0.358	0.09
A 25	TRUE	0.429		CB 8039	SCS CN	54	FAA	0.217	0.04
A 26	TRUE	0.988		CB 8042	SCS CN	54	FAA	0.321	0.1
A 27	TRUE	0.825		CB 8047	SCS CN	54	FAA	0.321	0.08
A 28	TRUE	0.926		CB 8046	SCS CN	54	FAA	0.34	0.09
A 29	TRUE	1.248		CB 8052	SCS CN	54	FAA	0.409	0.11
A 30	TRUE	0.887		CB 8054	SCS CN	54	FAA	0.321	0.09
A 31	TRUE	0.687		CB 8055	SCS CN	54	FAA	0.321	0.07
A 32	TRUE	0.406		CB 8025	SCS CN	54	FAA	0.253	0.04
A 33	TRUE	0.407		CB 8029	SCS CN	54	FAA	0.358	0.04
A 34	TRUE	0.519		CB 8027	SCS CN	54	FAA	0.255	0.05
A 35	TRUE	0.344		CB 2098	SCS CN	54	FAA	0.278	0.03
A 36	TRUE	0.362		CB 2096	SCS CN	54	FAA	0.253	0.04
A 37	TRUE	1.576		CB 2095	SCS CN	54	FAA	0.424	0.14
A 38	TRUE	2.332		CB 3074	SCS CN	54	FAA	0.481	0.18
A 39	TRUE	0.46		CB 3071	SCS CN	54	FAA	0.33	0.04
A 40	TRUE	1.764		CB 3067	SCS CN	54	FAA	0.424	0.15
A 41	TRUE	0.324		CB 3068	SCS CN	54	FAA	0.278	0.03
A 42	TRUE	0.151		CB 3073	SCS CN	54	FAA	0.215	0.01
A 43	TRUE	0.315		CB 2093	SCS CN	54	FAA	0.344	0.03
A 44	TRUE	1.411		CB 2091	SCS CN	54	FAA	0.424	0.12
A 45	TRUE	1.098		CB 3069	SCS CN	54	FAA	0.393	0.1
A 46	TRUE	0.683		CB 2090	SCS CN	54	FAA	0.358	0.06
A 47	TRUE	1.322		CB 2088	SCS CN	54	FAA	0.376	0.12
A 48	TRUE	0.299		CB 3088	SCS CN	54	FAA	0.227	0.03
A 49	TRUE	0.364		CB 3089	SCS CN	54	FAA	0.278	0.04
A 50	TRUE	0.545		CB 3091	SCS CN	54	FAA	0.358	0.05
A 51	TRUE	0.323		CB 3095	SCS CN	54	FAA	0.201	0.03
A 52	TRUE	0.308		CB 3094	SCS CN	54	FAA	0.253	0.03
A 53	TRUE	0.592		CB 6085	SCS CN	54	FAA	0.278	0.06
A 54	TRUE	0.394		CB 6084	SCS CN	54	FAA	0.3	0.04
A 55	TRUE	0.701		CB 6080	SCS CN	54	FAA	0.278	0.07
A 56	TRUE	0.624		CB 6082	SCS CN	54	FAA	0.337	0.06
A 57	TRUE	0.619		CB 6076	SCS CN	54	FAA	0.253	0.06
A 58	TRUE	0.403		CB 6077	SCS CN	54	FAA	0.263	0.04
A 59	TRUE	0.715		CB 6092	SCS CN	54	FAA	0.227	0.07
A 60	TRUE	0.437		CB 6091	SCS CN	54	FAA	0.278	0.04
A 61	TRUE	1.053		CB 6088	SCS CN	54	FAA	0.351	0.1
A 62	TRUE	1.705		CB 6086	SCS CN	54	FAA	0.369	0.16
A 63	TRUE	1.535		CB 3099	SCS CN	54	FAA	0.34	0.14
A 64	TRUE	0.247		CB 3097	SCS CN	54	FAA	0.196	0.02
A 65	TRUE	0.197		CB 3096	SCS CN	54	FAA	0.18	0.02
A 66	TRUE	1.124		CB 6071	SCS CN	54	FAA	0.376	0.1
A 67	TRUE	0.758		CB 6059	SCS CN	54	FAA	0.358	0.07
A 68	TRUE	1.552		CB 6060	SCS CN	54	FAA	0.376	0.14
A 69	TRUE	0.408		CB 6062	SCS CN	54	FAA	0.268	0.04
A 70	TRUE	1.872		CB 6063	SCS CN	54	FAA	0.478	0.15
A 71	TRUE	1.089		CB 6068	SCS CN	54	FAA	0.376	0.1
A 72	TRUE	0.968		CB 6066	SCS CN	54	FAA	0.436	0.08

System 1 (10 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	0.267		CB 8059	SCS CN	54	FAA	0.285	0.12
A 2	TRUE	1.243		CB 8056	SCS CN	54	FAA	0.393	0.59
A 3	TRUE	0.682		CB 13079	SCS CN	54	FAA	0.358	0.32
A 4	TRUE	1.091		CB 8061	SCS CN	54	FAA	0.453	0.52
A 5	TRUE	1.22		CB 8063	SCS CN	54	FAA	0.393	0.58
A 6	TRUE	0.393		CB 8064	SCS CN	54	FAA	0.358	0.18
A 7	TRUE	1.457		CB 8065	SCS CN	54	FAA	0.358	0.68
A 8	TRUE	1.533		CB 8066	SCS CN	54	FAA	0.424	0.73
A 9	TRUE	0.459		CB 8006	SCS CN	54	FAA	0.3	0.2
A 10	TRUE	2.285		CB 8016	SCS CN	54	FAA	0.465	1.08
A 11	TRUE	0.886		CB 8007	SCS CN	54	FAA	0.34	0.41
A 12	TRUE	0.777		CB 8010	SCS CN	54	FAA	0.393	0.37
A 13	TRUE	0.655		CB 8018	SCS CN	54	FAA	0.308	0.29
A 14	TRUE	0.885		CB 8014	SCS CN	54	FAA	0.22	0.35
A 15	TRUE	0.838		CB 8015	SCS CN	54	FAA	0.3	0.37
A 16	TRUE	0.614		CB 8023	SCS CN	54	FAA	0.304	0.27
A 17	TRUE	0.777		CB 8020	SCS CN	54	FAA	0.296	0.34
A 18	TRUE	1.166		CB 8045	SCS CN	54	FAA	0.358	0.54
A 19	TRUE	0.446		CB 8043	SCS CN	54	FAA	0.227	0.18
A 20	TRUE	0.674		CB 8037	SCS CN	54	FAA	0.34	0.31
A 21	TRUE	0.776		CB 8033	SCS CN	54	FAA	0.247	0.32
A 22	TRUE	0.236		CB 8035	SCS CN	54	FAA	0.201	0.09
A 23	TRUE	0.475		CB 8031	SCS CN	54	FAA	0.26	0.2
A 24	TRUE	0.989		CB 8030	SCS CN	54	FAA	0.358	0.46
A 25	TRUE	0.429		CB 8039	SCS CN	54	FAA	0.217	0.17
A 26	TRUE	0.988		CB 8042	SCS CN	54	FAA	0.321	0.45
A 27	TRUE	0.825		CB 8047	SCS CN	54	FAA	0.321	0.37
A 28	TRUE	0.926		CB 8046	SCS CN	54	FAA	0.34	0.43
A 29	TRUE	1.248		CB 8052	SCS CN	54	FAA	0.409	0.59
A 30	TRUE	0.887		CB 8054	SCS CN	54	FAA	0.321	0.4
A 31	TRUE	0.687		CB 8055	SCS CN	54	FAA	0.321	0.31
A 32	TRUE	0.406		CB 8025	SCS CN	54	FAA	0.253	0.17
A 33	TRUE	0.407		CB 8029	SCS CN	54	FAA	0.358	0.19
A 34	TRUE	0.519		CB 8027	SCS CN	54	FAA	0.255	0.22
A 35	TRUE	0.344		CB 2098	SCS CN	54	FAA	0.278	0.15
A 36	TRUE	0.362		CB 2096	SCS CN	54	FAA	0.253	0.15
A 37	TRUE	1.576		CB 2095	SCS CN	54	FAA	0.424	0.75
A 38	TRUE	2.332		CB 3074	SCS CN	54	FAA	0.481	1.1
A 39	TRUE	0.46		CB 3071	SCS CN	54	FAA	0.33	0.21
A 40	TRUE	1.764		CB 3067	SCS CN	54	FAA	0.424	0.84
A 41	TRUE	0.324		CB 3068	SCS CN	54	FAA	0.278	0.14
A 42	TRUE	0.151		CB 3073	SCS CN	54	FAA	0.215	0.06
A 43	TRUE	0.315		CB 2093	SCS CN	54	FAA	0.344	0.15
A 44	TRUE	1.411		CB 2091	SCS CN	54	FAA	0.424	0.67
A 45	TRUE	1.098		CB 3069	SCS CN	54	FAA	0.393	0.52
A 46	TRUE	0.683		CB 2090	SCS CN	54	FAA	0.358	0.32
A 47	TRUE	1.322		CB 2088	SCS CN	54	FAA	0.376	0.62
A 48	TRUE	0.299		CB 3088	SCS CN	54	FAA	0.227	0.12
A 49	TRUE	0.364		CB 3089	SCS CN	54	FAA	0.278	0.16
A 50	TRUE	0.545		CB 3091	SCS CN	54	FAA	0.358	0.25
A 51	TRUE	0.323		CB 3095	SCS CN	54	FAA	0.201	0.12
A 52	TRUE	0.308		CB 3094	SCS CN	54	FAA	0.253	0.13
A 53	TRUE	0.592		CB 6085	SCS CN	54	FAA	0.278	0.26
A 54	TRUE	0.394		CB 6084	SCS CN	54	FAA	0.3	0.18
A 55	TRUE	0.701		CB 6080	SCS CN	54	FAA	0.278	0.3
A 56	TRUE	0.624		CB 6082	SCS CN	54	FAA	0.337	0.29
A 57	TRUE	0.619		CB 6076	SCS CN	54	FAA	0.253	0.26
A 58	TRUE	0.403		CB 6077	SCS CN	54	FAA	0.263	0.17
A 59	TRUE	0.715		CB 6092	SCS CN	54	FAA	0.227	0.29
A 60	TRUE	0.437		CB 6091	SCS CN	54	FAA	0.278	0.19
A 61	TRUE	1.053		CB 6088	SCS CN	54	FAA	0.351	0.49
A 62	TRUE	1.705		CB 6086	SCS CN	54	FAA	0.369	0.8
A 63	TRUE	1.535		CB 3099	SCS CN	54	FAA	0.34	0.71
A 64	TRUE	0.247		CB 3097	SCS CN	54	FAA	0.196	0.09
A 65	TRUE	0.197		CB 3096	SCS CN	54	FAA	0.18	0.07
A 66	TRUE	1.124		CB 6071	SCS CN	54	FAA	0.376	0.53
A 67	TRUE	0.758		CB 6059	SCS CN	54	FAA	0.358	0.35
A 68	TRUE	1.552		CB 6060	SCS CN	54	FAA	0.376	0.73
A 69	TRUE	0.408		CB 6062	SCS CN	54	FAA	0.268	0.17
A 70	TRUE	1.872		CB 6063	SCS CN	54	FAA	0.478	0.89
A 71	TRUE	1.089		CB 6068	SCS CN	54	FAA	0.376	0.51
A 72	TRUE	0.968		CB 6066	SCS CN	54	FAA	0.436	0.46

Appendix C
System 2 Watershed Map

GPI GdB

NEW YORK STATE OF OPPORTUNITY. DASNY NY RISING

Legend

- System 2 Structures
- System 2
- System 2 Outfalls
- System 2 Watershed
- Location 3A
- Location 3E
- Location 3F

N W E S

0 0.025 0.05 0.1 Miles

System 2 (2 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	0.551		CB 6058	SCS CN	54	FAA	0.3	0.05
A 2	TRUE	1.953		CB 6057	SCS CN	54	FAA	0.424	0.17
A 3	TRUE	2.407		CB 6026	SCS CN	54	FAA	0.393	0.22
A 4	TRUE	2.766		CB 6074	SCS CN	54	FAA	0.467	0.22
A 5	TRUE	0.95		CB 6075	SCS CN	54	FAA	0.358	0.09
A 6	TRUE	1.736		CB 6031	SCS CN	54	FAA	0.453	0.14
A 7	TRUE	3.014		CB 6030	SCS CN	54	FAA	0.453	0.25
A 8	TRUE	0.51		CB 6020	SCS CN	54	FAA	0.3	0.05
A 9	TRUE	1.002		CB 6019	SCS CN	54	FAA	0.34	0.09
A 10	TRUE	0.86		CB 6021	SCS CN	54	FAA	0.321	0.08
A 11	TRUE	1.271		CB 6022	SCS CN	54	FAA	0.453	0.1
A 12	TRUE	1.124		CB 6023	SCS CN	54	FAA	0.393	0.1
A 13	TRUE	1.364		CB 6025	SCS CN	54	FAA	0.453	0.11
A 14	TRUE	2.066		CB 6038	SCS CN	54	FAA	0.453	0.17
A 15	TRUE	1.549		CB 6037	SCS CN	54	FAA	0.424	0.13
A 16	TRUE	1.221		CB 6041	SCS CN	54	FAA	0.424	0.1
A 17	TRUE	2.861		CB 6039	SCS CN	54	FAA	0.481	0.22
A 18	TRUE	0.723		CB 6040	SCS CN	54	FAA	0.47	0.06
A 19	TRUE	1.25		CB 6013	SCS CN	54	FAA	0.453	0.1
A 20	TRUE	1.455		CB 6012	SCS CN	54	FAA	0.383	0.13
A 21	TRUE	1.288		CB 6008	SCS CN	54	FAA	0.393	0.12
A 22	TRUE	1.609		CB 6009	SCS CN	54	FAA	0.366	0.15
A 23	TRUE	1.147		CB 6007	SCS CN	54	FAA	0.409	0.1
A 24	TRUE	0.838		CB 6053	SCS CN	54	FAA	0.424	0.07
A 25	TRUE	0.798		CB 6052	SCS CN	54	FAA	0.393	0.07
A 26	TRUE	0.533		CB 6055	SCS CN	54	FAA	0.321	0.05
A 27	TRUE	0.566		CB 6054	SCS CN	54	FAA	0.321	0.05

System 2 (10 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	0.551		CB 6058	SCS CN	54	FAA	0.3	0.25
A 2	TRUE	1.953		CB 6057	SCS CN	54	FAA	0.424	0.93
A 3	TRUE	2.407		CB 6026	SCS CN	54	FAA	0.393	1.14
A 4	TRUE	2.766		CB 6074	SCS CN	54	FAA	0.467	1.31
A 5	TRUE	0.95		CB 6075	SCS CN	54	FAA	0.358	0.44
A 6	TRUE	1.736		CB 6031	SCS CN	54	FAA	0.453	0.82
A 7	TRUE	3.014		CB 6030	SCS CN	54	FAA	0.453	1.43
A 8	TRUE	0.51		CB 6020	SCS CN	54	FAA	0.3	0.23
A 9	TRUE	1.002		CB 6019	SCS CN	54	FAA	0.34	0.46
A 10	TRUE	0.86		CB 6021	SCS CN	54	FAA	0.321	0.39
A 11	TRUE	1.271		CB 6022	SCS CN	54	FAA	0.453	0.6
A 12	TRUE	1.124		CB 6023	SCS CN	54	FAA	0.393	0.53
A 13	TRUE	1.364		CB 6025	SCS CN	54	FAA	0.453	0.65
A 14	TRUE	2.066		CB 6038	SCS CN	54	FAA	0.453	0.98
A 15	TRUE	1.549		CB 6037	SCS CN	54	FAA	0.424	0.74
A 16	TRUE	1.221		CB 6041	SCS CN	54	FAA	0.424	0.58
A 17	TRUE	2.861		CB 6039	SCS CN	54	FAA	0.481	1.35
A 18	TRUE	0.723		CB 6040	SCS CN	54	FAA	0.47	0.34
A 19	TRUE	1.25		CB 6013	SCS CN	54	FAA	0.453	0.59
A 20	TRUE	1.455		CB 6012	SCS CN	54	FAA	0.383	0.69
A 21	TRUE	1.288		CB 6008	SCS CN	54	FAA	0.393	0.61
A 22	TRUE	1.609		CB 6009	SCS CN	54	FAA	0.366	0.75
A 23	TRUE	1.147		CB 6007	SCS CN	54	FAA	0.409	0.54
A 24	TRUE	0.838		CB 6053	SCS CN	54	FAA	0.424	0.4
A 25	TRUE	0.798		CB 6052	SCS CN	54	FAA	0.393	0.38
A 26	TRUE	0.533		CB 6055	SCS CN	54	FAA	0.321	0.24
A 27	TRUE	0.566		CB 6054	SCS CN	54	FAA	0.321	0.26

Appendix C
System 3 Watershed Map

GPI GdB

NEW YORK STATE OF OPPORTUNITY. DASNY NY RISING

Legend

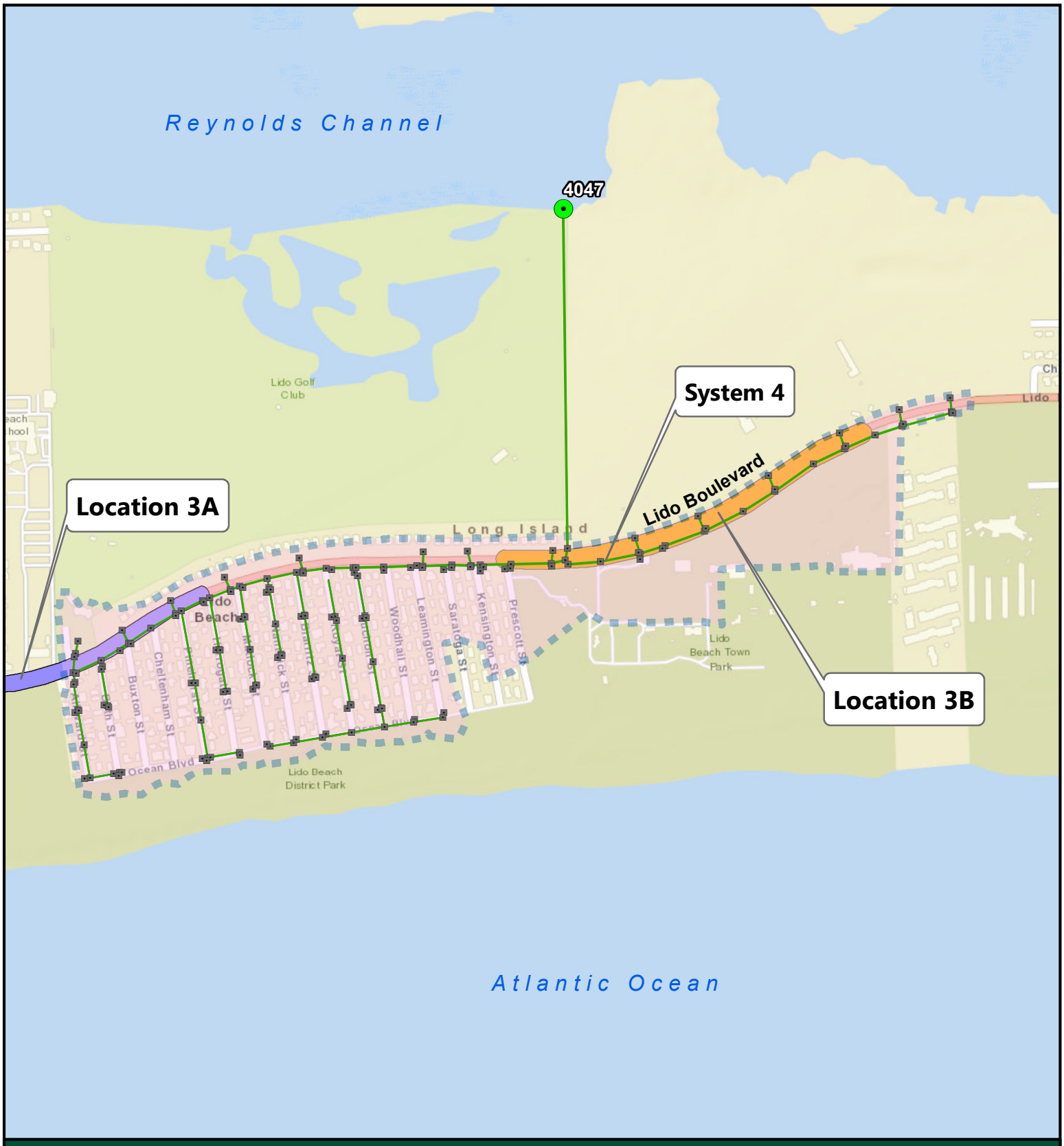
- System 3 Structures
- System 3
- System 3 Outfalls
- Inverted Siphon Location
- System 3 Watershed
- Location 3A
- Location 3E

N W E S

0 0.025 0.05 0.1 Miles

System 3 (2 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	1.082		CB 6045	SCS CN	54	FAA	0.515	0.08
A 2	TRUE	6.829		CB 13002	SCS CN	39	FAA	0.694	0
A 3	TRUE	0.467		CB 6046	SCS CN	54	FAA	0.201	0.05
A 4	TRUE	0.432		CB 6047	SCS CN	54	FAA	0.201	0.04
A 5	TRUE	1.092		CB 6049	SCS CN	54	FAA	0.312	0.11
A 6	TRUE	1.207		CB 6048	SCS CN	54	FAA	0.312	0.12
A 7	TRUE	0.487		CB 6050	SCS CN	54	FAA	0.201	0.05
A 8	TRUE	0.496		CB 11004	SCS CN	54	FAA	0.201	0.05
A 9	TRUE	1.532		CB 2087	SCS CN	54	FAA	0.327	0.15
A 10	TRUE	1.642		CB 2085	SCS CN	54	FAA	0.327	0.16
A 11	TRUE	0.794		CB 8071	SCS CN	54	FAA	0.312	0.08
A 12	TRUE	2.01		CB 8072	SCS CN	54	FAA	0.442	0.17
A 13	TRUE	3.271		CB 2083	SCS CN	39	FAA	0.6	0
A 14	TRUE	5.864		CB 2081	SCS CN	54	FAA	0.651	0.32
A 15	TRUE	2.992		CB 3059	SCS CN	54	FAA	0.337	0.28
A 16	TRUE	0.837		CB 2074	SCS CN	54	FAA	0.285	0.08
A 17	TRUE	2.504		CB 6006	SCS CN	54	FAA	0.409	0.22
A 18	TRUE	1.839		CB 6005	SCS CN	54	FAA	0.467	0.15
A 19	TRUE	0.204		CB 2077	SCS CN	54	FAA	0.143	0.02
A 20	TRUE	0.326		CB 2078	SCS CN	54	FAA	0.175	0.03
A 21	TRUE	1.002		CB 3039	SCS CN	54	FAA	0.361	0.09
A 22	TRUE	0.439		CB 13010	SCS CN	54	FAA	0.163	0.04
A 23	TRUE	2.104		CB 13007	SCS CN	54	FAA	0.507	0.16
A 24	TRUE	0.346		CB 13009	SCS CN	54	FAA	0.175	0.03
A 25	TRUE	0.286		CB 13023	SCS CN	54	FAA	0.143	0.03
A 26	TRUE	0.292		CB 13012	SCS CN	54	FAA	0.175	0.03
A 27	TRUE	0.138		CB 13014	SCS CN	54	FAA	0.16	0.01
A 28	TRUE	0.185		CB 13013	SCS CN	54	FAA	0.143	0.02
A 29	TRUE	0.387		CB 13031	SCS CN	54	FAA	0.163	0.04
A 30	TRUE	0.516		CB 13032	SCS CN	54	FAA	0.132	0.05
A 31	TRUE	0.101		CB 13033	SCS CN	54	FAA	0.115	0.01
A 32	TRUE	0.076		CB 13026	SCS CN	54	FAA	0.143	0.01
A 33	TRUE	0.059		CB 13024	SCS CN	54	FAA	0.124	0.01
A 34	TRUE	0.247		CB 13034	SCS CN	54	FAA	0.202	0.02
A 35	TRUE	0.113		CB 13025	SCS CN	54	FAA	0.124	0.01
A 36	TRUE	0.135		CB 13029	SCS CN	54	FAA	0.16	0.01
A 37	TRUE	0.204		CB 13028	SCS CN	54	FAA	0.163	0.02
A 38	TRUE	0.016		CB 13017	SCS CN	54	FAA	0.095	0
A 39	TRUE	0.053		CB 13019	SCS CN	54	FAA	0.124	0
A 40	TRUE	0.032		CB 13020	SCS CN	54	FAA	0.124	0
A 41	TRUE	0.079		CB 13021	SCS CN	54	FAA	0.16	0.01
A 42	TRUE	0.588		CB 13042	SCS CN	54	FAA	0.16	0.05
A 43	TRUE	0.467		CB 13041	SCS CN	54	FAA	0.202	0.05
A 44	TRUE	0.035		CB 13040	SCS CN	54	FAA	0.083	0
A 45	TRUE	0.227		CB 13038	SCS CN	54	FAA	0.16	0.02
A 46	TRUE	0.065		CB 13039	SCS CN	54	FAA	0.124	0.01
A 47	TRUE	0.996		CB 13059	SCS CN	54	FAA	0.143	(N/A)
A 48	TRUE	0.271		CB 13055	SCS CN	54	FAA	0.175	0.03
A 49	TRUE	0.131		CB 13056	SCS CN	54	FAA	0.143	(N/A)
A 50	TRUE	0.293		CB 13057	SCS CN	54	FAA	0.214	(N/A)
A 51	TRUE	0.231		CB 13067	SCS CN	54	FAA	0.16	0.02
A 52	TRUE	0.16		CB 13054	SCS CN	54	FAA	0.124	0.01
A 53	TRUE	0.112		CB 13053	SCS CN	54	FAA	0.124	(N/A)
A 54	TRUE	0.121		CB 13052	SCS CN	54	FAA	0.124	0.01
A 55	TRUE	0.438		CB 13060	SCS CN	54	FAA	0.202	0.04
A 56	TRUE	0.498		CB 13061	SCS CN	54	FAA	0.163	0.05
A 57	TRUE	0.263		CB 13070	SCS CN	54	FAA	0.143	0.02
A 58	TRUE	0.087		CB 13069	SCS CN	54	FAA	0.143	0.01
A 59	TRUE	0.087		CB 13051	SCS CN	54	FAA	0.124	0.01
A 60	TRUE	0.091		CB 13050	SCS CN	54	FAA	0.124	0.01
A 61	TRUE	0.849		CB 13062	SCS CN	54	FAA	0.255	0.08
A 62	TRUE	0.084		CB 13063	SCS CN	54	FAA	0.143	0.01
A 63	TRUE	0.235		CB 13071	SCS CN	54	FAA	0.143	0.02
A 64	TRUE	0.311		CB 13072	SCS CN	54	FAA	0.143	0.03
A 65	TRUE	0.455		CB 13064	SCS CN	54	FAA	0.163	0.04
A 66	TRUE	1.248		CB 13065	SCS CN	54	FAA	0.312	0.12
A 67	TRUE	0.556		CB 13073	SCS CN	54	FAA	0.189	0.05
A 68	TRUE	0.063		CB 13018	SCS CN	54	FAA	0.124	0.01
A 69	TRUE	0.041		CB 13027	SCS CN	54	FAA	0.101	0
A 70	TRUE	0.439		CB 13058	SCS CN	54	FAA	0.136	(N/A)
A 71	TRUE	1.499		CB 13066	SCS CN	54	FAA	0.295	0.15
A 72	TRUE	0.058		CB 13049	SCS CN	54	FAA	0.124	0
A 73	TRUE	0.026		CB 13048	SCS CN	54	FAA	0.124	0
A 74	TRUE	0.066		CB 13047	SCS CN	54	FAA	0.124	0.01
A 75	TRUE	0.107		CB 13046	SCS CN	54	FAA	0.143	0.01
A 76	TRUE	0.058		CB 13045	SCS CN	54	FAA	0.124	0
A 77	TRUE	0.383		CB 13044	SCS CN	54	FAA	0.248	0.04
A 78	TRUE	2.662		CB 20001	SCS CN	54	FAA	0.453	0.22
A 79	TRUE	0.212		CB 13017A	SCS CN	54	FAA	0.175	0.02
A 81	TRUE	0.968		CB90000	SCS CN	39	FAA	0.34	0
A 82	TRUE	0.12		CB 13074	SCS CN	54	FAA	0.124	(N/A)
A 83	TRUE	0.099		CB90002	SCS CN	54	FAA	0.124	(N/A)
A 84	TRUE	0.257		CB90003	SCS CN	54	FAA	0.124	(N/A)
A 85	TRUE	0.114		CB90004	SCS CN	54	FAA	0.143	0.01
A 86	TRUE	0.032		CB90005	SCS CN	54	FAA	0.143	0
A 87	TRUE	0.027		CB90006	SCS CN	54	FAA	0.143	0
A 88	TRUE	0.062		CB90007	SCS CN	54	FAA	0.143	0.01
A 89	TRUE	0.472		CB 6044	SCS CN	54	FAA	0.404	0.04
A 90	TRUE	1.645		CB 1099	SCS CN	39	FAA	0.601	0
A 91	TRUE	0.092		CB90001	SCS CN	54	FAA	0.124	(N/A)
A 92	TRUE	0.019		CB 13075	SCS CN	54	FAA	0.124	0
A 93	TRUE	0.153		CB 13068	SCS CN	54	FAA	0.143	0.01
A 94	TRUE	0.098		<None>	SCS CN	54	FAA	0.33	(N/A)
A 95	TRUE	0.227		<None>	SCS CN	54	FAA	0.255	(N/A)
A 96	TRUE	5.246		<None>	SCS CN	54	FAA	0.569	(N/A)
A 97	TRUE	0.461		CB 13005	SCS CN	39	FAA	0.278	0
A 98	TRUE	0.181		<None>	SCS CN	54	FAA	0.227	(N/A)

System 3 (10 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	1.082		CB 6045	SCS CN	54	FAA	0.515	0.5
A 2	TRUE	6.829		CB 13002	SCS CN	39	FAA	0.694	0.03
A 3	TRUE	0.467		CB 6046	SCS CN	54	FAA	0.201	0.18
A 4	TRUE	0.432		CB 6047	SCS CN	54	FAA	0.201	0.16
A 5	TRUE	1.092		CB 6049	SCS CN	54	FAA	0.312	0.49
A 6	TRUE	1.207		CB 6048	SCS CN	54	FAA	0.312	0.54
A 7	TRUE	0.487		CB 6050	SCS CN	54	FAA	0.201	0.19
A 8	TRUE	0.496		CB 11004	SCS CN	54	FAA	0.201	0.19
A 9	TRUE	1.532		CB 2087	SCS CN	54	FAA	0.327	0.7
A 10	TRUE	1.642		CB 2085	SCS CN	54	FAA	0.327	0.75
A 11	TRUE	0.794		CB 8071	SCS CN	54	FAA	0.312	0.36
A 12	TRUE	2.01		CB 8072	SCS CN	54	FAA	0.442	0.96
A 13	TRUE	3.271		CB 2083	SCS CN	39	FAA	0.6	0.02
A 14	TRUE	5.864		CB 2081	SCS CN	54	FAA	0.651	2.41
A 15	TRUE	2.992		CB 3059	SCS CN	54	FAA	0.337	1.38
A 16	TRUE	0.837		CB 2074	SCS CN	54	FAA	0.285	0.37
A 17	TRUE	2.504		CB 6006	SCS CN	54	FAA	0.409	1.18
A 18	TRUE	1.839		CB 6005	SCS CN	54	FAA	0.467	0.87
A 19	TRUE	0.204		CB 2077	SCS CN	54	FAA	0.143	0.07
A 20	TRUE	0.326		CB 2078	SCS CN	54	FAA	0.175	0.12
A 21	TRUE	1.002		CB 3039	SCS CN	54	FAA	0.361	0.47
A 22	TRUE	0.439		CB 13010	SCS CN	54	FAA	0.163	0.15
A 23	TRUE	2.104		CB 13007	SCS CN	54	FAA	0.507	0.98
A 24	TRUE	0.346		CB 13009	SCS CN	54	FAA	0.175	0.12
A 25	TRUE	0.286		CB 13023	SCS CN	54	FAA	0.143	0.09
A 26	TRUE	0.292		CB 13012	SCS CN	54	FAA	0.175	0.11
A 27	TRUE	0.138		CB 13014	SCS CN	54	FAA	0.16	0.05
A 28	TRUE	0.185		CB 13013	SCS CN	54	FAA	0.143	0.06
A 29	TRUE	0.387		CB 13031	SCS CN	54	FAA	0.163	0.14
A 30	TRUE	0.516		CB 13032	SCS CN	54	FAA	0.132	0.17
A 31	TRUE	0.101		CB 13033	SCS CN	54	FAA	0.115	0.03
A 32	TRUE	0.076		CB 13026	SCS CN	54	FAA	0.143	0.03
A 33	TRUE	0.059		CB 13024	SCS CN	54	FAA	0.124	0.02
A 34	TRUE	0.247		CB 13034	SCS CN	54	FAA	0.202	0.09
A 35	TRUE	0.113		CB 13025	SCS CN	54	FAA	0.124	0.04
A 36	TRUE	0.135		CB 13029	SCS CN	54	FAA	0.16	0.05
A 37	TRUE	0.204		CB 13028	SCS CN	54	FAA	0.163	0.07
A 38	TRUE	0.016		CB 13017	SCS CN	54	FAA	0.095	0
A 39	TRUE	0.053		CB 13019	SCS CN	54	FAA	0.124	0.02
A 40	TRUE	0.032		CB 13020	SCS CN	54	FAA	0.124	0.01
A 41	TRUE	0.079		CB 13021	SCS CN	54	FAA	0.16	0.03
A 42	TRUE	0.588		CB 13042	SCS CN	54	FAA	0.16	0.2
A 43	TRUE	0.467		CB 13041	SCS CN	54	FAA	0.202	0.18
A 44	TRUE	0.035		CB 13040	SCS CN	54	FAA	0.083	0.01
A 45	TRUE	0.227		CB 13038	SCS CN	54	FAA	0.16	0.08
A 46	TRUE	0.065		CB 13039	SCS CN	54	FAA	0.124	0.02
A 47	TRUE	0.996		CB 13059	SCS CN	54	FAA	0.143	(N/A)
A 48	TRUE	0.271		CB 13055	SCS CN	54	FAA	0.175	0.1
A 49	TRUE	0.131		CB 13056	SCS CN	54	FAA	0.143	(N/A)
A 50	TRUE	0.293		CB 13057	SCS CN	54	FAA	0.214	(N/A)
A 51	TRUE	0.231		CB 13067	SCS CN	54	FAA	0.16	0.08
A 52	TRUE	0.16		CB 13054	SCS CN	54	FAA	0.124	0.05
A 53	TRUE	0.112		CB 13053	SCS CN	54	FAA	0.124	(N/A)
A 54	TRUE	0.121		CB 13052	SCS CN	54	FAA	0.124	0.04
A 55	TRUE	0.438		CB 13060	SCS CN	54	FAA	0.202	0.17
A 56	TRUE	0.498		CB 13061	SCS CN	54	FAA	0.163	0.17
A 57	TRUE	0.263		CB 13070	SCS CN	54	FAA	0.143	0.09
A 58	TRUE	0.087		CB 13069	SCS CN	54	FAA	0.143	0.03
A 59	TRUE	0.087		CB 13051	SCS CN	54	FAA	0.124	0.03
A 60	TRUE	0.091		CB 13050	SCS CN	54	FAA	0.124	0.03
A 61	TRUE	0.849		CB 13062	SCS CN	54	FAA	0.255	0.36
A 62	TRUE	0.084		CB 13063	SCS CN	54	FAA	0.143	0.03
A 63	TRUE	0.235		CB 13071	SCS CN	54	FAA	0.143	0.08
A 64	TRUE	0.311		CB 13072	SCS CN	54	FAA	0.143	0.1
A 65	TRUE	0.455		CB 13064	SCS CN	54	FAA	0.163	0.16
A 66	TRUE	1.248		CB 13065	SCS CN	54	FAA	0.312	0.56
A 67	TRUE	0.556		CB 13073	SCS CN	54	FAA	0.189	0.21
A 68	TRUE	0.063		CB 13018	SCS CN	54	FAA	0.124	0.02
A 69	TRUE	0.041		CB 13027	SCS CN	54	FAA	0.101	0.01
A 70	TRUE	0.439		CB 13058	SCS CN	54	FAA	0.136	(N/A)
A 71	TRUE	1.499		CB 13066	SCS CN	54	FAA	0.295	0.66
A 72	TRUE	0.058		CB 13049	SCS CN	54	FAA	0.124	0.02
A 73	TRUE	0.026		CB 13048	SCS CN	54	FAA	0.124	0.01
A 74	TRUE	0.066		CB 13047	SCS CN	54	FAA	0.124	0.02
A 75	TRUE	0.107		CB 13046	SCS CN	54	FAA	0.143	0.04
A 76	TRUE	0.058		CB 13045	SCS CN	54	FAA	0.124	0.02
A 77	TRUE	0.383		CB 13044	SCS CN	54	FAA	0.248	0.16
A 78	TRUE	2.662		CB 20001	SCS CN	54	FAA	0.453	1.26
A 79	TRUE	0.212		CB 13017A	SCS CN	54	FAA	0.175	0.08
A 81	TRUE	0.968		CB90000	SCS CN	39	FAA	0.34	0.02
A 82	TRUE	0.12		CB 13074	SCS CN	54	FAA	0.124	(N/A)
A 83	TRUE	0.099		CB90002	SCS CN	54	FAA	0.124	(N/A)
A 84	TRUE	0.257		CB90003	SCS CN	54	FAA	0.124	(N/A)
A 85	TRUE	0.114		CB90004	SCS CN	54	FAA	0.143	0.04
A 86	TRUE	0.032		CB90005	SCS CN	54	FAA	0.143	0.01
A 87	TRUE	0.027		CB90006	SCS CN	54	FAA	0.143	0.01
A 88	TRUE	0.062		CB90007	SCS CN	54	FAA	0.143	0.02
A 89	TRUE	0.472		CB 6044	SCS CN	54	FAA	0.404	0.22
A 90	TRUE	1.645		CB 1099	SCS CN	39	FAA	0.601	0.01
A 91	TRUE	0.092		CB90001	SCS CN	54	FAA	0.124	(N/A)
A 92	TRUE	0.019		CB 13075	SCS CN	54	FAA	0.124	0.01
A 93	TRUE	0.153		CB 13068	SCS CN	54	FAA	0.143	0.05
A 94	TRUE	0.098		<None>	SCS CN	54	FAA	0.33	(N/A)
A 95	TRUE	0.227		<None>	SCS CN	54	FAA	0.255	(N/A)
A 96	TRUE	5.246		<None>	SCS CN	54	FAA	0.569	(N/A)
A 97	TRUE	0.461		CB 13005	SCS CN	39	FAA	0.278	0.01
A 98	TRUE	0.181		<None>	SCS CN	54	FAA	0.227	(N/A)



Appendix C
System 4 Watershed Map

GPI GdB

NEW YORK STATE OF OPPORTUNITY. DASNY NY RISING

Legend

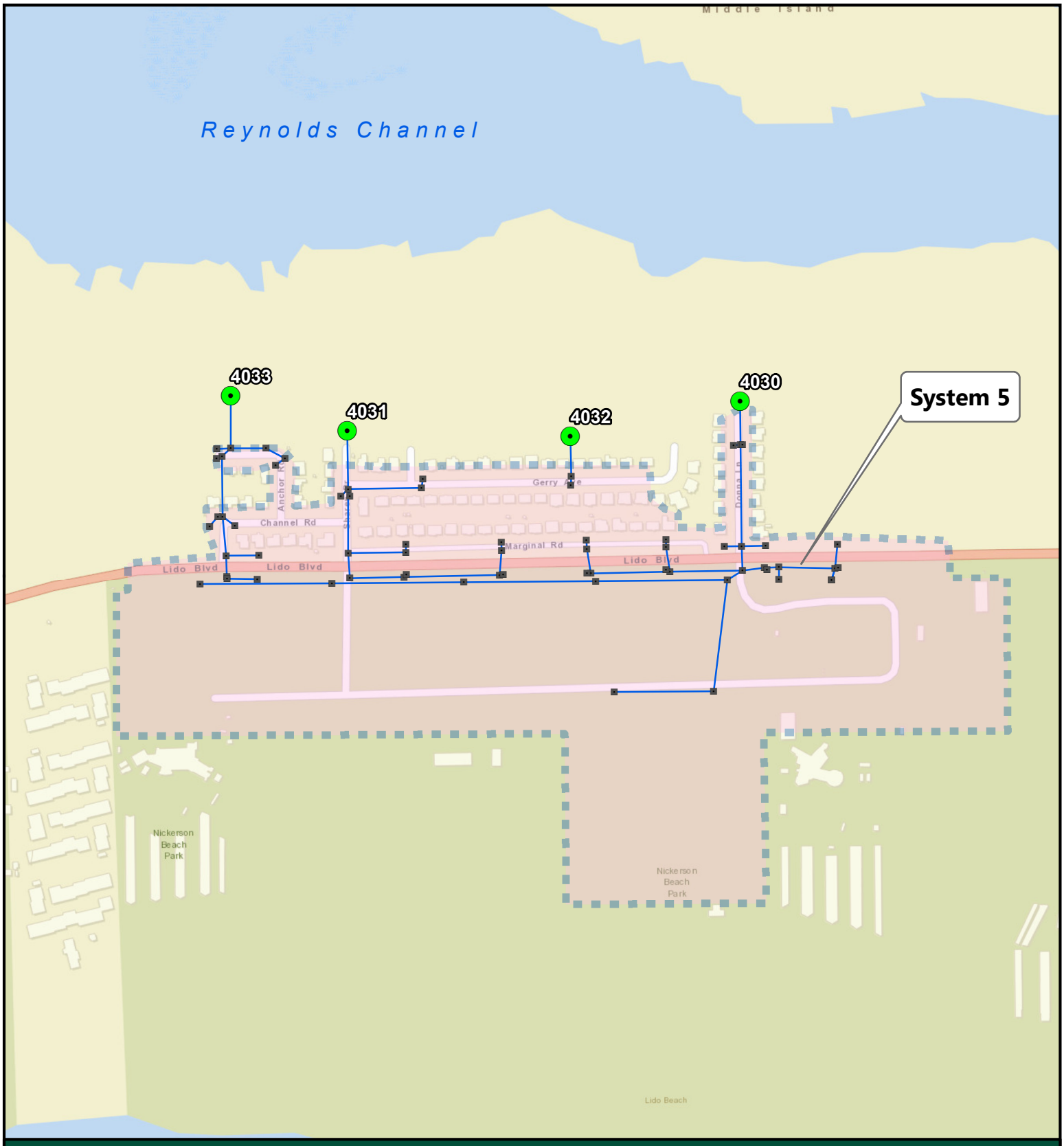
- System 4 Structures
- System 4
- System 4 Outfall
- System 4 Watershed
- Location 3A
- Location 3B

N W E S

0 0.05 0.1 0.2 Miles

System 4 (2 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	0.17		CB 2079	SCS CN	54	FAA	0.321	0.02
A 2	TRUE	0.26		CB 2080	SCS CN	54	FAA	0.238	0.03
A 3	TRUE	0.554		CB 3040	SCS CN	54	FAA	0.321	0.06
A 4	TRUE	0.393		CB 5071	SCS CN	54	FAA	0.278	0.04
A 5	TRUE	0.366		CB 5070	SCS CN	54	FAA	0.278	0.04
A 6	TRUE	1.277		CB 5069	SCS CN	54	FAA	0.358	0.13
A 7	TRUE	0.656		CB 4070	SCS CN	54	FAA	0.34	0.07
A 8	TRUE	0.58		CB 4072	SCS CN	54	FAA	0.278	0.06
A 9	TRUE	0.495		CB 4069	SCS CN	54	FAA	0.377	0.05
A 10	TRUE	3.078		CB 4066/ CB 4077	SCS CN	54	FAA	0.537	0.23
A 11	TRUE	0.269		CB 13001	SCS CN	54	FAA	0.263	0.03
A 12	TRUE	0.738		CB 2043	SCS CN	54	FAA	0.321	0.07
A 13	TRUE	1.121		CB 2044	SCS CN	54	FAA	0.358	0.11
A 14	TRUE	0.839		CB 2046	SCS CN	54	FAA	0.321	0.09
A 15	TRUE	1.434		CB 3042	SCS CN	54	FAA	0.409	0.13
A 16	TRUE	0.691		CB 2048	SCS CN	54	FAA	0.278	0.07
A 17	TRUE	0.97		CB 3055	SCS CN	54	FAA	0.358	0.09
A 18	TRUE	0.338		CB 4059	SCS CN	54	FAA	0.279	0.03
A 19	TRUE	0.504		CB 4057	SCS CN	54	FAA	0.291	0.05
A 20	TRUE	3.213		CB 4064/CB 4065	SCS CN	54	FAA	0.52	0.25
A 21	TRUE	0.675		CB 4063	SCS CN	54	FAA	0.393	0.06
A 22	TRUE	0.306		CB 4062	SCS CN	54	FAA	0.278	0.03
A 23	TRUE	0.341		CB 4049	SCS CN	54	FAA	0.34	0.03
A 24	TRUE	0.685		CB 4050	SCS CN	54	FAA	0.34	0.07
A 25	TRUE	0.484		CB 4054	SCS CN	54	FAA	0.227	0.05
A 26	TRUE	0.601		CB 4056	SCS CN	54	FAA	0.34	0.06
A 27	TRUE	0.887		CB 4051	SCS CN	54	FAA	0.358	0.09
A 28	TRUE	0.528		CB 4053	SCS CN	54	FAA	0.291	0.05
A 29	TRUE	0.461		CB 3052	SCS CN	54	FAA	0.278	0.05
A 30	TRUE	1.163		CB 3057	SCS CN	54	FAA	0.376	0.11
A 31	TRUE	0.348		CB 3050	SCS CN	54	FAA	0.253	0.04
A 32	TRUE	0.416		CB 5038	SCS CN	54	FAA	0.278	0.04
A 33	TRUE	0.422		CB 5037	SCS CN	54	FAA	0.278	0.04
A 34	TRUE	1.044		CB 5032	SCS CN	54	FAA	0.532	0.08
A 35	TRUE	0.573		CB 5034	SCS CN	54	FAA	0.393	0.05
A 36	TRUE	0.173		CB 2073	SCS CN	54	FAA	0.253	0.02
A 37	TRUE	0.277		CB 2072	SCS CN	54	FAA	0.253	0.03
A 38	TRUE	1.463		CB 5042	SCS CN	54	FAA	0.406	0.14
A 39	TRUE	1.34		CB 5041	SCS CN	54	FAA	0.409	0.12
A 40	TRUE	0.551		CB 3046	SCS CN	54	FAA	0.278	0.06
A 41	TRUE	1.672		CB 3058	SCS CN	54	FAA	0.52	0.13
A 42	TRUE	0.662		CB 13078	SCS CN	54	FAA	0.291	0.07
A 43	TRUE	0.642		CB 13090	SCS CN	54	FAA	0.278	0.07
A 44	TRUE	0.619		CB 5047	SCS CN	54	FAA	0.291	0.06
A 45	TRUE	0.469		CB 5046	SCS CN	54	FAA	0.278	0.05
A 46	TRUE	0.974		CB 2049	SCS CN	54	FAA	0.278	0.1
A 47	TRUE	0.831		CB 5057	SCS CN	54	FAA	0.291	0.09
A 48	TRUE	0.854		CB 5055	SCS CN	54	FAA	0.278	0.09
A 49	TRUE	1.228		CB 5051	SCS CN	54	FAA	0.415	0.11
A 50	TRUE	0.877		CB 5052	SCS CN	54	FAA	0.278	0.09
A 51	TRUE	0.977		CB 5060	SCS CN	54	FAA	0.344	0.1
A 52	TRUE	1.042		CB 5059	SCS CN	54	FAA	0.358	0.1
A 53	TRUE	0.89		CB 5064	SCS CN	54	FAA	0.34	0.09
A 54	TRUE	0.877		CB 5063	SCS CN	54	FAA	0.34	0.09
A 55	TRUE	1.65		CB 2055	SCS CN	54	FAA	0.453	0.14
A 56	TRUE	0.9		CB 2060	SCS CN	54	FAA	0.321	0.09
A 57	TRUE	0.662		CB 2058	SCS CN	54	FAA	0.481	0.06
A 58	TRUE	1.455		CB 2056	SCS CN	54	FAA	0.424	0.13
A 59	TRUE	1.131		CB 2068	SCS CN	54	FAA	0.453	0.1
A 60	TRUE	1.087		CB 2070	SCS CN	54	FAA	0.481	0.09
A 61	TRUE	1.042		CB 2061	SCS CN	54	FAA	0.358	0.1
A 62	TRUE	0.887		CB 2067	SCS CN	54	FAA	0.507	0.07
A 63	TRUE	0.099		CB 2063	SCS CN	54	FAA	0.278	0.01
A 64	TRUE	1.517		CB 2064/CB 2065	SCS CN	54	FAA	0.555	0.11
A 65	TRUE	0.572		CB 3036	SCS CN	54	FAA	0.522	0.04
A 66	TRUE	0.957		CB 3037	SCS CN	54	FAA	0.507	0.08
A 67	TRUE	0.967		CB 2037	SCS CN	54	FAA	0.358	0.09
A 68	TRUE	0.309		CB 3035	SCS CN	54	FAA	0.278	0.03
A 69	TRUE	0.851		CB 10001	SCS CN	54	FAA	0.393	0.08
A 70	TRUE	0.942		CB 2039	SCS CN	54	FAA	0.442	0.08
A 71	FALSE	1.529	1.2	CB 3027	SCS CN	54	FAA	0.393	0.11
A 72	TRUE	0.498		CB 2036	SCS CN	54	FAA	0.3	0.05
A 73	TRUE	0.714		CB 3025	SCS CN	54	FAA	0.3	0.07
A 74	TRUE	0.654		CB 2035	SCS CN	54	FAA	0.358	0.06
A 75	TRUE	0.269		CB 2032	SCS CN	54	FAA	0.321	0.03
A 76	TRUE	0.715		CB 2034	SCS CN	54	FAA	0.393	0.07
A 77	TRUE	0.392		CB 2029	SCS CN	54	FAA	0.278	0.04
A 78	TRUE	0.471		CB 2028	SCS CN	54	FAA	0.278	0.05
A 79	TRUE	0.301		CB 3018	SCS CN	54	FAA	0.291	0.03
A 80	TRUE	0.395		CB 2027	SCS CN	54	FAA	0.278	0.04
A 81	TRUE	1.85		CB90008	SCS CN	54	FAA	0.393	0.17
A 82	FALSE	6.703	7	CB3030A	SCS CN	54	FAA	0.661	0.39
A 83	FALSE	3.426	3.5	CB3029A	SCS CN	54	FAA	0.522	0.27
A 84	TRUE	0.536		CB 4048	SCS CN	54	FAA	0.336	0.05
A 85	TRUE	1.095		CB 5043	SCS CN	54	FAA	0.358	0.11
A 86	TRUE	0.923		CB 5044	SCS CN	54	FAA	0.321	0.09
A 87	FALSE	5.597	6	CB 3023A	SCS CN	54	FAA	0.356	0.59
A 88	FALSE	6.693	7	CB 2033A	SCS CN	54	FAA	0.356	0.69
A 89	TRUE	1.705		CB 5065	SCS CN	54	FAA	0.453	0.15
A 90	TRUE	2.338		CB 5066	SCS CN	54	FAA	0.467	0.2

System 4 (10 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	0.17		CB 2079	SCS CN	54	FAA	0.321	0.08
A 2	TRUE	0.26		CB 2080	SCS CN	54	FAA	0.238	0.11
A 3	TRUE	0.554		CB 3040	SCS CN	54	FAA	0.321	0.25
A 4	TRUE	0.393		CB 5071	SCS CN	54	FAA	0.278	0.17
A 5	TRUE	0.366		CB 5070	SCS CN	54	FAA	0.278	0.16
A 6	TRUE	1.277		CB 5069	SCS CN	54	FAA	0.358	0.59
A 7	TRUE	0.656		CB 4070	SCS CN	54	FAA	0.34	0.3
A 8	TRUE	0.58		CB 4072	SCS CN	54	FAA	0.278	0.25
A 9	TRUE	0.495		CB 4069	SCS CN	54	FAA	0.377	0.23
A 10	TRUE	3.078		CB 4066/ CB 4077	SCS CN	54	FAA	0.537	1.41
A 11	TRUE	0.269		CB 13001	SCS CN	54	FAA	0.263	0.11
A 12	TRUE	0.738		CB 2043	SCS CN	54	FAA	0.321	0.34
A 13	TRUE	1.121		CB 2044	SCS CN	54	FAA	0.358	0.52
A 14	TRUE	0.839		CB 2046	SCS CN	54	FAA	0.321	0.38
A 15	TRUE	1.434		CB 3042	SCS CN	54	FAA	0.409	0.68
A 16	TRUE	0.691		CB 2048	SCS CN	54	FAA	0.278	0.3
A 17	TRUE	0.97		CB 3055	SCS CN	54	FAA	0.358	0.45
A 18	TRUE	0.338		CB 4059	SCS CN	54	FAA	0.279	0.15
A 19	TRUE	0.504		CB 4057	SCS CN	54	FAA	0.291	0.22
A 20	TRUE	3.213		CB 4064/CB 4065	SCS CN	54	FAA	0.52	1.49
A 21	TRUE	0.675		CB 4063	SCS CN	54	FAA	0.393	0.32
A 22	TRUE	0.306		CB 4062	SCS CN	54	FAA	0.278	0.13
A 23	TRUE	0.341		CB 4049	SCS CN	54	FAA	0.34	0.16
A 24	TRUE	0.685		CB 4050	SCS CN	54	FAA	0.34	0.31
A 25	TRUE	0.484		CB 4054	SCS CN	54	FAA	0.227	0.19
A 26	TRUE	0.601		CB 4056	SCS CN	54	FAA	0.34	0.28
A 27	TRUE	0.887		CB 4051	SCS CN	54	FAA	0.358	0.41
A 28	TRUE	0.528		CB 4053	SCS CN	54	FAA	0.291	0.23
A 29	TRUE	0.461		CB 3052	SCS CN	54	FAA	0.278	0.2
A 30	TRUE	1.163		CB 3057	SCS CN	54	FAA	0.376	0.55
A 31	TRUE	0.348		CB 3050	SCS CN	54	FAA	0.253	0.15
A 32	TRUE	0.416		CB 5038	SCS CN	54	FAA	0.278	0.18
A 33	TRUE	0.422		CB 5037	SCS CN	54	FAA	0.278	0.18
A 34	TRUE	1.044		CB 5032	SCS CN	54	FAA	0.532	0.48
A 35	TRUE	0.573		CB 5034	SCS CN	54	FAA	0.393	0.27
A 36	TRUE	0.173		CB 2073	SCS CN	54	FAA	0.253	0.07
A 37	TRUE	0.277		CB 2072	SCS CN	54	FAA	0.253	0.12
A 38	TRUE	1.463		CB 5042	SCS CN	54	FAA	0.406	0.69
A 39	TRUE	1.34		CB 5041	SCS CN	54	FAA	0.409	0.63
A 40	TRUE	0.551		CB 3046	SCS CN	54	FAA	0.278	0.24
A 41	TRUE	1.672		CB 3058	SCS CN	54	FAA	0.52	0.78
A 42	TRUE	0.662		CB 13078	SCS CN	54	FAA	0.291	0.29
A 43	TRUE	0.642		CB 13090	SCS CN	54	FAA	0.278	0.28
A 44	TRUE	0.619		CB 5047	SCS CN	54	FAA	0.291	0.27
A 45	TRUE	0.469		CB 5046	SCS CN	54	FAA	0.278	0.2
A 46	TRUE	0.974		CB 2049	SCS CN	54	FAA	0.278	0.42
A 47	TRUE	0.831		CB 5057	SCS CN	54	FAA	0.291	0.37
A 48	TRUE	0.854		CB 5055	SCS CN	54	FAA	0.278	0.37
A 49	TRUE	1.228		CB 5051	SCS CN	54	FAA	0.415	0.58
A 50	TRUE	0.877		CB 5052	SCS CN	54	FAA	0.278	0.38
A 51	TRUE	0.977		CB 5060	SCS CN	54	FAA	0.344	0.45
A 52	TRUE	1.042		CB 5059	SCS CN	54	FAA	0.358	0.48
A 53	TRUE	0.89		CB 5064	SCS CN	54	FAA	0.34	0.41
A 54	TRUE	0.877		CB 5063	SCS CN	54	FAA	0.34	0.4
A 55	TRUE	1.65		CB 2055	SCS CN	54	FAA	0.453	0.78
A 56	TRUE	0.9		CB 2060	SCS CN	54	FAA	0.321	0.41
A 57	TRUE	0.662		CB 2058	SCS CN	54	FAA	0.481	0.31
A 58	TRUE	1.455		CB 2056	SCS CN	54	FAA	0.424	0.69
A 59	TRUE	1.131		CB 2068	SCS CN	54	FAA	0.453	0.54
A 60	TRUE	1.087		CB 2070	SCS CN	54	FAA	0.481	0.51
A 61	TRUE	1.042		CB 2061	SCS CN	54	FAA	0.358	0.48
A 62	TRUE	0.887		CB 2067	SCS CN	54	FAA	0.507	0.41
A 63	TRUE	0.099		CB 2063	SCS CN	54	FAA	0.278	0.04
A 64	TRUE	1.517		CB 2064/CB 2065	SCS CN	54	FAA	0.555	0.69
A 65	TRUE	0.572		CB 3036	SCS CN	54	FAA	0.522	0.26
A 66	TRUE	0.957		CB 3037	SCS CN	54	FAA	0.507	0.45
A 67	TRUE	0.967		CB 2037	SCS CN	54	FAA	0.358	0.45
A 68	TRUE	0.309		CB 3035	SCS CN	54	FAA	0.278	0.13
A 69	TRUE	0.851		CB 10001	SCS CN	54	FAA	0.393	0.4
A 70	TRUE	0.942		CB 2039	SCS CN	54	FAA	0.442	0.45
A 71	FALSE	1.529	1.2	CB 3027	SCS CN	54	FAA	0.393	0.57
A 72	TRUE	0.498		CB 2036	SCS CN	54	FAA	0.3	0.22
A 73	TRUE	0.714		CB 3025	SCS CN	54	FAA	0.3	0.32
A 74	TRUE	0.654		CB 2035	SCS CN	54	FAA	0.358	0.3
A 75	TRUE	0.269		CB 2032	SCS CN	54	FAA	0.321	0.12
A 76	TRUE	0.715		CB 2034	SCS CN	54	FAA	0.393	0.34
A 77	TRUE	0.392		CB 2029	SCS CN	54	FAA	0.278	0.17
A 78	TRUE	0.471		CB 2028	SCS CN	54	FAA	0.278	0.2
A 79	TRUE	0.301		CB 3018	SCS CN	54	FAA	0.291	0.13
A 80	TRUE	0.395		CB 2027	SCS CN	54	FAA	0.278	0.17
A 81	TRUE	1.85		CB90008	SCS CN	54	FAA	0.393	0.87
A 82	FALSE	6.703	7	CB3030A	SCS CN	54	FAA	0.661	2.82
A 83	FALSE	3.426	3.5	CB3029A	SCS CN	54	FAA	0.522	1.62
A 84	TRUE	0.536		CB 4048	SCS CN	54	FAA	0.336	0.25
A 85	TRUE	1.095		CB 5043	SCS CN	54	FAA	0.358	0.51
A 86	TRUE	0.923		CB 5044	SCS CN	54	FAA	0.321	0.42
A 87	FALSE	5.597	6	CB 3023A	SCS CN	54	FAA	0.356	2.79
A 88	FALSE	6.693	7	CB 2033A	SCS CN	54	FAA	0.356	3.25
A 89	TRUE	1.705		CB 5065	SCS CN	54	FAA	0.453	0.81
A 90	TRUE	2.338		CB 5066	SCS CN	54	FAA	0.467	1.11



Appendix C
System 5 Watershed Map

GPI GdB

NEW YORK STATE OF OPPORTUNITY. DASNY NY RISING

Legend

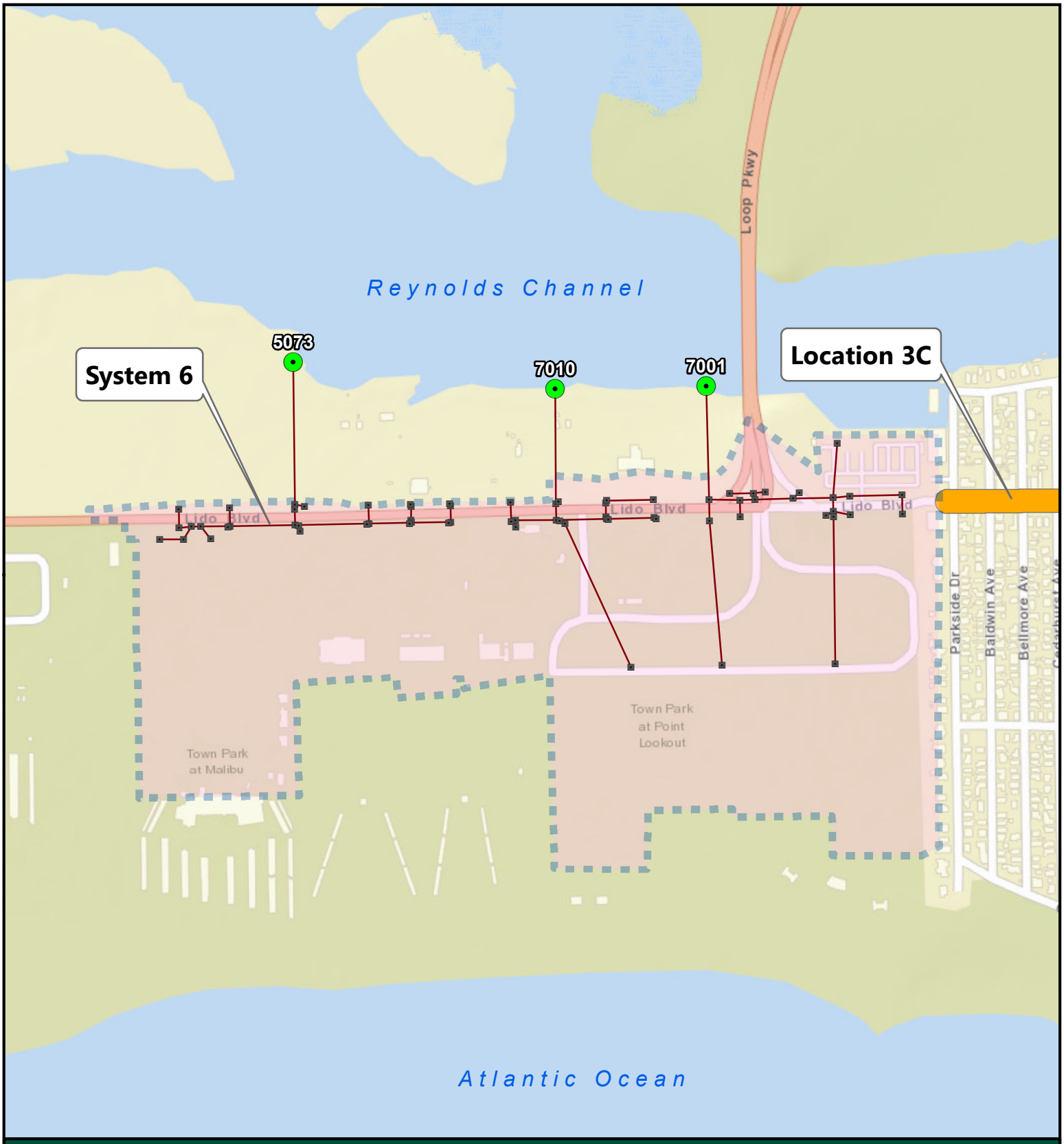
- System 5 Structures
- System 5
- System 5 Outfalls
- System 5 Watershed

N W E S

0 0.025 0.05 0.1 0.15 Miles

System 5 (2 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	1.393		CB 3015	SCS CN	54	FAA	0.442	0.11
A 2	TRUE	1.191		CB 2022	SCS CN	54	FAA	0.424	0.09
A 3	TRUE	0.348		CB 2025	SCS CN	54	FAA	0.424	0.03
A 4	TRUE	0.196		CB 2026	SCS CN	54	FAA	0.227	0.01
A 5	TRUE	0.715		CB 2023	SCS CN	54	FAA	0.424	0.06
A 6	TRUE	0.213		CB 4045	SCS CN	54	FAA	0.278	0.01
A 7	TRUE	0.066		CB 4046	SCS CN	54	FAA	0.253	0
A 8	TRUE	0.056		CB 4043	SCS CN	54	FAA	0.227	0
A 9	TRUE	0.239		CB 4041	SCS CN	54	FAA	0.321	0.02
A 10	TRUE	0.265		CB 4042	SCS CN	54	FAA	0.321	0.02
A 11	TRUE	0.982		CB 3012	SCS CN	54	FAA	0.358	0.07
A 12	TRUE	0.546		CB 3011	SCS CN	54	FAA	0.358	0.04
A 13	TRUE	0.617		CB 2015	SCS CN	54	FAA	0.358	0.05
A 14	TRUE	0.635		CB 2017	SCS CN	54	FAA	0.358	0.05
A 15	TRUE	0.75		CB 3013	SCS CN	54	FAA	0.358	0.06
A 16	TRUE	1.222		CB 3014	SCS CN	54	FAA	0.358	0.09
A 17	TRUE	0.537		CB 4038	SCS CN	54	FAA	0.376	0.04
A 18	TRUE	0.654		CB 4039	SCS CN	54	FAA	0.358	0.05
A 19	TRUE	1.258		CB 4034	SCS CN	54	FAA	0.358	0.09
A 20	TRUE	0.682		CB 4035	SCS CN	54	FAA	0.358	0.05
A 21	TRUE	1.746		CB 4036	SCS CN	54	FAA	0.358	0.13
A 22	TRUE	0.832		CB 4037	SCS CN	54	FAA	0.358	0.06
A 23	TRUE	0.568		CB 3010	SCS CN	54	FAA	0.278	0.04
A 24	TRUE	0.314		CB 3009	SCS CN	54	FAA	0.278	0.02
A 25	TRUE	0.56		CB 2014	SCS CN	54	FAA	0.358	0.04
A 26	TRUE	0.6		CB 2012	SCS CN	54	FAA	0.358	0.04
A 27	TRUE	0.41		CB 3007	SCS CN	54	FAA	0.358	0.03
A 28	TRUE	0.619		CB 3008	SCS CN	54	FAA	0.358	0.05
A 29	TRUE	0.508		CB 2007	SCS CN	54	FAA	0.358	0.04
A 30	TRUE	0.496		CB 3003	SCS CN	54	FAA	0.358	0.04
A 31	TRUE	0.7		CB 1081	SCS CN	54	FAA	0.424	0.06
A 32	TRUE	0.505		CB 3004	SCS CN	54	FAA	0.358	0.04
A 33	TRUE	0.357		CB 3006	SCS CN	54	FAA	0.358	0.03
A 34	TRUE	1.104		CB 2004	SCS CN	54	FAA	0.453	0.09
A 35	TRUE	0.805		CB 1082	SCS CN	54	FAA	0.453	0.06
A 36	FALSE	3.708	6.3	CB 2010A	SCS CN	54	FAA	0.424	0.5
A 37	FALSE	8.156	6.3	CB 2010B	SCS CN	54	FAA	0.661	0.49
A 38	FALSE	6.44	6.3	CB 2010C	SCS CN	54	FAA	0.578	0.51
A 39	FALSE	2.982	6.3	CB 2010D	SCS CN	54	FAA	0.424	0.5
A 40	FALSE	8.052	6.3	CB 2010E	SCS CN	54	FAA	0.578	0.51
A 41	FALSE	6.431	6.3	CB 2010F	SCS CN	54	FAA	0.578	0.51
A 42	FALSE	7.86	6.3	CB 2010G	SCS CN	54	FAA	0.578	0.51
A 43	TRUE	2.499		CB 2006A	SCS CN	54	FAA	0.453	0.2
A 44	TRUE	9.887		CB 2005A	SCS CN	54	FAA	0.578	0.8

System 5 (10 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	1.393		CB 3015	SCS CN	54	FAA	0.442	0.67
A 2	TRUE	1.191		CB 2022	SCS CN	54	FAA	0.424	0.57
A 3	TRUE	0.348		CB 2025	SCS CN	54	FAA	0.424	0.17
A 4	TRUE	0.196		CB 2026	SCS CN	54	FAA	0.227	0.08
A 5	TRUE	0.715		CB 2023	SCS CN	54	FAA	0.424	0.34
A 6	TRUE	0.213		CB 4045	SCS CN	54	FAA	0.278	0.09
A 7	TRUE	0.066		CB 4046	SCS CN	54	FAA	0.253	0.03
A 8	TRUE	0.056		CB 4043	SCS CN	54	FAA	0.227	0.02
A 9	TRUE	0.239		CB 4041	SCS CN	54	FAA	0.321	0.11
A 10	TRUE	0.265		CB 4042	SCS CN	54	FAA	0.321	0.12
A 11	TRUE	0.982		CB 3012	SCS CN	54	FAA	0.358	0.46
A 12	TRUE	0.546		CB 3011	SCS CN	54	FAA	0.358	0.26
A 13	TRUE	0.617		CB 2015	SCS CN	54	FAA	0.358	0.29
A 14	TRUE	0.635		CB 2017	SCS CN	54	FAA	0.358	0.3
A 15	TRUE	0.75		CB 3013	SCS CN	54	FAA	0.358	0.35
A 16	TRUE	1.222		CB 3014	SCS CN	54	FAA	0.358	0.57
A 17	TRUE	0.537		CB 4038	SCS CN	54	FAA	0.376	0.25
A 18	TRUE	0.654		CB 4039	SCS CN	54	FAA	0.358	0.31
A 19	TRUE	1.258		CB 4034	SCS CN	54	FAA	0.358	0.59
A 20	TRUE	0.682		CB 4035	SCS CN	54	FAA	0.358	0.32
A 21	TRUE	1.746		CB 4036	SCS CN	54	FAA	0.358	0.82
A 22	TRUE	0.832		CB 4037	SCS CN	54	FAA	0.358	0.39
A 23	TRUE	0.568		CB 3010	SCS CN	54	FAA	0.278	0.25
A 24	TRUE	0.314		CB 3009	SCS CN	54	FAA	0.278	0.14
A 25	TRUE	0.56		CB 2014	SCS CN	54	FAA	0.358	0.26
A 26	TRUE	0.6		CB 2012	SCS CN	54	FAA	0.358	0.28
A 27	TRUE	0.41		CB 3007	SCS CN	54	FAA	0.358	0.19
A 28	TRUE	0.619		CB 3008	SCS CN	54	FAA	0.358	0.29
A 29	TRUE	0.508		CB 2007	SCS CN	54	FAA	0.358	0.24
A 30	TRUE	0.496		CB 3003	SCS CN	54	FAA	0.358	0.23
A 31	TRUE	0.7		CB 1081	SCS CN	54	FAA	0.424	0.33
A 32	TRUE	0.505		CB 3004	SCS CN	54	FAA	0.358	0.24
A 33	TRUE	0.357		CB 3006	SCS CN	54	FAA	0.358	0.17
A 34	TRUE	1.104		CB 2004	SCS CN	54	FAA	0.453	0.53
A 35	TRUE	0.805		CB 1082	SCS CN	54	FAA	0.453	0.38
A 36	FALSE	3.708	6.3	CB 2010A	SCS CN	54	FAA	0.424	3.01
A 37	FALSE	8.156	6.3	CB 2010B	SCS CN	54	FAA	0.661	2.56
A 38	FALSE	6.44	6.3	CB 2010C	SCS CN	54	FAA	0.578	2.81
A 39	FALSE	2.982	6.3	CB 2010D	SCS CN	54	FAA	0.424	3.01
A 40	FALSE	8.052	6.3	CB 2010E	SCS CN	54	FAA	0.578	2.81
A 41	FALSE	6.431	6.3	CB 2010F	SCS CN	54	FAA	0.578	2.81
A 42	FALSE	7.86	6.3	CB 2010G	SCS CN	54	FAA	0.578	2.81
A 43	TRUE	2.499		CB 2006A	SCS CN	54	FAA	0.453	1.19
A 44	TRUE	9.887		CB 2005A	SCS CN	54	FAA	0.578	4.41



Appendix C
System 6 Watershed

GPI GdB

NEW YORK STATE OF OPPORTUNITY. DASNY NY RISING

Legend

- System 6 Structures
- System 6
- System 6 Outfalls
- System 6 Watershed

N
W E
S

0 0.025 0.05 0.1 0.15 Miles

System 6 (2 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	0.8		CB 1083	SCS CN	54	FAA	0.409	0.08
A 2	TRUE	0.796		CB 1084	SCS CN	54	FAA	0.369	0.08
A 3	TRUE	0.952		CB 1061	SCS CN	54	FAA	0.393	0.09
A 4	TRUE	0.683		CB 1059	SCS CN	54	FAA	0.393	0.07
A 5	TRUE	0.361		CB 1063	SCS CN	54	FAA	0.376	0.04
A 6	TRUE	0.513		CB 1057	SCS CN	54	FAA	0.376	0.05
A 7	TRUE	0.242		CB 1064	SCS CN	54	FAA	0.296	0.03
A 8	TRUE	0.277		CB 1056	SCS CN	54	FAA	0.296	0.03
A 9	TRUE	0.189		CB 1067	SCS CN	54	FAA	0.278	0.02
A 10	TRUE	0.211		CB 1055	SCS CN	54	FAA	0.278	0.02
A 11	TRUE	0.24		CB 1068	SCS CN	54	FAA	0.3	0.02
A 12	TRUE	0.259		CB 1053	SCS CN	54	FAA	0.278	0.03
A 13	TRUE	0.497		CB 1051	SCS CN	54	FAA	0.393	0.05
A 14	TRUE	0.349		CB 1070	SCS CN	54	FAA	0.278	0.04
A 15	FALSE	6.128	10.4	CB 1072	SCS CN	54	FAA	0.641	0.63
A 16	TRUE	0.239		CB 1074	SCS CN	54	FAA	0.278	0.03
A 17	TRUE	0.831		CB 1050	SCS CN	54	FAA	0.321	0.09
A 18	TRUE	0.262		CB 1077	SCS CN	54	FAA	0.278	0.03
A 19	TRUE	0.719		CB 1048	SCS CN	54	FAA	0.278	0.08
A 20	TRUE	1.085		CB 1046	SCS CN	54	FAA	0.409	0.1
A 21	TRUE	0.49		CB 1079	SCS CN	54	FAA	0.424	0.05
A 22	TRUE	0.315		CB 1043	SCS CN	54	FAA	0.393	0.03
A 23	TRUE	0.869		CB 1044	SCS CN	54	FAA	0.481	0.07
A 24	TRUE	0.363		CB 1042	SCS CN	54	FAA	0.407	0.03
A 25	TRUE	0.563		CB 1040	SCS CN	54	FAA	0.393	0.05
A 26	TRUE	0.341		CB 1080	SCS CN	54	FAA	0.278	0.04
A 27	TRUE	0.415		CB 1017	SCS CN	54	FAA	0.393	0.04
A 28	TRUE	0.734		CB 1018	SCS CN	54	FAA	0.393	0.07
A 29	TRUE	0.302		CB 1015	SCS CN	54	FAA	0.253	0.03
A 30	TRUE	0.228		CB 1014	SCS CN	54	FAA	0.253	0.02
A 31	TRUE	0.382		CB 1020	SCS CN	54	FAA	0.278	0.04
A 32	TRUE	0.392		CB 1021	SCS CN	54	FAA	0.3	0.04
A 33	TRUE	0.306		CB 1013	SCS CN	54	FAA	0.278	0.03
A 34	FALSE	6.998	7	CB 2003A	SCS CN	54	FAA	0.785	0.3
A 35	FALSE	2.362	7	CB 2003B	SCS CN	54	FAA	0.61	0.45
A 36	FALSE	11.837	7	CB 2002A	SCS CN	54	FAA	0.792	0.3
A 37	FALSE	14.675	10.4	CB 1063A	SCS CN	54	FAA	0.752	0.49
A 38	FALSE	4.14	10.4	CB 1074A	SCS CN	54	FAA	0.507	0.84
A 39	FALSE	13.252	10.4	CB 1074B	SCS CN	54	FAA	0.717	0.53
A 40	FALSE	4.762	10.4	CB 1045A	SCS CN	54	FAA	0.453	0.92
A 41	FALSE	12.683	10.4	CB 1045B	SCS CN	54	FAA	0.621	0.66
A 42	FALSE	7.44	10.4	CB 1016A	SCS CN	54	FAA	0.555	0.76
A 43	FALSE	21.731	10.4	CB 1016B	SCS CN	54	FAA	0.68	0.57
A 44	FALSE	3.989	4	CB 1019A	SCS CN	54	FAA	0.494	0.33

System 6 (10 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	0.8		CB 1083	SCS CN	54	FAA	0.409	0.38
A 2	TRUE	0.796		CB 1084	SCS CN	54	FAA	0.369	0.38
A 3	TRUE	0.952		CB 1061	SCS CN	54	FAA	0.393	0.45
A 4	TRUE	0.683		CB 1059	SCS CN	54	FAA	0.393	0.32
A 5	TRUE	0.361		CB 1063	SCS CN	54	FAA	0.376	0.17
A 6	TRUE	0.513		CB 1057	SCS CN	54	FAA	0.376	0.24
A 7	TRUE	0.242		CB 1064	SCS CN	54	FAA	0.296	0.11
A 8	TRUE	0.277		CB 1056	SCS CN	54	FAA	0.296	0.12
A 9	TRUE	0.189		CB 1067	SCS CN	54	FAA	0.278	0.08
A 10	TRUE	0.211		CB 1055	SCS CN	54	FAA	0.278	0.09
A 11	TRUE	0.24		CB 1068	SCS CN	54	FAA	0.3	0.11
A 12	TRUE	0.259		CB 1053	SCS CN	54	FAA	0.278	0.11
A 13	TRUE	0.497		CB 1051	SCS CN	54	FAA	0.393	0.24
A 14	TRUE	0.349		CB 1070	SCS CN	54	FAA	0.278	0.15
A 15	FALSE	6.128	10.4	CB 1072	SCS CN	54	FAA	0.641	4.34
A 16	TRUE	0.239		CB 1074	SCS CN	54	FAA	0.278	0.1
A 17	TRUE	0.831		CB 1050	SCS CN	54	FAA	0.321	0.38
A 18	TRUE	0.262		CB 1077	SCS CN	54	FAA	0.278	0.11
A 19	TRUE	0.719		CB 1048	SCS CN	54	FAA	0.278	0.31
A 20	TRUE	1.085		CB 1046	SCS CN	54	FAA	0.409	0.52
A 21	TRUE	0.49		CB 1079	SCS CN	54	FAA	0.424	0.23
A 22	TRUE	0.315		CB 1043	SCS CN	54	FAA	0.393	0.15
A 23	TRUE	0.869		CB 1044	SCS CN	54	FAA	0.481	0.41
A 24	TRUE	0.363		CB 1042	SCS CN	54	FAA	0.407	0.17
A 25	TRUE	0.563		CB 1040	SCS CN	54	FAA	0.393	0.27
A 26	TRUE	0.341		CB 1080	SCS CN	54	FAA	0.278	0.15
A 27	TRUE	0.415		CB 1017	SCS CN	54	FAA	0.393	0.2
A 28	TRUE	0.734		CB 1018	SCS CN	54	FAA	0.393	0.35
A 29	TRUE	0.302		CB 1015	SCS CN	54	FAA	0.253	0.13
A 30	TRUE	0.228		CB 1014	SCS CN	54	FAA	0.253	0.1
A 31	TRUE	0.382		CB 1020	SCS CN	54	FAA	0.278	0.17
A 32	TRUE	0.392		CB 1021	SCS CN	54	FAA	0.3	0.18
A 33	TRUE	0.306		CB 1013	SCS CN	54	FAA	0.278	0.13
A 34	FALSE	6.998	7	CB 2003A	SCS CN	54	FAA	0.785	2.35
A 35	FALSE	2.362	7	CB 2003B	SCS CN	54	FAA	0.61	3.02
A 36	FALSE	11.837	7	CB 2002A	SCS CN	54	FAA	0.792	2.33
A 37	FALSE	14.675	10.4	CB 1063A	SCS CN	54	FAA	0.752	3.69
A 38	FALSE	4.14	10.4	CB 1074A	SCS CN	54	FAA	0.507	4.9
A 39	FALSE	13.252	10.4	CB 1074B	SCS CN	54	FAA	0.717	3.89
A 40	FALSE	4.762	10.4	CB 1045A	SCS CN	54	FAA	0.453	4.97
A 41	FALSE	12.683	10.4	CB 1045B	SCS CN	54	FAA	0.621	4.46
A 42	FALSE	7.44	10.4	CB 1016A	SCS CN	54	FAA	0.555	4.74
A 43	FALSE	21.731	10.4	CB 1016B	SCS CN	54	FAA	0.68	4.11
A 44	FALSE	3.989	4	CB 1019A	SCS CN	54	FAA	0.494	1.89

Appendix C
System 7 Watershed Map

GPI GdB

NEW YORK STATE OF OPPORTUNITY. DASNY NY RISING

Legend

- System 7 Structures
- System 7
- System 7 Outfall
- Waterhed 7 Watershed
- Location 3C

N W E S

0 0.025 0.05 0.1 Miles

System 7 (2 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	1.168		CB 5024	SCS CN	54	FAA	0.555	0.08
A 2	TRUE	2.144		CB 5022	SCS CN	54	FAA	0.555	0.14
A 3	TRUE	2.822		CB 5023	SCS CN	54	FAA	0.507	0.18
A 4	TRUE	3.114		CB 5021	SCS CN	54	FAA	0.507	0.2
A 5	TRUE	2.245		CB 5020	SCS CN	54	FAA	0.565	0.15
A 6	TRUE	1.121		CB 5019	SCS CN	54	FAA	0.565	0.07
A 7	TRUE	1.424		CB 5012	SCS CN	54	FAA	0.507	0.09
A 8	TRUE	4.716		CB 5013	SCS CN	54	FAA	0.565	0.31
A 9	TRUE	2.329		CB 5015	SCS CN	54	FAA	0.409	0.14
A 10	TRUE	5.359		CB 5016	SCS CN	54	FAA	0.565	0.35
A 11	TRUE	1.418		CB 5017	SCS CN	54	FAA	0.376	0.08
A 12	TRUE	5.418		CB 5018	SCS CN	54	FAA	0.565	0.35
A 13	TRUE	0.833		CB 5010	SCS CN	54	FAA	0.393	0.05
A 14	TRUE	0.966		CB 5008	SCS CN	54	FAA	0.393	0.06
A 15	TRUE	0.724		CB 5005	SCS CN	54	FAA	0.393	0.04
A 16	TRUE	0.696		CB 5007	SCS CN	54	FAA	0.393	0.04
A 17	TRUE	0.66		CB 5004	SCS CN	54	FAA	0.393	0.04
A 18	TRUE	0.588		CB 5002	SCS CN	54	FAA	0.393	0.03
A 19	TRUE	0.403		CB 1028	SCS CN	54	FAA	0.278	0.02
A 20	TRUE	1		CB 1008	SCS CN	54	FAA	0.555	0.06
A 21	TRUE	2.099		CB 1026	SCS CN	54	FAA	0.453	0.13
A 22	TRUE	0.885		CB 1009	SCS CN	54	FAA	0.555	0.06
A 23	TRUE	1.061		CB 1024	SCS CN	54	FAA	0.376	0.06
A 24	TRUE	2.098		CB 1011	SCS CN	54	FAA	0.532	0.13
A 25	TRUE	1.224		CB 1010	SCS CN	54	FAA	0.532	0.08
A 26	TRUE	0.604		CB 1022	SCS CN	54	FAA	0.336	0.03
A 27	TRUE	3.231		CB 1012	SCS CN	54	FAA	0.532	0.21
A 28	TRUE	0.477		CB 1032	SCS CN	54	FAA	0.278	0.02
A 29	TRUE	0.095		CB 1007	SCS CN	54	FAA	0.278	0
A 30	TRUE	2.117		CB 1034	SCS CN	54	FAA	0.532	0.14
A 31	TRUE	3.441		CB 1006	SCS CN	54	FAA	0.661	0.23
A 32	TRUE	2.947		CB 1036	SCS CN	54	FAA	0.532	0.19
A 33	TRUE	4.058		CB 1005	SCS CN	54	FAA	0.661	0.28
A 34	TRUE	2.113		CB 1039	SCS CN	54	FAA	0.532	0.13
A 35	TRUE	3.199		CB 1004	SCS CN	54	FAA	0.644	0.22
A 36	TRUE	3.392		CB 1002	SCS CN	54	FAA	0.532	0.22
A 37	TRUE	4.47		CB 1003	SCS CN	54	FAA	0.661	0.3
A 38	TRUE	0.263		CB 5026	SCS CN	54	FAA	0.278	0.01
A 39	TRUE	0.586		CB 5028	SCS CN	54	FAA	0.393	0.03
A 40	TRUE	0.137		CB 4015	SCS CN	54	FAA	0.278	0.01
A 41	TRUE	1.778		CB 4013	SCS CN	54	FAA	0.393	0.1
A 42	TRUE	0.781		CB 4014	SCS CN	54	FAA	0.393	0.04
A 43	TRUE	0.185		CB 4009	SCS CN	54	FAA	0.227	0.01
A 44	TRUE	0.304		CB 4024	SCS CN	54	FAA	0.321	0.02
A 45	TRUE	0.735		CB 4025	SCS CN	54	FAA	0.321	0.04
A 46	TRUE	0.371		CB 4026	SCS CN	54	FAA	0.321	0.02
A 47	TRUE	0.541		CB 5029	SCS CN	54	FAA	0.3	0.03
A 48	TRUE	0.753		CB 4028	SCS CN	54	FAA	0.358	0.04
A 49	TRUE	0.912		CB 4029	SCS CN	54	FAA	0.321	0.05
A 50	TRUE	0.295		CB 4027	SCS CN	54	FAA	0.278	0.02
A 51	TRUE	0.285		CB 4023	SCS CN	54	FAA	0.321	0.02
A 52	TRUE	0.426		CB 4022	SCS CN	54	FAA	0.358	0.02
A 53	TRUE	0.539		CB 4005	SCS CN	54	FAA	0.253	0.03
A 54	TRUE	0.233		CB 4004	SCS CN	54	FAA	0.253	0.01
A 55	TRUE	0.522		CB 4007	SCS CN	54	FAA	0.253	0.03
A 56	TRUE	0.223		CB 4006	SCS CN	54	FAA	0.253	0.01
A 57	TRUE	0.524		CB 4010	SCS CN	54	FAA	0.253	0.03
A 58	TRUE	0.092		CB 4008	SCS CN	54	FAA	0.196	0
A 59	TRUE	0.182		CB 4018/4019	SCS CN	54	FAA	0.253	0.01
A 60	TRUE	0.143		CB 4016	SCS CN	54	FAA	0.253	0.01
A 61	TRUE	0.339		CB 5025	SCS CN	54	FAA	0.278	0.02

System 7 (10 Year Storm)									
Label	Use Scaled Area?	Scaled Area (acres)	Area (User Defined) (acres)	Outflow Element	Loss Method	SCS CN	Tc Data Collection	Time of Concentration (Composite) (hours)	Flow (Total Out) (cfs)
A 1	TRUE	1.168		CB 5024	SCS CN	54	FAA	0.555	0.53
A 2	TRUE	2.144		CB 5022	SCS CN	54	FAA	0.555	0.98
A 3	TRUE	2.822		CB 5023	SCS CN	54	FAA	0.507	1.33
A 4	TRUE	3.114		CB 5021	SCS CN	54	FAA	0.507	1.47
A 5	TRUE	2.245		CB 5020	SCS CN	54	FAA	0.565	1.02
A 6	TRUE	1.121		CB 5019	SCS CN	54	FAA	0.565	0.51
A 7	TRUE	1.424		CB 5012	SCS CN	54	FAA	0.507	0.67
A 8	TRUE	4.716		CB 5013	SCS CN	54	FAA	0.565	2.14
A 9	TRUE	2.329		CB 5015	SCS CN	54	FAA	0.409	1.11
A 10	TRUE	5.359		CB 5016	SCS CN	54	FAA	0.565	2.43
A 11	TRUE	1.418		CB 5017	SCS CN	54	FAA	0.376	0.67
A 12	TRUE	5.418		CB 5018	SCS CN	54	FAA	0.565	2.46
A 13	TRUE	0.833		CB 5010	SCS CN	54	FAA	0.393	0.4
A 14	TRUE	0.966		CB 5008	SCS CN	54	FAA	0.393	0.46
A 15	TRUE	0.724		CB 5005	SCS CN	54	FAA	0.393	0.34
A 16	TRUE	0.696		CB 5007	SCS CN	54	FAA	0.393	0.33
A 17	TRUE	0.66		CB 5004	SCS CN	54	FAA	0.393	0.31
A 18	TRUE	0.588		CB 5002	SCS CN	54	FAA	0.393	0.28
A 19	TRUE	0.403		CB 1028	SCS CN	54	FAA	0.278	0.18
A 20	TRUE	1		CB 1008	SCS CN	54	FAA	0.555	0.46
A 21	TRUE	2.099		CB 1026	SCS CN	54	FAA	0.453	1
A 22	TRUE	0.885		CB 1009	SCS CN	54	FAA	0.555	0.4
A 23	TRUE	1.061		CB 1024	SCS CN	54	FAA	0.376	0.5
A 24	TRUE	2.098		CB 1011	SCS CN	54	FAA	0.532	0.97
A 25	TRUE	1.224		CB 1010	SCS CN	54	FAA	0.532	0.57
A 26	TRUE	0.604		CB 1022	SCS CN	54	FAA	0.336	0.28
A 27	TRUE	3.231		CB 1012	SCS CN	54	FAA	0.532	1.5
A 28	TRUE	0.477		CB 1032	SCS CN	54	FAA	0.278	0.21
A 29	TRUE	0.095		CB 1007	SCS CN	54	FAA	0.278	0.04
A 30	TRUE	2.117		CB 1034	SCS CN	54	FAA	0.532	0.98
A 31	TRUE	3.441		CB 1006	SCS CN	54	FAA	0.661	1.4
A 32	TRUE	2.947		CB 1036	SCS CN	54	FAA	0.532	1.37
A 33	TRUE	4.058		CB 1005	SCS CN	54	FAA	0.661	1.65
A 34	TRUE	2.113		CB 1039	SCS CN	54	FAA	0.532	0.98
A 35	TRUE	3.199		CB 1004	SCS CN	54	FAA	0.644	1.32
A 36	TRUE	3.392		CB 1002	SCS CN	54	FAA	0.532	1.57
A 37	TRUE	4.47		CB 1003	SCS CN	54	FAA	0.661	1.81
A 38	TRUE	0.263		CB 5026	SCS CN	54	FAA	0.278	0.11
A 39	TRUE	0.586		CB 5028	SCS CN	54	FAA	0.393	0.28
A 40	TRUE	0.137		CB 4015	SCS CN	54	FAA	0.278	0.06
A 41	TRUE	1.778		CB 4013	SCS CN	54	FAA	0.393	0.84
A 42	TRUE	0.781		CB 4014	SCS CN	54	FAA	0.393	0.37
A 43	TRUE	0.185		CB 4009	SCS CN	54	FAA	0.227	0.07
A 44	TRUE	0.304		CB 4024	SCS CN	54	FAA	0.321	0.14
A 45	TRUE	0.735		CB 4025	SCS CN	54	FAA	0.321	0.34
A 46	TRUE	0.371		CB 4026	SCS CN	54	FAA	0.321	0.17
A 47	TRUE	0.541		CB 5029	SCS CN	54	FAA	0.3	0.24
A 48	TRUE	0.753		CB 4028	SCS CN	54	FAA	0.358	0.35
A 49	TRUE	0.912		CB 4029	SCS CN	54	FAA	0.321	0.42
A 50	TRUE	0.295		CB 4027	SCS CN	54	FAA	0.278	0.13
A 51	TRUE	0.285		CB 4023	SCS CN	54	FAA	0.321	0.13
A 52	TRUE	0.426		CB 4022	SCS CN	54	FAA	0.358	0.2
A 53	TRUE	0.539		CB 4005	SCS CN	54	FAA	0.253	0.23
A 54	TRUE	0.233		CB 4004	SCS CN	54	FAA	0.253	0.1
A 55	TRUE	0.522		CB 4007	SCS CN	54	FAA	0.253	0.22
A 56	TRUE	0.223		CB 4006	SCS CN	54	FAA	0.253	0.09
A 57	TRUE	0.524		CB 4010	SCS CN	54	FAA	0.253	0.22
A 58	TRUE	0.092		CB 4008	SCS CN	54	FAA	0.196	0.03
A 59	TRUE	0.182		CB 4018/4019	SCS CN	54	FAA	0.253	0.08
A 60	TRUE	0.143		CB 4016	SCS CN	54	FAA	0.253	0.06
A 61	TRUE	0.339		CB 5025	SCS CN	54	FAA	0.278	0.15

Appendix D

Existing Drainage Structure and Outfall Reports

Catch Basin Drainage System 1 Existing 2 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6071	In Sag	4.35	-1.53	0.68	0.1	0.1	(N/A)
CB 2088	On Grade	6.03	-0.01	3.21	0.12	0.12	0
CB 2090	On Grade	5.95	-0.01	3.2	0.06	0.06	0
CB 2091	On Grade	5.79	-0.44	1.73	0.12	0.12	0
CB 2093	On Grade	6.09	0.36	2.39	0.03	0.03	0
CB 2095	In Sag	5.97	1.16	3.33	0.14	0.14	(N/A)
CB 2096	On Grade	6.14	1.2	3.29	0.04	0.04	0
CB 2098	On Grade	5.89	0.2	2.29	0.03	0.03	0
CB 3067	On Grade	6.11	0.79	2.87	0.15	0.12	0.03
CB 3068	On Grade	6.2	0.99	3.06	0.03	0.03	0
CB 3069	On Grade	5.63	0.6	2.69	0.1	0.09	0.01
CB 3071	On Grade	6.14	0.41	2.5	0.04	0.04	0
CB 3073	On Grade	5.99	1.56	2.94	0.01	0.01	0
CB 3074	On Grade	5.89	0.06	2.17	0.18	0.14	0.05
CB 3088	On Grade	5.42	0.75	2.84	0.03	0.03	0
CB 3089	On Grade	5.34	0.64	2.71	0.04	0.03	0
CB 3091	On Grade	5.38	0.64	2.73	0.05	0.05	0
CB 3094	In Sag	5.37	1.09	3.16	0.03	0.03	(N/A)
CB 3095	In Sag	5.4	0.99	3.1	0.03	0.03	(N/A)
CB 3096	In Sag	5.18	1.74	3.7	0.02	0.02	(N/A)
CB 3097	In Sag	5.28	1.64	3.71	0.02	0.02	(N/A)
CB 3099	In Sag	5.09	1.64	3.82	0.14	0.14	(N/A)
CB 6059	In Sag	5.14	-0.63	1.5	0.07	0.07	(N/A)
CB 6060	In Sag	5.24	-0.73	1.49	0.14	0.14	(N/A)
CB 6062	In Sag	4.35	-1.25	0.87	0.04	0.04	(N/A)
CB 6063	In Sag	4.64	-1.15	1.03	0.15	0.15	(N/A)
CB 6066	In Sag	3.69	-0.76	1.33	0.08	0.08	(N/A)
CB 6068	In Sag	4.3	-0.36	1.78	0.1	0.1	(N/A)
CB 6076	On Grade	4.57	-0.88	1.25	0.06	0.06	0
CB 6077	On Grade	4.68	-0.88	1.22	0.04	0.04	0
CB 6080	On Grade	4.94	-0.19	1.93	0.07	0.06	0
CB 6082	On Grade	4.83	-0.19	1.89	0.06	0.06	0
CB 6084	On Grade	5.15	0.82	2.9	0.04	0.04	0
CB 6085	On Grade	5.43	1.12	3.23	0.06	0.06	0
CB 6086	On Grade	4.98	0.51	2.74	0.16	0.15	0
CB 6088	On Grade	4.83	0.51	2.81	0.1	0.1	0
CB 6091	On Grade	4.87	-0.08	2.43	0.04	0.04	0
CB 6092	On Grade	4.75	0.75	2.85	0.07	0.07	0
CB 8006	On Grade	5.66	0.33	2.47	0.04	0.04	0
CB 8007	In Sag	6.01	1.68	3.75	0.08	0.08	(N/A)
CB 8010	In Sag	5.93	1.6	3.66	0.07	0.07	(N/A)
CB 8014	In Sag	5.5	-0.26	1.87	0.09	0.09	(N/A)
CB 8015	In Sag	5.59	1.41	3.56	0.08	0.08	(N/A)
CB 8016	In Sag	5.6	1.1	3.36	0.18	0.18	(N/A)
CB 8018	In Sag	5.7	1.44	3.59	0.06	0.06	(N/A)
CB 8020	On Grade	5.85	-0.54	1.6	0.08	0.07	0.01
CB 8023	On Grade	5.89	0.36	2.48	0.06	0.06	0
CB 8025	On Grade	6.39	1.4	3.49	0.04	0.04	0
CB 8027	In Sag	6.1	1.56	3.65	0.05	0.05	(N/A)
CB 8029	In Sag	6.2	0.26	2.32	0.04	0.04	(N/A)
CB 8030	On Grade	6.06	-0.16	1.98	0.09	0.09	0
CB 8031	On Grade	5.8	-0.26	1.83	0.05	0.05	0
CB 8033	On Grade	5.78	1.01	3.15	0.08	0.07	0
CB 8035	On Grade	5.65	1.01	3.06	0.02	0.02	0
CB 8037	On Grade	5.78	1.58	3.68	0.06	0.06	0
CB 8039	In Sag	5.9	0.05	2.16	0.04	0.04	(N/A)
CB 8042	In Sag	5.82	0.09	2.31	0.1	0.09	(N/A)
CB 8043	In Sag	5.32	0.44	2.54	0.04	0.04	(N/A)
CB 8045	In Sag	5.25	0.94	3.07	0.11	0.11	(N/A)
CB 8046	In Sag	5.12	0.12	2.32	0.09	0.09	(N/A)
CB 8047	In Sag	5.29	0.29	2.42	0.08	0.08	(N/A)
CB 8052	In Sag	5.36	1.56	3.72	0.11	0.11	(N/A)
CB 8054	On Grade	5.57	0.8	2.9	0.09	0.08	0
CB 8055	On Grade	5.94	1.2	3.3	0.07	0.06	0
CB 8056	In Sag	4.78	0.35	2.63	0.11	0.11	(N/A)
CB 8059	In Sag	4.74	1.24	3.29	0.03	0.03	(N/A)
CB 8061	In Sag	5.05	-0.18	2.83	0.09	0.09	(N/A)
CB 8063	In Sag	5.08	0.55	2.83	0.11	0.11	(N/A)
CB 8064	In Sag	5.23	0.63	2.88	0.04	0.04	(N/A)
CB 8065	In Sag	5.23	0.93	3.07	0.14	0.14	(N/A)
CB 8066	In Sag	5.33	0.9	3.25	0.13	0.13	(N/A)
CB 13079	In Sag	5.22	-0.01	2.51	0.06	0.06	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**190.9**			

Catch Basin Drainage System 1 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6071	In Sag	4.35	-1.53	0.68	0.1	0.1	(N/A)
CB 2088	On Grade	6.03	-0.01	3.21	0.12	0.12	0
CB 2090	On Grade	5.95	-0.01	3.2	0.06	0.06	0
CB 2091	On Grade	5.79	-0.44	1.73	0.12	0.12	0
CB 2093	On Grade	6.09	0.36	2.39	0.03	0.03	0
CB 2095	In Sag	5.97	1.16	3.33	0.14	0.14	(N/A)
CB 2096	On Grade	6.14	1.2	3.29	0.04	0.04	0
CB 2098	On Grade	5.89	0.2	2.29	0.03	0.03	0
CB 3067	On Grade	6.11	0.79	2.87	0.15	0.12	0.03
CB 3068	On Grade	6.2	0.99	3.06	0.03	0.03	0
CB 3069	On Grade	5.63	0.6	2.69	0.1	0.09	0.01
CB 3071	On Grade	6.14	0.41	2.5	0.04	0.04	0
CB 3073	On Grade	5.99	1.56	2.94	0.01	0.01	0
CB 3074	On Grade	5.89	0.06	2.17	0.18	0.14	0.05
CB 3088	On Grade	5.42	0.75	2.84	0.03	0.03	0
CB 3089	On Grade	5.34	0.64	2.71	0.04	0.03	0
CB 3091	On Grade	5.38	0.64	2.73	0.05	0.05	0
CB 3094	In Sag	5.37	1.09	3.16	0.03	0.03	(N/A)
CB 3095	In Sag	5.4	0.99	3.1	0.03	0.03	(N/A)
CB 3096	In Sag	5.18	1.74	3.7	0.02	0.02	(N/A)
CB 3097	In Sag	5.28	1.64	3.71	0.02	0.02	(N/A)
CB 3099	In Sag	5.09	1.64	3.82	0.14	0.14	(N/A)
CB 6059	In Sag	5.14	-0.63	1.5	0.07	0.07	(N/A)
CB 6060	In Sag	5.24	-0.73	1.49	0.14	0.14	(N/A)
CB 6062	In Sag	4.35	-1.25	0.87	0.04	0.04	(N/A)
CB 6063	In Sag	4.64	-1.15	1.03	0.15	0.15	(N/A)
CB 6066	In Sag	3.69	-0.76	1.33	0.08	0.08	(N/A)
CB 6068	In Sag	4.3	-0.36	1.78	0.1	0.1	(N/A)
CB 6076	On Grade	4.57	-0.88	1.25	0.06	0.06	0
CB 6077	On Grade	4.68	-0.88	1.22	0.04	0.04	0
CB 6080	On Grade	4.94	-0.19	1.93	0.07	0.06	0
CB 6082	On Grade	4.83	-0.19	1.89	0.06	0.06	0
CB 6084	On Grade	5.15	0.82	2.9	0.04	0.04	0
CB 6085	On Grade	5.43	1.12	3.23	0.06	0.06	0
CB 6086	On Grade	4.98	0.51	2.71	0.16	0.15	0
CB 6088	On Grade	4.83	0.51	2.81	0.1	0.1	0
CB 6091	On Grade	4.87	-0.08	2.43	0.04	0.04	0
CB 6092	On Grade	4.75	0.75	2.85	0.07	0.07	0
CB 8006	On Grade	5.66	0.33	2.47	0.04	0.04	0
CB 8007	In Sag	6.01	1.68	3.75	0.08	0.08	(N/A)
CB 8010	In Sag	5.93	1.6	3.66	0.07	0.07	(N/A)
CB 8014	In Sag	5.5	-0.26	1.87	0.09	0.09	(N/A)
CB 8015	In Sag	5.59	1.41	3.56	0.08	0.08	(N/A)
CB 8016	In Sag	5.6	1.1	3.36	0.18	0.18	(N/A)
CB 8018	In Sag	5.7	1.44	3.59	0.06	0.06	(N/A)
CB 8020	On Grade	5.85	-0.54	1.6	0.08	0.07	0.01
CB 8023	On Grade	5.89	0.36	2.48	0.06	0.06	0
CB 8025	On Grade	6.39	1.4	3.49	0.04	0.04	0
CB 8027	In Sag	6.1	1.56	3.65	0.05	0.05	(N/A)
CB 8029	In Sag	6.2	0.26	2.32	0.04	0.04	(N/A)
CB 8030	On Grade	6.06	-0.16	1.98	0.09	0.09	0
CB 8031	On Grade	5.8	-0.26	1.83	0.05	0.05	0
CB 8033	On Grade	5.78	1.01	3.15	0.08	0.07	0
CB 8035	On Grade	5.65	1.01	3.06	0.02	0.02	0
CB 8037	On Grade	5.78	1.58	3.68	0.06	0.06	0
CB 8039	In Sag	5.9	0.05	2.16	0.04	0.04	(N/A)
CB 8042	In Sag	5.82	0.09	2.3	0.1	0.09	(N/A)
CB 8043	In Sag	5.32	0.44	2.54	0.04	0.04	(N/A)
CB 8045	In Sag	5.25	0.94	3.07	0.11	0.11	(N/A)
CB 8046	In Sag	5.12	0.12	2.36	0.09	0.09	(N/A)
CB 8047	In Sag	5.29	0.29	2.43	0.08	0.08	(N/A)
CB 8052	In Sag	5.36	1.56	3.72	0.11	0.11	(N/A)
CB 8054	On Grade	5.57	0.8	2.9	0.09	0.08	0
CB 8055	On Grade	5.94	1.2	3.3	0.07	0.06	0
CB 8056	In Sag	4.78	0.35	2.63	0.11	0.11	(N/A)
CB 8059	In Sag	4.74	1.24	3.29	0.03	0.03	(N/A)
CB 8061	In Sag	5.05	-0.18	2.83	0.09	0.09	(N/A)
CB 8063	In Sag	5.08	0.55	2.83	0.11	0.11	(N/A)
CB 8064	In Sag	5.23	0.63	2.88	0.04	0.04	(N/A)
CB 8065	In Sag	5.23	0.93	3.07	0.14	0.14	(N/A)
CB 8066	In Sag	5.33	0.9	3.25	0.13	0.13	(N/A)
CB 13079	In Sag	5.22	-0.01	2.51	0.06	0.06	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**190.91**			

Catch Basin Drainage System 1 Existing 10 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6071	In Sag	4.35	-1.53	0.96	0.53	0.53	(N/A)
CB 2088	On Grade	6.03	-0.01	3.49	0.62	0.58	0.04
CB 2090	On Grade	5.95	-0.01	3.49	0.32	0.31	0.01
CB 2091	On Grade	5.79	-0.44	1.9	0.67	0.62	0.05
CB 2093	On Grade	6.09	0.36	2.81	0.15	0.12	0.03
CB 2095	In Sag	5.97	1.16	3.54	0.75	0.75	(N/A)
CB 2096	On Grade	6.14	1.2	3.35	0.15	0.12	0.03
CB 2098	On Grade	5.89	0.2	2.35	0.15	0.12	0.03
CB 3067	On Grade	6.11	0.79	2.96	0.84	0.38	0.46
CB 3068	On Grade	6.2	0.99	3.11	0.14	0.11	0.03
CB 3069	On Grade	5.63	0.6	2.76	0.52	0.28	0.24
CB 3071	On Grade	6.14	0.41	2.57	0.21	0.15	0.06
CB 3073	On Grade	5.99	1.56	3.7	0.06	0.06	0
CB 3074	On Grade	5.89	0.06	2.25	1.1	0.45	0.65
CB 3088	On Grade	5.42	0.75	2.91	0.12	0.1	0.02
CB 3089	On Grade	5.34	0.64	2.83	0.16	0.15	0
CB 3091	On Grade	5.38	0.64	2.84	0.25	0.25	0.01
CB 3094	In Sag	5.37	1.09	3.24	0.13	0.13	(N/A)
CB 3095	In Sag	5.4	0.99	3.21	0.12	0.12	(N/A)
CB 3096	In Sag	5.18	1.74	3.93	0.07	0.07	(N/A)
CB 3097	In Sag	5.28	1.64	3.93	0.09	0.09	(N/A)
CB 3099	In Sag	5.09	1.64	4.03	0.71	0.71	(N/A)
CB 6059	In Sag	5.14	-0.63	1.82	0.35	0.35	(N/A)
CB 6060	In Sag	5.24	-0.73	1.82	0.73	0.73	(N/A)
CB 6062	In Sag	4.35	-1.25	1.1	0.17	0.17	(N/A)
CB 6063	In Sag	4.64	-1.15	1.28	0.89	0.89	(N/A)
CB 6066	In Sag	3.69	-0.76	1.46	0.46	0.46	(N/A)
CB 6068	In Sag	4.3	-0.36	1.97	0.51	0.51	(N/A)
CB 6076	On Grade	4.57	-0.88	1.34	0.26	0.17	0.08
CB 6077	On Grade	4.68	-0.88	1.29	0.17	0.13	0.04
CB 6080	On Grade	4.94	-0.19	2	0.3	0.2	0.11
CB 6082	On Grade	4.83	-0.19	1.95	0.29	0.19	0.1
CB 6084	On Grade	5.15	0.82	2.96	0.18	0.13	0.04
CB 6085	On Grade	5.43	1.12	3.3	0.26	0.17	0.08
CB 6086	On Grade	4.98	0.51	3.43	0.8	0.72	0.08
CB 6088	On Grade	4.83	0.51	3.43	0.49	0.46	0.03
CB 6091	On Grade	4.87	-0.08	2.71	0.19	0.19	0
CB 6092	On Grade	4.75	0.75	2.95	0.29	0.28	0.01
CB 8006	On Grade	5.66	0.33	2.91	0.2	0.15	0.06
CB 8007	In Sag	6.01	1.68	3.83	0.41	0.41	(N/A)
CB 8010	In Sag	5.93	1.6	3.73	0.37	0.37	(N/A)
CB 8014	In Sag	5.5	-0.26	2.72	0.35	0.35	(N/A)
CB 8015	In Sag	5.59	1.41	3.72	0.37	0.37	(N/A)
CB 8016	In Sag	5.6	1.1	3.71	1.08	1.08	(N/A)
CB 8018	In Sag	5.7	1.44	3.73	0.29	0.29	(N/A)
CB 8020	On Grade	5.85	-0.54	2.54	0.34	0.21	0.13
CB 8023	On Grade	5.89	0.36	2.58	0.27	0.18	0.09
CB 8025	On Grade	6.39	1.4	3.56	0.17	0.13	0.04
CB 8027	In Sag	6.1	1.56	3.75	0.22	0.22	(N/A)
CB 8029	In Sag	6.2	0.26	2.39	0.19	0.19	(N/A)
CB 8030	On Grade	6.06	-0.16	2.71	0.46	0.44	0.02
CB 8031	On Grade	5.8	-0.26	2.74	0.2	0.2	0
CB 8033	On Grade	5.78	1.01	3.28	0.32	0.31	0.01
CB 8035	On Grade	5.65	1.01	3.11	0.09	0.09	0
CB 8037	On Grade	5.78	1.58	3.79	0.31	0.3	0.01
CB 8039	In Sag	5.9	0.05	2.72	0.17	0.17	(N/A)
CB 8042	In Sag	5.82	0.09	2.71	0.45	0.45	(N/A)
CB 8043	In Sag	5.32	0.44	2.69	0.18	0.18	(N/A)
CB 8045	In Sag	5.25	0.94	3.23	0.54	0.54	(N/A)
CB 8046	In Sag	5.12	0.12	2.91	0.43	0.43	(N/A)
CB 8047	In Sag	5.29	0.29	2.85	0.37	0.37	(N/A)
CB 8052	In Sag	5.36	1.56	3.92	0.59	0.59	(N/A)
CB 8054	On Grade	5.57	0.8	3.01	0.4	0.39	0.02
CB 8055	On Grade	5.94	1.2	3.41	0.31	0.3	0.01
CB 8056	In Sag	4.78	0.35	3.03	0.59	0.59	(N/A)
CB 8059	In Sag	4.74	1.24	3.48	0.12	0.12	(N/A)
CB 8061	In Sag	5.05	-0.18	3.23	0.52	0.52	(N/A)
CB 8063	In Sag	5.08	0.55	3.22	0.58	0.58	(N/A)
CB 8064	In Sag	5.23	0.63	3.27	0.18	0.18	(N/A)
CB 8065	In Sag	5.23	0.93	3.25	0.68	0.68	(N/A)
CB 8066	In Sag	5.33	0.9	3.5	0.73	0.73	(N/A)
CB 13079	In Sag	5.22	-0.01	3.02	0.32	0.32	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**209.22**			

Catch Basin Drainage System 1 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6071	In Sag	4.35	-1.53	0.96	0.53	0.53	(N/A)
CB 2088	On Grade	6.03	-0.01	3.49	0.62	0.58	0.04
CB 2090	On Grade	5.95	-0.01	3.49	0.32	0.31	0.01
CB 2091	On Grade	5.79	-0.44	1.9	0.67	0.62	0.05
CB 2093	On Grade	6.09	0.36	2.81	0.15	0.12	0.03
CB 2095	In Sag	5.97	1.16	3.54	0.75	0.75	(N/A)
CB 2096	On Grade	6.14	1.2	3.35	0.15	0.12	0.03
CB 2098	On Grade	5.89	0.2	2.35	0.15	0.12	0.03
CB 3067	On Grade	6.11	0.79	2.96	0.84	0.38	0.46
CB 3068	On Grade	6.2	0.99	3.11	0.14	0.11	0.03
CB 3069	On Grade	5.63	0.6	2.76	0.52	0.28	0.24
CB 3071	On Grade	6.14	0.41	2.57	0.21	0.15	0.06
CB 3073	On Grade	5.99	1.56	3.7	0.06	0.06	0
CB 3074	On Grade	5.89	0.06	2.25	1.1	0.45	0.65
CB 3088	On Grade	5.42	0.75	2.91	0.12	0.1	0.02
CB 3089	On Grade	5.34	0.64	2.83	0.16	0.15	0
CB 3091	On Grade	5.38	0.64	2.84	0.25	0.25	0.01
CB 3094	In Sag	5.37	1.09	3.24	0.13	0.13	(N/A)
CB 3095	In Sag	5.4	0.99	3.21	0.12	0.12	(N/A)
CB 3096	In Sag	5.18	1.74	3.93	0.07	0.07	(N/A)
CB 3097	In Sag	5.28	1.64	3.93	0.09	0.09	(N/A)
CB 3099	In Sag	5.09	1.64	4.03	0.71	0.71	(N/A)
CB 6059	In Sag	5.14	-0.63	1.82	0.35	0.35	(N/A)
CB 6060	In Sag	5.24	-0.73	1.82	0.73	0.73	(N/A)
CB 6062	In Sag	4.35	-1.25	1.1	0.17	0.17	(N/A)
CB 6063	In Sag	4.64	-1.15	1.28	0.89	0.89	(N/A)
CB 6066	In Sag	3.69	-0.76	1.46	0.46	0.46	(N/A)
CB 6068	In Sag	4.3	-0.36	1.97	0.51	0.51	(N/A)
CB 6076	On Grade	4.57	-0.88	1.34	0.26	0.17	0.08
CB 6077	On Grade	4.68	-0.88	1.29	0.17	0.13	0.04
CB 6080	On Grade	4.94	-0.19	2	0.3	0.2	0.11
CB 6082	On Grade	4.83	-0.19	1.95	0.29	0.19	0.1
CB 6084	On Grade	5.15	0.82	2.96	0.18	0.13	0.04
CB 6085	On Grade	5.43	1.12	3.3	0.26	0.17	0.08
CB 6086	On Grade	4.98	0.51	3.43	0.8	0.72	0.08
CB 6088	On Grade	4.83	0.51	3.43	0.49	0.46	0.03
CB 6091	On Grade	4.87	-0.08	2.71	0.19	0.19	0
CB 6092	On Grade	4.75	0.75	2.95	0.29	0.28	0.01
CB 8006	On Grade	5.66	0.33	2.9	0.2	0.15	0.06
CB 8007	In Sag	6.01	1.68	3.83	0.41	0.41	(N/A)
CB 8010	In Sag	5.93	1.6	3.73	0.37	0.37	(N/A)
CB 8014	In Sag	5.5	-0.26	2.72	0.35	0.35	(N/A)
CB 8015	In Sag	5.59	1.41	3.72	0.37	0.37	(N/A)
CB 8016	In Sag	5.6	1.1	3.71	1.08	1.08	(N/A)
CB 8018	In Sag	5.7	1.44	3.73	0.29	0.29	(N/A)
CB 8020	On Grade	5.85	-0.54	2.55	0.34	0.21	0.13
CB 8023	On Grade	5.89	0.36	2.57	0.27	0.18	0.09
CB 8025	On Grade	6.39	1.4	3.56	0.17	0.13	0.04
CB 8027	In Sag	6.1	1.56	3.75	0.22	0.22	(N/A)
CB 8029	In Sag	6.2	0.26	2.39	0.19	0.19	(N/A)
CB 8030	On Grade	6.06	-0.16	2.71	0.46	0.44	0.02
CB 8031	On Grade	5.8	-0.26	2.71	0.2	0.2	0
CB 8033	On Grade	5.78	1.01	3.28	0.32	0.31	0.01
CB 8035	On Grade	5.65	1.01	3.11	0.09	0.09	0
CB 8037	On Grade	5.78	1.58	3.79	0.31	0.3	0.01
CB 8039	In Sag	5.9	0.05	2.69	0.17	0.17	(N/A)
CB 8042	In Sag	5.82	0.09	2.8	0.45	0.45	(N/A)
CB 8043	In Sag	5.32	0.44	2.68	0.18	0.18	(N/A)
CB 8045	In Sag	5.25	0.94	3.23	0.54	0.54	(N/A)
CB 8046	In Sag	5.12	0.12	2.88	0.43	0.43	(N/A)
CB 8047	In Sag	5.29	0.29	2.84	0.37	0.37	(N/A)
CB 8052	In Sag	5.36	1.56	3.92	0.59	0.59	(N/A)
CB 8054	On Grade	5.57	0.8	3.01	0.4	0.39	0.02
CB 8055	On Grade	5.94	1.2	3.41	0.31	0.3	0.01
CB 8056	In Sag	4.78	0.35	3.03	0.59	0.59	(N/A)
CB 8059	In Sag	4.74	1.24	3.48	0.12	0.12	(N/A)
CB 8061	In Sag	5.05	-0.18	3.23	0.52	0.52	(N/A)
CB 8063	In Sag	5.08	0.55	3.22	0.58	0.58	(N/A)
CB 8064	In Sag	5.23	0.63	3.27	0.18	0.18	(N/A)
CB 8065	In Sag	5.23	0.93	3.25	0.68	0.68	(N/A)
CB 8066	In Sag	5.33	0.9	3.5	0.73	0.73	(N/A)
CB 13079	In Sag	5.22	-0.01	3.01	0.32	0.32	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**209.18**			

Catch Basin Drainage System 1 Existing 2 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6071	In Sag	4.35	-1.53	1.91	0.1	0.1	(N/A)
CB 2088	On Grade	6.03	-0.01	3.21	0.12	0.12	0
CB 2090	On Grade	5.95	-0.01	3.2	0.06	0.06	0
CB 2091	On Grade	5.79	-0.44	2	0.12	0.12	0
CB 2093	On Grade	6.09	0.36	2.39	0.03	0.03	0
CB 2095	In Sag	5.97	1.16	3.33	0.14	0.14	(N/A)
CB 2096	On Grade	6.14	1.2	3.29	0.04	0.04	0
CB 2098	On Grade	5.89	0.2	2.29	0.03	0.03	0
CB 3067	On Grade	6.11	0.79	2.87	0.15	0.12	0.03
CB 3068	On Grade	6.2	0.99	3.06	0.03	0.03	0
CB 3069	On Grade	5.63	0.6	2.69	0.1	0.09	0.01
CB 3071	On Grade	6.14	0.41	2.5	0.04	0.04	0
CB 3073	On Grade	5.99	1.56	2.94	0.01	0.01	0
CB 3074	On Grade	5.89	0.06	2.17	0.18	0.14	0.05
CB 3088	On Grade	5.42	0.75	2.84	0.03	0.03	0
CB 3089	On Grade	5.34	0.64	2.71	0.04	0.03	0
CB 3091	On Grade	5.38	0.64	2.73	0.05	0.05	0
CB 3094	In Sag	5.37	1.09	3.16	0.03	0.03	(N/A)
CB 3095	In Sag	5.4	0.99	3.1	0.03	0.03	(N/A)
CB 3096	In Sag	5.18	1.74	3.7	0.02	0.02	(N/A)
CB 3097	In Sag	5.28	1.64	3.71	0.02	0.02	(N/A)
CB 3099	In Sag	5.09	1.64	3.82	0.14	0.14	(N/A)
CB 6059	In Sag	5.14	-0.63	1.92	0.07	0.07	(N/A)
CB 6060	In Sag	5.24	-0.73	1.92	0.14	0.14	(N/A)
CB 6062	In Sag	4.35	-1.25	1.9	0.04	0.04	(N/A)
CB 6063	In Sag	4.64	-1.15	1.9	0.15	0.15	(N/A)
CB 6066	In Sag	3.69	-0.76	1.87	0.08	0.08	(N/A)
CB 6068	In Sag	4.3	-0.36	1.88	0.1	0.1	(N/A)
CB 6076	On Grade	4.57	-0.88	1.93	0.06	0.06	0
CB 6077	On Grade	4.68	-0.88	1.93	0.04	0.04	0
CB 6080	On Grade	4.94	-0.19	1.95	0.07	0.06	0
CB 6082	On Grade	4.83	-0.19	1.9	0.06	0.06	0
CB 6084	On Grade	5.15	0.82	2.9	0.04	0.04	0
CB 6085	On Grade	5.43	1.12	3.23	0.06	0.06	0
CB 6086	On Grade	4.98	0.51	2.79	0.16	0.15	0
CB 6088	On Grade	4.83	0.51	2.81	0.1	0.1	0
CB 6091	On Grade	4.87	-0.08	2.43	0.04	0.04	0
CB 6092	On Grade	4.75	0.75	2.85	0.07	0.07	0
CB 8006	On Grade	5.66	0.33	2.47	0.04	0.04	0
CB 8007	In Sag	6.01	1.68	3.75	0.08	0.08	(N/A)
CB 8010	In Sag	5.93	1.6	3.66	0.07	0.07	(N/A)
CB 8014	In Sag	5.5	-0.26	2.05	0.09	0.09	(N/A)
CB 8015	In Sag	5.59	1.41	3.56	0.08	0.08	(N/A)
CB 8016	In Sag	5.6	1.1	3.36	0.18	0.18	(N/A)
CB 8018	In Sag	5.7	1.44	3.59	0.06	0.06	(N/A)
CB 8020	On Grade	5.85	-0.54	2.04	0.08	0.07	0.01
CB 8023	On Grade	5.89	0.36	2.48	0.06	0.06	0
CB 8025	On Grade	6.39	1.4	3.49	0.04	0.04	0
CB 8027	In Sag	6.1	1.56	3.65	0.05	0.05	(N/A)
CB 8029	In Sag	6.2	0.26	2.32	0.04	0.04	(N/A)
CB 8030	On Grade	6.06	-0.16	2.05	0.09	0.09	0
CB 8031	On Grade	5.8	-0.26	2.08	0.05	0.05	0
CB 8033	On Grade	5.78	1.01	3.15	0.08	0.07	0
CB 8035	On Grade	5.65	1.01	3.06	0.02	0.02	0
CB 8037	On Grade	5.78	1.58	3.68	0.06	0.06	0
CB 8039	In Sag	5.9	0.05	2.16	0.04	0.04	(N/A)
CB 8042	In Sag	5.82	0.09	2.36	0.1	0.09	(N/A)
CB 8043	In Sag	5.32	0.44	2.54	0.04	0.04	(N/A)
CB 8045	In Sag	5.25	0.94	3.07	0.11	0.11	(N/A)
CB 8046	In Sag	5.12	0.12	2.3	0.09	0.09	(N/A)
CB 8047	In Sag	5.29	0.29	2.43	0.08	0.08	(N/A)
CB 8052	In Sag	5.36	1.56	3.72	0.11	0.11	(N/A)
CB 8054	On Grade	5.57	0.8	2.9	0.09	0.08	0
CB 8055	On Grade	5.94	1.2	3.3	0.07	0.06	0
CB 8056	In Sag	4.78	0.35	2.63	0.11	0.11	(N/A)
CB 8059	In Sag	4.74	1.24	3.29	0.03	0.03	(N/A)
CB 8061	In Sag	5.05	-0.18	2.83	0.09	0.09	(N/A)
CB 8063	In Sag	5.08	0.55	2.83	0.11	0.11	(N/A)
CB 8064	In Sag	5.23	0.63	2.88	0.04	0.04	(N/A)
CB 8065	In Sag	5.23	0.93	3.07	0.14	0.14	(N/A)
CB 8066	In Sag	5.33	0.9	3.25	0.13	0.13	(N/A)
CB 13079	In Sag	5.22	-0.01	2.51	0.06	0.06	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**198.24**			

Catch Basin Drainage System 1 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6071	In Sag	4.35	-1.53	0.68	0.1	0.1	(N/A)
CB 2088	On Grade	6.03	-0.01	3.21	0.12	0.12	0
CB 2090	On Grade	5.95	-0.01	3.2	0.06	0.06	0
CB 2091	On Grade	5.79	-0.44	1.73	0.12	0.12	0
CB 2093	On Grade	6.09	0.36	2.39	0.03	0.03	0
CB 2095	In Sag	5.97	1.16	3.33	0.14	0.14	(N/A)
CB 2096	On Grade	6.14	1.2	3.29	0.04	0.04	0
CB 2098	On Grade	5.89	0.2	2.29	0.03	0.03	0
CB 3067	On Grade	6.11	0.79	2.87	0.15	0.12	0.03
CB 3068	On Grade	6.2	0.99	3.06	0.03	0.03	0
CB 3069	On Grade	5.63	0.6	2.69	0.1	0.09	0.01
CB 3071	On Grade	6.14	0.41	2.5	0.04	0.04	0
CB 3073	On Grade	5.99	1.56	2.94	0.01	0.01	0
CB 3074	On Grade	5.89	0.06	2.17	0.18	0.14	0.05
CB 3088	On Grade	5.42	0.75	2.84	0.03	0.03	0
CB 3089	On Grade	5.34	0.64	2.71	0.04	0.03	0
CB 3091	On Grade	5.38	0.64	2.73	0.05	0.05	0
CB 3094	In Sag	5.37	1.09	3.16	0.03	0.03	(N/A)
CB 3095	In Sag	5.4	0.99	3.1	0.03	0.03	(N/A)
CB 3096	In Sag	5.18	1.74	3.7	0.02	0.02	(N/A)
CB 3097	In Sag	5.28	1.64	3.71	0.02	0.02	(N/A)
CB 3099	In Sag	5.09	1.64	3.82	0.14	0.14	(N/A)
CB 6059	In Sag	5.14	-0.63	1.5	0.07	0.07	(N/A)
CB 6060	In Sag	5.24	-0.73	1.49	0.14	0.14	(N/A)
CB 6062	In Sag	4.35	-1.25	0.87	0.04	0.04	(N/A)
CB 6063	In Sag	4.64	-1.15	1.03	0.15	0.15	(N/A)
CB 6066	In Sag	3.69	-0.76	1.33	0.08	0.08	(N/A)
CB 6068	In Sag	4.3	-0.36	1.78	0.1	0.1	(N/A)
CB 6076	On Grade	4.57	-0.88	1.25	0.06	0.06	0
CB 6077	On Grade	4.68	-0.88	1.22	0.04	0.04	0
CB 6080	On Grade	4.94	-0.19	1.93	0.07	0.06	0
CB 6082	On Grade	4.83	-0.19	1.89	0.06	0.06	0
CB 6084	On Grade	5.15	0.82	2.9	0.04	0.04	0
CB 6085	On Grade	5.43	1.12	3.23	0.06	0.06	0
CB 6086	On Grade	4.98	0.51	2.71	0.16	0.15	0
CB 6088	On Grade	4.83	0.51	2.81	0.1	0.1	0
CB 6091	On Grade	4.87	-0.08	2.43	0.04	0.04	0
CB 6092	On Grade	4.75	0.75	2.85	0.07	0.07	0
CB 8006	On Grade	5.66	0.33	2.47	0.04	0.04	0
CB 8007	In Sag	6.01	1.68	3.75	0.08	0.08	(N/A)
CB 8010	In Sag	5.93	1.6	3.66	0.07	0.07	(N/A)
CB 8014	In Sag	5.5	-0.26	1.87	0.09	0.09	(N/A)
CB 8015	In Sag	5.59	1.41	3.56	0.08	0.08	(N/A)
CB 8016	In Sag	5.6	1.1	3.36	0.18	0.18	(N/A)
CB 8018	In Sag	5.7	1.44	3.59	0.06	0.06	(N/A)
CB 8020	On Grade	5.85	-0.54	1.6	0.08	0.07	0.01
CB 8023	On Grade	5.89	0.36	2.48	0.06	0.06	0
CB 8025	On Grade	6.39	1.4	3.49	0.04	0.04	0
CB 8027	In Sag	6.1	1.56	3.65	0.05	0.05	(N/A)
CB 8029	In Sag	6.2	0.26	2.32	0.04	0.04	(N/A)
CB 8030	On Grade	6.06	-0.16	1.98	0.09	0.09	0
CB 8031	On Grade	5.8	-0.26	1.83	0.05	0.05	0
CB 8033	On Grade	5.78	1.01	3.15	0.08	0.07	0
CB 8035	On Grade	5.65	1.01	3.06	0.02	0.02	0
CB 8037	On Grade	5.78	1.58	3.68	0.06	0.06	0
CB 8039	In Sag	5.9	0.05	2.16	0.04	0.04	(N/A)
CB 8042	In Sag	5.82	0.09	2.3	0.1	0.09	(N/A)
CB 8043	In Sag	5.32	0.44	2.54	0.04	0.04	(N/A)
CB 8045	In Sag	5.25	0.94	3.07	0.11	0.11	(N/A)
CB 8046	In Sag	5.12	0.12	2.36	0.09	0.09	(N/A)
CB 8047	In Sag	5.29	0.29	2.43	0.08	0.08	(N/A)
CB 8052	In Sag	5.36	1.56	3.72	0.11	0.11	(N/A)
CB 8054	On Grade	5.57	0.8	2.9	0.09	0.08	0
CB 8055	On Grade	5.94	1.2	3.3	0.07	0.06	0
CB 8056	In Sag	4.78	0.35	2.63	0.11	0.11	(N/A)
CB 8059	In Sag	4.74	1.24	3.29	0.03	0.03	(N/A)
CB 8061	In Sag	5.05	-0.18	2.83	0.09	0.09	(N/A)
CB 8063	In Sag	5.08	0.55	2.83	0.11	0.11	(N/A)
CB 8064	In Sag	5.23	0.63	2.88	0.04	0.04	(N/A)
CB 8065	In Sag	5.23	0.93	3.07	0.14	0.14	(N/A)
CB 8066	In Sag	5.33	0.9	3.25	0.13	0.13	(N/A)
CB 13079	In Sag	5.22	-0.01	2.51	0.06	0.06	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**190.91**			

Catch Basin Drainage System 1 Existing 10 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6071	In Sag	4.35	-1.53	2.66	0.53	0.53	(N/A)
CB 2088	On Grade	6.03	-0.01	4.14	0.62	0.58	0.04
CB 2090	On Grade	5.95	-0.01	4.17	0.32	0.31	0.01
CB 2091	On Grade	5.79	-0.44	4.14	0.67	0.62	0.05
CB 2093	On Grade	6.09	0.36	4.14	0.15	0.12	0.03
CB 2095	In Sag	5.97	1.16	4.07	0.75	0.75	(N/A)
CB 2096	On Grade	6.14	1.2	4.15	0.15	0.12	0.03
CB 2098	On Grade	5.89	0.2	4.15	0.15	0.12	0.03
CB 3067	On Grade	6.11	0.79	4.14	0.84	0.38	0.46
CB 3068	On Grade	6.2	0.99	4.12	0.14	0.11	0.03
CB 3069	On Grade	5.63	0.6	4.14	0.52	0.28	0.24
CB 3071	On Grade	6.14	0.41	4.14	0.21	0.15	0.06
CB 3073	On Grade	5.99	1.56	4.13	0.06	0.06	0
CB 3074	On Grade	5.89	0.06	4	1.1	0.45	0.65
CB 3088	On Grade	5.42	0.75	3.72	0.12	0.1	0.02
CB 3089	On Grade	5.34	0.64	3.72	0.16	0.15	0
CB 3091	On Grade	5.38	0.64	3.72	0.25	0.25	0.01
CB 3094	In Sag	5.37	1.09	3.71	0.13	0.13	(N/A)
CB 3095	In Sag	5.4	0.99	3.71	0.12	0.12	(N/A)
CB 3096	In Sag	5.18	1.74	3.93	0.07	0.07	(N/A)
CB 3097	In Sag	5.28	1.64	3.93	0.09	0.09	(N/A)
CB 3099	In Sag	5.09	1.64	4.03	0.71	0.71	(N/A)
CB 6059	In Sag	5.14	-0.63	2.78	0.35	0.35	(N/A)
CB 6060	In Sag	5.24	-0.73	2.77	0.73	0.73	(N/A)
CB 6062	In Sag	4.35	-1.25	2.61	0.17	0.17	(N/A)
CB 6063	In Sag	4.64	-1.15	2.57	0.89	0.89	(N/A)
CB 6066	In Sag	3.69	-0.76	2.15	0.46	0.46	(N/A)
CB 6068	In Sag	4.3	-0.36	2.16	0.51	0.51	(N/A)
CB 6076	On Grade	4.57	-0.88	2.97	0.26	0.17	0.08
CB 6077	On Grade	4.68	-0.88	2.97	0.17	0.13	0.04
CB 6080	On Grade	4.94	-0.19	3.24	0.3	0.2	0.11
CB 6082	On Grade	4.83	-0.19	3.24	0.29	0.19	0.1
CB 6084	On Grade	5.15	0.82	3.55	0.18	0.13	0.04
CB 6085	On Grade	5.43	1.12	3.55	0.26	0.17	0.08
CB 6086	On Grade	4.98	0.51	3.43	0.8	0.72	0.08
CB 6088	On Grade	4.83	0.51	3.43	0.49	0.46	0.03
CB 6091	On Grade	4.87	-0.08	3.04	0.19	0.19	0
CB 6092	On Grade	4.75	0.75	3.04	0.29	0.28	0.01
CB 8006	On Grade	5.66	0.33	4.87	0.2	0.15	0.06
CB 8007	In Sag	6.01	1.68	4.87	0.41	0.41	(N/A)
CB 8010	In Sag	5.93	1.6	4.84	0.37	0.37	(N/A)
CB 8014	In Sag	5.5	-0.26	4.79	0.35	0.35	(N/A)
CB 8015	In Sag	5.59	1.41	4.78	0.37	0.37	(N/A)
CB 8016	In Sag	5.6	1.1	4.94	1.08	1.08	(N/A)
CB 8018	In Sag	5.7	1.44	4.8	0.29	0.29	(N/A)
CB 8020	On Grade	5.85	-0.54	4.74	0.34	0.21	0.13
CB 8023	On Grade	5.89	0.36	4.74	0.27	0.18	0.09
CB 8025	On Grade	6.39	1.4	4.43	0.17	0.13	0.04
CB 8027	In Sag	6.1	1.56	4.48	0.22	0.22	(N/A)
CB 8029	In Sag	6.2	0.26	4.48	0.19	0.19	(N/A)
CB 8030	On Grade	6.06	-0.16	4.89	0.46	0.44	0.02
CB 8031	On Grade	5.8	-0.26	4.88	0.2	0.2	0
CB 8033	On Grade	5.78	1.01	4.9	0.32	0.31	0.01
CB 8035	On Grade	5.65	1.01	4.88	0.09	0.09	0
CB 8037	On Grade	5.78	1.58	4.82	0.31	0.3	0.01
CB 8039	In Sag	5.9	0.05	4.96	0.17	0.17	(N/A)
CB 8042	In Sag	5.82	0.09	4.99	0.45	0.45	(N/A)
CB 8043	In Sag	5.32	0.44	4.81	0.18	0.18	(N/A)
CB 8045	In Sag	5.25	0.94	4.84	0.54	0.54	(N/A)
CB 8046	In Sag	5.12	0.12	4.96	0.43	0	(N/A)
CB 8047	In Sag	5.29	0.29	5.26	0.38	0	(N/A)
CB 8052	In Sag	5.36	1.56	5.04	0.59	0	(N/A)
CB 8054	On Grade	5.57	0.8	5.24	0.4	0.39	0.02
CB 8055	On Grade	5.94	1.2	5.23	0.31	0.3	0.01
CB 8056	In Sag	4.78	0.35	5.33	0.59	0	(N/A)
CB 8059	In Sag	4.74	1.24	4.53	0.12	0	(N/A)
CB 8061	In Sag	5.05	-0.18	4.58	0.52	0.92	(N/A)
CB 8063	In Sag	5.08	0.55	5.14	0.58	1.64	(N/A)
CB 8064	In Sag	5.23	0.63	3.63	4.4	-4.21	(N/A)
CB 8065	In Sag	5.23	0.93	4.34	0.68	1.73	(N/A)
CB 8066	In Sag	5.33	0.9	4.71	0.73	0.73	(N/A)
CB 13079	In Sag	5.22	-0.01	3.48	0.32	1.7	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**296.46**			

Catch Basin Drainage System 1 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6071	In Sag	4.35	-1.53	2.38	0.53	0.53	(N/A)
CB 2088	On Grade	6.03	-0.01	3.49	0.62	0.58	0.04
CB 2090	On Grade	5.95	-0.01	3.48	0.32	0.31	0.01
CB 2091	On Grade	5.79	-0.44	3.04	0.67	0.62	0.05
CB 2093	On Grade	6.09	0.36	3.11	0.15	0.12	0.03
CB 2095	In Sag	5.97	1.16	3.54	0.75	0.75	(N/A)
CB 2096	On Grade	6.14	1.2	3.35	0.15	0.12	0.03
CB 2098	On Grade	5.89	0.2	3.04	0.15	0.12	0.03
CB 3067	On Grade	6.11	0.79	3.02	0.84	0.38	0.46
CB 3068	On Grade	6.2	0.99	3.12	0.14	0.11	0.03
CB 3069	On Grade	5.63	0.6	3.18	0.52	0.28	0.24
CB 3071	On Grade	6.14	0.41	3.07	0.21	0.15	0.06
CB 3073	On Grade	5.99	1.56	3.7	0.06	0.06	0
CB 3074	On Grade	5.89	0.06	3.05	1.1	0.45	0.65
CB 3088	On Grade	5.42	0.75	2.9	0.12	0.1	0.02
CB 3089	On Grade	5.34	0.64	2.9	0.16	0.15	0
CB 3091	On Grade	5.38	0.64	2.87	0.25	0.25	0.01
CB 3094	In Sag	5.37	1.09	3.24	0.13	0.13	(N/A)
CB 3095	In Sag	5.4	0.99	3.21	0.12	0.12	(N/A)
CB 3096	In Sag	5.18	1.74	3.93	0.07	0.07	(N/A)
CB 3097	In Sag	5.28	1.64	3.93	0.09	0.09	(N/A)
CB 3099	In Sag	5.09	1.64	4.03	0.71	0.71	(N/A)
CB 6059	In Sag	5.14	-0.63	2.43	0.35	0.35	(N/A)
CB 6060	In Sag	5.24	-0.73	2.42	0.73	0.73	(N/A)
CB 6062	In Sag	4.35	-1.25	2.34	0.17	0.17	(N/A)
CB 6063	In Sag	4.64	-1.15	2.35	0.89	0.89	(N/A)
CB 6066	In Sag	3.69	-0.76	1.98	0.46	0.46	(N/A)
CB 6068	In Sag	4.3	-0.36	2.08	0.51	0.51	(N/A)
CB 6076	On Grade	4.57	-0.88	2.52	0.26	0.17	0.08
CB 6077	On Grade	4.68	-0.88	2.52	0.17	0.13	0.04
CB 6080	On Grade	4.94	-0.19	2.61	0.3	0.2	0.11
CB 6082	On Grade	4.83	-0.19	2.71	0.29	0.19	0.1
CB 6084	On Grade	5.15	0.82	2.96	0.18	0.13	0.04
CB 6085	On Grade	5.43	1.12	3.3	0.26	0.17	0.08
CB 6086	On Grade	4.98	0.51	3.43	0.8	0.72	0.08
CB 6088	On Grade	4.83	0.51	3.43	0.49	0.46	0.03
CB 6091	On Grade	4.87	-0.08	2.71	0.19	0.19	0
CB 6092	On Grade	4.75	0.75	2.95	0.29	0.28	0.01
CB 8006	On Grade	5.66	0.33	3.26	0.2	0.15	0.06
CB 8007	In Sag	6.01	1.68	3.83	0.41	0.41	(N/A)
CB 8010	In Sag	5.93	1.6	3.73	0.37	0.37	(N/A)
CB 8014	In Sag	5.5	-0.26	3.32	0.35	0.35	(N/A)
CB 8015	In Sag	5.59	1.41	3.72	0.37	0.37	(N/A)
CB 8016	In Sag	5.6	1.1	3.71	1.08	1.08	(N/A)
CB 8018	In Sag	5.7	1.44	3.73	0.29	0.29	(N/A)
CB 8020	On Grade	5.85	-0.54	3.27	0.34	0.21	0.13
CB 8023	On Grade	5.89	0.36	3.27	0.27	0.18	0.09
CB 8025	On Grade	6.39	1.4	3.56	0.17	0.13	0.04
CB 8027	In Sag	6.1	1.56	3.75	0.22	0.22	(N/A)
CB 8029	In Sag	6.2	0.26	3.2	0.19	0.19	(N/A)
CB 8030	On Grade	6.06	-0.16	3.32	0.46	0.44	0.02
CB 8031	On Grade	5.8	-0.26	3.33	0.2	0.2	0
CB 8033	On Grade	5.78	1.01	3.31	0.32	0.31	0.01
CB 8035	On Grade	5.65	1.01	3.32	0.09	0.09	0
CB 8037	On Grade	5.78	1.58	3.79	0.31	0.3	0.01
CB 8039	In Sag	5.9	0.05	3.3	0.17	0.17	(N/A)
CB 8042	In Sag	5.82	0.09	3.31	0.45	0.45	(N/A)
CB 8043	In Sag	5.32	0.44	3.26	0.18	0.18	(N/A)
CB 8045	In Sag	5.25	0.94	3.27	0.54	0.54	(N/A)
CB 8046	In Sag	5.12	0.12	3.32	0.43	0.43	(N/A)
CB 8047	In Sag	5.29	0.29	3.31	0.37	0.37	(N/A)
CB 8052	In Sag	5.36	1.56	3.92	0.59	0.59	(N/A)
CB 8054	On Grade	5.57	0.8	3.41	0.4	0.39	0.02
CB 8055	On Grade	5.94	1.2	3.41	0.31	0.3	0.01
CB 8056	In Sag	4.78	0.35	3.25	0.59	0.59	(N/A)
CB 8059	In Sag	4.74	1.24	3.48	0.12	0.12	(N/A)
CB 8061	In Sag	5.05	-0.18	3.36	0.52	0.52	(N/A)
CB 8063	In Sag	5.08	0.55	3.36	0.58	0.58	(N/A)
CB 8064	In Sag	5.23	0.63	3.35	0.18	0.18	(N/A)
CB 8065	In Sag	5.23	0.93	3.32	0.68	0.68	(N/A)
CB 8066	In Sag	5.33	0.9	3.5	0.73	0.73	(N/A)
CB 13079	In Sag	5.22	-0.01	3.24	0.32	0.32	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**231.11**			

Catch Basin Drainage System 1 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6071	In Sag	4.35	-1.53	3.03	0.1	0.1	(N/A)
CB 2088	On Grade	6.03	-0.01	3.24	0.12	0.12	0
CB 2090	On Grade	5.95	-0.01	3.24	0.06	0.06	0
CB 2091	On Grade	5.79	-0.44	3.17	0.12	0.12	0
CB 2093	On Grade	6.09	0.36	3.16	0.03	0.03	0
CB 2095	In Sag	5.97	1.16	3.33	0.14	0.14	(N/A)
CB 2096	On Grade	6.14	1.2	3.29	0.04	0.04	0
CB 2098	On Grade	5.89	0.2	3.16	0.03	0.03	0
CB 3067	On Grade	6.11	0.79	3.16	0.15	0.12	0.03
CB 3068	On Grade	6.2	0.99	3.17	0.03	0.03	0
CB 3069	On Grade	5.63	0.6	3.16	0.1	0.09	0.01
CB 3071	On Grade	6.14	0.41	3.16	0.04	0.04	0
CB 3073	On Grade	5.99	1.56	2.94	0.01	0.01	0
CB 3074	On Grade	5.89	0.06	3.15	0.18	0.14	0.05
CB 3088	On Grade	5.42	0.75	3.13	0.03	0.03	0
CB 3089	On Grade	5.34	0.64	3.13	0.04	0.03	0
CB 3091	On Grade	5.38	0.64	3.13	0.05	0.05	0
CB 3094	In Sag	5.37	1.09	3.16	0.03	0.03	(N/A)
CB 3095	In Sag	5.4	0.99	3.13	0.03	0.03	(N/A)
CB 3096	In Sag	5.18	1.74	3.7	0.02	0.02	(N/A)
CB 3097	In Sag	5.28	1.64	3.71	0.02	0.02	(N/A)
CB 3099	In Sag	5.09	1.64	3.82	0.14	0.14	(N/A)
CB 6059	In Sag	5.14	-0.63	3.04	0.07	0.07	(N/A)
CB 6060	In Sag	5.24	-0.73	3.04	0.14	0.14	(N/A)
CB 6062	In Sag	4.35	-1.25	3.03	0.04	0.04	(N/A)
CB 6063	In Sag	4.64	-1.15	3.03	0.15	0.15	(N/A)
CB 6066	In Sag	3.69	-0.76	2.99	0.08	0.08	(N/A)
CB 6068	In Sag	4.3	-0.36	2.99	0.1	0.1	(N/A)
CB 6076	On Grade	4.57	-0.88	3.06	0.06	0.06	0
CB 6077	On Grade	4.68	-0.88	3.06	0.04	0.04	0
CB 6080	On Grade	4.94	-0.19	3.08	0.07	0.06	0
CB 6082	On Grade	4.83	-0.19	3.08	0.06	0.06	0
CB 6084	On Grade	5.15	0.82	3.11	0.04	0.04	0
CB 6085	On Grade	5.43	1.12	3.23	0.06	0.06	0
CB 6086	On Grade	4.98	0.51	3.09	0.16	0.15	0
CB 6088	On Grade	4.83	0.51	3.09	0.1	0.1	0
CB 6091	On Grade	4.87	-0.08	3.06	0.04	0.04	0
CB 6092	On Grade	4.75	0.75	3.06	0.07	0.07	0
CB 8006	On Grade	5.66	0.33	3.25	0.04	0.04	0
CB 8007	In Sag	6.01	1.68	3.75	0.08	0.08	(N/A)
CB 8010	In Sag	5.93	1.6	3.66	0.07	0.07	(N/A)
CB 8014	In Sag	5.5	-0.26	3.23	0.09	0.09	(N/A)
CB 8015	In Sag	5.59	1.41	3.56	0.08	0.08	(N/A)
CB 8016	In Sag	5.6	1.1	3.36	0.18	0.18	(N/A)
CB 8018	In Sag	5.7	1.44	3.59	0.06	0.06	(N/A)
CB 8020	On Grade	5.85	-0.54	3.22	0.08	0.07	0.01
CB 8023	On Grade	5.89	0.36	3.22	0.06	0.06	0
CB 8025	On Grade	6.39	1.4	3.49	0.04	0.04	0
CB 8027	In Sag	6.1	1.56	3.65	0.05	0.05	(N/A)
CB 8029	In Sag	6.2	0.26	3.19	0.04	0.04	(N/A)
CB 8030	On Grade	6.06	-0.16	3.23	0.09	0.09	0
CB 8031	On Grade	5.8	-0.26	3.23	0.05	0.05	0
CB 8033	On Grade	5.78	1.01	3.23	0.08	0.07	0
CB 8035	On Grade	5.65	1.01	3.23	0.02	0.02	0
CB 8037	On Grade	5.78	1.58	3.68	0.06	0.06	0
CB 8039	In Sag	5.9	0.05	3.23	0.04	0.04	(N/A)
CB 8042	In Sag	5.82	0.09	3.23	0.1	0.09	(N/A)
CB 8043	In Sag	5.32	0.44	3.23	0.04	0.04	(N/A)
CB 8045	In Sag	5.25	0.94	3.23	0.11	0.11	(N/A)
CB 8046	In Sag	5.12	0.12	3.24	0.09	0.09	(N/A)
CB 8047	In Sag	5.29	0.29	3.24	0.08	0.08	(N/A)
CB 8052	In Sag	5.36	1.56	3.72	0.11	0.11	(N/A)
CB 8054	On Grade	5.57	0.8	3.24	0.09	0.08	0
CB 8055	On Grade	5.94	1.2	3.3	0.07	0.06	0
CB 8056	In Sag	4.78	0.35	3.25	0.11	0.11	(N/A)
CB 8059	In Sag	4.74	1.24	3.43	0.03	0.03	(N/A)
CB 8061	In Sag	5.05	-0.18	3.25	0.09	0.09	(N/A)
CB 8063	In Sag	5.08	0.55	3.25	0.11	0.11	(N/A)
CB 8064	In Sag	5.23	0.63	3.25	0.04	0.04	(N/A)
CB 8065	In Sag	5.23	0.93	3.25	0.14	0.14	(N/A)
CB 8066	In Sag	5.33	0.9	3.27	0.13	0.13	(N/A)
CB 13079	In Sag	5.22	-0.01	3.25	0.06	0.06	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**233.94**			

Catch Basin Drainage System 1 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6071	In Sag	4.35	-1.53	0.68	0.1	0.1	(N/A)
CB 2088	On Grade	6.03	-0.01	3.21	0.12	0.12	0
CB 2090	On Grade	5.95	-0.01	3.2	0.06	0.06	0
CB 2091	On Grade	5.79	-0.44	1.73	0.12	0.12	0
CB 2093	On Grade	6.09	0.36	2.39	0.03	0.03	0
CB 2095	In Sag	5.97	1.16	3.33	0.14	0.14	(N/A)
CB 2096	On Grade	6.14	1.2	3.29	0.04	0.04	0
CB 2098	On Grade	5.89	0.2	2.29	0.03	0.03	0
CB 3067	On Grade	6.11	0.79	2.87	0.15	0.12	0.03
CB 3068	On Grade	6.2	0.99	3.06	0.03	0.03	0
CB 3069	On Grade	5.63	0.6	2.69	0.1	0.09	0.01
CB 3071	On Grade	6.14	0.41	2.5	0.04	0.04	0
CB 3073	On Grade	5.99	1.56	2.94	0.01	0.01	0
CB 3074	On Grade	5.89	0.06	2.17	0.18	0.14	0.05
CB 3088	On Grade	5.42	0.75	2.84	0.03	0.03	0
CB 3089	On Grade	5.34	0.64	2.71	0.04	0.03	0
CB 3091	On Grade	5.38	0.64	2.73	0.05	0.05	0
CB 3094	In Sag	5.37	1.09	3.16	0.03	0.03	(N/A)
CB 3095	In Sag	5.4	0.99	3.1	0.03	0.03	(N/A)
CB 3096	In Sag	5.18	1.74	3.7	0.02	0.02	(N/A)
CB 3097	In Sag	5.28	1.64	3.71	0.02	0.02	(N/A)
CB 3099	In Sag	5.09	1.64	3.82	0.14	0.14	(N/A)
CB 6059	In Sag	5.14	-0.63	1.5	0.07	0.07	(N/A)
CB 6060	In Sag	5.24	-0.73	1.49	0.14	0.14	(N/A)
CB 6062	In Sag	4.35	-1.25	0.87	0.04	0.04	(N/A)
CB 6063	In Sag	4.64	-1.15	1.03	0.15	0.15	(N/A)
CB 6066	In Sag	3.69	-0.76	1.33	0.08	0.08	(N/A)
CB 6068	In Sag	4.3	-0.36	1.78	0.1	0.1	(N/A)
CB 6076	On Grade	4.57	-0.88	1.25	0.06	0.06	0
CB 6077	On Grade	4.68	-0.88	1.22	0.04	0.04	0
CB 6080	On Grade	4.94	-0.19	1.93	0.07	0.06	0
CB 6082	On Grade	4.83	-0.19	1.89	0.06	0.06	0
CB 6084	On Grade	5.15	0.82	2.9	0.04	0.04	0
CB 6085	On Grade	5.43	1.12	3.23	0.06	0.06	0
CB 6086	On Grade	4.98	0.51	2.71	0.16	0.15	0
CB 6088	On Grade	4.83	0.51	2.81	0.1	0.1	0
CB 6091	On Grade	4.87	-0.08	2.43	0.04	0.04	0
CB 6092	On Grade	4.75	0.75	2.85	0.07	0.07	0
CB 8006	On Grade	5.66	0.33	2.47	0.04	0.04	0
CB 8007	In Sag	6.01	1.68	3.75	0.08	0.08	(N/A)
CB 8010	In Sag	5.93	1.6	3.66	0.07	0.07	(N/A)
CB 8014	In Sag	5.5	-0.26	1.87	0.09	0.09	(N/A)
CB 8015	In Sag	5.59	1.41	3.56	0.08	0.08	(N/A)
CB 8016	In Sag	5.6	1.1	3.36	0.18	0.18	(N/A)
CB 8018	In Sag	5.7	1.44	3.59	0.06	0.06	(N/A)
CB 8020	On Grade	5.85	-0.54	1.6	0.08	0.07	0.01
CB 8023	On Grade	5.89	0.36	2.48	0.06	0.06	0
CB 8025	On Grade	6.39	1.4	3.49	0.04	0.04	0
CB 8027	In Sag	6.1	1.56	3.65	0.05	0.05	(N/A)
CB 8029	In Sag	6.2	0.26	2.32	0.04	0.04	(N/A)
CB 8030	On Grade	6.06	-0.16	1.98	0.09	0.09	0
CB 8031	On Grade	5.8	-0.26	1.83	0.05	0.05	0
CB 8033	On Grade	5.78	1.01	3.15	0.08	0.07	0
CB 8035	On Grade	5.65	1.01	3.06	0.02	0.02	0
CB 8037	On Grade	5.78	1.58	3.68	0.06	0.06	0
CB 8039	In Sag	5.9	0.05	2.16	0.04	0.04	(N/A)
CB 8042	In Sag	5.82	0.09	2.3	0.1	0.09	(N/A)
CB 8043	In Sag	5.32	0.44	2.54	0.04	0.04	(N/A)
CB 8045	In Sag	5.25	0.94	3.07	0.11	0.11	(N/A)
CB 8046	In Sag	5.12	0.12	2.36	0.09	0.09	(N/A)
CB 8047	In Sag	5.29	0.29	2.43	0.08	0.08	(N/A)
CB 8052	In Sag	5.36	1.56	3.72	0.11	0.11	(N/A)
CB 8054	On Grade	5.57	0.8	2.9	0.09	0.08	0
CB 8055	On Grade	5.94	1.2	3.3	0.07	0.06	0
CB 8056	In Sag	4.78	0.35	2.63	0.11	0.11	(N/A)
CB 8059	In Sag	4.74	1.24	3.29	0.03	0.03	(N/A)
CB 8061	In Sag	5.05	-0.18	2.83	0.09	0.09	(N/A)
CB 8063	In Sag	5.08	0.55	2.83	0.11	0.11	(N/A)
CB 8064	In Sag	5.23	0.63	2.88	0.04	0.04	(N/A)
CB 8065	In Sag	5.23	0.93	3.07	0.14	0.14	(N/A)
CB 8066	In Sag	5.33	0.9	3.25	0.13	0.13	(N/A)
CB 13079	In Sag	5.22	-0.01	2.51	0.06	0.06	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**190.91**			

Catch Basin Drainage System 1 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 6071	In Sag	4.35	-1.53	3.65	0.53	0.53	(N/A)
CB 2088	On Grade	6.03	-0.01	4.78	0.62	0.58	0.04
CB 2090	On Grade	5.95	-0.01	4.79	0.32	0.31	0.01
CB 2091	On Grade	5.79	-0.44	4.78	0.67	0.62	0.05
CB 2093	On Grade	6.09	0.36	4.81	0.15	0.12	0.03
CB 2095	In Sag	5.97	1.16	4.69	0.75	0.75	(N/A)
CB 2096	On Grade	6.14	1.2	4.75	0.15	0.12	0.03
CB 2098	On Grade	5.89	0.2	4.73	0.15	0.12	0.03
CB 3067	On Grade	6.11	0.79	4.77	0.84	0.38	0.46
CB 3068	On Grade	6.2	0.99	4.77	0.14	0.11	0.03
CB 3069	On Grade	5.63	0.6	4.78	0.52	0.28	0.24
CB 3071	On Grade	6.14	0.41	4.75	0.21	0.15	0.06
CB 3073	On Grade	5.99	1.56	4.78	0.06	0.06	0
CB 3074	On Grade	5.89	0.06	4.65	1.1	0.45	0.65
CB 3088	On Grade	5.42	0.75	4.47	0.12	0.1	0.02
CB 3089	On Grade	5.34	0.64	4.47	0.16	0.15	0
CB 3091	On Grade	5.38	0.64	4.47	0.25	0.25	0.01
CB 3094	In Sag	5.37	1.09	4.46	0.13	0.13	(N/A)
CB 3095	In Sag	5.4	0.99	4.45	0.12	0.12	(N/A)
CB 3096	In Sag	5.18	1.74	4.35	0.07	0.07	(N/A)
CB 3097	In Sag	5.28	1.64	4.35	0.09	0.09	(N/A)
CB 3099	In Sag	5.09	1.64	4.36	0.71	0.71	(N/A)
CB 6059	In Sag	5.14	-0.63	3.78	0.35	0.35	(N/A)
CB 6060	In Sag	5.24	-0.73	3.72	0.73	0.73	(N/A)
CB 6062	In Sag	4.35	-1.25	3.56	0.17	0.17	(N/A)
CB 6063	In Sag	4.64	-1.15	3.57	0.89	0.89	(N/A)
CB 6066	In Sag	3.69	-0.76	3.2	0.46	0.46	(N/A)
CB 6068	In Sag	4.3	-0.36	3.2	0.51	0.51	(N/A)
CB 6076	On Grade	4.57	-0.88	3.91	0.26	0.17	0.08
CB 6077	On Grade	4.68	-0.88	3.91	0.17	0.13	0.04
CB 6080	On Grade	4.94	-0.19	4.12	0.3	0.2	0.11
CB 6082	On Grade	4.83	-0.19	4.12	0.29	0.19	0.1
CB 6084	On Grade	5.15	0.82	4.34	0.18	0.13	0.04
CB 6085	On Grade	5.43	1.12	4.34	0.26	0.17	0.08
CB 6086	On Grade	4.98	0.51	4.28	0.8	0.72	0.08
CB 6088	On Grade	4.83	0.51	4.29	0.49	0.46	0.03
CB 6091	On Grade	4.87	-0.08	4.01	0.19	0.19	0
CB 6092	On Grade	4.75	0.75	4.01	0.29	0.28	0.01
CB 8006	On Grade	5.66	0.33	5.26	0.2	0.15	0.06
CB 8007	In Sag	6.01	1.68	5.14	0.41	0.41	(N/A)
CB 8010	In Sag	5.93	1.6	5.17	0.37	0.37	(N/A)
CB 8014	In Sag	5.5	-0.26	5.09	0.35	0.35	(N/A)
CB 8015	In Sag	5.59	1.41	5.06	0.37	0.37	(N/A)
CB 8016	In Sag	5.6	1.1	4.25	1.08	1.75	(N/A)
CB 8018	In Sag	5.7	1.44	5.07	0.29	0.29	(N/A)
CB 8020	On Grade	5.85	-0.54	5.1	0.34	0.21	0.13
CB 8023	On Grade	5.89	0.36	5.1	0.27	0.18	0.09
CB 8025	On Grade	6.39	1.4	4.89	0.17	0.13	0.04
CB 8027	In Sag	6.1	1.56	5.02	0.22	0.22	(N/A)
CB 8029	In Sag	6.2	0.26	5.05	0.19	0.19	(N/A)
CB 8030	On Grade	6.06	-0.16	5.21	0.46	0.44	0.02
CB 8031	On Grade	5.8	-0.26	5.21	0.2	0.2	0
CB 8033	On Grade	5.78	1.01	5.17	0.32	0.31	0.01
CB 8035	On Grade	5.65	1.01	5.17	0.09	0.09	0
CB 8037	On Grade	5.78	1.58	5.09	0.31	0.3	0.01
CB 8039	In Sag	5.9	0.05	5.15	0.17	0.17	(N/A)
CB 8042	In Sag	5.82	0.09	5.09	0.45	0.45	(N/A)
CB 8043	In Sag	5.32	0.44	5.23	0.18	0.18	(N/A)
CB 8045	In Sag	5.25	0.94	4.65	0.54	3.27	(N/A)
CB 8046	In Sag	5.12	0.12	5.04	0.43	0	(N/A)
CB 8047	In Sag	5.29	0.29	3.54	3.84	-3.47	(N/A)
CB 8052	In Sag	5.36	1.56	5.4	0.59	0.71	(N/A)
CB 8054	On Grade	5.57	0.8	5.37	0.4	0.39	0.02
CB 8055	On Grade	5.94	1.2	5.38	0.31	0.3	0.01
CB 8056	In Sag	4.78	0.35	4.28	2.71	-2.12	(N/A)
CB 8059	In Sag	4.74	1.24	4.49	3.97	-3.85	(N/A)
CB 8061	In Sag	5.05	-0.18	4.65	0.52	1.1	(N/A)
CB 8063	In Sag	5.08	0.55	5.24	0.58	2.17	(N/A)
CB 8064	In Sag	5.23	0.63	5.41	4.4	-4.21	(N/A)
CB 8065	In Sag	5.23	0.93	3.97	0.68	1.9	(N/A)
CB 8066	In Sag	5.33	0.9	4.89	0.73	0.73	(N/A)
CB 13079	In Sag	5.22	-0.01	3.64	0.32	0.91	(N/A)
		Summation of Hydraulic Grade Line Elevations (ft)		**330.69**			

Catch Basin Drainage System 1 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6071	In Sag	4.35	-1.53	3.32	0.53	0.53	(N/A)
CB 2088	On Grade	6.03	-0.01	3.49	0.62	0.58	0.04
CB 2090	On Grade	5.95	-0.01	3.49	0.32	0.31	0.01
CB 2091	On Grade	5.79	-0.44	3.54	0.67	0.62	0.05
CB 2093	On Grade	6.09	0.36	3.63	0.15	0.12	0.03
CB 2095	In Sag	5.97	1.16	3.56	0.75	0.75	(N/A)
CB 2096	On Grade	6.14	1.2	3.54	0.15	0.12	0.03
CB 2098	On Grade	5.89	0.2	3.5	0.15	0.12	0.03
CB 3067	On Grade	6.11	0.79	3.52	0.84	0.38	0.46
CB 3068	On Grade	6.2	0.99	3.47	0.14	0.11	0.03
CB 3069	On Grade	5.63	0.6	3.56	0.52	0.28	0.24
CB 3071	On Grade	6.14	0.41	3.42	0.21	0.15	0.06
CB 3073	On Grade	5.99	1.56	3.69	0.06	0.06	0
CB 3074	On Grade	5.89	0.06	3.49	1.1	0.45	0.65
CB 3088	On Grade	5.42	0.75	3.39	0.12	0.1	0.02
CB 3089	On Grade	5.34	0.64	3.54	0.16	0.15	0
CB 3091	On Grade	5.38	0.64	3.43	0.25	0.25	0.01
CB 3094	In Sag	5.37	1.09	3.53	0.13	0.13	(N/A)
CB 3095	In Sag	5.4	0.99	3.58	0.12	0.12	(N/A)
CB 3096	In Sag	5.18	1.74	3.93	0.07	0.07	(N/A)
CB 3097	In Sag	5.28	1.64	3.92	0.09	0.09	(N/A)
CB 3099	In Sag	5.09	1.64	4.03	0.71	0.71	(N/A)
CB 6059	In Sag	5.14	-0.63	3.48	0.35	0.35	(N/A)
CB 6060	In Sag	5.24	-0.73	3.47	0.73	0.73	(N/A)
CB 6062	In Sag	4.35	-1.25	3.33	0.17	0.17	(N/A)
CB 6063	In Sag	4.64	-1.15	3.32	0.89	0.89	(N/A)
CB 6066	In Sag	3.69	-0.76	3.12	0.46	0.46	(N/A)
CB 6068	In Sag	4.3	-0.36	3.12	0.51	0.51	(N/A)
CB 6076	On Grade	4.57	-0.88	3.43	0.26	0.17	0.08
CB 6077	On Grade	4.68	-0.88	3.39	0.17	0.13	0.04
CB 6080	On Grade	4.94	-0.19	3.46	0.3	0.2	0.11
CB 6082	On Grade	4.83	-0.19	3.46	0.29	0.19	0.1
CB 6084	On Grade	5.15	0.82	3.39	0.18	0.13	0.04
CB 6085	On Grade	5.43	1.12	3.52	0.26	0.17	0.08
CB 6086	On Grade	4.98	0.51	3.59	0.8	0.72	0.08
CB 6088	On Grade	4.83	0.51	3.59	0.49	0.46	0.03
CB 6091	On Grade	4.87	-0.08	3.38	0.19	0.19	0
CB 6092	On Grade	4.75	0.75	3.47	0.29	0.28	0.01
CB 8006	On Grade	5.66	0.33	3.44	0.2	0.15	0.06
CB 8007	In Sag	6.01	1.68	3.83	0.41	0.41	(N/A)
CB 8010	In Sag	5.93	1.6	3.73	0.37	0.37	(N/A)
CB 8014	In Sag	5.5	-0.26	3.46	0.35	0.35	(N/A)
CB 8015	In Sag	5.59	1.41	3.72	0.37	0.37	(N/A)
CB 8016	In Sag	5.6	1.1	3.71	1.08	1.08	(N/A)
CB 8018	In Sag	5.7	1.44	3.73	0.29	0.29	(N/A)
CB 8020	On Grade	5.85	-0.54	3.47	0.34	0.21	0.13
CB 8023	On Grade	5.89	0.36	3.49	0.27	0.18	0.09
CB 8025	On Grade	6.39	1.4	3.56	0.17	0.13	0.04
CB 8027	In Sag	6.1	1.56	3.74	0.22	0.22	(N/A)
CB 8029	In Sag	6.2	0.26	3.7	0.19	0.19	(N/A)
CB 8030	On Grade	6.06	-0.16	3.51	0.46	0.44	0.02
CB 8031	On Grade	5.8	-0.26	3.51	0.2	0.2	0
CB 8033	On Grade	5.78	1.01	3.63	0.32	0.31	0.01
CB 8035	On Grade	5.65	1.01	3.55	0.09	0.09	0
CB 8037	On Grade	5.78	1.58	3.79	0.31	0.3	0.01
CB 8039	In Sag	5.9	0.05	3.52	0.17	0.17	(N/A)
CB 8042	In Sag	5.82	0.09	3.56	0.45	0.45	(N/A)
CB 8043	In Sag	5.32	0.44	3.47	0.18	0.18	(N/A)
CB 8045	In Sag	5.25	0.94	3.52	0.54	0.54	(N/A)
CB 8046	In Sag	5.12	0.12	3.68	0.43	0.43	(N/A)
CB 8047	In Sag	5.29	0.29	3.99	0.37	0.37	(N/A)
CB 8052	In Sag	5.36	1.56	3.92	0.59	0.59	(N/A)
CB 8054	On Grade	5.57	0.8	3.56	0.4	0.39	0.02
CB 8055	On Grade	5.94	1.2	3.42	0.31	0.3	0.01
CB 8056	In Sag	4.78	0.35	3.26	0.59	0.59	(N/A)
CB 8059	In Sag	4.74	1.24	3.48	0.12	0.12	(N/A)
CB 8061	In Sag	5.05	-0.18	3.41	0.52	0.52	(N/A)
CB 8063	In Sag	5.08	0.55	3.4	0.58	0.58	(N/A)
CB 8064	In Sag	5.23	0.63	3.36	0.18	0.18	(N/A)
CB 8065	In Sag	5.23	0.93	3.32	0.68	0.68	(N/A)
CB 8066	In Sag	5.33	0.9	3.5	0.73	0.73	(N/A)
CB 13079	In Sag	5.22	-0.01	3.25	0.32	0.32	(N/A)
		Summation of Hydraulic Grade Line Elevations (ft)		**254.28**			

Manholes Drainage System 1 Existing 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2089	6.29	1.99	3.21	48	Circular Structure
MH 2092	7.04	2.34	2.35	48	Circular Structure
MH 2094	8.67	-0.87	-0.28	48	Circular Structure
MH 2097	6.6	-0.6	-0.27	48	Circular Structure
MH 2099	6.66	-4.03	-0.28	72	Circular Structure
MH 3070	7.13	-0.04	0.42	72	Circular Structure
MH 3072	6.76	1.16	1.27	72	Circular Structure
MH 3075	6.33	-1.07	-0.66	48	Circular Structure
MH 3076	6.71	-4.13	-0.28	48	Circular Structure
MH 3090	5.94	2.24	2.55	72	Circular Structure
MH 3092	5.95	-1.55	-0.95	72	Circular Structure
MH 3093	5.88	2.38	2.56	48	Circular Structure
MH 3098	6.24	3.44	3.66	48	Circular Structure
MH 3100	6.07	3.17	3.32	48	Circular Structure
MH 6061	5.45	-2.65	-2.06	48	Circular Structure
MH 6065	5.28	-3.42	-2.07	72	Circular Structure
MH 6069	5.23	-4.17	-2.08	72	Circular Structure
MH 6070	4.96	-2.34	-2.06	48	Circular Structure
MH 6072	5.13	-1.97	-1.75	48	Circular Structure
MH 6073	5.36	-1.84	-1.62	48	Circular Structure
MH 6078	5.42	-2.08	-1.51	96	Circular Structure
MH 6081	5.21	-1.99	-1.48	48	Circular Structure
MH 6083	5.52	-1.38	-1.09	48	Circular Structure
MH 6087	5.21	2.41	2.82	48	Circular Structure
MH 6090	5.55	1.9	2.43	72	Circular Structure
MH 6093	5.94	1.44	1.85	48	Circular Structure
MH 8008	6.33	1.13	1.55	48	Circular Structure
MH 8009	6.32	0.82	1.56	48	Circular Structure
MH 8011	6.67	1.17	1.47	48	Circular Structure
MH 8013	6.14	0.34	1	96	Circular Structure
MH 8019	6.31	0.51	0.78	72	Circular Structure
MH 8021	6.78	-0.12	0.59	48	Circular Structure
MH 8022	6.76	-0.04	0.57	48	Circular Structure
MH 8024	7.17	-0.23	0.51	48	Circular Structure
MH 8026	7.2	0.1	0.45	48	Circular Structure
MH 8028	6.66	1.86	1.95	48	Circular Structure
MH 8032	6.57	1.17	1.45	48	Circular Structure
MH 8034	5.91	1.11	1.43	72	Circular Structure
MH 8036	6.38	0.86	1.38	72	Circular Structure
MH 8038	6.37	1.37	1.67	48	Circular Structure
MH 8040	6.32	1.72	1.96	48	Circular Structure
MH 8041	6.29	1.72	2.3	48	Circular Structure
MH 8044	5.64	0.44	0.85	48	Circular Structure
MH 8048	5.46	2.02	2.34	48	Circular Structure
MH 8049	6.19	2.09	2.35	48	Circular Structure
MH 8050	6.23	1.83	2.37	48	Circular Structure
MH 8053	6.36	1.66	2.38	48	Circular Structure
MH 8057	5.56	2.06	2.45	48	Circular Structure
MH 8058	5.48	3.14	3.15	48	Circular Structure
MH 8062	5.77	2.17	2.44	48	Circular Structure
MH 8067	6.1	2	2.29	48	Circular Structure
MH 8068	6.17	1.87	2.16	48	Circular Structure
MH 8069	6.39	1.59	1.82	48	Circular Structure
MH 11007	4.44	-4.26	-2.08	72	Circular Structure
MH 13086	6	2.69	2.73	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**53.87**		

Manholes Drainage System 1 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2089	6.29	1.99	3.21	48	Circular Structure
MH 2092	7.04	2.34	2.35	48	Circular Structure
MH 2094	8.67	-0.87	-0.66	48	Circular Structure
MH 2097	6.6	-0.6	-0.41	48	Circular Structure
MH 2099	6.66	-4.03	-2.75	72	Circular Structure
MH 3070	7.13	-0.04	0.42	72	Circular Structure
MH 3072	6.76	1.16	1.27	72	Circular Structure
MH 3075	6.33	-1.07	-0.91	48	Circular Structure
MH 3076	6.71	-4.13	-2.74	48	Circular Structure
MH 3090	5.94	2.24	2.55	72	Circular Structure
MH 3092	5.95	-1.55	-1.21	72	Circular Structure
MH 3093	5.88	2.38	2.56	48	Circular Structure
MH 3098	6.24	3.44	3.66	48	Circular Structure
MH 3100	6.07	3.17	3.32	48	Circular Structure
MH 6061	5.45	-2.65	-2.42	48	Circular Structure
MH 6065	5.28	-3.42	-3.21	72	Circular Structure
MH 6069	5.23	-4.17	-3.89	72	Circular Structure
MH 6070	4.96	-2.34	-2.16	48	Circular Structure
MH 6072	5.13	-1.97	-1.89	48	Circular Structure
MH 6073	5.36	-1.84	-1.7	48	Circular Structure
MH 6078	5.42	-2.08	-1.64	96	Circular Structure
MH 6081	5.21	-1.99	-1.63	48	Circular Structure
MH 6083	5.52	-1.38	-1.25	48	Circular Structure
MH 6087	5.21	2.41	2.82	48	Circular Structure
MH 6090	5.55	1.9	2.43	72	Circular Structure
MH 6093	5.94	1.44	1.85	48	Circular Structure
MH 8008	6.33	1.13	1.55	48	Circular Structure
MH 8009	6.32	0.82	1.53	48	Circular Structure
MH 8011	6.67	1.17	1.46	48	Circular Structure
MH 8013	6.14	0.34	0.97	96	Circular Structure
MH 8019	6.31	0.51	0.76	72	Circular Structure
MH 8021	6.78	-0.12	0.48	48	Circular Structure
MH 8022	6.76	-0.04	0.45	48	Circular Structure
MH 8024	7.17	-0.23	0.39	48	Circular Structure
MH 8026	7.2	0.1	0.32	48	Circular Structure
MH 8028	6.66	1.86	1.95	48	Circular Structure
MH 8032	6.57	1.17	1.44	48	Circular Structure
MH 8034	5.91	1.11	1.42	72	Circular Structure
MH 8036	6.38	0.86	1.34	72	Circular Structure
MH 8038	6.37	1.37	1.64	48	Circular Structure
MH 8040	6.32	1.72	1.93	48	Circular Structure
MH 8041	6.29	1.72	2.3	48	Circular Structure
MH 8044	5.64	0.44	0.81	48	Circular Structure
MH 8048	5.46	2.02	2.32	48	Circular Structure
MH 8049	6.19	2.09	2.34	48	Circular Structure
MH 8050	6.23	1.83	2.35	48	Circular Structure
MH 8053	6.36	1.66	2.36	48	Circular Structure
MH 8057	5.56	2.06	2.45	48	Circular Structure
MH 8058	5.48	3.14	3.15	48	Circular Structure
MH 8062	5.77	2.17	2.44	48	Circular Structure
MH 8067	6.1	2	2.29	48	Circular Structure
MH 8068	6.17	1.87	2.16	48	Circular Structure
MH 8069	6.39	1.59	1.82	48	Circular Structure
MH 11007	4.44	-4.26	-3.85	72	Circular Structure
MH 13086	6	2.69	2.73	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**41.27**		

Manholes Drainage System 1 Existing 10 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2089	6.29	1.99	3.49	48	Circular Structure
MH 2092	7.04	2.34	2.85	48	Circular Structure
MH 2094	8.67	-0.87	1.56	48	Circular Structure
MH 2097	6.6	-0.6	1.59	48	Circular Structure
MH 2099	6.66	-4.03	1.49	72	Circular Structure
MH 3070	7.13	-0.04	1.57	72	Circular Structure
MH 3072	6.76	1.16	1.58	72	Circular Structure
MH 3075	6.33	-1.07	1.46	48	Circular Structure
MH 3076	6.71	-4.13	1.42	48	Circular Structure
MH 3090	5.94	2.24	2.83	72	Circular Structure
MH 3092	5.95	-1.55	1.09	72	Circular Structure
MH 3093	5.88	2.38	2.85	48	Circular Structure
MH 3098	6.24	3.44	3.93	48	Circular Structure
MH 3100	6.07	3.17	3.54	48	Circular Structure
MH 6061	5.45	-2.65	-1.03	48	Circular Structure
MH 6065	5.28	-3.42	-1.51	72	Circular Structure
MH 6069	5.23	-4.17	-1.85	72	Circular Structure
MH 6070	4.96	-2.34	-0.76	48	Circular Structure
MH 6072	5.13	-1.97	-0.19	48	Circular Structure
MH 6073	5.36	-1.84	-0.14	48	Circular Structure
MH 6078	5.42	-2.08	0.27	96	Circular Structure
MH 6081	5.21	-1.99	0.57	48	Circular Structure
MH 6083	5.52	-1.38	0.91	48	Circular Structure
MH 6087	5.21	2.41	3.43	48	Circular Structure
MH 6090	5.55	1.9	2.71	72	Circular Structure
MH 6093	5.94	1.44	2.41	48	Circular Structure
MH 8008	6.33	1.13	2.91	48	Circular Structure
MH 8009	6.32	0.82	2.9	48	Circular Structure
MH 8011	6.67	1.17	2.84	48	Circular Structure
MH 8013	6.14	0.34	2.72	96	Circular Structure
MH 8019	6.31	0.51	2.68	72	Circular Structure
MH 8021	6.78	-0.12	2.57	48	Circular Structure
MH 8022	6.76	-0.04	2.55	48	Circular Structure
MH 8024	7.17	-0.23	2.07	48	Circular Structure
MH 8026	7.2	0.1	2.01	48	Circular Structure
MH 8028	6.66	1.86	2.06	48	Circular Structure
MH 8032	6.57	1.17	2.74	48	Circular Structure
MH 8034	5.91	1.11	2.74	72	Circular Structure
MH 8036	6.38	0.86	2.71	72	Circular Structure
MH 8038	6.37	1.37	2.75	48	Circular Structure
MH 8040	6.32	1.72	2.76	48	Circular Structure
MH 8041	6.29	1.72	2.74	48	Circular Structure
MH 8044	5.64	0.44	2.68	48	Circular Structure
MH 8048	5.46	2.02	2.84	48	Circular Structure
MH 8049	6.19	2.09	2.85	48	Circular Structure
MH 8050	6.23	1.83	2.88	48	Circular Structure
MH 8053	6.36	1.66	2.9	48	Circular Structure
MH 8057	5.56	2.06	3.01	48	Circular Structure
MH 8058	5.48	3.14	3.48	48	Circular Structure
MH 8062	5.77	2.17	2.99	48	Circular Structure
MH 8067	6.1	2	2.96	48	Circular Structure
MH 8068	6.17	1.87	2.94	48	Circular Structure
MH 8069	6.39	1.59	2.92	48	Circular Structure
MH 11007	4.44	-4.26	-1.7	72	Circular Structure
MH 13086	6	2.69	3.13	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**111.7**		

Manholes Drainage System 1 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2089	6.29	1.99	3.49	48	Circular Structure
MH 2092	7.04	2.34	2.85	48	Circular Structure
MH 2094	8.67	-0.87	1.51	48	Circular Structure
MH 2097	6.6	-0.6	1.51	48	Circular Structure
MH 2099	6.66	-4.03	1.51	72	Circular Structure
MH 3070	7.13	-0.04	1.58	72	Circular Structure
MH 3072	6.76	1.16	1.51	72	Circular Structure
MH 3075	6.33	-1.07	1.43	48	Circular Structure
MH 3076	6.71	-4.13	1.46	48	Circular Structure
MH 3090	5.94	2.24	2.83	72	Circular Structure
MH 3092	5.95	-1.55	1.09	72	Circular Structure
MH 3093	5.88	2.38	2.85	48	Circular Structure
MH 3098	6.24	3.44	3.93	48	Circular Structure
MH 3100	6.07	3.17	3.54	48	Circular Structure
MH 6061	5.45	-2.65	-1.03	48	Circular Structure
MH 6065	5.28	-3.42	-1.52	72	Circular Structure
MH 6069	5.23	-4.17	-1.85	72	Circular Structure
MH 6070	4.96	-2.34	-0.77	48	Circular Structure
MH 6072	5.13	-1.97	-0.2	48	Circular Structure
MH 6073	5.36	-1.84	-0.14	48	Circular Structure
MH 6078	5.42	-2.08	0.26	96	Circular Structure
MH 6081	5.21	-1.99	0.57	48	Circular Structure
MH 6083	5.52	-1.38	0.9	48	Circular Structure
MH 6087	5.21	2.41	3.43	48	Circular Structure
MH 6090	5.55	1.9	2.71	72	Circular Structure
MH 6093	5.94	1.44	2.41	48	Circular Structure
MH 8008	6.33	1.13	2.9	48	Circular Structure
MH 8009	6.32	0.82	2.89	48	Circular Structure
MH 8011	6.67	1.17	2.82	48	Circular Structure
MH 8013	6.14	0.34	2.72	96	Circular Structure
MH 8019	6.31	0.51	2.67	72	Circular Structure
MH 8021	6.78	-0.12	2.56	48	Circular Structure
MH 8022	6.76	-0.04	2.54	48	Circular Structure
MH 8024	7.17	-0.23	2.07	48	Circular Structure
MH 8026	7.2	0.1	2.01	48	Circular Structure
MH 8028	6.66	1.86	2.04	48	Circular Structure
MH 8032	6.57	1.17	2.72	48	Circular Structure
MH 8034	5.91	1.11	2.72	72	Circular Structure
MH 8036	6.38	0.86	2.68	72	Circular Structure
MH 8038	6.37	1.37	2.77	48	Circular Structure
MH 8040	6.32	1.72	2.74	48	Circular Structure
MH 8041	6.29	1.72	2.7	48	Circular Structure
MH 8044	5.64	0.44	2.67	48	Circular Structure
MH 8048	5.46	2.02	2.84	48	Circular Structure
MH 8049	6.19	2.09	2.85	48	Circular Structure
MH 8050	6.23	1.83	2.88	48	Circular Structure
MH 8053	6.36	1.66	2.89	48	Circular Structure
MH 8057	5.56	2.06	3.01	48	Circular Structure
MH 8058	5.48	3.14	3.48	48	Circular Structure
MH 8062	5.77	2.17	2.99	48	Circular Structure
MH 8067	6.1	2	2.95	48	Circular Structure
MH 8068	6.17	1.87	2.93	48	Circular Structure
MH 8069	6.39	1.59	2.91	48	Circular Structure
MH 11007	4.44	-4.26	-1.7	72	Circular Structure
MH 13086	6	2.69	3.13	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**111.24**		

Manholes Drainage System 1 Existing 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2089	6.29	1.99	3.21	48	Circular Structure
MH 2092	7.04	2.34	2.35	48	Circular Structure
MH 2094	8.67	-0.87	2	48	Circular Structure
MH 2097	6.6	-0.6	2	48	Circular Structure
MH 2099	6.66	-4.03	2	72	Circular Structure
MH 3070	7.13	-0.04	2	72	Circular Structure
MH 3072	6.76	1.16	2	72	Circular Structure
MH 3075	6.33	-1.07	1.99	48	Circular Structure
MH 3076	6.71	-4.13	1.99	48	Circular Structure
MH 3090	5.94	2.24	2.55	72	Circular Structure
MH 3092	5.95	-1.55	1.98	72	Circular Structure
MH 3093	5.88	2.38	2.56	48	Circular Structure
MH 3098	6.24	3.44	3.66	48	Circular Structure
MH 3100	6.07	3.17	3.32	48	Circular Structure
MH 6061	5.45	-2.65	1.9	48	Circular Structure
MH 6065	5.28	-3.42	1.89	72	Circular Structure
MH 6069	5.23	-4.17	1.87	72	Circular Structure
MH 6070	4.96	-2.34	1.91	48	Circular Structure
MH 6072	5.13	-1.97	1.92	48	Circular Structure
MH 6073	5.36	-1.84	1.92	48	Circular Structure
MH 6078	5.42	-2.08	1.93	96	Circular Structure
MH 6081	5.21	-1.99	1.95	48	Circular Structure
MH 6083	5.52	-1.38	1.96	48	Circular Structure
MH 6087	5.21	2.41	2.81	48	Circular Structure
MH 6090	5.55	1.9	2.43	72	Circular Structure
MH 6093	5.94	1.44	1.97	48	Circular Structure
MH 8008	6.33	1.13	2.08	48	Circular Structure
MH 8009	6.32	0.82	2.08	48	Circular Structure
MH 8011	6.67	1.17	2.07	48	Circular Structure
MH 8013	6.14	0.34	2.05	96	Circular Structure
MH 8019	6.31	0.51	2.05	72	Circular Structure
MH 8021	6.78	-0.12	2.04	48	Circular Structure
MH 8022	6.76	-0.04	2.04	48	Circular Structure
MH 8024	7.17	-0.23	2.02	48	Circular Structure
MH 8026	7.2	0.1	2.02	48	Circular Structure
MH 8028	6.66	1.86	2.02	48	Circular Structure
MH 8032	6.57	1.17	2.05	48	Circular Structure
MH 8034	5.91	1.11	2.06	72	Circular Structure
MH 8036	6.38	0.86	2.05	72	Circular Structure
MH 8038	6.37	1.37	2.06	48	Circular Structure
MH 8040	6.32	1.72	2.06	48	Circular Structure
MH 8041	6.29	1.72	2.28	48	Circular Structure
MH 8044	5.64	0.44	2.05	48	Circular Structure
MH 8048	5.46	2.02	2.32	48	Circular Structure
MH 8049	6.19	2.09	2.34	48	Circular Structure
MH 8050	6.23	1.83	2.36	48	Circular Structure
MH 8053	6.36	1.66	2.37	48	Circular Structure
MH 8057	5.56	2.06	2.45	48	Circular Structure
MH 8058	5.48	3.14	3.15	48	Circular Structure
MH 8062	5.77	2.17	2.44	48	Circular Structure
MH 8067	6.1	2	2.29	48	Circular Structure
MH 8068	6.17	1.87	2.15	48	Circular Structure
MH 8069	6.39	1.59	2.08	48	Circular Structure
MH 11007	4.44	-4.26	1.87	72	Circular Structure
MH 13086	6	2.69	2.73	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**121.7**		

Manholes Drainage System 1 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2089	6.29	1.99	3.21	48	Circular Structure
MH 2092	7.04	2.34	2.35	48	Circular Structure
MH 2094	8.67	-0.87	-0.66	48	Circular Structure
MH 2097	6.6	-0.6	-0.41	48	Circular Structure
MH 2099	6.66	-4.03	-2.75	72	Circular Structure
MH 3070	7.13	-0.04	0.42	72	Circular Structure
MH 3072	6.76	1.16	1.27	72	Circular Structure
MH 3075	6.33	-1.07	-0.91	48	Circular Structure
MH 3076	6.71	-4.13	-2.74	48	Circular Structure
MH 3090	5.94	2.24	2.55	72	Circular Structure
MH 3092	5.95	-1.55	-1.21	72	Circular Structure
MH 3093	5.88	2.38	2.56	48	Circular Structure
MH 3098	6.24	3.44	3.66	48	Circular Structure
MH 3100	6.07	3.17	3.32	48	Circular Structure
MH 6061	5.45	-2.65	-2.42	48	Circular Structure
MH 6065	5.28	-3.42	-3.21	72	Circular Structure
MH 6069	5.23	-4.17	-3.89	72	Circular Structure
MH 6070	4.96	-2.34	-2.16	48	Circular Structure
MH 6072	5.13	-1.97	-1.89	48	Circular Structure
MH 6073	5.36	-1.84	-1.7	48	Circular Structure
MH 6078	5.42	-2.08	-1.64	96	Circular Structure
MH 6081	5.21	-1.99	-1.63	48	Circular Structure
MH 6083	5.52	-1.38	-1.25	48	Circular Structure
MH 6087	5.21	2.41	2.82	48	Circular Structure
MH 6090	5.55	1.9	2.43	72	Circular Structure
MH 6093	5.94	1.44	1.85	48	Circular Structure
MH 8008	6.33	1.13	1.55	48	Circular Structure
MH 8009	6.32	0.82	1.53	48	Circular Structure
MH 8011	6.67	1.17	1.46	48	Circular Structure
MH 8013	6.14	0.34	0.97	96	Circular Structure
MH 8019	6.31	0.51	0.76	72	Circular Structure
MH 8021	6.78	-0.12	0.48	48	Circular Structure
MH 8022	6.76	-0.04	0.45	48	Circular Structure
MH 8024	7.17	-0.23	0.39	48	Circular Structure
MH 8026	7.2	0.1	0.32	48	Circular Structure
MH 8028	6.66	1.86	1.95	48	Circular Structure
MH 8032	6.57	1.17	1.44	48	Circular Structure
MH 8034	5.91	1.11	1.42	72	Circular Structure
MH 8036	6.38	0.86	1.34	72	Circular Structure
MH 8038	6.37	1.37	1.64	48	Circular Structure
MH 8040	6.32	1.72	1.93	48	Circular Structure
MH 8041	6.29	1.72	2.3	48	Circular Structure
MH 8044	5.64	0.44	0.81	48	Circular Structure
MH 8048	5.46	2.02	2.32	48	Circular Structure
MH 8049	6.19	2.09	2.34	48	Circular Structure
MH 8050	6.23	1.83	2.35	48	Circular Structure
MH 8053	6.36	1.66	2.36	48	Circular Structure
MH 8057	5.56	2.06	2.45	48	Circular Structure
MH 8058	5.48	3.14	3.15	48	Circular Structure
MH 8062	5.77	2.17	2.44	48	Circular Structure
MH 8067	6.1	2	2.29	48	Circular Structure
MH 8068	6.17	1.87	2.16	48	Circular Structure
MH 8069	6.39	1.59	1.82	48	Circular Structure
MH 11007	4.44	-4.26	-3.85	72	Circular Structure
MH 13086	6	2.69	2.73	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**41.27**		

Manholes Drainage System 1 Existing 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2089	6.29	1.99	4.21	48	Circular Structure
MH 2092	7.04	2.34	4.14	48	Circular Structure
MH 2094	8.67	-0.87	4.09	48	Circular Structure
MH 2097	6.6	-0.6	4.15	48	Circular Structure
MH 2099	6.66	-4.03	4.06	72	Circular Structure
MH 3070	7.13	-0.04	4.14	72	Circular Structure
MH 3072	6.76	1.16	4.14	72	Circular Structure
MH 3075	6.33	-1.07	4	48	Circular Structure
MH 3076	6.71	-4.13	4.02	48	Circular Structure
MH 3090	5.94	2.24	3.72	72	Circular Structure
MH 3092	5.95	-1.55	3.72	72	Circular Structure
MH 3093	5.88	2.38	3.72	48	Circular Structure
MH 3098	6.24	3.44	3.93	48	Circular Structure
MH 3100	6.07	3.17	3.54	48	Circular Structure
MH 6061	5.45	-2.65	2.58	48	Circular Structure
MH 6065	5.28	-3.42	2.37	72	Circular Structure
MH 6069	5.23	-4.17	2.05	72	Circular Structure
MH 6070	4.96	-2.34	2.66	48	Circular Structure
MH 6072	5.13	-1.97	2.84	48	Circular Structure
MH 6073	5.36	-1.84	2.81	48	Circular Structure
MH 6078	5.42	-2.08	2.97	96	Circular Structure
MH 6081	5.21	-1.99	3.24	48	Circular Structure
MH 6083	5.52	-1.38	3.55	48	Circular Structure
MH 6087	5.21	2.41	3.43	48	Circular Structure
MH 6090	5.55	1.9	3.04	72	Circular Structure
MH 6093	5.94	1.44	3.06	48	Circular Structure
MH 8008	6.33	1.13	4.82	48	Circular Structure
MH 8009	6.32	0.82	4.83	48	Circular Structure
MH 8011	6.67	1.17	4.81	48	Circular Structure
MH 8013	6.14	0.34	4.81	96	Circular Structure
MH 8019	6.31	0.51	4.79	72	Circular Structure
MH 8021	6.78	-0.12	4.75	48	Circular Structure
MH 8022	6.76	-0.04	4.75	48	Circular Structure
MH 8024	7.17	-0.23	4.47	48	Circular Structure
MH 8026	7.2	0.1	4.43	48	Circular Structure
MH 8028	6.66	1.86	4.46	48	Circular Structure
MH 8032	6.57	1.17	4.91	48	Circular Structure
MH 8034	5.91	1.11	4.9	72	Circular Structure
MH 8036	6.38	0.86	4.86	72	Circular Structure
MH 8038	6.37	1.37	4.94	48	Circular Structure
MH 8040	6.32	1.72	4.96	48	Circular Structure
MH 8041	6.29	1.72	4.97	48	Circular Structure
MH 8044	5.64	0.44	4.84	48	Circular Structure
MH 8048	5.46	2.02	5.13	48	Circular Structure
MH 8049	6.19	2.09	5.08	48	Circular Structure
MH 8050	6.23	1.83	5.15	48	Circular Structure
MH 8053	6.36	1.66	5.26	48	Circular Structure
MH 8057	5.56	2.06	5.15	48	Circular Structure
MH 8058	5.48	3.14	5.03	48	Circular Structure
MH 8062	5.77	2.17	4.92	48	Circular Structure
MH 8067	6.1	2	4.71	48	Circular Structure
MH 8068	6.17	1.87	4.72	48	Circular Structure
MH 8069	6.39	1.59	4.79	48	Circular Structure
MH 11007	4.44	-4.26	2.15	72	Circular Structure
MH 13086	6	2.69	4.15	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**227.72**		

Manholes Drainage System 1 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2089	6.29	1.99	3.49	48	Circular Structure
MH 2092	7.04	2.34	3.08	48	Circular Structure
MH 2094	8.67	-0.87	3.09	48	Circular Structure
MH 2097	6.6	-0.6	3.08	48	Circular Structure
MH 2099	6.66	-4.03	3.06	72	Circular Structure
MH 3070	7.13	-0.04	3.12	72	Circular Structure
MH 3072	6.76	1.16	3.07	72	Circular Structure
MH 3075	6.33	-1.07	2.98	48	Circular Structure
MH 3076	6.71	-4.13	3	48	Circular Structure
MH 3090	5.94	2.24	2.9	72	Circular Structure
MH 3092	5.95	-1.55	2.91	72	Circular Structure
MH 3093	5.88	2.38	2.89	48	Circular Structure
MH 3098	6.24	3.44	3.93	48	Circular Structure
MH 3100	6.07	3.17	3.54	48	Circular Structure
MH 6061	5.45	-2.65	2.34	48	Circular Structure
MH 6065	5.28	-3.42	2.2	72	Circular Structure
MH 6069	5.23	-4.17	1.98	72	Circular Structure
MH 6070	4.96	-2.34	2.38	48	Circular Structure
MH 6072	5.13	-1.97	2.45	48	Circular Structure
MH 6073	5.36	-1.84	2.47	48	Circular Structure
MH 6078	5.42	-2.08	2.53	96	Circular Structure
MH 6081	5.21	-1.99	2.66	48	Circular Structure
MH 6083	5.52	-1.38	2.81	48	Circular Structure
MH 6087	5.21	2.41	3.43	48	Circular Structure
MH 6090	5.55	1.9	2.71	72	Circular Structure
MH 6093	5.94	1.44	2.64	48	Circular Structure
MH 8008	6.33	1.13	3.28	48	Circular Structure
MH 8009	6.32	0.82	3.28	48	Circular Structure
MH 8011	6.67	1.17	3.29	48	Circular Structure
MH 8013	6.14	0.34	3.32	96	Circular Structure
MH 8019	6.31	0.51	3.3	72	Circular Structure
MH 8021	6.78	-0.12	3.27	48	Circular Structure
MH 8022	6.76	-0.04	3.27	48	Circular Structure
MH 8024	7.17	-0.23	3.18	48	Circular Structure
MH 8026	7.2	0.1	3.17	48	Circular Structure
MH 8028	6.66	1.86	3.15	48	Circular Structure
MH 8032	6.57	1.17	3.32	48	Circular Structure
MH 8034	5.91	1.11	3.31	72	Circular Structure
MH 8036	6.38	0.86	3.26	72	Circular Structure
MH 8038	6.37	1.37	3.28	48	Circular Structure
MH 8040	6.32	1.72	3.27	48	Circular Structure
MH 8041	6.29	1.72	3.28	48	Circular Structure
MH 8044	5.64	0.44	3.26	48	Circular Structure
MH 8048	5.46	2.02	3.34	48	Circular Structure
MH 8049	6.19	2.09	3.35	48	Circular Structure
MH 8050	6.23	1.83	3.34	48	Circular Structure
MH 8053	6.36	1.66	3.4	48	Circular Structure
MH 8057	5.56	2.06	3.25	48	Circular Structure
MH 8058	5.48	3.14	3.48	48	Circular Structure
MH 8062	5.77	2.17	3.3	48	Circular Structure
MH 8067	6.1	2	3.28	48	Circular Structure
MH 8068	6.17	1.87	3.27	48	Circular Structure
MH 8069	6.39	1.59	3.27	48	Circular Structure
MH 11007	4.44	-4.26	2.04	72	Circular Structure
MH 13086	6	2.69	3.17	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**168.72**		

Manholes Drainage System 1 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2089	6.29	1.99	3.24	48	Circular Structure
MH 2092	7.04	2.34	3.16	48	Circular Structure
MH 2094	8.67	-0.87	3.16	48	Circular Structure
MH 2097	6.6	-0.6	3.16	48	Circular Structure
MH 2099	6.66	-4.03	3.16	72	Circular Structure
MH 3070	7.13	-0.04	3.16	72	Circular Structure
MH 3072	6.76	1.16	3.16	72	Circular Structure
MH 3075	6.33	-1.07	3.15	48	Circular Structure
MH 3076	6.71	-4.13	3.15	48	Circular Structure
MH 3090	5.94	2.24	3.13	72	Circular Structure
MH 3092	5.95	-1.55	3.13	72	Circular Structure
MH 3093	5.88	2.38	3.13	48	Circular Structure
MH 3098	6.24	3.44	3.66	48	Circular Structure
MH 3100	6.07	3.17	3.32	48	Circular Structure
MH 6061	5.45	-2.65	3.03	48	Circular Structure
MH 6065	5.28	-3.42	3.01	72	Circular Structure
MH 6069	5.23	-4.17	2.98	72	Circular Structure
MH 6070	4.96	-2.34	3.03	48	Circular Structure
MH 6072	5.13	-1.97	3.05	48	Circular Structure
MH 6073	5.36	-1.84	3.05	48	Circular Structure
MH 6078	5.42	-2.08	3.06	96	Circular Structure
MH 6081	5.21	-1.99	3.08	48	Circular Structure
MH 6083	5.52	-1.38	3.11	48	Circular Structure
MH 6087	5.21	2.41	3.09	48	Circular Structure
MH 6090	5.55	1.9	3.06	72	Circular Structure
MH 6093	5.94	1.44	3.07	48	Circular Structure
MH 8008	6.33	1.13	3.24	48	Circular Structure
MH 8009	6.32	0.82	3.24	48	Circular Structure
MH 8011	6.67	1.17	3.24	48	Circular Structure
MH 8013	6.14	0.34	3.23	96	Circular Structure
MH 8019	6.31	0.51	3.23	72	Circular Structure
MH 8021	6.78	-0.12	3.22	48	Circular Structure
MH 8022	6.76	-0.04	3.22	48	Circular Structure
MH 8024	7.17	-0.23	3.19	48	Circular Structure
MH 8026	7.2	0.1	3.19	48	Circular Structure
MH 8028	6.66	1.86	3.19	48	Circular Structure
MH 8032	6.57	1.17	3.23	48	Circular Structure
MH 8034	5.91	1.11	3.23	72	Circular Structure
MH 8036	6.38	0.86	3.23	72	Circular Structure
MH 8038	6.37	1.37	3.23	48	Circular Structure
MH 8040	6.32	1.72	3.24	48	Circular Structure
MH 8041	6.29	1.72	3.23	48	Circular Structure
MH 8044	5.64	0.44	3.23	48	Circular Structure
MH 8048	5.46	2.02	3.24	48	Circular Structure
MH 8049	6.19	2.09	3.24	48	Circular Structure
MH 8050	6.23	1.83	3.24	48	Circular Structure
MH 8053	6.36	1.66	3.24	48	Circular Structure
MH 8057	5.56	2.06	3.25	48	Circular Structure
MH 8058	5.48	3.14	3.43	48	Circular Structure
MH 8062	5.77	2.17	3.25	48	Circular Structure
MH 8067	6.1	2	3.25	48	Circular Structure
MH 8068	6.17	1.87	3.25	48	Circular Structure
MH 8069	6.39	1.59	3.24	48	Circular Structure
MH 11007	4.44	-4.26	2.99	72	Circular Structure
MH 13086	6	2.69	3.17	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**175.09**		

Manholes Drainage System 1 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2089	6.29	1.99	3.21	48	Circular Structure
MH 2092	7.04	2.34	2.35	48	Circular Structure
MH 2094	8.67	-0.87	-0.66	48	Circular Structure
MH 2097	6.6	-0.6	-0.41	48	Circular Structure
MH 2099	6.66	-4.03	-2.75	72	Circular Structure
MH 3070	7.13	-0.04	0.42	72	Circular Structure
MH 3072	6.76	1.16	1.27	72	Circular Structure
MH 3075	6.33	-1.07	-0.91	48	Circular Structure
MH 3076	6.71	-4.13	-2.74	48	Circular Structure
MH 3090	5.94	2.24	2.55	72	Circular Structure
MH 3092	5.95	-1.55	-1.21	72	Circular Structure
MH 3093	5.88	2.38	2.56	48	Circular Structure
MH 3098	6.24	3.44	3.66	48	Circular Structure
MH 3100	6.07	3.17	3.32	48	Circular Structure
MH 6061	5.45	-2.65	-2.42	48	Circular Structure
MH 6065	5.28	-3.42	-3.21	72	Circular Structure
MH 6069	5.23	-4.17	-3.89	72	Circular Structure
MH 6070	4.96	-2.34	-2.16	48	Circular Structure
MH 6072	5.13	-1.97	-1.89	48	Circular Structure
MH 6073	5.36	-1.84	-1.7	48	Circular Structure
MH 6078	5.42	-2.08	-1.64	96	Circular Structure
MH 6081	5.21	-1.99	-1.63	48	Circular Structure
MH 6083	5.52	-1.38	-1.25	48	Circular Structure
MH 6087	5.21	2.41	2.82	48	Circular Structure
MH 6090	5.55	1.9	2.43	72	Circular Structure
MH 6093	5.94	1.44	1.85	48	Circular Structure
MH 8008	6.33	1.13	1.55	48	Circular Structure
MH 8009	6.32	0.82	1.53	48	Circular Structure
MH 8011	6.67	1.17	1.46	48	Circular Structure
MH 8013	6.14	0.34	0.97	96	Circular Structure
MH 8019	6.31	0.51	0.76	72	Circular Structure
MH 8021	6.78	-0.12	0.48	48	Circular Structure
MH 8022	6.76	-0.04	0.45	48	Circular Structure
MH 8024	7.17	-0.23	0.39	48	Circular Structure
MH 8026	7.2	0.1	0.32	48	Circular Structure
MH 8028	6.66	1.86	1.95	48	Circular Structure
MH 8032	6.57	1.17	1.44	48	Circular Structure
MH 8034	5.91	1.11	1.42	72	Circular Structure
MH 8036	6.38	0.86	1.34	72	Circular Structure
MH 8038	6.37	1.37	1.64	48	Circular Structure
MH 8040	6.32	1.72	1.93	48	Circular Structure
MH 8041	6.29	1.72	2.3	48	Circular Structure
MH 8044	5.64	0.44	0.81	48	Circular Structure
MH 8048	5.46	2.02	2.32	48	Circular Structure
MH 8049	6.19	2.09	2.34	48	Circular Structure
MH 8050	6.23	1.83	2.35	48	Circular Structure
MH 8053	6.36	1.66	2.36	48	Circular Structure
MH 8057	5.56	2.06	2.45	48	Circular Structure
MH 8058	5.48	3.14	3.15	48	Circular Structure
MH 8062	5.77	2.17	2.44	48	Circular Structure
MH 8067	6.1	2	2.29	48	Circular Structure
MH 8068	6.17	1.87	2.16	48	Circular Structure
MH 8069	6.39	1.59	1.82	48	Circular Structure
MH 11007	4.44	-4.26	-3.85	72	Circular Structure
MH 13086	6	2.69	2.73	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**41.27**		

Manholes Drainage System 1 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2089	6.29	1.99	4.81	48	Circular Structure
MH 2092	7.04	2.34	4.75	48	Circular Structure
MH 2094	8.67	-0.87	4.74	48	Circular Structure
MH 2097	6.6	-0.6	4.75	48	Circular Structure
MH 2099	6.66	-4.03	4.69	72	Circular Structure
MH 3070	7.13	-0.04	4.78	72	Circular Structure
MH 3072	6.76	1.16	4.78	72	Circular Structure
MH 3075	6.33	-1.07	4.65	48	Circular Structure
MH 3076	6.71	-4.13	4.67	48	Circular Structure
MH 3090	5.94	2.24	4.45	72	Circular Structure
MH 3092	5.95	-1.55	4.46	72	Circular Structure
MH 3093	5.88	2.38	4.48	48	Circular Structure
MH 3098	6.24	3.44	4.35	48	Circular Structure
MH 3100	6.07	3.17	4.33	48	Circular Structure
MH 6061	5.45	-2.65	3.58	48	Circular Structure
MH 6065	5.28	-3.42	3.39	72	Circular Structure
MH 6069	5.23	-4.17	3.12	72	Circular Structure
MH 6070	4.96	-2.34	3.63	48	Circular Structure
MH 6072	5.13	-1.97	3.73	48	Circular Structure
MH 6073	5.36	-1.84	3.79	48	Circular Structure
MH 6078	5.42	-2.08	3.89	96	Circular Structure
MH 6081	5.21	-1.99	4.09	48	Circular Structure
MH 6083	5.52	-1.38	4.34	48	Circular Structure
MH 6087	5.21	2.41	4.31	48	Circular Structure
MH 6090	5.55	1.9	4.01	72	Circular Structure
MH 6093	5.94	1.44	3.97	48	Circular Structure
MH 8008	6.33	1.13	5.14	48	Circular Structure
MH 8009	6.32	0.82	5.14	48	Circular Structure
MH 8011	6.67	1.17	5.13	48	Circular Structure
MH 8013	6.14	0.34	5.08	96	Circular Structure
MH 8019	6.31	0.51	5.07	72	Circular Structure
MH 8021	6.78	-0.12	5.1	48	Circular Structure
MH 8022	6.76	-0.04	5.09	48	Circular Structure
MH 8024	7.17	-0.23	4.93	48	Circular Structure
MH 8026	7.2	0.1	4.9	48	Circular Structure
MH 8028	6.66	1.86	5.04	48	Circular Structure
MH 8032	6.57	1.17	5.22	48	Circular Structure
MH 8034	5.91	1.11	5.2	72	Circular Structure
MH 8036	6.38	0.86	5.14	72	Circular Structure
MH 8038	6.37	1.37	5.16	48	Circular Structure
MH 8040	6.32	1.72	5.24	48	Circular Structure
MH 8041	6.29	1.72	5.1	48	Circular Structure
MH 8044	5.64	0.44	5.26	48	Circular Structure
MH 8048	5.46	2.02	5.46	48	Circular Structure
MH 8049	6.19	2.09	5.37	48	Circular Structure
MH 8050	6.23	1.83	5.37	48	Circular Structure
MH 8053	6.36	1.66	5.36	48	Circular Structure
MH 8057	5.56	2.06	5.33	48	Circular Structure
MH 8058	5.48	3.14	4.96	48	Circular Structure
MH 8062	5.77	2.17	5.12	48	Circular Structure
MH 8067	6.1	2	4.92	48	Circular Structure
MH 8068	6.17	1.87	4.93	48	Circular Structure
MH 8069	6.39	1.59	5.04	48	Circular Structure
MH 11007	4.44	-4.26	3.21	72	Circular Structure
MH 13086	6	2.69	4.78	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**257.33**		

Manholes Drainage System 1 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2089	6.29	1.99	3.49	48	Circular Structure
MH 2092	7.04	2.34	3.63	48	Circular Structure
MH 2094	8.67	-0.87	3.49	48	Circular Structure
MH 2097	6.6	-0.6	3.54	48	Circular Structure
MH 2099	6.66	-4.03	3.54	72	Circular Structure
MH 3070	7.13	-0.04	3.52	72	Circular Structure
MH 3072	6.76	1.16	3.65	72	Circular Structure
MH 3075	6.33	-1.07	3.52	48	Circular Structure
MH 3076	6.71	-4.13	3.53	48	Circular Structure
MH 3090	5.94	2.24	3.47	72	Circular Structure
MH 3092	5.95	-1.55	3.48	72	Circular Structure
MH 3093	5.88	2.38	3.5	48	Circular Structure
MH 3098	6.24	3.44	3.92	48	Circular Structure
MH 3100	6.07	3.17	3.64	48	Circular Structure
MH 6061	5.45	-2.65	3.29	48	Circular Structure
MH 6065	5.28	-3.42	3.2	72	Circular Structure
MH 6069	5.23	-4.17	3.07	72	Circular Structure
MH 6070	4.96	-2.34	3.33	48	Circular Structure
MH 6072	5.13	-1.97	3.33	48	Circular Structure
MH 6073	5.36	-1.84	3.41	48	Circular Structure
MH 6078	5.42	-2.08	3.41	96	Circular Structure
MH 6081	5.21	-1.99	3.46	48	Circular Structure
MH 6083	5.52	-1.38	3.46	48	Circular Structure
MH 6087	5.21	2.41	3.59	48	Circular Structure
MH 6090	5.55	1.9	3.39	72	Circular Structure
MH 6093	5.94	1.44	3.41	48	Circular Structure
MH 8008	6.33	1.13	3.42	48	Circular Structure
MH 8009	6.32	0.82	3.42	48	Circular Structure
MH 8011	6.67	1.17	3.51	48	Circular Structure
MH 8013	6.14	0.34	3.45	96	Circular Structure
MH 8019	6.31	0.51	3.47	72	Circular Structure
MH 8021	6.78	-0.12	3.47	48	Circular Structure
MH 8022	6.76	-0.04	3.47	48	Circular Structure
MH 8024	7.17	-0.23	3.52	48	Circular Structure
MH 8026	7.2	0.1	3.52	48	Circular Structure
MH 8028	6.66	1.86	3.69	48	Circular Structure
MH 8032	6.57	1.17	3.52	48	Circular Structure
MH 8034	5.91	1.11	3.55	72	Circular Structure
MH 8036	6.38	0.86	3.53	72	Circular Structure
MH 8038	6.37	1.37	3.55	48	Circular Structure
MH 8040	6.32	1.72	3.62	48	Circular Structure
MH 8041	6.29	1.72	3.57	48	Circular Structure
MH 8044	5.64	0.44	3.47	48	Circular Structure
MH 8048	5.46	2.02	3.69	48	Circular Structure
MH 8049	6.19	2.09	3.51	48	Circular Structure
MH 8050	6.23	1.83	3.55	48	Circular Structure
MH 8053	6.36	1.66	3.53	48	Circular Structure
MH 8057	5.56	2.06	3.27	48	Circular Structure
MH 8058	5.48	3.14	3.48	48	Circular Structure
MH 8062	5.77	2.17	3.38	48	Circular Structure
MH 8067	6.1	2	3.39	48	Circular Structure
MH 8068	6.17	1.87	3.39	48	Circular Structure
MH 8069	6.39	1.59	3.41	48	Circular Structure
MH 11007	4.44	-4.26	3.11	72	Circular Structure
MH 13086	6	2.69	3.58	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**191.31**		

Catch Basin Drainage System 2 Existing 2 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6007	In Sag	5.18	-0.14	2.48	0.1	0.1	(N/A)
CB 6008	In Sag	5.05	-0.1	2.02	0.12	0.11	(N/A)
CB 6009	In Sag	5.16	-0.34	1.96	0.15	0.15	(N/A)
CB 6012	In Sag	5.28	0.2	2.46	0.13	0.13	(N/A)
CB 6013	In Sag	5.54	0	2.47	0.1	0.1	(N/A)
CB 6019	In Sag	5.07	0.08	2.17	0.09	0.09	(N/A)
CB 6020	In Sag	5.22	0.08	2.2	0.05	0.05	(N/A)
CB 6021	In Sag	5.47	0.18	2.31	0.08	0.08	(N/A)
CB 6022	In Sag	4.98	0.16	2.29	0.1	0.1	(N/A)
CB 6023	In Sag	5.14	0.1	2.24	0.1	0.1	(N/A)
CB 6025	In Sag	5.14	-0.14	2.04	0.11	0.11	(N/A)
CB 6026	In Sag	5.95	-0.41	1.8	0.22	0.21	(N/A)
CB 6030	In Sag	4.75	-1.07	1.08	0.25	0.25	(N/A)
CB 6031	In Sag	4.83	-1.07	1.08	0.14	0.14	(N/A)
CB 6037	In Sag	5.22	-1.05	1.21	0.13	0.13	(N/A)
CB 6038	In Sag	5.17	-0.95	1.23	0.17	0.17	(N/A)
CB 6039	In Sag	5.01	-2.02	-1.74	0.22	0.22	(N/A)
CB 6040	In Sag	5.4	-1.92	-1.74	0.06	0.06	(N/A)
CB 6041	In Sag	5.65	-2.12	-1.92	0.1	0.1	(N/A)
CB 6052	In Sag	4.76	-0.57	1.54	0.07	0.07	(N/A)
CB 6053	In Sag	5.01	-0.47	1.65	0.07	0.07	(N/A)
CB 6054	In Sag	5.06	-0.47	1.62	0.05	0.05	(N/A)
CB 6055	In Sag	5.05	-0.37	1.74	0.05	0.05	(N/A)
CB 6057	In Sag	5.14	-0.66	1.47	0.17	0.17	(N/A)
CB 6058	In Sag	5.48	-0.66	1.44	0.05	0.05	(N/A)
CB 6074	In Sag	5.04	-0.15	2.09	0.22	0.22	(N/A)
CB 6075	In Sag	5.07	0	3.74	0.09	0.09	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**40.93**			

Catch Basin Drainage System 2 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6007	In Sag	5.18	-0.14	2.48	0.1	0.1	(N/A)
CB 6008	In Sag	5.05	-0.1	2.02	0.12	0.11	(N/A)
CB 6009	In Sag	5.16	-0.34	1.96	0.15	0.15	(N/A)
CB 6012	In Sag	5.28	0.2	2.46	0.13	0.13	(N/A)
CB 6013	In Sag	5.54	0	2.47	0.1	0.1	(N/A)
CB 6019	In Sag	5.07	0.08	2.17	0.09	0.09	(N/A)
CB 6020	In Sag	5.22	0.08	2.2	0.05	0.05	(N/A)
CB 6021	In Sag	5.47	0.18	2.31	0.08	0.08	(N/A)
CB 6022	In Sag	4.98	0.16	2.29	0.1	0.1	(N/A)
CB 6023	In Sag	5.14	0.1	2.24	0.1	0.1	(N/A)
CB 6025	In Sag	5.14	-0.14	2.04	0.11	0.11	(N/A)
CB 6026	In Sag	5.95	-0.41	1.8	0.22	0.21	(N/A)
CB 6030	In Sag	4.75	-1.07	1.08	0.25	0.25	(N/A)
CB 6031	In Sag	4.83	-1.07	1.08	0.14	0.14	(N/A)
CB 6037	In Sag	5.22	-1.05	1.21	0.13	0.13	(N/A)
CB 6038	In Sag	5.17	-0.95	1.23	0.17	0.17	(N/A)
CB 6039	In Sag	5.01	-2.02	-1.74	0.22	0.22	(N/A)
CB 6040	In Sag	5.4	-1.92	-1.74	0.06	0.06	(N/A)
CB 6041	In Sag	5.65	-2.12	-1.92	0.1	0.1	(N/A)
CB 6052	In Sag	4.76	-0.57	1.54	0.07	0.07	(N/A)
CB 6053	In Sag	5.01	-0.47	1.65	0.07	0.07	(N/A)
CB 6054	In Sag	5.06	-0.47	1.62	0.05	0.05	(N/A)
CB 6055	In Sag	5.05	-0.37	1.74	0.05	0.05	(N/A)
CB 6057	In Sag	5.14	-0.66	1.47	0.17	0.17	(N/A)
CB 6058	In Sag	5.48	-0.66	1.44	0.05	0.05	(N/A)
CB 6074	In Sag	5.04	-0.15	2.08	0.22	0.22	(N/A)
CB 6075	In Sag	5.07	0	3.74	0.09	0.09	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**40.92**			

Catch Basin Drainage System 2 Existing 10 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6007	In Sag	5.18	-0.14	2.72	0.54	0.54	(N/A)
CB 6008	In Sag	5.05	-0.1	2.69	0.61	0.61	(N/A)
CB 6009	In Sag	5.16	-0.34	2.71	0.75	0.75	(N/A)
CB 6012	In Sag	5.28	0.2	2.9	0.69	0.69	(N/A)
CB 6013	In Sag	5.54	0	2.9	0.59	0.59	(N/A)
CB 6019	In Sag	5.07	0.08	2.78	0.46	0.46	(N/A)
CB 6020	In Sag	5.22	0.08	2.59	0.23	0.23	(N/A)
CB 6021	In Sag	5.47	0.18	2.59	0.39	0.39	(N/A)
CB 6022	In Sag	4.98	0.16	2.62	0.6	0.6	(N/A)
CB 6023	In Sag	5.14	0.1	2.62	0.53	0.53	(N/A)
CB 6025	In Sag	5.14	-0.14	2.62	0.65	0.65	(N/A)
CB 6026	In Sag	5.95	-0.41	3.82	1.14	1.14	(N/A)
CB 6030	In Sag	4.75	-1.07	3.41	1.43	1.43	(N/A)
CB 6031	In Sag	4.83	-1.07	3.41	0.82	0.82	(N/A)
CB 6037	In Sag	5.22	-1.05	1.55	0.74	0.74	(N/A)
CB 6038	In Sag	5.17	-0.95	1.58	0.98	0.98	(N/A)
CB 6039	In Sag	5.01	-2.02	-1.21	1.35	1.35	(N/A)
CB 6040	In Sag	5.4	-1.92	-1.21	0.34	0.34	(N/A)
CB 6041	In Sag	5.65	-2.12	-1.27	0.58	0.58	(N/A)
CB 6052	In Sag	4.76	-0.57	1.67	0.38	0.38	(N/A)
CB 6053	In Sag	5.01	-0.47	1.79	0.4	0.4	(N/A)
CB 6054	In Sag	5.06	-0.47	1.73	0.26	0.26	(N/A)
CB 6055	In Sag	5.05	-0.37	1.85	0.24	0.24	(N/A)
CB 6057	In Sag	5.14	-0.66	3.68	0.93	0.93	(N/A)
CB 6058	In Sag	5.48	-0.66	3.68	0.25	0.25	(N/A)
CB 6074	In Sag	5.04	-0.15	3.89	1.31	1.31	(N/A)
CB 6075	In Sag	5.07	0	3.91	0.44	0.44	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**62.02**			

Catch Basin Drainage System 2 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6007	In Sag	5.18	-0.14	2.73	0.54	0.54	(N/A)
CB 6008	In Sag	5.05	-0.1	2.69	0.61	0.61	(N/A)
CB 6009	In Sag	5.16	-0.34	2.71	0.75	0.75	(N/A)
CB 6012	In Sag	5.28	0.2	2.9	0.69	0.69	(N/A)
CB 6013	In Sag	5.54	0	2.9	0.59	0.59	(N/A)
CB 6019	In Sag	5.07	0.08	2.75	0.46	0.46	(N/A)
CB 6020	In Sag	5.22	0.08	2.59	0.23	0.23	(N/A)
CB 6021	In Sag	5.47	0.18	2.6	0.39	0.39	(N/A)
CB 6022	In Sag	4.98	0.16	2.62	0.6	0.6	(N/A)
CB 6023	In Sag	5.14	0.1	2.62	0.53	0.53	(N/A)
CB 6025	In Sag	5.14	-0.14	2.62	0.65	0.65	(N/A)
CB 6026	In Sag	5.95	-0.41	3.82	1.14	1.14	(N/A)
CB 6030	In Sag	4.75	-1.07	3.41	1.43	1.43	(N/A)
CB 6031	In Sag	4.83	-1.07	3.41	0.82	0.82	(N/A)
CB 6037	In Sag	5.22	-1.05	1.55	0.74	0.74	(N/A)
CB 6038	In Sag	5.17	-0.95	1.58	0.98	0.98	(N/A)
CB 6039	In Sag	5.01	-2.02	-1.21	1.35	1.35	(N/A)
CB 6040	In Sag	5.4	-1.92	-1.21	0.34	0.34	(N/A)
CB 6041	In Sag	5.65	-2.12	-1.27	0.58	0.58	(N/A)
CB 6052	In Sag	4.76	-0.57	1.67	0.38	0.38	(N/A)
CB 6053	In Sag	5.01	-0.47	1.79	0.4	0.4	(N/A)
CB 6054	In Sag	5.06	-0.47	1.73	0.26	0.26	(N/A)
CB 6055	In Sag	5.05	-0.37	1.85	0.24	0.24	(N/A)
CB 6057	In Sag	5.14	-0.66	3.68	0.93	0.93	(N/A)
CB 6058	In Sag	5.48	-0.66	3.68	0.25	0.25	(N/A)
CB 6074	In Sag	5.04	-0.15	3.89	1.31	1.31	(N/A)
CB 6075	In Sag	5.07	0	3.91	0.44	0.44	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**62.01**			

Catch Basin Drainage System 2 Existing 2 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6007	In Sag	5.18	-0.14	2.48	0.1	0.1	(N/A)
CB 6008	In Sag	5.05	-0.1	2.03	0.12	0.11	(N/A)
CB 6009	In Sag	5.16	-0.34	2.05	0.15	0.15	(N/A)
CB 6012	In Sag	5.28	0.2	2.46	0.13	0.13	(N/A)
CB 6013	In Sag	5.54	0	2.46	0.1	0.1	(N/A)
CB 6019	In Sag	5.07	0.08	2.17	0.09	0.09	(N/A)
CB 6020	In Sag	5.22	0.08	2.2	0.05	0.05	(N/A)
CB 6021	In Sag	5.47	0.18	2.31	0.08	0.08	(N/A)
CB 6022	In Sag	4.98	0.16	2.29	0.1	0.1	(N/A)
CB 6023	In Sag	5.14	0.1	2.24	0.1	0.1	(N/A)
CB 6025	In Sag	5.14	-0.14	2.05	0.11	0.11	(N/A)
CB 6026	In Sag	5.95	-0.41	2.07	0.22	0.21	(N/A)
CB 6030	In Sag	4.75	-1.07	2.05	0.25	0.25	(N/A)
CB 6031	In Sag	4.83	-1.07	2.05	0.14	0.14	(N/A)
CB 6037	In Sag	5.22	-1.05	1.91	0.13	0.13	(N/A)
CB 6038	In Sag	5.17	-0.95	1.91	0.17	0.17	(N/A)
CB 6039	In Sag	5.01	-2.02	1.88	0.22	0.22	(N/A)
CB 6040	In Sag	5.4	-1.92	1.88	0.06	0.06	(N/A)
CB 6041	In Sag	5.65	-2.12	1.88	0.1	0.1	(N/A)
CB 6052	In Sag	4.76	-0.57	1.86	0.07	0.07	(N/A)
CB 6053	In Sag	5.01	-0.47	1.86	0.07	0.07	(N/A)
CB 6054	In Sag	5.06	-0.47	1.85	0.05	0.05	(N/A)
CB 6055	In Sag	5.05	-0.37	1.85	0.05	0.05	(N/A)
CB 6057	In Sag	5.14	-0.66	2.06	0.17	0.17	(N/A)
CB 6058	In Sag	5.48	-0.66	2.06	0.05	0.05	(N/A)
CB 6074	In Sag	5.04	-0.15	2.11	0.22	0.22	(N/A)
CB 6075	In Sag	5.07	0	3.74	0.09	0.09	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**57.76**			

Catch Basin Drainage System 2 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6007	In Sag	5.18	-0.14	2.48	0.1	0.1	(N/A)
CB 6008	In Sag	5.05	-0.1	2.02	0.12	0.11	(N/A)
CB 6009	In Sag	5.16	-0.34	1.96	0.15	0.15	(N/A)
CB 6012	In Sag	5.28	0.2	2.46	0.13	0.13	(N/A)
CB 6013	In Sag	5.54	0	2.47	0.1	0.1	(N/A)
CB 6019	In Sag	5.07	0.08	2.17	0.09	0.09	(N/A)
CB 6020	In Sag	5.22	0.08	2.2	0.05	0.05	(N/A)
CB 6021	In Sag	5.47	0.18	2.31	0.08	0.08	(N/A)
CB 6022	In Sag	4.98	0.16	2.29	0.1	0.1	(N/A)
CB 6023	In Sag	5.14	0.1	2.24	0.1	0.1	(N/A)
CB 6025	In Sag	5.14	-0.14	2.04	0.11	0.11	(N/A)
CB 6026	In Sag	5.95	-0.41	1.8	0.22	0.21	(N/A)
CB 6030	In Sag	4.75	-1.07	1.08	0.25	0.25	(N/A)
CB 6031	In Sag	4.83	-1.07	1.08	0.14	0.14	(N/A)
CB 6037	In Sag	5.22	-1.05	1.21	0.13	0.13	(N/A)
CB 6038	In Sag	5.17	-0.95	1.23	0.17	0.17	(N/A)
CB 6039	In Sag	5.01	-2.02	-1.27	0.22	0.22	(N/A)
CB 6040	In Sag	5.4	-1.92	-1.28	0.06	0.06	(N/A)
CB 6041	In Sag	5.65	-2.12	-1.29	0.1	0.1	(N/A)
CB 6052	In Sag	4.76	-0.57	1.85	0.07	0.07	(N/A)
CB 6053	In Sag	5.01	-0.47	1.85	0.07	0.07	(N/A)
CB 6054	In Sag	5.06	-0.47	1.84	0.05	0.05	(N/A)
CB 6055	In Sag	5.05	-0.37	1.83	0.05	0.05	(N/A)
CB 6057	In Sag	5.14	-0.66	1.47	0.17	0.17	(N/A)
CB 6058	In Sag	5.48	-0.66	1.44	0.05	0.05	(N/A)
CB 6074	In Sag	5.04	-0.15	2.08	0.22	0.22	(N/A)
CB 6075	In Sag	5.07	0	3.74	0.09	0.09	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**43.30**			

Catch Basin Drainage System 2 Existing 10 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6007	In Sag	5.18	-0.14	3.56	0.54	3.81	(N/A)
CB 6008	In Sag	5.05	-0.1	5.07	0.61	2.08	(N/A)
CB 6009	In Sag	5.16	-0.34	3.65	4.91	-4.16	(N/A)
CB 6012	In Sag	5.28	0.2	5.38	0.69	0.74	(N/A)
CB 6013	In Sag	5.54	0	5.05	0.59	0.59	(N/A)
CB 6019	In Sag	5.07	0.08	5.02	0.46	0.46	(N/A)
CB 6020	In Sag	5.22	0.08	5.02	0.23	0.23	(N/A)
CB 6021	In Sag	5.47	0.18	5.02	0.39	0.39	(N/A)
CB 6022	In Sag	4.98	0.16	5.13	0.6	1.02	(N/A)
CB 6023	In Sag	5.14	0.1	5.15	0.53	0.69	(N/A)
CB 6025	In Sag	5.14	-0.14	3.27	0.65	2.12	(N/A)
CB 6026	In Sag	5.95	-0.41	5.42	1.14	1.14	(N/A)
CB 6030	In Sag	4.75	-1.07	5.45	1.43	0	(N/A)
CB 6031	In Sag	4.83	-1.07	4.06	0.82	0	(N/A)
CB 6037	In Sag	5.22	-1.05	2.75	0.74	0.74	(N/A)
CB 6038	In Sag	5.17	-0.95	2.75	0.98	0.98	(N/A)
CB 6039	In Sag	5.01	-2.02	2.38	1.35	1.35	(N/A)
CB 6040	In Sag	5.4	-1.92	2.35	0.34	0.34	(N/A)
CB 6041	In Sag	5.65	-2.12	2.32	0.58	0.58	(N/A)
CB 6052	In Sag	4.76	-0.57	1.85	0.38	0.38	(N/A)
CB 6053	In Sag	5.01	-0.47	1.86	0.4	0.4	(N/A)
CB 6054	In Sag	5.06	-0.47	1.85	0.26	0.26	(N/A)
CB 6055	In Sag	5.05	-0.37	1.87	0.24	0.24	(N/A)
CB 6057	In Sag	5.14	-0.66	5.04	0.93	2.12	(N/A)
CB 6058	In Sag	5.48	-0.66	5.36	0.25	0	(N/A)
CB 6074	In Sag	5.04	-0.15	5.37	1.31	0	(N/A)
CB 6075	In Sag	5.07	0	5.87	0.44	0	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**107.87**			

Catch Basin Drainage System 2 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 6007	In Sag	5.18	-0.14	5.6	0.54	1.69	(N/A)
CB 6008	In Sag	5.05	-0.1	5.11	0.61	1.55	(N/A)
CB 6009	In Sag	5.16	-0.34	3.44	0.75	0	(N/A)
CB 6012	In Sag	5.28	0.2	5.18	0.69	0.69	(N/A)
CB 6013	In Sag	5.54	0	5.18	0.59	0.59	(N/A)
CB 6019	In Sag	5.07	0.08	4.81	0.46	0.46	(N/A)
CB 6020	In Sag	5.22	0.08	4.81	0.23	0.23	(N/A)
CB 6021	In Sag	5.47	0.18	4.82	0.39	0.39	(N/A)
CB 6022	In Sag	4.98	0.16	5.42	0.6	0	(N/A)
CB 6023	In Sag	5.14	0.1	4.57	0.53	0.67	(N/A)
CB 6025	In Sag	5.14	-0.14	3.11	2.77	-2.12	(N/A)
CB 6026	In Sag	5.95	-0.41	5.35	1.14	1.14	(N/A)
CB 6030	In Sag	4.75	-1.07	4.73	1.43	0	(N/A)
CB 6031	In Sag	4.83	-1.07	3.87	0.82	0	(N/A)
CB 6037	In Sag	5.22	-1.05	2.67	0.74	0.74	(N/A)
CB 6038	In Sag	5.17	-0.95	2.68	0.98	0.98	(N/A)
CB 6039	In Sag	5.01	-2.02	2.35	1.35	1.35	(N/A)
CB 6040	In Sag	5.4	-1.92	2.31	0.34	0.34	(N/A)
CB 6041	In Sag	5.65	-2.12	2.35	0.58	0.58	(N/A)
CB 6052	In Sag	4.76	-0.57	1.85	0.38	0.38	(N/A)
CB 6053	In Sag	5.01	-0.47	1.86	0.4	0.4	(N/A)
CB 6054	In Sag	5.06	-0.47	1.85	0.26	0.26	(N/A)
CB 6055	In Sag	5.05	-0.37	1.87	0.24	0.24	(N/A)
CB 6057	In Sag	5.14	-0.66	4.67	0.93	0	(N/A)
CB 6058	In Sag	5.48	-0.66	4.39	0.25	0	(N/A)
CB 6074	In Sag	5.04	-0.15	5.29	1.31	0	(N/A)
CB 6075	In Sag	5.07	0	6.02	0.44	2.71	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				106.16			

Catch Basin Drainage System 2 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6007	In Sag	5.18	-0.14	3.17	0.1	0.1	(N/A)
CB 6008	In Sag	5.05	-0.1	3.17	0.12	0.11	(N/A)
CB 6009	In Sag	5.16	-0.34	3.17	0.15	0.15	(N/A)
CB 6012	In Sag	5.28	0.2	3.18	0.13	0.13	(N/A)
CB 6013	In Sag	5.54	0	3.18	0.1	0.1	(N/A)
CB 6019	In Sag	5.07	0.08	3.16	0.09	0.09	(N/A)
CB 6020	In Sag	5.22	0.08	3.16	0.05	0.05	(N/A)
CB 6021	In Sag	5.47	0.18	3.16	0.08	0.08	(N/A)
CB 6022	In Sag	4.98	0.16	3.17	0.1	0.1	(N/A)
CB 6023	In Sag	5.14	0.1	3.17	0.1	0.1	(N/A)
CB 6025	In Sag	5.14	-0.14	3.17	0.11	0.11	(N/A)
CB 6026	In Sag	5.95	-0.41	3.2	0.22	0.21	(N/A)
CB 6030	In Sag	4.75	-1.07	3.18	0.25	0.25	(N/A)
CB 6031	In Sag	4.83	-1.07	3.18	0.14	0.14	(N/A)
CB 6037	In Sag	5.22	-1.05	3.02	0.13	0.13	(N/A)
CB 6038	In Sag	5.17	-0.95	3.02	0.17	0.17	(N/A)
CB 6039	In Sag	5.01	-2.02	2.99	0.22	0.22	(N/A)
CB 6040	In Sag	5.4	-1.92	2.99	0.06	0.06	(N/A)
CB 6041	In Sag	5.65	-2.12	2.99	0.1	0.1	(N/A)
CB 6052	In Sag	4.76	-0.57	2.97	0.07	0.07	(N/A)
CB 6053	In Sag	5.01	-0.47	2.97	0.07	0.07	(N/A)
CB 6054	In Sag	5.06	-0.47	2.97	0.05	0.05	(N/A)
CB 6055	In Sag	5.05	-0.37	2.97	0.05	0.05	(N/A)
CB 6057	In Sag	5.14	-0.66	3.19	0.17	0.17	(N/A)
CB 6058	In Sag	5.48	-0.66	3.19	0.05	0.05	(N/A)
CB 6074	In Sag	5.04	-0.15	3.2	0.22	0.22	(N/A)
CB 6075	In Sag	5.07	0	3.74	0.09	0.09	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**84.63**			

Catch Basin Drainage System 2 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6007	In Sag	5.18	-0.14	2.48	0.1	0.1	(N/A)
CB 6008	In Sag	5.05	-0.1	2.02	0.12	0.11	(N/A)
CB 6009	In Sag	5.16	-0.34	1.96	0.15	0.15	(N/A)
CB 6012	In Sag	5.28	0.2	2.46	0.13	0.13	(N/A)
CB 6013	In Sag	5.54	0	2.47	0.1	0.1	(N/A)
CB 6019	In Sag	5.07	0.08	2.17	0.09	0.09	(N/A)
CB 6020	In Sag	5.22	0.08	2.2	0.05	0.05	(N/A)
CB 6021	In Sag	5.47	0.18	2.31	0.08	0.08	(N/A)
CB 6022	In Sag	4.98	0.16	2.29	0.1	0.1	(N/A)
CB 6023	In Sag	5.14	0.1	2.24	0.1	0.1	(N/A)
CB 6025	In Sag	5.14	-0.14	2.04	0.11	0.11	(N/A)
CB 6026	In Sag	5.95	-0.41	1.8	0.22	0.21	(N/A)
CB 6030	In Sag	4.75	-1.07	1.08	0.25	0.25	(N/A)
CB 6031	In Sag	4.83	-1.07	1.08	0.14	0.14	(N/A)
CB 6037	In Sag	5.22	-1.05	1.21	0.13	0.13	(N/A)
CB 6038	In Sag	5.17	-0.95	1.23	0.17	0.17	(N/A)
CB 6039	In Sag	5.01	-2.02	-1.27	0.22	0.22	(N/A)
CB 6040	In Sag	5.4	-1.92	-1.28	0.06	0.06	(N/A)
CB 6041	In Sag	5.65	-2.12	-1.29	0.1	0.1	(N/A)
CB 6052	In Sag	4.76	-0.57	1.94	0.07	0.07	(N/A)
CB 6053	In Sag	5.01	-0.47	1.94	0.07	0.07	(N/A)
CB 6054	In Sag	5.06	-0.47	1.97	0.05	0.05	(N/A)
CB 6055	In Sag	5.05	-0.37	1.98	0.05	0.05	(N/A)
CB 6057	In Sag	5.14	-0.66	1.47	0.17	0.17	(N/A)
CB 6058	In Sag	5.48	-0.66	1.44	0.05	0.05	(N/A)
CB 6074	In Sag	5.04	-0.15	2.08	0.22	0.22	(N/A)
CB 6075	In Sag	5.07	0	3.74	0.09	0.09	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**43.76**			

Catch Basin Drainage System 2 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6007	In Sag	5.18	-0.14	4.51	2.66	-2.12	(N/A)
CB 6008	In Sag	5.05	-0.1	4.71	0.61	0	(N/A)
CB 6009	In Sag	5.16	-0.34	9.64	0.75	5.74	(N/A)
CB 6012	In Sag	5.28	0.2	4.2	2.81	-2.12	(N/A)
CB 6013	In Sag	5.54	0	5.77	0.59	0	(N/A)
CB 6019	In Sag	5.07	0.08	5.06	0.46	1.43	(N/A)
CB 6020	In Sag	5.22	0.08	3.3	0.23	0	(N/A)
CB 6021	In Sag	5.47	0.18	5.66	0.39	0	(N/A)
CB 6022	In Sag	4.98	0.16	5.01	0.6	2.12	(N/A)
CB 6023	In Sag	5.14	0.1	5.38	0.53	3.53	(N/A)
CB 6025	In Sag	5.14	-0.14	8.84	0.65	0	(N/A)
CB 6026	In Sag	5.95	-0.41	5.42	1.14	1.14	(N/A)
CB 6030	In Sag	4.75	-1.07	4.87	3.55	-2.12	(N/A)
CB 6031	In Sag	4.83	-1.07	3.98	0.82	0	(N/A)
CB 6037	In Sag	5.22	-1.05	3.64	0.74	0.74	(N/A)
CB 6038	In Sag	5.17	-0.95	3.65	0.98	0.98	(N/A)
CB 6039	In Sag	5.01	-2.02	3.43	1.35	1.35	(N/A)
CB 6040	In Sag	5.4	-1.92	3.34	0.34	0.34	(N/A)
CB 6041	In Sag	5.65	-2.12	3.37	0.58	0.58	(N/A)
CB 6052	In Sag	4.76	-0.57	2.97	0.38	0.38	(N/A)
CB 6053	In Sag	5.01	-0.47	2.97	0.4	0.4	(N/A)
CB 6054	In Sag	5.06	-0.47	2.97	0.26	0.26	(N/A)
CB 6055	In Sag	5.05	-0.37	2.97	0.24	0.24	(N/A)
CB 6057	In Sag	5.14	-0.66	5.48	0.93	0	(N/A)
CB 6058	In Sag	5.48	-0.66	4.3	0.25	0	(N/A)
CB 6074	In Sag	5.04	-0.15	5.39	1.31	2.68	(N/A)
CB 6075	In Sag	5.07	0	5.77	0.44	2.43	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**126.60**			

Catch Basin Drainage System 2 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 6007	In Sag	5.18	-0.14	3.52	0.54	0	(N/A)
CB 6008	In Sag	5.05	-0.1	4.67	0.61	0.76	(N/A)
CB 6009	In Sag	5.16	-0.34	4.08	5.01	-4.26	(N/A)
CB 6012	In Sag	5.28	0.2	5.04	0.69	0	(N/A)
CB 6013	In Sag	5.54	0	4.16	2.14	-1.55	(N/A)
CB 6019	In Sag	5.07	0.08	4.99	0.46	0.36	(N/A)
CB 6020	In Sag	5.22	0.08	3.44	2.35	-2.12	(N/A)
CB 6021	In Sag	5.47	0.18	5.11	0.39	0.39	(N/A)
CB 6022	In Sag	4.98	0.16	5.5	0.6	0	(N/A)
CB 6023	In Sag	5.14	0.1	5.02	0.53	0.66	(N/A)
CB 6025	In Sag	5.14	-0.14	3.3	2.77	-2.12	(N/A)
CB 6026	In Sag	5.95	-0.41	5.54	1.14	1.14	(N/A)
CB 6030	In Sag	4.75	-1.07	4.88	1.43	0	(N/A)
CB 6031	In Sag	4.83	-1.07	4	0.82	0	(N/A)
CB 6037	In Sag	5.22	-1.05	3.58	0.74	0.74	(N/A)
CB 6038	In Sag	5.17	-0.95	3.56	0.98	0.98	(N/A)
CB 6039	In Sag	5.01	-2.02	3.32	1.35	1.35	(N/A)
CB 6040	In Sag	5.4	-1.92	3.39	0.34	0.34	(N/A)
CB 6041	In Sag	5.65	-2.12	3.3	0.58	0.58	(N/A)
CB 6052	In Sag	4.76	-0.57	2.97	0.38	0.38	(N/A)
CB 6053	In Sag	5.01	-0.47	2.97	0.4	0.4	(N/A)
CB 6054	In Sag	5.06	-0.47	2.97	0.26	0.26	(N/A)
CB 6055	In Sag	5.05	-0.37	2.97	0.24	0.24	(N/A)
CB 6057	In Sag	5.14	-0.66	5.18	0.93	0	(N/A)
CB 6058	In Sag	5.48	-0.66	4.62	0.25	0	(N/A)
CB 6074	In Sag	5.04	-0.15	5.3	1.31	0	(N/A)
CB 6075	In Sag	5.07	0	5.02	0.44	0	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**112.40**			

Manholes Drainage System 2 Existing 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 6011	5.9	1.9	2.35	48	Circular Structure
MH 6015	6.98	1.78	1.8	48	Circular Structure
MH 6016	6.48	0.78	1.01	48	Circular Structure
MH 6017	6.12	0.62	0.8	48	Circular Structure
MH 6018	5.68	0.18	0.55	96	Circular Structure
MH 6024	5.56	1.66	1.81	48	Circular Structure
MH 6027	6.59	1.39	1.6	72	Circular Structure
MH 6028	6.44	0.74	0.96	48	Circular Structure
MH 6029	5.63	0.23	0.59	48	Circular Structure
MH 6032	7.67	0	0.34	48	Circular Structure
MH 6033	7.91	-0.29	0.06	48	Circular Structure
MH 6034	7.54	-0.86	-0.53	48	Circular Structure
MH 6035	6.71	-1.39	-1.01	48	Circular Structure
MH 6036	6.15	-2.15	-1.71	48	Circular Structure
MH 6042	5.88	-2.42	-2.11	72	Circular Structure
MH 6056	5.64	0.74	1.02	48	Circular Structure
MH 6094	5.45	1.45	1.65	48	Circular Structure
MH 11003	6.86	2.26	2.32	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**11.5**		

Manholes Drainage System 2 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 6011	5.9	1.9	2.35	48	Circular Structure
MH 6015	6.98	1.78	1.8	48	Circular Structure
MH 6016	6.48	0.78	1.01	48	Circular Structure
MH 6017	6.12	0.62	0.8	48	Circular Structure
MH 6018	5.68	0.18	0.54	96	Circular Structure
MH 6024	5.56	1.66	1.81	48	Circular Structure
MH 6027	6.59	1.39	1.59	72	Circular Structure
MH 6028	6.44	0.74	0.96	48	Circular Structure
MH 6029	5.63	0.23	0.58	48	Circular Structure
MH 6032	7.67	0	0.31	48	Circular Structure
MH 6033	7.91	-0.29	0.03	48	Circular Structure
MH 6034	7.54	-0.86	-0.56	48	Circular Structure
MH 6035	6.71	-1.39	-1.1	48	Circular Structure
MH 6036	6.15	-2.15	-1.84	48	Circular Structure
MH 6042	5.88	-2.42	-2.08	72	Circular Structure
MH 6056	5.64	0.74	1.02	48	Circular Structure
MH 6094	5.45	1.45	1.65	48	Circular Structure
MH 11003	6.86	2.26	2.32	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**11.19**		

Manholes Drainage System 2 Existing 10 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 6011	5.9	1.9	2.59	48	Circular Structure
MH 6015	6.98	1.78	2.18	48	Circular Structure
MH 6016	6.48	0.78	1.29	48	Circular Structure
MH 6017	6.12	0.62	1.03	48	Circular Structure
MH 6018	5.68	0.18	0.94	96	Circular Structure
MH 6024	5.56	1.66	1.92	48	Circular Structure
MH 6027	6.59	1.39	1.79	72	Circular Structure
MH 6028	6.44	0.74	1.19	48	Circular Structure
MH 6029	5.63	0.23	0.96	48	Circular Structure
MH 6032	7.67	0	0.68	48	Circular Structure
MH 6033	7.91	-0.29	0.5	48	Circular Structure
MH 6034	7.54	-0.86	-0.12	48	Circular Structure
MH 6035	6.71	-1.39	-0.55	48	Circular Structure
MH 6036	6.15	-2.15	-1.18	48	Circular Structure
MH 6042	5.88	-2.42	-1.78	72	Circular Structure
MH 6056	5.64	0.74	1.24	48	Circular Structure
MH 6094	5.45	1.45	1.81	48	Circular Structure
MH 11003	6.86	2.26	2.48	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**16.97**		

Manholes Drainage System 2 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 6011	5.9	1.9	2.59	48	Circular Structure
MH 6015	6.98	1.78	2.18	48	Circular Structure
MH 6016	6.48	0.78	1.29	48	Circular Structure
MH 6017	6.12	0.62	1.03	48	Circular Structure
MH 6018	5.68	0.18	0.94	96	Circular Structure
MH 6024	5.56	1.66	1.92	48	Circular Structure
MH 6027	6.59	1.39	1.79	72	Circular Structure
MH 6028	6.44	0.74	1.19	48	Circular Structure
MH 6029	5.63	0.23	0.96	48	Circular Structure
MH 6032	7.67	0	0.68	48	Circular Structure
MH 6033	7.91	-0.29	0.5	48	Circular Structure
MH 6034	7.54	-0.86	-0.12	48	Circular Structure
MH 6035	6.71	-1.39	-0.55	48	Circular Structure
MH 6036	6.15	-2.15	-1.18	48	Circular Structure
MH 6042	5.88	-2.42	-1.78	72	Circular Structure
MH 6056	5.64	0.74	1.24	48	Circular Structure
MH 6094	5.45	1.45	1.81	48	Circular Structure
MH 11003	6.86	2.26	2.48	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**16.97**		

Manholes Drainage System 2 Existing 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 6011	5.9	1.9	2.35	48	Circular Structure
MH 6015	6.98	1.78	1.95	48	Circular Structure
MH 6016	6.48	0.78	1.94	48	Circular Structure
MH 6017	6.12	0.62	1.94	48	Circular Structure
MH 6018	5.68	0.18	1.94	96	Circular Structure
MH 6024	5.56	1.66	1.94	48	Circular Structure
MH 6027	6.59	1.39	1.96	72	Circular Structure
MH 6028	6.44	0.74	1.96	48	Circular Structure
MH 6029	5.63	0.23	1.95	48	Circular Structure
MH 6032	7.67	0	1.94	48	Circular Structure
MH 6033	7.91	-0.29	1.93	48	Circular Structure
MH 6034	7.54	-0.86	1.91	48	Circular Structure
MH 6035	6.71	-1.39	1.89	48	Circular Structure
MH 6036	6.15	-2.15	1.88	48	Circular Structure
MH 6042	5.88	-2.42	1.87	72	Circular Structure
MH 6056	5.64	0.74	1.96	48	Circular Structure
MH 6094	5.45	1.45	1.95	48	Circular Structure
MH 11003	6.86	2.26	2.31	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**35.57**		

Manholes Drainage System 2 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 6011	5.9	1.9	2.35	48	Circular Structure
MH 6015	6.98	1.78	1.8	48	Circular Structure
MH 6016	6.48	0.78	1.01	48	Circular Structure
MH 6017	6.12	0.62	0.8	48	Circular Structure
MH 6018	5.68	0.18	0.54	96	Circular Structure
MH 6024	5.56	1.66	1.81	48	Circular Structure
MH 6027	6.59	1.39	1.59	72	Circular Structure
MH 6028	6.44	0.74	0.96	48	Circular Structure
MH 6029	5.63	0.23	0.58	48	Circular Structure
MH 6032	7.67	0	0.31	48	Circular Structure
MH 6033	7.91	-0.29	0.03	48	Circular Structure
MH 6034	7.54	-0.86	-0.57	48	Circular Structure
MH 6035	6.71	-1.39	-1.08	48	Circular Structure
MH 6036	6.15	-2.15	-1.65	48	Circular Structure
MH 6042	5.88	-2.42	-1.68	72	Circular Structure
MH 6056	5.64	0.74	1.02	48	Circular Structure
MH 6094	5.45	1.45	1.65	48	Circular Structure
MH 11003	6.86	2.26	2.32	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**11.79**		

Manholes Drainage System 2 Existing 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 6011	5.9	1.9	2.61	48	Circular Structure
MH 6015	6.98	1.78	2.52	48	Circular Structure
MH 6016	6.48	0.78	2.51	48	Circular Structure
MH 6017	6.12	0.62	2.51	48	Circular Structure
MH 6018	5.68	0.18	2.5	96	Circular Structure
MH 6024	5.56	1.66	2.5	48	Circular Structure
MH 6027	6.59	1.39	2.52	72	Circular Structure
MH 6028	6.44	0.74	2.5	48	Circular Structure
MH 6029	5.63	0.23	2.48	48	Circular Structure
MH 6032	7.67	0	2.42	48	Circular Structure
MH 6033	7.91	-0.29	2.39	48	Circular Structure
MH 6034	7.54	-0.86	2.24	48	Circular Structure
MH 6035	6.71	-1.39	2.09	48	Circular Structure
MH 6036	6.15	-2.15	2.01	48	Circular Structure
MH 6042	5.88	-2.42	1.94	72	Circular Structure
MH 6056	5.64	0.74	2.51	48	Circular Structure
MH 6094	5.45	1.45	2.52	48	Circular Structure
MH 11003	6.86	2.26	2.52	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**43.29**		

Manholes Drainage System 2 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 6011	5.9	1.9	2.59	48	Circular Structure
MH 6015	6.98	1.78	2.28	48	Circular Structure
MH 6016	6.48	0.78	2.26	48	Circular Structure
MH 6017	6.12	0.62	2.26	48	Circular Structure
MH 6018	5.68	0.18	2.24	96	Circular Structure
MH 6024	5.56	1.66	2.24	48	Circular Structure
MH 6027	6.59	1.39	2.3	72	Circular Structure
MH 6028	6.44	0.74	2.31	48	Circular Structure
MH 6029	5.63	0.23	2.31	48	Circular Structure
MH 6032	7.67	0	2.24	48	Circular Structure
MH 6033	7.91	-0.29	2.2	48	Circular Structure
MH 6034	7.54	-0.86	2.11	48	Circular Structure
MH 6035	6.71	-1.39	2.02	48	Circular Structure
MH 6036	6.15	-2.15	1.97	48	Circular Structure
MH 6042	5.88	-2.42	1.92	72	Circular Structure
MH 6056	5.64	0.74	2.3	48	Circular Structure
MH 6094	5.45	1.45	2.26	48	Circular Structure
MH 11003	6.86	2.26	2.48	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**40.29**		

Manholes Drainage System 2 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 6011	5.9	1.9	3.06	48	Circular Structure
MH 6015	6.98	1.78	3.06	48	Circular Structure
MH 6016	6.48	0.78	3.06	48	Circular Structure
MH 6017	6.12	0.62	3.06	48	Circular Structure
MH 6018	5.68	0.18	3.06	96	Circular Structure
MH 6024	5.56	1.66	3.06	48	Circular Structure
MH 6027	6.59	1.39	3.07	72	Circular Structure
MH 6028	6.44	0.74	3.06	48	Circular Structure
MH 6029	5.63	0.23	3.06	48	Circular Structure
MH 6032	7.67	0	3.05	48	Circular Structure
MH 6033	7.91	-0.29	3.04	48	Circular Structure
MH 6034	7.54	-0.86	3.02	48	Circular Structure
MH 6035	6.71	-1.39	3	48	Circular Structure
MH 6036	6.15	-2.15	2.99	48	Circular Structure
MH 6042	5.88	-2.42	2.98	72	Circular Structure
MH 6056	5.64	0.74	3.06	48	Circular Structure
MH 6094	5.45	1.45	3.06	48	Circular Structure
MH 11003	6.86	2.26	3.06	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**54.81**		

Manholes Drainage System 2 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 6011	5.9	1.9	2.35	48	Circular Structure
MH 6015	6.98	1.78	1.8	48	Circular Structure
MH 6016	6.48	0.78	1.01	48	Circular Structure
MH 6017	6.12	0.62	0.8	48	Circular Structure
MH 6018	5.68	0.18	0.54	96	Circular Structure
MH 6024	5.56	1.66	1.81	48	Circular Structure
MH 6027	6.59	1.39	1.59	72	Circular Structure
MH 6028	6.44	0.74	0.96	48	Circular Structure
MH 6029	5.63	0.23	0.58	48	Circular Structure
MH 6032	7.67	0	0.31	48	Circular Structure
MH 6033	7.91	-0.29	0.03	48	Circular Structure
MH 6034	7.54	-0.86	-0.57	48	Circular Structure
MH 6035	6.71	-1.39	-1.08	48	Circular Structure
MH 6036	6.15	-2.15	-1.65	48	Circular Structure
MH 6042	5.88	-2.42	-1.68	72	Circular Structure
MH 6056	5.64	0.74	1.02	48	Circular Structure
MH 6094	5.45	1.45	1.65	48	Circular Structure
MH 11003	6.86	2.26	2.32	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**11.79**		

Manholes Drainage System 2 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 6011	5.9	1.9	3.59	48	Circular Structure
MH 6015	6.98	1.78	3.58	48	Circular Structure
MH 6016	6.48	0.78	3.58	48	Circular Structure
MH 6017	6.12	0.62	3.57	48	Circular Structure
MH 6018	5.68	0.18	3.56	96	Circular Structure
MH 6024	5.56	1.66	3.56	48	Circular Structure
MH 6027	6.59	1.39	3.59	72	Circular Structure
MH 6028	6.44	0.74	3.57	48	Circular Structure
MH 6029	5.63	0.23	3.55	48	Circular Structure
MH 6032	7.67	0	3.49	48	Circular Structure
MH 6033	7.91	-0.29	3.46	48	Circular Structure
MH 6034	7.54	-0.86	3.32	48	Circular Structure
MH 6035	6.71	-1.39	3.18	48	Circular Structure
MH 6036	6.15	-2.15	3.11	48	Circular Structure
MH 6042	5.88	-2.42	3.04	72	Circular Structure
MH 6056	5.64	0.74	3.57	48	Circular Structure
MH 6094	5.45	1.45	3.59	48	Circular Structure
MH 11003	6.86	2.26	3.58	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**62.49**		

Manholes Drainage System 2 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 6011	5.9	1.9	2.59	48	Circular Structure
MH 6015	6.98	1.78	2.57	48	Circular Structure
MH 6016	6.48	0.78	2.6	48	Circular Structure
MH 6017	6.12	0.62	2.59	48	Circular Structure
MH 6018	5.68	0.18	2.57	96	Circular Structure
MH 6024	5.56	1.66	2.61	48	Circular Structure
MH 6027	6.59	1.39	2.58	72	Circular Structure
MH 6028	6.44	0.74	2.58	48	Circular Structure
MH 6029	5.63	0.23	2.63	48	Circular Structure
MH 6032	7.67	0	2.59	48	Circular Structure
MH 6033	7.91	-0.29	2.57	48	Circular Structure
MH 6034	7.54	-0.86	2.56	48	Circular Structure
MH 6035	6.71	-1.39	2.54	48	Circular Structure
MH 6036	6.15	-2.15	2.51	48	Circular Structure
MH 6042	5.88	-2.42	2.5	72	Circular Structure
MH 6056	5.64	0.74	2.47	48	Circular Structure
MH 6094	5.45	1.45	2.63	48	Circular Structure
MH 11003	6.86	2.26	2.54	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**46.23**		

Catch Basin Drainage System 3 Existing 2 Yr. Low Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1099	On Grade	5.04	1.6	1.6	0	0	0
CB 2074	On Grade	5.24	0.41	2.76	0.08	0.07	0.01
CB 2077	On Grade	5.24	1.54	3.61	0.02	0.02	0
CB 2078	In Sag	5.12	0.29	2.72	0.03	0.03	(N/A)
CB 2081	On Grade	4.8	-0.73	1.83	0.32	0.2	0.12
CB 2083	In Sag	4.42	-0.41	1.84	0	0	(N/A)
CB 2085	In Sag	5.07	0.04	3.06	0.16	0.16	(N/A)
CB 2087	In Sag	5.03	0.7	3.07	0.15	0.15	(N/A)
CB 3039	In Sag	4.96	-0.07	2.73	0.09	0.09	(N/A)
CB 3059	In Sag	4.56	-0.07	2.22	0.28	0.28	(N/A)
CB 6005	In Sag	5.09	0.1	2.27	0.15	0.15	(N/A)
CB 6006	In Sag	5.05	0.2	2.42	0.22	0.22	(N/A)
CB 6044	On Grade	5.17	-2	0.13	0.04	0.04	0
CB 6045	On Grade	5.01	-2.11	0.12	0.08	0.07	0.01
CB 6046	In Sag	5.6	0.19	2.32	0.05	0.05	(N/A)
CB 6047	In Sag	5.02	0.09	2.17	0.04	0.04	(N/A)
CB 6048	In Sag	4.97	-1.65	0.46	0.12	0.12	(N/A)
CB 6049	In Sag	4.6	-2.06	0.14	0.11	0.11	(N/A)
CB 6050	On Grade	4.99	-0.25	1.86	0.05	0.05	0
CB 8071	In Sag	5.97	1.06	3.79	0.08	0.08	(N/A)
CB 8072	In Sag	6.2	1.29	3.79	0.17	0.17	(N/A)
CB 11004	On Grade	5.02	-0.35	1.73	0.05	0.05	0
CB 13002	On Grade	4.39	-2.55	-2.08	0	0	0
CB 13005	On Grade	5.66	2.96	3.12	0	0	0
CB 13007	On Grade	5.91	1.81	4	0.16	0.15	0.01
CB 13009	On Grade	5.94	-0.56	1.58	0.03	0.03	0
CB 13010	On Grade	6.19	1.49	3.55	0.04	0.04	0
CB 13012	On Grade	6.8	0.2	2.27	0.03	0.03	0
CB 13013	On Grade	6.84	0.24	2.09	0.02	0.02	0
CB 13014	On Grade	6.93	3.13	4.49	0.01	0.01	0
CB 13017	On Grade	8.39	1.99	2.15	0	0	0
CB 13017A	On Grade	8	2.39	4.42	0.02	0.02	0
CB 13018	On Grade	5.92	1.62	2.26	0.01	0.01	0
CB 13019	On Grade	6.1	1.8	2.34	0	0	0
CB 13020	On Grade	6.01	2.01	2.33	0	0	0
CB 13021	On Grade	6.07	2.37	3.15	0.01	0.01	0
CB 13023	On Grade	6.68	0.18	2.33	0.03	0.02	0
CB 13024	On Grade	6.38	1.18	1.77	0.01	0	0
CB 13025	On Grade	6.72	1.32	2.47	0.01	0.01	0
CB 13026	On Grade	6.76	1.36	2.12	0.01	0.01	0
CB 13027	On Grade	5.81	1.81	2.23	0	0	0
CB 13028	On Grade	5.86	1.96	3.95	0.02	0.02	0
CB 13029	On Grade	6.25	2.05	3.37	0.01	0.01	0
CB 13031	On Grade	6.62	1.42	3.82	0.04	0.03	0
CB 13032	On Grade	6.82	1.52	3.82	0.05	0.04	0
CB 13033	In Sag	7.08	1.78	2.86	0.01	0.01	(N/A)
CB 13034	In Sag	6.63	1.53	3.57	0.02	0.02	(N/A)
CB 13038	On Grade	7.67	1.27	3.4	0.02	0.02	0
CB 13039	On Grade	7.62	1.32	1.98	0.01	0.01	0
CB 13040	On Grade	7.5	0.7	1.06	0	0	0
CB 13041	On Grade	7.44	0.14	2.26	0.05	0.04	0
CB 13042	On Grade	7.37	1.17	3.25	0.05	0.05	0
CB 13044	On Grade	8.11	3.51	5.57	0.04	0.04	0
CB 13045	On Grade	7.99	2.99	4.59	0	0	0
CB 13046	On Grade	7.91	2.91	3.98	0.01	0.01	0
CB 13047	On Grade	7.83	-1.57	0.82	0.01	0.01	0
CB 13048	On Grade	7.85	-1.85	0.85	0	0	0
CB 13049	On Grade	7.77	-1.83	0.85	0	0	0
CB 13050	On Grade	7.77	-1.53	0.86	0.01	0.01	0
CB 13051	On Grade	7.85	-1.45	0.91	0.01	0.01	0
CB 13052	On Grade	7.11	-1.29	1.06	0.01	0.01	0
CB 13053	On Grade	7.55	0.15	2.2	0	0	0
CB 13054	In Sag	6.02	0.22	2.28	0.01	0.01	(N/A)
CB 13055	On Grade	6.98	1.08	3.14	0.03	0.02	0
CB 13056	On Grade	5.89	2.49	2.49	0	0	0
CB 13057	On Grade	6.91	0.91	0.91	0	0	0
CB 13058	On Grade	5.92	2.42	2.42	0	0	0
CB 13059	On Grade	5.89	2.39	2.39	0	0	0
CB 13060	On Grade	6.21	-0.39	1.92	0.04	0.04	0
CB 13061	In Sag	5.93	0.53	2.73	0.05	0.05	(N/A)
CB 13062	On Grade	6.45	0.95	3.17	0.08	0.08	0
CB 13063	In Sag	6	3.04	3.23	0.01	0.01	(N/A)
CB 13064	On Grade	6.28	4.18	4.36	0.04	0.04	0
CB 13065	In Sag	6.26	5.36	5.48	0.12	0.12	(N/A)
CB 13066	On Grade	6.86	-0.24	1.86	0.15	0.14	0.01
CB 13067	In Sag	5.85	0.84	2.9	0.02	0.02	(N/A)
CB 13068	In Sag	5.34	4.44	4.65	0.01	0.01	(N/A)
CB 13069	In Sag	5.67	0.97	3.02	0.01	0.01	(N/A)

CB 13070	In Sag	5.76	0.86	2.91	0.02	0.02	(N/A)
CB 13071	On Grade	5.31	0.27	2.62	0.02	0.02	0
CB 13072	In Sag	5.47	0.37	3.63	0.03	0.03	(N/A)
CB 13073	On Grade	5.43	2.23	4.32	0.05	0.05	0
CB 13074	On Grade	8	1.55	1.55	0	0	0
CB 13075	On Grade	8.05	3.1	3.29	0	0	0
CB 20001	On Grade	8	-1.37	0.9	0.22	0.21	0.01
CB90000	On Grade	5.91	3.8	3.8	0	0	0
CB90001	On Grade	8	1.15	1.15	0	0	0
CB90002	On Grade	8	1.87	1.87	0	0	0
CB90003	On Grade	8	3.35	3.35	0	0	0
CB90004	In Sag	8	1.37	2.57	0.01	0.01	(N/A)
CB90005	On Grade	8	1.92	2.24	0	0	0
CB90006	On Grade	8	1.9	2.17	0	0	0
CB90007	On Grade	8	2.93	3.55	0.01	0.01	0
Summation of Hydraulic Grade Line Elevations (ft)				**235.13**			

Catch Basin Drainage System 3 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1099	On Grade	5.04	1.6	1.6	0	0	0
CB 2074	On Grade	5.24	0.41	2.76	0.08	0.07	0.01
CB 2077	On Grade	5.24	1.54	3.61	0.02	0.02	0
CB 2078	In Sag	5.12	0.29	2.72	0.03	0.03	(N/A)
CB 2081	On Grade	4.8	-0.73	1.8	0.32	0.2	0.12
CB 2083	In Sag	4.42	-0.41	-0.41	0	0	(N/A)
CB 2085	In Sag	5.07	0.04	3.06	0.16	0.16	(N/A)
CB 2087	In Sag	5.03	0.7	3.07	0.15	0.15	(N/A)
CB 3039	In Sag	4.96	-0.07	2.73	0.09	0.09	(N/A)
CB 3059	In Sag	4.56	-0.07	2.22	0.28	0.28	(N/A)
CB 6005	In Sag	5.09	0.1	2.27	0.15	0.15	(N/A)
CB 6006	In Sag	5.05	0.2	2.42	0.22	0.22	(N/A)
CB 6044	On Grade	5.17	-2	0.12	0.04	0.04	0
CB 6045	On Grade	5.01	-2.11	0.12	0.08	0.07	0.01
CB 6046	In Sag	5.6	0.19	2.32	0.05	0.05	(N/A)
CB 6047	In Sag	5.02	0.09	2.17	0.04	0.04	(N/A)
CB 6048	In Sag	4.97	-1.65	0.46	0.12	0.12	(N/A)
CB 6049	In Sag	4.6	-2.06	0.14	0.11	0.11	(N/A)
CB 6050	On Grade	4.99	-0.25	1.86	0.05	0.05	0
CB 8071	In Sag	5.97	1.06	3.79	0.08	0.08	(N/A)
CB 8072	In Sag	6.2	1.29	3.79	0.17	0.17	(N/A)
CB 11004	On Grade	5.02	-0.35	1.73	0.05	0.05	0
CB 13002	On Grade	4.39	-2.55	-2.55	0	0	0
CB 13005	On Grade	5.66	2.96	3.12	0	0	0
CB 13007	On Grade	5.91	1.81	4	0.16	0.15	0.01
CB 13009	On Grade	5.94	-0.56	1.57	0.03	0.03	0
CB 13010	On Grade	6.19	1.49	3.55	0.04	0.04	0
CB 13012	On Grade	6.8	0.2	2.27	0.03	0.03	0
CB 13013	On Grade	6.84	0.24	2.09	0.02	0.02	0
CB 13014	On Grade	6.93	3.13	4.49	0.01	0.01	0
CB 13017	On Grade	8.39	1.99	2.15	0	0	0
CB 13017A	On Grade	8	2.39	4.42	0.02	0.02	0
CB 13018	On Grade	5.92	1.62	2.26	0.01	0.01	0
CB 13019	On Grade	6.1	1.8	2.34	0	0	0
CB 13020	On Grade	6.01	2.01	2.33	0	0	0
CB 13021	On Grade	6.07	2.37	3.15	0.01	0.01	0
CB 13023	On Grade	6.68	0.18	2.33	0.03	0.02	0
CB 13024	On Grade	6.38	1.18	1.77	0.01	0	0
CB 13025	On Grade	6.72	1.32	2.47	0.01	0.01	0
CB 13026	On Grade	6.76	1.36	2.12	0.01	0.01	0
CB 13027	On Grade	5.81	1.81	2.23	0	0	0
CB 13028	On Grade	5.86	1.96	3.95	0.02	0.02	0
CB 13029	On Grade	6.25	2.05	3.37	0.01	0.01	0
CB 13031	On Grade	6.62	1.42	3.82	0.04	0.03	0
CB 13032	On Grade	6.82	1.52	3.82	0.05	0.04	0
CB 13033	In Sag	7.08	1.78	2.86	0.01	0.01	(N/A)
CB 13034	In Sag	6.63	1.53	3.57	0.02	0.02	(N/A)
CB 13038	On Grade	7.67	1.27	3.4	0.02	0.02	0
CB 13039	On Grade	7.62	1.32	1.98	0.01	0.01	0
CB 13040	On Grade	7.5	0.7	1.06	0	0	0
CB 13041	On Grade	7.44	0.14	2.26	0.05	0.04	0
CB 13042	On Grade	7.37	1.17	3.25	0.05	0.05	0
CB 13044	On Grade	8.11	3.51	5.57	0.04	0.04	0
CB 13045	On Grade	7.99	2.99	4.59	0	0	0
CB 13046	On Grade	7.91	2.91	3.98	0.01	0.01	0
CB 13047	On Grade	7.83	-1.57	0.79	0.01	0.01	0
CB 13048	On Grade	7.85	-1.85	0.82	0	0	0
CB 13049	On Grade	7.77	-1.83	0.82	0	0	0
CB 13050	On Grade	7.77	-1.53	0.82	0.01	0.01	0
CB 13051	On Grade	7.85	-1.45	0.88	0.01	0.01	0
CB 13052	On Grade	7.11	-1.29	1.04	0.01	0.01	0
CB 13053	On Grade	7.55	0.15	0.59	0	0	0
CB 13054	In Sag	6.02	0.22	2.11	0.01	0.01	(N/A)
CB 13055	On Grade	6.98	1.08	3.14	0.03	0.02	0
CB 13056	On Grade	5.89	2.49	2.49	0	0	0
CB 13057	On Grade	6.91	0.91	0.91	0	0	0
CB 13058	On Grade	5.92	2.42	2.42	0	0	0
CB 13059	On Grade	5.89	2.39	2.39	0	0	0
CB 13060	On Grade	6.21	-0.39	1.92	0.04	0.04	0
CB 13061	In Sag	5.93	0.53	2.73	0.05	0.05	(N/A)
CB 13062	On Grade	6.45	0.95	3.17	0.08	0.08	0
CB 13063	In Sag	6	3.04	3.23	0.01	0.01	(N/A)
CB 13064	On Grade	6.28	4.18	4.36	0.04	0.04	0
CB 13065	In Sag	6.26	5.36	5.48	0.12	0.12	(N/A)
CB 13066	On Grade	6.86	-0.24	1.86	0.15	0.14	0.01
CB 13067	In Sag	5.85	0.84	2.9	0.02	0.02	(N/A)
CB 13068	In Sag	5.34	4.44	4.65	0.01	0.01	(N/A)
CB 13069	In Sag	5.67	0.97	3.02	0.01	0.01	(N/A)

CB 13070	In Sag	5.76	0.86	2.91	0.02	0.02	(N/A)
CB 13071	On Grade	5.31	0.27	2.62	0.02	0.02	0
CB 13072	In Sag	5.47	0.37	3.63	0.03	0.03	(N/A)
CB 13073	On Grade	5.43	2.23	4.32	0.05	0.05	0
CB 13074	On Grade	8	1.55	1.55	0	0	0
CB 13075	On Grade	8.05	3.1	3.29	0	0	0
CB 20001	On Grade	8	-1.37	0.86	0.22	0.21	0.01
CB90000	On Grade	5.91	3.8	3.8	0	0	0
CB90001	On Grade	8	1.15	1.15	0	0	0
CB90002	On Grade	8	1.87	1.87	0	0	0
CB90003	On Grade	8	3.35	3.35	0	0	0
CB90004	In Sag	8	1.37	2.57	0.01	0.01	(N/A)
CB90005	On Grade	8	1.92	2.24	0	0	0
CB90006	On Grade	8	1.9	2.17	0	0	0
CB90007	On Grade	8	2.93	3.55	0.01	0.01	0
Summation of Hydraulic Grade Line Elevations (ft)				**230.36**			

Catch Basin Drainage System 3 Existing 10 Yr. Low Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1099	On Grade	5.04	1.6	1.66	0.01	0.01	0
CB 2074	On Grade	5.24	0.41	3.16	0.37	0.22	0.15
CB 2077	On Grade	5.24	1.54	3.74	0.07	0.06	0
CB 2078	In Sag	5.12	0.29	3.33	0.12	0.12	(N/A)
CB 2081	On Grade	4.8	-0.73	2.95	2.41	0.73	1.67
CB 2083	In Sag	4.42	-0.41	2.95	0.02	0.02	(N/A)
CB 2085	In Sag	5.07	0.04	3.89	0.75	0.75	(N/A)
CB 2087	In Sag	5.03	0.7	3.9	0.7	0.7	(N/A)
CB 3039	In Sag	4.96	-0.07	3.34	0.47	0.47	(N/A)
CB 3059	In Sag	4.56	-0.07	2.86	1.38	1.38	(N/A)
CB 6005	In Sag	5.09	0.1	2.52	0.87	0.87	(N/A)
CB 6006	In Sag	5.05	0.2	2.7	1.18	1.18	(N/A)
CB 6044	On Grade	5.17	-2	0.3	0.22	0.16	0.07
CB 6045	On Grade	5.01	-2.11	0.3	0.5	0.27	0.23
CB 6046	In Sag	5.6	0.19	2.43	0.18	0.18	(N/A)
CB 6047	In Sag	5.02	0.09	2.25	0.16	0.17	(N/A)
CB 6048	In Sag	4.97	-1.65	0.59	0.54	0.54	(N/A)
CB 6049	In Sag	4.6	-2.06	0.38	0.49	0.49	(N/A)
CB 6050	On Grade	4.99	-0.25	1.93	0.19	0.14	0.05
CB 8071	In Sag	5.97	1.06	4.01	0.36	0.36	(N/A)
CB 8072	In Sag	6.2	1.29	4.01	0.96	0.96	(N/A)
CB 11004	On Grade	5.02	-0.35	1.79	0.19	0.14	0.05
CB 13002	On Grade	4.39	-2.55	-1.33	0.03	0.03	0
CB 13005	On Grade	5.66	2.96	3.34	0.01	0.01	0
CB 13007	On Grade	5.91	1.81	4.32	0.98	0.83	0.15
CB 13009	On Grade	5.94	-0.56	1.88	0.12	0.12	0.01
CB 13010	On Grade	6.19	1.49	3.61	0.15	0.15	0.01
CB 13012	On Grade	6.8	0.2	2.45	0.11	0.1	0
CB 13013	On Grade	6.84	0.24	2.6	0.06	0.06	0
CB 13014	On Grade	6.93	3.13	5.22	0.05	0.05	0
CB 13017	On Grade	8.39	1.99	4.25	0	0	0
CB 13017A	On Grade	8	2.39	4.51	0.08	0.07	0
CB 13018	On Grade	5.92	1.62	3.73	0.02	0.02	0
CB 13019	On Grade	6.1	1.8	3.9	0.02	0.02	0
CB 13020	On Grade	6.01	2.01	4.14	0.01	0.01	0
CB 13021	On Grade	6.07	2.37	4.42	0.03	0.03	0
CB 13023	On Grade	6.68	0.18	2.57	0.09	0.09	0
CB 13024	On Grade	6.38	1.18	3.36	0.02	0.02	0
CB 13025	On Grade	6.72	1.32	3.51	0.04	0.03	0
CB 13026	On Grade	6.76	1.36	3.52	0.03	0.02	0
CB 13027	On Grade	5.81	1.81	3.96	0.01	0.01	0
CB 13028	On Grade	5.86	1.96	4.3	0.07	0.07	0
CB 13029	On Grade	6.25	2.05	4.23	0.05	0.04	0
CB 13031	On Grade	6.62	1.42	3.91	0.14	0.13	0.01
CB 13032	On Grade	6.82	1.52	3.91	0.17	0.16	0.01
CB 13033	In Sag	7.08	1.78	3.81	0.03	0.03	(N/A)
CB 13034	In Sag	6.63	1.53	3.62	0.09	0.09	(N/A)
CB 13038	On Grade	7.67	1.27	3.59	0.08	0.08	0
CB 13039	On Grade	7.62	1.32	3.44	0.02	0.02	0
CB 13040	On Grade	7.5	0.7	3.15	0.01	0.01	0
CB 13041	On Grade	7.44	0.14	2.42	0.18	0.17	0.01
CB 13042	On Grade	7.37	1.17	3.32	0.2	0.19	0.01
CB 13044	On Grade	8.11	3.51	5.63	0.16	0.15	0.01
CB 13045	On Grade	7.99	2.99	5.29	0.02	0.02	0
CB 13046	On Grade	7.91	2.91	5.05	0.04	0.03	0
CB 13047	On Grade	7.83	-1.57	2	0.02	0.02	0
CB 13048	On Grade	7.85	-1.85	2.01	0.01	0.01	0
CB 13049	On Grade	7.77	-1.83	2.02	0.02	0.02	0
CB 13050	On Grade	7.77	-1.53	2.05	0.03	0.03	0
CB 13051	On Grade	7.85	-1.45	2.08	0.03	0.03	0
CB 13052	On Grade	7.11	-1.29	2.1	0.04	0.04	0
CB 13053	On Grade	7.55	0.15	2.25	0	0	0
CB 13054	In Sag	6.02	0.22	2.35	0.05	0.05	(N/A)
CB 13055	On Grade	6.98	1.08	3.19	0.1	0.09	0
CB 13056	On Grade	5.89	2.49	2.49	0	0	0
CB 13057	On Grade	6.91	0.91	0.91	0	0	0
CB 13058	On Grade	5.92	2.42	2.42	0	0	0
CB 13059	On Grade	5.89	2.39	2.39	0	0	0
CB 13060	On Grade	6.21	-0.39	2.22	0.17	0.16	0.01
CB 13061	In Sag	5.93	0.53	3.02	0.17	0.17	(N/A)
CB 13062	On Grade	6.45	0.95	3.46	0.36	0.33	0.02
CB 13063	In Sag	6	3.04	3.53	0.03	0.03	(N/A)
CB 13064	On Grade	6.28	4.18	4.56	0.16	0.15	0.01
CB 13065	In Sag	6.26	5.36	5.62	0.56	0.56	(N/A)
CB 13066	On Grade	6.86	-0.24	1.97	0.66	0.59	0.08
CB 13067	In Sag	5.85	0.84	2.95	0.08	0.08	(N/A)
CB 13068	In Sag	5.34	4.44	4.74	0.05	0.05	(N/A)
CB 13069	In Sag	5.67	0.97	3.09	0.03	0.03	(N/A)

CB 13070	In Sag	5.76	0.86	2.96	0.09	0.09	(N/A)
CB 13071	On Grade	5.31	0.27	3.55	0.08	0.07	0
CB 13072	In Sag	5.47	0.37	3.96	0.1	0.1	(N/A)
CB 13073	On Grade	5.43	2.23	4.4	0.21	0.2	0.01
CB 13074	On Grade	8	1.55	1.55	0	0	0
CB 13075	On Grade	8.05	3.1	5.29	0.01	0.01	0
CB 20001	On Grade	8	-1.37	1.9	1.26	1.04	0.23
CB90000	On Grade	5.91	3.8	4.3	0.02	0.02	0
CB90001	On Grade	8	1.15	1.15	0	0	0
CB90002	On Grade	8	1.87	1.87	0	0	0
CB90003	On Grade	8	3.35	3.35	0	0	0
CB90004	In Sag	8	1.37	3.59	0.04	0.04	(N/A)
CB90005	On Grade	8	1.92	3.96	0.01	0.01	0
CB90006	On Grade	8	1.9	3.82	0.01	0.01	0
CB90007	On Grade	8	2.93	5.02	0.02	0.02	0
Summation of Hydraulic Grade Line Elevations (ft)				**288.71**			

Catch Basin Drainage System 3 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1099	On Grade	5.04	1.6	1.66	0.01	0.01	0
CB 2074	On Grade	5.24	0.41	3.16	0.37	0.22	0.15
CB 2077	On Grade	5.24	1.54	3.74	0.07	0.06	0
CB 2078	In Sag	5.12	0.29	3.33	0.12	0.12	(N/A)
CB 2081	On Grade	4.8	-0.73	2.95	2.41	0.73	1.67
CB 2083	In Sag	4.42	-0.41	2.95	0.02	0.02	(N/A)
CB 2085	In Sag	5.07	0.04	3.89	0.75	0.75	(N/A)
CB 2087	In Sag	5.03	0.7	3.9	0.7	0.7	(N/A)
CB 3039	In Sag	4.96	-0.07	3.34	0.47	0.47	(N/A)
CB 3059	In Sag	4.56	-0.07	2.86	1.38	1.38	(N/A)
CB 6005	In Sag	5.09	0.1	2.52	0.87	0.87	(N/A)
CB 6006	In Sag	5.05	0.2	2.7	1.18	1.18	(N/A)
CB 6044	On Grade	5.17	-2	0.3	0.22	0.16	0.07
CB 6045	On Grade	5.01	-2.11	0.3	0.5	0.27	0.23
CB 6046	In Sag	5.6	0.19	2.43	0.18	0.18	(N/A)
CB 6047	In Sag	5.02	0.09	2.25	0.16	0.17	(N/A)
CB 6048	In Sag	4.97	-1.65	0.59	0.54	0.54	(N/A)
CB 6049	In Sag	4.6	-2.06	0.38	0.49	0.49	(N/A)
CB 6050	On Grade	4.99	-0.25	1.93	0.19	0.14	0.05
CB 8071	In Sag	5.97	1.06	4.01	0.36	0.36	(N/A)
CB 8072	In Sag	6.2	1.29	4.01	0.96	0.96	(N/A)
CB 11004	On Grade	5.02	-0.35	1.79	0.19	0.14	0.05
CB 13002	On Grade	4.39	-2.55	-1.33	0.03	0.03	0
CB 13005	On Grade	5.66	2.96	3.34	0.01	0.01	0
CB 13007	On Grade	5.91	1.81	4.32	0.98	0.83	0.15
CB 13009	On Grade	5.94	-0.56	1.88	0.12	0.12	0.01
CB 13010	On Grade	6.19	1.49	3.61	0.15	0.15	0.01
CB 13012	On Grade	6.8	0.2	2.45	0.11	0.1	0
CB 13013	On Grade	6.84	0.24	2.6	0.06	0.06	0
CB 13014	On Grade	6.93	3.13	5.22	0.05	0.05	0
CB 13017	On Grade	8.39	1.99	4.25	0	0	0
CB 13017A	On Grade	8	2.39	4.51	0.08	0.07	0
CB 13018	On Grade	5.92	1.62	3.73	0.02	0.02	0
CB 13019	On Grade	6.1	1.8	3.9	0.02	0.02	0
CB 13020	On Grade	6.01	2.01	4.14	0.01	0.01	0
CB 13021	On Grade	6.07	2.37	4.42	0.03	0.03	0
CB 13023	On Grade	6.68	0.18	2.57	0.09	0.09	0
CB 13024	On Grade	6.38	1.18	3.36	0.02	0.02	0
CB 13025	On Grade	6.72	1.32	3.51	0.04	0.03	0
CB 13026	On Grade	6.76	1.36	3.52	0.03	0.02	0
CB 13027	On Grade	5.81	1.81	3.96	0.01	0.01	0
CB 13028	On Grade	5.86	1.96	4.3	0.07	0.07	0
CB 13029	On Grade	6.25	2.05	4.23	0.05	0.04	0
CB 13031	On Grade	6.62	1.42	3.91	0.14	0.13	0.01
CB 13032	On Grade	6.82	1.52	3.91	0.17	0.16	0.01
CB 13033	In Sag	7.08	1.78	3.81	0.03	0.03	(N/A)
CB 13034	In Sag	6.63	1.53	3.62	0.09	0.09	(N/A)
CB 13038	On Grade	7.67	1.27	3.59	0.08	0.08	0
CB 13039	On Grade	7.62	1.32	3.44	0.02	0.02	0
CB 13040	On Grade	7.5	0.7	3.15	0.01	0.01	0
CB 13041	On Grade	7.44	0.14	2.42	0.18	0.17	0.01
CB 13042	On Grade	7.37	1.17	3.32	0.2	0.19	0.01
CB 13044	On Grade	8.11	3.51	5.63	0.16	0.15	0.01
CB 13045	On Grade	7.99	2.99	5.29	0.02	0.02	0
CB 13046	On Grade	7.91	2.91	5.05	0.04	0.03	0
CB 13047	On Grade	7.83	-1.57	2	0.02	0.02	0
CB 13048	On Grade	7.85	-1.85	2.01	0.01	0.01	0
CB 13049	On Grade	7.77	-1.83	2.02	0.02	0.02	0
CB 13050	On Grade	7.77	-1.53	2.04	0.03	0.03	0
CB 13051	On Grade	7.85	-1.45	2.07	0.03	0.03	0
CB 13052	On Grade	7.11	-1.29	2.1	0.04	0.04	0
CB 13053	On Grade	7.55	0.15	2.25	0	0	0
CB 13054	In Sag	6.02	0.22	2.35	0.05	0.05	(N/A)
CB 13055	On Grade	6.98	1.08	3.19	0.1	0.09	0
CB 13056	On Grade	5.89	2.49	2.49	0	0	0
CB 13057	On Grade	6.91	0.91	0.91	0	0	0
CB 13058	On Grade	5.92	2.42	2.42	0	0	0
CB 13059	On Grade	5.89	2.39	2.39	0	0	0
CB 13060	On Grade	6.21	-0.39	2.22	0.17	0.16	0.01
CB 13061	In Sag	5.93	0.53	3.02	0.17	0.17	(N/A)
CB 13062	On Grade	6.45	0.95	3.46	0.36	0.33	0.02
CB 13063	In Sag	6	3.04	3.53	0.03	0.03	(N/A)
CB 13064	On Grade	6.28	4.18	4.56	0.16	0.15	0.01
CB 13065	In Sag	6.26	5.36	5.62	0.56	0.56	(N/A)
CB 13066	On Grade	6.86	-0.24	2	0.66	0.59	0.08
CB 13067	In Sag	5.85	0.84	2.95	0.08	0.08	(N/A)
CB 13068	In Sag	5.34	4.44	4.74	0.05	0.05	(N/A)
CB 13069	In Sag	5.67	0.97	3.09	0.03	0.03	(N/A)

CB 13070	In Sag	5.76	0.86	2.96	0.09	0.09	(N/A)
CB 13071	On Grade	5.31	0.27	3.55	0.08	0.07	0
CB 13072	In Sag	5.47	0.37	3.96	0.1	0.1	(N/A)
CB 13073	On Grade	5.43	2.23	4.4	0.21	0.2	0.01
CB 13074	On Grade	8	1.55	1.55	0	0	0
CB 13075	On Grade	8.05	3.1	5.29	0.01	0.01	0
CB 20001	On Grade	8	-1.37	1.9	1.26	1.04	0.23
CB90000	On Grade	5.91	3.8	4.3	0.02	0.02	0
CB90001	On Grade	8	1.15	1.15	0	0	0
CB90002	On Grade	8	1.87	1.87	0	0	0
CB90003	On Grade	8	3.35	3.35	0	0	0
CB90004	In Sag	8	1.37	3.59	0.04	0.04	(N/A)
CB90005	On Grade	8	1.92	3.96	0.01	0.01	0
CB90006	On Grade	8	1.9	3.82	0.01	0.01	0
CB90007	On Grade	8	2.93	5.02	0.02	0.02	0
Summation of Hydraulic Grade Line Elevations (ft)				**288.72**			

Catch Basin Drainage System 3 Existing 2 Yr. High Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1099	On Grade	5.04	1.6	1.86	0	0	0
CB 2074	On Grade	5.24	0.41	2.76	0.08	0.07	0.01
CB 2077	On Grade	5.24	1.54	3.61	0.02	0.02	0
CB 2078	In Sag	5.12	0.29	2.72	0.03	0.03	(N/A)
CB 2081	On Grade	4.8	-0.73	2.02	0.32	0.2	0.12
CB 2083	In Sag	4.42	-0.41	2.02	0	0	(N/A)
CB 2085	In Sag	5.07	0.04	3.06	0.16	0.16	(N/A)
CB 2087	In Sag	5.03	0.7	3.07	0.15	0.15	(N/A)
CB 3039	In Sag	4.96	-0.07	2.73	0.09	0.09	(N/A)
CB 3059	In Sag	4.56	-0.07	2.22	0.28	0.28	(N/A)
CB 6005	In Sag	5.09	0.1	2.27	0.15	0.15	(N/A)
CB 6006	In Sag	5.05	0.2	2.42	0.22	0.22	(N/A)
CB 6044	On Grade	5.17	-2	1.86	0.04	0.04	0
CB 6045	On Grade	5.01	-2.11	1.86	0.08	0.07	0.01
CB 6046	In Sag	5.6	0.19	2.32	0.05	0.05	(N/A)
CB 6047	In Sag	5.02	0.09	2.17	0.04	0.04	(N/A)
CB 6048	In Sag	4.97	-1.65	1.87	0.12	0.12	(N/A)
CB 6049	In Sag	4.6	-2.06	1.87	0.11	0.11	(N/A)
CB 6050	On Grade	4.99	-0.25	1.86	0.05	0.05	0
CB 8071	In Sag	5.97	1.06	3.79	0.08	0.08	(N/A)
CB 8072	In Sag	6.2	1.29	3.79	0.17	0.17	(N/A)
CB 11004	On Grade	5.02	-0.35	1.85	0.05	0.05	0
CB 13002	On Grade	4.39	-2.55	1.88	0	0	0
CB 13005	On Grade	5.66	2.96	3.12	0	0	0
CB 13007	On Grade	5.91	1.81	4	0.16	0.15	0.01
CB 13009	On Grade	5.94	-0.56	1.91	0.03	0.03	0
CB 13010	On Grade	6.19	1.49	3.55	0.04	0.04	0
CB 13012	On Grade	6.8	0.2	2.27	0.03	0.03	0
CB 13013	On Grade	6.84	0.24	2.09	0.02	0.02	0
CB 13014	On Grade	6.93	3.13	4.49	0.01	0.01	0
CB 13017	On Grade	8.39	1.99	2.15	0	0	0
CB 13017A	On Grade	8	2.39	4.42	0.02	0.02	0
CB 13018	On Grade	5.92	1.62	2.26	0.01	0.01	0
CB 13019	On Grade	6.1	1.8	2.34	0	0	0
CB 13020	On Grade	6.01	2.01	2.33	0	0	0
CB 13021	On Grade	6.07	2.37	3.15	0.01	0.01	0
CB 13023	On Grade	6.68	0.18	2.33	0.03	0.02	0
CB 13024	On Grade	6.38	1.18	1.77	0.01	0	0
CB 13025	On Grade	6.72	1.32	2.47	0.01	0.01	0
CB 13026	On Grade	6.76	1.36	2.12	0.01	0.01	0
CB 13027	On Grade	5.81	1.81	2.23	0	0	0
CB 13028	On Grade	5.86	1.96	3.95	0.02	0.02	0
CB 13029	On Grade	6.25	2.05	3.37	0.01	0.01	0
CB 13031	On Grade	6.62	1.42	3.82	0.04	0.03	0
CB 13032	On Grade	6.82	1.52	3.82	0.05	0.04	0
CB 13033	In Sag	7.08	1.78	2.86	0.01	0.01	(N/A)
CB 13034	In Sag	6.63	1.53	3.57	0.02	0.02	(N/A)
CB 13038	On Grade	7.67	1.27	3.4	0.02	0.02	0
CB 13039	On Grade	7.62	1.32	1.98	0.01	0.01	0
CB 13040	On Grade	7.5	0.7	1.06	0	0	0
CB 13041	On Grade	7.44	0.14	2.26	0.05	0.04	0
CB 13042	On Grade	7.37	1.17	3.25	0.05	0.05	0
CB 13044	On Grade	8.11	3.51	5.57	0.04	0.04	0
CB 13045	On Grade	7.99	2.99	4.59	0	0	0
CB 13046	On Grade	7.91	2.91	3.98	0.01	0.01	0
CB 13047	On Grade	7.83	-1.57	1.92	0.01	0.01	0
CB 13048	On Grade	7.85	-1.85	1.92	0	0	0
CB 13049	On Grade	7.77	-1.83	1.92	0	0	0
CB 13050	On Grade	7.77	-1.53	1.92	0.01	0.01	0
CB 13051	On Grade	7.85	-1.45	1.92	0.01	0.01	0
CB 13052	On Grade	7.11	-1.29	1.93	0.01	0.01	0
CB 13053	On Grade	7.55	0.15	2.2	0	0	0
CB 13054	In Sag	6.02	0.22	2.28	0.01	0.01	(N/A)
CB 13055	On Grade	6.98	1.08	3.14	0.03	0.02	0
CB 13056	On Grade	5.89	2.49	2.49	0	0	0
CB 13057	On Grade	6.91	0.91	0.91	0	0	0
CB 13058	On Grade	5.92	2.42	2.42	0	0	0
CB 13059	On Grade	5.89	2.39	2.39	0	0	0
CB 13060	On Grade	6.21	-0.39	1.92	0.04	0.04	0
CB 13061	In Sag	5.93	0.53	2.73	0.05	0.05	(N/A)
CB 13062	On Grade	6.45	0.95	3.17	0.08	0.08	0
CB 13063	In Sag	6	3.04	3.23	0.01	0.01	(N/A)
CB 13064	On Grade	6.28	4.18	4.36	0.04	0.04	0
CB 13065	In Sag	6.26	5.36	5.48	0.12	0.12	(N/A)
CB 13066	On Grade	6.86	-0.24	1.91	0.15	0.14	0.01
CB 13067	In Sag	5.85	0.84	2.9	0.02	0.02	(N/A)
CB 13068	In Sag	5.34	4.44	4.65	0.01	0.01	(N/A)
CB 13069	In Sag	5.67	0.97	3.02	0.01	0.01	(N/A)

CB 13070	In Sag	5.76	0.86	2.91	0.02	0.02	(N/A)
CB 13071	On Grade	5.31	0.27	2.62	0.02	0.02	0
CB 13072	In Sag	5.47	0.37	3.63	0.03	0.03	(N/A)
CB 13073	On Grade	5.43	2.23	4.32	0.05	0.05	0
CB 13074	On Grade	8	1.55	1.55	0	0	0
CB 13075	On Grade	8.05	3.1	3.29	0	0	0
CB 20001	On Grade	8	-1.37	1.91	0.22	0.21	0.01
CB90000	On Grade	5.91	3.8	3.8	0	0	0
CB90001	On Grade	8	1.15	1.15	0	0	0
CB90002	On Grade	8	1.87	1.87	0	0	0
CB90003	On Grade	8	3.35	3.35	0	0	0
CB90004	In Sag	8	1.37	2.57	0.01	0.01	(N/A)
CB90005	On Grade	8	1.92	2.24	0	0	0
CB90006	On Grade	8	1.9	2.17	0	0	0
CB90007	On Grade	8	2.93	3.55	0.01	0.01	0
Summation of Hydraulic Grade Line Elevations (ft)				**254.02**			

Catch Basin Drainage System 3 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1099	On Grade	5.04	1.6	1.6	0	0	0
CB 2074	On Grade	5.24	0.41	2.76	0.08	0.07	0.01
CB 2077	On Grade	5.24	1.54	3.61	0.02	0.02	0
CB 2078	In Sag	5.12	0.29	2.72	0.03	0.03	(N/A)
CB 2081	On Grade	4.8	-0.73	1.8	0.32	0.2	0.12
CB 2083	In Sag	4.42	-0.41	-0.41	0	0	(N/A)
CB 2085	In Sag	5.07	0.04	3.06	0.16	0.16	(N/A)
CB 2087	In Sag	5.03	0.7	3.07	0.15	0.15	(N/A)
CB 3039	In Sag	4.96	-0.07	2.73	0.09	0.09	(N/A)
CB 3059	In Sag	4.56	-0.07	2.22	0.28	0.28	(N/A)
CB 6005	In Sag	5.09	0.1	2.27	0.15	0.15	(N/A)
CB 6006	In Sag	5.05	0.2	2.42	0.22	0.22	(N/A)
CB 6044	On Grade	5.17	-2	0.25	0.04	0.04	0
CB 6045	On Grade	5.01	-2.11	0.24	0.08	0.07	0.01
CB 6046	In Sag	5.6	0.19	2.32	0.05	0.05	(N/A)
CB 6047	In Sag	5.02	0.09	2.17	0.04	0.04	(N/A)
CB 6048	In Sag	4.97	-1.65	0.46	0.12	0.12	(N/A)
CB 6049	In Sag	4.6	-2.06	0.14	0.11	0.11	(N/A)
CB 6050	On Grade	4.99	-0.25	1.86	0.05	0.05	0
CB 8071	In Sag	5.97	1.06	3.79	0.08	0.08	(N/A)
CB 8072	In Sag	6.2	1.29	3.79	0.17	0.17	(N/A)
CB 11004	On Grade	5.02	-0.35	1.85	0.05	0.05	0
CB 13002	On Grade	4.39	-2.55	-2.55	0	0	0
CB 13005	On Grade	5.66	2.96	3.12	0	0	0
CB 13007	On Grade	5.91	1.81	4	0.16	0.15	0.01
CB 13009	On Grade	5.94	-0.56	1.57	0.03	0.03	0
CB 13010	On Grade	6.19	1.49	3.55	0.04	0.04	0
CB 13012	On Grade	6.8	0.2	2.27	0.03	0.03	0
CB 13013	On Grade	6.84	0.24	2.09	0.02	0.02	0
CB 13014	On Grade	6.93	3.13	4.49	0.01	0.01	0
CB 13017	On Grade	8.39	1.99	2.15	0	0	0
CB 13017A	On Grade	8	2.39	4.42	0.02	0.02	0
CB 13018	On Grade	5.92	1.62	2.26	0.01	0.01	0
CB 13019	On Grade	6.1	1.8	2.34	0	0	0
CB 13020	On Grade	6.01	2.01	2.33	0	0	0
CB 13021	On Grade	6.07	2.37	3.15	0.01	0.01	0
CB 13023	On Grade	6.68	0.18	2.33	0.03	0.02	0
CB 13024	On Grade	6.38	1.18	1.77	0.01	0	0
CB 13025	On Grade	6.72	1.32	2.47	0.01	0.01	0
CB 13026	On Grade	6.76	1.36	2.12	0.01	0.01	0
CB 13027	On Grade	5.81	1.81	2.23	0	0	0
CB 13028	On Grade	5.86	1.96	3.95	0.02	0.02	0
CB 13029	On Grade	6.25	2.05	3.37	0.01	0.01	0
CB 13031	On Grade	6.62	1.42	3.82	0.04	0.03	0
CB 13032	On Grade	6.82	1.52	3.82	0.05	0.04	0
CB 13033	In Sag	7.08	1.78	2.86	0.01	0.01	(N/A)
CB 13034	In Sag	6.63	1.53	3.57	0.02	0.02	(N/A)
CB 13038	On Grade	7.67	1.27	3.4	0.02	0.02	0
CB 13039	On Grade	7.62	1.32	1.98	0.01	0.01	0
CB 13040	On Grade	7.5	0.7	1.06	0	0	0
CB 13041	On Grade	7.44	0.14	2.26	0.05	0.04	0
CB 13042	On Grade	7.37	1.17	3.25	0.05	0.05	0
CB 13044	On Grade	8.11	3.51	5.57	0.04	0.04	0
CB 13045	On Grade	7.99	2.99	4.59	0	0	0
CB 13046	On Grade	7.91	2.91	3.98	0.01	0.01	0
CB 13047	On Grade	7.83	-1.57	0.79	0.01	0.01	0
CB 13048	On Grade	7.85	-1.85	0.82	0	0	0
CB 13049	On Grade	7.77	-1.83	0.82	0	0	0
CB 13050	On Grade	7.77	-1.53	0.82	0.01	0.01	0
CB 13051	On Grade	7.85	-1.45	0.88	0.01	0.01	0
CB 13052	On Grade	7.11	-1.29	1.04	0.01	0.01	0
CB 13053	On Grade	7.55	0.15	0.59	0	0	0
CB 13054	In Sag	6.02	0.22	2.11	0.01	0.01	(N/A)
CB 13055	On Grade	6.98	1.08	3.14	0.03	0.02	0
CB 13056	On Grade	5.89	2.49	2.49	0	0	0
CB 13057	On Grade	6.91	0.91	0.91	0	0	0
CB 13058	On Grade	5.92	2.42	2.42	0	0	0
CB 13059	On Grade	5.89	2.39	2.39	0	0	0
CB 13060	On Grade	6.21	-0.39	1.92	0.04	0.04	0
CB 13061	In Sag	5.93	0.53	2.73	0.05	0.05	(N/A)
CB 13062	On Grade	6.45	0.95	3.17	0.08	0.08	0
CB 13063	In Sag	6	3.04	3.23	0.01	0.01	(N/A)
CB 13064	On Grade	6.28	4.18	4.36	0.04	0.04	0
CB 13065	In Sag	6.26	5.36	5.48	0.12	0.12	(N/A)
CB 13066	On Grade	6.86	-0.24	1.86	0.15	0.14	0.01
CB 13067	In Sag	5.85	0.84	2.9	0.02	0.02	(N/A)
CB 13068	In Sag	5.34	4.44	4.65	0.01	0.01	(N/A)
CB 13069	In Sag	5.67	0.97	3.02	0.01	0.01	(N/A)

CB 13070	In Sag	5.76	0.86	2.91	0.02	0.02	(N/A)
CB 13071	On Grade	5.31	0.27	2.62	0.02	0.02	0
CB 13072	In Sag	5.47	0.37	3.63	0.03	0.03	(N/A)
CB 13073	On Grade	5.43	2.23	4.32	0.05	0.05	0
CB 13074	On Grade	8	1.55	1.55	0	0	0
CB 13075	On Grade	8.05	3.1	3.29	0	0	0
CB 20001	On Grade	8	-1.37	0.86	0.22	0.21	0.01
CB90000	On Grade	5.91	3.8	3.8	0	0	0
CB90001	On Grade	8	1.15	1.15	0	0	0
CB90002	On Grade	8	1.87	1.87	0	0	0
CB90003	On Grade	8	3.35	3.35	0	0	0
CB90004	In Sag	8	1.37	2.57	0.01	0.01	(N/A)
CB90005	On Grade	8	1.92	2.24	0	0	0
CB90006	On Grade	8	1.9	2.17	0	0	0
CB90007	On Grade	8	2.93	3.55	0.01	0.01	0
Summation of Hydraulic Grade Line Elevations (ft)				**230.73**			

Catch Basin Drainage System 3 Existing 10 Yr. High Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1099	On Grade	5.04	1.6	1.93	0.01	0.01	0
CB 2074	On Grade	5.24	0.41	3.45	0.37	0.22	0.15
CB 2077	On Grade	5.24	1.54	3.67	0.07	0.06	0
CB 2078	In Sag	5.12	0.29	3.49	0.12	0.12	(N/A)
CB 2081	On Grade	4.8	-0.73	3.56	2.41	0.73	1.67
CB 2083	In Sag	4.42	-0.41	3.56	0.02	0.02	(N/A)
CB 2085	In Sag	5.07	0.04	4.6	0.75	0.75	(N/A)
CB 2087	In Sag	5.03	0.7	4.61	0.7	0.7	(N/A)
CB 3039	In Sag	4.96	-0.07	3.5	0.47	0.47	(N/A)
CB 3059	In Sag	4.56	-0.07	3.46	1.38	1.38	(N/A)
CB 6005	In Sag	5.09	0.1	2.97	0.87	0.87	(N/A)
CB 6006	In Sag	5.05	0.2	2.98	1.18	1.18	(N/A)
CB 6044	On Grade	5.17	-2	1.86	0.22	0.16	0.07
CB 6045	On Grade	5.01	-2.11	1.86	0.5	0.27	0.23
CB 6046	In Sag	5.6	0.19	2.43	0.18	0.18	(N/A)
CB 6047	In Sag	5.02	0.09	2.25	0.16	0.17	(N/A)
CB 6048	In Sag	4.97	-1.65	2.02	0.54	0.54	(N/A)
CB 6049	In Sag	4.6	-2.06	2.02	0.49	0.49	(N/A)
CB 6050	On Grade	4.99	-0.25	1.92	0.19	0.14	0.05
CB 8071	In Sag	5.97	1.06	4.51	0.36	0.36	(N/A)
CB 8072	In Sag	6.2	1.29	4.52	0.96	0.96	(N/A)
CB 11004	On Grade	5.02	-0.35	1.86	0.19	0.14	0.05
CB 13002	On Grade	4.39	-2.55	2.1	0.03	0.03	0
CB 13005	On Grade	5.66	2.96	3.34	0.01	0.01	0
CB 13007	On Grade	5.91	1.81	4.32	0.98	0.83	0.15
CB 13009	On Grade	5.94	-0.56	2.53	0.12	0.12	0.01
CB 13010	On Grade	6.19	1.49	3.61	0.15	0.15	0.01
CB 13012	On Grade	6.8	0.2	2.53	0.11	0.1	0
CB 13013	On Grade	6.84	0.24	2.61	0.06	0.06	0
CB 13014	On Grade	6.93	3.13	5.22	0.05	0.05	0
CB 13017	On Grade	8.39	1.99	4.25	0	0	0
CB 13017A	On Grade	8	2.39	4.51	0.08	0.07	0
CB 13018	On Grade	5.92	1.62	3.73	0.02	0.02	0
CB 13019	On Grade	6.1	1.8	3.9	0.02	0.02	0
CB 13020	On Grade	6.01	2.01	4.14	0.01	0.01	0
CB 13021	On Grade	6.07	2.37	4.42	0.03	0.03	0
CB 13023	On Grade	6.68	0.18	2.57	0.09	0.09	0
CB 13024	On Grade	6.38	1.18	3.36	0.02	0.02	0
CB 13025	On Grade	6.72	1.32	3.51	0.04	0.03	0
CB 13026	On Grade	6.76	1.36	3.52	0.03	0.02	0
CB 13027	On Grade	5.81	1.81	3.96	0.01	0.01	0
CB 13028	On Grade	5.86	1.96	4.3	0.07	0.07	0
CB 13029	On Grade	6.25	2.05	4.23	0.05	0.04	0
CB 13031	On Grade	6.62	1.42	3.91	0.14	0.13	0.01
CB 13032	On Grade	6.82	1.52	3.91	0.17	0.16	0.01
CB 13033	In Sag	7.08	1.78	3.81	0.03	0.03	(N/A)
CB 13034	In Sag	6.63	1.53	3.62	0.09	0.09	(N/A)
CB 13038	On Grade	7.67	1.27	3.59	0.08	0.08	0
CB 13039	On Grade	7.62	1.32	3.44	0.02	0.02	0
CB 13040	On Grade	7.5	0.7	3.15	0.01	0.01	0
CB 13041	On Grade	7.44	0.14	2.59	0.18	0.17	0.01
CB 13042	On Grade	7.37	1.17	3.32	0.2	0.19	0.01
CB 13044	On Grade	8.11	3.51	5.63	0.16	0.15	0.01
CB 13045	On Grade	7.99	2.99	5.29	0.02	0.02	0
CB 13046	On Grade	7.91	2.91	5.05	0.04	0.03	0
CB 13047	On Grade	7.83	-1.57	2.7	0.02	0.02	0
CB 13048	On Grade	7.85	-1.85	2.71	0.01	0.01	0
CB 13049	On Grade	7.77	-1.83	2.71	0.02	0.02	0
CB 13050	On Grade	7.77	-1.53	2.74	0.03	0.03	0
CB 13051	On Grade	7.85	-1.45	2.78	0.03	0.03	0
CB 13052	On Grade	7.11	-1.29	2.81	0.04	0.04	0
CB 13053	On Grade	7.55	0.15	2.81	0	0	0
CB 13054	In Sag	6.02	0.22	2.85	0.05	0.05	(N/A)
CB 13055	On Grade	6.98	1.08	3.19	0.1	0.09	0
CB 13056	On Grade	5.89	2.49	2.49	0	0	0
CB 13057	On Grade	6.91	0.91	0.91	0	0	0
CB 13058	On Grade	5.92	2.42	2.42	0	0	0
CB 13059	On Grade	5.89	2.39	2.39	0	0	0
CB 13060	On Grade	6.21	-0.39	2.85	0.17	0.16	0.01
CB 13061	In Sag	5.93	0.53	3.02	0.17	0.17	(N/A)
CB 13062	On Grade	6.45	0.95	3.46	0.36	0.33	0.02
CB 13063	In Sag	6	3.04	3.53	0.03	0.03	(N/A)
CB 13064	On Grade	6.28	4.18	4.56	0.16	0.15	0.01
CB 13065	In Sag	6.26	5.36	5.62	0.56	0.56	(N/A)
CB 13066	On Grade	6.86	-0.24	2.72	0.66	0.59	0.08
CB 13067	In Sag	5.85	0.84	2.95	0.08	0.08	(N/A)
CB 13068	In Sag	5.34	4.44	4.74	0.05	0.05	(N/A)
CB 13069	In Sag	5.67	0.97	3.09	0.03	0.03	(N/A)

CB 13070	In Sag	5.76	0.86	2.96	0.09	0.09	(N/A)
CB 13071	On Grade	5.31	0.27	3.55	0.08	0.07	0
CB 13072	In Sag	5.47	0.37	3.96	0.1	0.1	(N/A)
CB 13073	On Grade	5.43	2.23	4.4	0.21	0.2	0.01
CB 13074	On Grade	8	1.55	1.55	0	0	0
CB 13075	On Grade	8.05	3.1	5.29	0.01	0.01	0
CB 20001	On Grade	8	-1.37	2.57	1.26	1.04	0.23
CB90000	On Grade	5.91	3.8	4.3	0.02	0.02	0
CB90001	On Grade	8	1.15	1.15	0	0	0
CB90002	On Grade	8	1.87	1.87	0	0	0
CB90003	On Grade	8	3.35	3.35	0	0	0
CB90004	In Sag	8	1.37	3.59	0.04	0.04	(N/A)
CB90005	On Grade	8	1.92	3.96	0.01	0.01	0
CB90006	On Grade	8	1.9	3.82	0.01	0.01	0
CB90007	On Grade	8	2.93	5.02	0.02	0.02	0
Summation of Hydraulic Grade Line Elevations (ft)				**312.39**			

Catch Basin Drainage System 3 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1099	On Grade	5.04	1.6	1.93	0.01	0.01	0
CB 2074	On Grade	5.24	0.41	3.19	0.37	0.22	0.15
CB 2077	On Grade	5.24	1.54	3.74	0.07	0.06	0
CB 2078	In Sag	5.12	0.29	3.33	0.12	0.12	(N/A)
CB 2081	On Grade	4.8	-0.73	3.23	2.41	0.73	1.67
CB 2083	In Sag	4.42	-0.41	3.23	0.02	0.02	(N/A)
CB 2085	In Sag	5.07	0.04	4.19	0.75	0.75	(N/A)
CB 2087	In Sag	5.03	0.7	4.2	0.7	0.7	(N/A)
CB 3039	In Sag	4.96	-0.07	3.34	0.47	0.47	(N/A)
CB 3059	In Sag	4.56	-0.07	3.13	1.38	1.38	(N/A)
CB 6005	In Sag	5.09	0.1	2.76	0.87	0.87	(N/A)
CB 6006	In Sag	5.05	0.2	2.8	1.18	1.18	(N/A)
CB 6044	On Grade	5.17	-2	1.86	0.22	0.16	0.07
CB 6045	On Grade	5.01	-2.11	1.86	0.5	0.27	0.23
CB 6046	In Sag	5.6	0.19	2.43	0.18	0.18	(N/A)
CB 6047	In Sag	5.02	0.09	2.25	0.16	0.17	(N/A)
CB 6048	In Sag	4.97	-1.65	2	0.54	0.54	(N/A)
CB 6049	In Sag	4.6	-2.06	2	0.49	0.49	(N/A)
CB 6050	On Grade	4.99	-0.25	1.92	0.19	0.14	0.05
CB 8071	In Sag	5.97	1.06	4.03	0.36	0.36	(N/A)
CB 8072	In Sag	6.2	1.29	4.03	0.96	0.96	(N/A)
CB 11004	On Grade	5.02	-0.35	1.86	0.19	0.14	0.05
CB 13002	On Grade	4.39	-2.55	2.06	0.03	0.03	0
CB 13005	On Grade	5.66	2.96	3.34	0.01	0.01	0
CB 13007	On Grade	5.91	1.81	4.32	0.98	0.83	0.15
CB 13009	On Grade	5.94	-0.56	2.41	0.12	0.12	0.01
CB 13010	On Grade	6.19	1.49	3.61	0.15	0.15	0.01
CB 13012	On Grade	6.8	0.2	2.45	0.11	0.1	0
CB 13013	On Grade	6.84	0.24	2.6	0.06	0.06	0
CB 13014	On Grade	6.93	3.13	5.22	0.05	0.05	0
CB 13017	On Grade	8.39	1.99	4.25	0	0	0
CB 13017A	On Grade	8	2.39	4.51	0.08	0.07	0
CB 13018	On Grade	5.92	1.62	3.73	0.02	0.02	0
CB 13019	On Grade	6.1	1.8	3.9	0.02	0.02	0
CB 13020	On Grade	6.01	2.01	4.14	0.01	0.01	0
CB 13021	On Grade	6.07	2.37	4.42	0.03	0.03	0
CB 13023	On Grade	6.68	0.18	2.57	0.09	0.09	0
CB 13024	On Grade	6.38	1.18	3.36	0.02	0.02	0
CB 13025	On Grade	6.72	1.32	3.51	0.04	0.03	0
CB 13026	On Grade	6.76	1.36	3.52	0.03	0.02	0
CB 13027	On Grade	5.81	1.81	3.96	0.01	0.01	0
CB 13028	On Grade	5.86	1.96	4.3	0.07	0.07	0
CB 13029	On Grade	6.25	2.05	4.23	0.05	0.04	0
CB 13031	On Grade	6.62	1.42	3.91	0.14	0.13	0.01
CB 13032	On Grade	6.82	1.52	3.91	0.17	0.16	0.01
CB 13033	In Sag	7.08	1.78	3.81	0.03	0.03	(N/A)
CB 13034	In Sag	6.63	1.53	3.62	0.09	0.09	(N/A)
CB 13038	On Grade	7.67	1.27	3.59	0.08	0.08	0
CB 13039	On Grade	7.62	1.32	3.44	0.02	0.02	0
CB 13040	On Grade	7.5	0.7	3.15	0.01	0.01	0
CB 13041	On Grade	7.44	0.14	2.46	0.18	0.17	0.01
CB 13042	On Grade	7.37	1.17	3.32	0.2	0.19	0.01
CB 13044	On Grade	8.11	3.51	5.63	0.16	0.15	0.01
CB 13045	On Grade	7.99	2.99	5.29	0.02	0.02	0
CB 13046	On Grade	7.91	2.91	5.05	0.04	0.03	0
CB 13047	On Grade	7.83	-1.57	2.56	0.02	0.02	0
CB 13048	On Grade	7.85	-1.85	2.57	0.01	0.01	0
CB 13049	On Grade	7.77	-1.83	2.57	0.02	0.02	0
CB 13050	On Grade	7.77	-1.53	2.6	0.03	0.03	0
CB 13051	On Grade	7.85	-1.45	2.63	0.03	0.03	0
CB 13052	On Grade	7.11	-1.29	2.66	0.04	0.04	0
CB 13053	On Grade	7.55	0.15	2.66	0	0	0
CB 13054	In Sag	6.02	0.22	2.7	0.05	0.05	(N/A)
CB 13055	On Grade	6.98	1.08	3.19	0.1	0.09	0
CB 13056	On Grade	5.89	2.49	2.49	0	0	0
CB 13057	On Grade	6.91	0.91	0.91	0	0	0
CB 13058	On Grade	5.92	2.42	2.42	0	0	0
CB 13059	On Grade	5.89	2.39	2.39	0	0	0
CB 13060	On Grade	6.21	-0.39	2.68	0.17	0.16	0.01
CB 13061	In Sag	5.93	0.53	3.02	0.17	0.17	(N/A)
CB 13062	On Grade	6.45	0.95	3.46	0.36	0.33	0.02
CB 13063	In Sag	6	3.04	3.53	0.03	0.03	(N/A)
CB 13064	On Grade	6.28	4.18	4.56	0.16	0.15	0.01
CB 13065	In Sag	6.26	5.36	5.62	0.56	0.56	(N/A)
CB 13066	On Grade	6.86	-0.24	2.57	0.66	0.59	0.08
CB 13067	In Sag	5.85	0.84	2.95	0.08	0.08	(N/A)
CB 13068	In Sag	5.34	4.44	4.74	0.05	0.05	(N/A)
CB 13069	In Sag	5.67	0.97	3.09	0.03	0.03	(N/A)

CB 13070	In Sag	5.76	0.86	2.96	0.09	0.09	(N/A)
CB 13071	On Grade	5.31	0.27	3.55	0.08	0.07	0
CB 13072	In Sag	5.47	0.37	3.96	0.1	0.1	(N/A)
CB 13073	On Grade	5.43	2.23	4.4	0.21	0.2	0.01
CB 13074	On Grade	8	1.55	1.55	0	0	0
CB 13075	On Grade	8.05	3.1	5.29	0.01	0.01	0
CB 20001	On Grade	8	-1.37	2.43	1.26	1.04	0.23
CB90000	On Grade	5.91	3.8	4.3	0.02	0.02	0
CB90001	On Grade	8	1.15	1.15	0	0	0
CB90002	On Grade	8	1.87	1.87	0	0	0
CB90003	On Grade	8	3.35	3.35	0	0	0
CB90004	In Sag	8	1.37	3.59	0.04	0.04	(N/A)
CB90005	On Grade	8	1.92	3.96	0.01	0.01	0
CB90006	On Grade	8	1.9	3.82	0.01	0.01	0
CB90007	On Grade	8	2.93	5.02	0.02	0.02	0
Summation of Hydraulic Grade Line Elevations (ft)				**306.67**			

Catch Basin Drainage System 3 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1099	On Grade	5.04	1.6	2.97	0	0	0
CB 2074	On Grade	5.24	0.41	3.08	0.08	0.07	0.01
CB 2077	On Grade	5.24	1.54	3.61	0.02	0.02	0
CB 2078	In Sag	5.12	0.29	3.15	0.03	0.03	(N/A)
CB 2081	On Grade	4.8	-0.73	3.08	0.32	0.2	0.12
CB 2083	In Sag	4.42	-0.41	3.08	0	0	(N/A)
CB 2085	In Sag	5.07	0.04	3.19	0.16	0.16	(N/A)
CB 2087	In Sag	5.03	0.7	3.2	0.15	0.15	(N/A)
CB 3039	In Sag	4.96	-0.07	3.15	0.09	0.09	(N/A)
CB 3059	In Sag	4.56	-0.07	3.07	0.28	0.28	(N/A)
CB 6005	In Sag	5.09	0.1	3.04	0.15	0.15	(N/A)
CB 6006	In Sag	5.05	0.2	3.04	0.22	0.22	(N/A)
CB 6044	On Grade	5.17	-2	2.97	0.04	0.04	0
CB 6045	On Grade	5.01	-2.11	2.97	0.08	0.07	0.01
CB 6046	In Sag	5.6	0.19	2.97	0.05	0.05	(N/A)
CB 6047	In Sag	5.02	0.09	2.97	0.04	0.04	(N/A)
CB 6048	In Sag	4.97	-1.65	2.98	0.12	0.12	(N/A)
CB 6049	In Sag	4.6	-2.06	2.98	0.11	0.11	(N/A)
CB 6050	On Grade	4.99	-0.25	2.97	0.05	0.05	0
CB 8071	In Sag	5.97	1.06	3.79	0.08	0.08	(N/A)
CB 8072	In Sag	6.2	1.29	3.79	0.17	0.17	(N/A)
CB 11004	On Grade	5.02	-0.35	2.97	0.05	0.05	0
CB 13002	On Grade	4.39	-2.55	2.98	0	0	0
CB 13005	On Grade	5.66	2.96	3.12	0	0	0
CB 13007	On Grade	5.91	1.81	4	0.16	0.15	0.01
CB 13009	On Grade	5.94	-0.56	3.01	0.03	0.03	0
CB 13010	On Grade	6.19	1.49	3.56	0.04	0.04	0
CB 13012	On Grade	6.8	0.2	3.01	0.03	0.03	0
CB 13013	On Grade	6.84	0.24	3.01	0.02	0.02	0
CB 13014	On Grade	6.93	3.13	4.49	0.01	0.01	0
CB 13017	On Grade	8.39	1.99	2.15	0	0	0
CB 13017A	On Grade	8	2.39	4.42	0.02	0.02	0
CB 13018	On Grade	5.92	1.62	2.26	0.01	0.01	0
CB 13019	On Grade	6.1	1.8	2.34	0	0	0
CB 13020	On Grade	6.01	2.01	2.33	0	0	0
CB 13021	On Grade	6.07	2.37	3.15	0.01	0.01	0
CB 13023	On Grade	6.68	0.18	3.01	0.03	0.02	0
CB 13024	On Grade	6.38	1.18	3.21	0.01	0	0
CB 13025	On Grade	6.72	1.32	2.8	0.01	0.01	0
CB 13026	On Grade	6.76	1.36	2.12	0.01	0.01	0
CB 13027	On Grade	5.81	1.81	2.23	0	0	0
CB 13028	On Grade	5.86	1.96	3.95	0.02	0.02	0
CB 13029	On Grade	6.25	2.05	3.37	0.01	0.01	0
CB 13031	On Grade	6.62	1.42	3.82	0.04	0.03	0
CB 13032	On Grade	6.82	1.52	3.82	0.05	0.04	0
CB 13033	In Sag	7.08	1.78	2.86	0.01	0.01	(N/A)
CB 13034	In Sag	6.63	1.53	3.57	0.02	0.02	(N/A)
CB 13038	On Grade	7.67	1.27	3.4	0.02	0.02	0
CB 13039	On Grade	7.62	1.32	2.87	0.01	0.01	0
CB 13040	On Grade	7.5	0.7	3.03	0	0	0
CB 13041	On Grade	7.44	0.14	3.01	0.05	0.04	0
CB 13042	On Grade	7.37	1.17	3.25	0.05	0.05	0
CB 13044	On Grade	8.11	3.51	5.57	0.04	0.04	0
CB 13045	On Grade	7.99	2.99	4.59	0	0	0
CB 13046	On Grade	7.91	2.91	3.98	0.01	0.01	0
CB 13047	On Grade	7.83	-1.57	3.02	0.01	0.01	0
CB 13048	On Grade	7.85	-1.85	3.02	0	0	0
CB 13049	On Grade	7.77	-1.83	3.02	0	0	0
CB 13050	On Grade	7.77	-1.53	3.03	0.01	0.01	0
CB 13051	On Grade	7.85	-1.45	3.03	0.01	0.01	0
CB 13052	On Grade	7.11	-1.29	3.03	0.01	0.01	0
CB 13053	On Grade	7.55	0.15	3.03	0	0	0
CB 13054	In Sag	6.02	0.22	3.04	0.01	0.01	(N/A)
CB 13055	On Grade	6.98	1.08	3.14	0.03	0.02	0
CB 13056	On Grade	5.89	2.49	2.49	0	0	0
CB 13057	On Grade	6.91	0.91	0.91	0	0	0
CB 13058	On Grade	5.92	2.42	2.42	0	0	0
CB 13059	On Grade	5.89	2.39	2.39	0	0	0
CB 13060	On Grade	6.21	-0.39	3.03	0.04	0.04	0
CB 13061	In Sag	5.93	0.53	3.04	0.05	0.05	(N/A)
CB 13062	On Grade	6.45	0.95	3.16	0.08	0.08	0
CB 13063	In Sag	6	3.04	3.24	0.01	0.01	(N/A)
CB 13064	On Grade	6.28	4.18	4.36	0.04	0.04	0
CB 13065	In Sag	6.26	5.36	5.48	0.12	0.12	(N/A)
CB 13066	On Grade	6.86	-0.24	3.02	0.15	0.14	0.01
CB 13067	In Sag	5.85	0.84	3.03	0.02	0.02	(N/A)
CB 13068	In Sag	5.34	4.44	4.65	0.01	0.01	(N/A)
CB 13069	In Sag	5.67	0.97	3.04	0.01	0.01	(N/A)

CB 13070	In Sag	5.76	0.86	3.03	0.02	0.02	(N/A)
CB 13071	On Grade	5.31	0.27	3.38	0.02	0.02	0
CB 13072	In Sag	5.47	0.37	3.63	0.03	0.03	(N/A)
CB 13073	On Grade	5.43	2.23	4.32	0.05	0.05	0
CB 13074	On Grade	8	1.55	1.55	0	0	0
CB 13075	On Grade	8.05	3.1	3.29	0	0	0
CB 20001	On Grade	8	-1.37	3.02	0.22	0.21	0.01
CB90000	On Grade	5.91	3.8	3.8	0	0	0
CB90001	On Grade	8	1.15	3.16	0	0	0
CB90002	On Grade	8	1.87	1.87	0	0	0
CB90003	On Grade	8	3.35	3.35	0	0	0
CB90004	In Sag	8	1.37	2.57	0.01	0.01	(N/A)
CB90005	On Grade	8	1.92	2.24	0	0	0
CB90006	On Grade	8	1.9	2.17	0	0	0
CB90007	On Grade	8	2.93	3.55	0.01	0.01	0
Summation of Hydraulic Grade Line Elevations (ft)				**293.86**			

Catch Basin Drainage System 3 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1099	On Grade	5.04	1.6	1.6	0	0	0
CB 2074	On Grade	5.24	0.41	2.76	0.08	0.07	0.01
CB 2077	On Grade	5.24	1.54	3.61	0.02	0.02	0
CB 2078	In Sag	5.12	0.29	2.72	0.03	0.03	(N/A)
CB 2081	On Grade	4.8	-0.73	1.8	0.32	0.2	0.12
CB 2083	In Sag	4.42	-0.41	-0.41	0	0	(N/A)
CB 2085	In Sag	5.07	0.04	3.06	0.16	0.16	(N/A)
CB 2087	In Sag	5.03	0.7	3.07	0.15	0.15	(N/A)
CB 3039	In Sag	4.96	-0.07	2.73	0.09	0.09	(N/A)
CB 3059	In Sag	4.56	-0.07	2.22	0.28	0.28	(N/A)
CB 6005	In Sag	5.09	0.1	2.27	0.15	0.15	(N/A)
CB 6006	In Sag	5.05	0.2	2.42	0.22	0.22	(N/A)
CB 6044	On Grade	5.17	-2	0.25	0.04	0.04	0
CB 6045	On Grade	5.01	-2.11	0.24	0.08	0.07	0.01
CB 6046	In Sag	5.6	0.19	2.47	0.05	0.05	(N/A)
CB 6047	In Sag	5.02	0.09	2.47	0.04	0.04	(N/A)
CB 6048	In Sag	4.97	-1.65	0.46	0.12	0.12	(N/A)
CB 6049	In Sag	4.6	-2.06	0.14	0.11	0.11	(N/A)
CB 6050	On Grade	4.99	-0.25	2.15	0.05	0.05	0
CB 8071	In Sag	5.97	1.06	3.79	0.08	0.08	(N/A)
CB 8072	In Sag	6.2	1.29	3.79	0.17	0.17	(N/A)
CB 11004	On Grade	5.02	-0.35	2.16	0.05	0.05	0
CB 13002	On Grade	4.39	-2.55	-2.55	0	0	0
CB 13005	On Grade	5.66	2.96	3.12	0	0	0
CB 13007	On Grade	5.91	1.81	4	0.16	0.15	0.01
CB 13009	On Grade	5.94	-0.56	1.57	0.03	0.03	0
CB 13010	On Grade	6.19	1.49	3.55	0.04	0.04	0
CB 13012	On Grade	6.8	0.2	2.27	0.03	0.03	0
CB 13013	On Grade	6.84	0.24	2.09	0.02	0.02	0
CB 13014	On Grade	6.93	3.13	4.49	0.01	0.01	0
CB 13017	On Grade	8.39	1.99	2.15	0	0	0
CB 13017A	On Grade	8	2.39	4.42	0.02	0.02	0
CB 13018	On Grade	5.92	1.62	2.26	0.01	0.01	0
CB 13019	On Grade	6.1	1.8	2.34	0	0	0
CB 13020	On Grade	6.01	2.01	2.33	0	0	0
CB 13021	On Grade	6.07	2.37	3.15	0.01	0.01	0
CB 13023	On Grade	6.68	0.18	2.33	0.03	0.02	0
CB 13024	On Grade	6.38	1.18	1.77	0.01	0	0
CB 13025	On Grade	6.72	1.32	2.47	0.01	0.01	0
CB 13026	On Grade	6.76	1.36	2.12	0.01	0.01	0
CB 13027	On Grade	5.81	1.81	2.23	0	0	0
CB 13028	On Grade	5.86	1.96	3.95	0.02	0.02	0
CB 13029	On Grade	6.25	2.05	3.37	0.01	0.01	0
CB 13031	On Grade	6.62	1.42	3.82	0.04	0.03	0
CB 13032	On Grade	6.82	1.52	3.82	0.05	0.04	0
CB 13033	In Sag	7.08	1.78	2.86	0.01	0.01	(N/A)
CB 13034	In Sag	6.63	1.53	3.57	0.02	0.02	(N/A)
CB 13038	On Grade	7.67	1.27	3.4	0.02	0.02	0
CB 13039	On Grade	7.62	1.32	1.98	0.01	0.01	0
CB 13040	On Grade	7.5	0.7	1.06	0	0	0
CB 13041	On Grade	7.44	0.14	2.26	0.05	0.04	0
CB 13042	On Grade	7.37	1.17	3.25	0.05	0.05	0
CB 13044	On Grade	8.11	3.51	5.57	0.04	0.04	0
CB 13045	On Grade	7.99	2.99	4.59	0	0	0
CB 13046	On Grade	7.91	2.91	3.98	0.01	0.01	0
CB 13047	On Grade	7.83	-1.57	0.79	0.01	0.01	0
CB 13048	On Grade	7.85	-1.85	0.82	0	0	0
CB 13049	On Grade	7.77	-1.83	0.82	0	0	0
CB 13050	On Grade	7.77	-1.53	0.82	0.01	0.01	0
CB 13051	On Grade	7.85	-1.45	0.88	0.01	0.01	0
CB 13052	On Grade	7.11	-1.29	1.04	0.01	0.01	0
CB 13053	On Grade	7.55	0.15	0.59	0	0	0
CB 13054	In Sag	6.02	0.22	2.11	0.01	0.01	(N/A)
CB 13055	On Grade	6.98	1.08	3.14	0.03	0.02	0
CB 13056	On Grade	5.89	2.49	2.49	0	0	0
CB 13057	On Grade	6.91	0.91	0.91	0	0	0
CB 13058	On Grade	5.92	2.42	2.42	0	0	0
CB 13059	On Grade	5.89	2.39	2.39	0	0	0
CB 13060	On Grade	6.21	-0.39	1.92	0.04	0.04	0
CB 13061	In Sag	5.93	0.53	2.73	0.05	0.05	(N/A)
CB 13062	On Grade	6.45	0.95	3.17	0.08	0.08	0
CB 13063	In Sag	6	3.04	3.23	0.01	0.01	(N/A)
CB 13064	On Grade	6.28	4.18	4.36	0.04	0.04	0
CB 13065	In Sag	6.26	5.36	5.48	0.12	0.12	(N/A)
CB 13066	On Grade	6.86	-0.24	1.86	0.15	0.14	0.01
CB 13067	In Sag	5.85	0.84	2.9	0.02	0.02	(N/A)
CB 13068	In Sag	5.34	4.44	4.65	0.01	0.01	(N/A)
CB 13069	In Sag	5.67	0.97	3.02	0.01	0.01	(N/A)

CB 13070	In Sag	5.76	0.86	2.91	0.02	0.02	(N/A)
CB 13071	On Grade	5.31	0.27	2.62	0.02	0.02	0
CB 13072	In Sag	5.47	0.37	3.63	0.03	0.03	(N/A)
CB 13073	On Grade	5.43	2.23	4.32	0.05	0.05	0
CB 13074	On Grade	8	1.55	1.55	0	0	0
CB 13075	On Grade	8.05	3.1	3.29	0	0	0
CB 20001	On Grade	8	-1.37	0.86	0.22	0.21	0.01
CB90000	On Grade	5.91	3.8	3.8	0	0	0
CB90001	On Grade	8	1.15	1.15	0	0	0
CB90002	On Grade	8	1.87	1.87	0	0	0
CB90003	On Grade	8	3.35	3.35	0	0	0
CB90004	In Sag	8	1.37	2.57	0.01	0.01	(N/A)
CB90005	On Grade	8	1.92	2.24	0	0	0
CB90006	On Grade	8	1.9	2.17	0	0	0
CB90007	On Grade	8	2.93	3.55	0.01	0.01	0
Summation of Hydraulic Grade Line Elevations (ft)				**231.78**			

Catch Basin Drainage System 3 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1099	On Grade	5.04	1.6	3.04	0.01	0.01	0
CB 2074	On Grade	5.24	0.41	4.31	0.37	0.22	0.15
CB 2077	On Grade	5.24	1.54	4.38	0.07	0.06	0
CB 2078	In Sag	5.12	0.29	4.17	0.12	0.12	(N/A)
CB 2081	On Grade	4.8	-0.73	3.83	2.41	0.73	1.67
CB 2083	In Sag	4.42	-0.41	5.42	0.02	0	(N/A)
CB 2085	In Sag	5.07	0.04	5.28	0.75	1.29	(N/A)
CB 2087	In Sag	5.03	0.7	5.14	0.7	0	(N/A)
CB 3039	In Sag	4.96	-0.07	4.18	0.47	0.47	(N/A)
CB 3059	In Sag	4.56	-0.07	4.36	1.38	1.38	(N/A)
CB 6005	In Sag	5.09	0.1	3.93	0.87	0.87	(N/A)
CB 6006	In Sag	5.05	0.2	3.95	1.18	1.18	(N/A)
CB 6044	On Grade	5.17	-2	2.97	0.22	0.16	0.07
CB 6045	On Grade	5.01	-2.11	2.97	0.5	0.27	0.23
CB 6046	In Sag	5.6	0.19	2.97	0.18	0.18	(N/A)
CB 6047	In Sag	5.02	0.09	2.97	0.16	0.17	(N/A)
CB 6048	In Sag	4.97	-1.65	3.09	0.54	0.54	(N/A)
CB 6049	In Sag	4.6	-2.06	3.11	0.49	0.49	(N/A)
CB 6050	On Grade	4.99	-0.25	2.97	0.19	0.14	0.05
CB 8071	In Sag	5.97	1.06	4.85	0.36	0.36	(N/A)
CB 8072	In Sag	6.2	1.29	4.85	0.96	0.96	(N/A)
CB 11004	On Grade	5.02	-0.35	2.97	0.19	0.14	0.05
CB 13002	On Grade	4.39	-2.55	3.17	0.03	0.03	0
CB 13005	On Grade	5.66	2.96	3.34	0.01	0.01	0
CB 13007	On Grade	5.91	1.81	4.32	0.98	0.83	0.15
CB 13009	On Grade	5.94	-0.56	3.54	0.12	0.12	0.01
CB 13010	On Grade	6.19	1.49	3.61	0.15	0.15	0.01
CB 13012	On Grade	6.8	0.2	3.55	0.11	0.1	0
CB 13013	On Grade	6.84	0.24	3.55	0.06	0.06	0
CB 13014	On Grade	6.93	3.13	5.22	0.05	0.05	0
CB 13017	On Grade	8.39	1.99	4.25	0	0	0
CB 13017A	On Grade	8	2.39	4.51	0.08	0.07	0
CB 13018	On Grade	5.92	1.62	3.73	0.02	0.02	0
CB 13019	On Grade	6.1	1.8	3.9	0.02	0.02	0
CB 13020	On Grade	6.01	2.01	4.14	0.01	0.01	0
CB 13021	On Grade	6.07	2.37	4.42	0.03	0.03	0
CB 13023	On Grade	6.68	0.18	3.54	0.09	0.09	0
CB 13024	On Grade	6.38	1.18	3.55	0.02	0.02	0
CB 13025	On Grade	6.72	1.32	3.55	0.04	0.03	0
CB 13026	On Grade	6.76	1.36	3.57	0.03	0.02	0
CB 13027	On Grade	5.81	1.81	3.96	0.01	0.01	0
CB 13028	On Grade	5.86	1.96	4.3	0.07	0.07	0
CB 13029	On Grade	6.25	2.05	4.23	0.05	0.04	0
CB 13031	On Grade	6.62	1.42	3.91	0.14	0.13	0.01
CB 13032	On Grade	6.82	1.52	3.91	0.17	0.16	0.01
CB 13033	In Sag	7.08	1.78	3.81	0.03	0.03	(N/A)
CB 13034	In Sag	6.63	1.53	3.62	0.09	0.09	(N/A)
CB 13038	On Grade	7.67	1.27	3.62	0.08	0.08	0
CB 13039	On Grade	7.62	1.32	3.6	0.02	0.02	0
CB 13040	On Grade	7.5	0.7	3.58	0.01	0.01	0
CB 13041	On Grade	7.44	0.14	3.58	0.18	0.17	0.01
CB 13042	On Grade	7.37	1.17	3.6	0.2	0.19	0.01
CB 13044	On Grade	8.11	3.51	5.63	0.16	0.15	0.01
CB 13045	On Grade	7.99	2.99	5.29	0.02	0.02	0
CB 13046	On Grade	7.91	2.91	5.04	0.04	0.03	0
CB 13047	On Grade	7.83	-1.57	3.66	0.02	0.02	0
CB 13048	On Grade	7.85	-1.85	3.67	0.01	0.01	0
CB 13049	On Grade	7.77	-1.83	3.65	0.02	0.02	0
CB 13050	On Grade	7.77	-1.53	3.72	0.03	0.03	0
CB 13051	On Grade	7.85	-1.45	3.76	0.03	0.03	0
CB 13052	On Grade	7.11	-1.29	3.79	0.04	0.04	0
CB 13053	On Grade	7.55	0.15	3.8	0	0	0
CB 13054	In Sag	6.02	0.22	3.86	0.05	0.05	(N/A)
CB 13055	On Grade	6.98	1.08	3.81	0.1	0.09	0
CB 13056	On Grade	5.89	2.49	2.49	0	0	0
CB 13057	On Grade	6.91	0.91	3.86	0	0	0
CB 13058	On Grade	5.92	2.42	2.42	0	0	0
CB 13059	On Grade	5.89	2.39	2.39	0	0	0
CB 13060	On Grade	6.21	-0.39	3.87	0.17	0.16	0.01
CB 13061	In Sag	5.93	0.53	3.96	0.17	0.17	(N/A)
CB 13062	On Grade	6.45	0.95	3.99	0.36	0.33	0.02
CB 13063	In Sag	6	3.04	4	0.03	0.03	(N/A)
CB 13064	On Grade	6.28	4.18	4.56	0.16	0.15	0.01
CB 13065	In Sag	6.26	5.36	5.62	0.56	0.56	(N/A)
CB 13066	On Grade	6.86	-0.24	3.7	0.66	0.59	0.08
CB 13067	In Sag	5.85	0.84	3.86	0.08	0.08	(N/A)
CB 13068	In Sag	5.34	4.44	4.74	0.05	0.05	(N/A)
CB 13069	In Sag	5.67	0.97	3.96	0.03	0.03	(N/A)

CB 13070	In Sag	5.76	0.86	3.86	0.09	0.09	(N/A)
CB 13071	On Grade	5.31	0.27	4.01	0.08	0.07	0
CB 13072	In Sag	5.47	0.37	4.03	0.1	0.1	(N/A)
CB 13073	On Grade	5.43	2.23	4.4	0.21	0.2	0.01
CB 13074	On Grade	8	1.55	3.76	0	0	0
CB 13075	On Grade	8.05	3.1	5.29	0.01	0.01	0
CB 20001	On Grade	8	-1.37	3.56	1.26	1.04	0.23
CB90000	On Grade	5.91	3.8	4.3	0.02	0.02	0
CB90001	On Grade	8	1.15	3.8	0	0	0
CB90002	On Grade	8	1.87	2.5	0	0	0
CB90003	On Grade	8	3.35	3.35	0	0	0
CB90004	In Sag	8	1.37	3.65	0.04	0.04	(N/A)
CB90005	On Grade	8	1.92	3.96	0.01	0.01	0
CB90006	On Grade	8	1.9	3.83	0.01	0.01	0
CB90007	On Grade	8	2.93	5.02	0.02	0.02	0
Summation of Hydraulic Grade Line Elevations (ft)				**363.31**			

Catch Basin Drainage System 3 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1099	On Grade	5.04	1.6	3.11	0.01	0.01	0
CB 2074	On Grade	5.24	0.41	3.75	0.37	0.22	0.15
CB 2077	On Grade	5.24	1.54	3.67	0.07	0.06	0
CB 2078	In Sag	5.12	0.29	3.88	0.12	0.12	(N/A)
CB 2081	On Grade	4.8	-0.73	3.8	2.41	0.73	1.67
CB 2083	In Sag	4.42	-0.41	3.8	0.02	0.02	(N/A)
CB 2085	In Sag	5.07	0.04	4.72	0.75	0.75	(N/A)
CB 2087	In Sag	5.03	0.7	4.73	0.7	0.7	(N/A)
CB 3039	In Sag	4.96	-0.07	3.9	0.47	0.47	(N/A)
CB 3059	In Sag	4.56	-0.07	3.7	1.38	1.38	(N/A)
CB 6005	In Sag	5.09	0.1	3.43	0.87	0.87	(N/A)
CB 6006	In Sag	5.05	0.2	3.43	1.18	1.18	(N/A)
CB 6044	On Grade	5.17	-2	2.97	0.22	0.16	0.07
CB 6045	On Grade	5.01	-2.11	2.97	0.5	0.27	0.23
CB 6046	In Sag	5.6	0.19	2.96	0.18	0.18	(N/A)
CB 6047	In Sag	5.02	0.09	2.96	0.16	0.17	(N/A)
CB 6048	In Sag	4.97	-1.65	3.02	0.54	0.54	(N/A)
CB 6049	In Sag	4.6	-2.06	3.03	0.49	0.49	(N/A)
CB 6050	On Grade	4.99	-0.25	2.97	0.19	0.14	0.05
CB 8071	In Sag	5.97	1.06	4.58	0.36	0.36	(N/A)
CB 8072	In Sag	6.2	1.29	4.6	0.96	0.96	(N/A)
CB 11004	On Grade	5.02	-0.35	2.97	0.19	0.14	0.05
CB 13002	On Grade	4.39	-2.55	3.05	0.03	0.03	0
CB 13005	On Grade	5.66	2.96	3.34	0.01	0.01	0
CB 13007	On Grade	5.91	1.81	4.32	0.98	0.83	0.15
CB 13009	On Grade	5.94	-0.56	3.25	0.12	0.12	0.01
CB 13010	On Grade	6.19	1.49	3.61	0.15	0.15	0.01
CB 13012	On Grade	6.8	0.2	3.29	0.11	0.1	0
CB 13013	On Grade	6.84	0.24	3.29	0.06	0.06	0
CB 13014	On Grade	6.93	3.13	5.22	0.05	0.05	0
CB 13017	On Grade	8.39	1.99	4.25	0	0	0
CB 13017A	On Grade	8	2.39	4.51	0.08	0.07	0
CB 13018	On Grade	5.92	1.62	3.73	0.02	0.02	0
CB 13019	On Grade	6.1	1.8	3.9	0.02	0.02	0
CB 13020	On Grade	6.01	2.01	4.14	0.01	0.01	0
CB 13021	On Grade	6.07	2.37	4.42	0.03	0.03	0
CB 13023	On Grade	6.68	0.18	3.28	0.09	0.09	0
CB 13024	On Grade	6.38	1.18	3.36	0.02	0.02	0
CB 13025	On Grade	6.72	1.32	3.51	0.04	0.03	0
CB 13026	On Grade	6.76	1.36	3.52	0.03	0.02	0
CB 13027	On Grade	5.81	1.81	3.96	0.01	0.01	0
CB 13028	On Grade	5.86	1.96	4.3	0.07	0.07	0
CB 13029	On Grade	6.25	2.05	4.23	0.05	0.04	0
CB 13031	On Grade	6.62	1.42	3.91	0.14	0.13	0.01
CB 13032	On Grade	6.82	1.52	3.91	0.17	0.16	0.01
CB 13033	In Sag	7.08	1.78	3.81	0.03	0.03	(N/A)
CB 13034	In Sag	6.63	1.53	3.62	0.09	0.09	(N/A)
CB 13038	On Grade	7.67	1.27	3.59	0.08	0.08	0
CB 13039	On Grade	7.62	1.32	3.44	0.02	0.02	0
CB 13040	On Grade	7.5	0.7	3.3	0.01	0.01	0
CB 13041	On Grade	7.44	0.14	3.3	0.18	0.17	0.01
CB 13042	On Grade	7.37	1.17	3.32	0.2	0.19	0.01
CB 13044	On Grade	8.11	3.51	5.63	0.16	0.15	0.01
CB 13045	On Grade	7.99	2.99	5.29	0.02	0.02	0
CB 13046	On Grade	7.91	2.91	5.05	0.04	0.03	0
CB 13047	On Grade	7.83	-1.57	3.26	0.02	0.02	0
CB 13048	On Grade	7.85	-1.85	3.26	0.01	0.01	0
CB 13049	On Grade	7.77	-1.83	3.28	0.02	0.02	0
CB 13050	On Grade	7.77	-1.53	3.32	0.03	0.03	0
CB 13051	On Grade	7.85	-1.45	3.37	0.03	0.03	0
CB 13052	On Grade	7.11	-1.29	3.41	0.04	0.04	0
CB 13053	On Grade	7.55	0.15	3.39	0	0	0
CB 13054	In Sag	6.02	0.22	3.5	0.05	0.05	(N/A)
CB 13055	On Grade	6.98	1.08	3.36	0.1	0.09	0
CB 13056	On Grade	5.89	2.49	2.49	0	0	0
CB 13057	On Grade	6.91	0.91	0.91	0	0	0
CB 13058	On Grade	5.92	2.42	2.42	0	0	0
CB 13059	On Grade	5.89	2.39	2.39	0	0	0
CB 13060	On Grade	6.21	-0.39	3.44	0.17	0.16	0.01
CB 13061	In Sag	5.93	0.53	3.46	0.17	0.17	(N/A)
CB 13062	On Grade	6.45	0.95	3.46	0.36	0.33	0.02
CB 13063	In Sag	6	3.04	3.53	0.03	0.03	(N/A)
CB 13064	On Grade	6.28	4.18	4.56	0.16	0.15	0.01
CB 13065	In Sag	6.26	5.36	5.62	0.56	0.56	(N/A)
CB 13066	On Grade	6.86	-0.24	3.26	0.66	0.59	0.08
CB 13067	In Sag	5.85	0.84	3.53	0.08	0.08	(N/A)
CB 13068	In Sag	5.34	4.44	4.74	0.05	0.05	(N/A)
CB 13069	In Sag	5.67	0.97	3.5	0.03	0.03	(N/A)

CB 13070	In Sag	5.76	0.86	3.37	0.09	0.09	(N/A)
CB 13071	On Grade	5.31	0.27	3.55	0.08	0.07	0
CB 13072	In Sag	5.47	0.37	3.96	0.1	0.1	(N/A)
CB 13073	On Grade	5.43	2.23	4.4	0.21	0.2	0.01
CB 13074	On Grade	8	1.55	1.55	0	0	0
CB 13075	On Grade	8.05	3.1	5.29	0.01	0.01	0
CB 20001	On Grade	8	-1.37	3.2	1.26	1.04	0.23
CB90000	On Grade	5.91	3.8	4.3	0.02	0.02	0
CB90001	On Grade	8	1.15	1.69	0	0	0
CB90002	On Grade	8	1.87	1.87	0	0	0
CB90003	On Grade	8	3.35	3.35	0	0	0
CB90004	In Sag	8	1.37	3.59	0.04	0.04	(N/A)
CB90005	On Grade	8	1.92	3.96	0.01	0.01	0
CB90006	On Grade	8	1.9	3.82	0.01	0.01	0
CB90007	On Grade	8	2.93	5.02	0.02	0.02	0
Summation of Hydraulic Grade Line Elevations (ft)				**337.98**			

Manholes Drainage System 3 Existing 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1	8	0.48	0.93	60	Circular Structure
MH 00005	8	-0.35	0.51	60	Circular Structure
MH 00008	7	0.16	0.28	72	Circular Structure
MH 2075	6.27	2.47	2.76	48	Circular Structure
MH 2076	5.7	2.6	2.78	60	Circular Structure
MH 2082	5.74	1.44	1.83	60	Circular Structure
MH 2084	6.11	2.71	3.04	48	Circular Structure
MH 3060	5.58	1.38	1.78	48	Circular Structure
MH 3061	5.3	1.2	1.68	60	Circular Structure
MH 3063	5.85	-1.7	1.8	48	Circular Structure
MH 3064	6.02	-1.7	1.8	48	Circular Structure
MH 3065	5.68	0.98	1.81	60	Circular Structure
MH 6001	6.23	1.13	1.49	60	Circular Structure
MH 6002	6.02	1.22	1.53	48	Circular Structure
MH 6003	6.38	0.78	1.06	60	Circular Structure
MH 6004	6.43	0.43	1.03	60	Circular Structure
MH 6043	6.4	-0.83	-0.76	72	Circular Structure
MH 11005	5.24	-4.06	-2.08	48	Circular Structure
MH 13011	7	-0.09	0.11	96	Circular Structure
MH 13015	7.14	-0.66	0.51	60	Circular Structure
MH 13016	8.21	1.01	1.01	48	Circular Structure
MH 13030	8.15	-2.45	0.51	48	Circular Structure
MH 13035	7.31	-1.19	0.99	48	Circular Structure
MH 13036	7.34	-0.96	1.25	48	Circular Structure
MH 13037	7.33	-1.07	1.29	48	Circular Structure
MH 13043	8.27	1.84	1.84	48	Circular Structure
MH 13081	7	2.47	2.98	48	Circular Structure
MH 13082	7	2.6	2.88	48	Circular Structure
MH 13083	7	2.23	2.64	48	Circular Structure
MH 13084	7	2.63	3.01	48	Circular Structure
MH 13085	6.35	1.97	2.2	48	Circular Structure
MH 13091	7.42	0.58	0.94	96	Circular Structure
MH 20003	7.74	0.55	0.97	84	Circular Structure
MH 99998	7	-0.01	0.2	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**46.6**		

Manholes Drainage System 3 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1	8	0.48	0.87	60	Circular Structure
MH 00005	8	-0.35	-0.24	60	Circular Structure
MH 00008	7	0.16	0.24	72	Circular Structure
MH 2075	6.27	2.47	2.76	48	Circular Structure
MH 2076	5.7	2.6	2.78	60	Circular Structure
MH 2082	5.74	1.44	1.8	60	Circular Structure
MH 2084	6.11	2.71	3.04	48	Circular Structure
MH 3060	5.58	1.38	1.75	48	Circular Structure
MH 3061	5.3	1.2	1.62	60	Circular Structure
MH 3063	5.85	-1.7	1.76	48	Circular Structure
MH 3064	6.02	-1.7	1.77	48	Circular Structure
MH 3065	5.68	0.98	1.78	60	Circular Structure
MH 6001	6.23	1.13	1.38	60	Circular Structure
MH 6002	6.02	1.22	1.44	48	Circular Structure
MH 6003	6.38	0.78	0.94	60	Circular Structure
MH 6004	6.43	0.43	0.93	60	Circular Structure
MH 6043	6.4	-0.83	-0.76	72	Circular Structure
MH 11005	5.24	-4.06	-3.19	48	Circular Structure
MH 13011	7	-0.09	0.1	96	Circular Structure
MH 13015	7.14	-0.66	-0.18	60	Circular Structure
MH 13016	8.21	1.01	1.01	48	Circular Structure
MH 13030	8.15	-2.45	-0.19	48	Circular Structure
MH 13035	7.31	-1.19	-1.19	48	Circular Structure
MH 13036	7.34	-0.96	0.9	48	Circular Structure
MH 13037	7.33	-1.07	1.29	48	Circular Structure
MH 13043	8.27	1.84	1.84	48	Circular Structure
MH 13081	7	2.47	2.98	48	Circular Structure
MH 13082	7	2.6	2.88	48	Circular Structure
MH 13083	7	2.23	2.64	48	Circular Structure
MH 13084	7	2.63	3.01	48	Circular Structure
MH 13085	6.35	1.97	2.2	48	Circular Structure
MH 13091	7.42	0.58	0.87	96	Circular Structure
MH 20003	7.74	0.55	0.89	84	Circular Structure
MH 99998	7	-0.01	0.19	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**39.91**		

Manholes Drainage System 3 Existing 10 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1	8	0.48	2	60	Circular Structure
MH 00005	8	-0.35	1.52	60	Circular Structure
MH 00008	7	0.16	1.37	72	Circular Structure
MH 2075	6.27	2.47	3.2	48	Circular Structure
MH 2076	5.7	2.6	3.23	60	Circular Structure
MH 2082	5.74	1.44	2.95	60	Circular Structure
MH 2084	6.11	2.71	3.88	48	Circular Structure
MH 3060	5.58	1.38	2.84	48	Circular Structure
MH 3061	5.3	1.2	2.79	60	Circular Structure
MH 3063	5.85	-1.7	2.88	48	Circular Structure
MH 3064	6.02	-1.7	2.9	48	Circular Structure
MH 3065	5.68	0.98	2.92	60	Circular Structure
MH 6001	6.23	1.13	2.62	60	Circular Structure
MH 6002	6.02	1.22	2.64	48	Circular Structure
MH 6003	6.38	0.78	2.39	60	Circular Structure
MH 6004	6.43	0.43	2.29	60	Circular Structure
MH 6043	6.4	-0.83	-0.34	72	Circular Structure
MH 11005	5.24	-4.06	-1.75	48	Circular Structure
MH 13011	7	-0.09	0.96	96	Circular Structure
MH 13015	7.14	-0.66	1.4	60	Circular Structure
MH 13016	8.21	1.01	3.17	48	Circular Structure
MH 13030	8.15	-2.45	1.47	48	Circular Structure
MH 13035	7.31	-1.19	1.53	48	Circular Structure
MH 13036	7.34	-0.96	1.58	48	Circular Structure
MH 13037	7.33	-1.07	1.63	48	Circular Structure
MH 13043	8.27	1.84	1.84	48	Circular Structure
MH 13081	7	2.47	3.77	48	Circular Structure
MH 13082	7	2.6	3.66	48	Circular Structure
MH 13083	7	2.23	3.51	48	Circular Structure
MH 13084	7	2.63	3.85	48	Circular Structure
MH 13085	6.35	1.97	3.01	48	Circular Structure
MH 13091	7.42	0.58	2.03	96	Circular Structure
MH 20003	7.74	0.55	2.09	84	Circular Structure
MH 99998	7	-0.01	1.16	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**76.99**		

Manholes Drainage System 3 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1	8	0.48	2	60	Circular Structure
MH 00005	8	-0.35	1.52	60	Circular Structure
MH 00008	7	0.16	1.37	72	Circular Structure
MH 2075	6.27	2.47	3.2	48	Circular Structure
MH 2076	5.7	2.6	3.23	60	Circular Structure
MH 2082	5.74	1.44	2.95	60	Circular Structure
MH 2084	6.11	2.71	3.88	48	Circular Structure
MH 3060	5.58	1.38	2.84	48	Circular Structure
MH 3061	5.3	1.2	2.79	60	Circular Structure
MH 3063	5.85	-1.7	2.88	48	Circular Structure
MH 3064	6.02	-1.7	2.9	48	Circular Structure
MH 3065	5.68	0.98	2.92	60	Circular Structure
MH 6001	6.23	1.13	2.61	60	Circular Structure
MH 6002	6.02	1.22	2.64	48	Circular Structure
MH 6003	6.38	0.78	2.39	60	Circular Structure
MH 6004	6.43	0.43	2.29	60	Circular Structure
MH 6043	6.4	-0.83	-0.34	72	Circular Structure
MH 11005	5.24	-4.06	-1.75	48	Circular Structure
MH 13011	7	-0.09	0.95	96	Circular Structure
MH 13015	7.14	-0.66	1.4	60	Circular Structure
MH 13016	8.21	1.01	3.17	48	Circular Structure
MH 13030	8.15	-2.45	1.47	48	Circular Structure
MH 13035	7.31	-1.19	1.52	48	Circular Structure
MH 13036	7.34	-0.96	1.58	48	Circular Structure
MH 13037	7.33	-1.07	1.63	48	Circular Structure
MH 13043	8.27	1.84	1.84	48	Circular Structure
MH 13081	7	2.47	3.77	48	Circular Structure
MH 13082	7	2.6	3.66	48	Circular Structure
MH 13083	7	2.23	3.51	48	Circular Structure
MH 13084	7	2.63	3.85	48	Circular Structure
MH 13085	6.35	1.97	3.01	48	Circular Structure
MH 13091	7.42	0.58	2.03	96	Circular Structure
MH 20003	7.74	0.55	2.09	84	Circular Structure
MH 99998	7	-0.01	1.16	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**76.96**		

Manholes Drainage System 3 Existing 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1	8	0.48	1.92	60	Circular Structure
MH 00005	8	-0.35	1.91	60	Circular Structure
MH 00008	7	0.16	1.88	72	Circular Structure
MH 2075	6.27	2.47	2.76	48	Circular Structure
MH 2076	5.7	2.6	2.78	60	Circular Structure
MH 2082	5.74	1.44	2.02	60	Circular Structure
MH 2084	6.11	2.71	3.04	48	Circular Structure
MH 3060	5.58	1.38	2	48	Circular Structure
MH 3061	5.3	1.2	1.99	60	Circular Structure
MH 3063	5.85	-1.7	2.01	48	Circular Structure
MH 3064	6.02	-1.7	2.01	48	Circular Structure
MH 3065	5.68	0.98	2.01	60	Circular Structure
MH 6001	6.23	1.13	1.96	60	Circular Structure
MH 6002	6.02	1.22	1.96	48	Circular Structure
MH 6003	6.38	0.78	1.94	60	Circular Structure
MH 6004	6.43	0.43	1.93	60	Circular Structure
MH 6043	6.4	-0.83	1.86	72	Circular Structure
MH 11005	5.24	-4.06	1.87	48	Circular Structure
MH 13011	7	-0.09	1.86	96	Circular Structure
MH 13015	7.14	-0.66	1.91	60	Circular Structure
MH 13016	8.21	1.01	1.01	48	Circular Structure
MH 13030	8.15	-2.45	1.91	48	Circular Structure
MH 13035	7.31	-1.19	1.91	48	Circular Structure
MH 13036	7.34	-0.96	1.92	48	Circular Structure
MH 13037	7.33	-1.07	1.92	48	Circular Structure
MH 13043	8.27	1.84	1.84	48	Circular Structure
MH 13081	7	2.47	2.98	48	Circular Structure
MH 13082	7	2.6	2.88	48	Circular Structure
MH 13083	7	2.23	2.63	48	Circular Structure
MH 13084	7	2.63	3.01	48	Circular Structure
MH 13085	6.35	1.97	2.21	48	Circular Structure
MH 13091	7.42	0.58	1.92	96	Circular Structure
MH 20003	7.74	0.55	1.92	84	Circular Structure
MH 99998	7	-0.01	1.87	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**71.55**		

Manholes Drainage System 3 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1	8	0.48	0.87	60	Circular Structure
MH 00005	8	-0.35	-0.24	60	Circular Structure
MH 00008	7	0.16	0.24	72	Circular Structure
MH 2075	6.27	2.47	2.76	48	Circular Structure
MH 2076	5.7	2.6	2.78	60	Circular Structure
MH 2082	5.74	1.44	1.8	60	Circular Structure
MH 2084	6.11	2.71	3.04	48	Circular Structure
MH 3060	5.58	1.38	1.75	48	Circular Structure
MH 3061	5.3	1.2	1.62	60	Circular Structure
MH 3063	5.85	-1.7	1.76	48	Circular Structure
MH 3064	6.02	-1.7	1.77	48	Circular Structure
MH 3065	5.68	0.98	1.78	60	Circular Structure
MH 6001	6.23	1.13	1.38	60	Circular Structure
MH 6002	6.02	1.22	1.44	48	Circular Structure
MH 6003	6.38	0.78	0.94	60	Circular Structure
MH 6004	6.43	0.43	0.93	60	Circular Structure
MH 6043	6.4	-0.83	-0.69	72	Circular Structure
MH 11005	5.24	-4.06	-3.19	48	Circular Structure
MH 13011	7	-0.09	0.1	96	Circular Structure
MH 13015	7.14	-0.66	-0.18	60	Circular Structure
MH 13016	8.21	1.01	1.01	48	Circular Structure
MH 13030	8.15	-2.45	-0.19	48	Circular Structure
MH 13035	7.31	-1.19	-1.19	48	Circular Structure
MH 13036	7.34	-0.96	0.9	48	Circular Structure
MH 13037	7.33	-1.07	1.29	48	Circular Structure
MH 13043	8.27	1.84	1.84	48	Circular Structure
MH 13081	7	2.47	2.98	48	Circular Structure
MH 13082	7	2.6	2.88	48	Circular Structure
MH 13083	7	2.23	2.64	48	Circular Structure
MH 13084	7	2.63	3.01	48	Circular Structure
MH 13085	6.35	1.97	2.2	48	Circular Structure
MH 13091	7.42	0.58	0.87	96	Circular Structure
MH 20003	7.74	0.55	0.89	84	Circular Structure
MH 99998	7	-0.01	0.19	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**39.98**		

Manholes Drainage System 3 Existing 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1	8	0.48	2.67	60	Circular Structure
MH 00005	8	-0.35	2.57	60	Circular Structure
MH 00008	7	0.16	2.17	72	Circular Structure
MH 2075	6.27	2.47	3.46	48	Circular Structure
MH 2076	5.7	2.6	3.48	60	Circular Structure
MH 2082	5.74	1.44	3.56	60	Circular Structure
MH 2084	6.11	2.71	4.59	48	Circular Structure
MH 3060	5.58	1.38	3.44	48	Circular Structure
MH 3061	5.3	1.2	3.41	60	Circular Structure
MH 3063	5.85	-1.7	3.48	48	Circular Structure
MH 3064	6.02	-1.7	3.5	48	Circular Structure
MH 3065	5.68	0.98	3.52	60	Circular Structure
MH 6001	6.23	1.13	3.27	60	Circular Structure
MH 6002	6.02	1.22	3.3	48	Circular Structure
MH 6003	6.38	0.78	3.04	60	Circular Structure
MH 6004	6.43	0.43	2.92	60	Circular Structure
MH 6043	6.4	-0.83	1.89	72	Circular Structure
MH 11005	5.24	-4.06	2.01	48	Circular Structure
MH 13011	7	-0.09	1.93	96	Circular Structure
MH 13015	7.14	-0.66	2.53	60	Circular Structure
MH 13016	8.21	1.01	3.17	48	Circular Structure
MH 13030	8.15	-2.45	2.55	48	Circular Structure
MH 13035	7.31	-1.19	2.57	48	Circular Structure
MH 13036	7.34	-0.96	2.58	48	Circular Structure
MH 13037	7.33	-1.07	2.58	48	Circular Structure
MH 13043	8.27	1.84	1.84	48	Circular Structure
MH 13081	7	2.47	4.48	48	Circular Structure
MH 13082	7	2.6	4.37	48	Circular Structure
MH 13083	7	2.23	4.17	48	Circular Structure
MH 13084	7	2.63	4.56	48	Circular Structure
MH 13085	6.35	1.97	3.61	48	Circular Structure
MH 13091	7.42	0.58	2.7	96	Circular Structure
MH 20003	7.74	0.55	2.74	84	Circular Structure
MH 99998	7	-0.01	2.02	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**104.68**		

Manholes Drainage System 3 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1	8	0.48	2.53	60	Circular Structure
MH 00005	8	-0.35	2.45	60	Circular Structure
MH 00008	7	0.16	2.06	72	Circular Structure
MH 2075	6.27	2.47	3.21	48	Circular Structure
MH 2076	5.7	2.6	3.24	60	Circular Structure
MH 2082	5.74	1.44	3.23	60	Circular Structure
MH 2084	6.11	2.71	4.17	48	Circular Structure
MH 3060	5.58	1.38	3.13	48	Circular Structure
MH 3061	5.3	1.2	3.1	60	Circular Structure
MH 3063	5.85	-1.7	3.16	48	Circular Structure
MH 3064	6.02	-1.7	3.18	48	Circular Structure
MH 3065	5.68	0.98	3.2	60	Circular Structure
MH 6001	6.23	1.13	2.99	60	Circular Structure
MH 6002	6.02	1.22	3.01	48	Circular Structure
MH 6003	6.38	0.78	2.84	60	Circular Structure
MH 6004	6.43	0.43	2.74	60	Circular Structure
MH 6043	6.4	-0.83	1.88	72	Circular Structure
MH 11005	5.24	-4.06	1.98	48	Circular Structure
MH 13011	7	-0.09	1.92	96	Circular Structure
MH 13015	7.14	-0.66	2.41	60	Circular Structure
MH 13016	8.21	1.01	3.17	48	Circular Structure
MH 13030	8.15	-2.45	2.43	48	Circular Structure
MH 13035	7.31	-1.19	2.48	48	Circular Structure
MH 13036	7.34	-0.96	2.46	48	Circular Structure
MH 13037	7.33	-1.07	2.46	48	Circular Structure
MH 13043	8.27	1.84	1.84	48	Circular Structure
MH 13081	7	2.47	4.04	48	Circular Structure
MH 13082	7	2.6	3.94	48	Circular Structure
MH 13083	7	2.23	3.77	48	Circular Structure
MH 13084	7	2.63	4.13	48	Circular Structure
MH 13085	6.35	1.97	3.28	48	Circular Structure
MH 13091	7.42	0.58	2.55	96	Circular Structure
MH 20003	7.74	0.55	2.58	84	Circular Structure
MH 99998	7	-0.01	1.98	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**97.54**		

Manholes Drainage System 3 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1	8	0.48	3.02	60	Circular Structure
MH 00005	8	-0.35	3.01	60	Circular Structure
MH 00008	7	0.16	2.99	72	Circular Structure
MH 2075	6.27	2.47	3.09	48	Circular Structure
MH 2076	5.7	2.6	3.09	60	Circular Structure
MH 2082	5.74	1.44	3.08	60	Circular Structure
MH 2084	6.11	2.71	3.18	48	Circular Structure
MH 3060	5.58	1.38	3.07	48	Circular Structure
MH 3061	5.3	1.2	3.07	60	Circular Structure
MH 3063	5.85	-1.7	3.08	48	Circular Structure
MH 3064	6.02	-1.7	3.08	48	Circular Structure
MH 3065	5.68	0.98	3.08	60	Circular Structure
MH 6001	6.23	1.13	3.06	60	Circular Structure
MH 6002	6.02	1.22	3.06	48	Circular Structure
MH 6003	6.38	0.78	3.05	60	Circular Structure
MH 6004	6.43	0.43	3.04	60	Circular Structure
MH 6043	6.4	-0.83	2.97	72	Circular Structure
MH 11005	5.24	-4.06	2.98	48	Circular Structure
MH 13011	7	-0.09	2.97	96	Circular Structure
MH 13015	7.14	-0.66	3.01	60	Circular Structure
MH 13016	8.21	1.01	3.03	48	Circular Structure
MH 13030	8.15	-2.45	3.01	48	Circular Structure
MH 13035	7.31	-1.19	3.01	48	Circular Structure
MH 13036	7.34	-0.96	3.01	48	Circular Structure
MH 13037	7.33	-1.07	3.01	48	Circular Structure
MH 13043	8.27	1.84	1.84	48	Circular Structure
MH 13081	7	2.47	3.16	48	Circular Structure
MH 13082	7	2.6	3.13	48	Circular Structure
MH 13083	7	2.23	3.11	48	Circular Structure
MH 13084	7	2.63	3.17	48	Circular Structure
MH 13085	6.35	1.97	3.08	48	Circular Structure
MH 13091	7.42	0.58	3.02	96	Circular Structure
MH 20003	7.74	0.55	3.03	84	Circular Structure
MH 99998	7	-0.01	2.98	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**102.57**		

Manholes Drainage System 3 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1	8	0.48	0.87	60	Circular Structure
MH 00005	8	-0.35	-0.24	60	Circular Structure
MH 00008	7	0.16	0.24	72	Circular Structure
MH 2075	6.27	2.47	2.76	48	Circular Structure
MH 2076	5.7	2.6	2.78	60	Circular Structure
MH 2082	5.74	1.44	1.8	60	Circular Structure
MH 2084	6.11	2.71	3.04	48	Circular Structure
MH 3060	5.58	1.38	1.75	48	Circular Structure
MH 3061	5.3	1.2	1.62	60	Circular Structure
MH 3063	5.85	-1.7	1.76	48	Circular Structure
MH 3064	6.02	-1.7	1.77	48	Circular Structure
MH 3065	5.68	0.98	1.78	60	Circular Structure
MH 6001	6.23	1.13	1.38	60	Circular Structure
MH 6002	6.02	1.22	1.44	48	Circular Structure
MH 6003	6.38	0.78	0.94	60	Circular Structure
MH 6004	6.43	0.43	0.93	60	Circular Structure
MH 6043	6.4	-0.83	-0.69	72	Circular Structure
MH 11005	5.24	-4.06	-3.19	48	Circular Structure
MH 13011	7	-0.09	0.1	96	Circular Structure
MH 13015	7.14	-0.66	-0.18	60	Circular Structure
MH 13016	8.21	1.01	1.01	48	Circular Structure
MH 13030	8.15	-2.45	-0.19	48	Circular Structure
MH 13035	7.31	-1.19	-1.19	48	Circular Structure
MH 13036	7.34	-0.96	0.9	48	Circular Structure
MH 13037	7.33	-1.07	1.29	48	Circular Structure
MH 13043	8.27	1.84	1.84	48	Circular Structure
MH 13081	7	2.47	2.98	48	Circular Structure
MH 13082	7	2.6	2.88	48	Circular Structure
MH 13083	7	2.23	2.64	48	Circular Structure
MH 13084	7	2.63	3.01	48	Circular Structure
MH 13085	6.35	1.97	2.2	48	Circular Structure
MH 13091	7.42	0.58	0.87	96	Circular Structure
MH 20003	7.74	0.55	0.89	84	Circular Structure
MH 99998	7	-0.01	0.19	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**39.98**		

Manholes Drainage System 3 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1	8	0.48	3.63	60	Circular Structure
MH 00005	8	-0.35	3.57	60	Circular Structure
MH 00008	7	0.16	3.23	72	Circular Structure
MH 2075	6.27	2.47	4.32	48	Circular Structure
MH 2076	5.7	2.6	4.33	60	Circular Structure
MH 2082	5.74	1.44	4.13	60	Circular Structure
MH 2084	6.11	2.71	5.18	48	Circular Structure
MH 3060	5.58	1.38	4.31	48	Circular Structure
MH 3061	5.3	1.2	4.29	60	Circular Structure
MH 3063	5.85	-1.7	4.29	48	Circular Structure
MH 3064	6.02	-1.7	4.26	48	Circular Structure
MH 3065	5.68	0.98	4.07	60	Circular Structure
MH 6001	6.23	1.13	4.14	60	Circular Structure
MH 6002	6.02	1.22	4.17	48	Circular Structure
MH 6003	6.38	0.78	3.95	60	Circular Structure
MH 6004	6.43	0.43	3.84	60	Circular Structure
MH 6043	6.4	-0.83	3	72	Circular Structure
MH 11005	5.24	-4.06	3.1	48	Circular Structure
MH 13011	7	-0.09	3.04	96	Circular Structure
MH 13015	7.14	-0.66	3.54	60	Circular Structure
MH 13016	8.21	1.01	3.56	48	Circular Structure
MH 13030	8.15	-2.45	3.56	48	Circular Structure
MH 13035	7.31	-1.19	3.57	48	Circular Structure
MH 13036	7.34	-0.96	3.58	48	Circular Structure
MH 13037	7.33	-1.07	3.59	48	Circular Structure
MH 13043	8.27	1.84	1.9	48	Circular Structure
MH 13081	7	2.47	4.73	48	Circular Structure
MH 13082	7	2.6	4.74	48	Circular Structure
MH 13083	7	2.23	4.57	48	Circular Structure
MH 13084	7	2.63	4.61	48	Circular Structure
MH 13085	6.35	1.97	3.89	48	Circular Structure
MH 13091	7.42	0.58	3.68	96	Circular Structure
MH 20003	7.74	0.55	3.7	84	Circular Structure
MH 99998	7	-0.01	3.11	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**131.18**		

Manholes Drainage System 3 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1	8	0.48	3.23	60	Circular Structure
MH 00005	8	-0.35	3.23	60	Circular Structure
MH 00008	7	0.16	3.12	72	Circular Structure
MH 2075	6.27	2.47	3.71	48	Circular Structure
MH 2076	5.7	2.6	3.72	60	Circular Structure
MH 2082	5.74	1.44	3.8	60	Circular Structure
MH 2084	6.11	2.71	4.7	48	Circular Structure
MH 3060	5.58	1.38	3.7	48	Circular Structure
MH 3061	5.3	1.2	3.67	60	Circular Structure
MH 3063	5.85	-1.7	3.73	48	Circular Structure
MH 3064	6.02	-1.7	3.75	48	Circular Structure
MH 3065	5.68	0.98	3.78	60	Circular Structure
MH 6001	6.23	1.13	3.57	60	Circular Structure
MH 6002	6.02	1.22	3.59	48	Circular Structure
MH 6003	6.38	0.78	3.45	60	Circular Structure
MH 6004	6.43	0.43	3.37	60	Circular Structure
MH 6043	6.4	-0.83	3	72	Circular Structure
MH 11005	5.24	-4.06	3.01	48	Circular Structure
MH 13011	7	-0.09	3.04	96	Circular Structure
MH 13015	7.14	-0.66	3.21	60	Circular Structure
MH 13016	8.21	1.01	3.19	48	Circular Structure
MH 13030	8.15	-2.45	3.2	48	Circular Structure
MH 13035	7.31	-1.19	3.26	48	Circular Structure
MH 13036	7.34	-0.96	3.32	48	Circular Structure
MH 13037	7.33	-1.07	3.33	48	Circular Structure
MH 13043	8.27	1.84	1.84	48	Circular Structure
MH 13081	7	2.47	4.57	48	Circular Structure
MH 13082	7	2.6	4.47	48	Circular Structure
MH 13083	7	2.23	4.31	48	Circular Structure
MH 13084	7	2.63	4.66	48	Circular Structure
MH 13085	6.35	1.97	3.85	48	Circular Structure
MH 13091	7.42	0.58	3.25	96	Circular Structure
MH 20003	7.74	0.55	3.27	84	Circular Structure
MH 99998	7	-0.01	3.07	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**119.97**		

Catch Basin Drainage System 4 Existing 2 Yr. Low Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 2027	In Sag	5.31	-1.22	1.3	0.04	0.04	(N/A)
CB 2028	In Sag	5.45	-0.88	1.2	0.05	0.05	(N/A)
CB 2029	In Sag	5.06	-0.17	1.98	0.04	0.04	(N/A)
CB 2032	In Sag	5.15	0.22	2.28	0.03	0.03	(N/A)
CB 2033A	On Grade	5.9	0	2.35	0.69	0.66	0.03
CB 2034	In Sag	5.59	-0.34	1.74	0.07	0.07	(N/A)
CB 2035	On Grade	5.86	0.13	2.19	0.06	0.04	0.02
CB 2036	In Sag	5.48	-0.75	1.34	0.05	0.05	(N/A)
CB 2037	On Grade	6.29	0.46	2.53	0.09	0.06	0.04
CB 2039	On Grade	6.04	-0.39	1.67	0.08	0.05	0.03
CB 2043	On Grade	6.23	0.5	2.56	0.07	0.05	0.03
CB 2044	On Grade	6.21	0.38	2.43	0.11	0.06	0.05
CB 2046	On Grade	6.2	0.07	2.14	0.09	0.05	0.03
CB 2048	On Grade	6.55	0.22	2.29	0.07	0.05	0.02
CB 2049	On Grade	7.03	1.5	3.55	0.1	0.06	0.04
CB 2055	In Sag	7.05	-0.05	2.03	0.14	0.14	(N/A)
CB 2056	In Sag	6.35	-0.09	1.99	0.13	0.13	(N/A)
CB 2058	In Sag	6.24	-0.26	1.82	0.06	0.05	(N/A)
CB 2060	In Sag	6.32	0.09	2.17	0.09	0.09	(N/A)
CB 2061	On Grade	6.02	-0.31	1.76	0.1	0.06	0.04
CB 2063	In Sag	6.34	0.91	1.75	0.01	0.01	(N/A)
CB 2064/CB 2065	In Sag	6.01	0.68	2.78	0.11	0.11	(N/A)
CB 2067	In Sag	5.96	0.23	2.29	0.07	0.07	(N/A)
CB 2068	In Sag	6.38	0.85	2.93	0.1	0.1	(N/A)
CB 2070	In Sag	6.55	1.52	3.61	0.09	0.09	(N/A)
CB 2072	In Sag	5.77	0.67	2.74	0.03	0.03	(N/A)
CB 2073	In Sag	5.99	-0.23	1.84	0.02	0.02	(N/A)
CB 2079	On Grade	5.98	1.08	3.2	0.02	0.02	0
CB 2080	On Grade	5.9	-1.23	1.54	0.03	0.02	0.01
CB 3018	In Sag	5.42	-0.31	1.9	0.03	0.03	(N/A)
CB 3023A	On Grade	6	0	2.25	0.59	0.56	0.03
CB 3025	On Grade	5.55	0.22	2.27	0.07	0.05	0.03
CB 3027	In Sag	4.94	-0.5	1.7	0.11	0.11	(N/A)
CB 3035	On Grade	6.16	-1.18	0.88	0.03	0.02	0.01
CB 3036	In Sag	6.9	1.22	3.33	0.04	0.04	(N/A)
CB 3037	In Sag	6.63	1.43	3.53	0.08	0.08	(N/A)
CB 3040	On Grade	5.66	-0.27	1.78	0.06	0.04	0.02
CB 3042	On Grade	6.22	0.69	2.78	0.13	0.07	0.06
CB 3046	On Grade	6.76	1.33	3.39	0.06	0.04	0.02
CB 3050	On Grade	6.17	0.94	2.97	0.04	0.03	0.01
CB 3052	On Grade	6	0.47	2.51	0.05	0.04	0.01
CB 3055	On Grade	6.26	0.73	2.81	0.09	0.06	0.04
CB 3057	On Grade	5.89	-0.24	1.83	0.11	0.06	0.05
CB 3058	On Grade	6.39	0.16	2.23	0.13	0.07	0.06
CB 4048	On Grade	4.77	1.16	3.3	0.05	0.05	0
CB 4049	In Sag	4.92	0.77	2.93	0.03	0.03	(N/A)
CB 4050	In Sag	5	0.82	2.95	0.07	0.07	(N/A)
CB 4051	In Sag	5.18	-0.43	1.66	0.09	0.09	(N/A)
CB 4053	In Sag	5.21	-1.33	1.35	0.05	0.05	(N/A)
CB 4054	In Sag	5.57	-0.38	1.71	0.05	0.05	(N/A)
CB 4056	In Sag	5.65	0.42	2.5	0.06	0.06	(N/A)
CB 4057	In Sag	5.4	-0.33	1.74	0.05	0.05	(N/A)
CB 4059	In Sag	5.64	-1.13	1.45	0.03	0.03	(N/A)
CB 4062	In Sag	4.88	-0.23	1.84	0.03	0.03	(N/A)
CB 4063	In Sag	4.82	0.47	2.62	0.06	0.06	(N/A)
CB 4064/CB 4065	In Sag	4.7	0.52	2.64	0.25	0.25	(N/A)
CB 4066/ CB 4077	In Sag	4.36	0.07	2.26	0.23	0.23	(N/A)
CB 4069	In Sag	4.5	-0.6	1.76	0.05	0.05	(N/A)
CB 4070	In Sag	5.23	0	2.11	0.07	0.07	(N/A)
CB 4072	In Sag	5.19	-0.1	1.99	0.06	0.06	(N/A)
CB 5032	In Sag	4.86	0.17	2.29	0.08	0.08	(N/A)
CB 5034	In Sag	4.72	-0.93	1.14	0.05	0.05	(N/A)
CB 5037	In Sag	5.57	0.22	2.28	0.04	0.04	(N/A)
CB 5038	In Sag	5.44	-0.78	1.31	0.04	0.04	(N/A)
CB 5041	In Sag	5.45	0.17	2.28	0.12	0.12	(N/A)
CB 5042	In Sag	5.43	0.47	2.63	0.14	0.14	(N/A)
CB 5043	On Grade	4.78	1.01	3.21	0.11	0.1	0.01
CB 5044	On Grade	4.57	0.85	3.07	0.09	0.09	0.01
CB 5046	In Sag	5.34	0.4	2.47	0.05	0.05	(N/A)
CB 5047	In Sag	5.36	0.4	2.51	0.06	0.06	(N/A)
CB 5051	In Sag	5.04	-0.14	2.01	0.11	0.11	(N/A)
CB 5052	In Sag	4.85	-0.14	1.95	0.09	0.09	(N/A)
CB 5055	In Sag	5.59	0.28	2.41	0.09	0.09	(N/A)
CB 5057	In Sag	6.55	-1.12	1	0.09	0.09	(N/A)
CB 5059	In Sag	6.16	-0.04	2.08	0.1	0.1	(N/A)
CB 5060	In Sag	6.14	-0.44	1.69	0.1	0.1	(N/A)
CB 5063	In Sag	4.85	-0.26	1.83	0.09	0.09	(N/A)
CB 5064	In Sag	5.15	-0.16	1.96	0.09	0.09	(N/A)
CB 5065	On Grade	5.7	2.1	4.32	0.15	0.14	0.01
CB 5066	On Grade	5.67	2.17	4.44	0.2	0.19	0.01
CB 5069	In Sag	4.81	-1.62	1.75	0.13	0.12	(N/A)

CB 5070	In Sag	5.11	-0.42	1.74	0.04	0.04	(N/A)
CB 5071	In Sag	5.05	-0.62	1.72	0.04	0.04	(N/A)
CB 10001	On Grade	5.85	-0.45	1.63	0.08	0.07	0.01
CB 13001	In Sag	4.57	0.96	3.04	0.03	0.03	(N/A)
CB 13078	In Sag	5.74	-0.94	1.17	0.07	0.07	(N/A)
CB 13090	In Sag	5.85	0.91	2.99	0.07	0.07	(N/A)
CB3029A	On Grade	8	-0.15	2.05	0.27	0.23	0.03
CB3030A	On Grade	7	-0.5	1.74	0.39	0.33	0.06
CB90008	On Grade	7	1.98	4.17	0.17	0.16	0.01
Summation of Hydraulic Grade Line Elevations (ft)				**203.85**			

Catch Basin Drainage System 4 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 2027	In Sag	5.31	-1.22	0.89	0.04	0.04	(N/A)
CB 2028	In Sag	5.45	-0.88	1.2	0.05	0.05	(N/A)
CB 2029	In Sag	5.06	-0.17	1.98	0.04	0.04	(N/A)
CB 2032	In Sag	5.15	0.22	2.24	0.03	0.03	(N/A)
CB 2033A	On Grade	5.9	0	2.35	0.69	0.66	0.03
CB 2034	In Sag	5.59	-0.34	1.74	0.07	0.07	(N/A)
CB 2035	On Grade	5.86	0.13	2.19	0.06	0.04	0.02
CB 2036	In Sag	5.48	-0.75	1.34	0.05	0.05	(N/A)
CB 2037	On Grade	6.29	0.46	2.53	0.09	0.06	0.04
CB 2039	On Grade	6.04	-0.39	1.67	0.08	0.05	0.03
CB 2043	On Grade	6.23	0.5	2.56	0.07	0.05	0.03
CB 2044	On Grade	6.21	0.38	2.43	0.11	0.06	0.05
CB 2046	On Grade	6.2	0.07	2.14	0.09	0.05	0.03
CB 2048	On Grade	6.55	0.22	2.29	0.07	0.05	0.02
CB 2049	On Grade	7.03	1.5	3.55	0.1	0.06	0.04
CB 2055	In Sag	7.05	-0.05	2.03	0.14	0.14	(N/A)
CB 2056	In Sag	6.35	-0.09	1.99	0.13	0.13	(N/A)
CB 2058	In Sag	6.24	-0.26	1.82	0.06	0.05	(N/A)
CB 2060	In Sag	6.32	0.09	2.17	0.09	0.09	(N/A)
CB 2061	On Grade	6.02	-0.31	1.76	0.1	0.06	0.04
CB 2063	In Sag	6.34	0.91	1.75	0.01	0.01	(N/A)
CB 2064/CB 2065	In Sag	6.01	0.68	2.78	0.11	0.11	(N/A)
CB 2067	In Sag	5.96	0.23	2.29	0.07	0.07	(N/A)
CB 2068	In Sag	6.38	0.85	2.93	0.1	0.1	(N/A)
CB 2070	In Sag	6.55	1.52	3.61	0.09	0.09	(N/A)
CB 2072	In Sag	5.77	0.67	2.74	0.03	0.03	(N/A)
CB 2073	In Sag	5.99	-0.23	1.34	0.02	0.02	(N/A)
CB 2079	On Grade	5.98	1.08	3.2	0.02	0.02	0
CB 2080	On Grade	5.9	-1.23	1.23	0.03	0.02	0.01
CB 3018	In Sag	5.42	-0.31	1.9	0.03	0.03	(N/A)
CB 3023A	On Grade	6	0	2.25	0.59	0.56	0.03
CB 3025	On Grade	5.55	0.22	2.27	0.07	0.05	0.03
CB 3027	In Sag	4.94	-0.5	1.7	0.11	0.11	(N/A)
CB 3035	On Grade	6.16	-1.18	0.83	0.03	0.02	0.01
CB 3036	In Sag	6.9	1.22	3.33	0.04	0.04	(N/A)
CB 3037	In Sag	6.63	1.43	3.53	0.08	0.08	(N/A)
CB 3040	On Grade	5.66	-0.27	1.78	0.06	0.04	0.02
CB 3042	On Grade	6.22	0.69	2.78	0.13	0.07	0.06
CB 3046	On Grade	6.76	1.33	3.39	0.06	0.04	0.02
CB 3050	On Grade	6.17	0.94	2.97	0.04	0.03	0.01
CB 3052	On Grade	6	0.47	2.51	0.05	0.04	0.01
CB 3055	On Grade	6.26	0.73	2.81	0.09	0.06	0.04
CB 3057	On Grade	5.89	-0.24	1.83	0.11	0.06	0.05
CB 3058	On Grade	6.39	0.16	2.23	0.13	0.07	0.06
CB 4048	On Grade	4.77	1.16	3.3	0.05	0.05	0
CB 4049	In Sag	4.92	0.77	2.93	0.03	0.03	(N/A)
CB 4050	In Sag	5	0.82	2.95	0.07	0.07	(N/A)
CB 4051	In Sag	5.18	-0.43	1.66	0.09	0.09	(N/A)
CB 4053	In Sag	5.21	-1.33	0.89	0.05	0.05	(N/A)
CB 4054	In Sag	5.57	-0.38	1.71	0.05	0.05	(N/A)
CB 4056	In Sag	5.65	0.42	2.5	0.06	0.06	(N/A)
CB 4057	In Sag	5.4	-0.33	1.74	0.05	0.05	(N/A)
CB 4059	In Sag	5.64	-1.13	0.95	0.03	0.03	(N/A)
CB 4062	In Sag	4.88	-0.23	1.84	0.03	0.03	(N/A)
CB 4063	In Sag	4.82	0.47	2.62	0.06	0.06	(N/A)
CB 4064/CB 4065	In Sag	4.7	0.52	2.64	0.25	0.25	(N/A)
CB 4066/ CB 4077	In Sag	4.36	0.07	2.26	0.23	0.23	(N/A)
CB 4069	In Sag	4.5	-0.6	1.6	0.05	0.05	(N/A)
CB 4070	In Sag	5.23	0	2.11	0.07	0.07	(N/A)
CB 4072	In Sag	5.19	-0.1	1.99	0.06	0.06	(N/A)
CB 5032	In Sag	4.86	0.17	2.29	0.08	0.08	(N/A)
CB 5034	In Sag	4.72	-0.93	1.14	0.05	0.05	(N/A)
CB 5037	In Sag	5.57	0.22	2.28	0.04	0.04	(N/A)
CB 5038	In Sag	5.44	-0.78	1.31	0.04	0.04	(N/A)
CB 5041	In Sag	5.45	0.17	2.28	0.12	0.12	(N/A)
CB 5042	In Sag	5.43	0.47	2.63	0.14	0.14	(N/A)
CB 5043	On Grade	4.78	1.01	3.21	0.11	0.1	0.01
CB 5044	On Grade	4.57	0.85	3.07	0.09	0.09	0.01
CB 5046	In Sag	5.34	0.4	2.47	0.05	0.05	(N/A)
CB 5047	In Sag	5.36	0.4	2.51	0.06	0.06	(N/A)
CB 5051	In Sag	5.04	-0.14	2.01	0.11	0.11	(N/A)
CB 5052	In Sag	4.85	-0.14	1.95	0.09	0.09	(N/A)
CB 5055	In Sag	5.59	0.28	2.41	0.09	0.09	(N/A)
CB 5057	In Sag	6.55	-1.12	1	0.09	0.09	(N/A)
CB 5059	In Sag	6.16	-0.04	2.08	0.1	0.1	(N/A)
CB 5060	In Sag	6.14	-0.44	1.69	0.1	0.1	(N/A)
CB 5063	In Sag	4.85	-0.26	1.83	0.09	0.09	(N/A)
CB 5064	In Sag	5.15	-0.16	1.96	0.09	0.09	(N/A)
CB 5065	On Grade	5.7	2.1	4.32	0.15	0.14	0.01
CB 5066	On Grade	5.67	2.17	4.44	0.2	0.19	0.01
CB 5069	In Sag	4.81	-1.62	0.55	0.13	0.12	(N/A)

CB 5070	In Sag	5.11	-0.42	1.65	0.04	0.04	(N/A)
CB 5071	In Sag	5.05	-0.62	1.47	0.04	0.04	(N/A)
CB 10001	On Grade	5.85	-0.45	1.63	0.08	0.07	0.01
CB 13001	In Sag	4.57	0.96	3.04	0.03	0.03	(N/A)
CB 13078	In Sag	5.74	-0.94	1.17	0.07	0.07	(N/A)
CB 13090	In Sag	5.85	0.91	2.99	0.07	0.07	(N/A)
CB3029A	On Grade	8	-0.15	2.05	0.27	0.23	0.03
CB3030A	On Grade	7	-0.5	1.74	0.39	0.33	0.06
CB90008	On Grade	7	1.98	4.17	0.17	0.16	0.01
Summation of Hydraulic Grade Line Elevations (ft)				**199.88**			

Catch Basin Drainage System 4 Existing 10 Yr. Low Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 2027	In Sag	5.31	-1.22	1.38	0.17	0.17	(N/A)
CB 2028	In Sag	5.45	-0.88	1.39	0.2	0.2	(N/A)
CB 2029	In Sag	5.06	-0.17	2.09	0.17	0.17	(N/A)
CB 2032	In Sag	5.15	0.22	2.34	0.12	0.12	(N/A)
CB 2033A	On Grade	5.9	0	2.74	3.25	2.82	0.44
CB 2034	In Sag	5.59	-0.34	1.84	0.34	0.34	(N/A)
CB 2035	On Grade	5.86	0.13	2.22	0.3	0.12	0.18
CB 2036	In Sag	5.48	-0.75	1.42	0.22	0.22	(N/A)
CB 2037	On Grade	6.29	0.46	2.57	0.45	0.16	0.29
CB 2039	On Grade	6.04	-0.39	1.71	0.45	0.16	0.29
CB 2043	On Grade	6.23	0.5	2.78	0.34	0.13	0.2
CB 2044	On Grade	6.21	0.38	2.8	0.52	0.17	0.35
CB 2046	On Grade	6.2	0.07	2.78	0.38	0.14	0.24
CB 2048	On Grade	6.55	0.22	2.32	0.3	0.12	0.18
CB 2049	On Grade	7.03	1.5	3.58	0.42	0.15	0.27
CB 2055	In Sag	7.05	-0.05	2.14	0.78	0.78	(N/A)
CB 2056	In Sag	6.35	-0.09	2.09	0.69	0.69	(N/A)
CB 2058	In Sag	6.24	-0.26	1.92	0.31	0.31	(N/A)
CB 2060	In Sag	6.32	0.09	2.26	0.41	0.41	(N/A)
CB 2061	On Grade	6.02	-0.31	1.81	0.48	0.16	0.32
CB 2063	In Sag	6.34	0.91	2.96	0.04	0.04	(N/A)
CB 2064/CB 2065	In Sag	6.01	0.68	2.91	0.69	0.69	(N/A)
CB 2067	In Sag	5.96	0.23	2.37	0.41	0.41	(N/A)
CB 2068	In Sag	6.38	0.85	3.03	0.54	0.54	(N/A)
CB 2070	In Sag	6.55	1.52	3.73	0.51	0.51	(N/A)
CB 2072	In Sag	5.77	0.67	2.8	0.12	0.12	(N/A)
CB 2073	In Sag	5.99	-0.23	1.89	0.07	0.07	(N/A)
CB 2079	On Grade	5.98	1.08	3.34	0.08	0.07	0.01
CB 2080	On Grade	5.9	-1.23	3.29	0.11	0.06	0.04
CB 3018	In Sag	5.42	-0.31	1.99	0.13	0.13	(N/A)
CB 3023A	On Grade	6	0	2.62	2.79	2.45	0.34
CB 3025	On Grade	5.55	0.22	2.3	0.32	0.13	0.19
CB 3027	In Sag	4.94	-0.5	1.89	0.57	0.57	(N/A)
CB 3035	On Grade	6.16	-1.18	0.92	0.13	0.07	0.06
CB 3036	In Sag	6.9	1.22	3.49	0.26	0.26	(N/A)
CB 3037	In Sag	6.63	1.43	3.66	0.45	0.45	(N/A)
CB 3040	On Grade	5.66	-0.27	3.3	0.25	0.11	0.14
CB 3042	On Grade	6.22	0.69	2.84	0.68	0.2	0.48
CB 3046	On Grade	6.76	1.33	3.42	0.24	0.11	0.13
CB 3050	On Grade	6.17	0.94	2.99	0.15	0.08	0.07
CB 3052	On Grade	6	0.47	2.53	0.2	0.09	0.11
CB 3055	On Grade	6.26	0.73	2.86	0.45	0.16	0.29
CB 3057	On Grade	5.89	-0.24	1.98	0.55	0.18	0.37
CB 3058	On Grade	6.39	0.16	2.28	0.78	0.22	0.56
CB 4048	On Grade	4.77	1.16	5.04	0.25	0.24	0.01
CB 4049	In Sag	4.92	0.77	3.13	0.16	0.16	(N/A)
CB 4050	In Sag	5	0.82	3.14	0.31	0.31	(N/A)
CB 4051	In Sag	5.18	-0.43	1.85	0.41	0.41	(N/A)
CB 4053	In Sag	5.21	-1.33	2.18	0.23	0.23	(N/A)
CB 4054	In Sag	5.57	-0.38	2.15	0.19	0.19	(N/A)
CB 4056	In Sag	5.65	0.42	2.59	0.28	0.28	(N/A)
CB 4057	In Sag	5.4	-0.33	2.52	0.22	0.22	(N/A)
CB 4059	In Sag	5.64	-1.13	2.47	0.15	0.15	(N/A)
CB 4062	In Sag	4.88	-0.23	2.65	0.13	0.13	(N/A)
CB 4063	In Sag	4.82	0.47	2.81	0.32	0.32	(N/A)
CB 4064/CB 4065	In Sag	4.7	0.52	2.8	1.49	1.49	(N/A)
CB 4066/ CB 4077	In Sag	4.36	0.07	4.06	1.41	1.41	(N/A)
CB 4069	In Sag	4.5	-0.6	3.96	0.23	0.23	(N/A)
CB 4070	In Sag	5.23	0	3.07	0.3	0.3	(N/A)
CB 4072	In Sag	5.19	-0.1	3.08	0.25	0.25	(N/A)
CB 5032	In Sag	4.86	0.17	2.47	0.48	0.48	(N/A)
CB 5034	In Sag	4.72	-0.93	1.94	0.27	0.27	(N/A)
CB 5037	In Sag	5.57	0.22	2.35	0.18	0.18	(N/A)
CB 5038	In Sag	5.44	-0.78	1.95	0.18	0.18	(N/A)
CB 5041	In Sag	5.45	0.17	2.42	0.63	0.63	(N/A)
CB 5042	In Sag	5.43	0.47	2.83	0.69	0.69	(N/A)
CB 5043	On Grade	4.78	1.01	5.06	0.51	0.49	0.02
CB 5044	On Grade	4.57	0.85	4.96	0.42	0.41	0.01
CB 5046	In Sag	5.34	0.4	2.55	0.2	0.2	(N/A)
CB 5047	In Sag	5.36	0.4	2.61	0.27	0.27	(N/A)
CB 5051	In Sag	5.04	-0.14	2.19	0.58	0.58	(N/A)
CB 5052	In Sag	4.85	-0.14	2.06	0.38	0.38	(N/A)
CB 5055	In Sag	5.59	0.28	2.53	0.37	0.37	(N/A)
CB 5057	In Sag	6.55	-1.12	1.7	0.37	0.37	(N/A)
CB 5059	In Sag	6.16	-0.04	2.22	0.48	0.48	(N/A)
CB 5060	In Sag	6.14	-0.44	1.96	0.45	0.45	(N/A)
CB 5063	In Sag	4.85	-0.26	2.26	0.4	0.4	(N/A)
CB 5064	In Sag	5.15	-0.16	2.46	0.41	0.41	(N/A)
CB 5065	On Grade	5.7	2.1	4.68	0.81	0.71	0.1
CB 5066	On Grade	5.67	2.17	4.94	1.11	0.92	0.19

CB 5069	In Sag	4.81	-1.62	3.65	0.59	0.59	(N/A)
CB 5070	In Sag	5.11	-0.42	3.43	0.16	0.16	(N/A)
CB 5071	In Sag	5.05	-0.62	3.43	0.17	0.17	(N/A)
CB 10001	On Grade	5.85	-0.45	1.73	0.4	0.33	0.07
CB 13001	In Sag	4.57	0.96	4.03	0.11	0.11	(N/A)
CB 13078	In Sag	5.74	-0.94	1.74	0.29	0.29	(N/A)
CB 13090	In Sag	5.85	0.91	3.07	0.28	0.28	(N/A)
CB3029A	On Grade	8	-0.15	2.27	1.62	1.05	0.57
CB3030A	On Grade	7	-0.5	2.03	2.82	1.61	1.21
CB90008	On Grade	7	1.98	4.39	0.87	0.77	0.1
Summation of Hydraulic Grade Line Elevations (ft)				**242.98**			

Catch Basin Drainage System 4 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 2027	In Sag	5.31	-1.22	1.44	0.17	0.17	(N/A)
CB 2028	In Sag	5.45	-0.88	1.39	0.2	0.2	(N/A)
CB 2029	In Sag	5.06	-0.17	2.09	0.17	0.17	(N/A)
CB 2032	In Sag	5.15	0.22	2.34	0.12	0.12	(N/A)
CB 2033A	On Grade	5.9	0	2.74	3.25	2.82	0.44
CB 2034	In Sag	5.59	-0.34	1.84	0.34	0.34	(N/A)
CB 2035	On Grade	5.86	0.13	2.22	0.3	0.12	0.18
CB 2036	In Sag	5.48	-0.75	1.42	0.22	0.22	(N/A)
CB 2037	On Grade	6.29	0.46	2.57	0.45	0.16	0.29
CB 2039	On Grade	6.04	-0.39	1.71	0.45	0.16	0.29
CB 2043	On Grade	6.23	0.5	2.6	0.34	0.13	0.2
CB 2044	On Grade	6.21	0.38	2.52	0.52	0.17	0.35
CB 2046	On Grade	6.2	0.07	2.57	0.38	0.14	0.24
CB 2048	On Grade	6.55	0.22	2.33	0.3	0.12	0.18
CB 2049	On Grade	7.03	1.5	3.58	0.42	0.15	0.27
CB 2055	In Sag	7.05	-0.05	2.14	0.78	0.78	(N/A)
CB 2056	In Sag	6.35	-0.09	2.09	0.69	0.69	(N/A)
CB 2058	In Sag	6.24	-0.26	1.92	0.31	0.31	(N/A)
CB 2060	In Sag	6.32	0.09	2.26	0.41	0.41	(N/A)
CB 2061	On Grade	6.02	-0.31	1.81	0.48	0.16	0.32
CB 2063	In Sag	6.34	0.91	2.96	0.04	0.04	(N/A)
CB 2064/CB 2065	In Sag	6.01	0.68	2.91	0.69	0.69	(N/A)
CB 2067	In Sag	5.96	0.23	2.37	0.41	0.41	(N/A)
CB 2068	In Sag	6.38	0.85	3.03	0.54	0.54	(N/A)
CB 2070	In Sag	6.55	1.52	3.73	0.51	0.51	(N/A)
CB 2072	In Sag	5.77	0.67	2.8	0.12	0.12	(N/A)
CB 2073	In Sag	5.99	-0.23	1.9	0.07	0.07	(N/A)
CB 2079	On Grade	5.98	1.08	3.34	0.08	0.07	0.01
CB 2080	On Grade	5.9	-1.23	3.04	0.11	0.06	0.04
CB 3018	In Sag	5.42	-0.31	1.99	0.13	0.13	(N/A)
CB 3023A	On Grade	6	0	2.62	2.79	2.45	0.34
CB 3025	On Grade	5.55	0.22	2.3	0.32	0.13	0.19
CB 3027	In Sag	4.94	-0.5	1.89	0.57	0.57	(N/A)
CB 3035	On Grade	6.16	-1.18	0.92	0.13	0.07	0.06
CB 3036	In Sag	6.9	1.22	3.49	0.26	0.26	(N/A)
CB 3037	In Sag	6.63	1.43	3.66	0.45	0.45	(N/A)
CB 3040	On Grade	5.66	-0.27	3.05	0.25	0.11	0.14
CB 3042	On Grade	6.22	0.69	2.84	0.68	0.2	0.48
CB 3046	On Grade	6.76	1.33	3.42	0.24	0.11	0.13
CB 3050	On Grade	6.17	0.94	2.99	0.15	0.08	0.07
CB 3052	On Grade	6	0.47	2.53	0.2	0.09	0.11
CB 3055	On Grade	6.26	0.73	2.86	0.45	0.16	0.29
CB 3057	On Grade	5.89	-0.24	1.9	0.55	0.18	0.37
CB 3058	On Grade	6.39	0.16	2.28	0.78	0.22	0.56
CB 4048	On Grade	4.77	1.16	4.92	0.25	0.24	0.01
CB 4049	In Sag	4.92	0.77	3.13	0.16	0.16	(N/A)
CB 4050	In Sag	5	0.82	3.14	0.31	0.31	(N/A)
CB 4051	In Sag	5.18	-0.43	1.91	0.41	0.41	(N/A)
CB 4053	In Sag	5.21	-1.33	2.02	0.23	0.23	(N/A)
CB 4054	In Sag	5.57	-0.38	2.01	0.19	0.19	(N/A)
CB 4056	In Sag	5.65	0.42	2.59	0.28	0.28	(N/A)
CB 4057	In Sag	5.4	-0.33	2.09	0.22	0.22	(N/A)
CB 4059	In Sag	5.64	-1.13	2.31	0.15	0.15	(N/A)
CB 4062	In Sag	4.88	-0.23	2.47	0.13	0.13	(N/A)
CB 4063	In Sag	4.82	0.47	2.81	0.32	0.32	(N/A)
CB 4064/CB 4065	In Sag	4.7	0.52	2.8	1.49	1.49	(N/A)
CB 4066/ CB 4077	In Sag	4.36	0.07	3.75	1.41	1.41	(N/A)
CB 4069	In Sag	4.5	-0.6	3.67	0.23	0.23	(N/A)
CB 4070	In Sag	5.23	0	2.85	0.3	0.3	(N/A)
CB 4072	In Sag	5.19	-0.1	2.86	0.25	0.25	(N/A)
CB 5032	In Sag	4.86	0.17	2.47	0.48	0.48	(N/A)
CB 5034	In Sag	4.72	-0.93	1.94	0.27	0.27	(N/A)
CB 5037	In Sag	5.57	0.22	2.35	0.18	0.18	(N/A)
CB 5038	In Sag	5.44	-0.78	1.84	0.18	0.18	(N/A)
CB 5041	In Sag	5.45	0.17	2.42	0.63	0.63	(N/A)
CB 5042	In Sag	5.43	0.47	2.83	0.69	0.69	(N/A)
CB 5043	On Grade	4.78	1.01	4.93	0.51	0.48	0.03
CB 5044	On Grade	4.57	0.85	4.76	0.42	0.4	0.02
CB 5046	In Sag	5.34	0.4	2.55	0.2	0.2	(N/A)
CB 5047	In Sag	5.36	0.4	2.61	0.27	0.27	(N/A)
CB 5051	In Sag	5.04	-0.14	2.19	0.58	0.58	(N/A)
CB 5052	In Sag	4.85	-0.14	2.06	0.38	0.38	(N/A)
CB 5055	In Sag	5.59	0.28	2.53	0.37	0.37	(N/A)
CB 5057	In Sag	6.55	-1.12	1.62	0.37	0.37	(N/A)
CB 5059	In Sag	6.16	-0.04	2.22	0.48	0.48	(N/A)
CB 5060	In Sag	6.14	-0.44	1.85	0.45	0.45	(N/A)
CB 5063	In Sag	4.85	-0.26	2.01	0.4	0.4	(N/A)
CB 5064	In Sag	5.15	-0.16	2.31	0.41	0.41	(N/A)
CB 5065	On Grade	5.7	2.1	4.6	0.81	0.71	0.1
CB 5066	On Grade	5.67	2.17	4.85	1.11	0.92	0.19

CB 5069	In Sag	4.81	-1.62	3.37	0.59	0.59	(N/A)
CB 5070	In Sag	5.11	-0.42	3.18	0.16	0.16	(N/A)
CB 5071	In Sag	5.05	-0.62	3.18	0.17	0.17	(N/A)
CB 10001	On Grade	5.85	-0.45	1.73	0.4	0.33	0.07
CB 13001	In Sag	4.57	0.96	3.73	0.11	0.11	(N/A)
CB 13078	In Sag	5.74	-0.94	1.65	0.29	0.29	(N/A)
CB 13090	In Sag	5.85	0.91	3.07	0.28	0.28	(N/A)
CB3029A	On Grade	8	-0.15	2.27	1.62	1.05	0.57
CB3030A	On Grade	7	-0.5	2.03	2.82	1.61	1.21
CB90008	On Grade	7	1.98	4.39	0.87	0.77	0.1
Summation of Hydraulic Grade Line Elevations (ft)				**237.27**			

Catch Basin Drainage System 4 Existing 2 Yr. High Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 2027	In Sag	5.31	-1.22	1.97	0.04	0.04	(N/A)
CB 2028	In Sag	5.45	-0.88	1.96	0.05	0.05	(N/A)
CB 2029	In Sag	5.06	-0.17	1.99	0.04	0.04	(N/A)
CB 2032	In Sag	5.15	0.22	2.28	0.03	0.03	(N/A)
CB 2033A	On Grade	5.9	0	2.35	0.69	0.66	0.03
CB 2034	In Sag	5.59	-0.34	1.96	0.07	0.07	(N/A)
CB 2035	On Grade	5.86	0.13	2.19	0.06	0.04	0.02
CB 2036	In Sag	5.48	-0.75	1.97	0.05	0.05	(N/A)
CB 2037	On Grade	6.29	0.46	2.53	0.09	0.06	0.04
CB 2039	On Grade	6.04	-0.39	1.97	0.08	0.05	0.03
CB 2043	On Grade	6.23	0.5	2.56	0.07	0.05	0.03
CB 2044	On Grade	6.21	0.38	2.44	0.11	0.06	0.05
CB 2046	On Grade	6.2	0.07	2.14	0.09	0.05	0.03
CB 2048	On Grade	6.55	0.22	2.29	0.07	0.05	0.02
CB 2049	On Grade	7.03	1.5	3.55	0.1	0.06	0.04
CB 2055	In Sag	7.05	-0.05	2.03	0.14	0.14	(N/A)
CB 2056	In Sag	6.35	-0.09	2	0.13	0.13	(N/A)
CB 2058	In Sag	6.24	-0.26	1.99	0.06	0.05	(N/A)
CB 2060	In Sag	6.32	0.09	2.17	0.09	0.09	(N/A)
CB 2061	On Grade	6.02	-0.31	1.98	0.1	0.06	0.04
CB 2063	In Sag	6.34	0.91	1.75	0.01	0.01	(N/A)
CB 2064/CB 2065	In Sag	6.01	0.68	2.78	0.11	0.11	(N/A)
CB 2067	In Sag	5.96	0.23	2.29	0.07	0.07	(N/A)
CB 2068	In Sag	6.38	0.85	2.93	0.1	0.1	(N/A)
CB 2070	In Sag	6.55	1.52	3.61	0.09	0.09	(N/A)
CB 2072	In Sag	5.77	0.67	2.74	0.03	0.03	(N/A)
CB 2073	In Sag	5.99	-0.23	2.05	0.02	0.02	(N/A)
CB 2079	On Grade	5.98	1.08	3.2	0.02	0.02	0
CB 2080	On Grade	5.9	-1.23	2.14	0.03	0.02	0.01
CB 3018	In Sag	5.42	-0.31	1.97	0.03	0.03	(N/A)
CB 3023A	On Grade	6	0	2.25	0.59	0.56	0.03
CB 3025	On Grade	5.55	0.22	2.27	0.07	0.05	0.03
CB 3027	In Sag	4.94	-0.5	1.97	0.11	0.11	(N/A)
CB 3035	On Grade	6.16	-1.18	1.96	0.03	0.02	0.01
CB 3036	In Sag	6.9	1.22	3.33	0.04	0.04	(N/A)
CB 3037	In Sag	6.63	1.43	3.53	0.08	0.08	(N/A)
CB 3040	On Grade	5.66	-0.27	2.14	0.06	0.04	0.02
CB 3042	On Grade	6.22	0.69	2.78	0.13	0.07	0.06
CB 3046	On Grade	6.76	1.33	3.39	0.06	0.04	0.02
CB 3050	On Grade	6.17	0.94	2.97	0.04	0.03	0.01
CB 3052	On Grade	6	0.47	2.51	0.05	0.04	0.01
CB 3055	On Grade	6.26	0.73	2.81	0.09	0.06	0.04
CB 3057	On Grade	5.89	-0.24	2.05	0.11	0.06	0.05
CB 3058	On Grade	6.39	0.16	2.23	0.13	0.07	0.06
CB 4048	On Grade	4.77	1.16	3.3	0.05	0.05	0
CB 4049	In Sag	4.92	0.77	2.93	0.03	0.03	(N/A)
CB 4050	In Sag	5	0.82	2.95	0.07	0.07	(N/A)
CB 4051	In Sag	5.18	-0.43	2.07	0.09	0.09	(N/A)
CB 4053	In Sag	5.21	-1.33	2.07	0.05	0.05	(N/A)
CB 4054	In Sag	5.57	-0.38	2.06	0.05	0.05	(N/A)
CB 4056	In Sag	5.65	0.42	2.5	0.06	0.06	(N/A)
CB 4057	In Sag	5.4	-0.33	2.08	0.05	0.05	(N/A)
CB 4059	In Sag	5.64	-1.13	2.08	0.03	0.03	(N/A)
CB 4062	In Sag	4.88	-0.23	2.1	0.03	0.03	(N/A)
CB 4063	In Sag	4.82	0.47	2.62	0.06	0.06	(N/A)
CB 4064/CB 4065	In Sag	4.7	0.52	2.64	0.25	0.25	(N/A)
CB 4066/ CB 4077	In Sag	4.36	0.07	2.26	0.23	0.23	(N/A)
CB 4069	In Sag	4.5	-0.6	2.17	0.05	0.05	(N/A)
CB 4070	In Sag	5.23	0	2.13	0.07	0.07	(N/A)
CB 4072	In Sag	5.19	-0.1	2.15	0.06	0.06	(N/A)
CB 5032	In Sag	4.86	0.17	2.29	0.08	0.08	(N/A)
CB 5034	In Sag	4.72	-0.93	2.06	0.05	0.05	(N/A)
CB 5037	In Sag	5.57	0.22	2.28	0.04	0.04	(N/A)
CB 5038	In Sag	5.44	-0.78	2.05	0.04	0.04	(N/A)
CB 5041	In Sag	5.45	0.17	2.28	0.12	0.12	(N/A)
CB 5042	In Sag	5.43	0.47	2.63	0.14	0.14	(N/A)
CB 5043	On Grade	4.78	1.01	3.21	0.11	0.1	0.01
CB 5044	On Grade	4.57	0.85	3.07	0.09	0.09	0.01
CB 5046	In Sag	5.34	0.4	2.47	0.05	0.05	(N/A)
CB 5047	In Sag	5.36	0.4	2.51	0.06	0.06	(N/A)
CB 5051	In Sag	5.04	-0.14	2.04	0.11	0.11	(N/A)
CB 5052	In Sag	4.85	-0.14	2.05	0.09	0.09	(N/A)
CB 5055	In Sag	5.59	0.28	2.41	0.09	0.09	(N/A)
CB 5057	In Sag	6.55	-1.12	2.03	0.09	0.09	(N/A)
CB 5059	In Sag	6.16	-0.04	2.08	0.1	0.1	(N/A)
CB 5060	In Sag	6.14	-0.44	2.03	0.1	0.1	(N/A)
CB 5063	In Sag	4.85	-0.26	2.04	0.09	0.09	(N/A)
CB 5064	In Sag	5.15	-0.16	2.04	0.09	0.09	(N/A)
CB 5065	On Grade	5.7	2.1	4.32	0.15	0.14	0.01
CB 5066	On Grade	5.67	2.17	4.44	0.2	0.19	0.01
CB 5069	In Sag	4.81	-1.62	2.16	0.13	0.12	(N/A)

CB 5070	In Sag	5.11	-0.42	2.15	0.04	0.04	(N/A)
CB 5071	In Sag	5.05	-0.62	2.15	0.04	0.04	(N/A)
CB 10001	On Grade	5.85	-0.45	1.97	0.08	0.07	0.01
CB 13001	In Sag	4.57	0.96	3.04	0.03	0.03	(N/A)
CB 13078	In Sag	5.74	-0.94	2.03	0.07	0.07	(N/A)
CB 13090	In Sag	5.85	0.91	2.99	0.07	0.07	(N/A)
CB3029A	On Grade	8	-0.15	2.05	0.27	0.23	0.03
CB3030A	On Grade	7	-0.5	1.97	0.39	0.33	0.06
CB90008	On Grade	7	1.98	4.17	0.17	0.16	0.01
Summation of Hydraulic Grade Line Elevations (ft)				**219.09**			

Catch Basin Drainage System 4 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 2027	In Sag	5.31	-1.22	0.89	0.04	0.04	(N/A)
CB 2028	In Sag	5.45	-0.88	1.2	0.05	0.05	(N/A)
CB 2029	In Sag	5.06	-0.17	1.98	0.04	0.04	(N/A)
CB 2032	In Sag	5.15	0.22	2.24	0.03	0.03	(N/A)
CB 2033A	On Grade	5.9	0	2.35	0.69	0.66	0.03
CB 2034	In Sag	5.59	-0.34	1.74	0.07	0.07	(N/A)
CB 2035	On Grade	5.86	0.13	2.19	0.06	0.04	0.02
CB 2036	In Sag	5.48	-0.75	1.34	0.05	0.05	(N/A)
CB 2037	On Grade	6.29	0.46	2.53	0.09	0.06	0.04
CB 2039	On Grade	6.04	-0.39	1.67	0.08	0.05	0.03
CB 2043	On Grade	6.23	0.5	2.56	0.07	0.05	0.03
CB 2044	On Grade	6.21	0.38	2.43	0.11	0.06	0.05
CB 2046	On Grade	6.2	0.07	2.14	0.09	0.05	0.03
CB 2048	On Grade	6.55	0.22	2.29	0.07	0.05	0.02
CB 2049	On Grade	7.03	1.5	3.55	0.1	0.06	0.04
CB 2055	In Sag	7.05	-0.05	2.03	0.14	0.14	(N/A)
CB 2056	In Sag	6.35	-0.09	1.99	0.13	0.13	(N/A)
CB 2058	In Sag	6.24	-0.26	1.82	0.06	0.05	(N/A)
CB 2060	In Sag	6.32	0.09	2.17	0.09	0.09	(N/A)
CB 2061	On Grade	6.02	-0.31	1.76	0.1	0.06	0.04
CB 2063	In Sag	6.34	0.91	1.75	0.01	0.01	(N/A)
CB 2064/CB 2065	In Sag	6.01	0.68	2.78	0.11	0.11	(N/A)
CB 2067	In Sag	5.96	0.23	2.29	0.07	0.07	(N/A)
CB 2068	In Sag	6.38	0.85	2.93	0.1	0.1	(N/A)
CB 2070	In Sag	6.55	1.52	3.61	0.09	0.09	(N/A)
CB 2072	In Sag	5.77	0.67	2.74	0.03	0.03	(N/A)
CB 2073	In Sag	5.99	-0.23	1.34	0.02	0.02	(N/A)
CB 2079	On Grade	5.98	1.08	3.2	0.02	0.02	0
CB 2080	On Grade	5.9	-1.23	1.23	0.03	0.02	0.01
CB 3018	In Sag	5.42	-0.31	1.9	0.03	0.03	(N/A)
CB 3023A	On Grade	6	0	2.25	0.59	0.56	0.03
CB 3025	On Grade	5.55	0.22	2.27	0.07	0.05	0.03
CB 3027	In Sag	4.94	-0.5	1.7	0.11	0.11	(N/A)
CB 3035	On Grade	6.16	-1.18	0.83	0.03	0.02	0.01
CB 3036	In Sag	6.9	1.22	3.33	0.04	0.04	(N/A)
CB 3037	In Sag	6.63	1.43	3.53	0.08	0.08	(N/A)
CB 3040	On Grade	5.66	-0.27	1.78	0.06	0.04	0.02
CB 3042	On Grade	6.22	0.69	2.78	0.13	0.07	0.06
CB 3046	On Grade	6.76	1.33	3.39	0.06	0.04	0.02
CB 3050	On Grade	6.17	0.94	2.97	0.04	0.03	0.01
CB 3052	On Grade	6	0.47	2.51	0.05	0.04	0.01
CB 3055	On Grade	6.26	0.73	2.81	0.09	0.06	0.04
CB 3057	On Grade	5.89	-0.24	1.83	0.11	0.06	0.05
CB 3058	On Grade	6.39	0.16	2.23	0.13	0.07	0.06
CB 4048	On Grade	4.77	1.16	3.3	0.05	0.05	0
CB 4049	In Sag	4.92	0.77	2.93	0.03	0.03	(N/A)
CB 4050	In Sag	5	0.82	2.95	0.07	0.07	(N/A)
CB 4051	In Sag	5.18	-0.43	1.66	0.09	0.09	(N/A)
CB 4053	In Sag	5.21	-1.33	0.89	0.05	0.05	(N/A)
CB 4054	In Sag	5.57	-0.38	1.71	0.05	0.05	(N/A)
CB 4056	In Sag	5.65	0.42	2.5	0.06	0.06	(N/A)
CB 4057	In Sag	5.4	-0.33	1.74	0.05	0.05	(N/A)
CB 4059	In Sag	5.64	-1.13	0.95	0.03	0.03	(N/A)
CB 4062	In Sag	4.88	-0.23	1.84	0.03	0.03	(N/A)
CB 4063	In Sag	4.82	0.47	2.62	0.06	0.06	(N/A)
CB 4064/CB 4065	In Sag	4.7	0.52	2.64	0.25	0.25	(N/A)
CB 4066/ CB 4077	In Sag	4.36	0.07	2.26	0.23	0.23	(N/A)
CB 4069	In Sag	4.5	-0.6	1.6	0.05	0.05	(N/A)
CB 4070	In Sag	5.23	0	2.11	0.07	0.07	(N/A)
CB 4072	In Sag	5.19	-0.1	1.99	0.06	0.06	(N/A)
CB 5032	In Sag	4.86	0.17	2.29	0.08	0.08	(N/A)
CB 5034	In Sag	4.72	-0.93	1.14	0.05	0.05	(N/A)
CB 5037	In Sag	5.57	0.22	2.28	0.04	0.04	(N/A)
CB 5038	In Sag	5.44	-0.78	1.31	0.04	0.04	(N/A)
CB 5041	In Sag	5.45	0.17	2.28	0.12	0.12	(N/A)
CB 5042	In Sag	5.43	0.47	2.63	0.14	0.14	(N/A)
CB 5043	On Grade	4.78	1.01	3.21	0.11	0.1	0.01
CB 5044	On Grade	4.57	0.85	3.07	0.09	0.09	0.01
CB 5046	In Sag	5.34	0.4	2.47	0.05	0.05	(N/A)
CB 5047	In Sag	5.36	0.4	2.51	0.06	0.06	(N/A)
CB 5051	In Sag	5.04	-0.14	2.01	0.11	0.11	(N/A)
CB 5052	In Sag	4.85	-0.14	1.95	0.09	0.09	(N/A)
CB 5055	In Sag	5.59	0.28	2.41	0.09	0.09	(N/A)
CB 5057	In Sag	6.55	-1.12	1	0.09	0.09	(N/A)
CB 5059	In Sag	6.16	-0.04	2.08	0.1	0.1	(N/A)
CB 5060	In Sag	6.14	-0.44	1.69	0.1	0.1	(N/A)
CB 5063	In Sag	4.85	-0.26	1.83	0.09	0.09	(N/A)
CB 5064	In Sag	5.15	-0.16	1.96	0.09	0.09	(N/A)
CB 5065	On Grade	5.7	2.1	4.32	0.15	0.14	0.01
CB 5066	On Grade	5.67	2.17	4.44	0.2	0.19	0.01
CB 5069	In Sag	4.81	-1.62	0.55	0.13	0.12	(N/A)

CB 5070	In Sag	5.11	-0.42	1.65	0.04	0.04	(N/A)
CB 5071	In Sag	5.05	-0.62	1.47	0.04	0.04	(N/A)
CB 10001	On Grade	5.85	-0.45	1.63	0.08	0.07	0.01
CB 13001	In Sag	4.57	0.96	3.04	0.03	0.03	(N/A)
CB 13078	In Sag	5.74	-0.94	1.17	0.07	0.07	(N/A)
CB 13090	In Sag	5.85	0.91	2.99	0.07	0.07	(N/A)
CB3029A	On Grade	8	-0.15	2.05	0.27	0.23	0.03
CB3030A	On Grade	7	-0.5	1.74	0.39	0.33	0.06
CB90008	On Grade	7	1.98	4.17	0.17	0.16	0.01
Summation of Hydraulic Grade Line Elevations (ft)				**199.88**			

Catch Basin Drainage System 4 Existing 10 Yr. High Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 2027	In Sag	5.31	-1.22	3.06	0.17	0.17	(N/A)
CB 2028	In Sag	5.45	-0.88	3.07	0.2	0.2	(N/A)
CB 2029	In Sag	5.06	-0.17	3.07	0.17	0.17	(N/A)
CB 2032	In Sag	5.15	0.22	3.07	0.12	0.12	(N/A)
CB 2033A	On Grade	5.9	0	3.09	3.25	2.82	0.44
CB 2034	In Sag	5.59	-0.34	3.07	0.34	0.34	(N/A)
CB 2035	On Grade	5.86	0.13	3.04	0.3	0.12	0.18
CB 2036	In Sag	5.48	-0.75	2.99	0.22	0.22	(N/A)
CB 2037	On Grade	6.29	0.46	2.98	0.45	0.16	0.29
CB 2039	On Grade	6.04	-0.39	2.98	0.45	0.16	0.29
CB 2043	On Grade	6.23	0.5	3.9	0.34	0.13	0.2
CB 2044	On Grade	6.21	0.38	3.91	0.52	0.17	0.35
CB 2046	On Grade	6.2	0.07	3.92	0.38	0.14	0.24
CB 2048	On Grade	6.55	0.22	3.7	0.3	0.12	0.18
CB 2049	On Grade	7.03	1.5	3.58	0.42	0.15	0.27
CB 2055	In Sag	7.05	-0.05	3.17	0.78	0.78	(N/A)
CB 2056	In Sag	6.35	-0.09	3.13	0.69	0.69	(N/A)
CB 2058	In Sag	6.24	-0.26	3.13	0.31	0.31	(N/A)
CB 2060	In Sag	6.32	0.09	3.13	0.41	0.41	(N/A)
CB 2061	On Grade	6.02	-0.31	3.21	0.48	0.16	0.32
CB 2063	In Sag	6.34	0.91	3.06	0.04	0.04	(N/A)
CB 2064/CB 2065	In Sag	6.01	0.68	2.94	0.69	0.69	(N/A)
CB 2067	In Sag	5.96	0.23	2.91	0.41	0.41	(N/A)
CB 2068	In Sag	6.38	0.85	3.05	0.54	0.54	(N/A)
CB 2070	In Sag	6.55	1.52	3.73	0.51	0.51	(N/A)
CB 2072	In Sag	5.77	0.67	3.39	0.12	0.12	(N/A)
CB 2073	In Sag	5.99	-0.23	3.39	0.07	0.07	(N/A)
CB 2079	On Grade	5.98	1.08	4.06	0.08	0.07	0.01
CB 2080	On Grade	5.9	-1.23	4.03	0.11	0.06	0.04
CB 3018	In Sag	5.42	-0.31	3.07	0.13	0.13	(N/A)
CB 3023A	On Grade	6	0	3.08	2.79	2.45	0.34
CB 3025	On Grade	5.55	0.22	3.05	0.32	0.13	0.19
CB 3027	In Sag	4.94	-0.5	2.99	0.57	0.57	(N/A)
CB 3035	On Grade	6.16	-1.18	2.98	0.13	0.07	0.06
CB 3036	In Sag	6.9	1.22	3.49	0.26	0.26	(N/A)
CB 3037	In Sag	6.63	1.43	3.66	0.45	0.45	(N/A)
CB 3040	On Grade	5.66	-0.27	3.93	0.25	0.11	0.14
CB 3042	On Grade	6.22	0.69	3.69	0.68	0.2	0.48
CB 3046	On Grade	6.76	1.33	3.42	0.24	0.11	0.13
CB 3050	On Grade	6.17	0.94	3.44	0.15	0.08	0.07
CB 3052	On Grade	6	0.47	3.46	0.2	0.09	0.11
CB 3055	On Grade	6.26	0.73	3.59	0.45	0.16	0.29
CB 3057	On Grade	5.89	-0.24	3.46	0.55	0.18	0.37
CB 3058	On Grade	6.39	0.16	3.27	0.78	0.22	0.56
CB 4048	On Grade	4.77	1.16	5.27	0.25	0.25	0
CB 4049	In Sag	4.92	0.77	4.21	0.16	0.16	(N/A)
CB 4050	In Sag	5	0.82	4.21	0.31	0.31	(N/A)
CB 4051	In Sag	5.18	-0.43	3.64	0.41	0.41	(N/A)
CB 4053	In Sag	5.21	-1.33	3.63	0.23	0.23	(N/A)
CB 4054	In Sag	5.57	-0.38	3.62	0.19	0.19	(N/A)
CB 4056	In Sag	5.65	0.42	3.59	0.28	0.28	(N/A)
CB 4057	In Sag	5.4	-0.33	3.97	0.22	0.22	(N/A)
CB 4059	In Sag	5.64	-1.13	3.96	0.15	0.15	(N/A)
CB 4062	In Sag	4.88	-0.23	4.18	0.13	0.13	(N/A)
CB 4063	In Sag	4.82	0.47	4.2	0.32	0.32	(N/A)
CB 4064/CB 4065	In Sag	4.7	0.52	4.21	1.49	1.49	(N/A)
CB 4066/ CB 4077	In Sag	4.36	0.07	4.06	1.99	-0.58	(N/A)
CB 4069	In Sag	4.5	-0.6	4.85	0.23	0.73	(N/A)
CB 4070	In Sag	5.23	0	4.14	0.3	0.3	(N/A)
CB 4072	In Sag	5.19	-0.1	4.14	0.25	0.25	(N/A)
CB 5032	In Sag	4.86	0.17	3.47	0.48	0.48	(N/A)
CB 5034	In Sag	4.72	-0.93	3.47	0.27	0.27	(N/A)
CB 5037	In Sag	5.57	0.22	3.45	0.18	0.18	(N/A)
CB 5038	In Sag	5.44	-0.78	3.43	0.18	0.18	(N/A)
CB 5041	In Sag	5.45	0.17	3.45	0.63	0.63	(N/A)
CB 5042	In Sag	5.43	0.47	3.45	0.69	0.69	(N/A)
CB 5043	On Grade	4.78	1.01	5.28	0.51	0.51	0
CB 5044	On Grade	4.57	0.85	5.07	0.42	0.42	0
CB 5046	In Sag	5.34	0.4	3.31	0.2	0.2	(N/A)
CB 5047	In Sag	5.36	0.4	3.33	0.27	0.27	(N/A)
CB 5051	In Sag	5.04	-0.14	3.36	0.58	0.58	(N/A)
CB 5052	In Sag	4.85	-0.14	3.33	0.38	0.38	(N/A)
CB 5055	In Sag	5.59	0.28	3.32	0.37	0.37	(N/A)
CB 5057	In Sag	6.55	-1.12	3.31	0.37	0.37	(N/A)
CB 5059	In Sag	6.16	-0.04	3.53	0.48	0.48	(N/A)
CB 5060	In Sag	6.14	-0.44	3.54	0.45	0.45	(N/A)
CB 5063	In Sag	4.85	-0.26	3.94	0.4	0.4	(N/A)
CB 5064	In Sag	5.15	-0.16	3.94	0.41	0.41	(N/A)
CB 5065	On Grade	5.7	2.1	5.75	0.81	0.71	0.1
CB 5066	On Grade	5.67	2.17	6.17	1.11	1.11	0

CB 5069	In Sag	4.81	-1.62	1.94	0.59	3.66	(N/A)
CB 5070	In Sag	5.11	-0.42	4.02	0.16	0.16	(N/A)
CB 5071	In Sag	5.05	-0.62	4.02	0.17	0.17	(N/A)
CB 10001	On Grade	5.85	-0.45	2.98	0.4	0.33	0.07
CB 13001	In Sag	4.57	0.96	4.42	0.11	0.15	(N/A)
CB 13078	In Sag	5.74	-0.94	3.31	0.29	0.29	(N/A)
CB 13090	In Sag	5.85	0.91	3.2	0.28	0.28	(N/A)
CB3029A	On Grade	8	-0.15	2.99	1.62	1.05	0.57
CB3030A	On Grade	7	-0.5	2.99	2.82	1.61	1.21
CB90008	On Grade	7	1.98	4.39	0.87	0.77	0.1
Summation of Hydraulic Grade Line Elevations (ft)				**324.38**			

Catch Basin Drainage System 4 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 2027	In Sag	5.31	-1.22	1.44	0.17	0.17	(N/A)
CB 2028	In Sag	5.45	-0.88	1.39	0.2	0.2	(N/A)
CB 2029	In Sag	5.06	-0.17	2.09	0.17	0.17	(N/A)
CB 2032	In Sag	5.15	0.22	2.34	0.12	0.12	(N/A)
CB 2033A	On Grade	5.9	0	2.74	3.25	2.82	0.44
CB 2034	In Sag	5.59	-0.34	1.84	0.34	0.34	(N/A)
CB 2035	On Grade	5.86	0.13	2.22	0.3	0.12	0.18
CB 2036	In Sag	5.48	-0.75	1.42	0.22	0.22	(N/A)
CB 2037	On Grade	6.29	0.46	2.57	0.45	0.16	0.29
CB 2039	On Grade	6.04	-0.39	1.71	0.45	0.16	0.29
CB 2043	On Grade	6.23	0.5	2.6	0.34	0.13	0.2
CB 2044	On Grade	6.21	0.38	2.52	0.52	0.17	0.35
CB 2046	On Grade	6.2	0.07	2.58	0.38	0.14	0.24
CB 2048	On Grade	6.55	0.22	2.33	0.3	0.12	0.18
CB 2049	On Grade	7.03	1.5	3.58	0.42	0.15	0.27
CB 2055	In Sag	7.05	-0.05	2.14	0.78	0.78	(N/A)
CB 2056	In Sag	6.35	-0.09	2.09	0.69	0.69	(N/A)
CB 2058	In Sag	6.24	-0.26	1.92	0.31	0.31	(N/A)
CB 2060	In Sag	6.32	0.09	2.26	0.41	0.41	(N/A)
CB 2061	On Grade	6.02	-0.31	1.81	0.48	0.16	0.32
CB 2063	In Sag	6.34	0.91	2.96	0.04	0.04	(N/A)
CB 2064/CB 2065	In Sag	6.01	0.68	2.91	0.69	0.69	(N/A)
CB 2067	In Sag	5.96	0.23	2.37	0.41	0.41	(N/A)
CB 2068	In Sag	6.38	0.85	3.03	0.54	0.54	(N/A)
CB 2070	In Sag	6.55	1.52	3.73	0.51	0.51	(N/A)
CB 2072	In Sag	5.77	0.67	2.8	0.12	0.12	(N/A)
CB 2073	In Sag	5.99	-0.23	1.9	0.07	0.07	(N/A)
CB 2079	On Grade	5.98	1.08	3.34	0.08	0.07	0.01
CB 2080	On Grade	5.9	-1.23	3.05	0.11	0.06	0.04
CB 3018	In Sag	5.42	-0.31	1.99	0.13	0.13	(N/A)
CB 3023A	On Grade	6	0	2.62	2.79	2.45	0.34
CB 3025	On Grade	5.55	0.22	2.3	0.32	0.13	0.19
CB 3027	In Sag	4.94	-0.5	1.89	0.57	0.57	(N/A)
CB 3035	On Grade	6.16	-1.18	1.28	0.13	0.07	0.06
CB 3036	In Sag	6.9	1.22	3.49	0.26	0.26	(N/A)
CB 3037	In Sag	6.63	1.43	3.66	0.45	0.45	(N/A)
CB 3040	On Grade	5.66	-0.27	3.04	0.25	0.11	0.14
CB 3042	On Grade	6.22	0.69	2.84	0.68	0.2	0.48
CB 3046	On Grade	6.76	1.33	3.42	0.24	0.11	0.13
CB 3050	On Grade	6.17	0.94	2.99	0.15	0.08	0.07
CB 3052	On Grade	6	0.47	2.53	0.2	0.09	0.11
CB 3055	On Grade	6.26	0.73	2.86	0.45	0.16	0.29
CB 3057	On Grade	5.89	-0.24	1.9	0.55	0.18	0.37
CB 3058	On Grade	6.39	0.16	2.28	0.78	0.22	0.56
CB 4048	On Grade	4.77	1.16	4.59	0.25	0.23	0.01
CB 4049	In Sag	4.92	0.77	3.13	0.16	0.16	(N/A)
CB 4050	In Sag	5	0.82	3.14	0.31	0.31	(N/A)
CB 4051	In Sag	5.18	-0.43	1.98	0.41	0.41	(N/A)
CB 4053	In Sag	5.21	-1.33	2.03	0.23	0.23	(N/A)
CB 4054	In Sag	5.57	-0.38	2.02	0.19	0.19	(N/A)
CB 4056	In Sag	5.65	0.42	2.59	0.28	0.28	(N/A)
CB 4057	In Sag	5.4	-0.33	2.14	0.22	0.22	(N/A)
CB 4059	In Sag	5.64	-1.13	2.29	0.15	0.15	(N/A)
CB 4062	In Sag	4.88	-0.23	2.47	0.13	0.13	(N/A)
CB 4063	In Sag	4.82	0.47	2.81	0.32	0.32	(N/A)
CB 4064/CB 4065	In Sag	4.7	0.52	2.8	1.49	1.49	(N/A)
CB 4066/ CB 4077	In Sag	4.36	0.07	3.76	1.41	1.41	(N/A)
CB 4069	In Sag	4.5	-0.6	3.67	0.23	0.23	(N/A)
CB 4070	In Sag	5.23	0	2.85	0.3	0.3	(N/A)
CB 4072	In Sag	5.19	-0.1	2.88	0.25	0.25	(N/A)
CB 5032	In Sag	4.86	0.17	2.47	0.48	0.48	(N/A)
CB 5034	In Sag	4.72	-0.93	1.92	0.27	0.27	(N/A)
CB 5037	In Sag	5.57	0.22	2.35	0.18	0.18	(N/A)
CB 5038	In Sag	5.44	-0.78	1.84	0.18	0.18	(N/A)
CB 5041	In Sag	5.45	0.17	2.42	0.63	0.63	(N/A)
CB 5042	In Sag	5.43	0.47	2.83	0.69	0.69	(N/A)
CB 5043	On Grade	4.78	1.01	4.64	0.51	0.46	0.04
CB 5044	On Grade	4.57	0.85	4.58	0.42	0.39	0.03
CB 5046	In Sag	5.34	0.4	2.55	0.2	0.2	(N/A)
CB 5047	In Sag	5.36	0.4	2.61	0.27	0.27	(N/A)
CB 5051	In Sag	5.04	-0.14	2.19	0.58	0.58	(N/A)
CB 5052	In Sag	4.85	-0.14	2.06	0.38	0.38	(N/A)
CB 5055	In Sag	5.59	0.28	2.53	0.37	0.37	(N/A)
CB 5057	In Sag	6.55	-1.12	1.63	0.37	0.37	(N/A)
CB 5059	In Sag	6.16	-0.04	2.22	0.48	0.48	(N/A)
CB 5060	In Sag	6.14	-0.44	1.87	0.45	0.45	(N/A)
CB 5063	In Sag	4.85	-0.26	2.05	0.4	0.4	(N/A)
CB 5064	In Sag	5.15	-0.16	2.32	0.41	0.41	(N/A)
CB 5065	On Grade	5.7	2.1	4.6	0.81	0.71	0.1
CB 5066	On Grade	5.67	2.17	4.86	1.11	0.92	0.19

CB 5069	In Sag	4.81	-1.62	3.38	0.59	0.59	(N/A)
CB 5070	In Sag	5.11	-0.42	3.17	0.16	0.16	(N/A)
CB 5071	In Sag	5.05	-0.62	3.17	0.17	0.17	(N/A)
CB 10001	On Grade	5.85	-0.45	1.73	0.4	0.33	0.07
CB 13001	In Sag	4.57	0.96	3.73	0.11	0.11	(N/A)
CB 13078	In Sag	5.74	-0.94	1.65	0.29	0.29	(N/A)
CB 13090	In Sag	5.85	0.91	3.07	0.28	0.28	(N/A)
CB3029A	On Grade	8	-0.15	2.27	1.62	1.05	0.57
CB3030A	On Grade	7	-0.5	2.03	2.82	1.61	1.21
CB90008	On Grade	7	1.98	4.39	0.87	0.77	0.1
Summation of Hydraulic Grade Line Elevations (ft)				**237.05**			

Catch Basin Drainage System 4 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 2027	In Sag	5.31	-1.22	3.09	0.04	0.04	(N/A)
CB 2028	In Sag	5.45	-0.88	3.08	0.05	0.05	(N/A)
CB 2029	In Sag	5.06	-0.17	3.08	0.04	0.04	(N/A)
CB 2032	In Sag	5.15	0.22	3.08	0.03	0.03	(N/A)
CB 2033A	On Grade	5.9	0	3.08	0.69	0.66	0.03
CB 2034	In Sag	5.59	-0.34	3.08	0.07	0.07	(N/A)
CB 2035	On Grade	5.86	0.13	3.08	0.06	0.04	0.02
CB 2036	In Sag	5.48	-0.75	3.07	0.05	0.05	(N/A)
CB 2037	On Grade	6.29	0.46	3.06	0.09	0.06	0.04
CB 2039	On Grade	6.04	-0.39	3.07	0.08	0.05	0.03
CB 2043	On Grade	6.23	0.5	3.19	0.07	0.05	0.03
CB 2044	On Grade	6.21	0.38	3.19	0.11	0.06	0.05
CB 2046	On Grade	6.2	0.07	3.19	0.09	0.05	0.03
CB 2048	On Grade	6.55	0.22	3.16	0.07	0.05	0.02
CB 2049	On Grade	7.03	1.5	3.55	0.1	0.06	0.04
CB 2055	In Sag	7.05	-0.05	3.11	0.14	0.14	(N/A)
CB 2056	In Sag	6.35	-0.09	3.11	0.13	0.13	(N/A)
CB 2058	In Sag	6.24	-0.26	3.1	0.06	0.05	(N/A)
CB 2060	In Sag	6.32	0.09	3.1	0.09	0.09	(N/A)
CB 2061	On Grade	6.02	-0.31	3.08	0.1	0.06	0.04
CB 2063	In Sag	6.34	0.91	3.08	0.01	0.01	(N/A)
CB 2064/CB 2065	In Sag	6.01	0.68	3.09	0.11	0.11	(N/A)
CB 2067	In Sag	5.96	0.23	3.08	0.07	0.07	(N/A)
CB 2068	In Sag	6.38	0.85	3.04	0.1	0.1	(N/A)
CB 2070	In Sag	6.55	1.52	3.61	0.09	0.09	(N/A)
CB 2072	In Sag	5.77	0.67	3.14	0.03	0.03	(N/A)
CB 2073	In Sag	5.99	-0.23	3.13	0.02	0.02	(N/A)
CB 2079	On Grade	5.98	1.08	3.21	0.02	0.02	0
CB 2080	On Grade	5.9	-1.23	3.22	0.03	0.02	0.01
CB 3018	In Sag	5.42	-0.31	3.09	0.03	0.03	(N/A)
CB 3023A	On Grade	6	0	3.08	0.59	0.56	0.03
CB 3025	On Grade	5.55	0.22	3.08	0.07	0.05	0.03
CB 3027	In Sag	4.94	-0.5	3.07	0.11	0.11	(N/A)
CB 3035	On Grade	6.16	-1.18	3.07	0.03	0.02	0.01
CB 3036	In Sag	6.9	1.22	3.33	0.04	0.04	(N/A)
CB 3037	In Sag	6.63	1.43	3.53	0.08	0.08	(N/A)
CB 3040	On Grade	5.66	-0.27	3.22	0.06	0.04	0.02
CB 3042	On Grade	6.22	0.69	3.16	0.13	0.07	0.06
CB 3046	On Grade	6.76	1.33	3.39	0.06	0.04	0.02
CB 3050	On Grade	6.17	0.94	3.14	0.04	0.03	0.01
CB 3052	On Grade	6	0.47	3.14	0.05	0.04	0.01
CB 3055	On Grade	6.26	0.73	3.15	0.09	0.06	0.04
CB 3057	On Grade	5.89	-0.24	3.14	0.11	0.06	0.05
CB 3058	On Grade	6.39	0.16	3.13	0.13	0.07	0.06
CB 4048	On Grade	4.77	1.16	3.32	0.05	0.05	0
CB 4049	In Sag	4.92	0.77	3.18	0.03	0.03	(N/A)
CB 4050	In Sag	5	0.82	3.18	0.07	0.07	(N/A)
CB 4051	In Sag	5.18	-0.43	3.15	0.09	0.09	(N/A)
CB 4053	In Sag	5.21	-1.33	3.15	0.05	0.05	(N/A)
CB 4054	In Sag	5.57	-0.38	3.15	0.05	0.05	(N/A)
CB 4056	In Sag	5.65	0.42	3.15	0.06	0.06	(N/A)
CB 4057	In Sag	5.4	-0.33	3.17	0.05	0.05	(N/A)
CB 4059	In Sag	5.64	-1.13	3.17	0.03	0.03	(N/A)
CB 4062	In Sag	4.88	-0.23	3.18	0.03	0.03	(N/A)
CB 4063	In Sag	4.82	0.47	3.18	0.06	0.06	(N/A)
CB 4064/CB 4065	In Sag	4.7	0.52	3.18	0.25	0.25	(N/A)
CB 4066/ CB 4077	In Sag	4.36	0.07	3.24	0.23	0.23	(N/A)
CB 4069	In Sag	4.5	-0.6	3.24	0.05	0.05	(N/A)
CB 4070	In Sag	5.23	0	3.21	0.07	0.07	(N/A)
CB 4072	In Sag	5.19	-0.1	3.21	0.06	0.06	(N/A)
CB 5032	In Sag	4.86	0.17	3.14	0.08	0.08	(N/A)
CB 5034	In Sag	4.72	-0.93	3.14	0.05	0.05	(N/A)
CB 5037	In Sag	5.57	0.22	3.14	0.04	0.04	(N/A)
CB 5038	In Sag	5.44	-0.78	3.14	0.04	0.04	(N/A)
CB 5041	In Sag	5.45	0.17	3.14	0.12	0.12	(N/A)
CB 5042	In Sag	5.43	0.47	3.14	0.14	0.14	(N/A)
CB 5043	On Grade	4.78	1.01	3.29	0.11	0.1	0.01
CB 5044	On Grade	4.57	0.85	3.26	0.09	0.09	0.01
CB 5046	In Sag	5.34	0.4	3.12	0.05	0.05	(N/A)
CB 5047	In Sag	5.36	0.4	3.12	0.06	0.06	(N/A)
CB 5051	In Sag	5.04	-0.14	3.13	0.11	0.11	(N/A)
CB 5052	In Sag	4.85	-0.14	3.13	0.09	0.09	(N/A)
CB 5055	In Sag	5.59	0.28	3.13	0.09	0.09	(N/A)
CB 5057	In Sag	6.55	-1.12	3.13	0.09	0.09	(N/A)
CB 5059	In Sag	6.16	-0.04	3.14	0.1	0.1	(N/A)
CB 5060	In Sag	6.14	-0.44	3.14	0.1	0.1	(N/A)
CB 5063	In Sag	4.85	-0.26	3.16	0.09	0.09	(N/A)
CB 5064	In Sag	5.15	-0.16	3.16	0.09	0.09	(N/A)
CB 5065	On Grade	5.7	2.1	4.32	0.15	0.14	0.01
CB 5066	On Grade	5.67	2.17	4.44	0.2	0.19	0.01
CB 5069	In Sag	4.81	-1.62	3.23	0.13	0.12	(N/A)

CB 5070	In Sag	5.11	-0.42	3.22	0.04	0.04	(N/A)
CB 5071	In Sag	5.05	-0.62	3.22	0.04	0.04	(N/A)
CB 10001	On Grade	5.85	-0.45	3.07	0.08	0.07	0.01
CB 13001	In Sag	4.57	0.96	3.24	0.03	0.03	(N/A)
CB 13078	In Sag	5.74	-0.94	3.13	0.07	0.07	(N/A)
CB 13090	In Sag	5.85	0.91	3.1	0.07	0.07	(N/A)
CB3029A	On Grade	8	-0.15	3.07	0.27	0.23	0.03
CB3030A	On Grade	7	-0.5	3.07	0.39	0.33	0.06
CB90008	On Grade	7	1.98	4.17	0.17	0.16	0.01
Summation of Hydraulic Grade Line Elevations (ft)				**287.96**			

Catch Basin Drainage System 4 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 2027	In Sag	5.31	-1.22	0.89	0.04	0.04	(N/A)
CB 2028	In Sag	5.45	-0.88	1.2	0.05	0.05	(N/A)
CB 2029	In Sag	5.06	-0.17	1.98	0.04	0.04	(N/A)
CB 2032	In Sag	5.15	0.22	2.24	0.03	0.03	(N/A)
CB 2033A	On Grade	5.9	0	2.35	0.69	0.66	0.03
CB 2034	In Sag	5.59	-0.34	1.74	0.07	0.07	(N/A)
CB 2035	On Grade	5.86	0.13	2.19	0.06	0.04	0.02
CB 2036	In Sag	5.48	-0.75	1.34	0.05	0.05	(N/A)
CB 2037	On Grade	6.29	0.46	2.53	0.09	0.06	0.04
CB 2039	On Grade	6.04	-0.39	1.67	0.08	0.05	0.03
CB 2043	On Grade	6.23	0.5	2.56	0.07	0.05	0.03
CB 2044	On Grade	6.21	0.38	2.43	0.11	0.06	0.05
CB 2046	On Grade	6.2	0.07	2.14	0.09	0.05	0.03
CB 2048	On Grade	6.55	0.22	2.29	0.07	0.05	0.02
CB 2049	On Grade	7.03	1.5	3.55	0.1	0.06	0.04
CB 2055	In Sag	7.05	-0.05	2.03	0.14	0.14	(N/A)
CB 2056	In Sag	6.35	-0.09	1.99	0.13	0.13	(N/A)
CB 2058	In Sag	6.24	-0.26	1.82	0.06	0.05	(N/A)
CB 2060	In Sag	6.32	0.09	2.17	0.09	0.09	(N/A)
CB 2061	On Grade	6.02	-0.31	1.76	0.1	0.06	0.04
CB 2063	In Sag	6.34	0.91	1.75	0.01	0.01	(N/A)
CB 2064/CB 2065	In Sag	6.01	0.68	2.78	0.11	0.11	(N/A)
CB 2067	In Sag	5.96	0.23	2.29	0.07	0.07	(N/A)
CB 2068	In Sag	6.38	0.85	2.93	0.1	0.1	(N/A)
CB 2070	In Sag	6.55	1.52	3.61	0.09	0.09	(N/A)
CB 2072	In Sag	5.77	0.67	2.74	0.03	0.03	(N/A)
CB 2073	In Sag	5.99	-0.23	1.34	0.02	0.02	(N/A)
CB 2079	On Grade	5.98	1.08	3.2	0.02	0.02	0
CB 2080	On Grade	5.9	-1.23	1.23	0.03	0.02	0.01
CB 3018	In Sag	5.42	-0.31	1.9	0.03	0.03	(N/A)
CB 3023A	On Grade	6	0	2.25	0.59	0.56	0.03
CB 3025	On Grade	5.55	0.22	2.27	0.07	0.05	0.03
CB 3027	In Sag	4.94	-0.5	1.7	0.11	0.11	(N/A)
CB 3035	On Grade	6.16	-1.18	0.83	0.03	0.02	0.01
CB 3036	In Sag	6.9	1.22	3.33	0.04	0.04	(N/A)
CB 3037	In Sag	6.63	1.43	3.53	0.08	0.08	(N/A)
CB 3040	On Grade	5.66	-0.27	1.78	0.06	0.04	0.02
CB 3042	On Grade	6.22	0.69	2.78	0.13	0.07	0.06
CB 3046	On Grade	6.76	1.33	3.39	0.06	0.04	0.02
CB 3050	On Grade	6.17	0.94	2.97	0.04	0.03	0.01
CB 3052	On Grade	6	0.47	2.51	0.05	0.04	0.01
CB 3055	On Grade	6.26	0.73	2.81	0.09	0.06	0.04
CB 3057	On Grade	5.89	-0.24	1.83	0.11	0.06	0.05
CB 3058	On Grade	6.39	0.16	2.23	0.13	0.07	0.06
CB 4048	On Grade	4.77	1.16	3.3	0.05	0.05	0
CB 4049	In Sag	4.92	0.77	2.93	0.03	0.03	(N/A)
CB 4050	In Sag	5	0.82	2.95	0.07	0.07	(N/A)
CB 4051	In Sag	5.18	-0.43	1.66	0.09	0.09	(N/A)
CB 4053	In Sag	5.21	-1.33	0.89	0.05	0.05	(N/A)
CB 4054	In Sag	5.57	-0.38	1.71	0.05	0.05	(N/A)
CB 4056	In Sag	5.65	0.42	2.5	0.06	0.06	(N/A)
CB 4057	In Sag	5.4	-0.33	1.74	0.05	0.05	(N/A)
CB 4059	In Sag	5.64	-1.13	0.95	0.03	0.03	(N/A)
CB 4062	In Sag	4.88	-0.23	1.84	0.03	0.03	(N/A)
CB 4063	In Sag	4.82	0.47	2.62	0.06	0.06	(N/A)
CB 4064/CB 4065	In Sag	4.7	0.52	2.64	0.25	0.25	(N/A)
CB 4066/ CB 4077	In Sag	4.36	0.07	2.26	0.23	0.23	(N/A)
CB 4069	In Sag	4.5	-0.6	1.6	0.05	0.05	(N/A)
CB 4070	In Sag	5.23	0	2.11	0.07	0.07	(N/A)
CB 4072	In Sag	5.19	-0.1	1.99	0.06	0.06	(N/A)
CB 5032	In Sag	4.86	0.17	2.29	0.08	0.08	(N/A)
CB 5034	In Sag	4.72	-0.93	1.14	0.05	0.05	(N/A)
CB 5037	In Sag	5.57	0.22	2.28	0.04	0.04	(N/A)
CB 5038	In Sag	5.44	-0.78	1.31	0.04	0.04	(N/A)
CB 5041	In Sag	5.45	0.17	2.28	0.12	0.12	(N/A)
CB 5042	In Sag	5.43	0.47	2.63	0.14	0.14	(N/A)
CB 5043	On Grade	4.78	1.01	3.21	0.11	0.1	0.01
CB 5044	On Grade	4.57	0.85	3.07	0.09	0.09	0.01
CB 5046	In Sag	5.34	0.4	2.47	0.05	0.05	(N/A)
CB 5047	In Sag	5.36	0.4	2.51	0.06	0.06	(N/A)
CB 5051	In Sag	5.04	-0.14	2.01	0.11	0.11	(N/A)
CB 5052	In Sag	4.85	-0.14	1.95	0.09	0.09	(N/A)
CB 5055	In Sag	5.59	0.28	2.41	0.09	0.09	(N/A)
CB 5057	In Sag	6.55	-1.12	1	0.09	0.09	(N/A)
CB 5059	In Sag	6.16	-0.04	2.08	0.1	0.1	(N/A)
CB 5060	In Sag	6.14	-0.44	1.69	0.1	0.1	(N/A)
CB 5063	In Sag	4.85	-0.26	1.83	0.09	0.09	(N/A)
CB 5064	In Sag	5.15	-0.16	1.96	0.09	0.09	(N/A)
CB 5065	On Grade	5.7	2.1	4.32	0.15	0.14	0.01
CB 5066	On Grade	5.67	2.17	4.44	0.2	0.19	0.01
CB 5069	In Sag	4.81	-1.62	0.55	0.13	0.12	(N/A)

CB 5070	In Sag	5.11	-0.42	1.65	0.04	0.04	(N/A)
CB 5071	In Sag	5.05	-0.62	1.47	0.04	0.04	(N/A)
CB 10001	On Grade	5.85	-0.45	1.63	0.08	0.07	0.01
CB 13001	In Sag	4.57	0.96	3.04	0.03	0.03	(N/A)
CB 13078	In Sag	5.74	-0.94	1.17	0.07	0.07	(N/A)
CB 13090	In Sag	5.85	0.91	2.99	0.07	0.07	(N/A)
CB3029A	On Grade	8	-0.15	2.05	0.27	0.23	0.03
CB3030A	On Grade	7	-0.5	1.74	0.39	0.33	0.06
CB90008	On Grade	7	1.98	4.17	0.17	0.16	0.01
Summation of Hydraulic Grade Line Elevations (ft)				**199.88**			

Catch Basin Drainage System 4 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 2027	In Sag	5.31	-1.22	3.97	0.17	0.17	(N/A)
CB 2028	In Sag	5.45	-0.88	4	0.2	0.2	(N/A)
CB 2029	In Sag	5.06	-0.17	3.98	0.17	0.17	(N/A)
CB 2032	In Sag	5.15	0.22	3.99	0.12	0.12	(N/A)
CB 2033A	On Grade	5.9	0	4.02	3.25	2.82	0.44
CB 2034	In Sag	5.59	-0.34	3.99	0.34	0.34	(N/A)
CB 2035	On Grade	5.86	0.13	3.96	0.3	0.12	0.18
CB 2036	In Sag	5.48	-0.75	3.9	0.22	0.22	(N/A)
CB 2037	On Grade	6.29	0.46	3.9	0.45	0.16	0.29
CB 2039	On Grade	6.04	-0.39	3.9	0.45	0.16	0.29
CB 2043	On Grade	6.23	0.5	4.51	0.34	0.13	0.2
CB 2044	On Grade	6.21	0.38	4.5	0.52	0.17	0.35
CB 2046	On Grade	6.2	0.07	4.48	0.38	0.14	0.24
CB 2048	On Grade	6.55	0.22	4.31	0.3	0.12	0.18
CB 2049	On Grade	7.03	1.5	4.1	0.42	0.15	0.27
CB 2055	In Sag	7.05	-0.05	4.01	0.78	0.78	(N/A)
CB 2056	In Sag	6.35	-0.09	4.03	0.69	0.69	(N/A)
CB 2058	In Sag	6.24	-0.26	4.02	0.31	0.31	(N/A)
CB 2060	In Sag	6.32	0.09	4.01	0.41	0.41	(N/A)
CB 2061	On Grade	6.02	-0.31	3.97	0.48	0.16	0.32
CB 2063	In Sag	6.34	0.91	3.96	0.04	0.04	(N/A)
CB 2064/CB 2065	In Sag	6.01	0.68	3.96	0.69	0.69	(N/A)
CB 2067	In Sag	5.96	0.23	3.94	0.41	0.41	(N/A)
CB 2068	In Sag	6.38	0.85	3.98	0.54	0.54	(N/A)
CB 2070	In Sag	6.55	1.52	3.97	0.51	0.51	(N/A)
CB 2072	In Sag	5.77	0.67	4.2	0.12	0.12	(N/A)
CB 2073	In Sag	5.99	-0.23	4.19	0.07	0.07	(N/A)
CB 2079	On Grade	5.98	1.08	4.43	0.08	0.07	0.01
CB 2080	On Grade	5.9	-1.23	4.42	0.11	0.06	0.04
CB 3018	In Sag	5.42	-0.31	3.99	0.13	0.13	(N/A)
CB 3023A	On Grade	6	0	4.01	2.79	2.45	0.34
CB 3025	On Grade	5.55	0.22	3.96	0.32	0.13	0.19
CB 3027	In Sag	4.94	-0.5	3.89	0.57	0.57	(N/A)
CB 3035	On Grade	6.16	-1.18	3.9	0.13	0.07	0.06
CB 3036	In Sag	6.9	1.22	3.95	0.26	0.26	(N/A)
CB 3037	In Sag	6.63	1.43	3.92	0.45	0.45	(N/A)
CB 3040	On Grade	5.66	-0.27	4.46	0.25	0.11	0.14
CB 3042	On Grade	6.22	0.69	4.31	0.68	0.2	0.48
CB 3046	On Grade	6.76	1.33	4.13	0.24	0.11	0.13
CB 3050	On Grade	6.17	0.94	4.25	0.15	0.08	0.07
CB 3052	On Grade	6	0.47	4.25	0.2	0.09	0.11
CB 3055	On Grade	6.26	0.73	4.28	0.45	0.16	0.29
CB 3057	On Grade	5.89	-0.24	4.27	0.55	0.18	0.37
CB 3058	On Grade	6.39	0.16	4.13	0.78	0.22	0.56
CB 4048	On Grade	4.77	1.16	5.27	0.25	0.25	0
CB 4049	In Sag	4.92	0.77	4.87	0.16	0.16	(N/A)
CB 4050	In Sag	5	0.82	4.84	0.31	0.32	(N/A)
CB 4051	In Sag	5.18	-0.43	4.32	0.41	0.41	(N/A)
CB 4053	In Sag	5.21	-1.33	4.3	0.23	0.23	(N/A)
CB 4054	In Sag	5.57	-0.38	4.34	0.19	0.19	(N/A)
CB 4056	In Sag	5.65	0.42	4.32	0.28	0.28	(N/A)
CB 4057	In Sag	5.4	-0.33	4.63	0.22	0.22	(N/A)
CB 4059	In Sag	5.64	-1.13	4.63	0.15	0.15	(N/A)
CB 4062	In Sag	4.88	-0.23	4.93	0.13	0	(N/A)
CB 4063	In Sag	4.82	0.47	4.89	0.32	0	(N/A)
CB 4064/CB 4065	In Sag	4.7	0.52	6.74	1.49	4.96	(N/A)
CB 4066/ CB 4077	In Sag	4.36	0.07	5.06	1.41	0	(N/A)
CB 4069	In Sag	4.5	-0.6	3.29	0.23	2.72	(N/A)
CB 4070	In Sag	5.23	0	4.63	0.3	0.3	(N/A)
CB 4072	In Sag	5.19	-0.1	4.63	0.25	0.25	(N/A)
CB 5032	In Sag	4.86	0.17	4.28	0.48	0.48	(N/A)
CB 5034	In Sag	4.72	-0.93	4.27	0.27	0.27	(N/A)
CB 5037	In Sag	5.57	0.22	4.23	0.18	0.18	(N/A)
CB 5038	In Sag	5.44	-0.78	4.29	0.18	0.18	(N/A)
CB 5041	In Sag	5.45	0.17	4.26	0.63	0.63	(N/A)
CB 5042	In Sag	5.43	0.47	4.25	0.69	0.69	(N/A)
CB 5043	On Grade	4.78	1.01	5.28	0.51	0.51	0
CB 5044	On Grade	4.57	0.85	5.07	0.42	0.42	0
CB 5046	In Sag	5.34	0.4	4.15	0.2	0.2	(N/A)
CB 5047	In Sag	5.36	0.4	4.16	0.27	0.27	(N/A)
CB 5051	In Sag	5.04	-0.14	4.26	0.58	0.58	(N/A)
CB 5052	In Sag	4.85	-0.14	4.18	0.38	0.38	(N/A)
CB 5055	In Sag	5.59	0.28	4.2	0.37	0.37	(N/A)
CB 5057	In Sag	6.55	-1.12	4.17	0.37	0.37	(N/A)
CB 5059	In Sag	6.16	-0.04	4.3	0.48	0.48	(N/A)
CB 5060	In Sag	6.14	-0.44	4.27	0.45	0.45	(N/A)
CB 5063	In Sag	4.85	-0.26	4.53	0.4	0.4	(N/A)
CB 5064	In Sag	5.15	-0.16	4.57	0.41	0.41	(N/A)
CB 5065	On Grade	5.7	2.1	6.05	0.81	0.77	0.04
CB 5066	On Grade	5.67	2.17	6.17	1.11	1.11	0

CB 5069	In Sag	4.81	-1.62	2.41	0.59	3.14	(N/A)
CB 5070	In Sag	5.11	-0.42	4.34	0.16	0.16	(N/A)
CB 5071	In Sag	5.05	-0.62	4.34	0.17	0.17	(N/A)
CB 10001	On Grade	5.85	-0.45	3.91	0.4	0.33	0.07
CB 13001	In Sag	4.57	0.96	3.98	0.11	1.31	(N/A)
CB 13078	In Sag	5.74	-0.94	4.13	0.29	0.29	(N/A)
CB 13090	In Sag	5.85	0.91	4.13	0.28	0.28	(N/A)
CB3029A	On Grade	8	-0.15	3.91	1.62	1.05	0.57
CB3030A	On Grade	7	-0.5	3.92	2.82	1.61	1.21
CB90008	On Grade	7	1.98	4.48	0.87	0.77	0.1
Summation of Hydraulic Grade Line Elevations (ft)				**386.48**			

Catch Basin Drainage System 4 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 2027	In Sag	5.31	-1.22	1.44	0.17	0.17	(N/A)
CB 2028	In Sag	5.45	-0.88	1.39	0.2	0.2	(N/A)
CB 2029	In Sag	5.06	-0.17	2.09	0.17	0.17	(N/A)
CB 2032	In Sag	5.15	0.22	2.34	0.12	0.12	(N/A)
CB 2033A	On Grade	5.9	0	2.74	3.25	2.82	0.44
CB 2034	In Sag	5.59	-0.34	1.84	0.34	0.34	(N/A)
CB 2035	On Grade	5.86	0.13	2.22	0.3	0.12	0.18
CB 2036	In Sag	5.48	-0.75	1.42	0.22	0.22	(N/A)
CB 2037	On Grade	6.29	0.46	2.57	0.45	0.16	0.29
CB 2039	On Grade	6.04	-0.39	1.71	0.45	0.16	0.29
CB 2043	On Grade	6.23	0.5	2.6	0.34	0.13	0.2
CB 2044	On Grade	6.21	0.38	2.52	0.52	0.17	0.35
CB 2046	On Grade	6.2	0.07	2.58	0.38	0.14	0.24
CB 2048	On Grade	6.55	0.22	2.33	0.3	0.12	0.18
CB 2049	On Grade	7.03	1.5	3.58	0.42	0.15	0.27
CB 2055	In Sag	7.05	-0.05	2.14	0.78	0.78	(N/A)
CB 2056	In Sag	6.35	-0.09	2.09	0.69	0.69	(N/A)
CB 2058	In Sag	6.24	-0.26	1.92	0.31	0.31	(N/A)
CB 2060	In Sag	6.32	0.09	2.26	0.41	0.41	(N/A)
CB 2061	On Grade	6.02	-0.31	1.81	0.48	0.16	0.32
CB 2063	In Sag	6.34	0.91	2.96	0.04	0.04	(N/A)
CB 2064/CB 2065	In Sag	6.01	0.68	2.91	0.69	0.69	(N/A)
CB 2067	In Sag	5.96	0.23	2.37	0.41	0.41	(N/A)
CB 2068	In Sag	6.38	0.85	3.03	0.54	0.54	(N/A)
CB 2070	In Sag	6.55	1.52	3.73	0.51	0.51	(N/A)
CB 2072	In Sag	5.77	0.67	2.8	0.12	0.12	(N/A)
CB 2073	In Sag	5.99	-0.23	1.9	0.07	0.07	(N/A)
CB 2079	On Grade	5.98	1.08	3.34	0.08	0.07	0.01
CB 2080	On Grade	5.9	-1.23	3.05	0.11	0.06	0.04
CB 3018	In Sag	5.42	-0.31	1.99	0.13	0.13	(N/A)
CB 3023A	On Grade	6	0	2.62	2.79	2.45	0.34
CB 3025	On Grade	5.55	0.22	2.3	0.32	0.13	0.19
CB 3027	In Sag	4.94	-0.5	1.89	0.57	0.57	(N/A)
CB 3035	On Grade	6.16	-1.18	1.28	0.13	0.07	0.06
CB 3036	In Sag	6.9	1.22	3.49	0.26	0.26	(N/A)
CB 3037	In Sag	6.63	1.43	3.66	0.45	0.45	(N/A)
CB 3040	On Grade	5.66	-0.27	3.04	0.25	0.11	0.14
CB 3042	On Grade	6.22	0.69	2.84	0.68	0.2	0.48
CB 3046	On Grade	6.76	1.33	3.42	0.24	0.11	0.13
CB 3050	On Grade	6.17	0.94	2.99	0.15	0.08	0.07
CB 3052	On Grade	6	0.47	2.53	0.2	0.09	0.11
CB 3055	On Grade	6.26	0.73	2.86	0.45	0.16	0.29
CB 3057	On Grade	5.89	-0.24	1.9	0.55	0.18	0.37
CB 3058	On Grade	6.39	0.16	2.28	0.78	0.22	0.56
CB 4048	On Grade	4.77	1.16	4.59	0.25	0.23	0.01
CB 4049	In Sag	4.92	0.77	3.13	0.16	0.16	(N/A)
CB 4050	In Sag	5	0.82	3.14	0.31	0.31	(N/A)
CB 4051	In Sag	5.18	-0.43	1.98	0.41	0.41	(N/A)
CB 4053	In Sag	5.21	-1.33	2.03	0.23	0.23	(N/A)
CB 4054	In Sag	5.57	-0.38	2.02	0.19	0.19	(N/A)
CB 4056	In Sag	5.65	0.42	2.59	0.28	0.28	(N/A)
CB 4057	In Sag	5.4	-0.33	2.14	0.22	0.22	(N/A)
CB 4059	In Sag	5.64	-1.13	2.29	0.15	0.15	(N/A)
CB 4062	In Sag	4.88	-0.23	2.47	0.13	0.13	(N/A)
CB 4063	In Sag	4.82	0.47	2.81	0.32	0.32	(N/A)
CB 4064/CB 4065	In Sag	4.7	0.52	2.8	1.49	1.49	(N/A)
CB 4066/ CB 4077	In Sag	4.36	0.07	3.76	1.41	1.41	(N/A)
CB 4069	In Sag	4.5	-0.6	3.67	0.23	0.23	(N/A)
CB 4070	In Sag	5.23	0	2.85	0.3	0.3	(N/A)
CB 4072	In Sag	5.19	-0.1	2.88	0.25	0.25	(N/A)
CB 5032	In Sag	4.86	0.17	2.47	0.48	0.48	(N/A)
CB 5034	In Sag	4.72	-0.93	1.92	0.27	0.27	(N/A)
CB 5037	In Sag	5.57	0.22	2.35	0.18	0.18	(N/A)
CB 5038	In Sag	5.44	-0.78	1.84	0.18	0.18	(N/A)
CB 5041	In Sag	5.45	0.17	2.42	0.63	0.63	(N/A)
CB 5042	In Sag	5.43	0.47	2.83	0.69	0.69	(N/A)
CB 5043	On Grade	4.78	1.01	4.64	0.51	0.46	0.04
CB 5044	On Grade	4.57	0.85	4.58	0.42	0.39	0.03
CB 5046	In Sag	5.34	0.4	2.55	0.2	0.2	(N/A)
CB 5047	In Sag	5.36	0.4	2.61	0.27	0.27	(N/A)
CB 5051	In Sag	5.04	-0.14	2.19	0.58	0.58	(N/A)
CB 5052	In Sag	4.85	-0.14	2.06	0.38	0.38	(N/A)
CB 5055	In Sag	5.59	0.28	2.53	0.37	0.37	(N/A)
CB 5057	In Sag	6.55	-1.12	1.63	0.37	0.37	(N/A)
CB 5059	In Sag	6.16	-0.04	2.22	0.48	0.48	(N/A)
CB 5060	In Sag	6.14	-0.44	1.87	0.45	0.45	(N/A)
CB 5063	In Sag	4.85	-0.26	2.05	0.4	0.4	(N/A)
CB 5064	In Sag	5.15	-0.16	2.32	0.41	0.41	(N/A)
CB 5065	On Grade	5.7	2.1	4.6	0.81	0.71	0.1
CB 5066	On Grade	5.67	2.17	4.86	1.11	0.92	0.19

CB 5069	In Sag	4.81	-1.62	3.38	0.59	0.59	(N/A)
CB 5070	In Sag	5.11	-0.42	3.17	0.16	0.16	(N/A)
CB 5071	In Sag	5.05	-0.62	3.17	0.17	0.17	(N/A)
CB 10001	On Grade	5.85	-0.45	1.73	0.4	0.33	0.07
CB 13001	In Sag	4.57	0.96	3.73	0.11	0.11	(N/A)
CB 13078	In Sag	5.74	-0.94	1.65	0.29	0.29	(N/A)
CB 13090	In Sag	5.85	0.91	3.07	0.28	0.28	(N/A)
CB3029A	On Grade	8	-0.15	2.27	1.62	1.05	0.57
CB3030A	On Grade	7	-0.5	2.03	2.82	1.61	1.21
CB90008	On Grade	7	1.98	4.39	0.87	0.77	0.1
Summation of Hydraulic Grade Line Elevations (ft)				**237.05**			

Manholes Drainage System 4 Existing 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2030	5.81	-1.42	1.12	48	Circular Structure
MH 2031	6.89	-1.11	1.02	48	Circular Structure
MH 2033	6.7	-1.5	0.81	48	Circular Structure
MH 2038	7.17	-2.23	-1.99	48	Circular Structure
MH 2040	6.4	-1.2	1.5	48	Circular Structure
MH 2041	6.89	-1.04	1.5	48	Circular Structure
MH 2042	6.73	0.93	1.5	48	Circular Structure
MH 2045	6.63	0.83	1.42	48	Circular Structure
MH 2047	7.26	0.86	1.29	48	Circular Structure
MH 2050	7.6	-0.46	0.1	48	Circular Structure
MH 2051	7.63	-0.46	0.1	48	Circular Structure
MH 2052	7.17	-2.13	0.24	48	Circular Structure
MH 2053	7.41	-1.99	0.24	48	Circular Structure
MH 2054	7.23	-0.47	-0.04	48	Circular Structure
MH 2057	6.71	-0.69	-0.18	48	Circular Structure
MH 2059	6.74	-0.76	-0.2	48	Circular Structure
MH 2062	6.66	-0.94	-0.4	48	Circular Structure
MH 2066	6.47	-0.83	-0.38	48	Circular Structure
MH 2069	6.84	-0.76	-0.26	48	Circular Structure
MH 2071	6.37	-1.93	0.35	48	Circular Structure
MH 3019	5.64	-1.16	1.13	48	Circular Structure
MH 3020	5.71	-1.37	1.3	48	Circular Structure
MH 3023	6.7	-2.5	0.18	48	Circular Structure
MH 3024	6.93	-2.77	0.15	48	Circular Structure
MH 3026	7.22	-2.58	0.06	48	Circular Structure
MH 3028	6.32	-2.58	-0.13	72	Circular Structure
MH 3029	7.15	-2.85	-0.39	60	Circular Structure
MH 3030	6.5	-3.2	-0.46	72	Circular Structure
MH 3031	7.43	-2.97	-0.61	60	Circular Structure
MH 3032	6.7	-3.4	-1.19	48	Circular Structure
MH 3033	7.35	-1.85	-1.47	48	Circular Structure
MH 3034	6.72	-1.58	-1.25	48	Circular Structure
MH 3038	7.22	-0.88	-0.59	48	Circular Structure
MH 3041	5.94	0.74	1.54	48	Circular Structure
MH 3043	6.9	0.7	0.88	48	Circular Structure
MH 3044	7.05	0.05	0.7	48	Circular Structure
MH 3045	7.34	-0.56	0.14	48	Circular Structure
MH 3047	7.03	-0.37	0.17	48	Circular Structure
MH 3048	7.05	-0.35	0.19	48	Circular Structure
MH 3049	6.97	-0.13	0.3	48	Circular Structure
MH 3051	6.73	0.13	0.61	48	Circular Structure
MH 3053	6.46	-0.14	0.63	48	Circular Structure
MH 3054	6.73	0.13	0.65	48	Circular Structure
MH 3056	7.11	0.11	0.66	48	Circular Structure
MH 4048A	6.37	1.13	2.58	48	Circular Structure
MH 4048B	6.17	0.99	3.17	48	Circular Structure
MH 4048C	7.17	0.82	3.05	48	Circular Structure
MH 4048D	6.37	0.65	1.64	48	Circular Structure
MH 4048E	7.47	0.53	2.82	48	Circular Structure
MH 4052	5.37	-1.53	1.35	48	Circular Structure
MH 4055	5.82	-0.88	1.32	48	Circular Structure
MH 4058	5.77	-1.83	1.45	48	Circular Structure
MH 4060	5.66	-2.54	1.45	48	Circular Structure

MH 4061	5.27	-0.53	1.73	48	Circular Structure
MH 4068	4.97	-0.33	1.86	48	Circular Structure
MH 4071	5.7	-0.5	1.66	48	Circular Structure
MH 4073	5.93	-0.77	1.7	48	Circular Structure
MH 4074	6.51	-0.69	1.53	48	Circular Structure
MH 5033	5.37	-1.63	0.97	48	Circular Structure
MH 5035	5.92	-1.48	0.94	48	Circular Structure
MH 5036	5.82	-1.38	0.79	48	Circular Structure
MH 5039	6.4	-1.3	0.92	48	Circular Structure
MH 5040	5.67	-1.63	0.97	48	Circular Structure
MH 5045	5.7	-0.7	1.5	48	Circular Structure
MH 5049	6.06	-1.14	1.04	48	Circular Structure
MH 5053	5.16	-1.54	1.46	48	Circular Structure
MH 5054	6.3	-0.8	1.38	48	Circular Structure
MH 5056	6.38	-1.52	0.78	48	Circular Structure
MH 5058	6.66	-1.64	0.7	48	Circular Structure
MH 5061	6.29	-1.81	0.77	48	Circular Structure
MH 5062	5.54	-1.56	0.9	48	Circular Structure
MH 5067	5.66	-1.14	1.75	48	Circular Structure
MH 5068	5.08	-3.32	1.75	48	Circular Structure
MH 5072	5.28	-2.52	1.75	48	Circular Structure
MH 11001	6.56	-0.14	2.17	48	Circular Structure
MH 11002	6.03	0.36	2.64	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**61.43**		

Manholes Drainage System 4 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2030	5.81	-1.42	0.81	48	Circular Structure
MH 2031	6.89	-1.11	-1.11	48	Circular Structure
MH 2033	6.7	-1.5	0.79	48	Circular Structure
MH 2038	7.17	-2.23	-2.21	48	Circular Structure
MH 2040	6.4	-1.2	0.39	48	Circular Structure
MH 2041	6.89	-1.04	-0.97	48	Circular Structure
MH 2042	6.73	0.93	1.12	48	Circular Structure
MH 2045	6.63	0.83	1.2	48	Circular Structure
MH 2047	7.26	0.86	1.05	48	Circular Structure
MH 2050	7.6	-0.46	-0.2	48	Circular Structure
MH 2051	7.63	-0.46	-0.21	48	Circular Structure
MH 2052	7.17	-2.13	-1.67	48	Circular Structure
MH 2053	7.41	-1.99	0.13	48	Circular Structure
MH 2054	7.23	-0.47	-0.28	48	Circular Structure
MH 2057	6.71	-0.69	-0.37	48	Circular Structure
MH 2059	6.74	-0.76	-0.38	48	Circular Structure
MH 2062	6.66	-0.94	-0.51	48	Circular Structure
MH 2066	6.47	-0.83	-0.5	48	Circular Structure
MH 2069	6.84	-0.76	-0.4	48	Circular Structure
MH 2071	6.37	-1.93	-1.16	48	Circular Structure
MH 3019	5.64	-1.16	-0.96	48	Circular Structure
MH 3020	5.71	-1.37	-0.45	48	Circular Structure
MH 3023	6.7	-2.5	0.11	48	Circular Structure
MH 3024	6.93	-2.77	0.07	48	Circular Structure
MH 3026	7.22	-2.58	-0.04	48	Circular Structure
MH 3028	6.32	-2.58	-0.23	72	Circular Structure
MH 3029	7.15	-2.85	-0.55	60	Circular Structure
MH 3030	6.5	-3.2	-0.62	72	Circular Structure
MH 3031	7.43	-2.97	-0.76	60	Circular Structure
MH 3032	6.7	-3.4	-1.28	48	Circular Structure
MH 3033	7.35	-1.85	-1.65	48	Circular Structure
MH 3034	6.72	-1.58	-1.36	48	Circular Structure
MH 3038	7.22	-0.88	-0.65	48	Circular Structure
MH 3041	5.94	0.74	1.22	48	Circular Structure
MH 3043	6.9	0.7	0.81	48	Circular Structure
MH 3044	7.05	0.05	0.41	48	Circular Structure
MH 3045	7.34	-0.56	-0.16	48	Circular Structure
MH 3047	7.03	-0.37	-0.13	48	Circular Structure
MH 3048	7.05	-0.35	-0.1	48	Circular Structure
MH 3049	6.97	-0.13	-0.11	48	Circular Structure
MH 3051	6.73	0.13	0.35	48	Circular Structure
MH 3053	6.46	-0.14	0.37	48	Circular Structure
MH 3054	6.73	0.13	0.38	48	Circular Structure
MH 3056	7.11	0.11	0.39	48	Circular Structure
MH 4048A	6.37	1.13	2.58	48	Circular Structure
MH 4048B	6.17	0.99	3.17	48	Circular Structure
MH 4048C	7.17	0.82	3.05	48	Circular Structure
MH 4048D	6.37	0.65	1.64	48	Circular Structure
MH 4048E	7.47	0.53	2.82	48	Circular Structure
MH 4052	5.37	-1.53	0.88	48	Circular Structure
MH 4055	5.82	-0.88	1.25	48	Circular Structure
MH 4058	5.77	-1.83	0.25	48	Circular Structure
MH 4060	5.66	-2.54	0.27	48	Circular Structure

MH 4061	5.27	-0.53	1.73	48	Circular Structure
MH 4068	4.97	-0.33	1.86	48	Circular Structure
MH 4071	5.7	-0.5	1.66	48	Circular Structure
MH 4073	5.93	-0.77	-0.77	48	Circular Structure
MH 4074	6.51	-0.69	-0.69	48	Circular Structure
MH 5033	5.37	-1.63	0.62	48	Circular Structure
MH 5035	5.92	-1.48	-1.48	48	Circular Structure
MH 5036	5.82	-1.38	0.73	48	Circular Structure
MH 5039	6.4	-1.3	0.85	48	Circular Structure
MH 5040	5.67	-1.63	0.93	48	Circular Structure
MH 5045	5.7	-0.7	1.46	48	Circular Structure
MH 5049	6.06	-1.14	1.02	48	Circular Structure
MH 5053	5.16	-1.54	1.15	48	Circular Structure
MH 5054	6.3	-0.8	-0.8	48	Circular Structure
MH 5056	6.38	-1.52	0.69	48	Circular Structure
MH 5058	6.66	-1.64	0.59	48	Circular Structure
MH 5061	6.29	-1.81	0.32	48	Circular Structure
MH 5062	5.54	-1.56	0.78	48	Circular Structure
MH 5067	5.66	-1.14	-0.62	48	Circular Structure
MH 5068	5.08	-3.32	-0.58	48	Circular Structure
MH 5072	5.28	-2.52	-0.49	48	Circular Structure
MH 11001	6.56	-0.14	2.16	48	Circular Structure
MH 11002	6.03	0.36	2.65	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**20.26**		

Manholes Drainage System 4 Existing 10 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2030	5.81	-1.42	1.39	48	Circular Structure
MH 2031	6.89	-1.11	1.24	48	Circular Structure
MH 2033	6.7	-1.5	1.17	48	Circular Structure
MH 2038	7.17	-2.23	-0.16	48	Circular Structure
MH 2040	6.4	-1.2	3.09	48	Circular Structure
MH 2041	6.89	-1.04	3.09	48	Circular Structure
MH 2042	6.73	0.93	3.08	48	Circular Structure
MH 2045	6.63	0.83	2.75	48	Circular Structure
MH 2047	7.26	0.86	2.53	48	Circular Structure
MH 2050	7.6	-0.46	1.58	48	Circular Structure
MH 2051	7.63	-0.46	1.56	48	Circular Structure
MH 2052	7.17	-2.13	1.58	48	Circular Structure
MH 2053	7.41	-1.99	1.62	48	Circular Structure
MH 2054	7.23	-0.47	1.43	48	Circular Structure
MH 2057	6.71	-0.69	1.31	48	Circular Structure
MH 2059	6.74	-0.76	1.28	48	Circular Structure
MH 2062	6.66	-0.94	0.98	48	Circular Structure
MH 2066	6.47	-0.83	1	48	Circular Structure
MH 2069	6.84	-0.76	1.15	48	Circular Structure
MH 2071	6.37	-1.93	1.85	48	Circular Structure
MH 3019	5.64	-1.16	1.43	48	Circular Structure
MH 3020	5.71	-1.37	1.37	48	Circular Structure
MH 3023	6.7	-2.5	1.08	48	Circular Structure
MH 3024	6.93	-2.77	1.02	48	Circular Structure
MH 3026	7.22	-2.58	0.88	48	Circular Structure
MH 3028	6.32	-2.58	0.65	72	Circular Structure
MH 3029	7.15	-2.85	0.51	60	Circular Structure
MH 3030	6.5	-3.2	0.45	72	Circular Structure
MH 3031	7.43	-2.97	0.16	60	Circular Structure
MH 3032	6.7	-3.4	0.01	48	Circular Structure
MH 3033	7.35	-1.85	-0.47	48	Circular Structure
MH 3034	6.72	-1.58	0.19	48	Circular Structure
MH 3038	7.22	-0.88	0.5	48	Circular Structure
MH 3041	5.94	0.74	3.3	48	Circular Structure
MH 3043	6.9	0.7	2.3	48	Circular Structure
MH 3044	7.05	0.05	2.28	48	Circular Structure
MH 3045	7.34	-0.56	1.66	48	Circular Structure
MH 3047	7.03	-0.37	1.71	48	Circular Structure
MH 3048	7.05	-0.35	1.73	48	Circular Structure
MH 3049	6.97	-0.13	1.84	48	Circular Structure
MH 3051	6.73	0.13	1.94	48	Circular Structure
MH 3053	6.46	-0.14	1.99	48	Circular Structure
MH 3054	6.73	0.13	2.11	48	Circular Structure
MH 3056	7.11	0.11	2.19	48	Circular Structure
MH 4048A	6.37	1.13	5.04	48	Circular Structure
MH 4048B	6.17	0.99	5.07	48	Circular Structure
MH 4048C	7.17	0.82	4.93	48	Circular Structure
MH 4048D	6.37	0.65	4.49	48	Circular Structure
MH 4048E	7.47	0.53	4.89	48	Circular Structure
MH 4052	5.37	-1.53	2.18	48	Circular Structure
MH 4055	5.82	-0.88	2.14	48	Circular Structure
MH 4058	5.77	-1.83	2.46	48	Circular Structure
MH 4060	5.66	-2.54	2.57	48	Circular Structure

MH 4061	5.27	-0.53	2.65	48	Circular Structure
MH 4068	4.97	-0.33	4.04	48	Circular Structure
MH 4071	5.7	-0.5	3.08	48	Circular Structure
MH 4073	5.93	-0.77	3.34	48	Circular Structure
MH 4074	6.51	-0.69	3.33	48	Circular Structure
MH 5033	5.37	-1.63	1.97	48	Circular Structure
MH 5035	5.92	-1.48	1.96	48	Circular Structure
MH 5036	5.82	-1.38	1.95	48	Circular Structure
MH 5039	6.4	-1.3	1.87	48	Circular Structure
MH 5040	5.67	-1.63	1.9	48	Circular Structure
MH 5045	5.7	-0.7	1.77	48	Circular Structure
MH 5049	6.06	-1.14	1.74	48	Circular Structure
MH 5053	5.16	-1.54	1.79	48	Circular Structure
MH 5054	6.3	-0.8	1.72	48	Circular Structure
MH 5056	6.38	-1.52	1.7	48	Circular Structure
MH 5058	6.66	-1.64	1.96	48	Circular Structure
MH 5061	6.29	-1.81	2.21	48	Circular Structure
MH 5062	5.54	-1.56	2.49	48	Circular Structure
MH 5067	5.66	-1.14	3.51	48	Circular Structure
MH 5068	5.08	-3.32	3.63	48	Circular Structure
MH 5072	5.28	-2.52	3.42	48	Circular Structure
MH 11001	6.56	-0.14	3.97	48	Circular Structure
MH 11002	6.03	0.36	4.65	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**158.77**		

Manholes Drainage System 4 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs					
Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Diameter (in)	Structure Type
MH 2030	5.81	-1.42	1.39	48	Circular Structure
MH 2031	6.89	-1.11	1.23	48	Circular Structure
MH 2033	6.7	-1.5	1.17	48	Circular Structure
MH 2038	7.17	-2.23	-0.27	48	Circular Structure
MH 2040	6.4	-1.2	2.84	48	Circular Structure
MH 2041	6.89	-1.04	2.84	48	Circular Structure
MH 2042	6.73	0.93	2.84	48	Circular Structure
MH 2045	6.63	0.83	2.58	48	Circular Structure
MH 2047	7.26	0.86	2.35	48	Circular Structure
MH 2050	7.6	-0.46	1.49	48	Circular Structure
MH 2051	7.63	-0.46	1.48	48	Circular Structure
MH 2052	7.17	-2.13	1.5	48	Circular Structure
MH 2053	7.41	-1.99	1.54	48	Circular Structure
MH 2054	7.23	-0.47	1.35	48	Circular Structure
MH 2057	6.71	-0.69	1.23	48	Circular Structure
MH 2059	6.74	-0.76	1.2	48	Circular Structure
MH 2062	6.66	-0.94	0.9	48	Circular Structure
MH 2066	6.47	-0.83	0.93	48	Circular Structure
MH 2069	6.84	-0.76	1.07	48	Circular Structure
MH 2071	6.37	-1.93	1.75	48	Circular Structure
MH 3019	5.64	-1.16	1.4	48	Circular Structure
MH 3020	5.71	-1.37	1.38	48	Circular Structure
MH 3023	6.7	-2.5	1.07	48	Circular Structure
MH 3024	6.93	-2.77	1.01	48	Circular Structure
MH 3026	7.22	-2.58	0.87	48	Circular Structure
MH 3028	6.32	-2.58	0.65	72	Circular Structure
MH 3029	7.15	-2.85	0.5	60	Circular Structure
MH 3030	6.5	-3.2	0.44	72	Circular Structure
MH 3031	7.43	-2.97	0.09	60	Circular Structure
MH 3032	6.7	-3.4	-0.43	48	Circular Structure
MH 3033	7.35	-1.85	-0.32	48	Circular Structure
MH 3034	6.72	-1.58	-0.12	48	Circular Structure
MH 3038	7.22	-0.88	0.43	48	Circular Structure
MH 3041	5.94	0.74	3.05	48	Circular Structure
MH 3043	6.9	0.7	2.27	48	Circular Structure
MH 3044	7.05	0.05	1.94	48	Circular Structure
MH 3045	7.34	-0.56	1.57	48	Circular Structure
MH 3047	7.03	-0.37	1.62	48	Circular Structure
MH 3048	7.05	-0.35	1.64	48	Circular Structure
MH 3049	6.97	-0.13	1.74	48	Circular Structure
MH 3051	6.73	0.13	1.84	48	Circular Structure
MH 3053	6.46	-0.14	1.84	48	Circular Structure
MH 3054	6.73	0.13	2.06	48	Circular Structure
MH 3056	7.11	0.11	1.96	48	Circular Structure
MH 4048A	6.37	1.13	4.91	48	Circular Structure
MH 4048B	6.17	0.99	4.92	48	Circular Structure
MH 4048C	7.17	0.82	4.75	48	Circular Structure
MH 4048D	6.37	0.65	4.33	48	Circular Structure
MH 4048E	7.47	0.53	4.8	48	Circular Structure
MH 4052	5.37	-1.53	2.02	48	Circular Structure
MH 4055	5.82	-0.88	2	48	Circular Structure
MH 4058	5.77	-1.83	2.31	48	Circular Structure
MH 4060	5.66	-2.54	2.39	48	Circular Structure

MH 4061	5.27	-0.53	2.47	48	Circular Structure
MH 4068	4.97	-0.33	3.73	48	Circular Structure
MH 4071	5.7	-0.5	2.85	48	Circular Structure
MH 4073	5.93	-0.77	3.09	48	Circular Structure
MH 4074	6.51	-0.69	3.08	48	Circular Structure
MH 5033	5.37	-1.63	1.85	48	Circular Structure
MH 5035	5.92	-1.48	1.85	48	Circular Structure
MH 5036	5.82	-1.38	1.84	48	Circular Structure
MH 5039	6.4	-1.3	1.77	48	Circular Structure
MH 5040	5.67	-1.63	1.8	48	Circular Structure
MH 5045	5.7	-0.7	1.7	48	Circular Structure
MH 5049	6.06	-1.14	1.65	48	Circular Structure
MH 5053	5.16	-1.54	1.77	48	Circular Structure
MH 5054	6.3	-0.8	1.63	48	Circular Structure
MH 5056	6.38	-1.52	1.62	48	Circular Structure
MH 5058	6.66	-1.64	1.84	48	Circular Structure
MH 5061	6.29	-1.81	2.06	48	Circular Structure
MH 5062	5.54	-1.56	2.36	48	Circular Structure
MH 5067	5.66	-1.14	3.27	48	Circular Structure
MH 5068	5.08	-3.32	3.37	48	Circular Structure
MH 5072	5.28	-2.52	3.18	48	Circular Structure
MH 11001	6.56	-0.14	3.84	48	Circular Structure
MH 11002	6.03	0.36	4.55	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**149.51**		

Manholes Drainage System 4 Existing 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2030	5.81	-1.42	1.96	48	Circular Structure
MH 2031	6.89	-1.11	1.96	48	Circular Structure
MH 2033	6.7	-1.5	1.96	48	Circular Structure
MH 2038	7.17	-2.23	1.96	48	Circular Structure
MH 2040	6.4	-1.2	2.13	48	Circular Structure
MH 2041	6.89	-1.04	2.13	48	Circular Structure
MH 2042	6.73	0.93	2.13	48	Circular Structure
MH 2045	6.63	0.83	2.11	48	Circular Structure
MH 2047	7.26	0.86	2.09	48	Circular Structure
MH 2050	7.6	-0.46	2.02	48	Circular Structure
MH 2051	7.63	-0.46	2.02	48	Circular Structure
MH 2052	7.17	-2.13	2.02	48	Circular Structure
MH 2053	7.41	-1.99	2.02	48	Circular Structure
MH 2054	7.23	-0.47	2.01	48	Circular Structure
MH 2057	6.71	-0.69	2.01	48	Circular Structure
MH 2059	6.74	-0.76	2.01	48	Circular Structure
MH 2062	6.66	-0.94	1.98	48	Circular Structure
MH 2066	6.47	-0.83	1.98	48	Circular Structure
MH 2069	6.84	-0.76	1.97	48	Circular Structure
MH 2071	6.37	-1.93	2.04	48	Circular Structure
MH 3019	5.64	-1.16	1.97	48	Circular Structure
MH 3020	5.71	-1.37	1.97	48	Circular Structure
MH 3023	6.7	-2.5	1.97	48	Circular Structure
MH 3024	6.93	-2.77	1.97	48	Circular Structure
MH 3026	7.22	-2.58	1.97	48	Circular Structure
MH 3028	6.32	-2.58	1.97	72	Circular Structure
MH 3029	7.15	-2.85	1.97	60	Circular Structure
MH 3030	6.5	-3.2	1.97	72	Circular Structure
MH 3031	7.43	-2.97	1.97	60	Circular Structure
MH 3032	6.7	-3.4	1.96	48	Circular Structure
MH 3033	7.35	-1.85	1.96	48	Circular Structure
MH 3034	6.72	-1.58	1.96	48	Circular Structure
MH 3038	7.22	-0.88	1.97	48	Circular Structure
MH 3041	5.94	0.74	2.14	48	Circular Structure
MH 3043	6.9	0.7	2.07	48	Circular Structure
MH 3044	7.05	0.05	2.07	48	Circular Structure
MH 3045	7.34	-0.56	2.02	48	Circular Structure
MH 3047	7.03	-0.37	2.03	48	Circular Structure
MH 3048	7.05	-0.35	2.03	48	Circular Structure
MH 3049	6.97	-0.13	2.04	48	Circular Structure
MH 3051	6.73	0.13	2.04	48	Circular Structure
MH 3053	6.46	-0.14	2.05	48	Circular Structure
MH 3054	6.73	0.13	2.06	48	Circular Structure
MH 3056	7.11	0.11	2.06	48	Circular Structure
MH 4048A	6.37	1.13	2.58	48	Circular Structure
MH 4048B	6.17	0.99	3.17	48	Circular Structure
MH 4048C	7.17	0.82	3.05	48	Circular Structure
MH 4048D	6.37	0.65	1.64	48	Circular Structure
MH 4048E	7.47	0.53	2.82	48	Circular Structure
MH 4052	5.37	-1.53	2.07	48	Circular Structure
MH 4055	5.82	-0.88	2.06	48	Circular Structure
MH 4058	5.77	-1.83	2.08	48	Circular Structure
MH 4060	5.66	-2.54	2.09	48	Circular Structure

MH 4061	5.27	-0.53	2.1	48	Circular Structure
MH 4068	4.97	-0.33	2.17	48	Circular Structure
MH 4071	5.7	-0.5	2.13	48	Circular Structure
MH 4073	5.93	-0.77	2.14	48	Circular Structure
MH 4074	6.51	-0.69	2.14	48	Circular Structure
MH 5033	5.37	-1.63	2.06	48	Circular Structure
MH 5035	5.92	-1.48	2.05	48	Circular Structure
MH 5036	5.82	-1.38	2.05	48	Circular Structure
MH 5039	6.4	-1.3	2.04	48	Circular Structure
MH 5040	5.67	-1.63	2.03	48	Circular Structure
MH 5045	5.7	-0.7	2.03	48	Circular Structure
MH 5049	6.06	-1.14	2.03	48	Circular Structure
MH 5053	5.16	-1.54	2.03	48	Circular Structure
MH 5054	6.3	-0.8	2.03	48	Circular Structure
MH 5056	6.38	-1.52	2.03	48	Circular Structure
MH 5058	6.66	-1.64	2.03	48	Circular Structure
MH 5061	6.29	-1.81	2.03	48	Circular Structure
MH 5062	5.54	-1.56	2.04	48	Circular Structure
MH 5067	5.66	-1.14	2.16	48	Circular Structure
MH 5068	5.08	-3.32	2.16	48	Circular Structure
MH 5072	5.28	-2.52	2.15	48	Circular Structure
MH 11001	6.56	-0.14	2.18	48	Circular Structure
MH 11002	6.03	0.36	2.64	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**158.71**		

Manholes Drainage System 4 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2030	5.81	-1.42	0.81	48	Circular Structure
MH 2031	6.89	-1.11	-1.11	48	Circular Structure
MH 2033	6.7	-1.5	0.79	48	Circular Structure
MH 2038	7.17	-2.23	-2.21	48	Circular Structure
MH 2040	6.4	-1.2	0.39	48	Circular Structure
MH 2041	6.89	-1.04	-0.97	48	Circular Structure
MH 2042	6.73	0.93	1.12	48	Circular Structure
MH 2045	6.63	0.83	1.2	48	Circular Structure
MH 2047	7.26	0.86	1.05	48	Circular Structure
MH 2050	7.6	-0.46	-0.2	48	Circular Structure
MH 2051	7.63	-0.46	-0.21	48	Circular Structure
MH 2052	7.17	-2.13	-1.67	48	Circular Structure
MH 2053	7.41	-1.99	0.13	48	Circular Structure
MH 2054	7.23	-0.47	-0.28	48	Circular Structure
MH 2057	6.71	-0.69	-0.37	48	Circular Structure
MH 2059	6.74	-0.76	-0.38	48	Circular Structure
MH 2062	6.66	-0.94	-0.51	48	Circular Structure
MH 2066	6.47	-0.83	-0.5	48	Circular Structure
MH 2069	6.84	-0.76	-0.4	48	Circular Structure
MH 2071	6.37	-1.93	-1.16	48	Circular Structure
MH 3019	5.64	-1.16	-0.96	48	Circular Structure
MH 3020	5.71	-1.37	-0.45	48	Circular Structure
MH 3023	6.7	-2.5	0.11	48	Circular Structure
MH 3024	6.93	-2.77	0.07	48	Circular Structure
MH 3026	7.22	-2.58	-0.04	48	Circular Structure
MH 3028	6.32	-2.58	-0.23	72	Circular Structure
MH 3029	7.15	-2.85	-0.55	60	Circular Structure
MH 3030	6.5	-3.2	-0.62	72	Circular Structure
MH 3031	7.43	-2.97	-0.76	60	Circular Structure
MH 3032	6.7	-3.4	-1.28	48	Circular Structure
MH 3033	7.35	-1.85	-1.65	48	Circular Structure
MH 3034	6.72	-1.58	-1.36	48	Circular Structure
MH 3038	7.22	-0.88	-0.65	48	Circular Structure
MH 3041	5.94	0.74	1.22	48	Circular Structure
MH 3043	6.9	0.7	0.81	48	Circular Structure
MH 3044	7.05	0.05	0.41	48	Circular Structure
MH 3045	7.34	-0.56	-0.16	48	Circular Structure
MH 3047	7.03	-0.37	-0.13	48	Circular Structure
MH 3048	7.05	-0.35	-0.1	48	Circular Structure
MH 3049	6.97	-0.13	-0.11	48	Circular Structure
MH 3051	6.73	0.13	0.35	48	Circular Structure
MH 3053	6.46	-0.14	0.37	48	Circular Structure
MH 3054	6.73	0.13	0.38	48	Circular Structure
MH 3056	7.11	0.11	0.39	48	Circular Structure
MH 4048A	6.37	1.13	2.58	48	Circular Structure
MH 4048B	6.17	0.99	3.17	48	Circular Structure
MH 4048C	7.17	0.82	3.05	48	Circular Structure
MH 4048D	6.37	0.65	1.64	48	Circular Structure
MH 4048E	7.47	0.53	2.82	48	Circular Structure
MH 4052	5.37	-1.53	0.88	48	Circular Structure
MH 4055	5.82	-0.88	1.25	48	Circular Structure
MH 4058	5.77	-1.83	0.25	48	Circular Structure
MH 4060	5.66	-2.54	0.27	48	Circular Structure

MH 4061	5.27	-0.53	1.73	48	Circular Structure
MH 4068	4.97	-0.33	1.86	48	Circular Structure
MH 4071	5.7	-0.5	1.66	48	Circular Structure
MH 4073	5.93	-0.77	-0.77	48	Circular Structure
MH 4074	6.51	-0.69	-0.69	48	Circular Structure
MH 5033	5.37	-1.63	0.62	48	Circular Structure
MH 5035	5.92	-1.48	-1.48	48	Circular Structure
MH 5036	5.82	-1.38	0.73	48	Circular Structure
MH 5039	6.4	-1.3	0.85	48	Circular Structure
MH 5040	5.67	-1.63	0.93	48	Circular Structure
MH 5045	5.7	-0.7	1.46	48	Circular Structure
MH 5049	6.06	-1.14	1.02	48	Circular Structure
MH 5053	5.16	-1.54	1.15	48	Circular Structure
MH 5054	6.3	-0.8	-0.8	48	Circular Structure
MH 5056	6.38	-1.52	0.69	48	Circular Structure
MH 5058	6.66	-1.64	0.59	48	Circular Structure
MH 5061	6.29	-1.81	0.32	48	Circular Structure
MH 5062	5.54	-1.56	0.78	48	Circular Structure
MH 5067	5.66	-1.14	-0.62	48	Circular Structure
MH 5068	5.08	-3.32	-0.58	48	Circular Structure
MH 5072	5.28	-2.52	-0.49	48	Circular Structure
MH 11001	6.56	-0.14	2.16	48	Circular Structure
MH 11002	6.03	0.36	2.65	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**20.26**		

Manholes Drainage System 4 Existing 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2030	5.81	-1.42	3.07	48	Circular Structure
MH 2031	6.89	-1.11	3.07	48	Circular Structure
MH 2033	6.7	-1.5	3.07	48	Circular Structure
MH 2038	7.17	-2.23	2.89	48	Circular Structure
MH 2040	6.4	-1.2	4.01	48	Circular Structure
MH 2041	6.89	-1.04	4	48	Circular Structure
MH 2042	6.73	0.93	3.98	48	Circular Structure
MH 2045	6.63	0.83	3.91	48	Circular Structure
MH 2047	7.26	0.86	3.85	48	Circular Structure
MH 2050	7.6	-0.46	3.18	48	Circular Structure
MH 2051	7.63	-0.46	3.17	48	Circular Structure
MH 2052	7.17	-2.13	3.18	48	Circular Structure
MH 2053	7.41	-1.99	3.22	48	Circular Structure
MH 2054	7.23	-0.47	3.15	48	Circular Structure
MH 2057	6.71	-0.69	3.12	48	Circular Structure
MH 2059	6.74	-0.76	3.13	48	Circular Structure
MH 2062	6.66	-0.94	3.05	48	Circular Structure
MH 2066	6.47	-0.83	3.1	48	Circular Structure
MH 2069	6.84	-0.76	3.11	48	Circular Structure
MH 2071	6.37	-1.93	3.39	48	Circular Structure
MH 3019	5.64	-1.16	3.07	48	Circular Structure
MH 3020	5.71	-1.37	3.08	48	Circular Structure
MH 3023	6.7	-2.5	3.07	48	Circular Structure
MH 3024	6.93	-2.77	3.03	48	Circular Structure
MH 3026	7.22	-2.58	3.02	48	Circular Structure
MH 3028	6.32	-2.58	2.99	72	Circular Structure
MH 3029	7.15	-2.85	2.99	60	Circular Structure
MH 3030	6.5	-3.2	2.98	72	Circular Structure
MH 3031	7.43	-2.97	2.97	60	Circular Structure
MH 3032	6.7	-3.4	2.96	48	Circular Structure
MH 3033	7.35	-1.85	2.97	48	Circular Structure
MH 3034	6.72	-1.58	2.98	48	Circular Structure
MH 3038	7.22	-0.88	3.04	48	Circular Structure
MH 3041	5.94	0.74	3.94	48	Circular Structure
MH 3043	6.9	0.7	3.69	48	Circular Structure
MH 3044	7.05	0.05	3.69	48	Circular Structure
MH 3045	7.34	-0.56	3.24	48	Circular Structure
MH 3047	7.03	-0.37	3.28	48	Circular Structure
MH 3048	7.05	-0.35	3.29	48	Circular Structure
MH 3049	6.97	-0.13	3.38	48	Circular Structure
MH 3051	6.73	0.13	3.45	48	Circular Structure
MH 3053	6.46	-0.14	3.46	48	Circular Structure
MH 3054	6.73	0.13	3.54	48	Circular Structure
MH 3056	7.11	0.11	3.6	48	Circular Structure
MH 4048A	6.37	1.13	5.3	48	Circular Structure
MH 4048B	6.17	0.99	5.22	48	Circular Structure
MH 4048C	7.17	0.82	5.05	48	Circular Structure
MH 4048D	6.37	0.65	4.96	48	Circular Structure
MH 4048E	7.47	0.53	6.11	48	Circular Structure
MH 4052	5.37	-1.53	3.58	48	Circular Structure
MH 4055	5.82	-0.88	3.59	48	Circular Structure
MH 4058	5.77	-1.83	3.97	48	Circular Structure
MH 4060	5.66	-2.54	4.09	48	Circular Structure

MH 4061	5.27	-0.53	4.2	48	Circular Structure
MH 4068	4.97	-0.33	4.09	48	Circular Structure
MH 4071	5.7	-0.5	4.13	48	Circular Structure
MH 4073	5.93	-0.77	3.92	48	Circular Structure
MH 4074	6.51	-0.69	3.92	48	Circular Structure
MH 5033	5.37	-1.63	3.47	48	Circular Structure
MH 5035	5.92	-1.48	3.44	48	Circular Structure
MH 5036	5.82	-1.38	3.45	48	Circular Structure
MH 5039	6.4	-1.3	3.4	48	Circular Structure
MH 5040	5.67	-1.63	3.45	48	Circular Structure
MH 5045	5.7	-0.7	3.33	48	Circular Structure
MH 5049	6.06	-1.14	3.32	48	Circular Structure
MH 5053	5.16	-1.54	3.37	48	Circular Structure
MH 5054	6.3	-0.8	3.34	48	Circular Structure
MH 5056	6.38	-1.52	3.32	48	Circular Structure
MH 5058	6.66	-1.64	3.53	48	Circular Structure
MH 5061	6.29	-1.81	3.74	48	Circular Structure
MH 5062	5.54	-1.56	3.91	48	Circular Structure
MH 5067	5.66	-1.14	3.15	48	Circular Structure
MH 5068	5.08	-3.32	2.35	48	Circular Structure
MH 5072	5.28	-2.52	4.01	48	Circular Structure
MH 11001	6.56	-0.14	4.89	48	Circular Structure
MH 11002	6.03	0.36	5.74	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**271.7**		

Manholes Drainage System 4 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs					
Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Diameter (in)	Structure Type
MH 2030	5.81	-1.42	1.39	48	Circular Structure
MH 2031	6.89	-1.11	1.23	48	Circular Structure
MH 2033	6.7	-1.5	1.17	48	Circular Structure
MH 2038	7.17	-2.23	1.38	48	Circular Structure
MH 2040	6.4	-1.2	2.85	48	Circular Structure
MH 2041	6.89	-1.04	2.85	48	Circular Structure
MH 2042	6.73	0.93	2.84	48	Circular Structure
MH 2045	6.63	0.83	2.59	48	Circular Structure
MH 2047	7.26	0.86	2.35	48	Circular Structure
MH 2050	7.6	-0.46	1.56	48	Circular Structure
MH 2051	7.63	-0.46	1.55	48	Circular Structure
MH 2052	7.17	-2.13	1.56	48	Circular Structure
MH 2053	7.41	-1.99	1.59	48	Circular Structure
MH 2054	7.23	-0.47	1.47	48	Circular Structure
MH 2057	6.71	-0.69	1.44	48	Circular Structure
MH 2059	6.74	-0.76	1.44	48	Circular Structure
MH 2062	6.66	-0.94	1.38	48	Circular Structure
MH 2066	6.47	-0.83	1.38	48	Circular Structure
MH 2069	6.84	-0.76	1.41	48	Circular Structure
MH 2071	6.37	-1.93	1.75	48	Circular Structure
MH 3019	5.64	-1.16	1.4	48	Circular Structure
MH 3020	5.71	-1.37	1.38	48	Circular Structure
MH 3023	6.7	-2.5	1.1	48	Circular Structure
MH 3024	6.93	-2.77	1.14	48	Circular Structure
MH 3026	7.22	-2.58	1.23	48	Circular Structure
MH 3028	6.32	-2.58	1.31	72	Circular Structure
MH 3029	7.15	-2.85	1.33	60	Circular Structure
MH 3030	6.5	-3.2	1.33	72	Circular Structure
MH 3031	7.43	-2.97	1.36	60	Circular Structure
MH 3032	6.7	-3.4	1.5	48	Circular Structure
MH 3033	7.35	-1.85	1	48	Circular Structure
MH 3034	6.72	-1.58	1.36	48	Circular Structure
MH 3038	7.22	-0.88	1.38	48	Circular Structure
MH 3041	5.94	0.74	3.04	48	Circular Structure
MH 3043	6.9	0.7	2.3	48	Circular Structure
MH 3044	7.05	0.05	1.94	48	Circular Structure
MH 3045	7.34	-0.56	1.61	48	Circular Structure
MH 3047	7.03	-0.37	1.64	48	Circular Structure
MH 3048	7.05	-0.35	1.65	48	Circular Structure
MH 3049	6.97	-0.13	1.74	48	Circular Structure
MH 3051	6.73	0.13	1.85	48	Circular Structure
MH 3053	6.46	-0.14	1.85	48	Circular Structure
MH 3054	6.73	0.13	2.07	48	Circular Structure
MH 3056	7.11	0.11	1.95	48	Circular Structure
MH 4048A	6.37	1.13	4.59	48	Circular Structure
MH 4048B	6.17	0.99	4.64	48	Circular Structure
MH 4048C	7.17	0.82	4.56	48	Circular Structure
MH 4048D	6.37	0.65	4.2	48	Circular Structure
MH 4048E	7.47	0.53	4.8	48	Circular Structure
MH 4052	5.37	-1.53	2.01	48	Circular Structure
MH 4055	5.82	-0.88	2	48	Circular Structure
MH 4058	5.77	-1.83	2.31	48	Circular Structure
MH 4060	5.66	-2.54	2.39	48	Circular Structure

MH 4061	5.27	-0.53	2.47	48	Circular Structure
MH 4068	4.97	-0.33	3.73	48	Circular Structure
MH 4071	5.7	-0.5	2.85	48	Circular Structure
MH 4073	5.93	-0.77	3.08	48	Circular Structure
MH 4074	6.51	-0.69	3.08	48	Circular Structure
MH 5033	5.37	-1.63	1.85	48	Circular Structure
MH 5035	5.92	-1.48	1.85	48	Circular Structure
MH 5036	5.82	-1.38	1.84	48	Circular Structure
MH 5039	6.4	-1.3	1.77	48	Circular Structure
MH 5040	5.67	-1.63	1.8	48	Circular Structure
MH 5045	5.7	-0.7	1.7	48	Circular Structure
MH 5049	6.06	-1.14	1.65	48	Circular Structure
MH 5053	5.16	-1.54	1.77	48	Circular Structure
MH 5054	6.3	-0.8	1.63	48	Circular Structure
MH 5056	6.38	-1.52	1.63	48	Circular Structure
MH 5058	6.66	-1.64	1.87	48	Circular Structure
MH 5061	6.29	-1.81	2.07	48	Circular Structure
MH 5062	5.54	-1.56	2.36	48	Circular Structure
MH 5067	5.66	-1.14	3.28	48	Circular Structure
MH 5068	5.08	-3.32	3.36	48	Circular Structure
MH 5072	5.28	-2.52	3.17	48	Circular Structure
MH 11001	6.56	-0.14	3.8	48	Circular Structure
MH 11002	6.03	0.36	4.55	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**162.3**		

Manholes Drainage System 4 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2030	5.81	-1.42	3.08	48	Circular Structure
MH 2031	6.89	-1.11	3.08	48	Circular Structure
MH 2033	6.7	-1.5	3.08	48	Circular Structure
MH 2038	7.17	-2.23	3.06	48	Circular Structure
MH 2040	6.4	-1.2	3.21	48	Circular Structure
MH 2041	6.89	-1.04	3.21	48	Circular Structure
MH 2042	6.73	0.93	3.21	48	Circular Structure
MH 2045	6.63	0.83	3.2	48	Circular Structure
MH 2047	7.26	0.86	3.18	48	Circular Structure
MH 2050	7.6	-0.46	3.11	48	Circular Structure
MH 2051	7.63	-0.46	3.11	48	Circular Structure
MH 2052	7.17	-2.13	3.11	48	Circular Structure
MH 2053	7.41	-1.99	3.12	48	Circular Structure
MH 2054	7.23	-0.47	3.11	48	Circular Structure
MH 2057	6.71	-0.69	3.11	48	Circular Structure
MH 2059	6.74	-0.76	3.11	48	Circular Structure
MH 2062	6.66	-0.94	3.08	48	Circular Structure
MH 2066	6.47	-0.83	3.08	48	Circular Structure
MH 2069	6.84	-0.76	3.08	48	Circular Structure
MH 2071	6.37	-1.93	3.13	48	Circular Structure
MH 3019	5.64	-1.16	3.09	48	Circular Structure
MH 3020	5.71	-1.37	3.09	48	Circular Structure
MH 3023	6.7	-2.5	3.08	48	Circular Structure
MH 3024	6.93	-2.77	3.07	48	Circular Structure
MH 3026	7.22	-2.58	3.07	48	Circular Structure
MH 3028	6.32	-2.58	3.07	72	Circular Structure
MH 3029	7.15	-2.85	3.07	60	Circular Structure
MH 3030	6.5	-3.2	3.07	72	Circular Structure
MH 3031	7.43	-2.97	3.06	60	Circular Structure
MH 3032	6.7	-3.4	3.06	48	Circular Structure
MH 3033	7.35	-1.85	3.06	48	Circular Structure
MH 3034	6.72	-1.58	3.07	48	Circular Structure
MH 3038	7.22	-0.88	3.07	48	Circular Structure
MH 3041	5.94	0.74	3.22	48	Circular Structure
MH 3043	6.9	0.7	3.16	48	Circular Structure
MH 3044	7.05	0.05	3.16	48	Circular Structure
MH 3045	7.34	-0.56	3.12	48	Circular Structure
MH 3047	7.03	-0.37	3.13	48	Circular Structure
MH 3048	7.05	-0.35	3.13	48	Circular Structure
MH 3049	6.97	-0.13	3.13	48	Circular Structure
MH 3051	6.73	0.13	3.14	48	Circular Structure
MH 3053	6.46	-0.14	3.14	48	Circular Structure
MH 3054	6.73	0.13	3.15	48	Circular Structure
MH 3056	7.11	0.11	3.16	48	Circular Structure
MH 4048A	6.37	1.13	3.3	48	Circular Structure
MH 4048B	6.17	0.99	3.29	48	Circular Structure
MH 4048C	7.17	0.82	3.26	48	Circular Structure
MH 4048D	6.37	0.65	3.23	48	Circular Structure
MH 4048E	7.47	0.53	3.26	48	Circular Structure
MH 4052	5.37	-1.53	3.16	48	Circular Structure
MH 4055	5.82	-0.88	3.16	48	Circular Structure
MH 4058	5.77	-1.83	3.18	48	Circular Structure
MH 4060	5.66	-2.54	3.18	48	Circular Structure

MH 4061	5.27	-0.53	3.18	48	Circular Structure
MH 4068	4.97	-0.33	3.24	48	Circular Structure
MH 4071	5.7	-0.5	3.21	48	Circular Structure
MH 4073	5.93	-0.77	3.22	48	Circular Structure
MH 4074	6.51	-0.69	3.22	48	Circular Structure
MH 5033	5.37	-1.63	3.14	48	Circular Structure
MH 5035	5.92	-1.48	3.14	48	Circular Structure
MH 5036	5.82	-1.38	3.14	48	Circular Structure
MH 5039	6.4	-1.3	3.14	48	Circular Structure
MH 5040	5.67	-1.63	3.14	48	Circular Structure
MH 5045	5.7	-0.7	3.13	48	Circular Structure
MH 5049	6.06	-1.14	3.13	48	Circular Structure
MH 5053	5.16	-1.54	3.13	48	Circular Structure
MH 5054	6.3	-0.8	3.13	48	Circular Structure
MH 5056	6.38	-1.52	3.13	48	Circular Structure
MH 5058	6.66	-1.64	3.14	48	Circular Structure
MH 5061	6.29	-1.81	3.15	48	Circular Structure
MH 5062	5.54	-1.56	3.16	48	Circular Structure
MH 5067	5.66	-1.14	3.23	48	Circular Structure
MH 5068	5.08	-3.32	3.23	48	Circular Structure
MH 5072	5.28	-2.52	3.22	48	Circular Structure
MH 11001	6.56	-0.14	3.22	48	Circular Structure
MH 11002	6.03	0.36	3.25	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**239.07**		

Manholes Drainage System 4 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2030	5.81	-1.42	0.81	48	Circular Structure
MH 2031	6.89	-1.11	-1.11	48	Circular Structure
MH 2033	6.7	-1.5	0.79	48	Circular Structure
MH 2038	7.17	-2.23	-2.21	48	Circular Structure
MH 2040	6.4	-1.2	0.39	48	Circular Structure
MH 2041	6.89	-1.04	-0.97	48	Circular Structure
MH 2042	6.73	0.93	1.12	48	Circular Structure
MH 2045	6.63	0.83	1.2	48	Circular Structure
MH 2047	7.26	0.86	1.05	48	Circular Structure
MH 2050	7.6	-0.46	-0.2	48	Circular Structure
MH 2051	7.63	-0.46	-0.21	48	Circular Structure
MH 2052	7.17	-2.13	-1.67	48	Circular Structure
MH 2053	7.41	-1.99	0.13	48	Circular Structure
MH 2054	7.23	-0.47	-0.28	48	Circular Structure
MH 2057	6.71	-0.69	-0.37	48	Circular Structure
MH 2059	6.74	-0.76	-0.38	48	Circular Structure
MH 2062	6.66	-0.94	-0.51	48	Circular Structure
MH 2066	6.47	-0.83	-0.5	48	Circular Structure
MH 2069	6.84	-0.76	-0.4	48	Circular Structure
MH 2071	6.37	-1.93	-1.16	48	Circular Structure
MH 3019	5.64	-1.16	-0.96	48	Circular Structure
MH 3020	5.71	-1.37	-0.45	48	Circular Structure
MH 3023	6.7	-2.5	0.11	48	Circular Structure
MH 3024	6.93	-2.77	0.07	48	Circular Structure
MH 3026	7.22	-2.58	-0.04	48	Circular Structure
MH 3028	6.32	-2.58	-0.23	72	Circular Structure
MH 3029	7.15	-2.85	-0.55	60	Circular Structure
MH 3030	6.5	-3.2	-0.62	72	Circular Structure
MH 3031	7.43	-2.97	-0.76	60	Circular Structure
MH 3032	6.7	-3.4	-1.28	48	Circular Structure
MH 3033	7.35	-1.85	-1.65	48	Circular Structure
MH 3034	6.72	-1.58	-1.36	48	Circular Structure
MH 3038	7.22	-0.88	-0.65	48	Circular Structure
MH 3041	5.94	0.74	1.22	48	Circular Structure
MH 3043	6.9	0.7	0.81	48	Circular Structure
MH 3044	7.05	0.05	0.41	48	Circular Structure
MH 3045	7.34	-0.56	-0.16	48	Circular Structure
MH 3047	7.03	-0.37	-0.13	48	Circular Structure
MH 3048	7.05	-0.35	-0.1	48	Circular Structure
MH 3049	6.97	-0.13	-0.11	48	Circular Structure
MH 3051	6.73	0.13	0.35	48	Circular Structure
MH 3053	6.46	-0.14	0.37	48	Circular Structure
MH 3054	6.73	0.13	0.38	48	Circular Structure
MH 3056	7.11	0.11	0.39	48	Circular Structure
MH 4048A	6.37	1.13	2.58	48	Circular Structure
MH 4048B	6.17	0.99	3.17	48	Circular Structure
MH 4048C	7.17	0.82	3.05	48	Circular Structure
MH 4048D	6.37	0.65	1.64	48	Circular Structure
MH 4048E	7.47	0.53	2.82	48	Circular Structure
MH 4052	5.37	-1.53	0.88	48	Circular Structure
MH 4055	5.82	-0.88	1.25	48	Circular Structure
MH 4058	5.77	-1.83	0.25	48	Circular Structure
MH 4060	5.66	-2.54	0.27	48	Circular Structure

MH 4061	5.27	-0.53	1.73	48	Circular Structure
MH 4068	4.97	-0.33	1.86	48	Circular Structure
MH 4071	5.7	-0.5	1.66	48	Circular Structure
MH 4073	5.93	-0.77	-0.77	48	Circular Structure
MH 4074	6.51	-0.69	-0.69	48	Circular Structure
MH 5033	5.37	-1.63	0.62	48	Circular Structure
MH 5035	5.92	-1.48	-1.48	48	Circular Structure
MH 5036	5.82	-1.38	0.73	48	Circular Structure
MH 5039	6.4	-1.3	0.85	48	Circular Structure
MH 5040	5.67	-1.63	0.93	48	Circular Structure
MH 5045	5.7	-0.7	1.46	48	Circular Structure
MH 5049	6.06	-1.14	1.02	48	Circular Structure
MH 5053	5.16	-1.54	1.15	48	Circular Structure
MH 5054	6.3	-0.8	-0.8	48	Circular Structure
MH 5056	6.38	-1.52	0.69	48	Circular Structure
MH 5058	6.66	-1.64	0.59	48	Circular Structure
MH 5061	6.29	-1.81	0.32	48	Circular Structure
MH 5062	5.54	-1.56	0.78	48	Circular Structure
MH 5067	5.66	-1.14	-0.62	48	Circular Structure
MH 5068	5.08	-3.32	-0.58	48	Circular Structure
MH 5072	5.28	-2.52	-0.49	48	Circular Structure
MH 11001	6.56	-0.14	2.16	48	Circular Structure
MH 11002	6.03	0.36	2.65	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**20.26**		

Manholes Drainage System 4 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2030	5.81	-1.42	3.99	48	Circular Structure
MH 2031	6.89	-1.11	3.99	48	Circular Structure
MH 2033	6.7	-1.5	3.99	48	Circular Structure
MH 2038	7.17	-2.23	3.86	48	Circular Structure
MH 2040	6.4	-1.2	4.54	48	Circular Structure
MH 2041	6.89	-1.04	4.55	48	Circular Structure
MH 2042	6.73	0.93	4.5	48	Circular Structure
MH 2045	6.63	0.83	4.51	48	Circular Structure
MH 2047	7.26	0.86	4.41	48	Circular Structure
MH 2050	7.6	-0.46	4.06	48	Circular Structure
MH 2051	7.63	-0.46	4.05	48	Circular Structure
MH 2052	7.17	-2.13	4.06	48	Circular Structure
MH 2053	7.41	-1.99	4.06	48	Circular Structure
MH 2054	7.23	-0.47	4.03	48	Circular Structure
MH 2057	6.71	-0.69	4	48	Circular Structure
MH 2059	6.74	-0.76	4.01	48	Circular Structure
MH 2062	6.66	-0.94	3.96	48	Circular Structure
MH 2066	6.47	-0.83	3.99	48	Circular Structure
MH 2069	6.84	-0.76	3.98	48	Circular Structure
MH 2071	6.37	-1.93	4.2	48	Circular Structure
MH 3019	5.64	-1.16	4.01	48	Circular Structure
MH 3020	5.71	-1.37	3.97	48	Circular Structure
MH 3023	6.7	-2.5	3.98	48	Circular Structure
MH 3024	6.93	-2.77	3.96	48	Circular Structure
MH 3026	7.22	-2.58	3.94	48	Circular Structure
MH 3028	6.32	-2.58	3.91	72	Circular Structure
MH 3029	7.15	-2.85	3.91	60	Circular Structure
MH 3030	6.5	-3.2	3.89	72	Circular Structure
MH 3031	7.43	-2.97	3.89	60	Circular Structure
MH 3032	6.7	-3.4	3.86	48	Circular Structure
MH 3033	7.35	-1.85	3.88	48	Circular Structure
MH 3034	6.72	-1.58	3.89	48	Circular Structure
MH 3038	7.22	-0.88	3.93	48	Circular Structure
MH 3041	5.94	0.74	4.47	48	Circular Structure
MH 3043	6.9	0.7	4.31	48	Circular Structure
MH 3044	7.05	0.05	4.33	48	Circular Structure
MH 3045	7.34	-0.56	4.09	48	Circular Structure
MH 3047	7.03	-0.37	4.13	48	Circular Structure
MH 3048	7.05	-0.35	4.13	48	Circular Structure
MH 3049	6.97	-0.13	4.2	48	Circular Structure
MH 3051	6.73	0.13	4.24	48	Circular Structure
MH 3053	6.46	-0.14	4.22	48	Circular Structure
MH 3054	6.73	0.13	4.27	48	Circular Structure
MH 3056	7.11	0.11	4.29	48	Circular Structure
MH 4048A	6.37	1.13	5.28	48	Circular Structure
MH 4048B	6.17	0.99	5.23	48	Circular Structure
MH 4048C	7.17	0.82	5.12	48	Circular Structure
MH 4048D	6.37	0.65	5.12	48	Circular Structure
MH 4048E	7.47	0.53	6.14	48	Circular Structure
MH 4052	5.37	-1.53	4.3	48	Circular Structure
MH 4055	5.82	-0.88	4.3	48	Circular Structure
MH 4058	5.77	-1.83	4.65	48	Circular Structure
MH 4060	5.66	-2.54	4.87	48	Circular Structure

MH 4061	5.27	-0.53	4.92	48	Circular Structure
MH 4068	4.97	-0.33	4.21	48	Circular Structure
MH 4071	5.7	-0.5	4.63	48	Circular Structure
MH 4073	5.93	-0.77	4.43	48	Circular Structure
MH 4074	6.51	-0.69	4.44	48	Circular Structure
MH 5033	5.37	-1.63	4.25	48	Circular Structure
MH 5035	5.92	-1.48	4.26	48	Circular Structure
MH 5036	5.82	-1.38	4.26	48	Circular Structure
MH 5039	6.4	-1.3	4.24	48	Circular Structure
MH 5040	5.67	-1.63	4.24	48	Circular Structure
MH 5045	5.7	-0.7	4.14	48	Circular Structure
MH 5049	6.06	-1.14	4.13	48	Circular Structure
MH 5053	5.16	-1.54	4.24	48	Circular Structure
MH 5054	6.3	-0.8	4.2	48	Circular Structure
MH 5056	6.38	-1.52	4.17	48	Circular Structure
MH 5058	6.66	-1.64	4.28	48	Circular Structure
MH 5061	6.29	-1.81	4.4	48	Circular Structure
MH 5062	5.54	-1.56	4.58	48	Circular Structure
MH 5067	5.66	-1.14	4.48	48	Circular Structure
MH 5068	5.08	-3.32	3.47	48	Circular Structure
MH 5072	5.28	-2.52	4.34	48	Circular Structure
MH 11001	6.56	-0.14	5.1	48	Circular Structure
MH 11002	6.03	0.36	5.99	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**326.85**		

Manholes Drainage System 4 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2030	5.81	-1.42	1.39	48	Circular Structure
MH 2031	6.89	-1.11	1.23	48	Circular Structure
MH 2033	6.7	-1.5	1.17	48	Circular Structure
MH 2038	7.17	-2.23	1.38	48	Circular Structure
MH 2040	6.4	-1.2	2.85	48	Circular Structure
MH 2041	6.89	-1.04	2.85	48	Circular Structure
MH 2042	6.73	0.93	2.84	48	Circular Structure
MH 2045	6.63	0.83	2.59	48	Circular Structure
MH 2047	7.26	0.86	2.35	48	Circular Structure
MH 2050	7.6	-0.46	1.56	48	Circular Structure
MH 2051	7.63	-0.46	1.55	48	Circular Structure
MH 2052	7.17	-2.13	1.56	48	Circular Structure
MH 2053	7.41	-1.99	1.59	48	Circular Structure
MH 2054	7.23	-0.47	1.47	48	Circular Structure
MH 2057	6.71	-0.69	1.44	48	Circular Structure
MH 2059	6.74	-0.76	1.44	48	Circular Structure
MH 2062	6.66	-0.94	1.38	48	Circular Structure
MH 2066	6.47	-0.83	1.38	48	Circular Structure
MH 2069	6.84	-0.76	1.41	48	Circular Structure
MH 2071	6.37	-1.93	1.75	48	Circular Structure
MH 3019	5.64	-1.16	1.4	48	Circular Structure
MH 3020	5.71	-1.37	1.38	48	Circular Structure
MH 3023	6.7	-2.5	1.1	48	Circular Structure
MH 3024	6.93	-2.77	1.14	48	Circular Structure
MH 3026	7.22	-2.58	1.23	48	Circular Structure
MH 3028	6.32	-2.58	1.31	72	Circular Structure
MH 3029	7.15	-2.85	1.33	60	Circular Structure
MH 3030	6.5	-3.2	1.33	72	Circular Structure
MH 3031	7.43	-2.97	1.36	60	Circular Structure
MH 3032	6.7	-3.4	1.5	48	Circular Structure
MH 3033	7.35	-1.85	1	48	Circular Structure
MH 3034	6.72	-1.58	1.36	48	Circular Structure
MH 3038	7.22	-0.88	1.38	48	Circular Structure
MH 3041	5.94	0.74	3.04	48	Circular Structure
MH 3043	6.9	0.7	2.3	48	Circular Structure
MH 3044	7.05	0.05	1.94	48	Circular Structure
MH 3045	7.34	-0.56	1.61	48	Circular Structure
MH 3047	7.03	-0.37	1.64	48	Circular Structure
MH 3048	7.05	-0.35	1.65	48	Circular Structure
MH 3049	6.97	-0.13	1.74	48	Circular Structure
MH 3051	6.73	0.13	1.85	48	Circular Structure
MH 3053	6.46	-0.14	1.85	48	Circular Structure
MH 3054	6.73	0.13	2.07	48	Circular Structure
MH 3056	7.11	0.11	1.95	48	Circular Structure
MH 4048A	6.37	1.13	4.59	48	Circular Structure
MH 4048B	6.17	0.99	4.64	48	Circular Structure
MH 4048C	7.17	0.82	4.56	48	Circular Structure
MH 4048D	6.37	0.65	4.2	48	Circular Structure
MH 4048E	7.47	0.53	4.8	48	Circular Structure
MH 4052	5.37	-1.53	2.01	48	Circular Structure
MH 4055	5.82	-0.88	2	48	Circular Structure
MH 4058	5.77	-1.83	2.31	48	Circular Structure
MH 4060	5.66	-2.54	2.39	48	Circular Structure

MH 4061	5.27	-0.53	2.47	48	Circular Structure
MH 4068	4.97	-0.33	3.73	48	Circular Structure
MH 4071	5.7	-0.5	2.85	48	Circular Structure
MH 4073	5.93	-0.77	3.08	48	Circular Structure
MH 4074	6.51	-0.69	3.08	48	Circular Structure
MH 5033	5.37	-1.63	1.85	48	Circular Structure
MH 5035	5.92	-1.48	1.85	48	Circular Structure
MH 5036	5.82	-1.38	1.84	48	Circular Structure
MH 5039	6.4	-1.3	1.77	48	Circular Structure
MH 5040	5.67	-1.63	1.8	48	Circular Structure
MH 5045	5.7	-0.7	1.7	48	Circular Structure
MH 5049	6.06	-1.14	1.65	48	Circular Structure
MH 5053	5.16	-1.54	1.77	48	Circular Structure
MH 5054	6.3	-0.8	1.63	48	Circular Structure
MH 5056	6.38	-1.52	1.63	48	Circular Structure
MH 5058	6.66	-1.64	1.87	48	Circular Structure
MH 5061	6.29	-1.81	2.07	48	Circular Structure
MH 5062	5.54	-1.56	2.36	48	Circular Structure
MH 5067	5.66	-1.14	3.28	48	Circular Structure
MH 5068	5.08	-3.32	3.36	48	Circular Structure
MH 5072	5.28	-2.52	3.17	48	Circular Structure
MH 11001	6.56	-0.14	3.8	48	Circular Structure
MH 11002	6.03	0.36	4.55	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**162.3**		

Catch Basin Drainage System 5 Existing 2 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1081	In Sag	5.49	0.16	2.25	0.06	0.06	(N/A)
CB 1082	In Sag	5.57	-0.56	1.52	0.07	0.07	(N/A)
CB 2004	In Sag	5.78	0.25	2.32	0.1	0.1	(N/A)
CB 2005A	On Grade	6	-0.1	2.3	0.69	0.66	0.02
CB 2006A	On Grade	6	0.7	2.96	0.22	0.21	0.01
CB 2007	In Sag	5.36	-0.07	1.98	0.05	0.05	(N/A)
CB 2010A	On Grade	6.9	-3.68	-0.64	0.58	0.57	0.02
CB 2010B	In Sag	7.9	1.1	3.56	0.36	0.36	(N/A)
CB 2010C	In Sag	7.9	1.5	3.84	0.44	0.44	(N/A)
CB 2010D	On Grade	6.9	-0.7	1.87	0.58	0.57	0.02
CB 2010E	On Grade	6.9	-0.2	2.28	0.44	0.42	0.01
CB 2010F	On Grade	6.9	0.3	2.73	0.44	0.42	0.01
CB 2010G	On Grade	6.9	0.8	3.14	0.44	0.42	0.01
CB 2012	On Grade	5.67	-0.06	2.24	0.06	0.06	0
CB 2014	On Grade	6.14	0.51	2.56	0.06	0.05	0
CB 2015	In Sag	5.47	0.04	2.09	0.06	0.06	(N/A)
CB 2017	In Sag	4.61	-0.82	1.3	0.06	0.06	(N/A)
CB 2022	In Sag	5.39	-0.14	1.97	0.11	0.11	(N/A)
CB 2023	In Sag	4.39	0.12	2.27	0.07	0.07	(N/A)
CB 2025	In Sag	4.34	-0.89	1.49	0.03	0.03	(N/A)
CB 2026	In Sag	4.45	-0.69	1.49	0.02	0.02	(N/A)
CB 3003	In Sag	6	0.97	3.03	0.05	0.05	(N/A)
CB 3004	In Sag	5.21	-0.29	-0.08	0.05	0.05	(N/A)
CB 3006	In Sag	5.28	-0.29	-0.11	0.04	0.04	(N/A)
CB 3007	On Grade	6.01	-1.15	0.94	0.04	0.04	0
CB 3008	On Grade	6.18	1.48	3.54	0.06	0.06	0
CB 3009	On Grade	5.95	-0.18	2.3	0.03	0.03	0
CB 3010	On Grade	6.05	0.55	2.62	0.06	0.06	0
CB 3011	In Sag	5.52	-1.11	1.02	0.05	0.05	(N/A)
CB 3012	In Sag	5.48	-1.52	1.03	0.1	0.1	(N/A)
CB 3013	In Sag	5.15	-0.48	1.66	0.07	0.07	(N/A)
CB 3014	In Sag	5.34	-0.56	1.71	0.12	0.12	(N/A)
CB 3015	In Sag	5.61	0.08	2.2	0.13	0.13	(N/A)
CB 4034	In Sag	5.46	-1.14	1.62	0.13	0.13	(N/A)
CB 4035	In Sag	5.37	-0.73	1.62	0.07	0.07	(N/A)
CB 4036	In Sag	5.08	-0.92	1.39	0.17	0.17	(N/A)
CB 4037	In Sag	5.04	-1.43	0.86	0.08	0.08	(N/A)
CB 4038	In Sag	5.7	-0.2	1.9	0.05	0.05	(N/A)
CB 4039	In Sag	5.54	-0.1	2.03	0.07	0.07	(N/A)
CB 4041	In Sag	4.01	-0.6	1.52	0.02	0.02	(N/A)
CB 4042	In Sag	4.37	-0.74	1.52	0.03	0.03	(N/A)
CB 4043	In Sag	4.54	-0.89	1.24	0.01	0.01	(N/A)
CB 4045	In Sag	4.56	-0.57	1.46	0.02	0.02	(N/A)
CB 4046	In Sag	4.22	-0.51	1.55	0.01	0.01	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**82.09**			

Catch Basin Drainage System 5 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1081	In Sag	5.49	0.16	2.25	0.06	0.06	(N/A)
CB 1082	In Sag	5.57	-0.56	1.52	0.07	0.07	(N/A)
CB 2004	In Sag	5.78	0.25	2.32	0.1	0.1	(N/A)
CB 2005A	On Grade	6	-0.1	2.3	0.69	0.66	0.02
CB 2006A	On Grade	6	0.7	2.96	0.22	0.21	0.01
CB 2007	In Sag	5.36	-0.07	1.98	0.05	0.05	(N/A)
CB 2010A	On Grade	6.9	-3.68	-0.67	0.58	0.57	0.02
CB 2010B	In Sag	7.9	1.1	3.56	0.36	0.36	(N/A)
CB 2010C	In Sag	7.9	1.5	3.84	0.44	0.44	(N/A)
CB 2010D	On Grade	6.9	-0.7	1.86	0.58	0.57	0.02
CB 2010E	On Grade	6.9	-0.2	2.28	0.44	0.42	0.01
CB 2010F	On Grade	6.9	0.3	2.73	0.44	0.42	0.01
CB 2010G	On Grade	6.9	0.8	3.14	0.44	0.42	0.01
CB 2012	On Grade	5.67	-0.06	2.24	0.06	0.06	0
CB 2014	On Grade	6.14	0.51	2.56	0.06	0.05	0
CB 2015	In Sag	5.47	0.04	2.09	0.06	0.06	(N/A)
CB 2017	In Sag	4.61	-0.82	1.3	0.06	0.06	(N/A)
CB 2022	In Sag	5.39	-0.14	1.97	0.11	0.11	(N/A)
CB 2023	In Sag	4.39	0.12	2.27	0.07	0.07	(N/A)
CB 2025	In Sag	4.34	-0.89	1.12	0.03	0.03	(N/A)
CB 2026	In Sag	4.45	-0.69	1.25	0.02	0.02	(N/A)
CB 3003	In Sag	6	0.97	3.03	0.05	0.05	(N/A)
CB 3004	In Sag	5.21	-0.29	-0.08	0.05	0.05	(N/A)
CB 3006	In Sag	5.28	-0.29	-0.11	0.04	0.04	(N/A)
CB 3007	On Grade	6.01	-1.15	0.94	0.04	0.04	0
CB 3008	On Grade	6.18	1.48	3.54	0.06	0.06	0
CB 3009	On Grade	5.95	-0.18	2.3	0.03	0.03	0
CB 3010	On Grade	6.05	0.55	2.62	0.06	0.06	0
CB 3011	In Sag	5.52	-1.11	1.02	0.05	0.05	(N/A)
CB 3012	In Sag	5.48	-1.52	1.03	0.1	0.1	(N/A)
CB 3013	In Sag	5.15	-0.48	1.66	0.07	0.07	(N/A)
CB 3014	In Sag	5.34	-0.56	1.71	0.12	0.12	(N/A)
CB 3015	In Sag	5.61	0.08	2.2	0.13	0.13	(N/A)
CB 4034	In Sag	5.46	-1.14	1.5	0.13	0.13	(N/A)
CB 4035	In Sag	5.37	-0.73	1.49	0.07	0.07	(N/A)
CB 4036	In Sag	5.08	-0.92	1.39	0.17	0.17	(N/A)
CB 4037	In Sag	5.04	-1.43	0.86	0.08	0.08	(N/A)
CB 4038	In Sag	5.7	-0.2	1.9	0.05	0.05	(N/A)
CB 4039	In Sag	5.54	-0.1	2.03	0.07	0.07	(N/A)
CB 4041	In Sag	4.01	-0.6	1.24	0.02	0.02	(N/A)
CB 4042	In Sag	4.37	-0.74	1.29	0.03	0.03	(N/A)
CB 4043	In Sag	4.54	-0.89	-0.34	0.01	0.01	(N/A)
CB 4045	In Sag	4.56	-0.57	1.28	0.02	0.02	(N/A)
CB 4046	In Sag	4.22	-0.51	0.1	0.01	0.01	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**77.47**			

Catch Basin Drainage System 5 Existing 10 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1081	In Sag	5.49	0.16	2.35	0.33	0.33	(N/A)
CB 1082	In Sag	5.57	-0.56	1.62	0.38	0.38	(N/A)
CB 2004	In Sag	5.78	0.25	2.4	0.53	0.53	(N/A)
CB 2005A	On Grade	6	-0.1	2.85	4.41	3.82	0.59
CB 2006A	On Grade	6	0.7	3.28	1.19	1.13	0.07
CB 2007	In Sag	5.36	-0.07	2.03	0.24	0.24	(N/A)
CB 2010A	On Grade	6.9	-3.68	2.34	3.01	2.69	0.32
CB 2010B	In Sag	7.9	1.1	4.73	2.56	2.56	(N/A)
CB 2010C	In Sag	7.9	1.5	4.93	2.81	2.81	(N/A)
CB 2010D	On Grade	6.9	-0.7	5.69	3.01	2.69	0.32
CB 2010E	On Grade	6.9	-0.2	7.27	2.81	2.73	0.08
CB 2010F	On Grade	6.9	0.3	8.05	2.81	2.81	0
CB 2010G	On Grade	6.9	0.8	8.3	2.81	2.81	0
CB 2012	On Grade	5.67	-0.06	2.33	0.28	0.18	0.1
CB 2014	On Grade	6.14	0.51	2.59	0.26	0.18	0.09
CB 2015	In Sag	5.47	0.04	2.15	0.29	0.29	(N/A)
CB 2017	In Sag	4.61	-0.82	1.42	0.3	0.3	(N/A)
CB 2022	In Sag	5.39	-0.14	2.1	0.57	0.57	(N/A)
CB 2023	In Sag	4.39	0.12	2.43	0.34	0.34	(N/A)
CB 2025	In Sag	4.34	-0.89	1.61	0.17	0.17	(N/A)
CB 2026	In Sag	4.45	-0.69	1.61	0.08	0.08	(N/A)
CB 3003	In Sag	6	0.97	3.09	0.23	0.23	(N/A)
CB 3004	In Sag	5.21	-0.29	0.06	0.24	0.24	(N/A)
CB 3006	In Sag	5.28	-0.29	-0.01	0.17	0.17	(N/A)
CB 3007	On Grade	6.01	-1.15	1.02	0.19	0.14	0.05
CB 3008	On Grade	6.18	1.48	3.6	0.29	0.28	0.01
CB 3009	On Grade	5.95	-0.18	2.38	0.14	0.11	0.03
CB 3010	On Grade	6.05	0.55	2.68	0.25	0.24	0.01
CB 3011	In Sag	5.52	-1.11	1.17	0.26	0.26	(N/A)
CB 3012	In Sag	5.48	-1.52	1.21	0.46	0.46	(N/A)
CB 3013	In Sag	5.15	-0.48	1.84	0.35	0.35	(N/A)
CB 3014	In Sag	5.34	-0.56	1.92	0.57	0.57	(N/A)
CB 3015	In Sag	5.61	0.08	2.35	0.67	0.67	(N/A)
CB 4034	In Sag	5.46	-1.14	1.96	0.59	0.59	(N/A)
CB 4035	In Sag	5.37	-0.73	1.96	0.32	0.32	(N/A)
CB 4036	In Sag	5.08	-0.92	1.63	0.82	0.82	(N/A)
CB 4037	In Sag	5.04	-1.43	1.13	0.39	0.39	(N/A)
CB 4038	In Sag	5.7	-0.2	2.01	0.25	0.25	(N/A)
CB 4039	In Sag	5.54	-0.1	2.15	0.31	0.31	(N/A)
CB 4041	In Sag	4.01	-0.6	1.64	0.11	0.11	(N/A)
CB 4042	In Sag	4.37	-0.74	1.66	0.12	0.12	(N/A)
CB 4043	In Sag	4.54	-0.89	1.37	0.02	0.02	(N/A)
CB 4045	In Sag	4.56	-0.57	1.5	0.09	0.09	(N/A)
CB 4046	In Sag	4.22	-0.51	1.59	0.03	0.03	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**111.99**			

Catch Basin Drainage System 5 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1081	In Sag	5.49	0.16	2.35	0.33	0.33	(N/A)
CB 1082	In Sag	5.57	-0.56	1.62	0.38	0.38	(N/A)
CB 2004	In Sag	5.78	0.25	2.4	0.53	0.53	(N/A)
CB 2005A	On Grade	6	-0.1	2.85	4.41	3.82	0.59
CB 2006A	On Grade	6	0.7	3.28	1.19	1.13	0.07
CB 2007	In Sag	5.36	-0.07	2.03	0.24	0.24	(N/A)
CB 2010A	On Grade	6.9	-3.68	2.35	3.01	2.69	0.32
CB 2010B	In Sag	7.9	1.1	4.73	2.56	2.56	(N/A)
CB 2010C	In Sag	7.9	1.5	4.93	2.81	2.81	(N/A)
CB 2010D	On Grade	6.9	-0.7	5.72	3.01	2.69	0.32
CB 2010E	On Grade	6.9	-0.2	7.32	2.81	2.76	0.05
CB 2010F	On Grade	6.9	0.3	8.11	2.81	2.81	0
CB 2010G	On Grade	6.9	0.8	8.35	2.81	2.81	0
CB 2012	On Grade	5.67	-0.06	2.33	0.28	0.18	0.1
CB 2014	On Grade	6.14	0.51	2.59	0.26	0.18	0.09
CB 2015	In Sag	5.47	0.04	2.15	0.29	0.29	(N/A)
CB 2017	In Sag	4.61	-0.82	1.42	0.3	0.3	(N/A)
CB 2022	In Sag	5.39	-0.14	2.1	0.57	0.57	(N/A)
CB 2023	In Sag	4.39	0.12	2.43	0.34	0.34	(N/A)
CB 2025	In Sag	4.34	-0.89	1.61	0.17	0.17	(N/A)
CB 2026	In Sag	4.45	-0.69	1.61	0.08	0.08	(N/A)
CB 3003	In Sag	6	0.97	3.09	0.23	0.23	(N/A)
CB 3004	In Sag	5.21	-0.29	0.06	0.24	0.24	(N/A)
CB 3006	In Sag	5.28	-0.29	-0.01	0.17	0.17	(N/A)
CB 3007	On Grade	6.01	-1.15	1.02	0.19	0.14	0.05
CB 3008	On Grade	6.18	1.48	3.6	0.29	0.28	0.01
CB 3009	On Grade	5.95	-0.18	2.38	0.14	0.11	0.03
CB 3010	On Grade	6.05	0.55	2.68	0.25	0.24	0.01
CB 3011	In Sag	5.52	-1.11	1.17	0.26	0.26	(N/A)
CB 3012	In Sag	5.48	-1.52	1.21	0.46	0.46	(N/A)
CB 3013	In Sag	5.15	-0.48	1.84	0.35	0.35	(N/A)
CB 3014	In Sag	5.34	-0.56	1.92	0.57	0.57	(N/A)
CB 3015	In Sag	5.61	0.08	2.35	0.67	0.67	(N/A)
CB 4034	In Sag	5.46	-1.14	1.96	0.59	0.59	(N/A)
CB 4035	In Sag	5.37	-0.73	1.96	0.32	0.32	(N/A)
CB 4036	In Sag	5.08	-0.92	1.63	0.82	0.82	(N/A)
CB 4037	In Sag	5.04	-1.43	1.13	0.39	0.39	(N/A)
CB 4038	In Sag	5.7	-0.2	2.01	0.25	0.25	(N/A)
CB 4039	In Sag	5.54	-0.1	2.15	0.31	0.31	(N/A)
CB 4041	In Sag	4.01	-0.6	1.64	0.11	0.11	(N/A)
CB 4042	In Sag	4.37	-0.74	1.66	0.12	0.12	(N/A)
CB 4043	In Sag	4.54	-0.89	1.37	0.02	0.02	(N/A)
CB 4045	In Sag	4.56	-0.57	1.5	0.09	0.09	(N/A)
CB 4046	In Sag	4.22	-0.51	1.59	0.03	0.03	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**112.19**			

Catch Basin Drainage System 5 Existing 2 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1081	In Sag	5.49	0.16	2.25	0.06	0.06	(N/A)
CB 1082	In Sag	5.57	-0.56	1.9	0.07	0.07	(N/A)
CB 2004	In Sag	5.78	0.25	2.32	0.1	0.1	(N/A)
CB 2005A	On Grade	6	-0.1	2.3	0.69	0.66	0.02
CB 2006A	On Grade	6	0.7	2.96	0.22	0.21	0.01
CB 2007	In Sag	5.36	-0.07	1.98	0.05	0.05	(N/A)
CB 2010A	On Grade	6.9	-3.68	1.92	0.58	0.57	0.02
CB 2010B	In Sag	7.9	1.1	3.56	0.36	0.36	(N/A)
CB 2010C	In Sag	7.9	1.5	3.84	0.44	0.44	(N/A)
CB 2010D	On Grade	6.9	-0.7	2.06	0.58	0.57	0.02
CB 2010E	On Grade	6.9	-0.2	2.29	0.44	0.42	0.01
CB 2010F	On Grade	6.9	0.3	2.73	0.44	0.42	0.01
CB 2010G	On Grade	6.9	0.8	3.14	0.44	0.42	0.01
CB 2012	On Grade	5.67	-0.06	2.24	0.06	0.06	0
CB 2014	On Grade	6.14	0.51	2.56	0.06	0.05	0
CB 2015	In Sag	5.47	0.04	2.09	0.06	0.06	(N/A)
CB 2017	In Sag	4.61	-0.82	1.86	0.06	0.06	(N/A)
CB 2022	In Sag	5.39	-0.14	1.97	0.11	0.11	(N/A)
CB 2023	In Sag	4.39	0.12	2.27	0.07	0.07	(N/A)
CB 2025	In Sag	4.34	-0.89	1.86	0.03	0.03	(N/A)
CB 2026	In Sag	4.45	-0.69	1.86	0.02	0.02	(N/A)
CB 3003	In Sag	6	0.97	3.03	0.05	0.05	(N/A)
CB 3004	In Sag	5.21	-0.29	1.86	0.05	0.05	(N/A)
CB 3006	In Sag	5.28	-0.29	1.86	0.04	0.04	(N/A)
CB 3007	On Grade	6.01	-1.15	1.89	0.04	0.04	0
CB 3008	On Grade	6.18	1.48	3.54	0.06	0.06	0
CB 3009	On Grade	5.95	-0.18	2.3	0.03	0.03	0
CB 3010	On Grade	6.05	0.55	2.62	0.06	0.06	0
CB 3011	In Sag	5.52	-1.11	1.86	0.05	0.05	(N/A)
CB 3012	In Sag	5.48	-1.52	1.86	0.1	0.1	(N/A)
CB 3013	In Sag	5.15	-0.48	1.86	0.07	0.07	(N/A)
CB 3014	In Sag	5.34	-0.56	1.86	0.12	0.12	(N/A)
CB 3015	In Sag	5.61	0.08	2.2	0.13	0.13	(N/A)
CB 4034	In Sag	5.46	-1.14	1.87	0.13	0.13	(N/A)
CB 4035	In Sag	5.37	-0.73	1.87	0.07	0.07	(N/A)
CB 4036	In Sag	5.08	-0.92	1.86	0.17	0.17	(N/A)
CB 4037	In Sag	5.04	-1.43	1.86	0.08	0.08	(N/A)
CB 4038	In Sag	5.7	-0.2	1.9	0.05	0.05	(N/A)
CB 4039	In Sag	5.54	-0.1	2.03	0.07	0.07	(N/A)
CB 4041	In Sag	4.01	-0.6	1.86	0.02	0.02	(N/A)
CB 4042	In Sag	4.37	-0.74	1.86	0.03	0.03	(N/A)
CB 4043	In Sag	4.54	-0.89	1.86	0.01	0.01	(N/A)
CB 4045	In Sag	4.56	-0.57	1.86	0.02	0.02	(N/A)
CB 4046	In Sag	4.22	-0.51	1.86	0.01	0.01	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**97.39**			

Catch Basin Drainage System 5 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1081	In Sag	5.49	0.16	2.25	0.06	0.06	(N/A)
CB 1082	In Sag	5.57	-0.56	1.52	0.07	0.07	(N/A)
CB 2004	In Sag	5.78	0.25	2.32	0.1	0.1	(N/A)
CB 2005A	On Grade	6	-0.1	2.3	0.69	0.66	0.02
CB 2006A	On Grade	6	0.7	2.96	0.22	0.21	0.01
CB 2007	In Sag	5.36	-0.07	1.98	0.05	0.05	(N/A)
CB 2010A	On Grade	6.9	-3.68	-0.67	0.58	0.57	0.02
CB 2010B	In Sag	7.9	1.1	3.56	0.36	0.36	(N/A)
CB 2010C	In Sag	7.9	1.5	3.84	0.44	0.44	(N/A)
CB 2010D	On Grade	6.9	-0.7	1.86	0.58	0.57	0.02
CB 2010E	On Grade	6.9	-0.2	2.28	0.44	0.42	0.01
CB 2010F	On Grade	6.9	0.3	2.73	0.44	0.42	0.01
CB 2010G	On Grade	6.9	0.8	3.14	0.44	0.42	0.01
CB 2012	On Grade	5.67	-0.06	2.24	0.06	0.06	0
CB 2014	On Grade	6.14	0.51	2.56	0.06	0.05	0
CB 2015	In Sag	5.47	0.04	2.09	0.06	0.06	(N/A)
CB 2017	In Sag	4.61	-0.82	1.3	0.06	0.06	(N/A)
CB 2022	In Sag	5.39	-0.14	1.97	0.11	0.11	(N/A)
CB 2023	In Sag	4.39	0.12	2.27	0.07	0.07	(N/A)
CB 2025	In Sag	4.34	-0.89	1.12	0.03	0.03	(N/A)
CB 2026	In Sag	4.45	-0.69	1.25	0.02	0.02	(N/A)
CB 3003	In Sag	6	0.97	3.03	0.05	0.05	(N/A)
CB 3004	In Sag	5.21	-0.29	-0.08	0.05	0.05	(N/A)
CB 3006	In Sag	5.28	-0.29	-0.11	0.04	0.04	(N/A)
CB 3007	On Grade	6.01	-1.15	0.94	0.04	0.04	0
CB 3008	On Grade	6.18	1.48	3.54	0.06	0.06	0
CB 3009	On Grade	5.95	-0.18	2.3	0.03	0.03	0
CB 3010	On Grade	6.05	0.55	2.62	0.06	0.06	0
CB 3011	In Sag	5.52	-1.11	1.02	0.05	0.05	(N/A)
CB 3012	In Sag	5.48	-1.52	1.03	0.1	0.1	(N/A)
CB 3013	In Sag	5.15	-0.48	1.66	0.07	0.07	(N/A)
CB 3014	In Sag	5.34	-0.56	1.71	0.12	0.12	(N/A)
CB 3015	In Sag	5.61	0.08	2.2	0.13	0.13	(N/A)
CB 4034	In Sag	5.46	-1.14	1.5	0.13	0.13	(N/A)
CB 4035	In Sag	5.37	-0.73	1.49	0.07	0.07	(N/A)
CB 4036	In Sag	5.08	-0.92	1.59	0.17	0.17	(N/A)
CB 4037	In Sag	5.04	-1.43	1.59	0.08	0.08	(N/A)
CB 4038	In Sag	5.7	-0.2	1.9	0.05	0.05	(N/A)
CB 4039	In Sag	5.54	-0.1	2.03	0.07	0.07	(N/A)
CB 4041	In Sag	4.01	-0.6	1.24	0.02	0.02	(N/A)
CB 4042	In Sag	4.37	-0.74	1.29	0.03	0.03	(N/A)
CB 4043	In Sag	4.54	-0.89	-0.34	0.01	0.01	(N/A)
CB 4045	In Sag	4.56	-0.57	1.28	0.02	0.02	(N/A)
CB 4046	In Sag	4.22	-0.51	0.1	0.01	0.01	(N/A)
			Summation of Hydraulic Grade Line Elevations (ft)	**78.40**			

Catch Basin Drainage System 5 Existing 10 Yr. High Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1081	In Sag	5.49	0.16	2.51	0.33	0.33	(N/A)
CB 1082	In Sag	5.57	-0.56	2.82	0.38	0.38	(N/A)
CB 2004	In Sag	5.78	0.25	3.04	0.53	0.53	(N/A)
CB 2005A	On Grade	6	-0.1	2.94	4.41	3.82	0.59
CB 2006A	On Grade	6	0.7	3.28	1.19	1.13	0.07
CB 2007	In Sag	5.36	-0.07	2.69	0.24	0.24	(N/A)
CB 2010A	On Grade	6.9	-3.68	4.09	3.01	2.69	0.32
CB 2010B	In Sag	7.9	1.1	5.29	2.56	2.56	(N/A)
CB 2010C	In Sag	7.9	1.5	5.77	2.81	2.81	(N/A)
CB 2010D	On Grade	6.9	-0.7	6.94	3.01	2.71	0.3
CB 2010E	On Grade	6.9	-0.2	8.43	2.81	2.81	0
CB 2010F	On Grade	6.9	0.3	9.09	2.81	2.81	0
CB 2010G	On Grade	6.9	0.8	9.3	2.81	2.81	0
CB 2012	On Grade	5.67	-0.06	2.63	0.28	0.18	0.1
CB 2014	On Grade	6.14	0.51	2.62	0.26	0.18	0.09
CB 2015	In Sag	5.47	0.04	2.15	0.29	0.29	(N/A)
CB 2017	In Sag	4.61	-0.82	1.87	0.3	0.3	(N/A)
CB 2022	In Sag	5.39	-0.14	2.1	0.57	0.57	(N/A)
CB 2023	In Sag	4.39	0.12	2.43	0.34	0.34	(N/A)
CB 2025	In Sag	4.34	-0.89	1.91	0.17	0.17	(N/A)
CB 2026	In Sag	4.45	-0.69	1.91	0.08	0.08	(N/A)
CB 3003	In Sag	6	0.97	3.09	0.23	0.23	(N/A)
CB 3004	In Sag	5.21	-0.29	2.08	0.24	0.24	(N/A)
CB 3006	In Sag	5.28	-0.29	2.08	0.17	0.17	(N/A)
CB 3007	On Grade	6.01	-1.15	2.63	0.19	0.14	0.05
CB 3008	On Grade	6.18	1.48	3.6	0.29	0.28	0.01
CB 3009	On Grade	5.95	-0.18	2.64	0.14	0.11	0.03
CB 3010	On Grade	6.05	0.55	2.68	0.25	0.24	0.01
CB 3011	In Sag	5.52	-1.11	1.91	0.26	0.26	(N/A)
CB 3012	In Sag	5.48	-1.52	1.92	0.46	0.46	(N/A)
CB 3013	In Sag	5.15	-0.48	1.88	0.35	0.35	(N/A)
CB 3014	In Sag	5.34	-0.56	1.94	0.57	0.57	(N/A)
CB 3015	In Sag	5.61	0.08	2.35	0.67	0.67	(N/A)
CB 4034	In Sag	5.46	-1.14	1.99	0.59	0.59	(N/A)
CB 4035	In Sag	5.37	-0.73	1.99	0.32	0.32	(N/A)
CB 4036	In Sag	5.08	-0.92	1.88	0.82	0.82	(N/A)
CB 4037	In Sag	5.04	-1.43	1.86	0.39	0.39	(N/A)
CB 4038	In Sag	5.7	-0.2	2.01	0.25	0.25	(N/A)
CB 4039	In Sag	5.54	-0.1	2.15	0.31	0.31	(N/A)
CB 4041	In Sag	4.01	-0.6	1.89	0.11	0.11	(N/A)
CB 4042	In Sag	4.37	-0.74	1.89	0.12	0.12	(N/A)
CB 4043	In Sag	4.54	-0.89	1.88	0.02	0.02	(N/A)
CB 4045	In Sag	4.56	-0.57	1.88	0.09	0.09	(N/A)
CB 4046	In Sag	4.22	-0.51	1.88	0.03	0.03	(N/A)
			Summation of Hydraulic Grade Line Elevations (ft)	133.91			

Catch Basin Drainage System 5 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1081	In Sag	5.49	0.16	2.49	0.33	0.33	(N/A)
CB 1082	In Sag	5.57	-0.56	2.82	0.38	0.38	(N/A)
CB 2004	In Sag	5.78	0.25	2.83	0.53	0.53	(N/A)
CB 2005A	On Grade	6	-0.1	2.93	4.41	3.82	0.59
CB 2006A	On Grade	6	0.7	3.28	1.19	1.13	0.07
CB 2007	In Sag	5.36	-0.07	2.69	0.24	0.24	(N/A)
CB 2010A	On Grade	6.9	-3.68	4.07	3.01	2.69	0.32
CB 2010B	In Sag	7.9	1.1	5.08	2.56	2.56	(N/A)
CB 2010C	In Sag	7.9	1.5	5.35	2.81	2.81	(N/A)
CB 2010D	On Grade	6.9	-0.7	6.91	3.01	2.69	0.32
CB 2010E	On Grade	6.9	-0.2	8.31	2.81	2.81	0
CB 2010F	On Grade	6.9	0.3	8.94	2.81	2.81	0
CB 2010G	On Grade	6.9	0.8	9.15	2.81	2.81	0
CB 2012	On Grade	5.67	-0.06	2.63	0.28	0.18	0.1
CB 2014	On Grade	6.14	0.51	2.68	0.26	0.18	0.09
CB 2015	In Sag	5.47	0.04	2.15	0.29	0.29	(N/A)
CB 2017	In Sag	4.61	-0.82	1.42	0.3	0.3	(N/A)
CB 2022	In Sag	5.39	-0.14	2.1	0.57	0.57	(N/A)
CB 2023	In Sag	4.39	0.12	2.43	0.34	0.34	(N/A)
CB 2025	In Sag	4.34	-0.89	1.98	0.17	0.17	(N/A)
CB 2026	In Sag	4.45	-0.69	1.98	0.08	0.08	(N/A)
CB 3003	In Sag	6	0.97	3.09	0.23	0.23	(N/A)
CB 3004	In Sag	5.21	-0.29	2.06	0.24	0.24	(N/A)
CB 3006	In Sag	5.28	-0.29	2.06	0.17	0.17	(N/A)
CB 3007	On Grade	6.01	-1.15	2.61	0.19	0.14	0.05
CB 3008	On Grade	6.18	1.48	3.6	0.29	0.28	0.01
CB 3009	On Grade	5.95	-0.18	2.6	0.14	0.11	0.03
CB 3010	On Grade	6.05	0.55	2.68	0.25	0.24	0.01
CB 3011	In Sag	5.52	-1.11	1.17	0.26	0.26	(N/A)
CB 3012	In Sag	5.48	-1.52	1.21	0.46	0.46	(N/A)
CB 3013	In Sag	5.15	-0.48	1.84	0.35	0.35	(N/A)
CB 3014	In Sag	5.34	-0.56	1.92	0.57	0.57	(N/A)
CB 3015	In Sag	5.61	0.08	2.35	0.67	0.67	(N/A)
CB 4034	In Sag	5.46	-1.14	1.96	0.59	0.59	(N/A)
CB 4035	In Sag	5.37	-0.73	1.96	0.32	0.32	(N/A)
CB 4036	In Sag	5.08	-0.92	1.88	0.82	0.82	(N/A)
CB 4037	In Sag	5.04	-1.43	1.86	0.39	0.39	(N/A)
CB 4038	In Sag	5.7	-0.2	2.01	0.25	0.25	(N/A)
CB 4039	In Sag	5.54	-0.1	2.15	0.31	0.31	(N/A)
CB 4041	In Sag	4.01	-0.6	1.93	0.11	0.11	(N/A)
CB 4042	In Sag	4.37	-0.74	1.93	0.12	0.12	(N/A)
CB 4043	In Sag	4.54	-0.89	1.93	0.02	0.02	(N/A)
CB 4045	In Sag	4.56	-0.57	1.93	0.09	0.09	(N/A)
CB 4046	In Sag	4.22	-0.51	1.91	0.03	0.03	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**130.86**			

Catch Basin Drainage System 5 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1081	In Sag	5.49	0.16	2.99	0.06	0.06	(N/A)
CB 1082	In Sag	5.57	-0.56	2.99	0.07	0.07	(N/A)
CB 2004	In Sag	5.78	0.25	2.99	0.1	0.1	(N/A)
CB 2005A	On Grade	6	-0.1	3	0.69	0.66	0.02
CB 2006A	On Grade	6	0.7	3.02	0.22	0.21	0.01
CB 2007	In Sag	5.36	-0.07	2.99	0.05	0.05	(N/A)
CB 2010A	On Grade	6.9	-3.68	3.04	0.58	0.57	0.02
CB 2010B	In Sag	7.9	1.1	3.56	0.36	0.36	(N/A)
CB 2010C	In Sag	7.9	1.5	3.84	0.44	0.44	(N/A)
CB 2010D	On Grade	6.9	-0.7	3.17	0.58	0.57	0.02
CB 2010E	On Grade	6.9	-0.2	3.23	0.44	0.42	0.01
CB 2010F	On Grade	6.9	0.3	3.25	0.44	0.42	0.01
CB 2010G	On Grade	6.9	0.8	3.28	0.44	0.42	0.01
CB 2012	On Grade	5.67	-0.06	2.99	0.06	0.06	0
CB 2014	On Grade	6.14	0.51	2.99	0.06	0.05	0
CB 2015	In Sag	5.47	0.04	2.97	0.06	0.06	(N/A)
CB 2017	In Sag	4.61	-0.82	2.97	0.06	0.06	(N/A)
CB 2022	In Sag	5.39	-0.14	2.97	0.11	0.11	(N/A)
CB 2023	In Sag	4.39	0.12	2.97	0.07	0.07	(N/A)
CB 2025	In Sag	4.34	-0.89	2.97	0.03	0.03	(N/A)
CB 2026	In Sag	4.45	-0.69	2.97	0.02	0.02	(N/A)
CB 3003	In Sag	6	0.97	3.03	0.05	0.05	(N/A)
CB 3004	In Sag	5.21	-0.29	2.97	0.05	0.05	(N/A)
CB 3006	In Sag	5.28	-0.29	2.97	0.04	0.04	(N/A)
CB 3007	On Grade	6.01	-1.15	2.99	0.04	0.04	0
CB 3008	On Grade	6.18	1.48	3.54	0.06	0.06	0
CB 3009	On Grade	5.95	-0.18	2.99	0.03	0.03	0
CB 3010	On Grade	6.05	0.55	3	0.06	0.06	0
CB 3011	In Sag	5.52	-1.11	2.97	0.05	0.05	(N/A)
CB 3012	In Sag	5.48	-1.52	2.97	0.1	0.1	(N/A)
CB 3013	In Sag	5.15	-0.48	2.97	0.07	0.07	(N/A)
CB 3014	In Sag	5.34	-0.56	2.97	0.12	0.12	(N/A)
CB 3015	In Sag	5.61	0.08	2.97	0.13	0.13	(N/A)
CB 4034	In Sag	5.46	-1.14	2.97	0.13	0.13	(N/A)
CB 4035	In Sag	5.37	-0.73	2.97	0.07	0.07	(N/A)
CB 4036	In Sag	5.08	-0.92	2.97	0.17	0.17	(N/A)
CB 4037	In Sag	5.04	-1.43	2.97	0.08	0.08	(N/A)
CB 4038	In Sag	5.7	-0.2	2.97	0.05	0.05	(N/A)
CB 4039	In Sag	5.54	-0.1	2.97	0.07	0.07	(N/A)
CB 4041	In Sag	4.01	-0.6	2.97	0.02	0.02	(N/A)
CB 4042	In Sag	4.37	-0.74	2.97	0.03	0.03	(N/A)
CB 4043	In Sag	4.54	-0.89	2.97	0.01	0.01	(N/A)
CB 4045	In Sag	4.56	-0.57	2.97	0.02	0.02	(N/A)
CB 4046	In Sag	4.22	-0.51	2.97	0.01	0.01	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**134.16**			

Catch Basin Drainage System 5 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1081	In Sag	5.49	0.16	2.24	0.06	0.06	(N/A)
CB 1082	In Sag	5.57	-0.56	1.52	0.06	0.06	(N/A)
CB 2004	In Sag	5.78	0.25	2.32	0.09	0.09	(N/A)
CB 2005A	On Grade	6	-0.1	2.33	0.8	0.77	0.03
CB 2006A	On Grade	6	0.7	2.95	0.2	0.2	0.01
CB 2007	In Sag	5.36	-0.07	1.97	0.04	0.04	(N/A)
CB 2010A	On Grade	6.9	-3.68	0.26	0.5	0.48	0.01
CB 2010B	In Sag	7.9	1.1	3.72	0.49	0.49	(N/A)
CB 2010C	In Sag	7.9	1.5	3.89	0.51	0.51	(N/A)
CB 2010D	On Grade	6.9	-0.7	2.14	0.5	0.48	0.01
CB 2010E	On Grade	6.9	-0.2	2.47	0.51	0.5	0.01
CB 2010F	On Grade	6.9	0.3	2.85	0.51	0.5	0.01
CB 2010G	On Grade	6.9	0.8	3.19	0.51	0.5	0.01
CB 2012	On Grade	5.67	-0.06	2.23	0.04	0.04	0
CB 2014	On Grade	6.14	0.51	2.55	0.04	0.04	0
CB 2015	In Sag	5.47	0.04	2.09	0.05	0.05	(N/A)
CB 2017	In Sag	4.61	-0.82	1.29	0.05	0.05	(N/A)
CB 2022	In Sag	5.39	-0.14	1.96	0.09	0.09	(N/A)
CB 2023	In Sag	4.39	0.12	2.26	0.06	0.06	(N/A)
CB 2025	In Sag	4.34	-0.89	1.49	0.03	0.03	(N/A)
CB 2026	In Sag	4.45	-0.69	1.48	0.01	0.01	(N/A)
CB 3003	In Sag	6	0.97	3.02	0.04	0.04	(N/A)
CB 3004	In Sag	5.21	-0.29	0.2	0.04	0.04	(N/A)
CB 3006	In Sag	5.28	-0.29	0.19	0.03	0.03	(N/A)
CB 3007	On Grade	6.01	-1.15	0.93	0.03	0.03	0
CB 3008	On Grade	6.18	1.48	3.53	0.05	0.05	0
CB 3009	On Grade	5.95	-0.18	2.29	0.02	0.02	0
CB 3010	On Grade	6.05	0.55	2.6	0.04	0.04	0
CB 3011	In Sag	5.52	-1.11	1.01	0.04	0.04	(N/A)
CB 3012	In Sag	5.48	-1.52	1.01	0.07	0.07	(N/A)
CB 3013	In Sag	5.15	-0.48	1.65	0.06	0.06	(N/A)
CB 3014	In Sag	5.34	-0.56	1.69	0.09	0.09	(N/A)
CB 3015	In Sag	5.61	0.08	2.19	0.11	0.11	(N/A)
CB 4034	In Sag	5.46	-1.14	1.62	0.09	0.09	(N/A)
CB 4035	In Sag	5.37	-0.73	1.62	0.05	0.05	(N/A)
CB 4036	In Sag	5.08	-0.92	2.8	0.13	0.13	(N/A)
CB 4037	In Sag	5.04	-1.43	2.79	0.06	0.06	(N/A)
CB 4038	In Sag	5.7	-0.2	1.89	0.04	0.04	(N/A)
CB 4039	In Sag	5.54	-0.1	2.01	0.05	0.05	(N/A)
CB 4041	In Sag	4.01	-0.6	1.51	0.02	0.02	(N/A)
CB 4042	In Sag	4.37	-0.74	1.51	0.02	0.02	(N/A)
CB 4043	In Sag	4.54	-0.89	1.21	0	0	(N/A)
CB 4045	In Sag	4.56	-0.57	1.46	0.01	0.01	(N/A)
CB 4046	In Sag	4.22	-0.51	0.51	0	0	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**86.44**			

Catch Basin Drainage System 5 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1081	In Sag	5.49	0.16	3.25	0.33	0.33	(N/A)
CB 1082	In Sag	5.57	-0.56	3.22	0.38	0.38	(N/A)
CB 2004	In Sag	5.78	0.25	3.22	0.53	0.53	(N/A)
CB 2005A	On Grade	6	-0.1	3.27	4.41	3.82	0.59
CB 2006A	On Grade	6	0.7	3.36	1.19	1.13	0.07
CB 2007	In Sag	5.36	-0.07	3.29	0.24	0.24	(N/A)
CB 2010A	On Grade	6.9	-3.68	4.82	3.01	2.69	0.32
CB 2010B	In Sag	7.9	1.1	5.94	2.56	2.55	(N/A)
CB 2010C	In Sag	7.9	1.5	6.19	2.81	2.81	(N/A)
CB 2010D	On Grade	6.9	-0.7	7.52	3.01	3.01	0
CB 2010E	On Grade	6.9	-0.2	8.91	2.81	2.81	0
CB 2010F	On Grade	6.9	0.3	9.56	2.81	2.81	0
CB 2010G	On Grade	6.9	0.8	9.78	2.81	2.81	0
CB 2012	On Grade	5.67	-0.06	3.3	0.28	0.18	0.1
CB 2014	On Grade	6.14	0.51	3.31	0.26	0.18	0.09
CB 2015	In Sag	5.47	0.04	3.01	0.29	0.29	(N/A)
CB 2017	In Sag	4.61	-0.82	2.96	0.3	0.3	(N/A)
CB 2022	In Sag	5.39	-0.14	3.01	0.57	0.57	(N/A)
CB 2023	In Sag	4.39	0.12	3.01	0.34	0.34	(N/A)
CB 2025	In Sag	4.34	-0.89	3.01	0.17	0.17	(N/A)
CB 2026	In Sag	4.45	-0.69	3.01	0.08	0.08	(N/A)
CB 3003	In Sag	6	0.97	3.25	0.23	0.23	(N/A)
CB 3004	In Sag	5.21	-0.29	3.07	0.24	0.24	(N/A)
CB 3006	In Sag	5.28	-0.29	3.02	0.17	0.17	(N/A)
CB 3007	On Grade	6.01	-1.15	3.3	0.19	0.14	0.05
CB 3008	On Grade	6.18	1.48	3.6	0.29	0.28	0.01
CB 3009	On Grade	5.95	-0.18	3.31	0.14	0.11	0.03
CB 3010	On Grade	6.05	0.55	3.31	0.25	0.24	0.01
CB 3011	In Sag	5.52	-1.11	3.02	0.26	0.26	(N/A)
CB 3012	In Sag	5.48	-1.52	3	0.46	0.46	(N/A)
CB 3013	In Sag	5.15	-0.48	2.99	0.35	0.35	(N/A)
CB 3014	In Sag	5.34	-0.56	2.99	0.57	0.57	(N/A)
CB 3015	In Sag	5.61	0.08	3.02	0.67	0.67	(N/A)
CB 4034	In Sag	5.46	-1.14	2.99	0.59	0.59	(N/A)
CB 4035	In Sag	5.37	-0.73	2.99	0.32	0.32	(N/A)
CB 4036	In Sag	5.08	-0.92	2.97	0.82	0.82	(N/A)
CB 4037	In Sag	5.04	-1.43	2.97	0.39	0.39	(N/A)
CB 4038	In Sag	5.7	-0.2	2.97	0.25	0.25	(N/A)
CB 4039	In Sag	5.54	-0.1	2.97	0.31	0.31	(N/A)
CB 4041	In Sag	4.01	-0.6	2.99	0.11	0.11	(N/A)
CB 4042	In Sag	4.37	-0.74	2.99	0.12	0.12	(N/A)
CB 4043	In Sag	4.54	-0.89	2.99	0.02	0.02	(N/A)
CB 4045	In Sag	4.56	-0.57	3	0.09	0.09	(N/A)
CB 4046	In Sag	4.22	-0.51	2.99	0.03	0.03	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**167.65**			

Catch Basin Drainage System 5 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1081	In Sag	5.49	0.16	3.27	0.33	0.33	(N/A)
CB 1082	In Sag	5.57	-0.56	3.25	0.38	0.38	(N/A)
CB 2004	In Sag	5.78	0.25	3.05	0.53	0.53	(N/A)
CB 2005A	On Grade	6	-0.1	3.27	4.41	3.82	0.59
CB 2006A	On Grade	6	0.7	3.35	1.19	1.13	0.07
CB 2007	In Sag	5.36	-0.07	3.27	0.24	0.24	(N/A)
CB 2010A	On Grade	6.9	-3.68	4.75	3.01	2.69	0.32
CB 2010B	In Sag	7.9	1.1	5.87	2.56	2.56	(N/A)
CB 2010C	In Sag	7.9	1.5	6.15	2.81	2.81	(N/A)
CB 2010D	On Grade	6.9	-0.7	7.3	3.01	2.94	0.07
CB 2010E	On Grade	6.9	-0.2	8.62	2.81	2.81	0
CB 2010F	On Grade	6.9	0.3	9.24	2.81	2.81	0
CB 2010G	On Grade	6.9	0.8	9.45	2.81	2.81	0
CB 2012	On Grade	5.67	-0.06	3.27	0.28	0.18	0.1
CB 2014	On Grade	6.14	0.51	3.29	0.26	0.18	0.09
CB 2015	In Sag	5.47	0.04	2.15	0.29	0.29	(N/A)
CB 2017	In Sag	4.61	-0.82	1.42	0.3	0.3	(N/A)
CB 2022	In Sag	5.39	-0.14	2.1	0.57	0.57	(N/A)
CB 2023	In Sag	4.39	0.12	2.43	0.34	0.34	(N/A)
CB 2025	In Sag	4.34	-0.89	2.11	0.17	0.17	(N/A)
CB 2026	In Sag	4.45	-0.69	2.1	0.08	0.08	(N/A)
CB 3003	In Sag	6	0.97	3.18	0.23	0.23	(N/A)
CB 3004	In Sag	5.21	-0.29	3.06	0.24	0.24	(N/A)
CB 3006	In Sag	5.28	-0.29	3.02	0.17	0.17	(N/A)
CB 3007	On Grade	6.01	-1.15	3.3	0.19	0.14	0.05
CB 3008	On Grade	6.18	1.48	3.6	0.29	0.28	0.01
CB 3009	On Grade	5.95	-0.18	3.28	0.14	0.11	0.03
CB 3010	On Grade	6.05	0.55	3.25	0.25	0.24	0.01
CB 3011	In Sag	5.52	-1.11	1.17	0.26	0.26	(N/A)
CB 3012	In Sag	5.48	-1.52	1.21	0.46	0.46	(N/A)
CB 3013	In Sag	5.15	-0.48	1.84	0.35	0.35	(N/A)
CB 3014	In Sag	5.34	-0.56	1.92	0.57	0.57	(N/A)
CB 3015	In Sag	5.61	0.08	2.35	0.67	0.67	(N/A)
CB 4034	In Sag	5.46	-1.14	1.96	0.59	0.59	(N/A)
CB 4035	In Sag	5.37	-0.73	1.96	0.32	0.32	(N/A)
CB 4036	In Sag	5.08	-0.92	2.97	0.82	0.82	(N/A)
CB 4037	In Sag	5.04	-1.43	2.97	0.39	0.39	(N/A)
CB 4038	In Sag	5.7	-0.2	2.01	0.25	0.25	(N/A)
CB 4039	In Sag	5.54	-0.1	2.15	0.31	0.31	(N/A)
CB 4041	In Sag	4.01	-0.6	2.1	0.11	0.11	(N/A)
CB 4042	In Sag	4.37	-0.74	2.1	0.12	0.12	(N/A)
CB 4043	In Sag	4.54	-0.89	2.1	0.02	0.02	(N/A)
CB 4045	In Sag	4.56	-0.57	2.1	0.09	0.09	(N/A)
CB 4046	In Sag	4.22	-0.51	2.08	0.03	0.03	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**145.39**			

Manholes Drainage System 5 Existing 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2005	6.45	-1.95	0.41	48	Circular Structure
MH 2006	5.82	-2.58	-0.05	48	Circular Structure
MH 2008	5.75	-2.95	-0.66	48	Circular Structure
MH 2010	6.05	-4.45	-0.66	48	Circular Structure
MH 2011	7.05	-3.25	-0.66	48	Circular Structure
MH 2013	6.92	-1.98	0.19	48	Circular Structure
MH 2016	6.25	-2.35	-0.06	48	Circular Structure
MH 2018	5.96	-3.04	-0.86	48	Circular Structure
MH 2019	5.97	-4.53	-1.15	48	Circular Structure
MH 2020	6.21	-4.29	-1.15	48	Circular Structure
MH 2021	5.91	-1.49	0.83	48	Circular Structure
MH 2024	5.12	-2.08	0.27	48	Circular Structure
MH 3002	5.78	-3.92	-1.32	48	Circular Structure
MH 3005	5.61	-4.59	-1.64	48	Circular Structure
MH 3016	6.14	-0.96	1.14	48	Circular Structure
MH 3017	6.19	-1.31	1	48	Circular Structure
MH 4040	5.96	-4.77	-1.15	48	Circular Structure
MH 4044	5	-2.75	-0.56	48	Circular Structure
MH 4046A	5.83	-2.91	-0.7	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**-6.78**		

Manholes Drainage System 5 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2005	6.45	-1.95	0.41	48	Circular Structure
MH 2006	5.82	-2.58	-0.05	48	Circular Structure
MH 2008	5.75	-2.95	-0.66	48	Circular Structure
MH 2010	6.05	-4.45	-0.69	48	Circular Structure
MH 2011	7.05	-3.25	-0.7	48	Circular Structure
MH 2013	6.92	-1.98	0.15	48	Circular Structure
MH 2016	6.25	-2.35	-0.14	48	Circular Structure
MH 2018	5.96	-3.04	-0.95	48	Circular Structure
MH 2019	5.97	-4.53	-4.41	48	Circular Structure
MH 2020	6.21	-4.29	-2.13	48	Circular Structure
MH 2021	5.91	-1.49	0.71	48	Circular Structure
MH 2024	5.12	-2.08	-0.05	48	Circular Structure
MH 3002	5.78	-3.92	-1.38	48	Circular Structure
MH 3005	5.61	-4.59	-1.97	48	Circular Structure
MH 3016	6.14	-0.96	1.14	48	Circular Structure
MH 3017	6.19	-1.31	0.89	48	Circular Structure
MH 4040	5.96	-4.77	-2.38	48	Circular Structure
MH 4044	5	-2.75	-2.75	48	Circular Structure
MH 4046A	5.83	-2.91	-2.91	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**-17.87**		

Manholes Drainage System 5 Existing 10 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2005	6.45	-1.95	1.03	48	Circular Structure
MH 2006	5.82	-2.58	0.89	48	Circular Structure
MH 2008	5.75	-2.95	0.83	48	Circular Structure
MH 2010	6.05	-4.45	0.79	48	Circular Structure
MH 2011	7.05	-3.25	0.8	48	Circular Structure
MH 2013	6.92	-1.98	0.82	48	Circular Structure
MH 2016	6.25	-2.35	0.31	48	Circular Structure
MH 2018	5.96	-3.04	-0.59	48	Circular Structure
MH 2019	5.97	-4.53	-0.84	48	Circular Structure
MH 2020	6.21	-4.29	-0.85	48	Circular Structure
MH 2021	5.91	-1.49	1.17	48	Circular Structure
MH 2024	5.12	-2.08	0.7	48	Circular Structure
MH 3002	5.78	-3.92	0.33	48	Circular Structure
MH 3005	5.61	-4.59	-0.11	48	Circular Structure
MH 3016	6.14	-0.96	1.26	48	Circular Structure
MH 3017	6.19	-1.31	1.28	48	Circular Structure
MH 4040	5.96	-4.77	-0.85	48	Circular Structure
MH 4044	5	-2.75	-0.25	48	Circular Structure
MH 4046A	5.83	-2.91	-0.37	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**6.35**		

Manholes Drainage System 5 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2005	6.45	-1.95	1.03	48	Circular Structure
MH 2006	5.82	-2.58	0.89	48	Circular Structure
MH 2008	5.75	-2.95	0.83	48	Circular Structure
MH 2010	6.05	-4.45	0.79	48	Circular Structure
MH 2011	7.05	-3.25	0.81	48	Circular Structure
MH 2013	6.92	-1.98	0.83	48	Circular Structure
MH 2016	6.25	-2.35	0.31	48	Circular Structure
MH 2018	5.96	-3.04	-0.59	48	Circular Structure
MH 2019	5.97	-4.53	-0.84	48	Circular Structure
MH 2020	6.21	-4.29	-0.85	48	Circular Structure
MH 2021	5.91	-1.49	1.17	48	Circular Structure
MH 2024	5.12	-2.08	0.7	48	Circular Structure
MH 3002	5.78	-3.92	0.34	48	Circular Structure
MH 3005	5.61	-4.59	-0.11	48	Circular Structure
MH 3016	6.14	-0.96	1.26	48	Circular Structure
MH 3017	6.19	-1.31	1.28	48	Circular Structure
MH 4040	5.96	-4.77	-0.85	48	Circular Structure
MH 4044	5	-2.75	-0.25	48	Circular Structure
MH 4046A	5.83	-2.91	-0.37	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**6.38**		

Manholes Drainage System 5 Existing 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2005	6.45	-1.95	1.9	48	Circular Structure
MH 2006	5.82	-2.58	1.89	48	Circular Structure
MH 2008	5.75	-2.95	1.89	48	Circular Structure
MH 2010	6.05	-4.45	1.89	48	Circular Structure
MH 2011	7.05	-3.25	1.89	48	Circular Structure
MH 2013	6.92	-1.98	1.89	48	Circular Structure
MH 2016	6.25	-2.35	1.86	48	Circular Structure
MH 2018	5.96	-3.04	1.86	48	Circular Structure
MH 2019	5.97	-4.53	1.86	48	Circular Structure
MH 2020	6.21	-4.29	1.86	48	Circular Structure
MH 2021	5.91	-1.49	1.86	48	Circular Structure
MH 2024	5.12	-2.08	1.86	48	Circular Structure
MH 3002	5.78	-3.92	1.88	48	Circular Structure
MH 3005	5.61	-4.59	1.86	48	Circular Structure
MH 3016	6.14	-0.96	1.86	48	Circular Structure
MH 3017	6.19	-1.31	1.86	48	Circular Structure
MH 4040	5.96	-4.77	1.86	48	Circular Structure
MH 4044	5	-2.75	1.86	48	Circular Structure
MH 4046A	5.83	-2.91	1.86	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**35.55**		

Manholes Drainage System 5 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2005	6.45	-1.95	0.41	48	Circular Structure
MH 2006	5.82	-2.58	-0.05	48	Circular Structure
MH 2008	5.75	-2.95	-0.66	48	Circular Structure
MH 2010	6.05	-4.45	-0.69	48	Circular Structure
MH 2011	7.05	-3.25	-0.7	48	Circular Structure
MH 2013	6.92	-1.98	0.15	48	Circular Structure
MH 2016	6.25	-2.35	-0.14	48	Circular Structure
MH 2018	5.96	-3.04	-0.95	48	Circular Structure
MH 2019	5.97	-4.53	-4.41	48	Circular Structure
MH 2020	6.21	-4.29	-2.13	48	Circular Structure
MH 2021	5.91	-1.49	0.71	48	Circular Structure
MH 2024	5.12	-2.08	-0.05	48	Circular Structure
MH 3002	5.78	-3.92	-1.36	48	Circular Structure
MH 3005	5.61	-4.59	-2.01	48	Circular Structure
MH 3016	6.14	-0.96	1.14	48	Circular Structure
MH 3017	6.19	-1.31	0.89	48	Circular Structure
MH 4040	5.96	-4.77	-2.38	48	Circular Structure
MH 4044	5	-2.75	-2.75	48	Circular Structure
MH 4046A	5.83	-2.91	-2.91	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**-17.89**		

Manholes Drainage System 5 Existing 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2005	6.45	-1.95	2.78	48	Circular Structure
MH 2006	5.82	-2.58	2.73	48	Circular Structure
MH 2008	5.75	-2.95	2.69	48	Circular Structure
MH 2010	6.05	-4.45	2.63	48	Circular Structure
MH 2011	7.05	-3.25	2.63	48	Circular Structure
MH 2013	6.92	-1.98	2.64	48	Circular Structure
MH 2016	6.25	-2.35	1.91	48	Circular Structure
MH 2018	5.96	-3.04	1.87	48	Circular Structure
MH 2019	5.97	-4.53	1.88	48	Circular Structure
MH 2020	6.21	-4.29	1.87	48	Circular Structure
MH 2021	5.91	-1.49	1.91	48	Circular Structure
MH 2024	5.12	-2.08	1.9	48	Circular Structure
MH 3002	5.78	-3.92	2.52	48	Circular Structure
MH 3005	5.61	-4.59	2.06	48	Circular Structure
MH 3016	6.14	-0.96	1.92	48	Circular Structure
MH 3017	6.19	-1.31	1.91	48	Circular Structure
MH 4040	5.96	-4.77	1.86	48	Circular Structure
MH 4044	5	-2.75	1.88	48	Circular Structure
MH 4046A	5.83	-2.91	1.88	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**41.47**		

Manholes Drainage System 5 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2005	6.45	-1.95	2.79	48	Circular Structure
MH 2006	5.82	-2.58	2.72	48	Circular Structure
MH 2008	5.75	-2.95	2.69	48	Circular Structure
MH 2010	6.05	-4.45	2.63	48	Circular Structure
MH 2011	7.05	-3.25	2.63	48	Circular Structure
MH 2013	6.92	-1.98	2.67	48	Circular Structure
MH 2016	6.25	-2.35	1.05	48	Circular Structure
MH 2018	5.96	-3.04	0.97	48	Circular Structure
MH 2019	5.97	-4.53	1	48	Circular Structure
MH 2020	6.21	-4.29	0.99	48	Circular Structure
MH 2021	5.91	-1.49	2	48	Circular Structure
MH 2024	5.12	-2.08	1.98	48	Circular Structure
MH 3002	5.78	-3.92	2.52	48	Circular Structure
MH 3005	5.61	-4.59	2.06	48	Circular Structure
MH 3016	6.14	-0.96	1.95	48	Circular Structure
MH 3017	6.19	-1.31	2.09	48	Circular Structure
MH 4040	5.96	-4.77	0.93	48	Circular Structure
MH 4044	5	-2.75	1.91	48	Circular Structure
MH 4046A	5.83	-2.91	1.93	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**37.51**		

Manholes Drainage System 5 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2005	6.45	-1.95	2.99	48	Circular Structure
MH 2006	5.82	-2.58	2.99	48	Circular Structure
MH 2008	5.75	-2.95	2.99	48	Circular Structure
MH 2010	6.05	-4.45	2.99	48	Circular Structure
MH 2011	7.05	-3.25	2.99	48	Circular Structure
MH 2013	6.92	-1.98	2.99	48	Circular Structure
MH 2016	6.25	-2.35	2.97	48	Circular Structure
MH 2018	5.96	-3.04	2.97	48	Circular Structure
MH 2019	5.97	-4.53	2.97	48	Circular Structure
MH 2020	6.21	-4.29	2.97	48	Circular Structure
MH 2021	5.91	-1.49	2.97	48	Circular Structure
MH 2024	5.12	-2.08	2.97	48	Circular Structure
MH 3002	5.78	-3.92	2.99	48	Circular Structure
MH 3005	5.61	-4.59	2.97	48	Circular Structure
MH 3016	6.14	-0.96	2.97	48	Circular Structure
MH 3017	6.19	-1.31	2.97	48	Circular Structure
MH 4040	5.96	-4.77	2.97	48	Circular Structure
MH 4044	5	-2.75	2.97	48	Circular Structure
MH 4046A	5.83	-2.91	2.97	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**56.57**		

Manholes Drainage System 5 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2005	6.45	-1.95	0.43	48	Circular Structure
MH 2006	5.82	-2.58	0.17	48	Circular Structure
MH 2008	5.75	-2.95	0.19	48	Circular Structure
MH 2010	6.05	-4.45	0.2	48	Circular Structure
MH 2011	7.05	-3.25	0.22	48	Circular Structure
MH 2013	6.92	-1.98	0.17	48	Circular Structure
MH 2016	6.25	-2.35	-0.05	48	Circular Structure
MH 2018	5.96	-3.04	-0.84	48	Circular Structure
MH 2019	5.97	-4.53	-1.63	48	Circular Structure
MH 2020	6.21	-4.29	-1.62	48	Circular Structure
MH 2021	5.91	-1.49	0.84	48	Circular Structure
MH 2024	5.12	-2.08	0.3	48	Circular Structure
MH 3002	5.78	-3.92	0.2	48	Circular Structure
MH 3005	5.61	-4.59	0.19	48	Circular Structure
MH 3016	6.14	-0.96	1.13	48	Circular Structure
MH 3017	6.19	-1.31	1	48	Circular Structure
MH 4040	5.96	-4.77	-1.6	48	Circular Structure
MH 4044	5	-2.75	-0.39	48	Circular Structure
MH 4046A	5.83	-2.91	-0.39	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**-1.48**		

Manholes Drainage System 5 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2005	6.45	-1.95	3.22	48	Circular Structure
MH 2006	5.82	-2.58	3.28	48	Circular Structure
MH 2008	5.75	-2.95	3.29	48	Circular Structure
MH 2010	6.05	-4.45	3.29	48	Circular Structure
MH 2011	7.05	-3.25	3.3	48	Circular Structure
MH 2013	6.92	-1.98	3.31	48	Circular Structure
MH 2016	6.25	-2.35	3.01	48	Circular Structure
MH 2018	5.96	-3.04	2.98	48	Circular Structure
MH 2019	5.97	-4.53	3.01	48	Circular Structure
MH 2020	6.21	-4.29	2.94	48	Circular Structure
MH 2021	5.91	-1.49	3.01	48	Circular Structure
MH 2024	5.12	-2.08	3.01	48	Circular Structure
MH 3002	5.78	-3.92	3.25	48	Circular Structure
MH 3005	5.61	-4.59	3.06	48	Circular Structure
MH 3016	6.14	-0.96	3.02	48	Circular Structure
MH 3017	6.19	-1.31	3.01	48	Circular Structure
MH 4040	5.96	-4.77	2.97	48	Circular Structure
MH 4044	5	-2.75	2.95	48	Circular Structure
MH 4046A	5.83	-2.91	2.99	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**58.9**		

Manholes Drainage System 5 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 2005	6.45	-1.95	3.22	48	Circular Structure
MH 2006	5.82	-2.58	3.26	48	Circular Structure
MH 2008	5.75	-2.95	3.26	48	Circular Structure
MH 2010	6.05	-4.45	3.29	48	Circular Structure
MH 2011	7.05	-3.25	3.27	48	Circular Structure
MH 2013	6.92	-1.98	3.29	48	Circular Structure
MH 2016	6.25	-2.35	1.05	48	Circular Structure
MH 2018	5.96	-3.04	0.97	48	Circular Structure
MH 2019	5.97	-4.53	0.95	48	Circular Structure
MH 2020	6.21	-4.29	0.99	48	Circular Structure
MH 2021	5.91	-1.49	2.11	48	Circular Structure
MH 2024	5.12	-2.08	2.11	48	Circular Structure
MH 3002	5.78	-3.92	3.23	48	Circular Structure
MH 3005	5.61	-4.59	3.05	48	Circular Structure
MH 3016	6.14	-0.96	2.03	48	Circular Structure
MH 3017	6.19	-1.31	2.25	48	Circular Structure
MH 4040	5.96	-4.77	0.93	48	Circular Structure
MH 4044	5	-2.75	2.12	48	Circular Structure
MH 4046A	5.83	-2.91	2.11	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**43.49**		

Catch Basin Drainage System 6 Existing 2 Yr. Low Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1013	On Grade	5.42	0.39	2.49	0.03	0.03	0
CB 1014	In Sag	4.35	-0.78	1.34	0.02	0.02	(N/A)
CB 1015	On Grade	4.73	-0.7	1.35	0.03	0.03	0
CB 1016A	On Grade	6	-1	1.44	0.76	0.73	0.03
CB 1016B	In Sag	6	0	2.39	0.57	0.57	(N/A)
CB 1017	On Grade	5.62	-2.51	0.18	0.04	0.04	0
CB 1018	On Grade	5	-0.33	1.74	0.07	0.07	0
CB 1019A	On Grade	5.8	-1.44	0.84	0.33	0.32	0.01
CB 1020	In Sag	4.35	-0.98	1.13	0.04	0.04	(N/A)
CB 1021	On Grade	5.46	-0.49	1.63	0.04	0.04	0
CB 1040	On Grade	6.02	0.69	2.8	0.05	0.05	0
CB 1042	On Grade	5.88	0.45	2.52	0.03	0.03	0
CB 1043	On Grade	6.1	-3.03	-0.36	0.03	0.03	0
CB 1044	In Sag	5.58	0.35	2.65	0.07	0.07	(N/A)
CB 1045A	On Grade	6.9	-1.75	0.49	0.92	0.88	0.04
CB 1045B	In Sag	6.8	0.8	3.22	0.66	0.66	(N/A)
CB 1046	On Grade	6.3	0.67	2.82	0.1	0.09	0.01
CB 1048	On Grade	5.91	0.28	2.71	0.08	0.07	0
CB 1050	On Grade	5.97	0.64	2.71	0.09	0.08	0.01
CB 1051	In Sag	5.38	-1.05	1.35	0.05	0.05	(N/A)
CB 1053	On Grade	5.95	0.62	2.66	0.03	0.03	0
CB 1055	On Grade	6.14	1.01	2.85	0.02	0.02	0
CB 1056	On Grade	6.01	0.08	2.13	0.03	0.03	0
CB 1057	In Sag	5.71	0.08	2.2	0.05	0.05	(N/A)
CB 1059	In Sag	4.93	-1.2	0.98	0.07	0.07	(N/A)
CB 1061	In Sag	5.01	-0.42	1.67	0.09	0.09	(N/A)
CB 1063	In Sag	5.81	0.08	2.25	0.04	0.04	(N/A)
CB 1063A	In Sag	6.9	1.1	3.39	0.49	0.49	(N/A)
CB 1064	On Grade	6.13	0.8	2.81	0.03	0.03	0
CB 1067	On Grade	6.08	0.55	2.2	0.02	0.02	0
CB 1068	On Grade	6.17	0.64	2.6	0.02	0.02	0
CB 1070	In Sag	5.35	-0.98	1.36	0.04	0.04	(N/A)
CB 1072	On Grade	6.37	0.23	2.53	0.63	0.61	0.02
CB 1074	On Grade	5.93	0.9	3.16	0.03	0.03	0
CB 1074A	In Sag	6.8	1	3.44	0.84	0.84	(N/A)
CB 1074B	In Sag	7.8	1.75	4.11	0.53	0.53	(N/A)
CB 1077	On Grade	6.14	1.01	3.05	0.03	0.03	0
CB 1079	On Grade	6.38	0.95	3.16	0.05	0.04	0
CB 1080	On Grade	5.65	-1.58	0.48	0.04	0.04	0
CB 1083	In Sag	5.22	-0.71	1.9	0.08	0.08	(N/A)
CB 1084	In Sag	5.43	-1	1.9	0.08	0.08	(N/A)
CB 2002A	In Sag	5.9	0	2.31	0.3	0.3	(N/A)
CB 2003A	In Sag	5.9	-0.4	2.03	0.3	0.3	(N/A)
CB 2003B	In Sag	5.9	-0.2	2.14	0.45	0.45	(N/A)
			Summation of Hydraulic Grade Line Elevations (ft)	**92.75**			

Catch Basin Drainage System 6 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1013	On Grade	5.42	0.39	2.49	0.03	0.03	0
CB 1014	In Sag	4.35	-0.78	1.26	0.02	0.02	(N/A)
CB 1015	On Grade	4.73	-0.7	1.35	0.03	0.03	0
CB 1016A	On Grade	6	-1	1.44	0.76	0.73	0.03
CB 1016B	In Sag	6	0	2.39	0.57	0.57	(N/A)
CB 1017	On Grade	5.62	-2.51	0.16	0.04	0.04	0
CB 1018	On Grade	5	-0.33	1.74	0.07	0.07	0
CB 1019A	On Grade	5.8	-1.44	0.84	0.33	0.32	0.01
CB 1020	In Sag	4.35	-0.98	1.13	0.04	0.04	(N/A)
CB 1021	On Grade	5.46	-0.49	1.62	0.04	0.04	0
CB 1040	On Grade	6.02	0.69	2.8	0.05	0.05	0
CB 1042	On Grade	5.88	0.45	2.52	0.03	0.03	0
CB 1043	On Grade	6.1	-3.03	-0.39	0.03	0.03	0
CB 1044	In Sag	5.58	0.35	2.65	0.07	0.07	(N/A)
CB 1045A	On Grade	6.9	-1.75	0.49	0.92	0.88	0.04
CB 1045B	In Sag	6.8	0.8	3.22	0.66	0.66	(N/A)
CB 1046	On Grade	6.3	0.67	2.82	0.1	0.09	0.01
CB 1048	On Grade	5.91	0.28	2.71	0.08	0.07	0
CB 1050	On Grade	5.97	0.64	2.71	0.09	0.08	0.01
CB 1051	In Sag	5.38	-1.05	1.27	0.05	0.05	(N/A)
CB 1053	On Grade	5.95	0.62	2.66	0.03	0.03	0
CB 1055	On Grade	6.14	1.01	2.85	0.02	0.02	0
CB 1056	On Grade	6.01	0.08	2.13	0.03	0.03	0
CB 1057	In Sag	5.71	0.08	2.2	0.05	0.05	(N/A)
CB 1059	In Sag	4.93	-1.2	0.88	0.07	0.07	(N/A)
CB 1061	In Sag	5.01	-0.42	1.67	0.09	0.09	(N/A)
CB 1063	In Sag	5.81	0.08	2.25	0.04	0.04	(N/A)
CB 1063A	In Sag	6.9	1.1	3.39	0.49	0.49	(N/A)
CB 1064	On Grade	6.13	0.8	2.81	0.03	0.03	0
CB 1067	On Grade	6.08	0.55	2.2	0.02	0.02	0
CB 1068	On Grade	6.17	0.64	2.6	0.02	0.02	0
CB 1070	In Sag	5.35	-0.98	1.26	0.04	0.04	(N/A)
CB 1072	On Grade	6.37	0.23	2.53	0.63	0.61	0.02
CB 1074	On Grade	5.93	0.9	3.16	0.03	0.03	0
CB 1074A	In Sag	6.8	1	3.44	0.84	0.84	(N/A)
CB 1074B	In Sag	7.8	1.75	4.11	0.53	0.53	(N/A)
CB 1077	On Grade	6.14	1.01	3.05	0.03	0.03	0
CB 1079	On Grade	6.38	0.95	3.16	0.05	0.04	0
CB 1080	On Grade	5.65	-1.58	0.48	0.04	0.04	0
CB 1083	In Sag	5.22	-0.71	1.81	0.08	0.08	(N/A)
CB 1084	In Sag	5.43	-1	1.82	0.08	0.08	(N/A)
CB 2002A	In Sag	5.9	0	2.31	0.3	0.3	(N/A)
CB 2003A	In Sag	5.9	-0.4	2.03	0.3	0.3	(N/A)
CB 2003B	In Sag	5.9	-0.2	2.14	0.45	0.45	(N/A)
		Summation of Hydraulic Grade Line Elevations (ft)		**92.16**			

Catch Basin Drainage System 6 Existing 10 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1013	On Grade	5.42	0.39	2.57	0.13	0.11	0.02
CB 1014	In Sag	4.35	-0.78	1.81	0.1	0.1	(N/A)
CB 1015	On Grade	4.73	-0.7	1.81	0.13	0.1	0.02
CB 1016A	On Grade	6	-1	2.18	4.74	4.08	0.66
CB 1016B	In Sag	6	0	3.4	4.11	4.11	(N/A)
CB 1017	On Grade	5.62	-2.51	1.33	0.2	0.14	0.05
CB 1018	On Grade	5	-0.33	1.8	0.35	0.21	0.14
CB 1019A	On Grade	5.8	-1.44	1.67	1.89	1.74	0.15
CB 1020	In Sag	4.35	-0.98	1.65	0.17	0.17	(N/A)
CB 1021	On Grade	5.46	-0.49	1.74	0.18	0.13	0.04
CB 1040	On Grade	6.02	0.69	2.89	0.27	0.18	0.09
CB 1042	On Grade	5.88	0.45	2.61	0.17	0.13	0.04
CB 1043	On Grade	6.1	-3.03	0.76	0.15	0.12	0.03
CB 1044	In Sag	5.58	0.35	2.9	0.41	0.41	(N/A)
CB 1045A	On Grade	6.9	-1.75	0.84	4.97	4.26	0.71
CB 1045B	In Sag	6.8	0.8	4.26	4.46	4.45	(N/A)
CB 1046	On Grade	6.3	0.67	3.2	0.52	0.28	0.24
CB 1048	On Grade	5.91	0.28	3.19	0.31	0.2	0.11
CB 1050	On Grade	5.97	0.64	2.75	0.38	0.23	0.15
CB 1051	In Sag	5.38	-1.05	2.46	0.24	0.24	(N/A)
CB 1053	On Grade	5.95	0.62	3.95	0.11	0.1	0.02
CB 1055	On Grade	6.14	1.01	3.14	0.09	0.08	0.01
CB 1056	On Grade	6.01	0.08	2.17	0.12	0.1	0.02
CB 1057	In Sag	5.71	0.08	2.31	0.24	0.24	(N/A)
CB 1059	In Sag	4.93	-1.2	2.32	0.32	0.32	(N/A)
CB 1061	In Sag	5.01	-0.42	2.33	0.45	0.45	(N/A)
CB 1063	In Sag	5.81	0.08	2.68	0.17	0.17	(N/A)
CB 1063A	In Sag	6.9	1.1	3.97	3.69	3.69	(N/A)
CB 1064	On Grade	6.13	0.8	2.87	0.11	0.09	0.02
CB 1067	On Grade	6.08	0.55	2.63	0.08	0.08	0.01
CB 1068	On Grade	6.17	0.64	2.72	0.11	0.09	0.02
CB 1070	In Sag	5.35	-0.98	2.46	0.15	0.15	(N/A)
CB 1072	On Grade	6.37	0.23	2.97	4.34	3.76	0.58
CB 1074	On Grade	5.93	0.9	3.99	0.1	0.09	0.01
CB 1074A	In Sag	6.8	1	4.34	4.9	4.89	(N/A)
CB 1074B	In Sag	7.8	1.75	5.09	3.89	3.89	(N/A)
CB 1077	On Grade	6.14	1.01	3.07	0.11	0.1	0.02
CB 1079	On Grade	6.38	0.95	3.26	0.23	0.16	0.07
CB 1080	On Grade	5.65	-1.58	0.76	0.15	0.12	0.03
CB 1083	In Sag	5.22	-0.71	3.33	0.38	0.38	(N/A)
CB 1084	In Sag	5.43	-1	3.32	0.38	0.38	(N/A)
CB 2002A	In Sag	5.9	0	3.25	2.33	2.32	(N/A)
CB 2003A	In Sag	5.9	-0.4	3.8	2.35	2.35	(N/A)
CB 2003B	In Sag	5.9	-0.2	4.05	3.02	3.01	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**120.6**			

Catch Basin Drainage System 6 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1013	On Grade	5.42	0.39	2.57	0.13	0.11	0.02
CB 1014	In Sag	4.35	-0.78	1.81	0.1	0.1	(N/A)
CB 1015	On Grade	4.73	-0.7	1.81	0.13	0.1	0.02
CB 1016A	On Grade	6	-1	2.18	4.74	4.08	0.66
CB 1016B	In Sag	6	0	3.4	4.11	4.11	(N/A)
CB 1017	On Grade	5.62	-2.51	1.33	0.2	0.14	0.05
CB 1018	On Grade	5	-0.33	1.8	0.35	0.21	0.14
CB 1019A	On Grade	5.8	-1.44	1.67	1.89	1.74	0.15
CB 1020	In Sag	4.35	-0.98	1.65	0.17	0.17	(N/A)
CB 1021	On Grade	5.46	-0.49	1.74	0.18	0.13	0.04
CB 1040	On Grade	6.02	0.69	2.89	0.27	0.18	0.09
CB 1042	On Grade	5.88	0.45	2.61	0.17	0.13	0.04
CB 1043	On Grade	6.1	-3.03	0.76	0.15	0.12	0.03
CB 1044	In Sag	5.58	0.35	2.9	0.41	0.41	(N/A)
CB 1045A	On Grade	6.9	-1.75	0.84	4.97	4.26	0.71
CB 1045B	In Sag	6.8	0.8	4.26	4.46	4.45	(N/A)
CB 1046	On Grade	6.3	0.67	3.2	0.52	0.28	0.24
CB 1048	On Grade	5.91	0.28	3.19	0.31	0.2	0.11
CB 1050	On Grade	5.97	0.64	2.75	0.38	0.23	0.15
CB 1051	In Sag	5.38	-1.05	2.46	0.24	0.24	(N/A)
CB 1053	On Grade	5.95	0.62	3.95	0.11	0.1	0.02
CB 1055	On Grade	6.14	1.01	3.14	0.09	0.08	0.01
CB 1056	On Grade	6.01	0.08	2.17	0.12	0.1	0.02
CB 1057	In Sag	5.71	0.08	2.31	0.24	0.24	(N/A)
CB 1059	In Sag	4.93	-1.2	2.33	0.32	0.32	(N/A)
CB 1061	In Sag	5.01	-0.42	2.49	0.45	0.45	(N/A)
CB 1063	In Sag	5.81	0.08	2.68	0.17	0.17	(N/A)
CB 1063A	In Sag	6.9	1.1	3.97	3.69	3.69	(N/A)
CB 1064	On Grade	6.13	0.8	2.87	0.11	0.09	0.02
CB 1067	On Grade	6.08	0.55	2.63	0.08	0.08	0.01
CB 1068	On Grade	6.17	0.64	2.72	0.11	0.09	0.02
CB 1070	In Sag	5.35	-0.98	2.46	0.15	0.15	(N/A)
CB 1072	On Grade	6.37	0.23	2.97	4.34	3.76	0.58
CB 1074	On Grade	5.93	0.9	3.99	0.1	0.09	0.01
CB 1074A	In Sag	6.8	1	4.34	4.9	4.89	(N/A)
CB 1074B	In Sag	7.8	1.75	5.09	3.89	3.89	(N/A)
CB 1077	On Grade	6.14	1.01	3.07	0.11	0.1	0.02
CB 1079	On Grade	6.38	0.95	3.26	0.23	0.16	0.07
CB 1080	On Grade	5.65	-1.58	0.76	0.15	0.12	0.03
CB 1083	In Sag	5.22	-0.71	3.33	0.38	0.38	(N/A)
CB 1084	In Sag	5.43	-1	3.32	0.38	0.38	(N/A)
CB 2002A	In Sag	5.9	0	3.25	2.33	2.32	(N/A)
CB 2003A	In Sag	5.9	-0.4	3.8	2.35	2.35	(N/A)
CB 2003B	In Sag	5.9	-0.2	4.05	3.02	3.01	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**120.77**			

Catch Basin Drainage System 6 Existing 2 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1013	On Grade	5.42	0.39	2.49	0.03	0.03	0
CB 1014	In Sag	4.35	-0.78	1.93	0.02	0.02	(N/A)
CB 1015	On Grade	4.73	-0.7	1.93	0.03	0.03	0
CB 1016A	On Grade	6	-1	1.93	0.76	0.73	0.03
CB 1016B	In Sag	6	0	2.38	0.57	0.57	(N/A)
CB 1017	On Grade	5.62	-2.51	1.91	0.04	0.04	0
CB 1018	On Grade	5	-0.33	1.91	0.07	0.07	0
CB 1019A	On Grade	5.8	-1.44	1.92	0.33	0.32	0.01
CB 1020	In Sag	4.35	-0.98	1.92	0.04	0.04	(N/A)
CB 1021	On Grade	5.46	-0.49	1.93	0.04	0.04	0
CB 1040	On Grade	6.02	0.69	2.8	0.05	0.05	0
CB 1042	On Grade	5.88	0.45	2.52	0.03	0.03	0
CB 1043	On Grade	6.1	-3.03	1.88	0.03	0.03	0
CB 1044	In Sag	5.58	0.35	2.65	0.07	0.07	(N/A)
CB 1045A	On Grade	6.9	-1.75	1.86	0.92	0.88	0.04
CB 1045B	In Sag	6.8	0.8	3.23	0.66	0.66	(N/A)
CB 1046	On Grade	6.3	0.67	2.82	0.1	0.09	0.01
CB 1048	On Grade	5.91	0.28	2.72	0.08	0.07	0
CB 1050	On Grade	5.97	0.64	2.71	0.09	0.08	0.01
CB 1051	In Sag	5.38	-1.05	2.29	0.05	0.05	(N/A)
CB 1053	On Grade	5.95	0.62	2.66	0.03	0.03	0
CB 1055	On Grade	6.14	1.01	2.85	0.02	0.02	0
CB 1056	On Grade	6.01	0.08	2.13	0.03	0.03	0
CB 1057	In Sag	5.71	0.08	2.2	0.05	0.05	(N/A)
CB 1059	In Sag	4.93	-1.2	1.89	0.07	0.07	(N/A)
CB 1061	In Sag	5.01	-0.42	1.89	0.09	0.09	(N/A)
CB 1063	In Sag	5.81	0.08	2.25	0.04	0.04	(N/A)
CB 1063A	In Sag	6.9	1.1	3.39	0.49	0.49	(N/A)
CB 1064	On Grade	6.13	0.8	2.81	0.03	0.03	0
CB 1067	On Grade	6.08	0.55	2.21	0.02	0.02	0
CB 1068	On Grade	6.17	0.64	2.6	0.02	0.02	0
CB 1070	In Sag	5.35	-0.98	2.29	0.04	0.04	(N/A)
CB 1072	On Grade	6.37	0.23	2.53	0.63	0.61	0.02
CB 1074	On Grade	5.93	0.9	3.16	0.03	0.03	0
CB 1074A	In Sag	6.8	1	3.44	0.84	0.84	(N/A)
CB 1074B	In Sag	7.8	1.75	4.11	0.53	0.53	(N/A)
CB 1077	On Grade	6.14	1.01	3.05	0.03	0.03	0
CB 1079	On Grade	6.38	0.95	3.16	0.05	0.04	0
CB 1080	On Grade	5.65	-1.58	1.88	0.04	0.04	0
CB 1083	In Sag	5.22	-0.71	1.92	0.08	0.08	(N/A)
CB 1084	In Sag	5.43	-1	1.92	0.08	0.08	(N/A)
CB 2002A	In Sag	5.9	0	2.31	0.3	0.3	(N/A)
CB 2003A	In Sag	5.9	-0.4	2.04	0.3	0.3	(N/A)
CB 2003B	In Sag	5.9	-0.2	2.14	0.45	0.45	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**106.56**			

Catch Basin Drainage System 6 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1013	On Grade	5.42	0.39	2.49	0.03	0.03	0
CB 1014	In Sag	4.35	-0.78	1.26	0.02	0.02	(N/A)
CB 1015	On Grade	4.73	-0.7	1.35	0.03	0.03	0
CB 1016A	On Grade	6	-1	1.44	0.76	0.73	0.03
CB 1016B	In Sag	6	0	2.39	0.57	0.57	(N/A)
CB 1017	On Grade	5.62	-2.51	0.16	0.04	0.04	0
CB 1018	On Grade	5	-0.33	1.74	0.07	0.07	0
CB 1019A	On Grade	5.8	-1.44	0.84	0.33	0.32	0.01
CB 1020	In Sag	4.35	-0.98	1.13	0.04	0.04	(N/A)
CB 1021	On Grade	5.46	-0.49	1.62	0.04	0.04	0
CB 1040	On Grade	6.02	0.69	2.8	0.05	0.05	0
CB 1042	On Grade	5.88	0.45	2.52	0.03	0.03	0
CB 1043	On Grade	6.1	-3.03	-0.3	0.03	0.03	0
CB 1044	In Sag	5.58	0.35	2.65	0.07	0.07	(N/A)
CB 1045A	On Grade	6.9	-1.75	0.49	0.92	0.88	0.04
CB 1045B	In Sag	6.8	0.8	3.22	0.66	0.66	(N/A)
CB 1046	On Grade	6.3	0.67	2.82	0.1	0.09	0.01
CB 1048	On Grade	5.91	0.28	2.71	0.08	0.07	0
CB 1050	On Grade	5.97	0.64	2.71	0.09	0.08	0.01
CB 1051	In Sag	5.38	-1.05	1.27	0.05	0.05	(N/A)
CB 1053	On Grade	5.95	0.62	2.66	0.03	0.03	0
CB 1055	On Grade	6.14	1.01	2.85	0.02	0.02	0
CB 1056	On Grade	6.01	0.08	2.13	0.03	0.03	0
CB 1057	In Sag	5.71	0.08	2.2	0.05	0.05	(N/A)
CB 1059	In Sag	4.93	-1.2	0.88	0.07	0.07	(N/A)
CB 1061	In Sag	5.01	-0.42	1.67	0.09	0.09	(N/A)
CB 1063	In Sag	5.81	0.08	2.25	0.04	0.04	(N/A)
CB 1063A	In Sag	6.9	1.1	3.39	0.49	0.49	(N/A)
CB 1064	On Grade	6.13	0.8	2.81	0.03	0.03	0
CB 1067	On Grade	6.08	0.55	2.2	0.02	0.02	0
CB 1068	On Grade	6.17	0.64	2.6	0.02	0.02	0
CB 1070	In Sag	5.35	-0.98	1.26	0.04	0.04	(N/A)
CB 1072	On Grade	6.37	0.23	2.53	0.63	0.61	0.02
CB 1074	On Grade	5.93	0.9	3.16	0.03	0.03	0
CB 1074A	In Sag	6.8	1	3.44	0.84	0.84	(N/A)
CB 1074B	In Sag	7.8	1.75	4.11	0.53	0.53	(N/A)
CB 1077	On Grade	6.14	1.01	3.05	0.03	0.03	0
CB 1079	On Grade	6.38	0.95	3.16	0.05	0.04	0
CB 1080	On Grade	5.65	-1.58	0.48	0.04	0.04	0
CB 1083	In Sag	5.22	-0.71	1.81	0.08	0.08	(N/A)
CB 1084	In Sag	5.43	-1	1.82	0.08	0.08	(N/A)
CB 2002A	In Sag	5.9	0	2.31	0.3	0.3	(N/A)
CB 2003A	In Sag	5.9	-0.4	2.03	0.3	0.3	(N/A)
CB 2003B	In Sag	5.9	-0.2	2.14	0.45	0.45	(N/A)
			Summation of Hydraulic Grade Line Elevations (ft)	**92.25**			

Catch Basin Drainage System 6 Existing 10 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1013	On Grade	5.42	0.39	3.4	0.13	0.11	0.02
CB 1014	In Sag	4.35	-0.78	3.55	0.1	0.1	(N/A)
CB 1015	On Grade	4.73	-0.7	3.55	0.13	0.1	0.02
CB 1016A	On Grade	6	-1	3.49	4.74	4.08	0.66
CB 1016B	In Sag	6	0	8.5	4.11	0	(N/A)
CB 1017	On Grade	5.62	-2.51	2.99	0.2	0.14	0.05
CB 1018	On Grade	5	-0.33	2.99	0.35	0.21	0.14
CB 1019A	On Grade	5.8	-1.44	3.42	1.89	1.74	0.15
CB 1020	In Sag	4.35	-0.98	3.43	0.17	0.17	(N/A)
CB 1021	On Grade	5.46	-0.49	3.4	0.18	0.13	0.04
CB 1040	On Grade	6.02	0.69	2.89	0.27	0.18	0.09
CB 1042	On Grade	5.88	0.45	2.61	0.17	0.13	0.04
CB 1043	On Grade	6.1	-3.03	2.36	0.15	0.12	0.03
CB 1044	In Sag	5.58	0.35	2.9	0.41	0.41	(N/A)
CB 1045A	On Grade	6.9	-1.75	1.92	4.97	4.26	0.71
CB 1045B	In Sag	6.8	0.8	4.26	4.46	4.45	(N/A)
CB 1046	On Grade	6.3	0.67	3.2	0.52	0.28	0.24
CB 1048	On Grade	5.91	0.28	3.19	0.31	0.2	0.11
CB 1050	On Grade	5.97	0.64	2.75	0.38	0.23	0.15
CB 1051	In Sag	5.38	-1.05	2.54	0.24	0.24	(N/A)
CB 1053	On Grade	5.95	0.62	3.95	0.11	0.1	0.02
CB 1055	On Grade	6.14	1.01	3.14	0.09	0.08	0.01
CB 1056	On Grade	6.01	0.08	2.17	0.12	0.1	0.02
CB 1057	In Sag	5.71	0.08	2.31	0.24	0.24	(N/A)
CB 1059	In Sag	4.93	-1.2	2.65	0.32	0.32	(N/A)
CB 1061	In Sag	5.01	-0.42	2.64	0.45	0.45	(N/A)
CB 1063	In Sag	5.81	0.08	2.53	0.17	0.17	(N/A)
CB 1063A	In Sag	6.9	1.1	3.97	3.69	3.69	(N/A)
CB 1064	On Grade	6.13	0.8	2.87	0.11	0.09	0.02
CB 1067	On Grade	6.08	0.55	2.63	0.08	0.08	0.01
CB 1068	On Grade	6.17	0.64	2.72	0.11	0.09	0.02
CB 1070	In Sag	5.35	-0.98	2.54	0.15	0.15	(N/A)
CB 1072	On Grade	6.37	0.23	2.97	4.34	3.76	0.58
CB 1074	On Grade	5.93	0.9	3.99	0.1	0.09	0.01
CB 1074A	In Sag	6.8	1	4.34	4.9	4.89	(N/A)
CB 1074B	In Sag	7.8	1.75	5.09	3.89	3.89	(N/A)
CB 1077	On Grade	6.14	1.01	3.07	0.11	0.1	0.02
CB 1079	On Grade	6.38	0.95	3.26	0.23	0.16	0.07
CB 1080	On Grade	5.65	-1.58	2.36	0.15	0.12	0.03
CB 1083	In Sag	5.22	-0.71	3.68	0.38	0.38	(N/A)
CB 1084	In Sag	5.43	-1	3.7	0.38	0.38	(N/A)
CB 2002A	In Sag	5.9	0	3.65	2.33	2.32	(N/A)
CB 2003A	In Sag	5.9	-0.4	4.18	2.35	2.35	(N/A)
CB 2003B	In Sag	5.9	-0.2	4.46	3.02	3.01	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**146.21**			

Catch Basin Drainage System 6 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1013	On Grade	5.42	0.39	3.27	0.13	0.11	0.02
CB 1014	In Sag	4.35	-0.78	3.3	0.1	0.1	(N/A)
CB 1015	On Grade	4.73	-0.7	3.31	0.13	0.1	0.02
CB 1016A	On Grade	6	-1	3.3	4.74	4.08	0.66
CB 1016B	In Sag	6	0	8.46	4.11	0	(N/A)
CB 1017	On Grade	5.62	-2.51	3.02	0.2	0.14	0.05
CB 1018	On Grade	5	-0.33	3.07	0.35	0.21	0.14
CB 1019A	On Grade	5.8	-1.44	3.22	1.89	1.74	0.15
CB 1020	In Sag	4.35	-0.98	3.26	0.17	0.17	(N/A)
CB 1021	On Grade	5.46	-0.49	3.3	0.18	0.13	0.04
CB 1040	On Grade	6.02	0.69	2.89	0.27	0.18	0.09
CB 1042	On Grade	5.88	0.45	2.61	0.17	0.13	0.04
CB 1043	On Grade	6.1	-3.03	2.33	0.15	0.12	0.03
CB 1044	In Sag	5.58	0.35	2.9	0.41	0.41	(N/A)
CB 1045A	On Grade	6.9	-1.75	1.88	4.97	4.26	0.71
CB 1045B	In Sag	6.8	0.8	4.26	4.46	4.45	(N/A)
CB 1046	On Grade	6.3	0.67	3.2	0.52	0.28	0.24
CB 1048	On Grade	5.91	0.28	3.19	0.31	0.2	0.11
CB 1050	On Grade	5.97	0.64	2.75	0.38	0.23	0.15
CB 1051	In Sag	5.38	-1.05	2.54	0.24	0.24	(N/A)
CB 1053	On Grade	5.95	0.62	3.95	0.11	0.1	0.02
CB 1055	On Grade	6.14	1.01	3.14	0.09	0.08	0.01
CB 1056	On Grade	6.01	0.08	2.17	0.12	0.1	0.02
CB 1057	In Sag	5.71	0.08	2.31	0.24	0.24	(N/A)
CB 1059	In Sag	4.93	-1.2	2.63	0.32	0.32	(N/A)
CB 1061	In Sag	5.01	-0.42	2.61	0.45	0.45	(N/A)
CB 1063	In Sag	5.81	0.08	2.53	0.17	0.17	(N/A)
CB 1063A	In Sag	6.9	1.1	3.97	3.69	3.69	(N/A)
CB 1064	On Grade	6.13	0.8	2.87	0.11	0.09	0.02
CB 1067	On Grade	6.08	0.55	2.63	0.08	0.08	0.01
CB 1068	On Grade	6.17	0.64	2.72	0.11	0.09	0.02
CB 1070	In Sag	5.35	-0.98	2.53	0.15	0.15	(N/A)
CB 1072	On Grade	6.37	0.23	2.97	4.34	3.76	0.58
CB 1074	On Grade	5.93	0.9	3.99	0.1	0.09	0.01
CB 1074A	In Sag	6.8	1	4.34	4.9	4.89	(N/A)
CB 1074B	In Sag	7.8	1.75	5.09	3.89	3.89	(N/A)
CB 1077	On Grade	6.14	1.01	3.07	0.11	0.1	0.02
CB 1079	On Grade	6.38	0.95	3.26	0.23	0.16	0.07
CB 1080	On Grade	5.65	-1.58	2.3	0.15	0.12	0.03
CB 1083	In Sag	5.22	-0.71	3.68	0.38	0.38	(N/A)
CB 1084	In Sag	5.43	-1	3.69	0.38	0.38	(N/A)
CB 2002A	In Sag	5.9	0	3.63	2.33	2.32	(N/A)
CB 2003A	In Sag	5.9	-0.4	4.16	2.35	2.35	(N/A)
CB 2003B	In Sag	5.9	-0.2	4.42	3.02	3.01	(N/A)
			Summation of Hydraulic Grade Line Elevations (ft)	144.72			

Catch Basin Drainage System 6 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1013	On Grade	5.42	0.39	3.03	0.03	0.03	0
CB 1014	In Sag	4.35	-0.78	3.03	0.02	0.02	(N/A)
CB 1015	On Grade	4.73	-0.7	3.03	0.03	0.03	0
CB 1016A	On Grade	6	-1	3.03	0.76	0.73	0.03
CB 1016B	In Sag	6	0	3.06	0.57	0.57	(N/A)
CB 1017	On Grade	5.62	-2.51	3.01	0.04	0.04	0
CB 1018	On Grade	5	-0.33	3.01	0.07	0.07	0
CB 1019A	On Grade	5.8	-1.44	3.03	0.33	0.32	0.01
CB 1020	In Sag	4.35	-0.98	3.03	0.04	0.04	(N/A)
CB 1021	On Grade	5.46	-0.49	3.03	0.04	0.04	0
CB 1040	On Grade	6.02	0.69	3	0.05	0.05	0
CB 1042	On Grade	5.88	0.45	3	0.03	0.03	0
CB 1043	On Grade	6.1	-3.03	2.99	0.03	0.03	0
CB 1044	In Sag	5.58	0.35	3	0.07	0.07	(N/A)
CB 1045A	On Grade	6.9	-1.75	2.97	0.92	0.88	0.04
CB 1045B	In Sag	6.8	0.8	3.21	0.66	0.66	(N/A)
CB 1046	On Grade	6.3	0.67	3.12	0.1	0.09	0.01
CB 1048	On Grade	5.91	0.28	3.12	0.08	0.07	0
CB 1050	On Grade	5.97	0.64	2.99	0.09	0.08	0.01
CB 1051	In Sag	5.38	-1.05	3	0.05	0.05	(N/A)
CB 1053	On Grade	5.95	0.62	2.66	0.03	0.03	0
CB 1055	On Grade	6.14	1.01	3.08	0.02	0.02	0
CB 1056	On Grade	6.01	0.08	3	0.03	0.03	0
CB 1057	In Sag	5.71	0.08	2.99	0.05	0.05	(N/A)
CB 1059	In Sag	4.93	-1.2	3.01	0.07	0.07	(N/A)
CB 1061	In Sag	5.01	-0.42	3.01	0.09	0.09	(N/A)
CB 1063	In Sag	5.81	0.08	2.99	0.04	0.04	(N/A)
CB 1063A	In Sag	6.9	1.1	3.39	0.49	0.49	(N/A)
CB 1064	On Grade	6.13	0.8	3	0.03	0.03	0
CB 1067	On Grade	6.08	0.55	3	0.02	0.02	0
CB 1068	On Grade	6.17	0.64	3	0.02	0.02	0
CB 1070	In Sag	5.35	-0.98	3	0.04	0.04	(N/A)
CB 1072	On Grade	6.37	0.23	3	0.63	0.61	0.02
CB 1074	On Grade	5.93	0.9	3.15	0.03	0.03	0
CB 1074A	In Sag	6.8	1	3.44	0.84	0.84	(N/A)
CB 1074B	In Sag	7.8	1.75	4.11	0.53	0.53	(N/A)
CB 1077	On Grade	6.14	1.01	3.05	0.03	0.03	0
CB 1079	On Grade	6.38	0.95	3.16	0.05	0.04	0
CB 1080	On Grade	5.65	-1.58	2.99	0.04	0.04	0
CB 1083	In Sag	5.22	-0.71	3.04	0.08	0.08	(N/A)
CB 1084	In Sag	5.43	-1	3.04	0.08	0.08	(N/A)
CB 2002A	In Sag	5.9	0	3.03	0.3	0.3	(N/A)
CB 2003A	In Sag	5.9	-0.4	3.05	0.3	0.3	(N/A)
CB 2003B	In Sag	5.9	-0.2	3.05	0.45	0.45	(N/A)
		Summation of Hydraulic Grade Line Elevations (ft)		**134.93**			

Catch Basin Drainage System 6 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1013	On Grade	5.42	0.39	2.49	0.03	0.03	0
CB 1014	In Sag	4.35	-0.78	1.26	0.02	0.02	(N/A)
CB 1015	On Grade	4.73	-0.7	1.35	0.03	0.03	0
CB 1016A	On Grade	6	-1	1.44	0.76	0.73	0.03
CB 1016B	In Sag	6	0	2.39	0.57	0.57	(N/A)
CB 1017	On Grade	5.62	-2.51	0.16	0.04	0.04	0
CB 1018	On Grade	5	-0.33	1.74	0.07	0.07	0
CB 1019A	On Grade	5.8	-1.44	0.84	0.33	0.32	0.01
CB 1020	In Sag	4.35	-0.98	1.13	0.04	0.04	(N/A)
CB 1021	On Grade	5.46	-0.49	1.62	0.04	0.04	0
CB 1040	On Grade	6.02	0.69	2.8	0.05	0.05	0
CB 1042	On Grade	5.88	0.45	2.52	0.03	0.03	0
CB 1043	On Grade	6.1	-3.03	-0.3	0.03	0.03	0
CB 1044	In Sag	5.58	0.35	2.65	0.07	0.07	(N/A)
CB 1045A	On Grade	6.9	-1.75	0.49	0.92	0.88	0.04
CB 1045B	In Sag	6.8	0.8	3.22	0.66	0.66	(N/A)
CB 1046	On Grade	6.3	0.67	2.82	0.1	0.09	0.01
CB 1048	On Grade	5.91	0.28	2.71	0.08	0.07	0
CB 1050	On Grade	5.97	0.64	2.71	0.09	0.08	0.01
CB 1051	In Sag	5.38	-1.05	1.27	0.05	0.05	(N/A)
CB 1053	On Grade	5.95	0.62	2.66	0.03	0.03	0
CB 1055	On Grade	6.14	1.01	2.85	0.02	0.02	0
CB 1056	On Grade	6.01	0.08	2.13	0.03	0.03	0
CB 1057	In Sag	5.71	0.08	2.2	0.05	0.05	(N/A)
CB 1059	In Sag	4.93	-1.2	0.88	0.07	0.07	(N/A)
CB 1061	In Sag	5.01	-0.42	1.67	0.09	0.09	(N/A)
CB 1063	In Sag	5.81	0.08	2.25	0.04	0.04	(N/A)
CB 1063A	In Sag	6.9	1.1	3.39	0.49	0.49	(N/A)
CB 1064	On Grade	6.13	0.8	2.81	0.03	0.03	0
CB 1067	On Grade	6.08	0.55	2.2	0.02	0.02	0
CB 1068	On Grade	6.17	0.64	2.6	0.02	0.02	0
CB 1070	In Sag	5.35	-0.98	1.26	0.04	0.04	(N/A)
CB 1072	On Grade	6.37	0.23	2.53	0.63	0.61	0.02
CB 1074	On Grade	5.93	0.9	3.16	0.03	0.03	0
CB 1074A	In Sag	6.8	1	3.44	0.84	0.84	(N/A)
CB 1074B	In Sag	7.8	1.75	4.11	0.53	0.53	(N/A)
CB 1077	On Grade	6.14	1.01	3.05	0.03	0.03	0
CB 1079	On Grade	6.38	0.95	3.16	0.05	0.04	0
CB 1080	On Grade	5.65	-1.58	0.48	0.04	0.04	0
CB 1083	In Sag	5.22	-0.71	1.81	0.08	0.08	(N/A)
CB 1084	In Sag	5.43	-1	1.82	0.08	0.08	(N/A)
CB 2002A	In Sag	5.9	0	2.31	0.3	0.3	(N/A)
CB 2003A	In Sag	5.9	-0.4	2.03	0.3	0.3	(N/A)
CB 2003B	In Sag	5.9	-0.2	2.14	0.45	0.45	(N/A)
		Summation of Hydraulic Grade Line Elevations (ft)		**92.25**			

Catch Basin Drainage System 6 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	Inlet Location	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Local Surface) (cfs)	Flow (Captured) (cfs)	Flow (Bypassed) (cfs)
CB 1013	On Grade	5.42	0.39	4.18	0.13	0.11	0.02
CB 1014	In Sag	4.35	-0.78	2.72	2.22	-2.12	(N/A)
CB 1015	On Grade	4.73	-0.7	4.74	0.13	0.1	0.02
CB 1016A	On Grade	6	-1	4.42	4.74	4.08	0.66
CB 1016B	In Sag	6	0	14.17	4.11	0	(N/A)
CB 1017	On Grade	5.62	-2.51	4.18	0.2	0.14	0.05
CB 1018	On Grade	5	-0.33	4.11	0.35	0.21	0.14
CB 1019A	On Grade	5.8	-1.44	4.7	1.89	1.74	0.15
CB 1020	In Sag	4.35	-0.98	6.01	0.17	0.84	(N/A)
CB 1021	On Grade	5.46	-0.49	4.3	0.18	0.13	0.04
CB 1040	On Grade	6.02	0.69	3.59	0.27	0.18	0.09
CB 1042	On Grade	5.88	0.45	3.62	0.17	0.13	0.04
CB 1043	On Grade	6.1	-3.03	3.46	0.15	0.12	0.03
CB 1044	In Sag	5.58	0.35	3.5	0.41	0.41	(N/A)
CB 1045A	On Grade	6.9	-1.75	3.07	4.97	4.26	0.71
CB 1045B	In Sag	6.8	0.8	4.29	4.46	4.45	(N/A)
CB 1046	On Grade	6.3	0.67	3.61	0.52	0.28	0.24
CB 1048	On Grade	5.91	0.28	3.63	0.31	0.2	0.11
CB 1050	On Grade	5.97	0.64	3.52	0.38	0.23	0.15
CB 1051	In Sag	5.38	-1.05	3.67	0.24	0.24	(N/A)
CB 1053	On Grade	5.95	0.62	3.95	0.11	0.1	0.02
CB 1055	On Grade	6.14	1.01	3.31	0.09	0.08	0.01
CB 1056	On Grade	6.01	0.08	3.31	0.12	0.1	0.02
CB 1057	In Sag	5.71	0.08	3.27	0.24	0.24	(N/A)
CB 1059	In Sag	4.93	-1.2	3.83	0.32	0.32	(N/A)
CB 1061	In Sag	5.01	-0.42	3.85	0.45	0.45	(N/A)
CB 1063	In Sag	5.81	0.08	3.31	0.17	0.17	(N/A)
CB 1063A	In Sag	6.9	1.1	3.97	3.69	3.69	(N/A)
CB 1064	On Grade	6.13	0.8	3.26	0.11	0.09	0.02
CB 1067	On Grade	6.08	0.55	3.32	0.08	0.08	0.01
CB 1068	On Grade	6.17	0.64	3.32	0.11	0.09	0.02
CB 1070	In Sag	5.35	-0.98	3.68	0.15	0.15	(N/A)
CB 1072	On Grade	6.37	0.23	3.69	4.34	3.76	0.58
CB 1074	On Grade	5.93	0.9	3.62	0.1	0.09	0.01
CB 1074A	In Sag	6.8	1	4.34	4.9	4.89	(N/A)
CB 1074B	In Sag	7.8	1.75	5.09	3.89	3.89	(N/A)
CB 1077	On Grade	6.14	1.01	3.24	0.11	0.1	0.02
CB 1079	On Grade	6.38	0.95	3.62	0.23	0.16	0.07
CB 1080	On Grade	5.65	-1.58	3.46	0.15	0.12	0.03
CB 1083	In Sag	5.22	-0.71	4.89	0.38	0.38	(N/A)
CB 1084	In Sag	5.43	-1	4.89	0.38	0.38	(N/A)
CB 2002A	In Sag	5.9	0	4.82	2.33	2.32	(N/A)
CB 2003A	In Sag	5.9	-0.4	5.37	2.35	2.35	(N/A)
CB 2003B	In Sag	5.9	-0.2	5.64	3.02	3.01	(N/A)
			Summation of Hydraulic Grade Line Elevations (ft)	**184.54**			

Catch Basin Drainage System 6 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1013	On Grade	5.42	0.39	4.35	0.13	0.11	0.02
CB 1014	In Sag	4.35	-0.78	3.18	0.1	1.06	(N/A)
CB 1015	On Grade	4.73	-0.7	4.73	0.13	0.1	0.02
CB 1016A	On Grade	6	-1	4.81	4.74	4.08	0.66
CB 1016B	In Sag	6	0	8.67	4.11	0	(N/A)
CB 1017	On Grade	5.62	-2.51	3.94	0.2	0.14	0.05
CB 1018	On Grade	5	-0.33	3.9	0.35	0.21	0.14
CB 1019A	On Grade	5.8	-1.44	4.55	1.89	1.74	0.15
CB 1020	In Sag	4.35	-0.98	2.68	0.17	0	(N/A)
CB 1021	On Grade	5.46	-0.49	4.38	0.18	0.13	0.04
CB 1040	On Grade	6.02	0.69	3.6	0.27	0.18	0.09
CB 1042	On Grade	5.88	0.45	3.54	0.17	0.13	0.04
CB 1043	On Grade	6.1	-3.03	3.4	0.15	0.12	0.03
CB 1044	In Sag	5.58	0.35	3.56	0.41	0.41	(N/A)
CB 1045A	On Grade	6.9	-1.75	3.07	4.97	4.26	0.71
CB 1045B	In Sag	6.8	0.8	4.29	4.46	4.45	(N/A)
CB 1046	On Grade	6.3	0.67	3.69	0.52	0.28	0.24
CB 1048	On Grade	5.91	0.28	3.59	0.31	0.2	0.11
CB 1050	On Grade	5.97	0.64	3.46	0.38	0.23	0.15
CB 1051	In Sag	5.38	-1.05	3.68	0.24	0.24	(N/A)
CB 1053	On Grade	5.95	0.62	3.95	0.11	0.1	0.02
CB 1055	On Grade	6.14	1.01	3.27	0.09	0.08	0.01
CB 1056	On Grade	6.01	0.08	3.28	0.12	0.1	0.02
CB 1057	In Sag	5.71	0.08	3.22	0.24	0.24	(N/A)
CB 1059	In Sag	4.93	-1.2	3.56	0.32	0.32	(N/A)
CB 1061	In Sag	5.01	-0.42	3.56	0.45	0.45	(N/A)
CB 1063	In Sag	5.81	0.08	3.17	0.17	0.17	(N/A)
CB 1063A	In Sag	6.9	1.1	3.97	3.69	3.69	(N/A)
CB 1064	On Grade	6.13	0.8	3.26	0.11	0.09	0.02
CB 1067	On Grade	6.08	0.55	3.26	0.08	0.08	0.01
CB 1068	On Grade	6.17	0.64	3.25	0.11	0.09	0.02
CB 1070	In Sag	5.35	-0.98	3.69	0.15	0.15	(N/A)
CB 1072	On Grade	6.37	0.23	3.7	4.34	3.76	0.58
CB 1074	On Grade	5.93	0.9	3.62	0.1	0.09	0.01
CB 1074A	In Sag	6.8	1	4.34	4.9	4.89	(N/A)
CB 1074B	In Sag	7.8	1.75	5.09	3.89	3.89	(N/A)
CB 1077	On Grade	6.14	1.01	3.71	0.11	0.1	0.02
CB 1079	On Grade	6.38	0.95	3.59	0.23	0.16	0.07
CB 1080	On Grade	5.65	-1.58	3.38	0.15	0.12	0.03
CB 1083	In Sag	5.22	-0.71	2.55	0.38	0	(N/A)
CB 1084	In Sag	5.43	-1	4.92	0.38	0.47	(N/A)
CB 2002A	In Sag	5.9	0	3.25	2.33	0	(N/A)
CB 2003A	In Sag	5.9	-0.4	3.55	2.35	6.16	(N/A)
CB 2003B	In Sag	5.9	-0.2	3.1	3.02	3.72	(N/A)
Summation of Hydraulic Grade Line Elevations (ft)				**167.31**			

Manholes Drainage System 6 Existing 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1016	5.18	-1.92	0.78	48	Circular Structure
MH 1019	5	-1.9	0.59	48	Circular Structure
MH 1041	6.45	-3.05	-0.23	48	Circular Structure
MH 1045	6.65	-3.25	-0.67	60	Circular Structure
MH 1047	6.32	-0.28	2.78	48	Circular Structure
MH 1049	6.35	-2.45	0.05	48	Circular Structure
MH 1052	6.33	0.03	0.24	48	Circular Structure
MH 1054	6.48	0.98	0.98	48	Circular Structure
MH 1058	6.41	-2.69	-0.12	48	Circular Structure
MH 1060	5.33	-2.27	0.99	48	Circular Structure
MH 1062	6.12	-2.13	0.21	48	Circular Structure
MH 1065	6.41	-1.99	0.45	48	Circular Structure
MH 1066	6.42	-1.68	0.67	48	Circular Structure
MH 1069	6.35	-1.05	0.95	48	Circular Structure
MH 1071	5.73	-1.17	1.14	48	Circular Structure
MH 1073	6.3	-2.3	0.28	48	Circular Structure
MH 1075	6.66	-1.34	-1.34	48	Circular Structure
MH 1076	6.35	-1.35	-1.11	48	Circular Structure
MH 1078	6.67	-0.23	0.32	48	Circular Structure
MH 1097	6.26	-2.65	-0.16	48	Circular Structure
MH 2002	5.71	-2.09	1.01	48	Circular Structure
MH 2003	5.66	-2.04	1.02	48	Circular Structure
MH 7012	6.36	-1.74	0.45	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**9.28**		

Manholes Drainage System 6 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1016	5.18	-1.92	0.78	48	Circular Structure
MH 1019	5	-1.9	0.59	48	Circular Structure
MH 1041	6.45	-3.05	-0.26	48	Circular Structure
MH 1045	6.65	-3.25	-0.71	60	Circular Structure
MH 1047	6.32	-0.28	2.77	48	Circular Structure
MH 1049	6.35	-2.45	0.05	48	Circular Structure
MH 1052	6.33	0.03	0.24	48	Circular Structure
MH 1054	6.48	0.98	0.98	48	Circular Structure
MH 1058	6.41	-2.69	-0.31	48	Circular Structure
MH 1060	5.33	-2.27	0.69	48	Circular Structure
MH 1062	6.12	-2.13	0.09	48	Circular Structure
MH 1065	6.41	-1.99	-1.83	48	Circular Structure
MH 1066	6.42	-1.68	-1.68	48	Circular Structure
MH 1069	6.35	-1.05	-1.05	48	Circular Structure
MH 1071	5.73	-1.17	1.14	48	Circular Structure
MH 1073	6.3	-2.3	0.28	48	Circular Structure
MH 1075	6.66	-1.34	-1.34	48	Circular Structure
MH 1076	6.35	-1.35	-1.11	48	Circular Structure
MH 1078	6.67	-0.23	0.32	48	Circular Structure
MH 1097	6.26	-2.65	-0.35	48	Circular Structure
MH 2002	5.71	-2.09	0.73	48	Circular Structure
MH 2003	5.66	-2.04	0.74	48	Circular Structure
MH 7012	6.36	-1.74	-1.74	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**-0.98**		

Manholes Drainage System 6 Existing 10 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1016	5.18	-1.92	1.81	48	Circular Structure
MH 1019	5	-1.9	1.65	48	Circular Structure
MH 1041	6.45	-3.05	0.95	48	Circular Structure
MH 1045	6.65	-3.25	0.32	60	Circular Structure
MH 1047	6.32	-0.28	3.19	48	Circular Structure
MH 1049	6.35	-2.45	1.03	48	Circular Structure
MH 1052	6.33	0.03	3.95	48	Circular Structure
MH 1054	6.48	0.98	3.05	48	Circular Structure
MH 1058	6.41	-2.69	0.94	48	Circular Structure
MH 1060	5.33	-2.27	2.32	48	Circular Structure
MH 1062	6.12	-2.13	0.87	48	Circular Structure
MH 1065	6.41	-1.99	0.9	48	Circular Structure
MH 1066	6.42	-1.68	0.91	48	Circular Structure
MH 1069	6.35	-1.05	1.11	48	Circular Structure
MH 1071	5.73	-1.17	1.64	48	Circular Structure
MH 1073	6.3	-2.3	1.27	48	Circular Structure
MH 1075	6.66	-1.34	2.53	48	Circular Structure
MH 1076	6.35	-1.35	2.52	48	Circular Structure
MH 1078	6.67	-0.23	2.51	48	Circular Structure
MH 1097	6.26	-2.65	0.88	48	Circular Structure
MH 2002	5.71	-2.09	3.16	48	Circular Structure
MH 2003	5.66	-2.04	3.31	48	Circular Structure
MH 7012	6.36	-1.74	0.9	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**41.72**		

Manholes Drainage System 6 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1016	5.18	-1.92	1.81	48	Circular Structure
MH 1019	5	-1.9	1.65	48	Circular Structure
MH 1041	6.45	-3.05	0.95	48	Circular Structure
MH 1045	6.65	-3.25	0.32	60	Circular Structure
MH 1047	6.32	-0.28	3.19	48	Circular Structure
MH 1049	6.35	-2.45	1.03	48	Circular Structure
MH 1052	6.33	0.03	3.95	48	Circular Structure
MH 1054	6.48	0.98	3.05	48	Circular Structure
MH 1058	6.41	-2.69	0.93	48	Circular Structure
MH 1060	5.33	-2.27	2.31	48	Circular Structure
MH 1062	6.12	-2.13	0.87	48	Circular Structure
MH 1065	6.41	-1.99	0.89	48	Circular Structure
MH 1066	6.42	-1.68	0.9	48	Circular Structure
MH 1069	6.35	-1.05	1.11	48	Circular Structure
MH 1071	5.73	-1.17	1.64	48	Circular Structure
MH 1073	6.3	-2.3	1.27	48	Circular Structure
MH 1075	6.66	-1.34	2.53	48	Circular Structure
MH 1076	6.35	-1.35	2.53	48	Circular Structure
MH 1078	6.67	-0.23	2.51	48	Circular Structure
MH 1097	6.26	-2.65	0.88	48	Circular Structure
MH 2002	5.71	-2.09	3.16	48	Circular Structure
MH 2003	5.66	-2.04	3.31	48	Circular Structure
MH 7012	6.36	-1.74	0.9	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**41.69**		

Manholes Drainage System 6 Existing 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1016	5.18	-1.92	1.93	48	Circular Structure
MH 1019	5	-1.9	1.92	48	Circular Structure
MH 1041	6.45	-3.05	1.89	48	Circular Structure
MH 1045	6.65	-3.25	1.86	60	Circular Structure
MH 1047	6.32	-0.28	2.78	48	Circular Structure
MH 1049	6.35	-2.45	1.88	48	Circular Structure
MH 1052	6.33	0.03	0.24	48	Circular Structure
MH 1054	6.48	0.98	0.98	48	Circular Structure
MH 1058	6.41	-2.69	1.87	48	Circular Structure
MH 1060	5.33	-2.27	1.89	48	Circular Structure
MH 1062	6.12	-2.13	1.87	48	Circular Structure
MH 1065	6.41	-1.99	1.87	48	Circular Structure
MH 1066	6.42	-1.68	1.87	48	Circular Structure
MH 1069	6.35	-1.05	1.87	48	Circular Structure
MH 1071	5.73	-1.17	1.89	48	Circular Structure
MH 1073	6.3	-2.3	1.88	48	Circular Structure
MH 1075	6.66	-1.34	0.84	48	Circular Structure
MH 1076	6.35	-1.35	0.83	48	Circular Structure
MH 1078	6.67	-0.23	0.32	48	Circular Structure
MH 1097	6.26	-2.65	1.87	48	Circular Structure
MH 2002	5.71	-2.09	1.91	48	Circular Structure
MH 2003	5.66	-2.04	1.92	48	Circular Structure
MH 7012	6.36	-1.74	1.87	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**38.05**		

Manholes Drainage System 6 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1016	5.18	-1.92	0.78	48	Circular Structure
MH 1019	5	-1.9	0.59	48	Circular Structure
MH 1041	6.45	-3.05	-0.22	48	Circular Structure
MH 1045	6.65	-3.25	-0.32	60	Circular Structure
MH 1047	6.32	-0.28	2.77	48	Circular Structure
MH 1049	6.35	-2.45	0.71	48	Circular Structure
MH 1052	6.33	0.03	0.24	48	Circular Structure
MH 1054	6.48	0.98	0.98	48	Circular Structure
MH 1058	6.41	-2.69	-0.33	48	Circular Structure
MH 1060	5.33	-2.27	0.69	48	Circular Structure
MH 1062	6.12	-2.13	0.09	48	Circular Structure
MH 1065	6.41	-1.99	-1.83	48	Circular Structure
MH 1066	6.42	-1.68	-1.68	48	Circular Structure
MH 1069	6.35	-1.05	-1.05	48	Circular Structure
MH 1071	5.73	-1.17	1.13	48	Circular Structure
MH 1073	6.3	-2.3	0.71	48	Circular Structure
MH 1075	6.66	-1.34	-1.34	48	Circular Structure
MH 1076	6.35	-1.35	-1.11	48	Circular Structure
MH 1078	6.67	-0.23	0.32	48	Circular Structure
MH 1097	6.26	-2.65	-0.39	48	Circular Structure
MH 2002	5.71	-2.09	0.73	48	Circular Structure
MH 2003	5.66	-2.04	0.74	48	Circular Structure
MH 7012	6.36	-1.74	-1.74	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**0.47**		

Manholes Drainage System 6 Existing 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1016	5.18	-1.92	3.51	48	Circular Structure
MH 1019	5	-1.9	3.44	48	Circular Structure
MH 1041	6.45	-3.05	2.55	48	Circular Structure
MH 1045	6.65	-3.25	1.95	60	Circular Structure
MH 1047	6.32	-0.28	3.19	48	Circular Structure
MH 1049	6.35	-2.45	2.41	48	Circular Structure
MH 1052	6.33	0.03	3.95	48	Circular Structure
MH 1054	6.48	0.98	3.05	48	Circular Structure
MH 1058	6.41	-2.69	2.13	48	Circular Structure
MH 1060	5.33	-2.27	2.64	48	Circular Structure
MH 1062	6.12	-2.13	2.14	48	Circular Structure
MH 1065	6.41	-1.99	2.14	48	Circular Structure
MH 1066	6.42	-1.68	2.14	48	Circular Structure
MH 1069	6.35	-1.05	2.15	48	Circular Structure
MH 1071	5.73	-1.17	2.53	48	Circular Structure
MH 1073	6.3	-2.3	2.48	48	Circular Structure
MH 1075	6.66	-1.34	2.57	48	Circular Structure
MH 1076	6.35	-1.35	2.57	48	Circular Structure
MH 1078	6.67	-0.23	2.57	48	Circular Structure
MH 1097	6.26	-2.65	2.12	48	Circular Structure
MH 2002	5.71	-2.09	3.54	48	Circular Structure
MH 2003	5.66	-2.04	3.7	48	Circular Structure
MH 7012	6.36	-1.74	2.14	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**61.61**		

Manholes Drainage System 6 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1016	5.18	-1.92	3.3	48	Circular Structure
MH 1019	5	-1.9	3.28	48	Circular Structure
MH 1041	6.45	-3.05	2.57	48	Circular Structure
MH 1045	6.65	-3.25	1.95	60	Circular Structure
MH 1047	6.32	-0.28	3.19	48	Circular Structure
MH 1049	6.35	-2.45	2.4	48	Circular Structure
MH 1052	6.33	0.03	3.95	48	Circular Structure
MH 1054	6.48	0.98	3.05	48	Circular Structure
MH 1058	6.41	-2.69	2.11	48	Circular Structure
MH 1060	5.33	-2.27	2.63	48	Circular Structure
MH 1062	6.12	-2.13	2.12	48	Circular Structure
MH 1065	6.41	-1.99	2.09	48	Circular Structure
MH 1066	6.42	-1.68	2.07	48	Circular Structure
MH 1069	6.35	-1.05	2.11	48	Circular Structure
MH 1071	5.73	-1.17	2.52	48	Circular Structure
MH 1073	6.3	-2.3	2.47	48	Circular Structure
MH 1075	6.66	-1.34	2.54	48	Circular Structure
MH 1076	6.35	-1.35	2.53	48	Circular Structure
MH 1078	6.67	-0.23	2.51	48	Circular Structure
MH 1097	6.26	-2.65	2.1	48	Circular Structure
MH 2002	5.71	-2.09	3.53	48	Circular Structure
MH 2003	5.66	-2.04	3.68	48	Circular Structure
MH 7012	6.36	-1.74	2.09	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**60.79**		

Manholes Drainage System 6 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1016	5.18	-1.92	3.03	48	Circular Structure
MH 1019	5	-1.9	3.03	48	Circular Structure
MH 1041	6.45	-3.05	3	48	Circular Structure
MH 1045	6.65	-3.25	2.97	60	Circular Structure
MH 1047	6.32	-0.28	3.12	48	Circular Structure
MH 1049	6.35	-2.45	2.99	48	Circular Structure
MH 1052	6.33	0.03	0.56	48	Circular Structure
MH 1054	6.48	0.98	3.02	48	Circular Structure
MH 1058	6.41	-2.69	2.99	48	Circular Structure
MH 1060	5.33	-2.27	3.01	48	Circular Structure
MH 1062	6.12	-2.13	2.99	48	Circular Structure
MH 1065	6.41	-1.99	3	48	Circular Structure
MH 1066	6.42	-1.68	3	48	Circular Structure
MH 1069	6.35	-1.05	3	48	Circular Structure
MH 1071	5.73	-1.17	3	48	Circular Structure
MH 1073	6.3	-2.3	3	48	Circular Structure
MH 1075	6.66	-1.34	3	48	Circular Structure
MH 1076	6.35	-1.35	3	48	Circular Structure
MH 1078	6.67	-0.23	3	48	Circular Structure
MH 1097	6.26	-2.65	2.99	48	Circular Structure
MH 2002	5.71	-2.09	3.03	48	Circular Structure
MH 2003	5.66	-2.04	3.03	48	Circular Structure
MH 7012	6.36	-1.74	3	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**66.76**		

Manholes Drainage System 6 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1016	5.18	-1.92	0.78	48	Circular Structure
MH 1019	5	-1.9	0.59	48	Circular Structure
MH 1041	6.45	-3.05	-0.22	48	Circular Structure
MH 1045	6.65	-3.25	-0.32	60	Circular Structure
MH 1047	6.32	-0.28	2.77	48	Circular Structure
MH 1049	6.35	-2.45	0.71	48	Circular Structure
MH 1052	6.33	0.03	0.24	48	Circular Structure
MH 1054	6.48	0.98	0.98	48	Circular Structure
MH 1058	6.41	-2.69	-0.33	48	Circular Structure
MH 1060	5.33	-2.27	0.69	48	Circular Structure
MH 1062	6.12	-2.13	0.09	48	Circular Structure
MH 1065	6.41	-1.99	-1.83	48	Circular Structure
MH 1066	6.42	-1.68	-1.68	48	Circular Structure
MH 1069	6.35	-1.05	-1.05	48	Circular Structure
MH 1071	5.73	-1.17	1.13	48	Circular Structure
MH 1073	6.3	-2.3	0.71	48	Circular Structure
MH 1075	6.66	-1.34	-1.34	48	Circular Structure
MH 1076	6.35	-1.35	-1.11	48	Circular Structure
MH 1078	6.67	-0.23	0.32	48	Circular Structure
MH 1097	6.26	-2.65	-0.39	48	Circular Structure
MH 2002	5.71	-2.09	0.73	48	Circular Structure
MH 2003	5.66	-2.04	0.74	48	Circular Structure
MH 7012	6.36	-1.74	-1.74	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**0.47**		

Manholes Drainage System 6 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1016	5.18	-1.92	4.79	48	Circular Structure
MH 1019	5	-1.9	4.94	48	Circular Structure
MH 1041	6.45	-3.05	3.63	48	Circular Structure
MH 1045	6.65	-3.25	3.08	60	Circular Structure
MH 1047	6.32	-0.28	3.59	48	Circular Structure
MH 1049	6.35	-2.45	3.54	48	Circular Structure
MH 1052	6.33	0.03	3.95	48	Circular Structure
MH 1054	6.48	0.98	3.31	48	Circular Structure
MH 1058	6.41	-2.69	3.31	48	Circular Structure
MH 1060	5.33	-2.27	3.84	48	Circular Structure
MH 1062	6.12	-2.13	3.31	48	Circular Structure
MH 1065	6.41	-1.99	3.32	48	Circular Structure
MH 1066	6.42	-1.68	3.32	48	Circular Structure
MH 1069	6.35	-1.05	3.32	48	Circular Structure
MH 1071	5.73	-1.17	3.68	48	Circular Structure
MH 1073	6.3	-2.3	3.62	48	Circular Structure
MH 1075	6.66	-1.34	3.63	48	Circular Structure
MH 1076	6.35	-1.35	3.64	48	Circular Structure
MH 1078	6.67	-0.23	3.61	48	Circular Structure
MH 1097	6.26	-2.65	3.27	48	Circular Structure
MH 2002	5.71	-2.09	4.73	48	Circular Structure
MH 2003	5.66	-2.04	4.92	48	Circular Structure
MH 7012	6.36	-1.74	3.32	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**85.67**		

Manholes Drainage System 6 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1016	5.18	-1.92	4.75	48	Circular Structure
MH 1019	5	-1.9	4.57	48	Circular Structure
MH 1041	6.45	-3.05	3.55	48	Circular Structure
MH 1045	6.65	-3.25	3.07	60	Circular Structure
MH 1047	6.32	-0.28	3.59	48	Circular Structure
MH 1049	6.35	-2.45	3.55	48	Circular Structure
MH 1052	6.33	0.03	3.95	48	Circular Structure
MH 1054	6.48	0.98	3.25	48	Circular Structure
MH 1058	6.41	-2.69	3.23	48	Circular Structure
MH 1060	5.33	-2.27	3.56	48	Circular Structure
MH 1062	6.12	-2.13	3.19	48	Circular Structure
MH 1065	6.41	-1.99	3.27	48	Circular Structure
MH 1066	6.42	-1.68	3.27	48	Circular Structure
MH 1069	6.35	-1.05	3.26	48	Circular Structure
MH 1071	5.73	-1.17	3.69	48	Circular Structure
MH 1073	6.3	-2.3	3.62	48	Circular Structure
MH 1075	6.66	-1.34	3.58	48	Circular Structure
MH 1076	6.35	-1.35	3.59	48	Circular Structure
MH 1078	6.67	-0.23	3.59	48	Circular Structure
MH 1097	6.26	-2.65	3.2	48	Circular Structure
MH 2002	5.71	-2.09	4.4	48	Circular Structure
MH 2003	5.66	-2.04	4.63	48	Circular Structure
MH 7012	6.36	-1.74	3.27	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**83.63**		

Catch Basin Drainage System 7 Existing 2 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1002	On Grade	6.83	1.7	3.87	0.26	0.24	0.02
CB 1003	On Grade	6.58	2.68	4.83	0.26	0.24	0.02
CB 1004	On Grade	6.53	2.2	4.34	0.19	0.19	0
CB 1005	On Grade	6.49	1.19	3.44	0.23	0.22	0.01
CB 1006	On Grade	5.98	0.65	2.95	0.2	0.19	0.01
CB 1007	In Sag	5.6	1.02	1.85	0.01	0.01	(N/A)
CB 1008	In Sag	5.74	0.53	2.68	0.07	0.07	(N/A)
CB 1009	On Grade	6.02	0.89	3.03	0.06	0.06	0
CB 1010	On Grade	5.96	1.13	3.37	0.09	0.09	0
CB 1011	On Grade	6.19	1.03	3.36	0.16	0.16	0
CB 1012	On Grade	6.68	1.07	3.32	0.25	0.23	0.01
CB 1022	On Grade	6.72	0.87	3.03	0.06	0.06	0
CB 1024	On Grade	6.22	0.93	3.34	0.1	0.1	0
CB 1026	On Grade	5.89	0.69	2.83	0.19	0.18	0
CB 1028	In Sag	5.86	0.23	2.51	0.04	0.04	(N/A)
CB 1032	In Sag	5.95	0.82	2.87	0.05	0.05	(N/A)
CB 1034	On Grade	6.09	0.56	2.93	0.16	0.16	0
CB 1036	On Grade	6.22	0.91	3.2	0.23	0.22	0.01
CB 1039	On Grade	7.24	0.94	3.12	0.16	0.16	0
CB 4004	On Grade	6.46	2.56	4.5	0.02	0.02	0
CB 4005	On Grade	6.59	2.39	4.53	0.06	0.05	0.01
CB 4006	On Grade	6.22	1.92	3.77	0.02	0.02	0
CB 4007	On Grade	6.26	1.76	3.98	0.05	0.05	0.01
CB 4008	On Grade	6.35	1.95	2.82	0.01	0.01	0
CB 4009	On Grade	5.85	1.35	3.15	0.02	0.02	0
CB 4010	On Grade	5.99	1.49	3.97	0.05	0.05	0.01
CB 4013	On Grade	5.53	0.57	3.37	0.17	0.17	0
CB 4014	On Grade	5.47	0.67	3.38	0.08	0.07	0
CB 4015	On Grade	4.93	0.5	2.67	0.01	0.01	0
CB 4016	On Grade	5.15	-2.83	-0.65	0.02	0.01	0
CB 4018/4019	On Grade	5.35	-0.99	-0.67	0.02	0.02	0
CB 4022	On Grade	4.69	-0.13	1.91	0.04	0.04	0
CB 4023	On Grade	4.74	-0.13	1.9	0.03	0.03	0
CB 4024	On Grade	4.98	-2.22	0.01	0.03	0.03	0
CB 4025	On Grade	5.18	-1.95	0.31	0.08	0.08	0
CB 4026	On Grade	5.03	0.33	2.38	0.04	0.04	0
CB 4027	On Grade	4.61	-0.09	1.99	0.03	0.03	0
CB 4028	On Grade	5.71	0.12	2.26	0.08	0.07	0
CB 4029	On Grade	4.69	-0.24	1.91	0.09	0.09	0
CB 5002	On Grade	6.3	1.43	3.55	0.06	0.06	0
CB 5004	On Grade	6.34	1.36	3.48	0.06	0.06	0
CB 5005	On Grade	6.35	1.39	3.45	0.07	0.07	0
CB 5007	On Grade	6.54	1.43	3.5	0.07	0.07	0
CB 5008	On Grade	6.57	1.43	3.59	0.09	0.09	0
CB 5010	On Grade	6.53	1.39	3.52	0.08	0.08	0
CB 5012	On Grade	6.74	0.54	2.73	0.11	0.11	0
CB 5013	On Grade	7.2	1.93	4.09	0.34	0.3	0.04
CB 5015	On Grade	7.87	1.97	4.25	0.22	0.21	0
CB 5016	On Grade	7.9	2.43	4.85	0.38	0.32	0.06
CB 5017	On Grade	8.64	2.44	4.92	0.14	0.14	0
CB 5018	On Grade	8.46	3.43	5.72	0.39	0.33	0.06
CB 5019	On Grade	7.61	2.91	5.13	0.08	0.08	0
CB 5020	On Grade	7.67	2.27	5.13	0.16	0.16	0
CB 5021	On Grade	7.82	1.92	5.13	0.25	0.25	0.01
CB 5022	On Grade	8.01	2.06	5.16	0.16	0.16	0
CB 5023	On Grade	7.85	2.15	5.16	0.23	0.22	0
CB 5024	On Grade	7.97	2.77	5.16	0.09	0.08	0
CB 5025	On Grade	5.66	-1.94	0.31	0.04	0.03	0
CB 5026	On Grade	5.27	-1.73	0.31	0.03	0.03	0
CB 5028	On Grade	5.09	-0.41	1.67	0.06	0.06	0
CB 5029	On Grade	5.71	-1.52	0.78	0.06	0.06	0
Summation of Hydraulic Grade Line Elevations (ft)				**189.95**			

Catch Basin Drainage System 7 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1002	On Grade	6.83	1.7	3.87	0.26	0.24	0.02
CB 1003	On Grade	6.58	2.68	4.83	0.26	0.24	0.02
CB 1004	On Grade	6.53	2.2	4.34	0.19	0.19	0
CB 1005	On Grade	6.49	1.19	3.44	0.23	0.22	0.01
CB 1006	On Grade	5.98	0.65	2.95	0.2	0.19	0.01
CB 1007	In Sag	5.6	1.02	1.85	0.01	0.01	(N/A)
CB 1008	In Sag	5.74	0.53	2.68	0.07	0.07	(N/A)
CB 1009	On Grade	6.02	0.89	3.03	0.06	0.06	0
CB 1010	On Grade	5.96	1.13	3.37	0.09	0.09	0
CB 1011	On Grade	6.19	1.03	3.36	0.16	0.16	0
CB 1012	On Grade	6.68	1.07	3.32	0.25	0.23	0.01
CB 1022	On Grade	6.72	0.87	3.03	0.06	0.06	0
CB 1024	On Grade	6.22	0.93	3.34	0.1	0.1	0
CB 1026	On Grade	5.89	0.69	2.83	0.19	0.18	0
CB 1028	In Sag	5.86	0.23	2.51	0.04	0.04	(N/A)
CB 1032	In Sag	5.95	0.82	2.87	0.05	0.05	(N/A)
CB 1034	On Grade	6.09	0.56	2.93	0.16	0.16	0
CB 1036	On Grade	6.22	0.91	3.2	0.23	0.22	0.01
CB 1039	On Grade	7.24	0.94	3.12	0.16	0.16	0
CB 4004	On Grade	6.46	2.56	4.5	0.02	0.02	0
CB 4005	On Grade	6.59	2.39	4.53	0.06	0.05	0.01
CB 4006	On Grade	6.22	1.92	3.77	0.02	0.02	0
CB 4007	On Grade	6.26	1.76	3.98	0.05	0.05	0.01
CB 4008	On Grade	6.35	1.95	2.82	0.01	0.01	0
CB 4009	On Grade	5.85	1.35	3.15	0.02	0.02	0
CB 4010	On Grade	5.99	1.49	3.97	0.05	0.05	0.01
CB 4013	On Grade	5.53	0.57	3.37	0.17	0.17	0
CB 4014	On Grade	5.47	0.67	3.38	0.08	0.07	0
CB 4015	On Grade	4.93	0.5	2.67	0.01	0.01	0
CB 4016	On Grade	5.15	-2.83	-0.75	0.02	0.01	0
CB 4018/4019	On Grade	5.35	-0.99	-0.86	0.02	0.02	0
CB 4022	On Grade	4.69	-0.13	1.91	0.04	0.04	0
CB 4023	On Grade	4.74	-0.13	1.9	0.03	0.03	0
CB 4024	On Grade	4.98	-2.22	-0.07	0.03	0.03	0
CB 4025	On Grade	5.18	-1.95	0.25	0.08	0.08	0
CB 4026	On Grade	5.03	0.33	2.38	0.04	0.04	0
CB 4027	On Grade	4.61	-0.09	1.99	0.03	0.03	0
CB 4028	On Grade	5.71	0.12	2.26	0.08	0.07	0
CB 4029	On Grade	4.69	-0.24	1.91	0.09	0.09	0
CB 5002	On Grade	6.3	1.43	3.55	0.06	0.06	0
CB 5004	On Grade	6.34	1.36	3.48	0.06	0.06	0
CB 5005	On Grade	6.35	1.39	3.45	0.07	0.07	0
CB 5007	On Grade	6.54	1.43	3.5	0.07	0.07	0
CB 5008	On Grade	6.57	1.43	3.59	0.09	0.09	0
CB 5010	On Grade	6.53	1.39	3.52	0.08	0.08	0
CB 5012	On Grade	6.74	0.54	2.73	0.11	0.11	0
CB 5013	On Grade	7.2	1.93	4.09	0.34	0.3	0.04
CB 5015	On Grade	7.87	1.97	4.25	0.22	0.21	0
CB 5016	On Grade	7.9	2.43	4.85	0.38	0.32	0.06
CB 5017	On Grade	8.64	2.44	4.92	0.14	0.14	0
CB 5018	On Grade	8.46	3.43	5.72	0.39	0.33	0.06
CB 5019	On Grade	7.61	2.91	5.13	0.08	0.08	0
CB 5020	On Grade	7.67	2.27	5.13	0.16	0.16	0
CB 5021	On Grade	7.82	1.92	5.13	0.25	0.25	0.01
CB 5022	On Grade	8.01	2.06	5.16	0.16	0.16	0
CB 5023	On Grade	7.85	2.15	5.16	0.23	0.22	0
CB 5024	On Grade	7.97	2.77	5.16	0.09	0.08	0
CB 5025	On Grade	5.66	-1.94	0.22	0.04	0.03	0
CB 5026	On Grade	5.27	-1.73	0.31	0.03	0.03	0
CB 5028	On Grade	5.09	-0.41	1.67	0.06	0.06	0
CB 5029	On Grade	5.71	-1.52	0.62	0.06	0.06	0
		Summation of Hydraulic Grade Line Elevations (ft)		**189.27**			

Catch Basin Drainage System 7 Existing 10 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1002	On Grade	6.83	1.7	4.15	1.57	0.79	0.79
CB 1003	On Grade	6.58	2.68	4.96	1.81	0.86	0.96
CB 1004	On Grade	6.53	2.2	4.48	1.32	0.71	0.61
CB 1005	On Grade	6.49	1.19	3.64	1.65	0.81	0.84
CB 1006	On Grade	5.98	0.65	3.24	1.4	0.73	0.66
CB 1007	In Sag	5.6	1.02	3.14	0.04	0.04	(N/A)
CB 1008	In Sag	5.74	0.53	2.87	0.46	0.46	(N/A)
CB 1009	On Grade	6.02	0.89	3.19	0.4	0.34	0.07
CB 1010	On Grade	5.96	1.13	3.66	0.57	0.42	0.14
CB 1011	On Grade	6.19	1.03	3.65	0.97	0.59	0.38
CB 1012	On Grade	6.68	1.07	3.51	1.5	0.76	0.73
CB 1022	On Grade	6.72	0.87	3.23	0.28	0.26	0.02
CB 1024	On Grade	6.22	0.93	3.61	0.5	0.39	0.11
CB 1026	On Grade	5.89	0.69	3.03	1	0.6	0.4
CB 1028	In Sag	5.86	0.23	2.74	0.18	0.18	(N/A)
CB 1032	In Sag	5.95	0.82	2.94	0.21	0.21	(N/A)
CB 1034	On Grade	6.09	0.56	3.22	0.98	0.6	0.38
CB 1036	On Grade	6.22	0.91	3.44	1.37	0.72	0.64
CB 1039	On Grade	7.24	0.94	3.36	0.98	0.87	0.11
CB 4004	On Grade	6.46	2.56	4.7	0.1	0.09	0.01
CB 4005	On Grade	6.59	2.39	4.65	0.23	0.2	0.03
CB 4006	On Grade	6.22	1.92	4.28	0.09	0.08	0.01
CB 4007	On Grade	6.26	1.76	4.23	0.22	0.19	0.03
CB 4008	On Grade	6.35	1.95	4.12	0.03	0.03	0
CB 4009	On Grade	5.85	1.35	4.01	0.07	0.07	0
CB 4010	On Grade	5.99	1.49	4.19	0.22	0.19	0.03
CB 4013	On Grade	5.53	0.57	3.94	0.84	0.54	0.3
CB 4014	On Grade	5.47	0.67	3.94	0.37	0.36	0.01
CB 4015	On Grade	4.93	0.5	3.12	0.06	0.06	0
CB 4016	On Grade	5.15	-2.83	0.34	0.06	0.05	0.01
CB 4018/4019	On Grade	5.35	-0.99	0.3	0.08	0.07	0.01
CB 4022	On Grade	4.69	-0.13	1.96	0.2	0.19	0
CB 4023	On Grade	4.74	-0.13	1.94	0.13	0.13	0
CB 4024	On Grade	4.98	-2.22	0.35	0.14	0.14	0
CB 4025	On Grade	5.18	-1.95	0.68	0.34	0.29	0.04
CB 4026	On Grade	5.03	0.33	2.44	0.17	0.17	0
CB 4027	On Grade	4.61	-0.09	2.06	0.13	0.13	0
CB 4028	On Grade	5.71	0.12	2.39	0.35	0.33	0.02
CB 4029	On Grade	4.69	-0.24	2.04	0.42	0.34	0.07
CB 5002	On Grade	6.3	1.43	3.68	0.28	0.27	0.01
CB 5004	On Grade	6.34	1.36	3.6	0.31	0.28	0.03
CB 5005	On Grade	6.35	1.39	3.52	0.34	0.3	0.04
CB 5007	On Grade	6.54	1.43	3.59	0.33	0.32	0.01
CB 5008	On Grade	6.57	1.43	3.75	0.46	0.44	0.02
CB 5010	On Grade	6.53	1.39	3.64	0.4	0.33	0.06
CB 5012	On Grade	6.74	0.54	3.08	0.67	0.62	0.05
CB 5013	On Grade	7.2	1.93	4.21	2.14	0.94	1.2
CB 5015	On Grade	7.87	1.97	4.52	1.11	0.97	0.14
CB 5016	On Grade	7.9	2.43	5.08	2.43	1.01	1.42
CB 5017	On Grade	8.64	2.44	5.35	0.67	0.62	0.05
CB 5018	On Grade	8.46	3.43	5.92	2.46	1.02	1.44
CB 5019	On Grade	7.61	2.91	6.27	0.51	0.48	0.03
CB 5020	On Grade	7.67	2.27	6.26	1.02	0.9	0.12
CB 5021	On Grade	7.82	1.92	6.26	1.47	1.24	0.23
CB 5022	On Grade	8.01	2.06	6.38	0.98	0.6	0.38
CB 5023	On Grade	7.85	2.15	6.38	1.33	1.14	0.19
CB 5024	On Grade	7.97	2.77	6.38	0.53	0.5	0.03
CB 5025	On Grade	5.66	-1.94	0.73	0.15	0.13	0.02
CB 5026	On Grade	5.27	-1.73	0.35	0.11	0.11	0
CB 5028	On Grade	5.09	-0.41	1.77	0.28	0.27	0.01
CB 5029	On Grade	5.71	-1.52	1.09	0.24	0.23	0.01
Summation of Hydraulic Grade Line Elevations (ft)				**213.55**			

Catch Basin Drainage System 7 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1002	On Grade	6.83	1.7	4.15	1.57	0.79	0.79
CB 1003	On Grade	6.58	2.68	4.96	1.81	0.86	0.96
CB 1004	On Grade	6.53	2.2	4.48	1.32	0.71	0.61
CB 1005	On Grade	6.49	1.19	3.64	1.65	0.81	0.84
CB 1006	On Grade	5.98	0.65	3.24	1.4	0.73	0.66
CB 1007	In Sag	5.6	1.02	3.14	0.04	0.04	(N/A)
CB 1008	In Sag	5.74	0.53	2.87	0.46	0.46	(N/A)
CB 1009	On Grade	6.02	0.89	3.19	0.4	0.34	0.07
CB 1010	On Grade	5.96	1.13	3.66	0.57	0.42	0.14
CB 1011	On Grade	6.19	1.03	3.65	0.97	0.59	0.38
CB 1012	On Grade	6.68	1.07	3.51	1.5	0.76	0.73
CB 1022	On Grade	6.72	0.87	3.23	0.28	0.26	0.02
CB 1024	On Grade	6.22	0.93	3.61	0.5	0.39	0.11
CB 1026	On Grade	5.89	0.69	3.03	1	0.6	0.4
CB 1028	In Sag	5.86	0.23	2.74	0.18	0.18	(N/A)
CB 1032	In Sag	5.95	0.82	2.94	0.21	0.21	(N/A)
CB 1034	On Grade	6.09	0.56	3.22	0.98	0.6	0.38
CB 1036	On Grade	6.22	0.91	3.44	1.37	0.72	0.64
CB 1039	On Grade	7.24	0.94	3.36	0.98	0.87	0.11
CB 4004	On Grade	6.46	2.56	4.7	0.1	0.09	0.01
CB 4005	On Grade	6.59	2.39	4.65	0.23	0.2	0.03
CB 4006	On Grade	6.22	1.92	4.28	0.09	0.08	0.01
CB 4007	On Grade	6.26	1.76	4.23	0.22	0.19	0.03
CB 4008	On Grade	6.35	1.95	4.12	0.03	0.03	0
CB 4009	On Grade	5.85	1.35	4.01	0.07	0.07	0
CB 4010	On Grade	5.99	1.49	4.19	0.22	0.19	0.03
CB 4013	On Grade	5.53	0.57	3.94	0.84	0.54	0.3
CB 4014	On Grade	5.47	0.67	3.94	0.37	0.36	0.01
CB 4015	On Grade	4.93	0.5	3.12	0.06	0.06	0
CB 4016	On Grade	5.15	-2.83	0.3	0.06	0.05	0.01
CB 4018/4019	On Grade	5.35	-0.99	0.26	0.08	0.07	0.01
CB 4022	On Grade	4.69	-0.13	1.96	0.2	0.19	0
CB 4023	On Grade	4.74	-0.13	1.94	0.13	0.13	0
CB 4024	On Grade	4.98	-2.22	0.36	0.14	0.14	0
CB 4025	On Grade	5.18	-1.95	0.68	0.34	0.29	0.04
CB 4026	On Grade	5.03	0.33	2.44	0.17	0.17	0
CB 4027	On Grade	4.61	-0.09	2.06	0.13	0.13	0
CB 4028	On Grade	5.71	0.12	2.39	0.35	0.33	0.02
CB 4029	On Grade	4.69	-0.24	2.04	0.42	0.34	0.07
CB 5002	On Grade	6.3	1.43	3.68	0.28	0.27	0.01
CB 5004	On Grade	6.34	1.36	3.6	0.31	0.28	0.03
CB 5005	On Grade	6.35	1.39	3.52	0.34	0.3	0.04
CB 5007	On Grade	6.54	1.43	3.59	0.33	0.32	0.01
CB 5008	On Grade	6.57	1.43	3.75	0.46	0.44	0.02
CB 5010	On Grade	6.53	1.39	3.64	0.4	0.33	0.06
CB 5012	On Grade	6.74	0.54	3.08	0.67	0.62	0.05
CB 5013	On Grade	7.2	1.93	4.21	2.14	0.94	1.2
CB 5015	On Grade	7.87	1.97	4.52	1.11	0.97	0.14
CB 5016	On Grade	7.9	2.43	5.08	2.43	1.01	1.42
CB 5017	On Grade	8.64	2.44	5.35	0.67	0.62	0.05
CB 5018	On Grade	8.46	3.43	5.92	2.46	1.02	1.44
CB 5019	On Grade	7.61	2.91	6.27	0.51	0.48	0.03
CB 5020	On Grade	7.67	2.27	6.26	1.02	0.9	0.12
CB 5021	On Grade	7.82	1.92	6.26	1.47	1.24	0.23
CB 5022	On Grade	8.01	2.06	6.38	0.98	0.6	0.38
CB 5023	On Grade	7.85	2.15	6.38	1.33	1.14	0.19
CB 5024	On Grade	7.97	2.77	6.38	0.53	0.5	0.03
CB 5025	On Grade	5.66	-1.94	0.72	0.15	0.13	0.02
CB 5026	On Grade	5.27	-1.73	0.35	0.11	0.11	0
CB 5028	On Grade	5.09	-0.41	1.77	0.28	0.27	0.01
CB 5029	On Grade	5.71	-1.52	1.09	0.24	0.23	0.01
		Summation of Hydraulic Grade Line Elevations (ft)		**213.47**			

Catch Basin Drainage System 7 Existing 2 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1002	On Grade	6.83	1.7	3.87	0.26	0.24	0.02
CB 1003	On Grade	6.58	2.68	4.83	0.26	0.24	0.02
CB 1004	On Grade	6.53	2.2	4.34	0.19	0.19	0
CB 1005	On Grade	6.49	1.19	3.44	0.23	0.22	0.01
CB 1006	On Grade	5.98	0.65	2.95	0.2	0.19	0.01
CB 1007	In Sag	5.6	1.02	1.85	0.01	0.01	(N/A)
CB 1008	In Sag	5.74	0.53	2.68	0.07	0.07	(N/A)
CB 1009	On Grade	6.02	0.89	3.03	0.06	0.06	0
CB 1010	On Grade	5.96	1.13	3.37	0.09	0.09	0
CB 1011	On Grade	6.19	1.03	3.36	0.16	0.16	0
CB 1012	On Grade	6.68	1.07	3.32	0.25	0.23	0.01
CB 1022	On Grade	6.72	0.87	3.03	0.06	0.06	0
CB 1024	On Grade	6.22	0.93	3.34	0.1	0.1	0
CB 1026	On Grade	5.89	0.69	2.83	0.19	0.18	0
CB 1028	In Sag	5.86	0.23	2.51	0.04	0.04	(N/A)
CB 1032	In Sag	5.95	0.82	2.87	0.05	0.05	(N/A)
CB 1034	On Grade	6.09	0.56	2.93	0.16	0.16	0
CB 1036	On Grade	6.22	0.91	3.2	0.23	0.22	0.01
CB 1039	On Grade	7.24	0.94	3.12	0.16	0.16	0
CB 4004	On Grade	6.46	2.56	4.5	0.02	0.02	0
CB 4005	On Grade	6.59	2.39	4.53	0.06	0.05	0.01
CB 4006	On Grade	6.22	1.92	3.77	0.02	0.02	0
CB 4007	On Grade	6.26	1.76	3.98	0.05	0.05	0.01
CB 4008	On Grade	6.35	1.95	2.82	0.01	0.01	0
CB 4009	On Grade	5.85	1.35	3.15	0.02	0.02	0
CB 4010	On Grade	5.99	1.49	3.97	0.05	0.05	0.01
CB 4013	On Grade	5.53	0.57	3.37	0.17	0.17	0
CB 4014	On Grade	5.47	0.67	3.37	0.08	0.07	0
CB 4015	On Grade	4.93	0.5	2.67	0.01	0.01	0
CB 4016	On Grade	5.15	-2.83	1.86	0.02	0.01	0
CB 4018/4019	On Grade	5.35	-0.99	1.86	0.02	0.02	0
CB 4022	On Grade	4.69	-0.13	1.91	0.04	0.04	0
CB 4023	On Grade	4.74	-0.13	1.9	0.03	0.03	0
CB 4024	On Grade	4.98	-2.22	1.86	0.03	0.03	0
CB 4025	On Grade	5.18	-1.95	1.86	0.08	0.08	0
CB 4026	On Grade	5.03	0.33	2.38	0.04	0.04	0
CB 4027	On Grade	4.61	-0.09	1.99	0.03	0.03	0
CB 4028	On Grade	5.71	0.12	2.26	0.08	0.07	0
CB 4029	On Grade	4.69	-0.24	1.91	0.09	0.09	0
CB 5002	On Grade	6.3	1.43	3.55	0.06	0.06	0
CB 5004	On Grade	6.34	1.36	3.48	0.06	0.06	0
CB 5005	On Grade	6.35	1.39	3.45	0.07	0.07	0
CB 5007	On Grade	6.54	1.43	3.5	0.07	0.07	0
CB 5008	On Grade	6.57	1.43	3.59	0.09	0.09	0
CB 5010	On Grade	6.53	1.39	3.52	0.08	0.08	0
CB 5012	On Grade	6.74	0.54	2.73	0.11	0.11	0
CB 5013	On Grade	7.2	1.93	4.09	0.34	0.3	0.04
CB 5015	On Grade	7.87	1.97	4.25	0.22	0.21	0
CB 5016	On Grade	7.9	2.43	4.85	0.38	0.32	0.06
CB 5017	On Grade	8.64	2.44	4.92	0.14	0.14	0
CB 5018	On Grade	8.46	3.43	5.72	0.39	0.33	0.06
CB 5019	On Grade	7.61	2.91	5.13	0.08	0.08	0
CB 5020	On Grade	7.67	2.27	5.13	0.16	0.16	0
CB 5021	On Grade	7.82	1.92	5.13	0.25	0.25	0.01
CB 5022	On Grade	8.01	2.06	5.16	0.16	0.16	0
CB 5023	On Grade	7.85	2.15	5.16	0.23	0.22	0
CB 5024	On Grade	7.97	2.77	5.16	0.09	0.08	0
CB 5025	On Grade	5.66	-1.94	1.87	0.04	0.03	0
CB 5026	On Grade	5.27	-1.73	1.86	0.03	0.03	0
CB 5028	On Grade	5.09	-0.41	1.86	0.06	0.06	0
CB 5029	On Grade	5.71	-1.52	1.86	0.06	0.06	0
Summation of Hydraulic Grade Line Elevations (ft)				**202.76**			

Catch Basin Drainage System 7 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1002	On Grade	6.83	1.7	3.87	0.26	0.24	0.02
CB 1003	On Grade	6.58	2.68	4.83	0.26	0.24	0.02
CB 1004	On Grade	6.53	2.2	4.34	0.19	0.19	0
CB 1005	On Grade	6.49	1.19	3.44	0.23	0.22	0.01
CB 1006	On Grade	5.98	0.65	2.95	0.2	0.19	0.01
CB 1007	In Sag	5.6	1.02	1.85	0.01	0.01	(N/A)
CB 1008	In Sag	5.74	0.53	2.68	0.07	0.07	(N/A)
CB 1009	On Grade	6.02	0.89	3.03	0.06	0.06	0
CB 1010	On Grade	5.96	1.13	3.37	0.09	0.09	0
CB 1011	On Grade	6.19	1.03	3.36	0.16	0.16	0
CB 1012	On Grade	6.68	1.07	3.32	0.25	0.23	0.01
CB 1022	On Grade	6.72	0.87	3.03	0.06	0.06	0
CB 1024	On Grade	6.22	0.93	3.34	0.1	0.1	0
CB 1026	On Grade	5.89	0.69	2.83	0.19	0.18	0
CB 1028	In Sag	5.86	0.23	2.51	0.04	0.04	(N/A)
CB 1032	In Sag	5.95	0.82	2.87	0.05	0.05	(N/A)
CB 1034	On Grade	6.09	0.56	2.93	0.16	0.16	0
CB 1036	On Grade	6.22	0.91	3.2	0.23	0.22	0.01
CB 1039	On Grade	7.24	0.94	3.12	0.16	0.16	0
CB 4004	On Grade	6.46	2.56	4.5	0.02	0.02	0
CB 4005	On Grade	6.59	2.39	4.53	0.06	0.05	0.01
CB 4006	On Grade	6.22	1.92	3.77	0.02	0.02	0
CB 4007	On Grade	6.26	1.76	3.98	0.05	0.05	0.01
CB 4008	On Grade	6.35	1.95	2.82	0.01	0.01	0
CB 4009	On Grade	5.85	1.35	3.15	0.02	0.02	0
CB 4010	On Grade	5.99	1.49	3.97	0.05	0.05	0.01
CB 4013	On Grade	5.53	0.57	3.37	0.17	0.17	0
CB 4014	On Grade	5.47	0.67	3.38	0.08	0.07	0
CB 4015	On Grade	4.93	0.5	2.67	0.01	0.01	0
CB 4016	On Grade	5.15	-2.83	-0.75	0.02	0.01	0
CB 4018/4019	On Grade	5.35	-0.99	-0.86	0.02	0.02	0
CB 4022	On Grade	4.69	-0.13	1.91	0.04	0.04	0
CB 4023	On Grade	4.74	-0.13	1.9	0.03	0.03	0
CB 4024	On Grade	4.98	-2.22	-0.07	0.03	0.03	0
CB 4025	On Grade	5.18	-1.95	0.25	0.08	0.08	0
CB 4026	On Grade	5.03	0.33	2.38	0.04	0.04	0
CB 4027	On Grade	4.61	-0.09	1.99	0.03	0.03	0
CB 4028	On Grade	5.71	0.12	2.26	0.08	0.07	0
CB 4029	On Grade	4.69	-0.24	1.91	0.09	0.09	0
CB 5002	On Grade	6.3	1.43	3.55	0.06	0.06	0
CB 5004	On Grade	6.34	1.36	3.48	0.06	0.06	0
CB 5005	On Grade	6.35	1.39	3.45	0.07	0.07	0
CB 5007	On Grade	6.54	1.43	3.5	0.07	0.07	0
CB 5008	On Grade	6.57	1.43	3.59	0.09	0.09	0
CB 5010	On Grade	6.53	1.39	3.52	0.08	0.08	0
CB 5012	On Grade	6.74	0.54	2.73	0.11	0.11	0
CB 5013	On Grade	7.2	1.93	4.09	0.34	0.3	0.04
CB 5015	On Grade	7.87	1.97	4.25	0.22	0.21	0
CB 5016	On Grade	7.9	2.43	4.85	0.38	0.32	0.06
CB 5017	On Grade	8.64	2.44	4.92	0.14	0.14	0
CB 5018	On Grade	8.46	3.43	5.72	0.39	0.33	0.06
CB 5019	On Grade	7.61	2.91	5.13	0.08	0.08	0
CB 5020	On Grade	7.67	2.27	5.13	0.16	0.16	0
CB 5021	On Grade	7.82	1.92	5.13	0.25	0.25	0.01
CB 5022	On Grade	8.01	2.06	5.16	0.16	0.16	0
CB 5023	On Grade	7.85	2.15	5.16	0.23	0.22	0
CB 5024	On Grade	7.97	2.77	5.16	0.09	0.08	0
CB 5025	On Grade	5.66	-1.94	0.22	0.04	0.03	0
CB 5026	On Grade	5.27	-1.73	0.31	0.03	0.03	0
CB 5028	On Grade	5.09	-0.41	1.67	0.06	0.06	0
CB 5029	On Grade	5.71	-1.52	0.62	0.06	0.06	0
		Summation of Hydraulic Grade Line Elevations (ft)		**189.27**			

Catch Basin Drainage System 7 Existing 10 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1002	On Grade	6.83	1.7	4.15	1.57	0.79	0.79
CB 1003	On Grade	6.58	2.68	4.96	1.81	0.86	0.96
CB 1004	On Grade	6.53	2.2	4.48	1.32	0.71	0.61
CB 1005	On Grade	6.49	1.19	3.64	1.65	0.81	0.84
CB 1006	On Grade	5.98	0.65	3.24	1.4	0.73	0.66
CB 1007	In Sag	5.6	1.02	3.14	0.04	0.04	(N/A)
CB 1008	In Sag	5.74	0.53	2.87	0.46	0.46	(N/A)
CB 1009	On Grade	6.02	0.89	3.19	0.4	0.34	0.07
CB 1010	On Grade	5.96	1.13	3.66	0.57	0.42	0.14
CB 1011	On Grade	6.19	1.03	3.65	0.97	0.59	0.38
CB 1012	On Grade	6.68	1.07	3.51	1.5	0.76	0.73
CB 1022	On Grade	6.72	0.87	3.23	0.28	0.26	0.02
CB 1024	On Grade	6.22	0.93	3.61	0.5	0.39	0.11
CB 1026	On Grade	5.89	0.69	3.03	1	0.6	0.4
CB 1028	In Sag	5.86	0.23	2.74	0.18	0.18	(N/A)
CB 1032	In Sag	5.95	0.82	2.94	0.21	0.21	(N/A)
CB 1034	On Grade	6.09	0.56	3.22	0.98	0.6	0.38
CB 1036	On Grade	6.22	0.91	3.44	1.37	0.72	0.64
CB 1039	On Grade	7.24	0.94	3.36	0.98	0.87	0.11
CB 4004	On Grade	6.46	2.56	4.7	0.1	0.09	0.01
CB 4005	On Grade	6.59	2.39	4.65	0.23	0.2	0.03
CB 4006	On Grade	6.22	1.92	4.28	0.09	0.08	0.01
CB 4007	On Grade	6.26	1.76	4.23	0.22	0.19	0.03
CB 4008	On Grade	6.35	1.95	4.12	0.03	0.03	0
CB 4009	On Grade	5.85	1.35	3.98	0.07	0.07	0
CB 4010	On Grade	5.99	1.49	4.19	0.22	0.19	0.03
CB 4013	On Grade	5.53	0.57	3.94	0.84	0.54	0.3
CB 4014	On Grade	5.47	0.67	3.94	0.37	0.36	0.01
CB 4015	On Grade	4.93	0.5	3.12	0.06	0.06	0
CB 4016	On Grade	5.15	-2.83	1.87	0.06	0.05	0.01
CB 4018/4019	On Grade	5.35	-0.99	1.87	0.08	0.07	0.01
CB 4022	On Grade	4.69	-0.13	1.96	0.2	0.19	0
CB 4023	On Grade	4.74	-0.13	1.94	0.13	0.13	0
CB 4024	On Grade	4.98	-2.22	1.88	0.14	0.14	0
CB 4025	On Grade	5.18	-1.95	1.89	0.34	0.29	0.04
CB 4026	On Grade	5.03	0.33	2.44	0.17	0.17	0
CB 4027	On Grade	4.61	-0.09	2.06	0.13	0.13	0
CB 4028	On Grade	5.71	0.12	2.39	0.35	0.33	0.02
CB 4029	On Grade	4.69	-0.24	2.04	0.42	0.34	0.07
CB 5002	On Grade	6.3	1.43	3.68	0.28	0.27	0.01
CB 5004	On Grade	6.34	1.36	3.6	0.31	0.28	0.03
CB 5005	On Grade	6.35	1.39	3.52	0.34	0.3	0.04
CB 5007	On Grade	6.54	1.43	3.59	0.33	0.32	0.01
CB 5008	On Grade	6.57	1.43	3.75	0.46	0.44	0.02
CB 5010	On Grade	6.53	1.39	3.64	0.4	0.33	0.06
CB 5012	On Grade	6.74	0.54	3.08	0.67	0.62	0.05
CB 5013	On Grade	7.2	1.93	4.21	2.14	0.94	1.2
CB 5015	On Grade	7.87	1.97	4.52	1.11	0.97	0.14
CB 5016	On Grade	7.9	2.43	5.08	2.43	1.01	1.42
CB 5017	On Grade	8.64	2.44	5.35	0.67	0.62	0.05
CB 5018	On Grade	8.46	3.43	5.92	2.46	1.02	1.44
CB 5019	On Grade	7.61	2.91	6.27	0.51	0.48	0.03
CB 5020	On Grade	7.67	2.27	6.26	1.02	0.9	0.12
CB 5021	On Grade	7.82	1.92	6.26	1.47	1.24	0.23
CB 5022	On Grade	8.01	2.06	6.38	0.98	0.6	0.38
CB 5023	On Grade	7.85	2.15	6.38	1.33	1.14	0.19
CB 5024	On Grade	7.97	2.77	6.38	0.53	0.5	0.03
CB 5025	On Grade	5.66	-1.94	1.96	0.15	0.13	0.02
CB 5026	On Grade	5.27	-1.73	1.87	0.11	0.11	0
CB 5028	On Grade	5.09	-0.41	1.86	0.28	0.27	0.01
CB 5029	On Grade	5.71	-1.52	1.93	0.24	0.23	0.01
Summation of Hydraulic Grade Line Elevations (ft)				**223.04**			

Catch Basin Drainage System 7 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1002	On Grade	6.83	1.7	4.15	1.57	0.79	0.79
CB 1003	On Grade	6.58	2.68	4.96	1.81	0.86	0.96
CB 1004	On Grade	6.53	2.2	4.48	1.32	0.71	0.61
CB 1005	On Grade	6.49	1.19	3.64	1.65	0.81	0.84
CB 1006	On Grade	5.98	0.65	3.24	1.4	0.73	0.66
CB 1007	In Sag	5.6	1.02	3.14	0.04	0.04	(N/A)
CB 1008	In Sag	5.74	0.53	2.87	0.46	0.46	(N/A)
CB 1009	On Grade	6.02	0.89	3.19	0.4	0.34	0.07
CB 1010	On Grade	5.96	1.13	3.66	0.57	0.42	0.14
CB 1011	On Grade	6.19	1.03	3.65	0.97	0.59	0.38
CB 1012	On Grade	6.68	1.07	3.51	1.5	0.76	0.73
CB 1022	On Grade	6.72	0.87	3.23	0.28	0.26	0.02
CB 1024	On Grade	6.22	0.93	3.61	0.5	0.39	0.11
CB 1026	On Grade	5.89	0.69	3.03	1	0.6	0.4
CB 1028	In Sag	5.86	0.23	2.74	0.18	0.18	(N/A)
CB 1032	In Sag	5.95	0.82	2.94	0.21	0.21	(N/A)
CB 1034	On Grade	6.09	0.56	3.22	0.98	0.6	0.38
CB 1036	On Grade	6.22	0.91	3.44	1.37	0.72	0.64
CB 1039	On Grade	7.24	0.94	3.36	0.98	0.87	0.11
CB 4004	On Grade	6.46	2.56	4.7	0.1	0.09	0.01
CB 4005	On Grade	6.59	2.39	4.65	0.23	0.2	0.03
CB 4006	On Grade	6.22	1.92	4.28	0.09	0.08	0.01
CB 4007	On Grade	6.26	1.76	4.23	0.22	0.19	0.03
CB 4008	On Grade	6.35	1.95	4.12	0.03	0.03	0
CB 4009	On Grade	5.85	1.35	4.01	0.07	0.07	0
CB 4010	On Grade	5.99	1.49	4.19	0.22	0.19	0.03
CB 4013	On Grade	5.53	0.57	3.94	0.84	0.54	0.3
CB 4014	On Grade	5.47	0.67	3.94	0.37	0.36	0.01
CB 4015	On Grade	4.93	0.5	3.12	0.06	0.06	0
CB 4016	On Grade	5.15	-2.83	1.87	0.06	0.05	0.01
CB 4018/4019	On Grade	5.35	-0.99	1.87	0.08	0.07	0.01
CB 4022	On Grade	4.69	-0.13	1.96	0.2	0.19	0
CB 4023	On Grade	4.74	-0.13	1.94	0.13	0.13	0
CB 4024	On Grade	4.98	-2.22	1.91	0.14	0.14	0
CB 4025	On Grade	5.18	-1.95	1.92	0.34	0.29	0.04
CB 4026	On Grade	5.03	0.33	2.44	0.17	0.17	0
CB 4027	On Grade	4.61	-0.09	2.13	0.13	0.13	0
CB 4028	On Grade	5.71	0.12	2.39	0.35	0.33	0.02
CB 4029	On Grade	4.69	-0.24	2.13	0.42	0.34	0.07
CB 5002	On Grade	6.3	1.43	3.68	0.28	0.27	0.01
CB 5004	On Grade	6.34	1.36	3.6	0.31	0.28	0.03
CB 5005	On Grade	6.35	1.39	3.52	0.34	0.3	0.04
CB 5007	On Grade	6.54	1.43	3.59	0.33	0.32	0.01
CB 5008	On Grade	6.57	1.43	3.75	0.46	0.44	0.02
CB 5010	On Grade	6.53	1.39	3.64	0.4	0.33	0.06
CB 5012	On Grade	6.74	0.54	3.08	0.67	0.62	0.05
CB 5013	On Grade	7.2	1.93	4.21	2.14	0.94	1.2
CB 5015	On Grade	7.87	1.97	4.52	1.11	0.97	0.14
CB 5016	On Grade	7.9	2.43	5.08	2.43	1.01	1.42
CB 5017	On Grade	8.64	2.44	5.35	0.67	0.62	0.05
CB 5018	On Grade	8.46	3.43	5.92	2.46	1.02	1.44
CB 5019	On Grade	7.61	2.91	6.27	0.51	0.48	0.03
CB 5020	On Grade	7.67	2.27	6.26	1.02	0.9	0.12
CB 5021	On Grade	7.82	1.92	6.26	1.47	1.24	0.23
CB 5022	On Grade	8.01	2.06	6.38	0.98	0.6	0.38
CB 5023	On Grade	7.85	2.15	6.38	1.33	1.14	0.19
CB 5024	On Grade	7.97	2.77	6.39	0.53	0.5	0.03
CB 5025	On Grade	5.66	-1.94	1.93	0.15	0.13	0.02
CB 5026	On Grade	5.27	-1.73	1.82	0.11	0.11	0
CB 5028	On Grade	5.09	-0.41	1.83	0.28	0.27	0.01
CB 5029	On Grade	5.71	-1.52	2.08	0.24	0.23	0.01
		Summation of Hydraulic Grade Line Elevations (ft)		**223.34**			

Catch Basin Drainage System 7 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1002	On Grade	6.83	1.7	3.87	0.26	0.24	0.02
CB 1003	On Grade	6.58	2.68	4.83	0.26	0.24	0.02
CB 1004	On Grade	6.53	2.2	4.34	0.19	0.19	0
CB 1005	On Grade	6.49	1.19	3.44	0.23	0.22	0.01
CB 1006	On Grade	5.98	0.65	3.04	0.2	0.19	0.01
CB 1007	In Sag	5.6	1.02	3.08	0.01	0.01	(N/A)
CB 1008	In Sag	5.74	0.53	2.98	0.07	0.07	(N/A)
CB 1009	On Grade	6.02	0.89	3.04	0.06	0.06	0
CB 1010	On Grade	5.96	1.13	3.37	0.09	0.09	0
CB 1011	On Grade	6.19	1.03	3.36	0.16	0.16	0
CB 1012	On Grade	6.68	1.07	3.32	0.25	0.23	0.01
CB 1022	On Grade	6.72	0.87	3.01	0.06	0.06	0
CB 1024	On Grade	6.22	0.93	3.34	0.1	0.1	0
CB 1026	On Grade	5.89	0.69	2.85	0.19	0.18	0
CB 1028	In Sag	5.86	0.23	2.99	0.04	0.04	(N/A)
CB 1032	In Sag	5.95	0.82	2.91	0.05	0.05	(N/A)
CB 1034	On Grade	6.09	0.56	3.04	0.16	0.16	0
CB 1036	On Grade	6.22	0.91	3.2	0.23	0.22	0.01
CB 1039	On Grade	7.24	0.94	3.12	0.16	0.16	0
CB 4004	On Grade	6.46	2.56	4.5	0.02	0.02	0
CB 4005	On Grade	6.59	2.39	4.53	0.06	0.05	0.01
CB 4006	On Grade	6.22	1.92	3.77	0.02	0.02	0
CB 4007	On Grade	6.26	1.76	3.98	0.05	0.05	0.01
CB 4008	On Grade	6.35	1.95	2.82	0.01	0.01	0
CB 4009	On Grade	5.85	1.35	3.16	0.02	0.02	0
CB 4010	On Grade	5.99	1.49	3.97	0.05	0.05	0.01
CB 4013	On Grade	5.53	0.57	3.43	0.17	0.17	0
CB 4014	On Grade	5.47	0.67	3.43	0.08	0.07	0
CB 4015	On Grade	4.93	0.5	2.97	0.01	0.01	0
CB 4016	On Grade	5.15	-2.83	2.96	0.02	0.01	0
CB 4018/4019	On Grade	5.35	-0.99	2.96	0.02	0.02	0
CB 4022	On Grade	4.69	-0.13	2.96	0.04	0.04	0
CB 4023	On Grade	4.74	-0.13	2.96	0.03	0.03	0
CB 4024	On Grade	4.98	-2.22	2.96	0.03	0.03	0
CB 4025	On Grade	5.18	-1.95	2.97	0.08	0.08	0
CB 4026	On Grade	5.03	0.33	2.97	0.04	0.04	0
CB 4027	On Grade	4.61	-0.09	2.98	0.03	0.03	0
CB 4028	On Grade	5.71	0.12	2.97	0.08	0.07	0
CB 4029	On Grade	4.69	-0.24	2.98	0.09	0.09	0
CB 5002	On Grade	6.3	1.43	3.55	0.06	0.06	0
CB 5004	On Grade	6.34	1.36	3.48	0.06	0.06	0
CB 5005	On Grade	6.35	1.39	3.45	0.07	0.07	0
CB 5007	On Grade	6.54	1.43	3.5	0.07	0.07	0
CB 5008	On Grade	6.57	1.43	3.59	0.09	0.09	0
CB 5010	On Grade	6.53	1.39	3.52	0.08	0.08	0
CB 5012	On Grade	6.74	0.54	2.84	0.11	0.11	0
CB 5013	On Grade	7.2	1.93	4.09	0.34	0.3	0.04
CB 5015	On Grade	7.87	1.97	4.25	0.22	0.21	0
CB 5016	On Grade	7.9	2.43	4.85	0.38	0.32	0.06
CB 5017	On Grade	8.64	2.44	4.92	0.14	0.14	0
CB 5018	On Grade	8.46	3.43	5.72	0.39	0.33	0.06
CB 5019	On Grade	7.61	2.91	5.13	0.08	0.08	0
CB 5020	On Grade	7.67	2.27	5.13	0.16	0.16	0
CB 5021	On Grade	7.82	1.92	5.13	0.25	0.25	0.01
CB 5022	On Grade	8.01	2.06	5.16	0.16	0.16	0
CB 5023	On Grade	7.85	2.15	5.16	0.23	0.22	0
CB 5024	On Grade	7.97	2.77	5.16	0.09	0.08	0
CB 5025	On Grade	5.66	-1.94	2.98	0.04	0.03	0
CB 5026	On Grade	5.27	-1.73	2.96	0.03	0.03	0
CB 5028	On Grade	5.09	-0.41	2.96	0.06	0.06	0
CB 5029	On Grade	5.71	-1.52	2.97	0.06	0.06	0
Summation of Hydraulic Grade Line Elevations (ft)				**219.86**			

Catch Basin Drainage System 7 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1002	On Grade	6.83	1.7	3.87	0.26	0.24	0.02
CB 1003	On Grade	6.58	2.68	4.83	0.26	0.24	0.02
CB 1004	On Grade	6.53	2.2	4.34	0.19	0.19	0
CB 1005	On Grade	6.49	1.19	3.44	0.23	0.22	0.01
CB 1006	On Grade	5.98	0.65	2.95	0.2	0.19	0.01
CB 1007	In Sag	5.6	1.02	1.85	0.01	0.01	(N/A)
CB 1008	In Sag	5.74	0.53	2.68	0.07	0.07	(N/A)
CB 1009	On Grade	6.02	0.89	3.03	0.06	0.06	0
CB 1010	On Grade	5.96	1.13	3.37	0.09	0.09	0
CB 1011	On Grade	6.19	1.03	3.36	0.16	0.16	0
CB 1012	On Grade	6.68	1.07	3.32	0.25	0.23	0.01
CB 1022	On Grade	6.72	0.87	3.03	0.06	0.06	0
CB 1024	On Grade	6.22	0.93	3.34	0.1	0.1	0
CB 1026	On Grade	5.89	0.69	2.83	0.19	0.18	0
CB 1028	In Sag	5.86	0.23	2.51	0.04	0.04	(N/A)
CB 1032	In Sag	5.95	0.82	2.87	0.05	0.05	(N/A)
CB 1034	On Grade	6.09	0.56	2.93	0.16	0.16	0
CB 1036	On Grade	6.22	0.91	3.2	0.23	0.22	0.01
CB 1039	On Grade	7.24	0.94	3.12	0.16	0.16	0
CB 4004	On Grade	6.46	2.56	4.5	0.02	0.02	0
CB 4005	On Grade	6.59	2.39	4.53	0.06	0.05	0.01
CB 4006	On Grade	6.22	1.92	3.77	0.02	0.02	0
CB 4007	On Grade	6.26	1.76	3.98	0.05	0.05	0.01
CB 4008	On Grade	6.35	1.95	2.82	0.01	0.01	0
CB 4009	On Grade	5.85	1.35	3.15	0.02	0.02	0
CB 4010	On Grade	5.99	1.49	3.97	0.05	0.05	0.01
CB 4013	On Grade	5.53	0.57	3.37	0.17	0.17	0
CB 4014	On Grade	5.47	0.67	3.38	0.08	0.07	0
CB 4015	On Grade	4.93	0.5	2.67	0.01	0.01	0
CB 4016	On Grade	5.15	-2.83	-0.75	0.02	0.01	0
CB 4018/4019	On Grade	5.35	-0.99	-0.86	0.02	0.02	0
CB 4022	On Grade	4.69	-0.13	1.91	0.04	0.04	0
CB 4023	On Grade	4.74	-0.13	1.9	0.03	0.03	0
CB 4024	On Grade	4.98	-2.22	-0.07	0.03	0.03	0
CB 4025	On Grade	5.18	-1.95	0.25	0.08	0.08	0
CB 4026	On Grade	5.03	0.33	2.38	0.04	0.04	0
CB 4027	On Grade	4.61	-0.09	1.99	0.03	0.03	0
CB 4028	On Grade	5.71	0.12	2.26	0.08	0.07	0
CB 4029	On Grade	4.69	-0.24	1.91	0.09	0.09	0
CB 5002	On Grade	6.3	1.43	3.55	0.06	0.06	0
CB 5004	On Grade	6.34	1.36	3.48	0.06	0.06	0
CB 5005	On Grade	6.35	1.39	3.45	0.07	0.07	0
CB 5007	On Grade	6.54	1.43	3.5	0.07	0.07	0
CB 5008	On Grade	6.57	1.43	3.59	0.09	0.09	0
CB 5010	On Grade	6.53	1.39	3.52	0.08	0.08	0
CB 5012	On Grade	6.74	0.54	2.73	0.11	0.11	0
CB 5013	On Grade	7.2	1.93	4.09	0.34	0.3	0.04
CB 5015	On Grade	7.87	1.97	4.25	0.22	0.21	0
CB 5016	On Grade	7.9	2.43	4.85	0.38	0.32	0.06
CB 5017	On Grade	8.64	2.44	4.92	0.14	0.14	0
CB 5018	On Grade	8.46	3.43	5.72	0.39	0.33	0.06
CB 5019	On Grade	7.61	2.91	5.13	0.08	0.08	0
CB 5020	On Grade	7.67	2.27	5.13	0.16	0.16	0
CB 5021	On Grade	7.82	1.92	5.13	0.25	0.25	0.01
CB 5022	On Grade	8.01	2.06	5.16	0.16	0.16	0
CB 5023	On Grade	7.85	2.15	5.16	0.23	0.22	0
CB 5024	On Grade	7.97	2.77	5.16	0.09	0.08	0
CB 5025	On Grade	5.66	-1.94	0.22	0.04	0.03	0
CB 5026	On Grade	5.27	-1.73	0.31	0.03	0.03	0
CB 5028	On Grade	5.09	-0.41	1.67	0.06	0.06	0
CB 5029	On Grade	5.71	-1.52	0.62	0.06	0.06	0
		Summation of Hydraulic Grade Line Elevations (ft)		**189.27**			

Catch Basin Drainage System 7 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1002	On Grade	6.83	1.7	3.94	1.57	0.79	0.79
CB 1003	On Grade	6.58	2.68	4.96	1.81	0.86	0.96
CB 1004	On Grade	6.53	2.2	4.48	1.32	0.71	0.61
CB 1005	On Grade	6.49	1.19	3.87	1.65	0.81	0.84
CB 1006	On Grade	5.98	0.65	3.55	1.4	0.73	0.66
CB 1007	In Sag	5.6	1.02	3.14	0.04	0.04	(N/A)
CB 1008	In Sag	5.74	0.53	3.09	0.46	0.46	(N/A)
CB 1009	On Grade	6.02	0.89	3.26	0.4	0.34	0.07
CB 1010	On Grade	5.96	1.13	3.66	0.57	0.42	0.14
CB 1011	On Grade	6.19	1.03	3.65	0.97	0.59	0.38
CB 1012	On Grade	6.68	1.07	3.54	1.5	0.76	0.73
CB 1022	On Grade	6.72	0.87	3.46	0.28	0.26	0.02
CB 1024	On Grade	6.22	0.93	3.61	0.5	0.39	0.11
CB 1026	On Grade	5.89	0.69	3.02	1	0.6	0.4
CB 1028	In Sag	5.86	0.23	3.08	0.18	0.18	(N/A)
CB 1032	In Sag	5.95	0.82	2.95	0.21	0.21	(N/A)
CB 1034	On Grade	6.09	0.56	3.55	0.98	0.6	0.38
CB 1036	On Grade	6.22	0.91	3.86	1.37	0.72	0.64
CB 1039	On Grade	7.24	0.94	3.99	0.98	0.87	0.11
CB 4004	On Grade	6.46	2.56	4.7	0.1	0.09	0.01
CB 4005	On Grade	6.59	2.39	4.65	0.23	0.2	0.03
CB 4006	On Grade	6.22	1.92	4.28	0.09	0.08	0.01
CB 4007	On Grade	6.26	1.76	4.23	0.22	0.19	0.03
CB 4008	On Grade	6.35	1.95	4.12	0.03	0.03	0
CB 4009	On Grade	5.85	1.35	3.98	0.07	0.07	0
CB 4010	On Grade	5.99	1.49	4.19	0.22	0.19	0.03
CB 4013	On Grade	5.53	0.57	3.94	0.84	0.54	0.3
CB 4014	On Grade	5.47	0.67	3.94	0.37	0.36	0.01
CB 4015	On Grade	4.93	0.5	3.12	0.06	0.06	0
CB 4016	On Grade	5.15	-2.83	2.98	0.06	0.05	0.01
CB 4018/4019	On Grade	5.35	-0.99	2.98	0.08	0.07	0.01
CB 4022	On Grade	4.69	-0.13	2.97	0.2	0.19	0
CB 4023	On Grade	4.74	-0.13	2.99	0.13	0.13	0
CB 4024	On Grade	4.98	-2.22	2.99	0.14	0.14	0
CB 4025	On Grade	5.18	-1.95	3	0.34	0.29	0.04
CB 4026	On Grade	5.03	0.33	3	0.17	0.17	0
CB 4027	On Grade	4.61	-0.09	3.04	0.13	0.13	0
CB 4028	On Grade	5.71	0.12	3.04	0.35	0.33	0.02
CB 4029	On Grade	4.69	-0.24	3.04	0.42	0.34	0.07
CB 5002	On Grade	6.3	1.43	3.68	0.28	0.27	0.01
CB 5004	On Grade	6.34	1.36	3.6	0.31	0.28	0.03
CB 5005	On Grade	6.35	1.39	3.52	0.34	0.3	0.04
CB 5007	On Grade	6.54	1.43	3.59	0.33	0.32	0.01
CB 5008	On Grade	6.57	1.43	3.75	0.46	0.44	0.02
CB 5010	On Grade	6.53	1.39	3.64	0.4	0.33	0.06
CB 5012	On Grade	6.74	0.54	3.22	0.67	0.62	0.05
CB 5013	On Grade	7.2	1.93	4.21	2.14	0.94	1.2
CB 5015	On Grade	7.87	1.97	4.52	1.11	0.97	0.14
CB 5016	On Grade	7.9	2.43	5.08	2.43	1.01	1.42
CB 5017	On Grade	8.64	2.44	5.35	0.67	0.62	0.05
CB 5018	On Grade	8.46	3.43	5.92	2.46	1.02	1.44
CB 5019	On Grade	7.61	2.91	6.29	0.51	0.48	0.03
CB 5020	On Grade	7.67	2.27	6.29	1.02	0.9	0.12
CB 5021	On Grade	7.82	1.92	6.28	1.47	1.24	0.23
CB 5022	On Grade	8.01	2.06	6.39	0.98	0.6	0.38
CB 5023	On Grade	7.85	2.15	6.39	1.33	1.14	0.19
CB 5024	On Grade	7.97	2.77	6.4	0.53	0.5	0.03
CB 5025	On Grade	5.66	-1.94	3.06	0.15	0.13	0.02
CB 5026	On Grade	5.27	-1.73	2.98	0.11	0.11	0
CB 5028	On Grade	5.09	-0.41	2.98	0.28	0.27	0.01
CB 5029	On Grade	5.71	-1.52	3.04	0.24	0.23	0.01
Summation of Hydraulic Grade Line Elevations (ft)				**240.02**			

Catch Basin Drainage System 7 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs							
Label	**Inlet Location**	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Flow (Local Surface) (cfs)**	**Flow (Captured) (cfs)**	**Flow (Bypassed) (cfs)**
CB 1002	On Grade	6.83	1.7	4.14	1.57	0.79	0.79
CB 1003	On Grade	6.58	2.68	4.96	1.81	0.86	0.96
CB 1004	On Grade	6.53	2.2	4.48	1.32	0.71	0.61
CB 1005	On Grade	6.49	1.19	3.64	1.65	0.81	0.84
CB 1006	On Grade	5.98	0.65	3.23	1.4	0.73	0.66
CB 1007	In Sag	5.6	1.02	3.14	0.04	0.04	(N/A)
CB 1008	In Sag	5.74	0.53	2.93	0.46	0.46	(N/A)
CB 1009	On Grade	6.02	0.89	3.19	0.4	0.34	0.07
CB 1010	On Grade	5.96	1.13	3.66	0.57	0.42	0.14
CB 1011	On Grade	6.19	1.03	3.65	0.97	0.59	0.38
CB 1012	On Grade	6.68	1.07	3.51	1.5	0.76	0.73
CB 1022	On Grade	6.72	0.87	3.23	0.28	0.26	0.02
CB 1024	On Grade	6.22	0.93	3.61	0.5	0.39	0.11
CB 1026	On Grade	5.89	0.69	2.95	1	0.6	0.4
CB 1028	In Sag	5.86	0.23	2.94	0.18	0.18	(N/A)
CB 1032	In Sag	5.95	0.82	2.94	0.21	0.21	(N/A)
CB 1034	On Grade	6.09	0.56	3.23	0.98	0.6	0.38
CB 1036	On Grade	6.22	0.91	3.44	1.37	0.72	0.64
CB 1039	On Grade	7.24	0.94	3.33	0.98	0.87	0.11
CB 4004	On Grade	6.46	2.56	4.7	0.1	0.09	0.01
CB 4005	On Grade	6.59	2.39	4.65	0.23	0.2	0.03
CB 4006	On Grade	6.22	1.92	4.28	0.09	0.08	0.01
CB 4007	On Grade	6.26	1.76	4.23	0.22	0.19	0.03
CB 4008	On Grade	6.35	1.95	4.12	0.03	0.03	0
CB 4009	On Grade	5.85	1.35	4.01	0.07	0.07	0
CB 4010	On Grade	5.99	1.49	4.19	0.22	0.19	0.03
CB 4013	On Grade	5.53	0.57	3.94	0.84	0.54	0.3
CB 4014	On Grade	5.47	0.67	3.94	0.37	0.36	0.01
CB 4015	On Grade	4.93	0.5	3.15	0.06	0.06	0
CB 4016	On Grade	5.15	-2.83	3.01	0.06	0.05	0.01
CB 4018/4019	On Grade	5.35	-0.99	2.95	0.08	0.07	0.01
CB 4022	On Grade	4.69	-0.13	3.06	0.2	0.19	0
CB 4023	On Grade	4.74	-0.13	2.91	0.13	0.13	0
CB 4024	On Grade	4.98	-2.22	2.91	0.14	0.14	0
CB 4025	On Grade	5.18	-1.95	2.81	0.34	0.29	0.04
CB 4026	On Grade	5.03	0.33	2.65	0.17	0.17	0
CB 4027	On Grade	4.61	-0.09	2.9	0.13	0.13	0
CB 4028	On Grade	5.71	0.12	3.06	0.35	0.33	0.02
CB 4029	On Grade	4.69	-0.24	2.92	0.42	0.34	0.07
CB 5002	On Grade	6.3	1.43	3.68	0.28	0.27	0.01
CB 5004	On Grade	6.34	1.36	3.6	0.31	0.28	0.03
CB 5005	On Grade	6.35	1.39	3.52	0.34	0.3	0.04
CB 5007	On Grade	6.54	1.43	3.59	0.33	0.32	0.01
CB 5008	On Grade	6.57	1.43	3.75	0.46	0.44	0.02
CB 5010	On Grade	6.53	1.39	3.64	0.4	0.33	0.06
CB 5012	On Grade	6.74	0.54	3.08	0.67	0.62	0.05
CB 5013	On Grade	7.2	1.93	4.21	2.14	0.94	1.2
CB 5015	On Grade	7.87	1.97	4.52	1.11	0.97	0.14
CB 5016	On Grade	7.9	2.43	5.08	2.43	1.01	1.42
CB 5017	On Grade	8.64	2.44	5.35	0.67	0.62	0.05
CB 5018	On Grade	8.46	3.43	5.92	2.46	1.02	1.44
CB 5019	On Grade	7.61	2.91	6.27	0.51	0.48	0.03
CB 5020	On Grade	7.67	2.27	6.26	1.02	0.9	0.12
CB 5021	On Grade	7.82	1.92	6.26	1.47	1.24	0.23
CB 5022	On Grade	8.01	2.06	6.38	0.98	0.6	0.38
CB 5023	On Grade	7.85	2.15	6.38	1.33	1.14	0.19
CB 5024	On Grade	7.97	2.77	6.38	0.53	0.5	0.03
CB 5025	On Grade	5.66	-1.94	2.94	0.15	0.13	0.02
CB 5026	On Grade	5.27	-1.73	2.97	0.11	0.11	0
CB 5028	On Grade	5.09	-0.41	2.96	0.28	0.27	0.01
CB 5029	On Grade	5.71	-1.52	3.03	0.24	0.23	0.01
		Summation of Hydraulic Grade Line Elevations (ft)		**236.36**			

Manholes Drainage System 7 Existing 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1001	7.32	0.12	2.83	48	Circular Structure
MH 1023	7.47	-0.23	2.05	48	Circular Structure
MH 1025	7.07	-0.53	1.86	48	Circular Structure
MH 1027	6.79	-1.01	1.43	48	Circular Structure
MH 1029	6.58	-1.32	0.95	48	Circular Structure
MH 1030	6.51	-1.59	0.83	48	Circular Structure
MH 1031	6.49	0.49	0.62	96	Circular Structure
MH 1033	6.68	-1.12	1.36	48	Circular Structure
MH 1035	6.77	-0.63	1.91	48	Circular Structure
MH 1037	7.01	-0.59	2.15	48	Circular Structure
MH 1038	7.24	0.44	2.75	48	Circular Structure
MH 4011	6.15	1.05	3.11	48	Circular Structure
MH 4012	6.35	0.95	3.16	48	Circular Structure
MH 4017	5.31	-0.99	-0.66	48	Circular Structure
MH 4020	5.41	-0.87	-0.67	48	Circular Structure
MH 4021	5.35	-2.65	-0.49	48	Circular Structure
MH 5003	6.67	-1.08	1.21	60	Circular Structure
MH 5006	6.68	-0.62	1.64	48	Circular Structure
MH 5009	6.91	-0.66	1.83	60	Circular Structure
MH 5011	7.28	-0.82	1.9	48	Circular Structure
MH 5014	7.6	0.3	3.12	48	Circular Structure
MH 5027	5.76	-0.54	-0.45	96	Circular Structure
MH 5030	6.44	-1.66	0.78	48	Circular Structure
MH 5031	5.74	-0.86	1.3	48	Circular Structure
MH 9999	5.25	-1.35	-0.66	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**33.86**		

Manholes Drainage System 7 Alternative "A" 2 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1001	7.32	0.12	2.83	48	Circular Structure
MH 1023	7.47	-0.23	2.05	48	Circular Structure
MH 1025	7.07	-0.53	1.86	48	Circular Structure
MH 1027	6.79	-1.01	1.43	48	Circular Structure
MH 1029	6.58	-1.32	0.95	48	Circular Structure
MH 1030	6.51	-1.59	0.76	48	Circular Structure
MH 1031	6.49	0.49	0.61	96	Circular Structure
MH 1033	6.68	-1.12	1.36	48	Circular Structure
MH 1035	6.77	-0.63	1.91	48	Circular Structure
MH 1037	7.01	-0.59	2.15	48	Circular Structure
MH 1038	7.24	0.44	2.75	48	Circular Structure
MH 4011	6.15	1.05	3.11	48	Circular Structure
MH 4012	6.35	0.95	3.16	48	Circular Structure
MH 4017	5.31	-0.99	-0.94	48	Circular Structure
MH 4020	5.41	-0.87	-0.86	48	Circular Structure
MH 4021	5.35	-2.65	-1.62	48	Circular Structure
MH 5003	6.67	-1.08	1.07	60	Circular Structure
MH 5006	6.68	-0.62	1.59	48	Circular Structure
MH 5009	6.91	-0.66	1.74	60	Circular Structure
MH 5011	7.28	-0.82	1.85	48	Circular Structure
MH 5014	7.6	0.3	3.12	48	Circular Structure
MH 5027	5.76	-0.54	-0.48	96	Circular Structure
MH 5030	6.44	-1.66	0.55	48	Circular Structure
MH 5031	5.74	-0.86	1.27	48	Circular Structure
MH 9999	5.25	-1.35	-0.95	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**31.27**		

Manholes Drainage System 7 Existing 10 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1001	7.32	0.12	3.23	48	Circular Structure
MH 1023	7.47	-0.23	2.35	48	Circular Structure
MH 1025	7.07	-0.53	2.25	48	Circular Structure
MH 1027	6.79	-1.01	1.92	48	Circular Structure
MH 1029	6.58	-1.32	1.24	48	Circular Structure
MH 1030	6.51	-1.59	1.33	48	Circular Structure
MH 1031	6.49	0.49	1.04	96	Circular Structure
MH 1033	6.68	-1.12	1.79	48	Circular Structure
MH 1035	6.77	-0.63	2.66	48	Circular Structure
MH 1037	7.01	-0.59	2.98	48	Circular Structure
MH 1038	7.24	0.44	3.09	48	Circular Structure
MH 4011	6.15	1.05	4.05	48	Circular Structure
MH 4012	6.35	0.95	3.98	48	Circular Structure
MH 4017	5.31	-0.99	0.33	48	Circular Structure
MH 4020	5.41	-0.87	0.24	48	Circular Structure
MH 4021	5.35	-2.65	-0.02	48	Circular Structure
MH 5003	6.67	-1.08	2.34	60	Circular Structure
MH 5006	6.68	-0.62	2.66	48	Circular Structure
MH 5009	6.91	-0.66	3.07	60	Circular Structure
MH 5011	7.28	-0.82	3.22	48	Circular Structure
MH 5014	7.6	0.3	3.7	48	Circular Structure
MH 5027	5.76	-0.54	0.29	96	Circular Structure
MH 5030	6.44	-1.66	1.1	48	Circular Structure
MH 5031	5.74	-0.86	1.45	48	Circular Structure
MH 9999	5.25	-1.35	0.33	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**50.62**		

Manholes Drainage System 7 Alternative "A" 10 Yr. Low Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1001	7.32	0.12	3.23	48	Circular Structure
MH 1023	7.47	-0.23	2.35	48	Circular Structure
MH 1025	7.07	-0.53	2.25	48	Circular Structure
MH 1027	6.79	-1.01	1.92	48	Circular Structure
MH 1029	6.58	-1.32	1.24	48	Circular Structure
MH 1030	6.51	-1.59	1.33	48	Circular Structure
MH 1031	6.49	0.49	1.04	96	Circular Structure
MH 1033	6.68	-1.12	1.79	48	Circular Structure
MH 1035	6.77	-0.63	2.66	48	Circular Structure
MH 1037	7.01	-0.59	2.98	48	Circular Structure
MH 1038	7.24	0.44	3.09	48	Circular Structure
MH 4011	6.15	1.05	4.05	48	Circular Structure
MH 4012	6.35	0.95	3.98	48	Circular Structure
MH 4017	5.31	-0.99	0.31	48	Circular Structure
MH 4020	5.41	-0.87	0.21	48	Circular Structure
MH 4021	5.35	-2.65	0.17	48	Circular Structure
MH 5003	6.67	-1.08	2.34	60	Circular Structure
MH 5006	6.68	-0.62	2.66	48	Circular Structure
MH 5009	6.91	-0.66	3.07	60	Circular Structure
MH 5011	7.28	-0.82	3.22	48	Circular Structure
MH 5014	7.6	0.3	3.7	48	Circular Structure
MH 5027	5.76	-0.54	0.29	96	Circular Structure
MH 5030	6.44	-1.66	1.1	48	Circular Structure
MH 5031	5.74	-0.86	1.45	48	Circular Structure
MH 9999	5.25	-1.35	0.31	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**50.74**		

Manholes Drainage System 7 Existing 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1001	7.32	0.12	2.83	48	Circular Structure
MH 1023	7.47	-0.23	2.05	48	Circular Structure
MH 1025	7.07	-0.53	1.94	48	Circular Structure
MH 1027	6.79	-1.01	1.89	48	Circular Structure
MH 1029	6.58	-1.32	1.87	48	Circular Structure
MH 1030	6.51	-1.59	1.87	48	Circular Structure
MH 1031	6.49	0.49	1.86	96	Circular Structure
MH 1033	6.68	-1.12	1.86	48	Circular Structure
MH 1035	6.77	-0.63	1.96	48	Circular Structure
MH 1037	7.01	-0.59	2.16	48	Circular Structure
MH 1038	7.24	0.44	2.75	48	Circular Structure
MH 4011	6.15	1.05	3.11	48	Circular Structure
MH 4012	6.35	0.95	3.19	48	Circular Structure
MH 4017	5.31	-0.99	1.86	48	Circular Structure
MH 4020	5.41	-0.87	1.86	48	Circular Structure
MH 4021	5.35	-2.65	1.87	48	Circular Structure
MH 5003	6.67	-1.08	1.88	60	Circular Structure
MH 5006	6.68	-0.62	1.9	48	Circular Structure
MH 5009	6.91	-0.66	2.03	60	Circular Structure
MH 5011	7.28	-0.82	2.07	48	Circular Structure
MH 5014	7.6	0.3	3.12	48	Circular Structure
MH 5027	5.76	-0.54	1.86	96	Circular Structure
MH 5030	6.44	-1.66	1.86	48	Circular Structure
MH 5031	5.74	-0.86	1.86	48	Circular Structure
MH 9999	5.25	-1.35	1.86	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**53.37**		

Manholes Drainage System 7 Alternative "A" 2 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1001	7.32	0.12	2.83	48	Circular Structure
MH 1023	7.47	-0.23	2.05	48	Circular Structure
MH 1025	7.07	-0.53	1.86	48	Circular Structure
MH 1027	6.79	-1.01	1.43	48	Circular Structure
MH 1029	6.58	-1.32	0.95	48	Circular Structure
MH 1030	6.51	-1.59	0.76	48	Circular Structure
MH 1031	6.49	0.49	0.61	96	Circular Structure
MH 1033	6.68	-1.12	1.36	48	Circular Structure
MH 1035	6.77	-0.63	1.91	48	Circular Structure
MH 1037	7.01	-0.59	2.15	48	Circular Structure
MH 1038	7.24	0.44	2.75	48	Circular Structure
MH 4011	6.15	1.05	3.11	48	Circular Structure
MH 4012	6.35	0.95	3.16	48	Circular Structure
MH 4017	5.31	-0.99	-0.94	48	Circular Structure
MH 4020	5.41	-0.87	-0.86	48	Circular Structure
MH 4021	5.35	-2.65	-1.62	48	Circular Structure
MH 5003	6.67	-1.08	1.07	60	Circular Structure
MH 5006	6.68	-0.62	1.59	48	Circular Structure
MH 5009	6.91	-0.66	1.74	60	Circular Structure
MH 5011	7.28	-0.82	1.85	48	Circular Structure
MH 5014	7.6	0.3	3.12	48	Circular Structure
MH 5027	5.76	-0.54	-0.48	96	Circular Structure
MH 5030	6.44	-1.66	0.55	48	Circular Structure
MH 5031	5.74	-0.86	1.27	48	Circular Structure
MH 9999	5.25	-1.35	-0.94	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**31.28**		

Manholes Drainage System 7 Existing 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1001	7.32	0.12	3.23	48	Circular Structure
MH 1023	7.47	-0.23	2.38	48	Circular Structure
MH 1025	7.07	-0.53	2.31	48	Circular Structure
MH 1027	6.79	-1.01	2.13	48	Circular Structure
MH 1029	6.58	-1.32	1.98	48	Circular Structure
MH 1030	6.51	-1.59	1.98	48	Circular Structure
MH 1031	6.49	0.49	1.88	96	Circular Structure
MH 1033	6.68	-1.12	1.76	48	Circular Structure
MH 1035	6.77	-0.63	2.67	48	Circular Structure
MH 1037	7.01	-0.59	2.98	48	Circular Structure
MH 1038	7.24	0.44	3.09	48	Circular Structure
MH 4011	6.15	1.05	4.06	48	Circular Structure
MH 4012	6.35	0.95	3.98	48	Circular Structure
MH 4017	5.31	-0.99	1.87	48	Circular Structure
MH 4020	5.41	-0.87	1.87	48	Circular Structure
MH 4021	5.35	-2.65	1.95	48	Circular Structure
MH 5003	6.67	-1.08	2.29	60	Circular Structure
MH 5006	6.68	-0.62	2.65	48	Circular Structure
MH 5009	6.91	-0.66	3.07	60	Circular Structure
MH 5011	7.28	-0.82	3.22	48	Circular Structure
MH 5014	7.6	0.3	3.7	48	Circular Structure
MH 5027	5.76	-0.54	1.87	96	Circular Structure
MH 5030	6.44	-1.66	1.93	48	Circular Structure
MH 5031	5.74	-0.86	1.94	48	Circular Structure
MH 9999	5.25	-1.35	1.87	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**62.66**		

Manholes Drainage System 7 Alternative "A" 10 Yr. High Tide @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1001	7.32	0.12	3.23	48	Circular Structure
MH 1023	7.47	-0.23	2.42	48	Circular Structure
MH 1025	7.07	-0.53	2.34	48	Circular Structure
MH 1027	6.79	-1.01	2.18	48	Circular Structure
MH 1029	6.58	-1.32	2.01	48	Circular Structure
MH 1030	6.51	-1.59	2.03	48	Circular Structure
MH 1031	6.49	0.49	1.8	96	Circular Structure
MH 1033	6.68	-1.12	1.58	48	Circular Structure
MH 1035	6.77	-0.63	2.67	48	Circular Structure
MH 1037	7.01	-0.59	2.99	48	Circular Structure
MH 1038	7.24	0.44	3.09	48	Circular Structure
MH 4011	6.15	1.05	4.05	48	Circular Structure
MH 4012	6.35	0.95	3.98	48	Circular Structure
MH 4017	5.31	-0.99	1.87	48	Circular Structure
MH 4020	5.41	-0.87	1.87	48	Circular Structure
MH 4021	5.35	-2.65	1.98	48	Circular Structure
MH 5003	6.67	-1.08	2.29	60	Circular Structure
MH 5006	6.68	-0.62	2.66	48	Circular Structure
MH 5009	6.91	-0.66	3.07	60	Circular Structure
MH 5011	7.28	-0.82	3.22	48	Circular Structure
MH 5014	7.6	0.3	3.7	48	Circular Structure
MH 5027	5.76	-0.54	1.83	96	Circular Structure
MH 5030	6.44	-1.66	2.09	48	Circular Structure
MH 5031	5.74	-0.86	2.1	48	Circular Structure
MH 9999	5.25	-1.35	1.88	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**62.93**		

Manholes Drainage System 7 Existing 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1001	7.32	0.12	3.08	48	Circular Structure
MH 1023	7.47	-0.23	3.01	48	Circular Structure
MH 1025	7.07	-0.53	3	48	Circular Structure
MH 1027	6.79	-1.01	3.04	48	Circular Structure
MH 1029	6.58	-1.32	2.98	48	Circular Structure
MH 1030	6.51	-1.59	2.97	48	Circular Structure
MH 1031	6.49	0.49	2.97	96	Circular Structure
MH 1033	6.68	-1.12	2.95	48	Circular Structure
MH 1035	6.77	-0.63	3.02	48	Circular Structure
MH 1037	7.01	-0.59	3.05	48	Circular Structure
MH 1038	7.24	0.44	3.06	48	Circular Structure
MH 4011	6.15	1.05	3.46	48	Circular Structure
MH 4012	6.35	0.95	3.43	48	Circular Structure
MH 4017	5.31	-0.99	2.96	48	Circular Structure
MH 4020	5.41	-0.87	2.96	48	Circular Structure
MH 4021	5.35	-2.65	2.97	48	Circular Structure
MH 5003	6.67	-1.08	2.98	60	Circular Structure
MH 5006	6.68	-0.62	3	48	Circular Structure
MH 5009	6.91	-0.66	3	60	Circular Structure
MH 5011	7.28	-0.82	3.09	48	Circular Structure
MH 5014	7.6	0.3	3.16	48	Circular Structure
MH 5027	5.76	-0.54	2.96	96	Circular Structure
MH 5030	6.44	-1.66	2.97	48	Circular Structure
MH 5031	5.74	-0.86	2.97	48	Circular Structure
MH 9999	5.25	-1.35	2.96	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**76**		

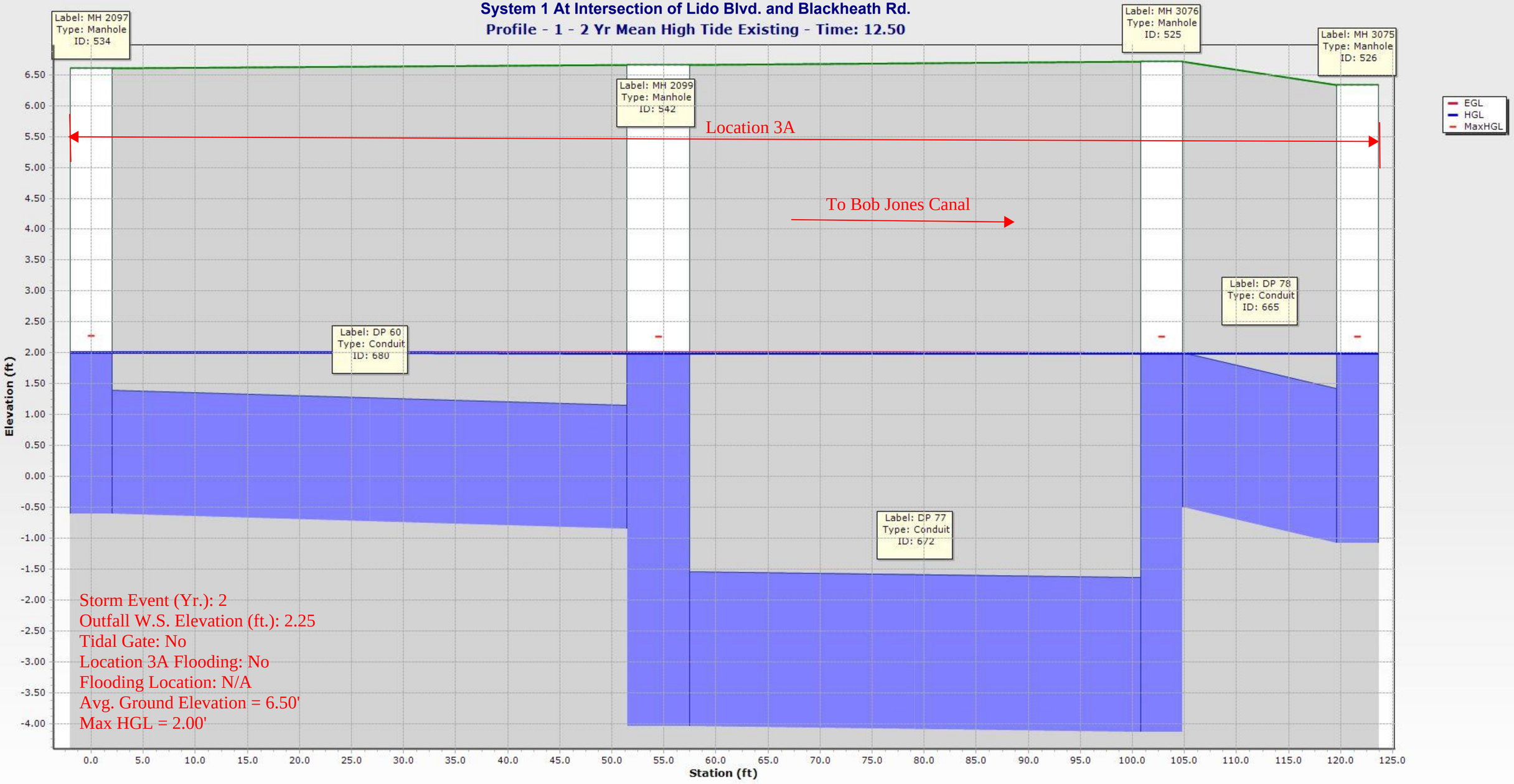
Manholes Drainage System 7 Alternative "A" 2 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1001	7.32	0.12	2.83	48	Circular Structure
MH 1023	7.47	-0.23	2.05	48	Circular Structure
MH 1025	7.07	-0.53	1.86	48	Circular Structure
MH 1027	6.79	-1.01	1.43	48	Circular Structure
MH 1029	6.58	-1.32	0.95	48	Circular Structure
MH 1030	6.51	-1.59	0.76	48	Circular Structure
MH 1031	6.49	0.49	0.61	96	Circular Structure
MH 1033	6.68	-1.12	1.36	48	Circular Structure
MH 1035	6.77	-0.63	1.91	48	Circular Structure
MH 1037	7.01	-0.59	2.15	48	Circular Structure
MH 1038	7.24	0.44	2.75	48	Circular Structure
MH 4011	6.15	1.05	3.11	48	Circular Structure
MH 4012	6.35	0.95	3.16	48	Circular Structure
MH 4017	5.31	-0.99	-0.94	48	Circular Structure
MH 4020	5.41	-0.87	-0.86	48	Circular Structure
MH 4021	5.35	-2.65	-1.62	48	Circular Structure
MH 5003	6.67	-1.08	1.07	60	Circular Structure
MH 5006	6.68	-0.62	1.59	48	Circular Structure
MH 5009	6.91	-0.66	1.74	60	Circular Structure
MH 5011	7.28	-0.82	1.85	48	Circular Structure
MH 5014	7.6	0.3	3.12	48	Circular Structure
MH 5027	5.76	-0.54	-0.48	96	Circular Structure
MH 5030	6.44	-1.66	0.55	48	Circular Structure
MH 5031	5.74	-0.86	1.27	48	Circular Structure
MH 9999	5.25	-1.35	-0.94	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**31.28**		

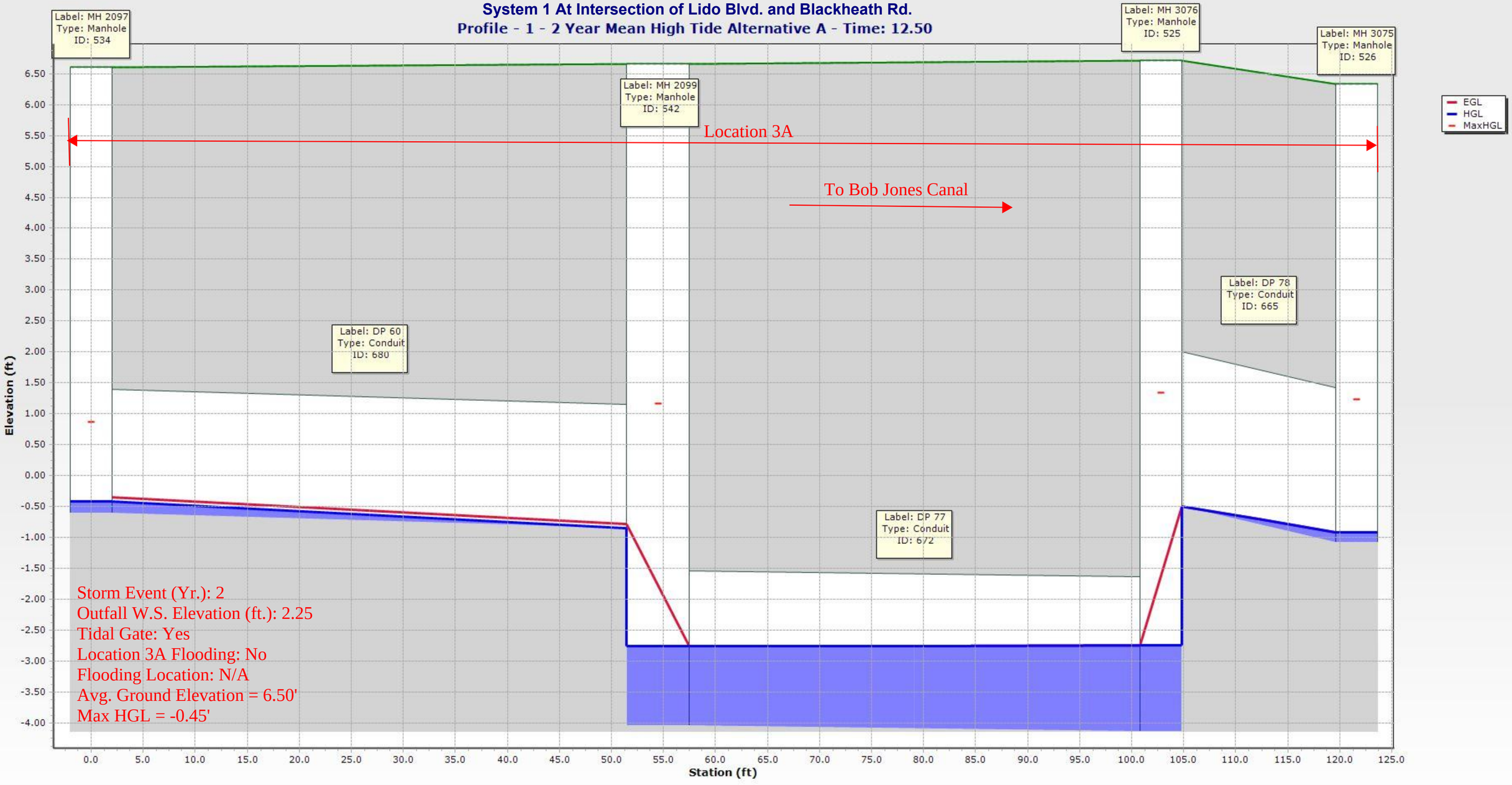
Manholes Drainage System 7 Existing 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1001	7.32	0.12	4.04	48	Circular Structure
MH 1023	7.47	-0.23	3.3	48	Circular Structure
MH 1025	7.07	-0.53	3.33	48	Circular Structure
MH 1027	6.79	-1.01	3.31	48	Circular Structure
MH 1029	6.58	-1.32	3.08	48	Circular Structure
MH 1030	6.51	-1.59	3.07	48	Circular Structure
MH 1031	6.49	0.49	3	96	Circular Structure
MH 1033	6.68	-1.12	3.04	48	Circular Structure
MH 1035	6.77	-0.63	3.54	48	Circular Structure
MH 1037	7.01	-0.59	3.85	48	Circular Structure
MH 1038	7.24	0.44	3.99	48	Circular Structure
MH 4011	6.15	1.05	4.06	48	Circular Structure
MH 4012	6.35	0.95	3.98	48	Circular Structure
MH 4017	5.31	-0.99	2.98	48	Circular Structure
MH 4020	5.41	-0.87	2.98	48	Circular Structure
MH 4021	5.35	-2.65	3.05	48	Circular Structure
MH 5003	6.67	-1.08	3.09	60	Circular Structure
MH 5006	6.68	-0.62	3.17	48	Circular Structure
MH 5009	6.91	-0.66	3.34	60	Circular Structure
MH 5011	7.28	-0.82	3.57	48	Circular Structure
MH 5014	7.6	0.3	3.71	48	Circular Structure
MH 5027	5.76	-0.54	2.98	96	Circular Structure
MH 5030	6.44	-1.66	3.04	48	Circular Structure
MH 5031	5.74	-0.86	3.04	48	Circular Structure
MH 9999	5.25	-1.35	2.98	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**83.52**		

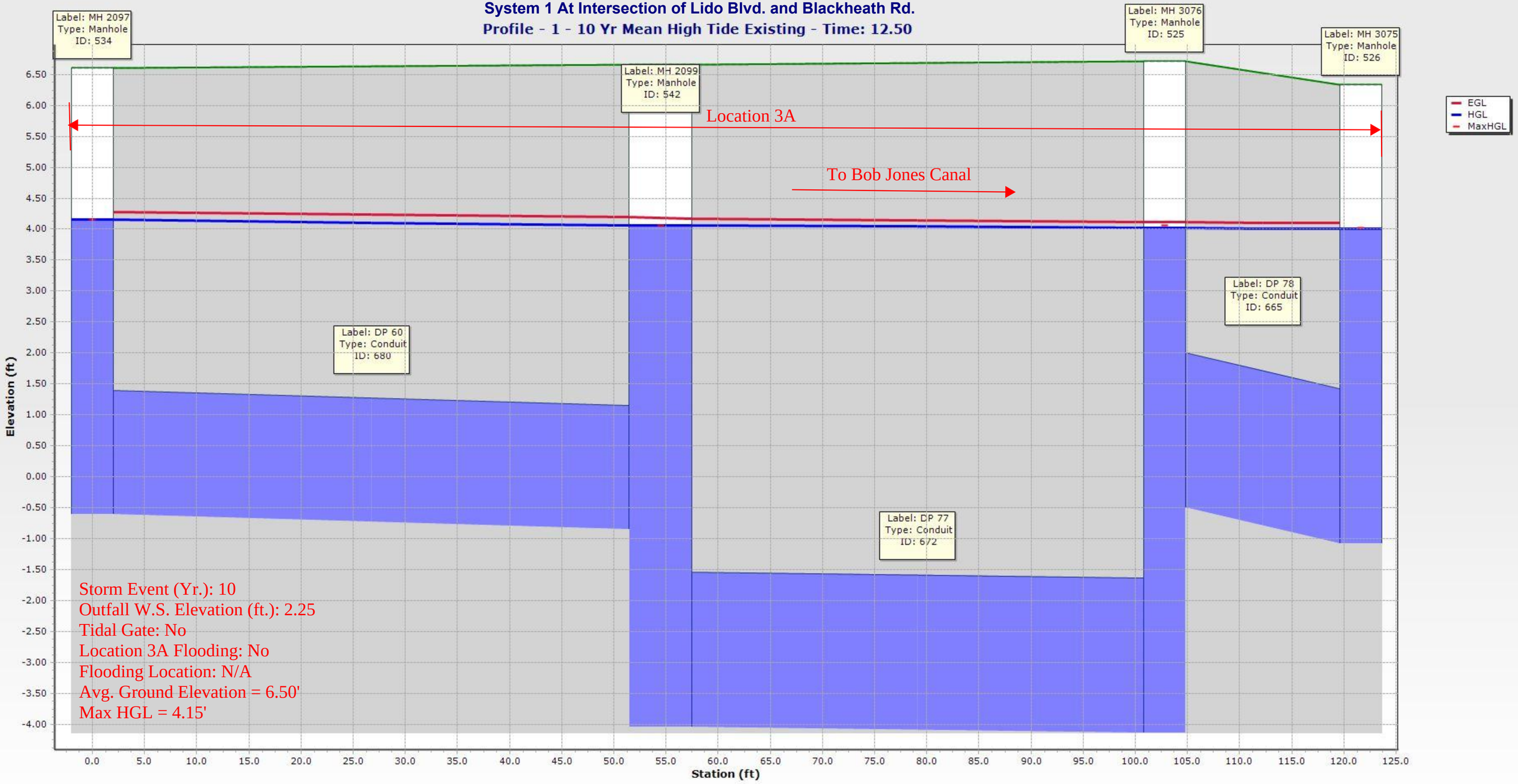
Manholes Drainage System 7 Alternative "A" 10 Yr. Minor Coastal Flood @ 12.5 Hrs					
Label	**Elevation (Rim) (ft)**	**Elevation (Invert) (ft)**	**Hydraulic Grade Line (Out) (ft)**	**Diameter (in)**	**Structure Type**
MH 1001	7.32	0.12	3.33	48	Circular Structure
MH 1023	7.47	-0.23	2.93	48	Circular Structure
MH 1025	7.07	-0.53	2.99	48	Circular Structure
MH 1027	6.79	-1.01	2.95	48	Circular Structure
MH 1029	6.58	-1.32	2.97	48	Circular Structure
MH 1030	6.51	-1.59	2.94	48	Circular Structure
MH 1031	6.49	0.49	2.97	96	Circular Structure
MH 1033	6.68	-1.12	2.96	48	Circular Structure
MH 1035	6.77	-0.63	3.19	48	Circular Structure
MH 1037	7.01	-0.59	3.31	48	Circular Structure
MH 1038	7.24	0.44	3.32	48	Circular Structure
MH 4011	6.15	1.05	4.05	48	Circular Structure
MH 4012	6.35	0.95	3.98	48	Circular Structure
MH 4017	5.31	-0.99	2.96	48	Circular Structure
MH 4020	5.41	-0.87	2.95	48	Circular Structure
MH 4021	5.35	-2.65	2.93	48	Circular Structure
MH 5003	6.67	-1.08	2.89	60	Circular Structure
MH 5006	6.68	-0.62	2.87	48	Circular Structure
MH 5009	6.91	-0.66	3.07	60	Circular Structure
MH 5011	7.28	-0.82	3.22	48	Circular Structure
MH 5014	7.6	0.3	3.7	48	Circular Structure
MH 5027	5.76	-0.54	2.96	96	Circular Structure
MH 5030	6.44	-1.66	2.98	48	Circular Structure
MH 5031	5.74	-0.86	2.86	48	Circular Structure
MH 9999	5.25	-1.35	2.96	48	Circular Structure
Summation of Hydraulic Grade Line Elevations (ft)			**78.24**		

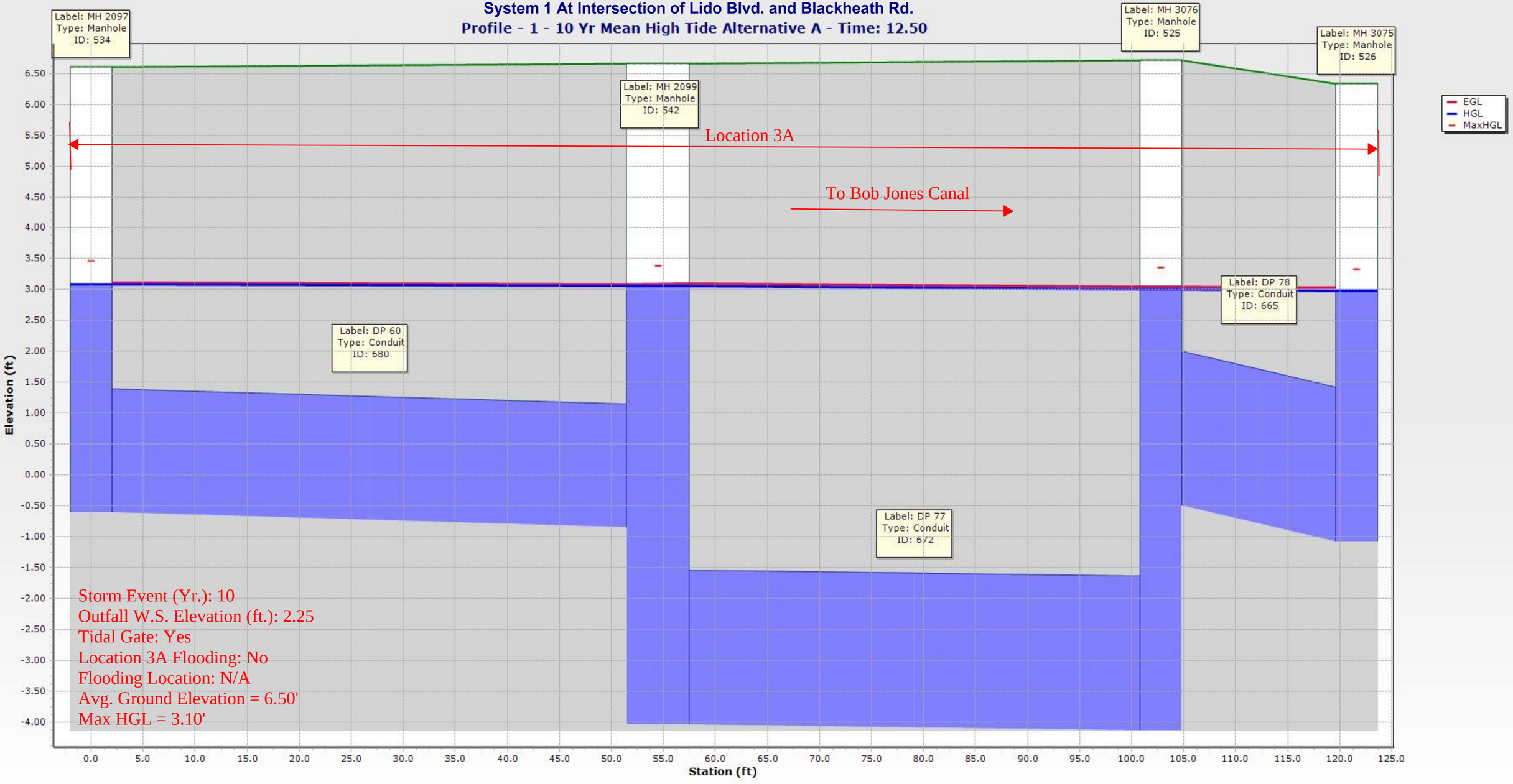
Appendix E

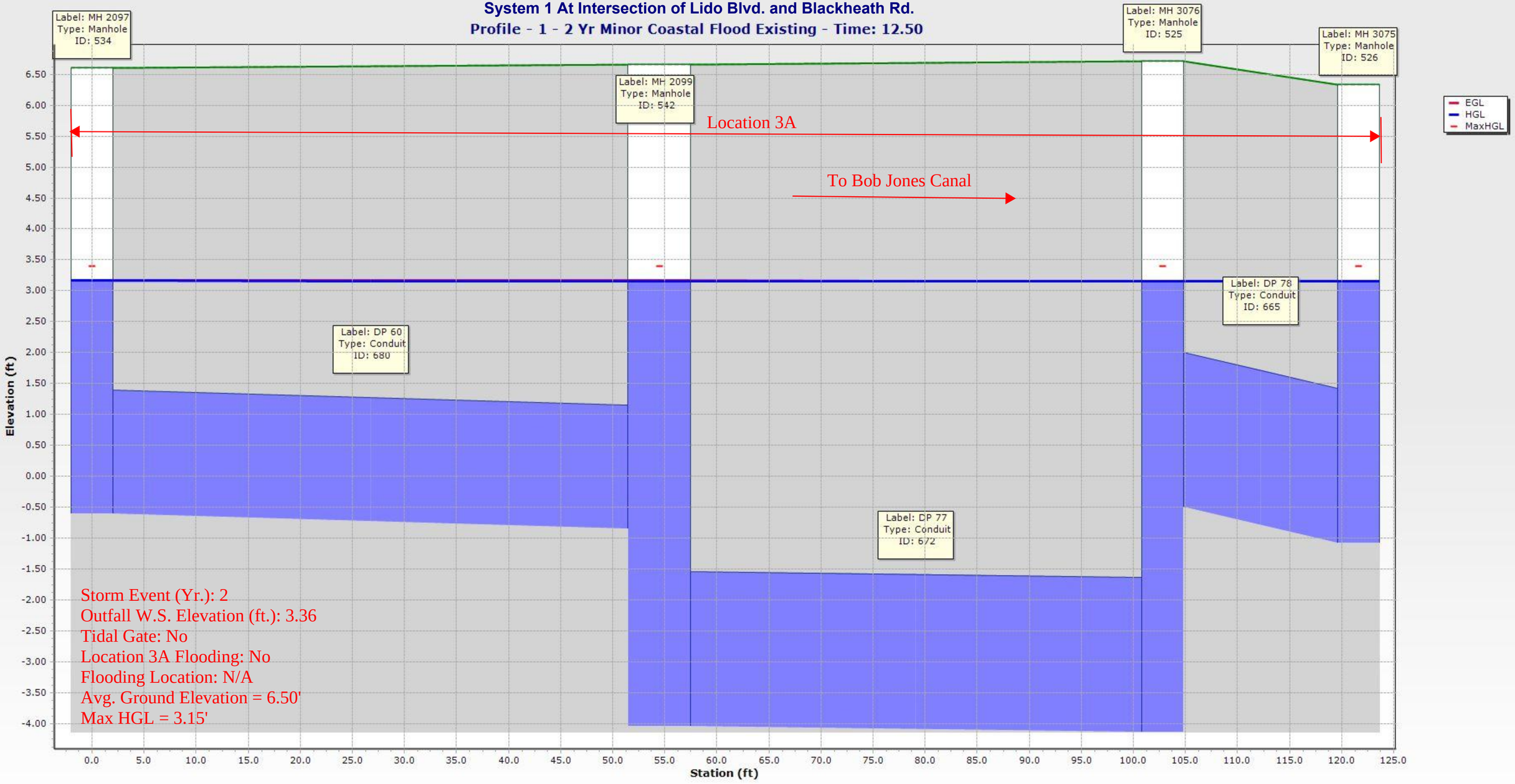
Drainage System Profiles

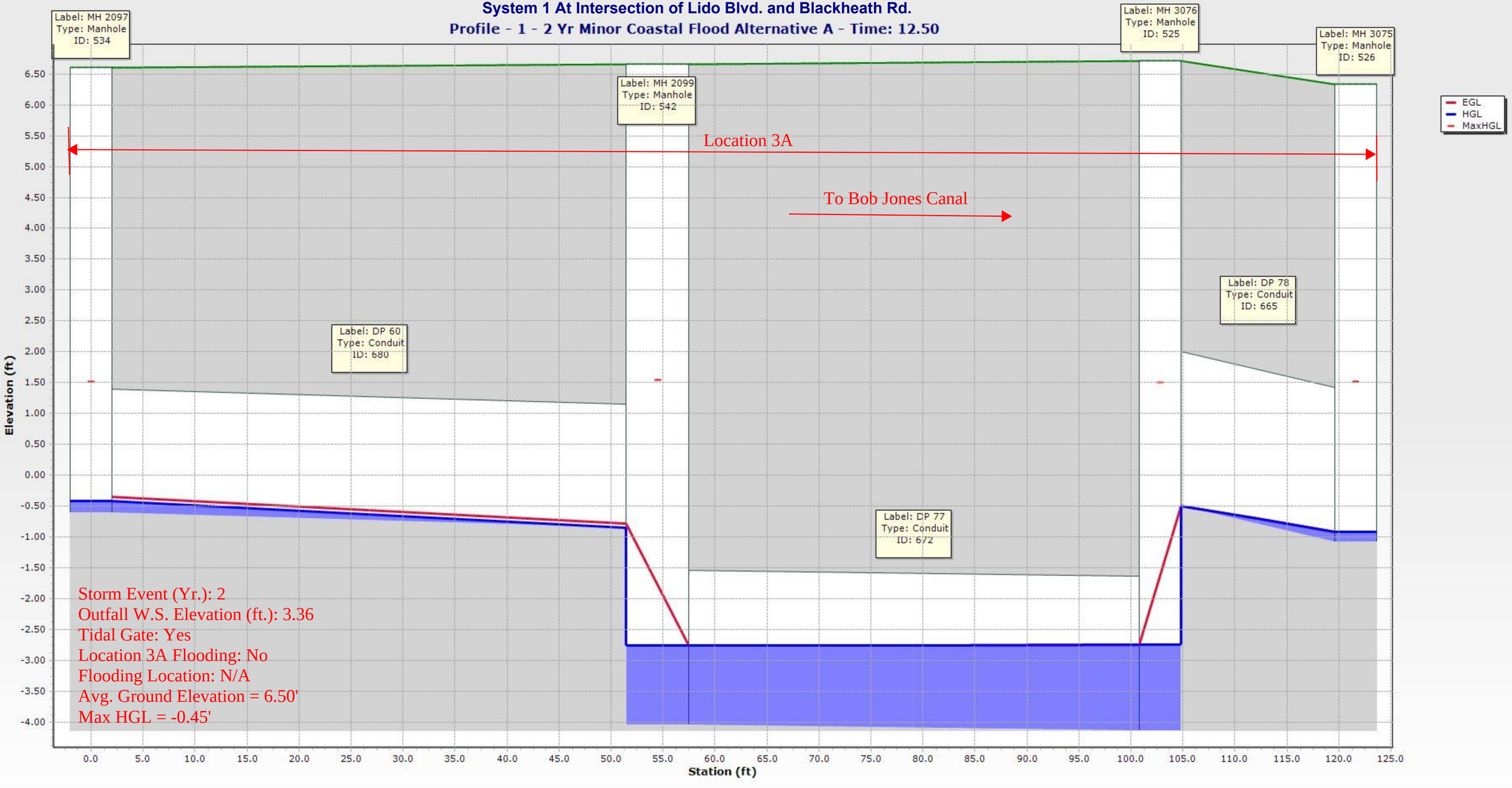

System 1 At Intersection of Lido Blvd. and Blackheath Rd.
Profile - 1 - 2 Yr Mean High Tide Existing - Time: 12.50
Label: MH 2097
Type: Manhole
ID: 534
Label: MH 2099
Type: Manhole
ID: 542
Label: MH 3076
Type: Manhole
ID: 525
Label: MH 3075
Type: Manhole
ID: 526
Location 3A
To Bob Jones Canal
Label: DP 60
Type: Conduit
ID: 680
Label: DP 77
Type: Conduit
ID: 672
Label: DP 78
Type: Conduit
ID: 665
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.50'
Max HGL = 2.00'

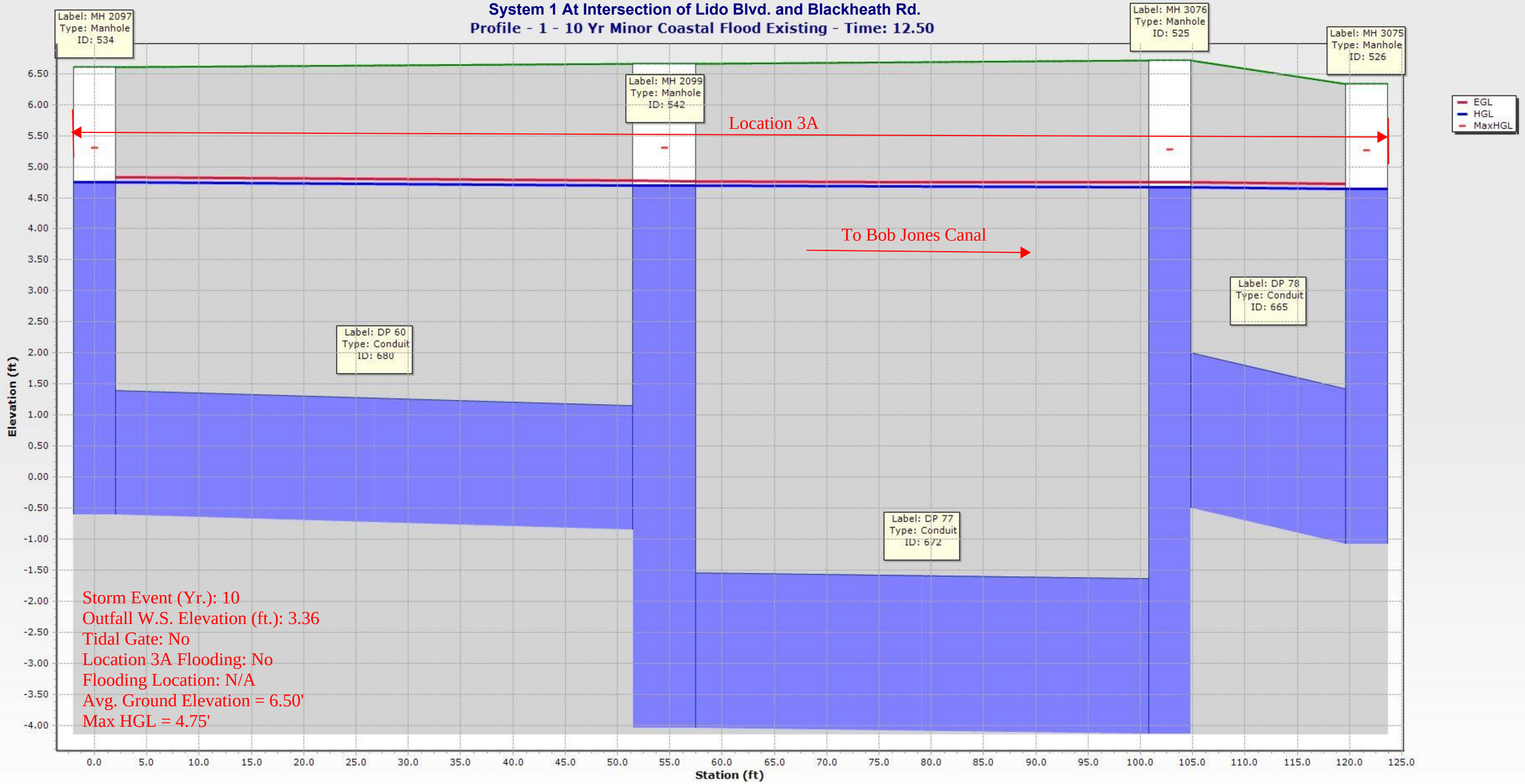

System 1 At Intersection of Lido Blvd. and Blackheath Rd.
Profile - 1 - 2 Year Mean High Tide Alternative A - Time: 12.50
Label: MH 2097
Type: Manhole
ID: 534
Label: MH 2099
Type: Manhole
ID: 542
Label: MH 3076
Type: Manhole
ID: 525
Label: MH 3075
Type: Manhole
ID: 526
Location 3A
To Bob Jones Canal
Label: DP 60
Type: Conduit
ID: 680
Label: DP 78
Type: Conduit
ID: 665
Label: DP 77
Type: Conduit
ID: 672
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.50'
Max HGL = -0.45'

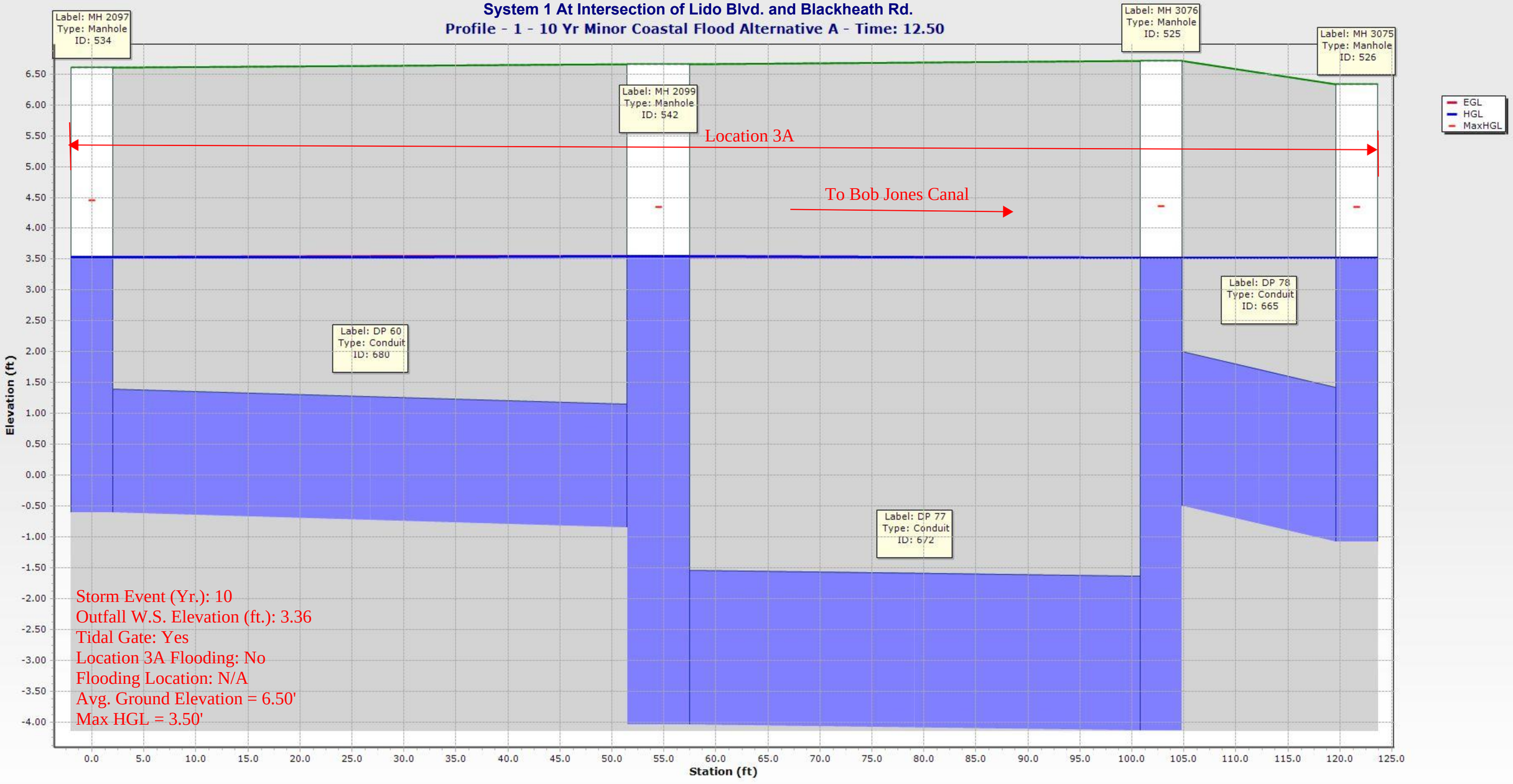

System 1 At Intersection of Lido Blvd. and Blackheath Rd.
Profile - 1 - 10 Yr Mean High Tide Existing - Time: 12.50
Label: MH 2097
Type: Manhole
ID: 534
Label: MH 2099
Type: Manhole
ID: 542
Label: MH 3076
Type: Manhole
ID: 525
Label: MH 3075
Type: Manhole
ID: 526
Location 3A
To Bob Jones Canal
Label: DP 60
Type: Conduit
ID: 680
Label: DP 77
Type: Conduit
ID: 672
Label: DP 78
Type: Conduit
ID: 665
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.50'
Max HGL = 4.15'

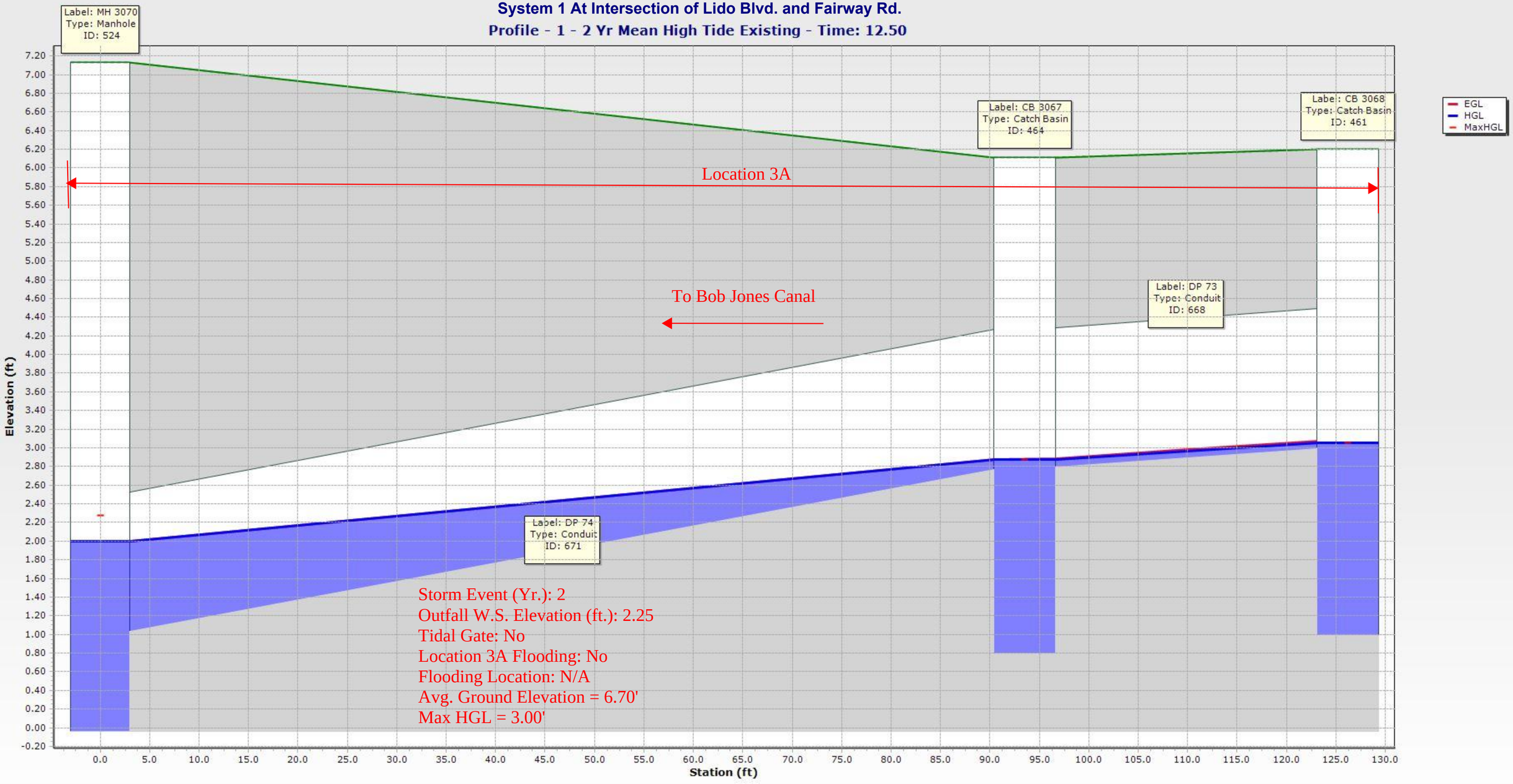

System 1 At Intersection of Lido Blvd. and Blackheath Rd.
Profile - 1 - 10 Yr Mean High Tide Alternative A - Time: 12.50
Label: MH 2097
Type: Manhole
ID: 534
Label: MH 2099
Type: Manhole
ID: 542
Label: MH 3076
Type: Manhole
ID: 525
Label: MH 3075
Type: Manhole
ID: 526
Location 3A
To Bob Jones Canal
Label: DP 60
Type: Conduit
ID: 680
Label: DP 77
Type: Conduit
ID: 672
Label: DP 78
Type: Conduit
ID: 665
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.50'
Max HGL = 3.10'

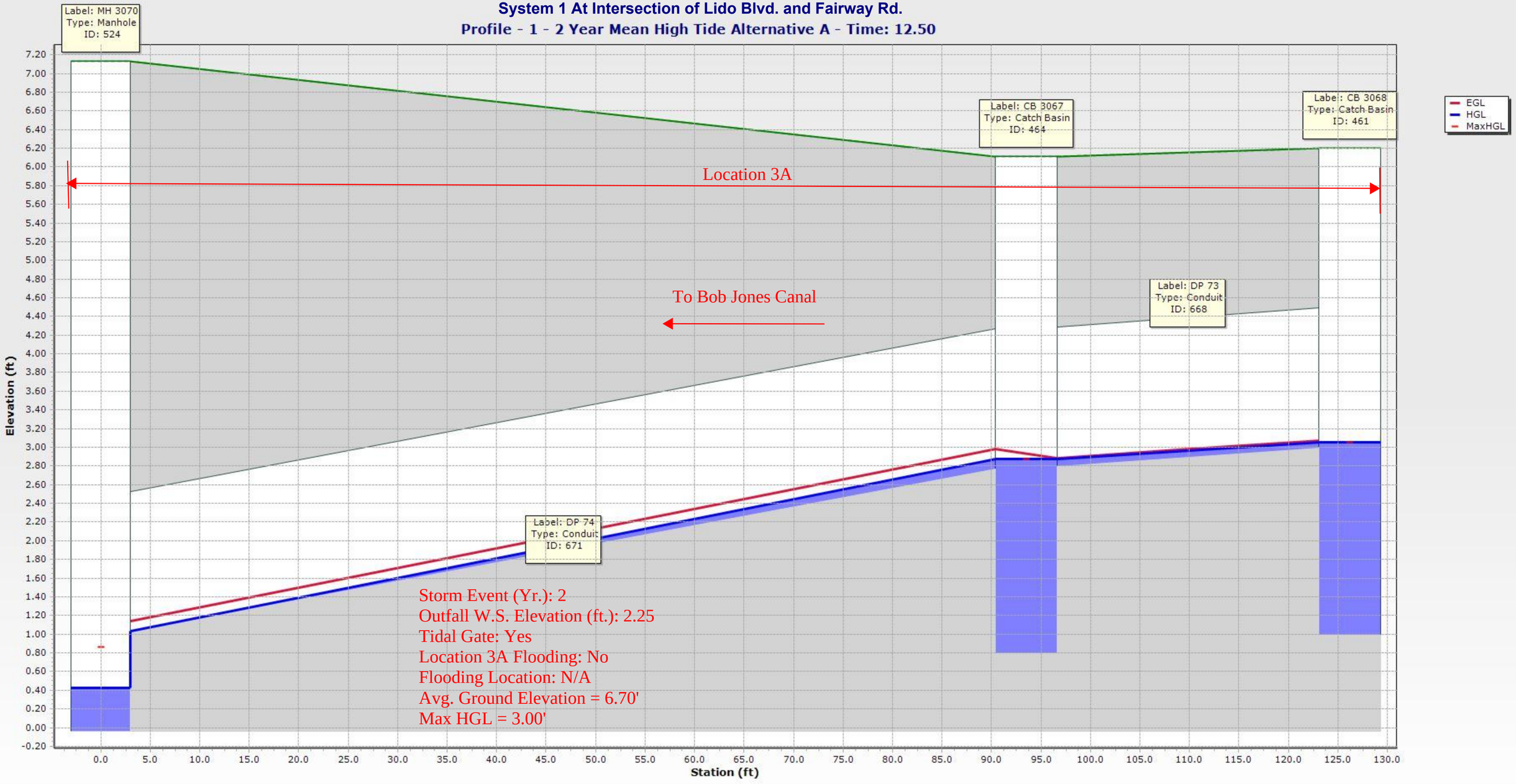

System 1 At Intersection of Lido Blvd. and Blackheath Rd.
Profile - 1 - 2 Yr Minor Coastal Flood Existing - Time: 12.50
Label: MH 2097
Type: Manhole
ID: 534
Label: MH 2099
Type: Manhole
ID: 542
Label: MH 3076
Type: Manhole
ID: 525
Label: MH 3075
Type: Manhole
ID: 526
EGL
HGL
MaxHGL
Location 3A
To Bob Jones Canal
Label: DP 60
Type: Conduit
ID: 680
Label: DP 77
Type: Conduit
ID: 672
Label: DP 78
Type: Conduit
ID: 665
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.50'
Max HGL = 3.15'
Elevation (ft)
Station (ft)

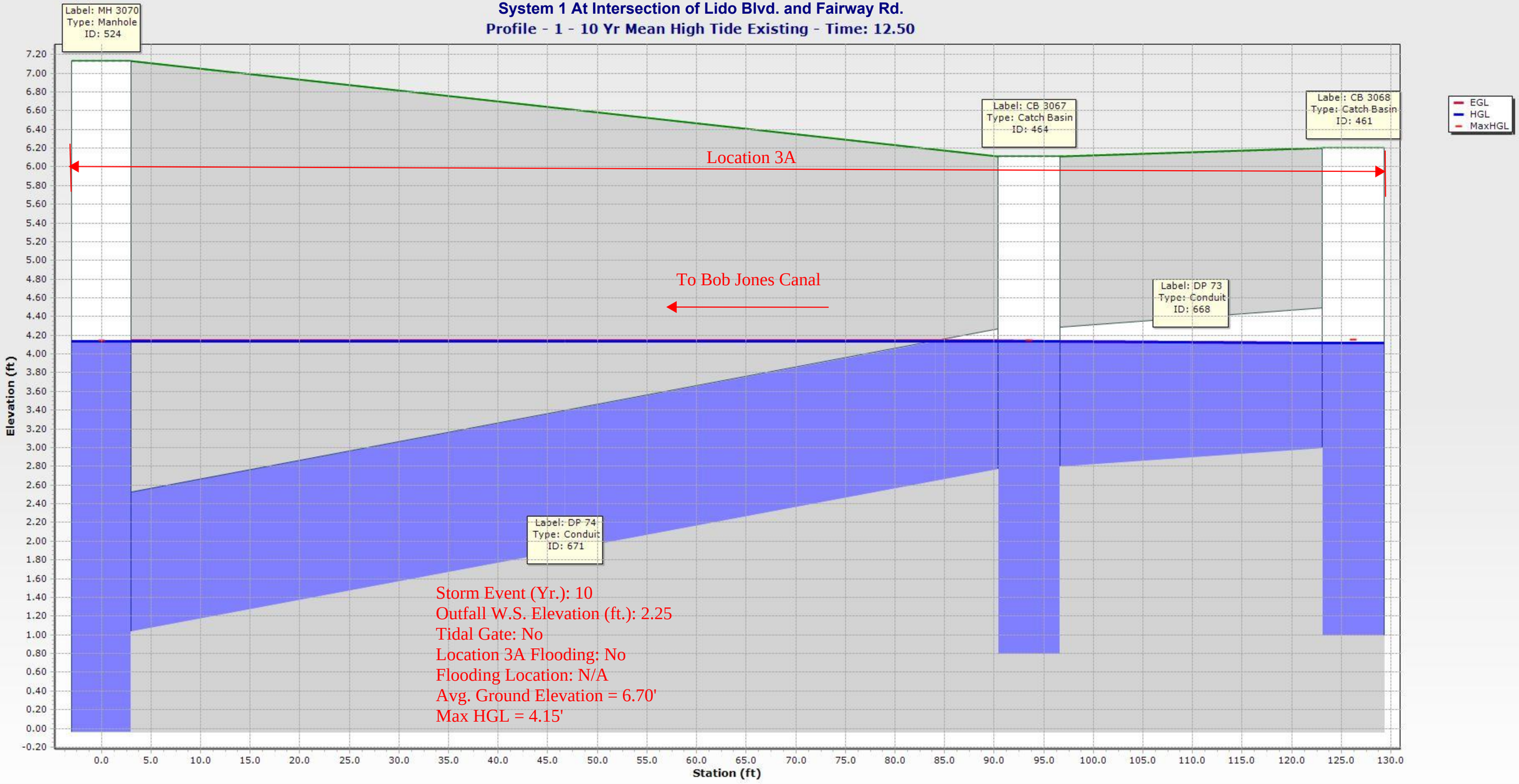

System 1 At Intersection of Lido Blvd. and Blackheath Rd.
Profile - 1 - 2 Yr Minor Coastal Flood Alternative A - Time: 12.50
Label: MH 2097
Type: Manhole
ID: 534
Label: MH 2099
Type: Manhole
ID: 542
Label: MH 3076
Type: Manhole
ID: 525
Label: MH 3075
Type: Manhole
ID: 526
Location 3A
To Bob Jones Canal
Label: DP 60
Type: Conduit
ID: 680
Label: DP 78
Type: Conduit
ID: 665
Label: DP 77
Type: Conduit
ID: 672
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.50'
Max HGL = -0.45'

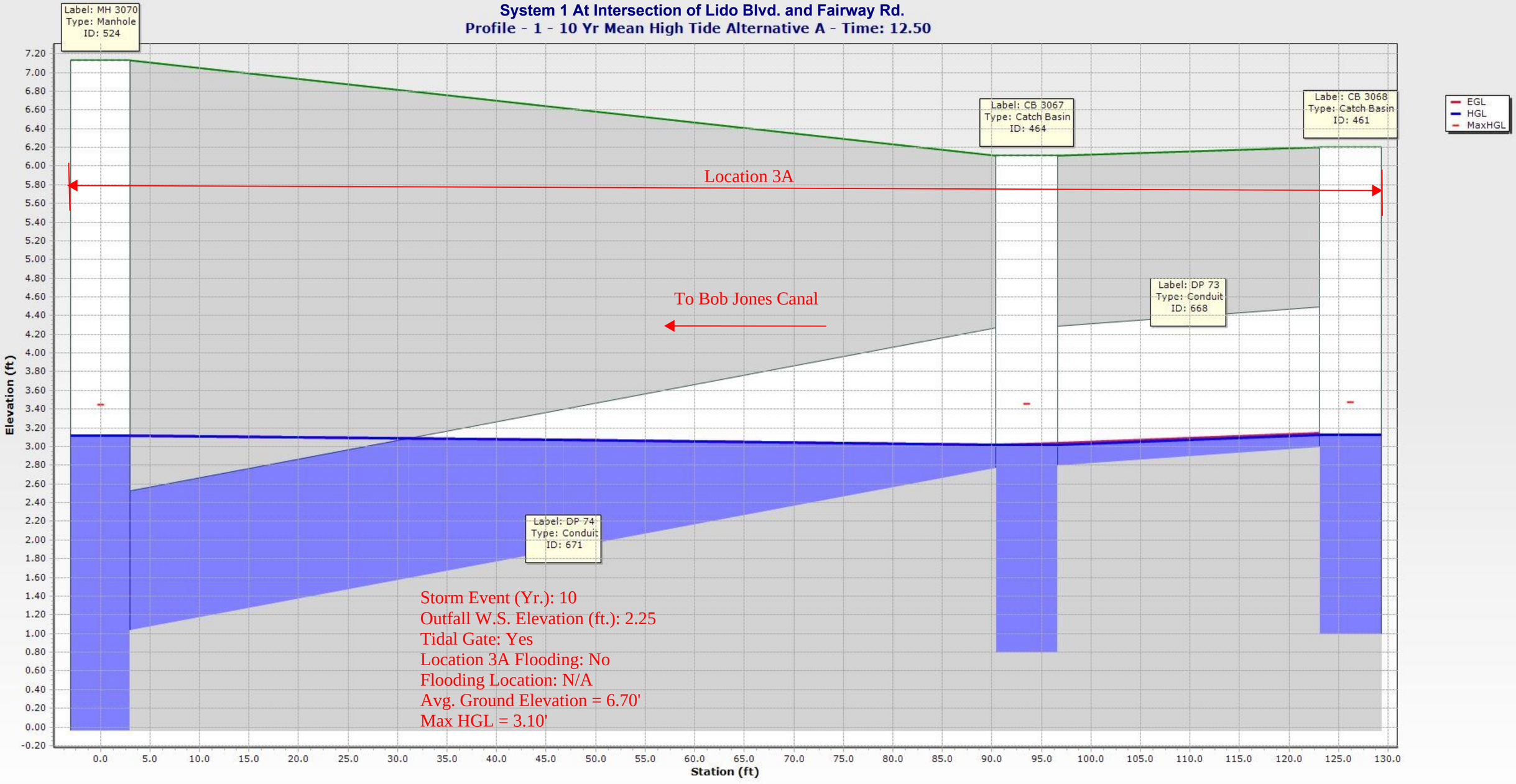

System 1 At Intersection of Lido Blvd. and Blackheath Rd.
Profile - 1 - 10 Yr Minor Coastal Flood Existing - Time: 12.50
Label: MH 2097
Type: Manhole
ID: 534
Label: MH 2099
Type: Manhole
ID: 542
Label: MH 3076
Type: Manhole
ID: 525
Label: MH 3075
Type: Manhole
ID: 526
Location 3A
To Bob Jones Canal
Label: DP 60
Type: Conduit
ID: 680
Label: DP 77
Type: Conduit
ID: 672
Label: DP 78
Type: Conduit
ID: 665
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.50'
Max HGL = 4.75'

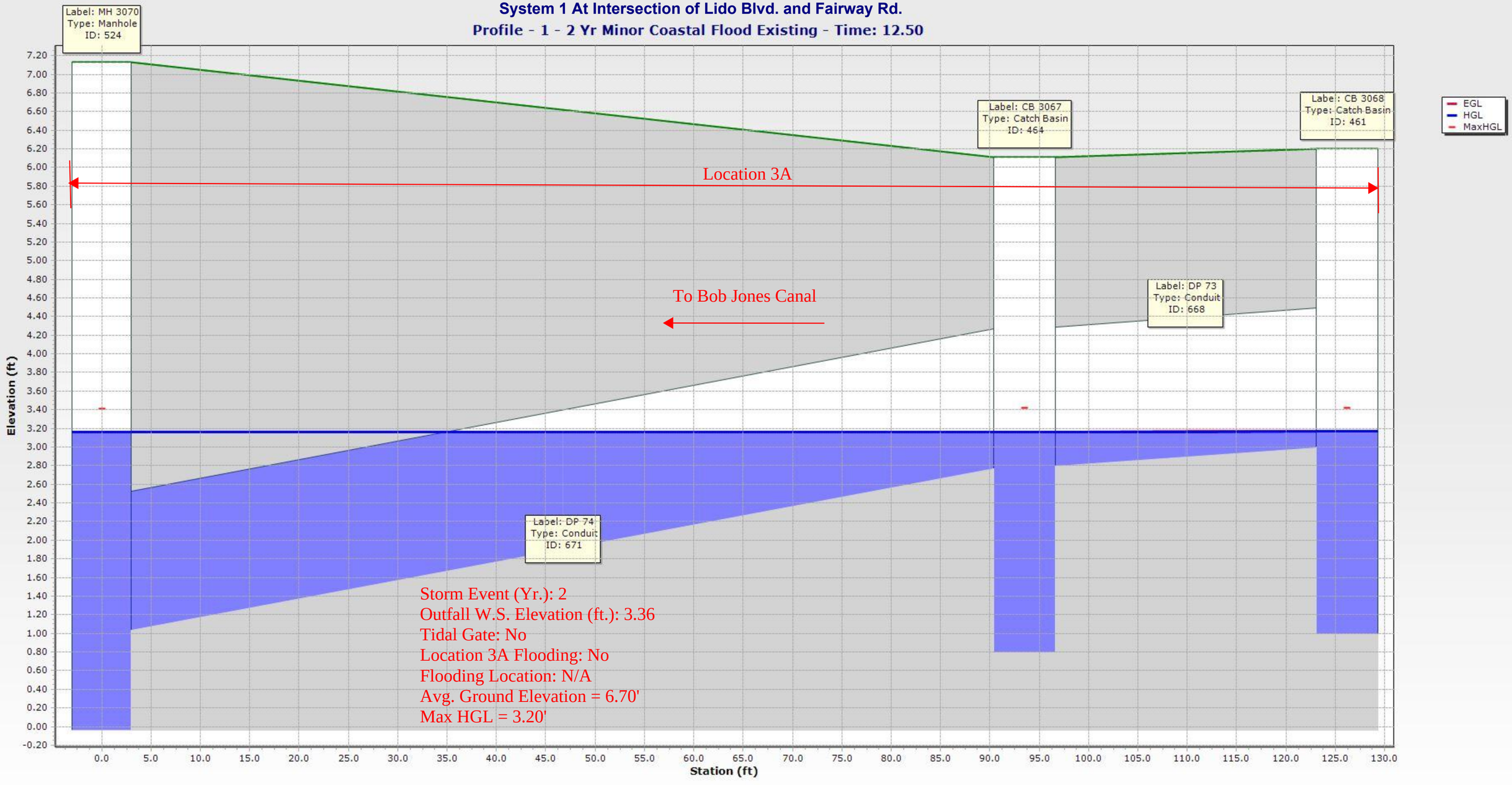

System 1 At Intersection of Lido Blvd. and Blackheath Rd.
Profile - 1 - 10 Yr Minor Coastal Flood Alternative A - Time: 12.50
Label: MH 2097
Type: Manhole
ID: 534
Label: MH 2099
Type: Manhole
ID: 542
Label: MH 3076
Type: Manhole
ID: 525
Label: MH 3075
Type: Manhole
ID: 526
EGL
HGL
MaxHGL
Location 3A
To Bob Jones Canal
Label: DP 60
Type: Conduit
ID: 680
Label: DP 77
Type: Conduit
ID: 672
Label: DP 78
Type: Conduit
ID: 665
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.50'
Max HGL = 3.50'
Elevation (ft)
Station (ft)

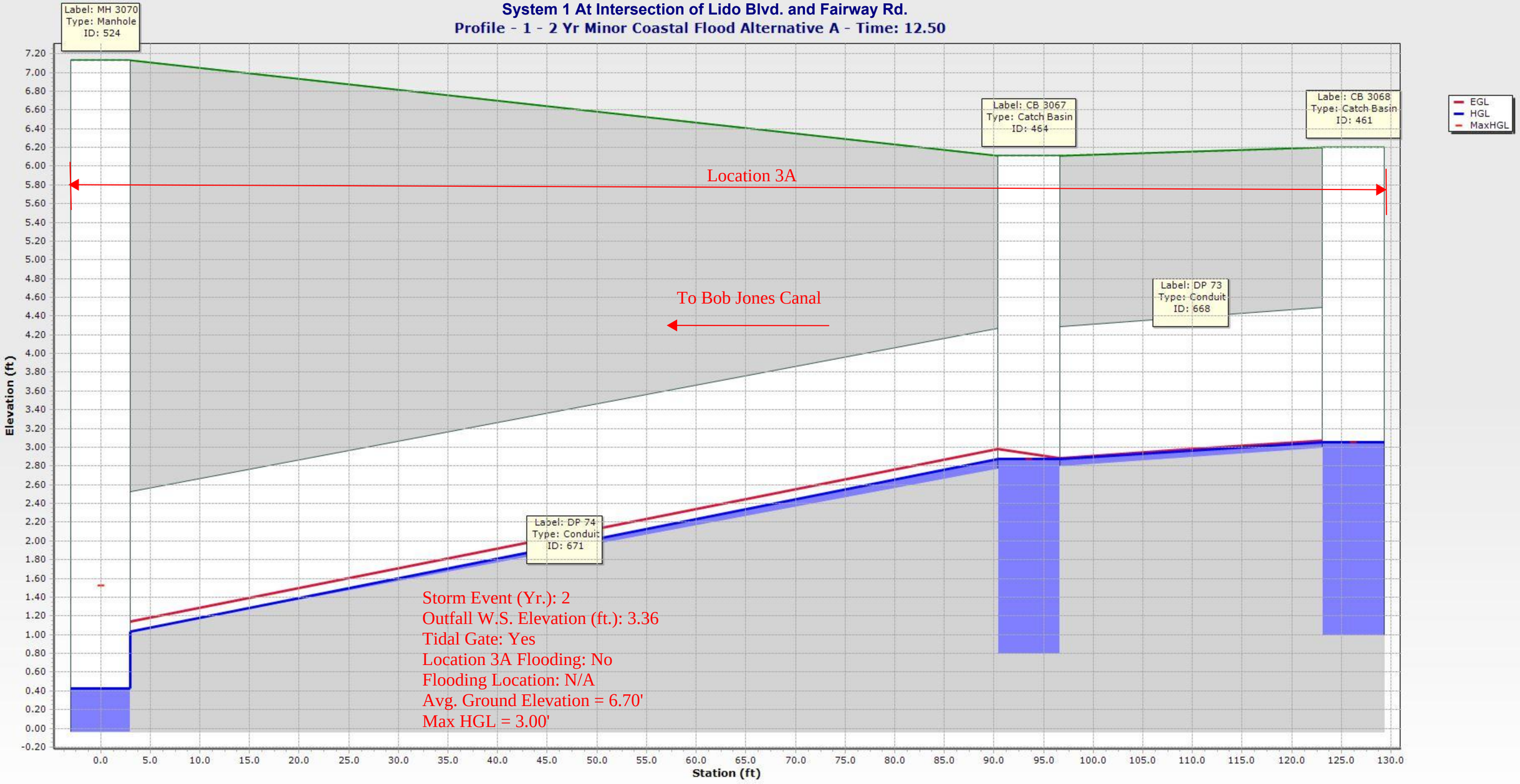

System 1 At Intersection of Lido Blvd. and Fairway Rd.
Profile - 1 - 2 Yr Mean High Tide Existing - Time: 12.50
Label: MH 3070
Type: Manhole
ID: 524
Label: CB 3067
Type: Catch Basin
ID: 464
Label: CB 3068
Type: Catch Basin
ID: 461
EGL
HGL
MaxHGL
Location 3A
To Bob Jones Canal
Label: DP 73
Type: Conduit
ID: 668
Label: DP 74
Type: Conduit
ID: 671
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.70'
Max HGL = 3.00'
Elevation (ft)
Station (ft)

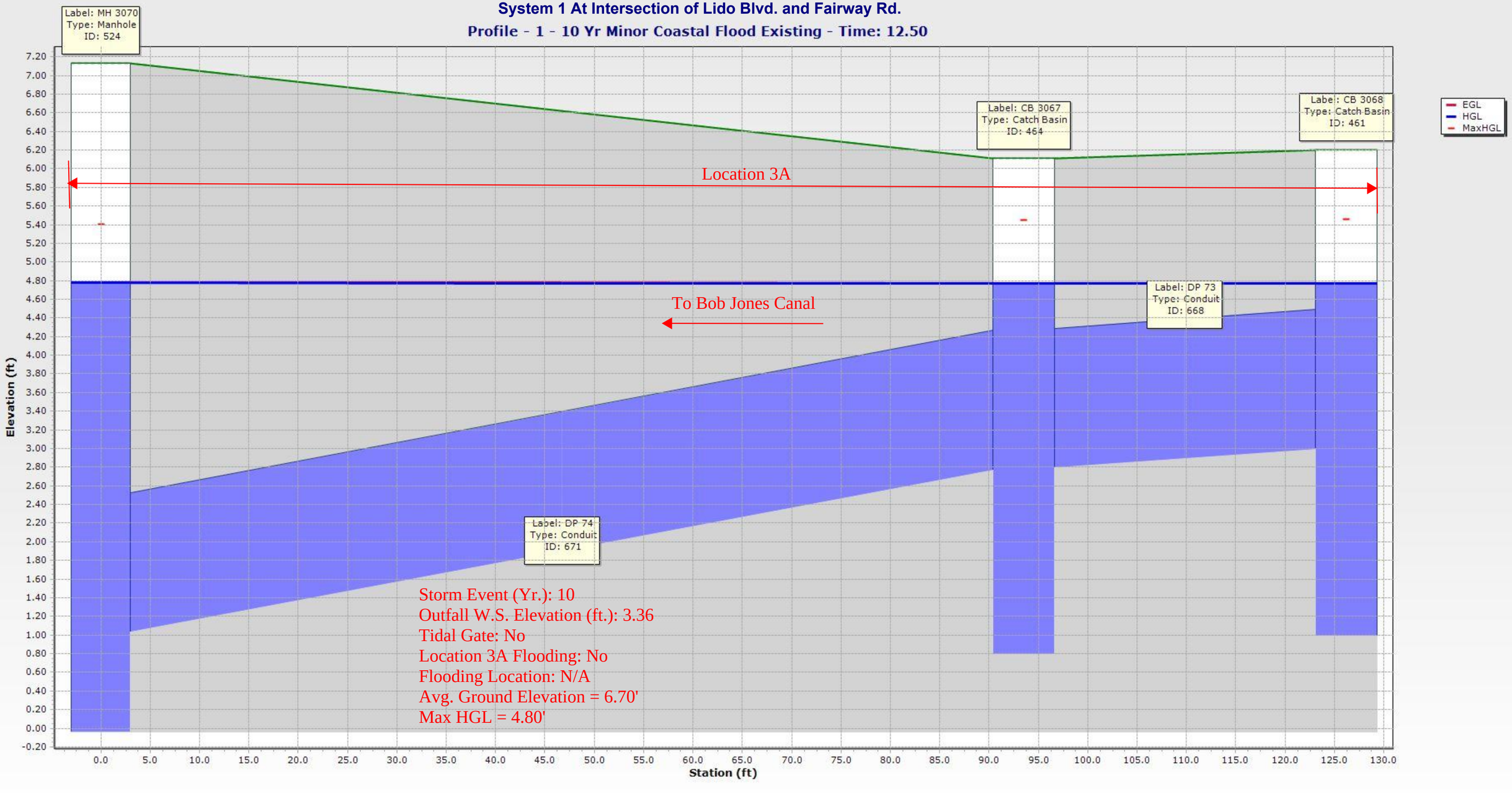

System 1 At Intersection of Lido Blvd. and Fairway Rd.
Profile - 1 - 2 Year Mean High Tide Alternative A - Time: 12.50
Label: MH 3070
Type: Manhole
ID: 524
Label: CB 3067
Type: Catch Basin
ID: 464
Label: CB 3068
Type: Catch Basin
ID: 461
EGL
HGL
MaxHGL
Location 3A
To Bob Jones Canal
Label: DP 73
Type: Conduit
ID: 668
Label: DP 74
Type: Conduit
ID: 671
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.70'
Max HGL = 3.00'
Elevation (ft)
Station (ft)

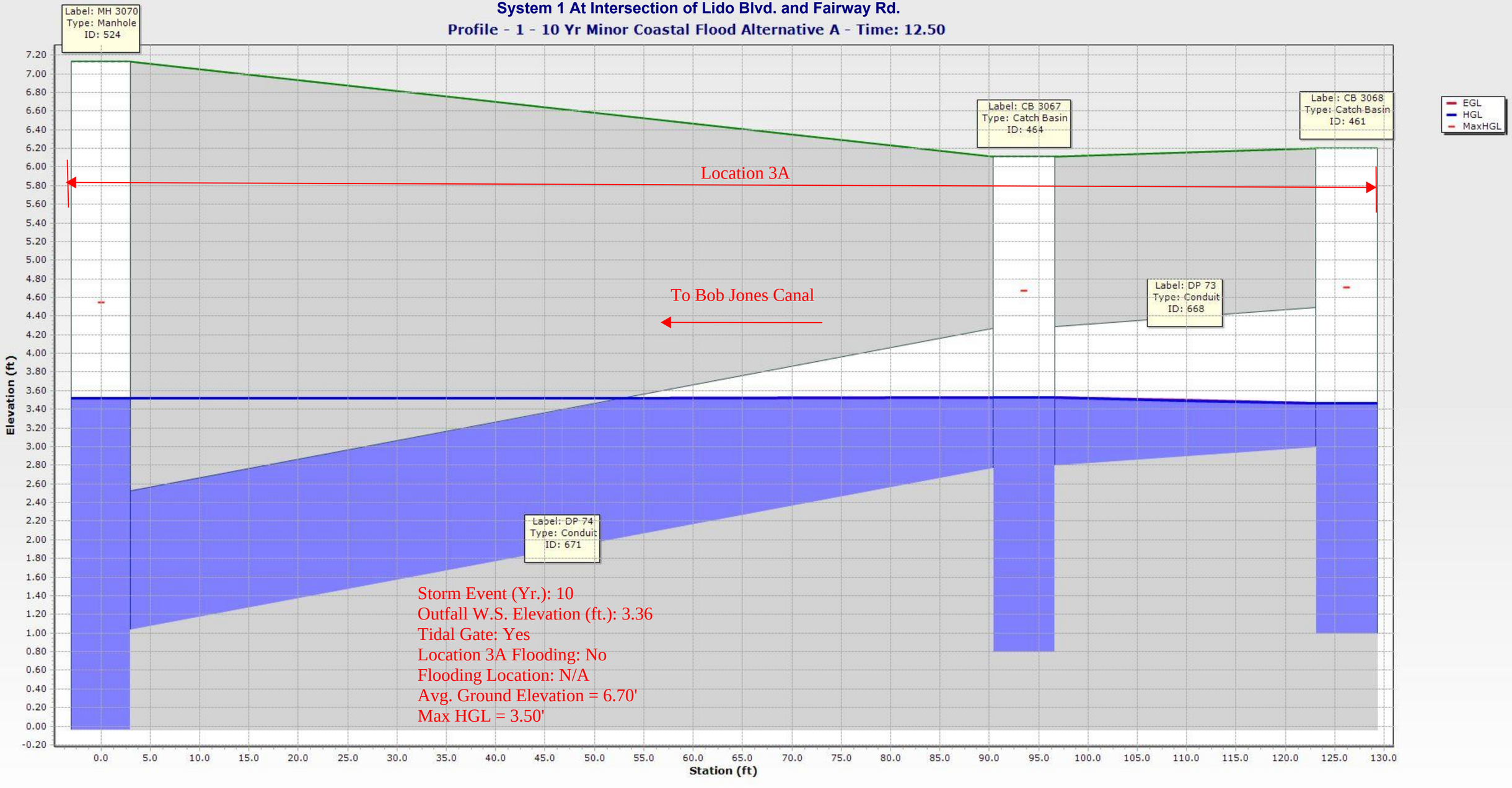

System 1 At Intersection of Lido Blvd. and Fairway Rd.
Profile - 1 - 10 Yr Mean High Tide Existing - Time: 12.50
Label: MH 3070
Type: Manhole
ID: 524
Label: CB 3067
Type: Catch Basin
ID: 464
Label: CB 3068
Type: Catch Basin
ID: 461
EGL
HGL
MaxHGL
Location 3A
To Bob Jones Canal
Label: DP 73
Type: Conduit
ID: 668
Label: DP 74
Type: Conduit
ID: 671
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.70'
Max HGL = 4.15'
Elevation (ft)
Station (ft)

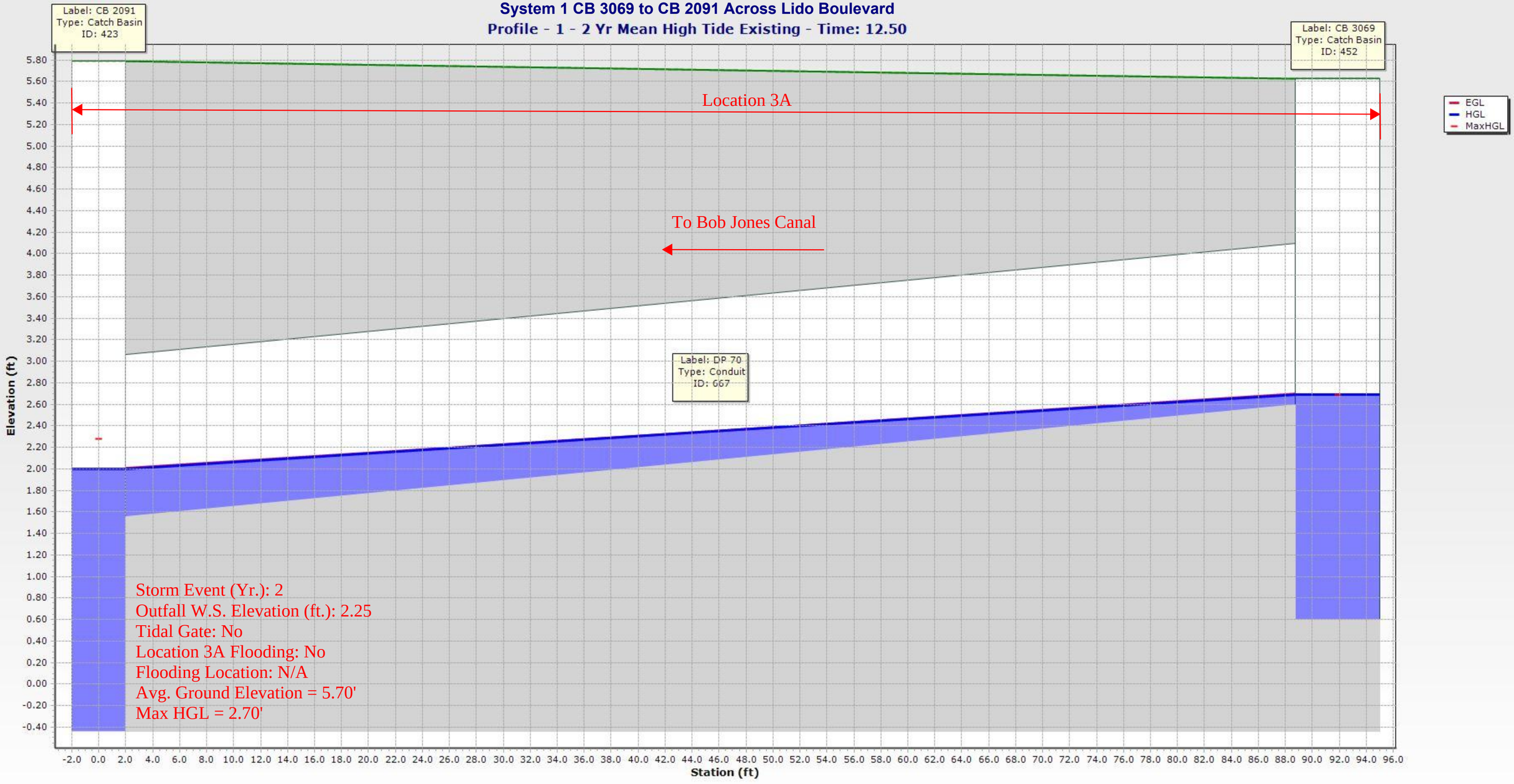

System 1 At Intersection of Lido Blvd. and Fairway Rd.
Profile - 1 - 10 Yr Mean High Tide Alternative A - Time: 12.50
Label: MH 3070
Type: Manhole
ID: 524
Label: CB 3067
Type: Catch Basin
ID: 464
Label: CB 3068
Type: Catch Basin
ID: 461
EGL
HGL
MaxHGL
Location 3A
To Bob Jones Canal
Label: DP 73
Type: Conduit
ID: 668
Label: DP 74
Type: Conduit
ID: 671
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.70'
Max HGL = 3.10'
Elevation (ft)
Station (ft)

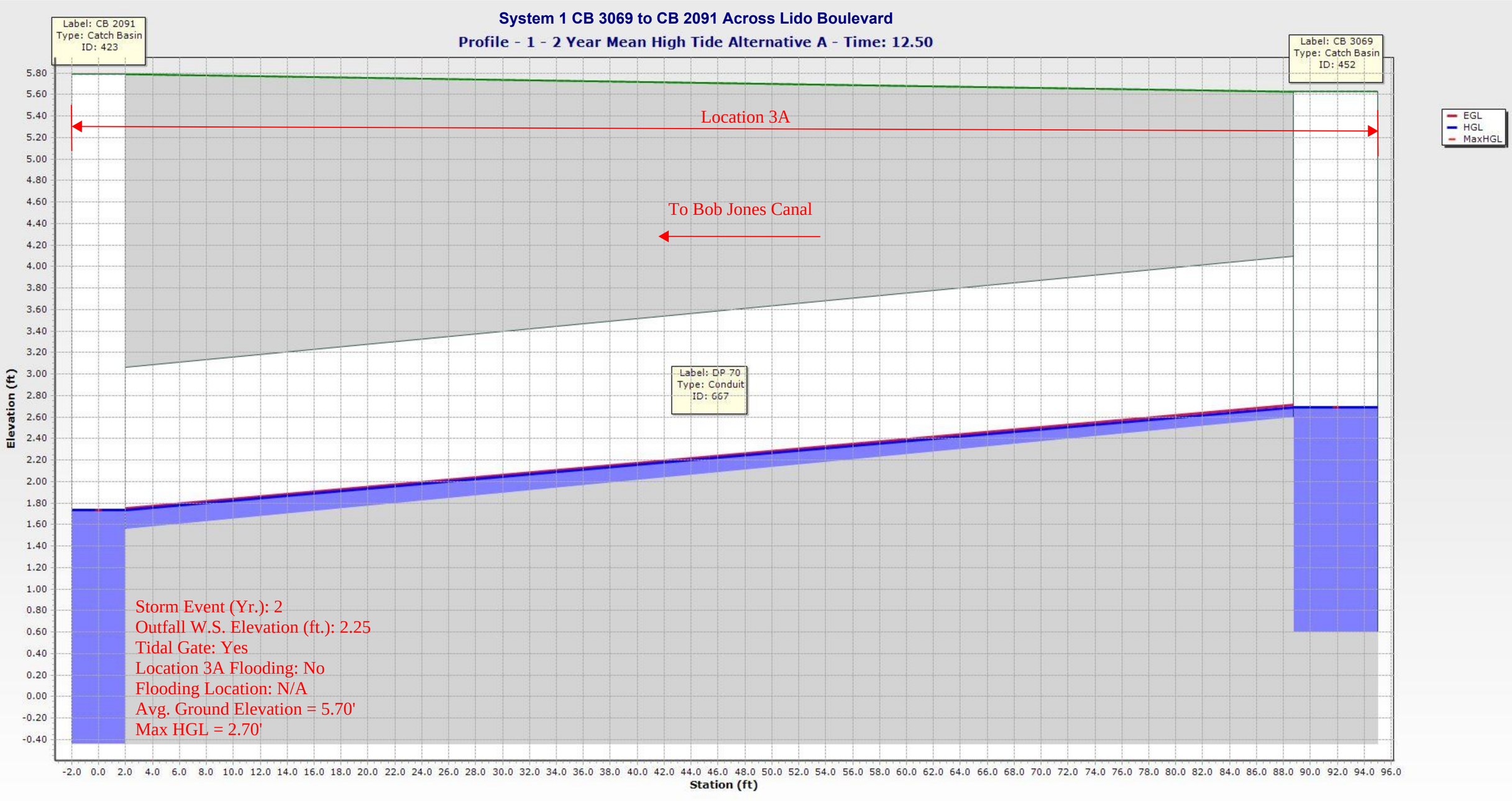

System 1 At Intersection of Lido Blvd. and Fairway Rd.
Profile - 1 - 2 Yr Minor Coastal Flood Existing - Time: 12.50
Label: MH 3070
Type: Manhole
ID: 524
Label: CB 3067
Type: Catch Basin
ID: 464
Label: CB 3068
Type: Catch Basin
ID: 461
EGL
HGL
MaxHGL
Location 3A
To Bob Jones Canal
Label: DP 73
Type: Conduit
ID: 668
Label: DP 74
Type: Conduit
ID: 671
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.70'
Max HGL = 3.20'
Elevation (ft)
Station (ft)

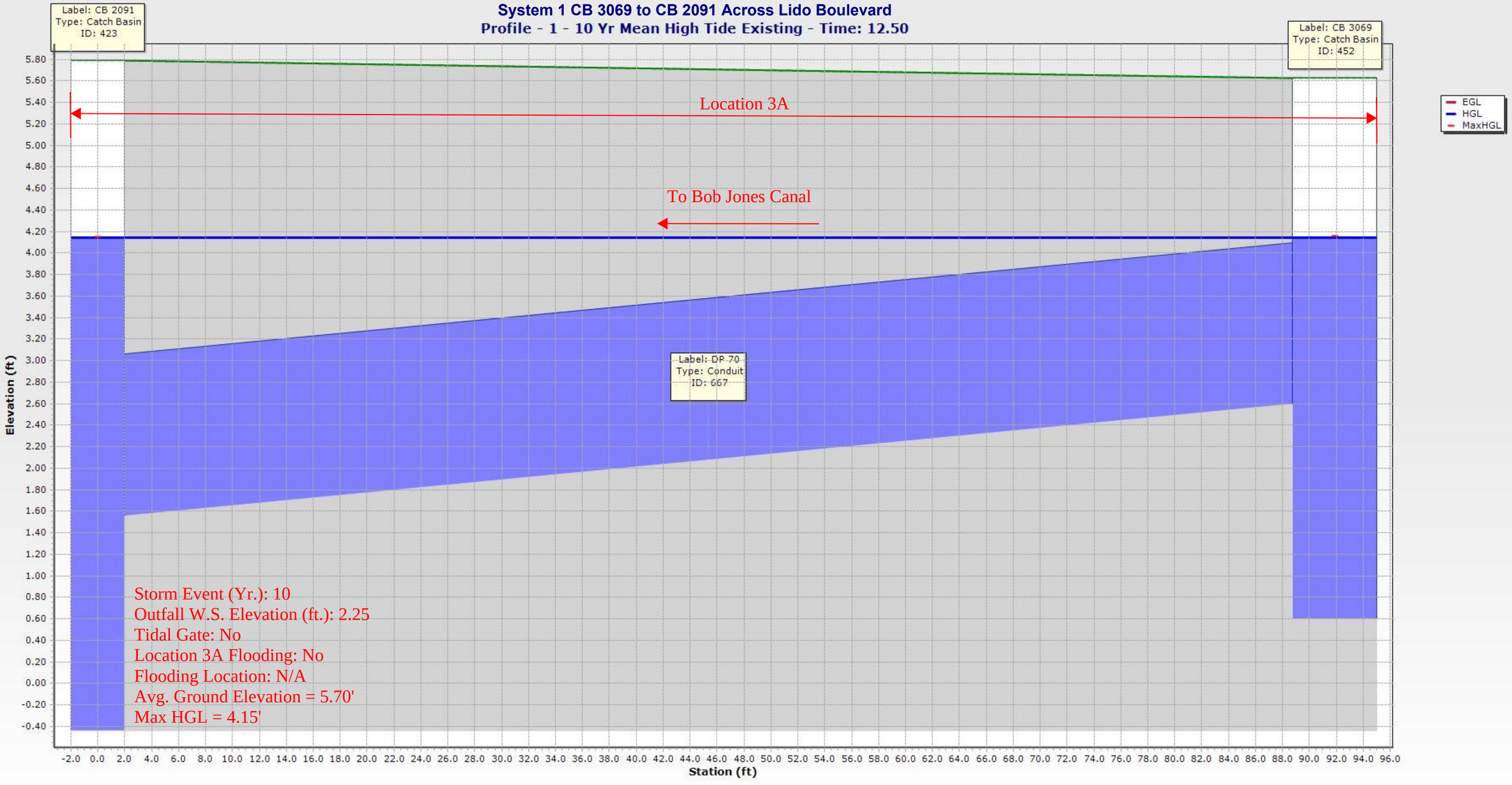

System 1 At Intersection of Lido Blvd. and Fairway Rd.
Profile - 1 - 2 Yr Minor Coastal Flood Alternative A - Time: 12.50
Label: MH 3070
Type: Manhole
ID: 524
Label: CB 3067
Type: Catch Basin
ID: 464
Label: CB 3068
Type: Catch Basin
ID: 461
EGL
HGL
MaxHGL
Location 3A
To Bob Jones Canal
Label: DP 73
Type: Conduit
ID: 668
Label: DP 74
Type: Conduit
ID: 671
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.70'
Max HGL = 3.00'
Elevation (ft)
Station (ft)

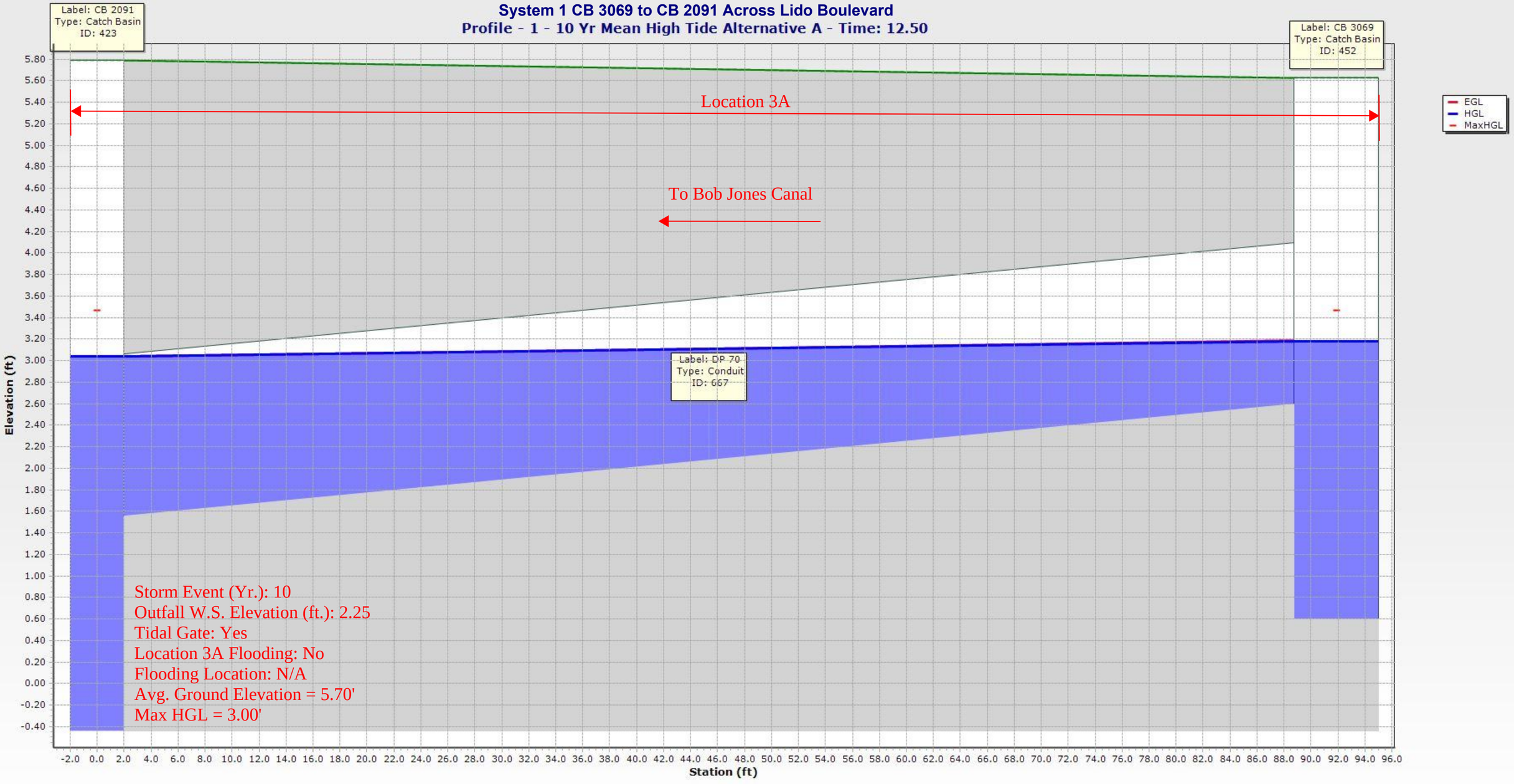

System 1 At Intersection of Lido Blvd. and Fairway Rd.
Profile - 1 - 10 Yr Minor Coastal Flood Existing - Time: 12.50
Label: MH 3070
Type: Manhole
ID: 524
Label: CB 3067
Type: Catch Basin
ID: 464
Label: CB 3068
Type: Catch Basin
ID: 461
EGL
HGL
MaxHGL
Location 3A
To Bob Jones Canal
Label: DP 73
Type: Conduit
ID: 668
Label: DP 74
Type: Conduit
ID: 671
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.70'
Max HGL = 4.80'
Elevation (ft)
Station (ft)

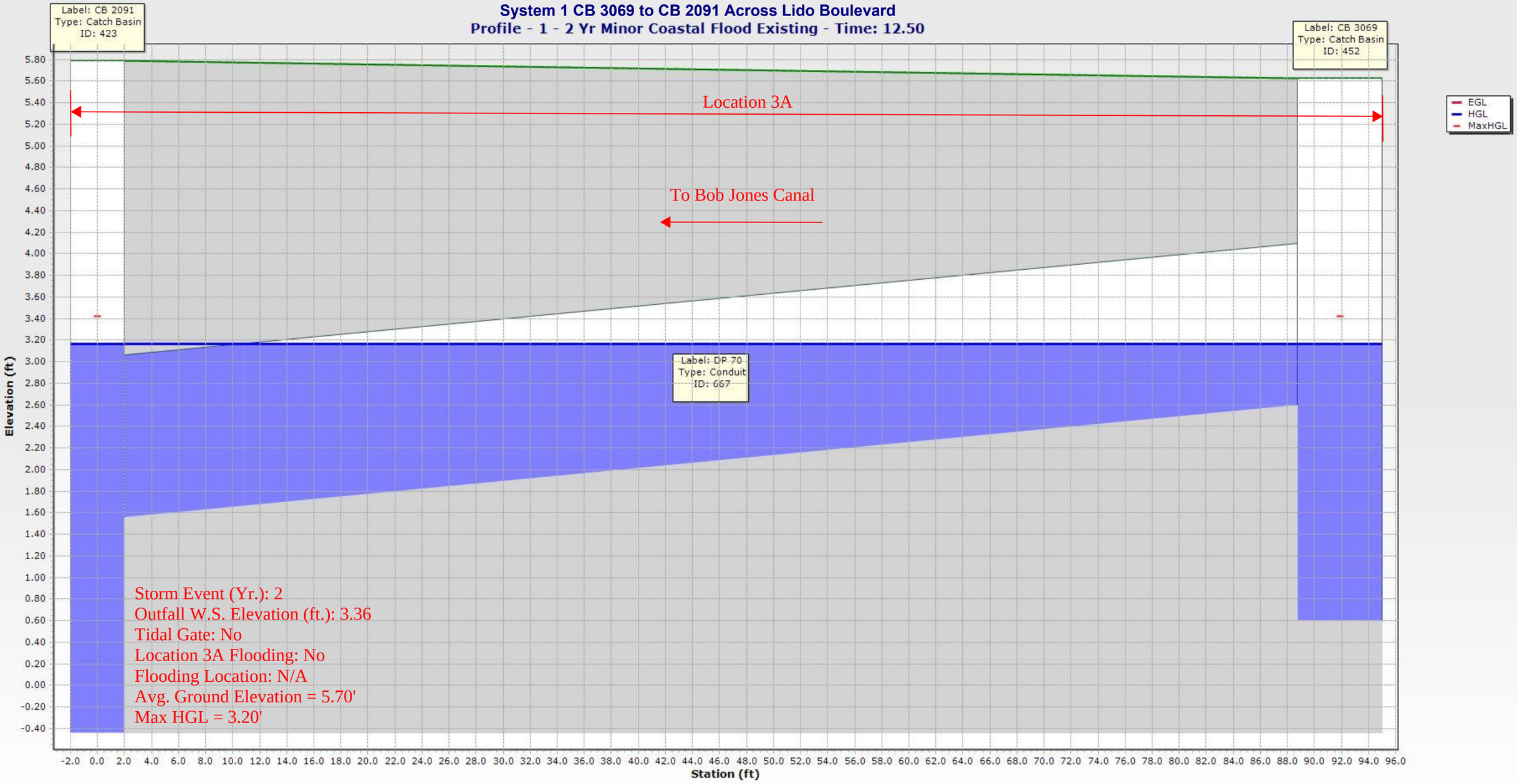

System 1 At Intersection of Lido Blvd. and Fairway Rd.
Profile - 1 - 10 Yr Minor Coastal Flood Alternative A - Time: 12.50
Label: MH 3070
Type: Manhole
ID: 524
Label: CB 3067
Type: Catch Basin
ID: 464
Label: CB 3068
Type: Catch Basin
ID: 461
EGL
HGL
MaxHGL
Location 3A
To Bob Jones Canal
Label: DP 73
Type: Conduit
ID: 668
Label: DP 74
Type: Conduit
ID: 671
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 6.70'
Max HGL = 3.50'
Elevation (ft)
Station (ft)

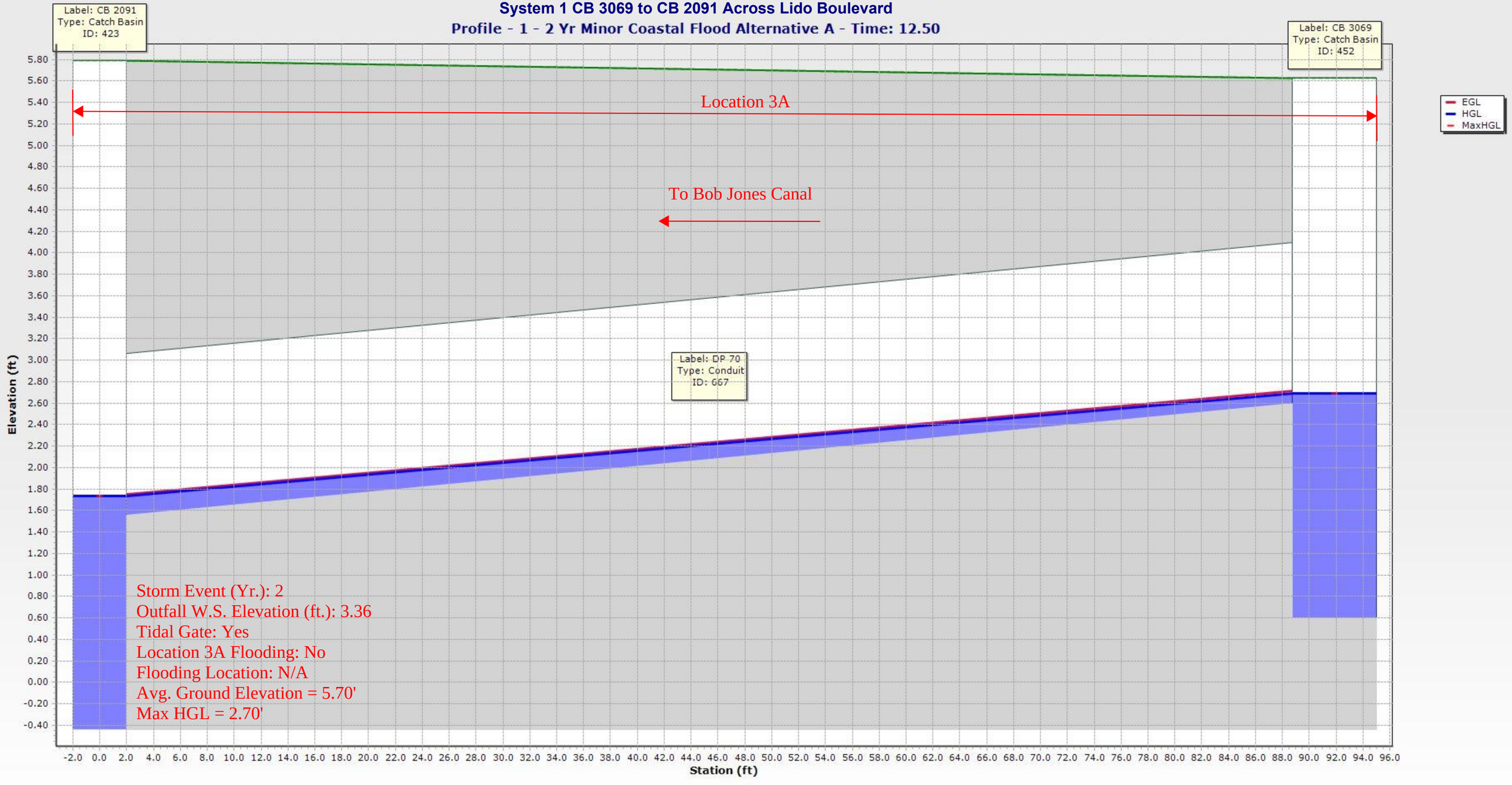

System 1 CB 3069 to CB 2091 Across Lido Boulevard
Profile - 1 - 2 Yr Mean High Tide Existing - Time: 12.50
Label: CB 2091
Type: Catch Basin
ID: 423
Label: CB 3069
Type: Catch Basin
ID: 452
Location 3A
To Bob Jones Canal
Label: DP 70
Type: Conduit
ID: 667
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.70'
Max HGL = 2.70'

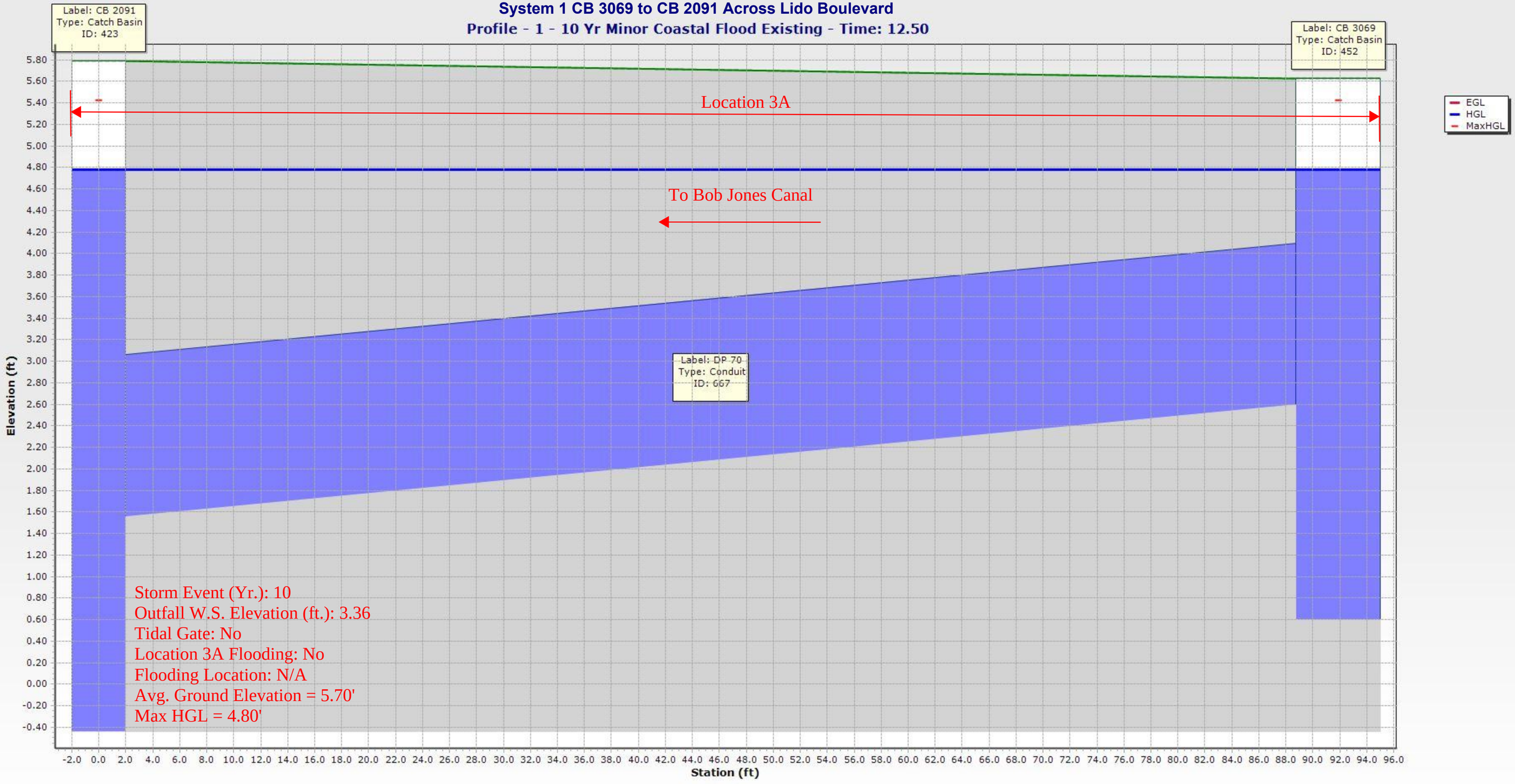

System 1 CB 3069 to CB 2091 Across Lido Boulevard
Profile - 1 - 2 Year Mean High Tide Alternative A - Time: 12.50
Label: CB 2091
Type: Catch Basin
ID: 423
Label: CB 3069
Type: Catch Basin
ID: 452
Location 3A
To Bob Jones Canal
Label: DP 70
Type: Conduit
ID: 667
EGL
HGL
MaxHGL
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.70'
Max HGL = 2.70'
Elevation (ft)
Station (ft)

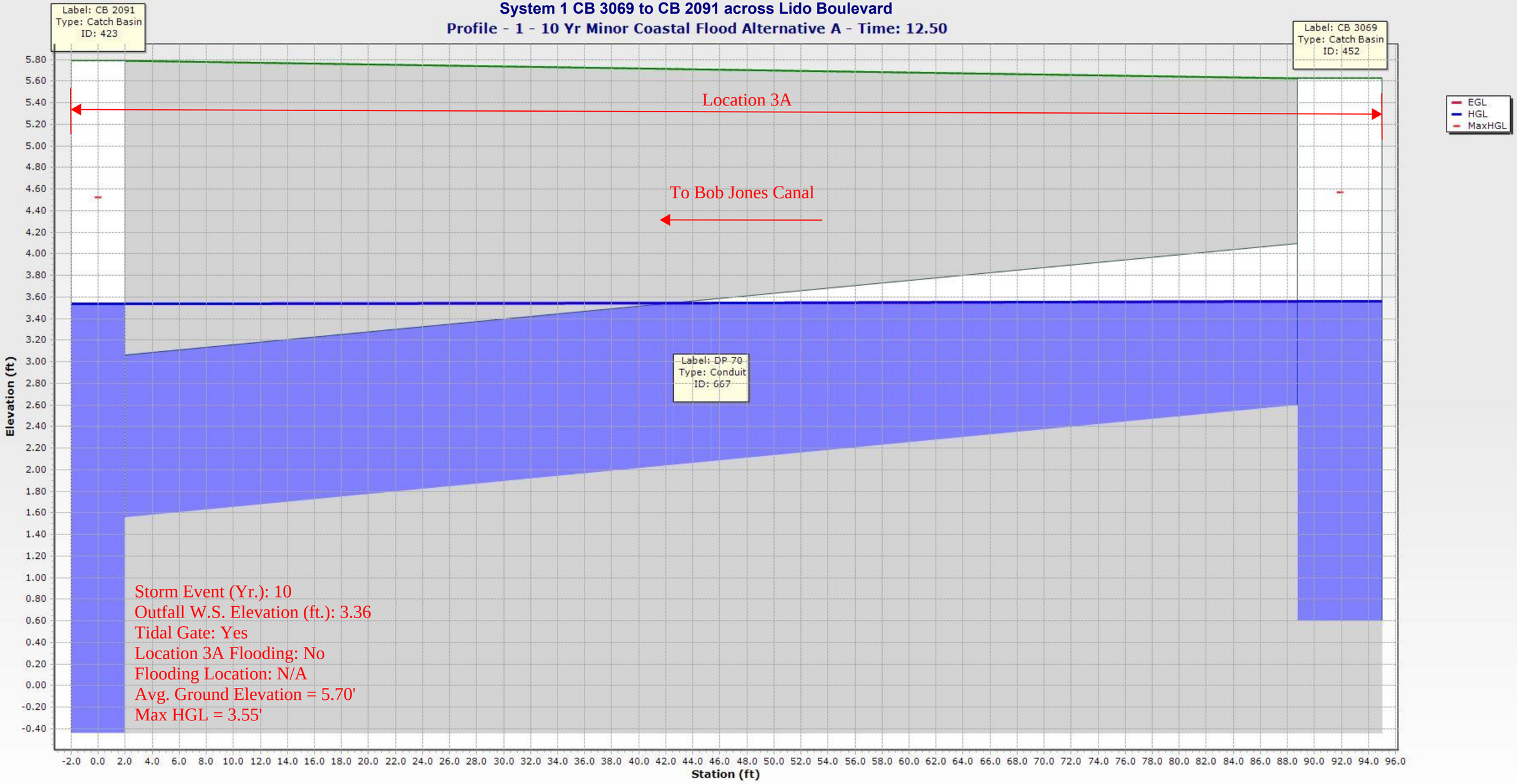

System 1 CB 3069 to CB 2091 Across Lido Boulevard
Profile - 1 - 10 Yr Mean High Tide Existing - Time: 12.50
Label: CB 2091
Type: Catch Basin
ID: 423
Label: CB 3069
Type: Catch Basin
ID: 452
Location 3A
To Bob Jones Canal
Label: DP 70
Type: Conduit
ID: 667
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.70'
Max HGL = 4.15'

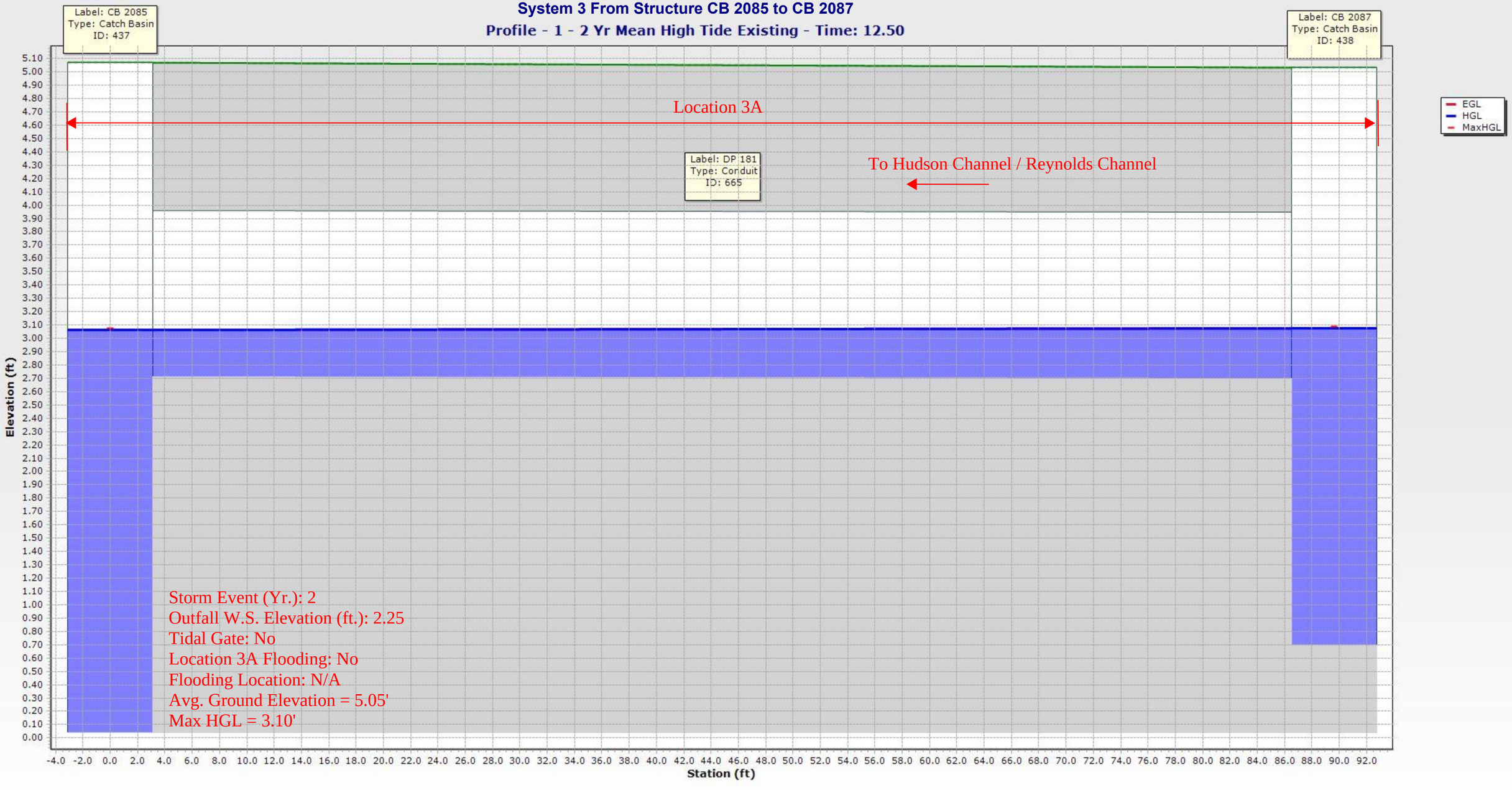

System 1 CB 3069 to CB 2091 Across Lido Boulevard
Profile - 1 - 10 Yr Mean High Tide Alternative A - Time: 12.50
Label: CB 2091
Type: Catch Basin
ID: 423
Label: CB 3069
Type: Catch Basin
ID: 452
Location 3A
To Bob Jones Canal
Label: DP 70
Type: Conduit
ID: 667
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.70'
Max HGL = 3.00'

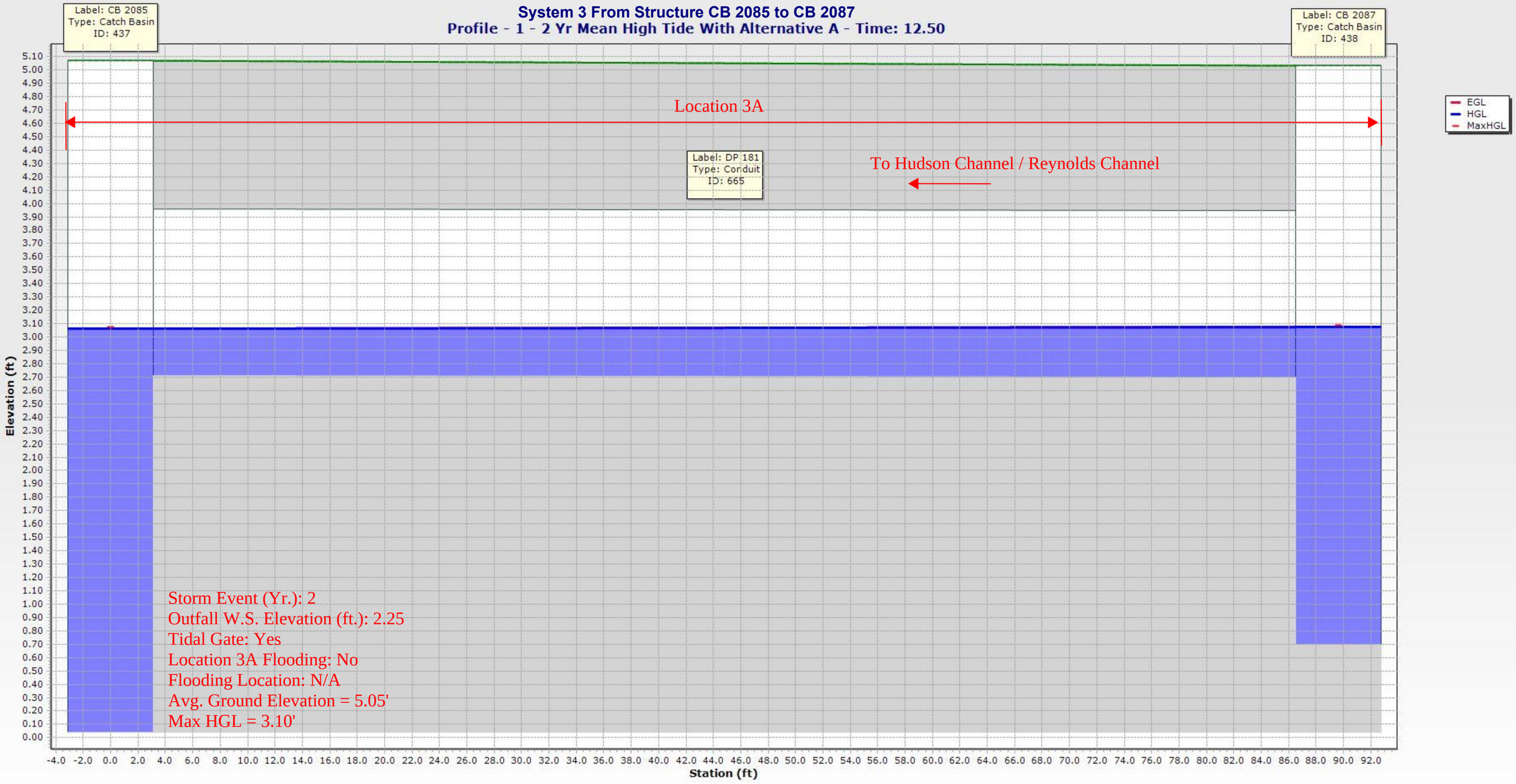

System 1 CB 3069 to CB 2091 Across Lido Boulevard
Profile - 1 - 2 Yr Minor Coastal Flood Existing - Time: 12.50
Label: CB 2091
Type: Catch Basin
ID: 423
Label: CB 3069
Type: Catch Basin
ID: 452
Location 3A
To Bob Jones Canal
Label: DP 70
Type: Conduit
ID: 667
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.70'
Max HGL = 3.20'

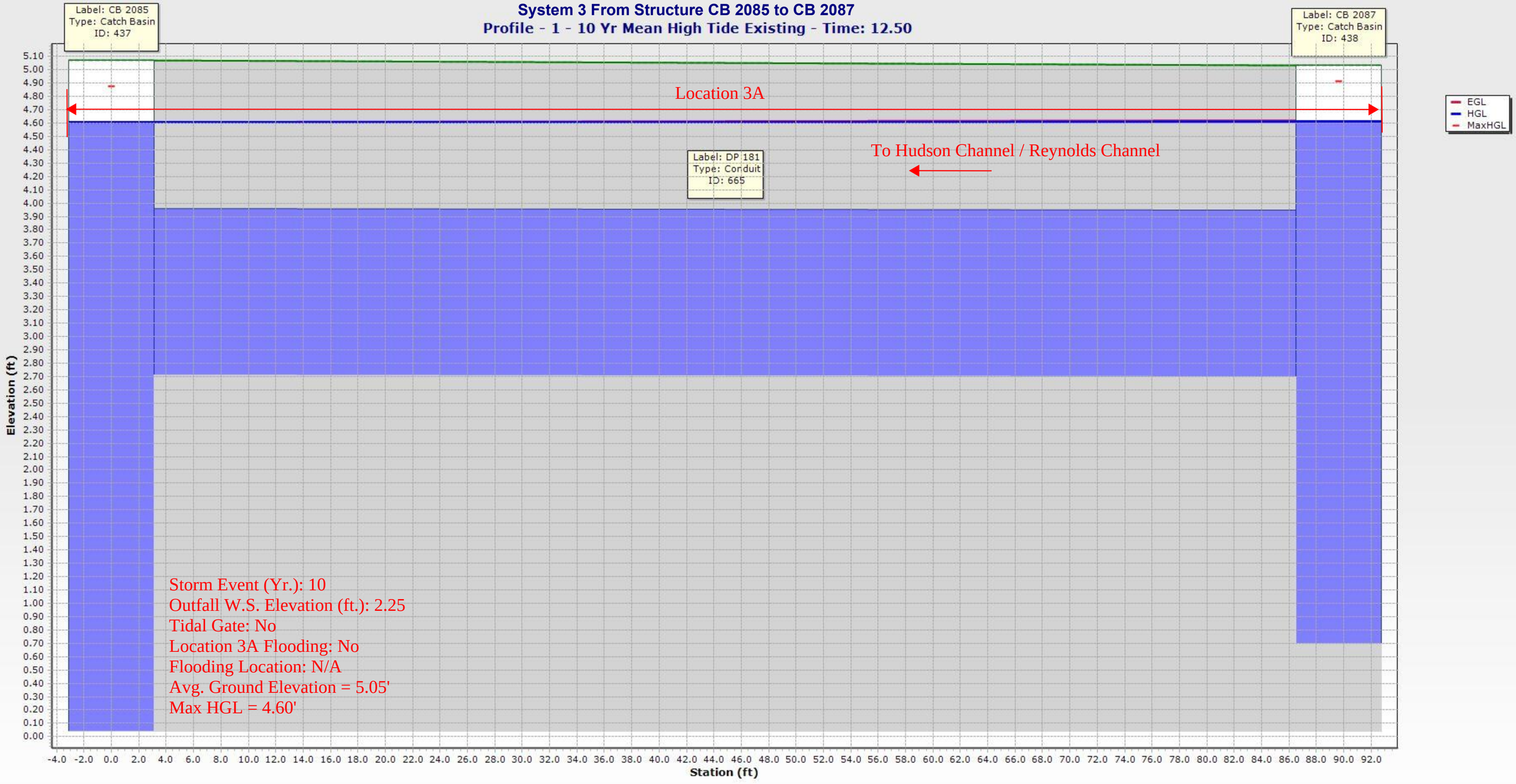

System 1 CB 3069 to CB 2091 Across Lido Boulevard
Profile - 1 - 2 Yr Minor Coastal Flood Alternative A - Time: 12.50
Label: CB 2091
Type: Catch Basin
ID: 423
Label: CB 3069
Type: Catch Basin
ID: 452
Location 3A
To Bob Jones Canal
Label: DP 70
Type: Conduit
ID: 667
EGL
HGL
MaxHGL
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.70'
Max HGL = 2.70'
Elevation (ft)
Station (ft)

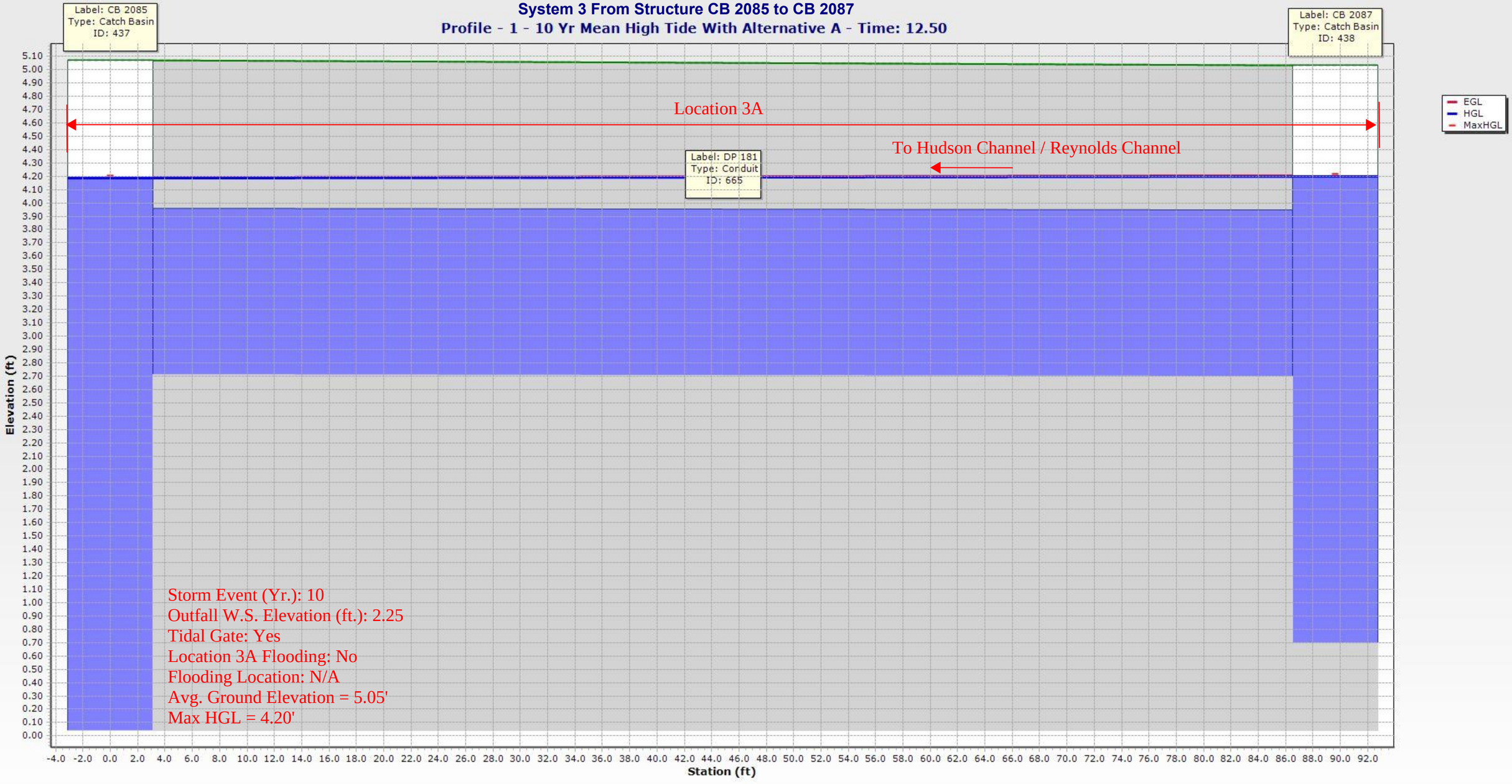

System 1 CB 3069 to CB 2091 Across Lido Boulevard
Profile - 1 - 10 Yr Minor Coastal Flood Existing - Time: 12.50
Label: CB 2091
Type: Catch Basin
ID: 423
Label: CB 3069
Type: Catch Basin
ID: 452
Location 3A
To Bob Jones Canal
Label: DP 70
Type: Conduit
ID: 667
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.70'
Max HGL = 4.80'

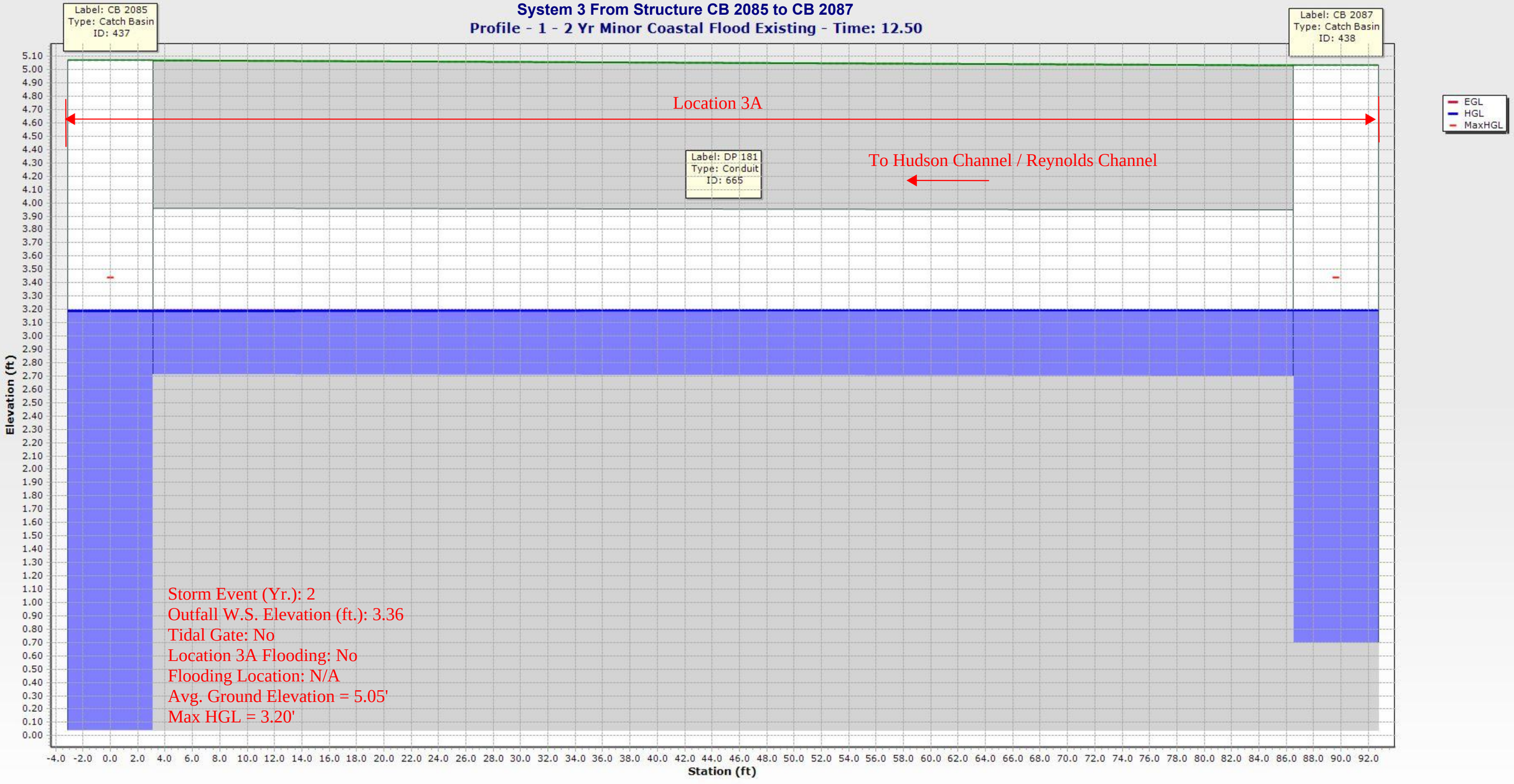

System 1 CB 3069 to CB 2091 across Lido Boulevard
Profile - 1 - 10 Yr Minor Coastal Flood Alternative A - Time: 12.50
Label: CB 2091
Type: Catch Basin
ID: 423
Label: CB 3069
Type: Catch Basin
ID: 452
Location 3A
To Bob Jones Canal
Label: DP 70
Type: Conduit
ID: 667
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.70'
Max HGL = 3.55'

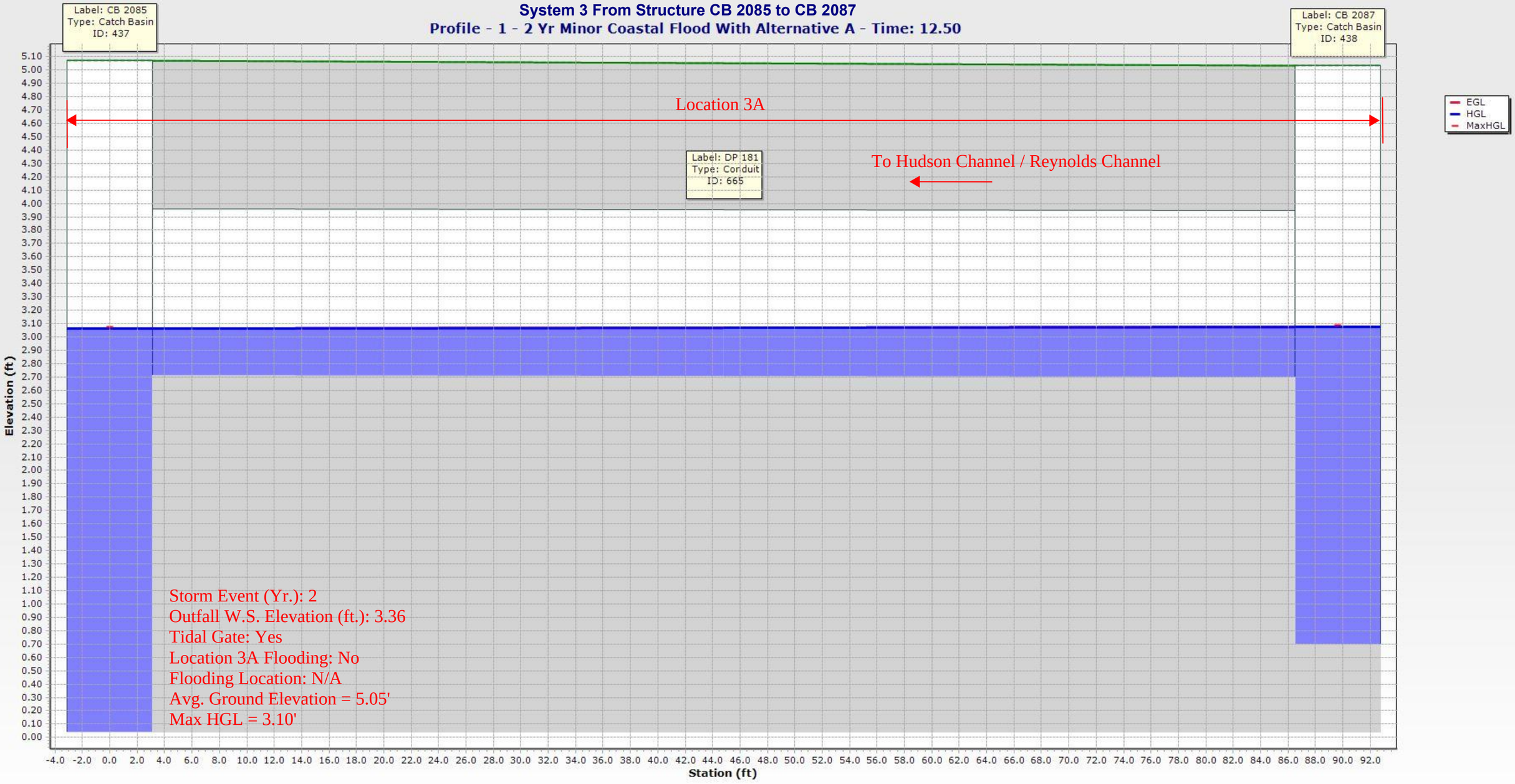

System 3 From Structure CB 2085 to CB 2087
Profile - 1 - 2 Yr Mean High Tide Existing - Time: 12.50
Label: CB 2085
Type: Catch Basin
ID: 437
Label: CB 2087
Type: Catch Basin
ID: 438
Label: DP 181
Type: Conduit
ID: 665
Location 3A
To Hudson Channel / Reynolds Channel
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.05'
Max HGL = 3.10'

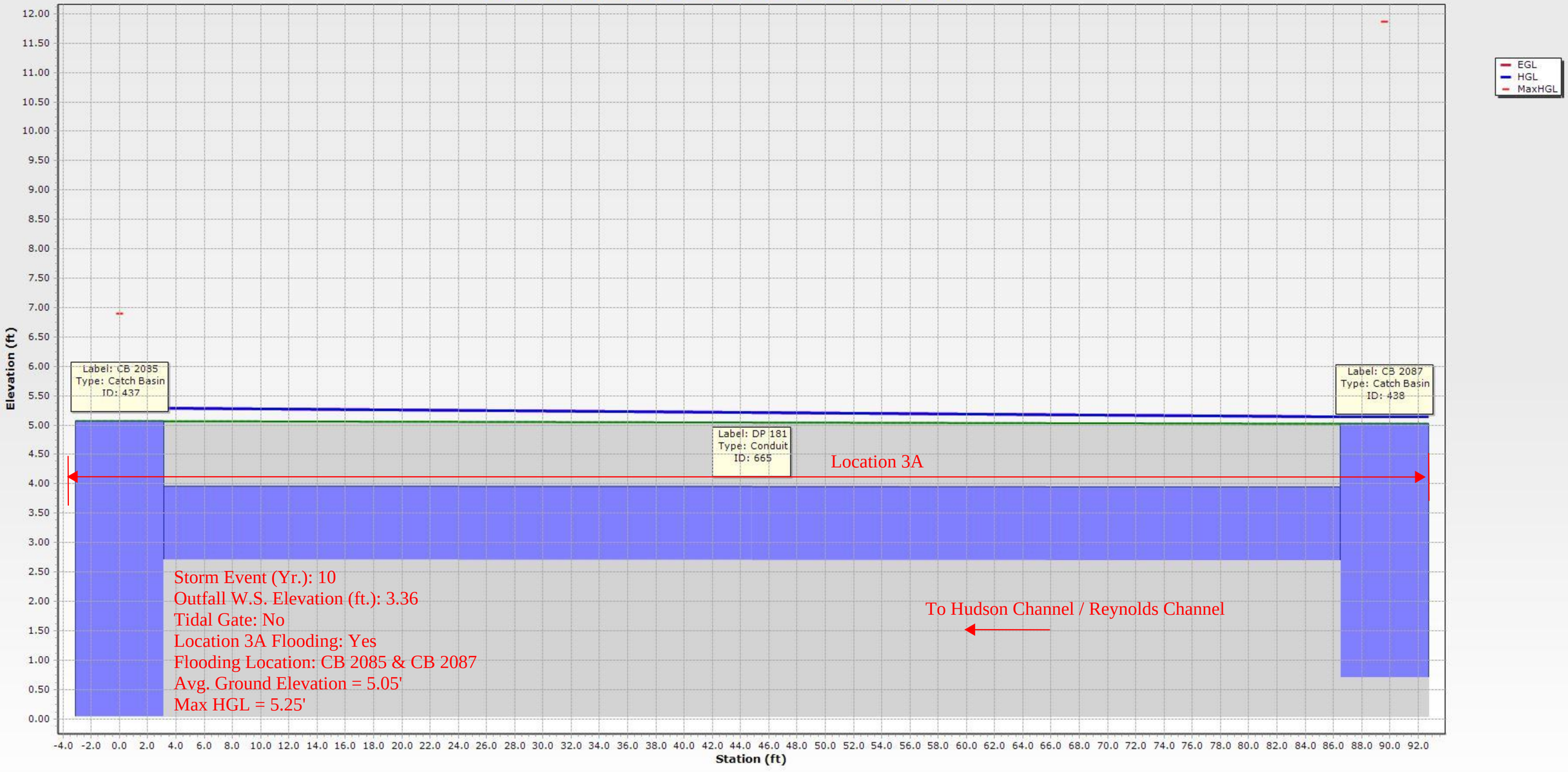

System 3 From Structure CB 2085 to CB 2087
Profile - 1 - 2 Yr Mean High Tide With Alternative A - Time: 12.50
Label: CB 2085
Type: Catch Basin
ID: 437
Label: CB 2087
Type: Catch Basin
ID: 438
Label: DP 181
Type: Conduit
ID: 665
Location 3A
To Hudson Channel / Reynolds Channel
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.05'
Max HGL = 3.10'


System 3 From Structure CB 2085 to CB 2087
Profile - 1 - 10 Yr Mean High Tide Existing - Time: 12.50
Label: CB 2085
Type: Catch Basin
ID: 437
Label: CB 2087
Type: Catch Basin
ID: 438
Location 3A
Label: DP 181
Type: Conduit
ID: 665
To Hudson Channel / Reynolds Channel
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.05'
Max HGL = 4.60'


System 3 From Structure CB 2085 to CB 2087
Profile - 1 - 10 Yr Mean High Tide With Alternative A - Time: 12.50
Label: CB 2085
Type: Catch Basin
ID: 437
Label: CB 2087
Type: Catch Basin
ID: 438
Label: DP 181
Type: Conduit
ID: 665
Location 3A
To Hudson Channel / Reynolds Channel
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.05'
Max HGL = 4.20'

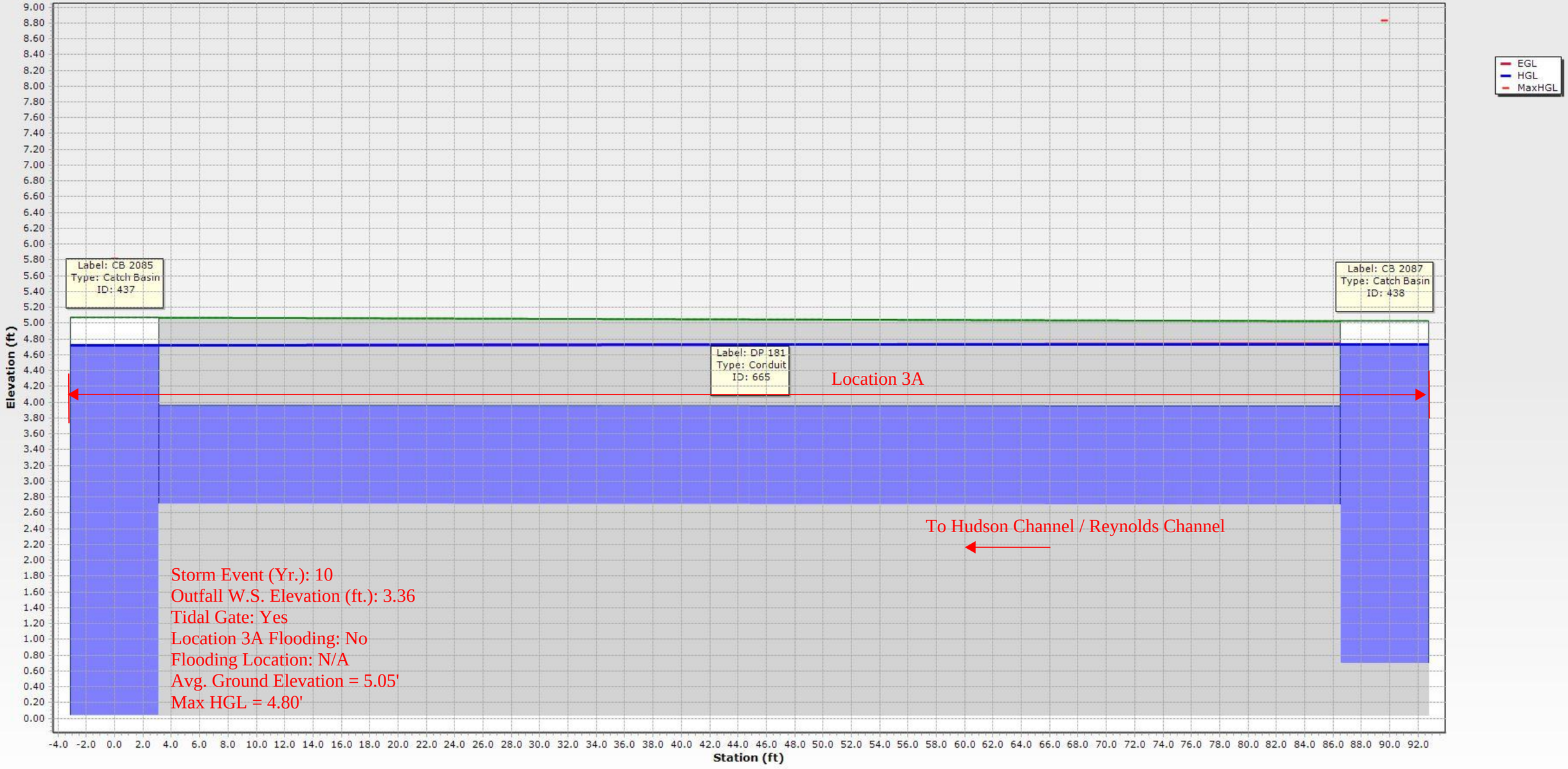

System 3 From Structure CB 2085 to CB 2087
Profile - 1 - 2 Yr Minor Coastal Flood Existing - Time: 12.50
Label: CB 2085
Type: Catch Basin
ID: 437
Label: CB 2087
Type: Catch Basin
ID: 438
Label: DP 181
Type: Conduit
ID: 665
Location 3A
To Hudson Channel / Reynolds Channel
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.05'
Max HGL = 3.20'

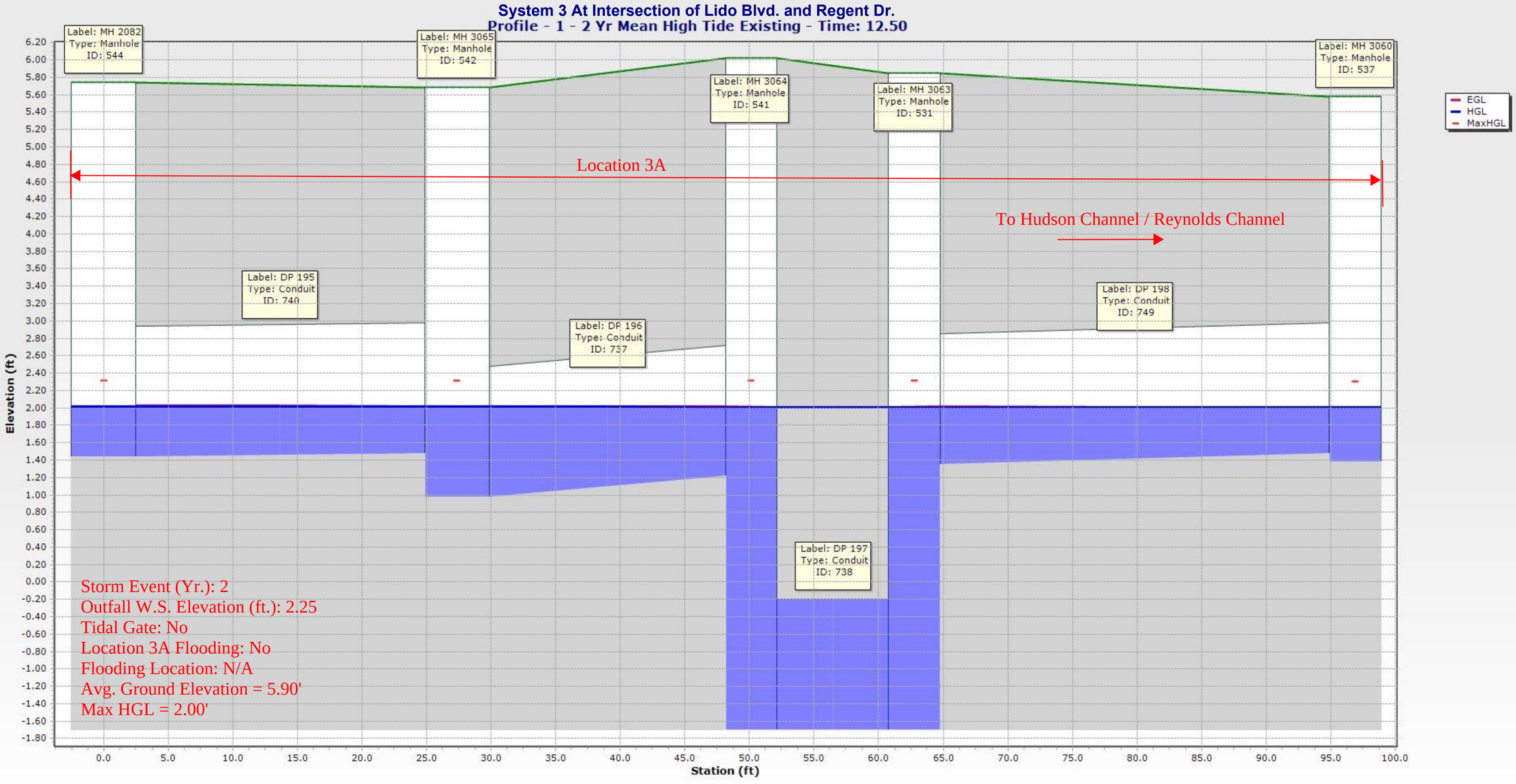

System 3 From Structure CB 2085 to CB 2087
Profile - 1 - 2 Yr Minor Coastal Flood With Alternative A - Time: 12.50
Label: CB 2085
Type: Catch Basin
ID: 437
Label: CB 2087
Type: Catch Basin
ID: 438
Location 3A
Label: DP 181
Type: Conduit
ID: 665
To Hudson Channel / Reynolds Channel
EGL
HGL
MaxHGL
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.05'
Max HGL = 3.10'
Elevation (ft)
Station (ft)

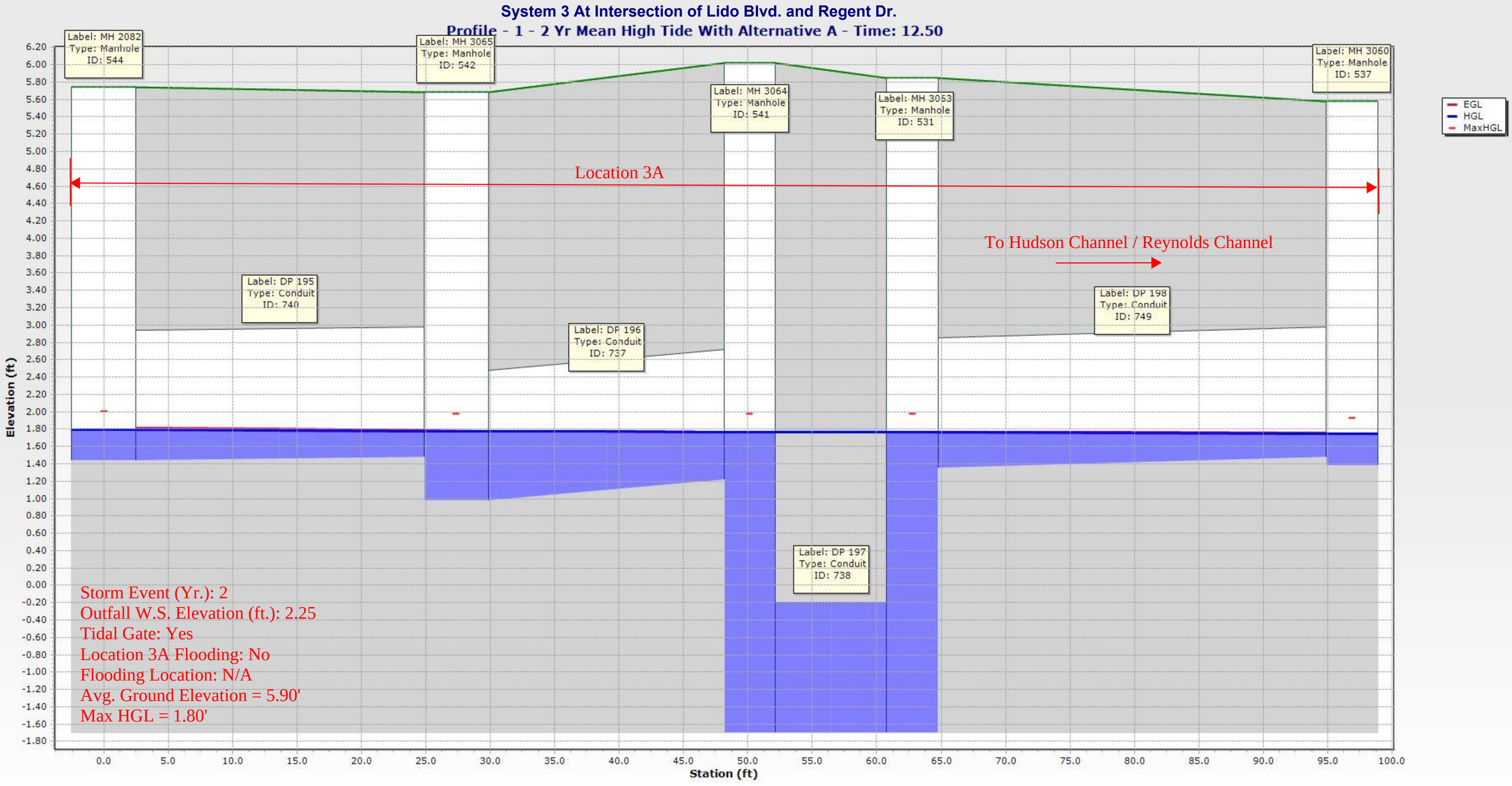

System 3 From Structure CB 2085 to CB 2087
Profile - 1 - 10 Yr Minor Coastal Flood Existing - Time: 12.50
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Label: CB 2085
Type: Catch Basin
ID: 437
Label: CB 2087
Type: Catch Basin
ID: 438
Label: DP 181
Type: Conduit
ID: 665
Location 3A
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: No
Location 3A Flooding: Yes
Flooding Location: CB 2085 & CB 2087
Avg. Ground Elevation = 5.05'
Max HGL = 5.25'
To Hudson Channel / Reynolds Channel

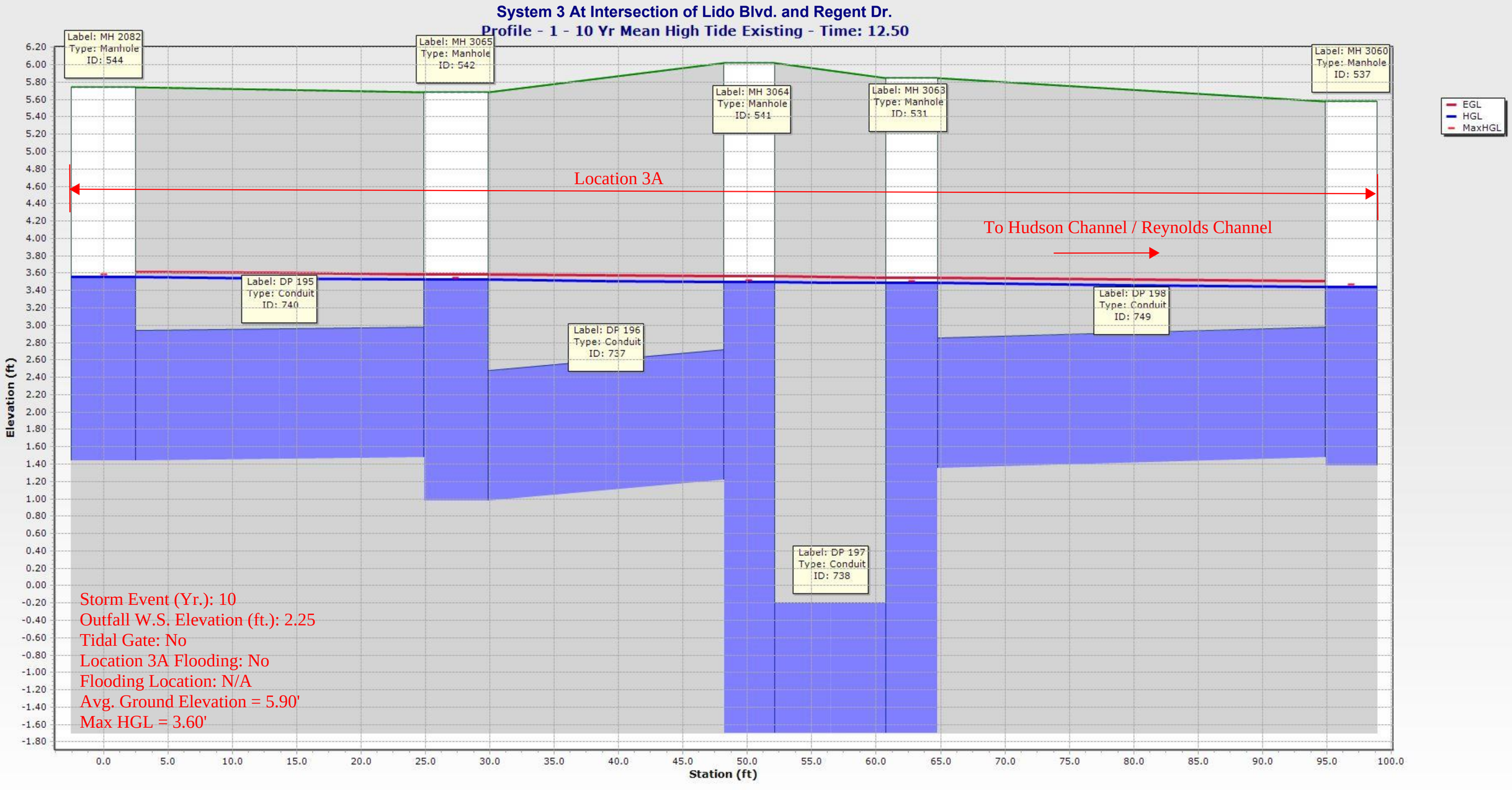
System 3 From Structure CB 2085 to CB 2087

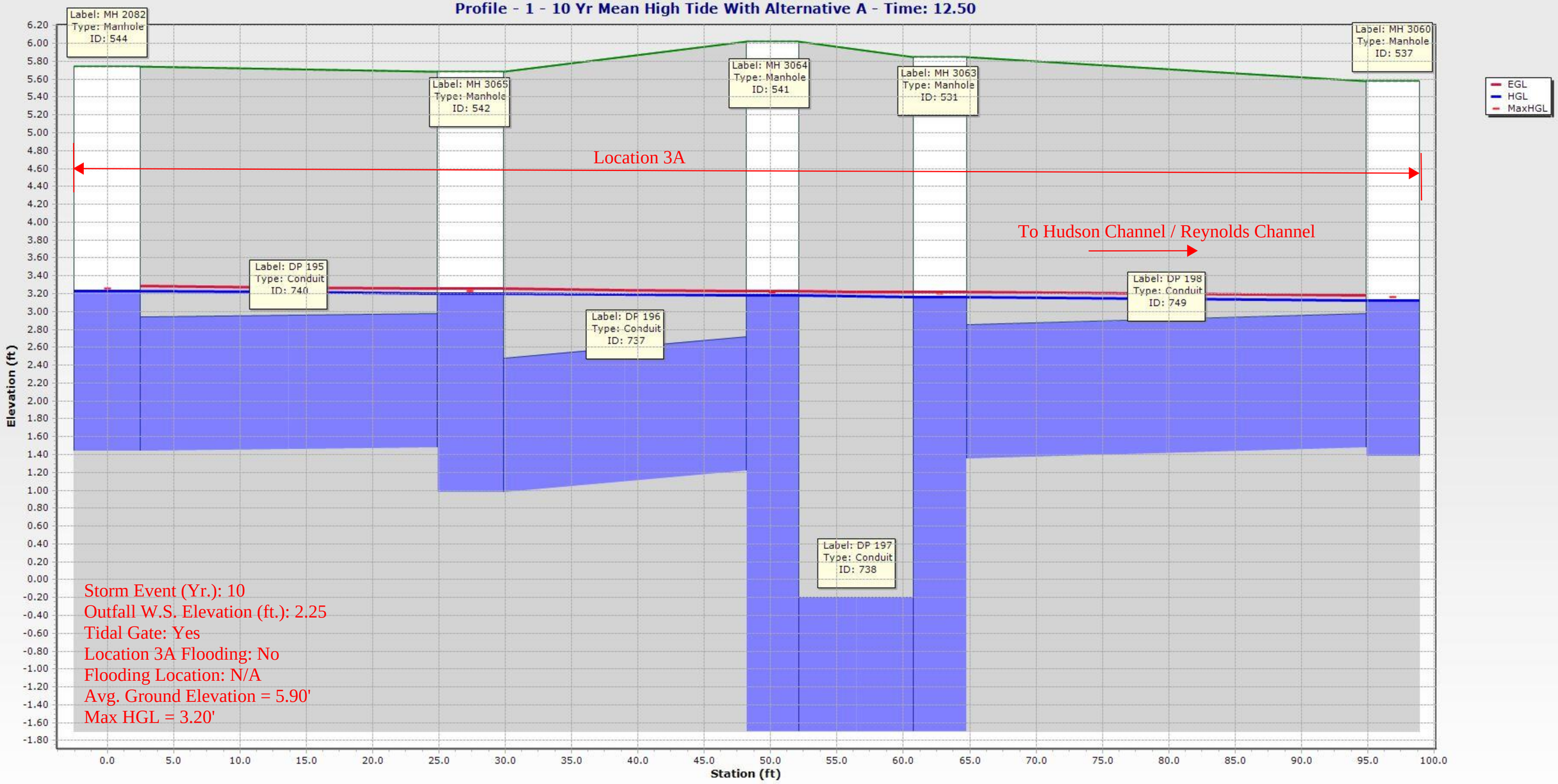
Profile - 1 - 10 Yr Minor Coastal Flood With Alternative A - Time: 12.50




System 3 At Intersection of Lido Blvd. and Regent Dr.
Profile - 1 - 2 Yr Mean High Tide Existing - Time: 12.50
Label: MH 2082
Type: Manhole
ID: 544
Label: MH 3065
Type: Manhole
ID: 542
Label: MH 3064
Type: Manhole
ID: 541
Label: MH 3063
Type: Manhole
ID: 531
Label: MH 3060
Type: Manhole
ID: 537
EGL
HGL
MaxHGL
Location 3A
To Hudson Channel / Reynolds Channel
Label: DP 195
Type: Conduit
ID: 740
Label: DP 196
Type: Conduit
ID: 737
Label: DP 197
Type: Conduit
ID: 738
Label: DP 198
Type: Conduit
ID: 749
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 2.00'
Elevation (ft)
Station (ft)

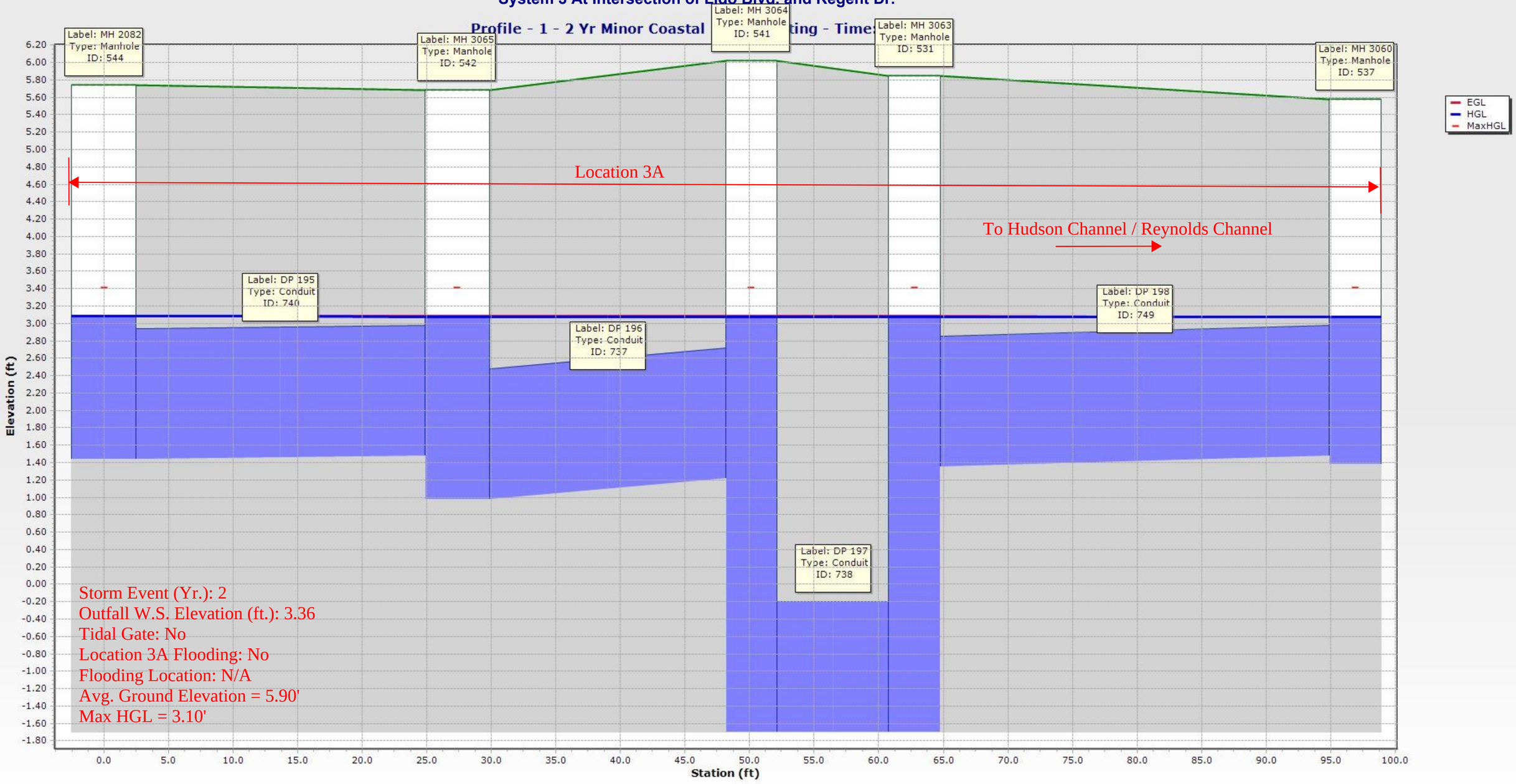

System 3 At Intersection of Lido Blvd. and Regent Dr.
Profile - 1 - 2 Yr Mean High Tide With Alternative A - Time: 12.50
Label: MH 2082
Type: Manhole
ID: 544
Label: MH 3065
Type: Manhole
ID: 542
Label: MH 3064
Type: Manhole
ID: 541
Label: MH 3053
Type: Manhole
ID: 531
Label: MH 3060
Type: Manhole
ID: 537
EGL
HGL
MaxHGL
Location 3A
To Hudson Channel / Reynolds Channel
Label: DP 195
Type: Conduit
ID: 740
Label: DP 196
Type: Conduit
ID: 737
Label: DP 198
Type: Conduit
ID: 749
Label: DP 197
Type: Conduit
ID: 738
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 1.80'
Elevation (ft)
Station (ft)


System 3 At Intersection of Lido Blvd. and Regent Dr.
Profile - 1 - 10 Yr Mean High Tide Existing - Time: 12.50
Label: MH 2082
Type: Manhole
ID: 544
Label: MH 3065
Type: Manhole
ID: 542
Label: MH 3064
Type: Manhole
ID: 541
Label: MH 3063
Type: Manhole
ID: 531
Label: MH 3060
Type: Manhole
ID: 537
EGL
HGL
MaxHGL
Location 3A
To Hudson Channel / Reynolds Channel
Label: DP 195
Type: Conduit
ID: 740
Label: DP 196
Type: Conduit
ID: 737
Label: DP 197
Type: Conduit
ID: 738
Label: DP 198
Type: Conduit
ID: 749
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 3.60'
Elevation (ft)
Station (ft)


System 3 At Intersection of Lido Blvd. and Regent Dr.
Profile - 1 - 10 Yr Mean High Tide With Alternative A - Time: 12.50
Label: MH 2082
Type: Manhole
ID: 544
Label: MH 3065
Type: Manhole
ID: 542
Label: MH 3064
Type: Manhole
ID: 541
Label: MH 3063
Type: Manhole
ID: 531
Label: MH 3060
Type: Manhole
ID: 537
EGL
HGL
MaxHGL
Location 3A
To Hudson Channel / Reynolds Channel
Label: DP 195
Type: Conduit
ID: 740
Label: DP 196
Type: Conduit
ID: 737
Label: DP 197
Type: Conduit
ID: 738
Label: DP 198
Type: Conduit
ID: 749
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 3.20'
Elevation (ft)
Station (ft)

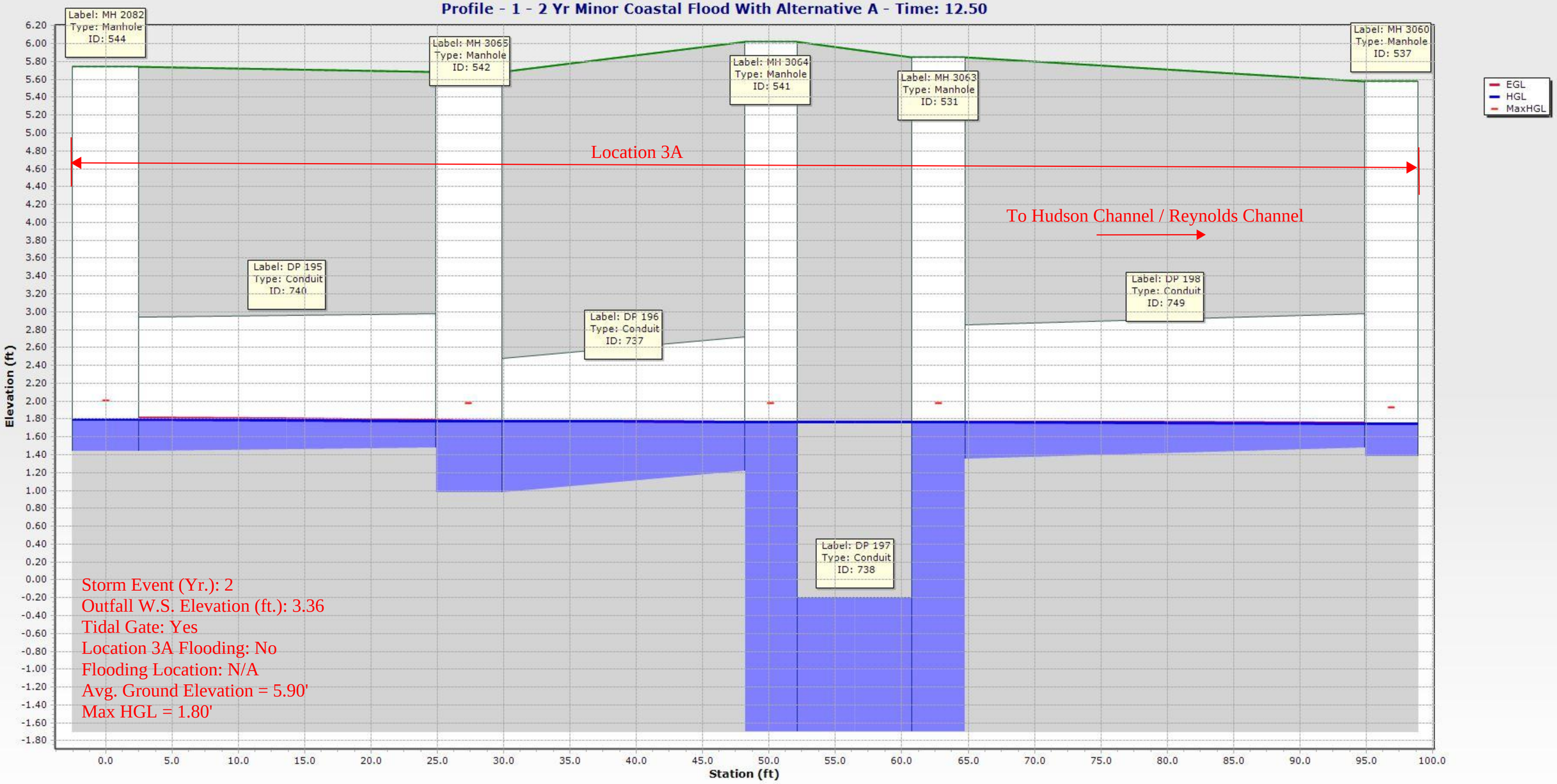
System 3 At Intersection of Lido Blvd. and Regent Dr.

Profile - 1 - 2 Yr Minor Coastal ting - Time

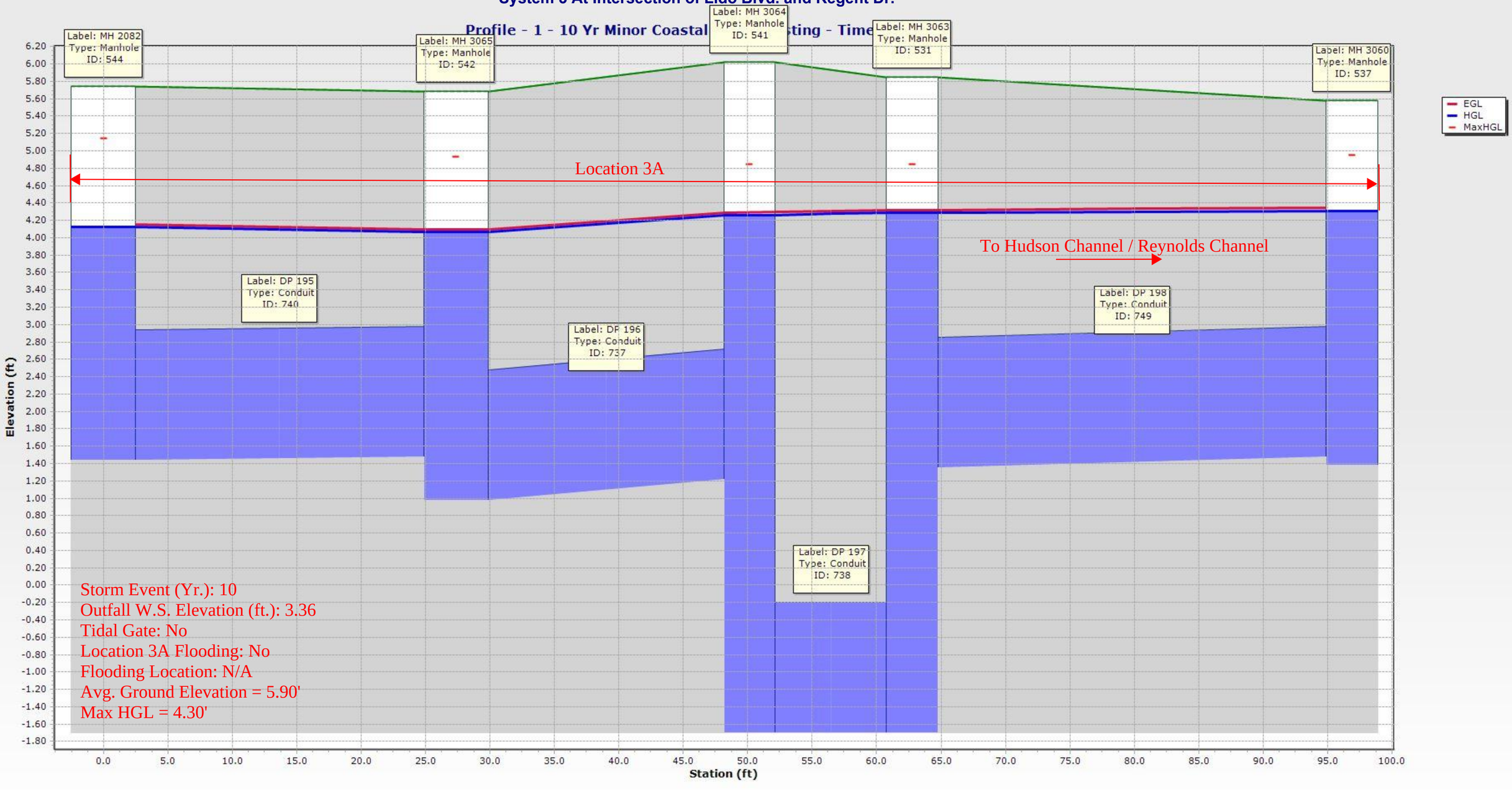


System 3 At Intersection of Lido Blvd. and Regent Dr.

Profile - 1 - 2 Yr Minor Coastal Flood With Alternative A - Time: 12.50

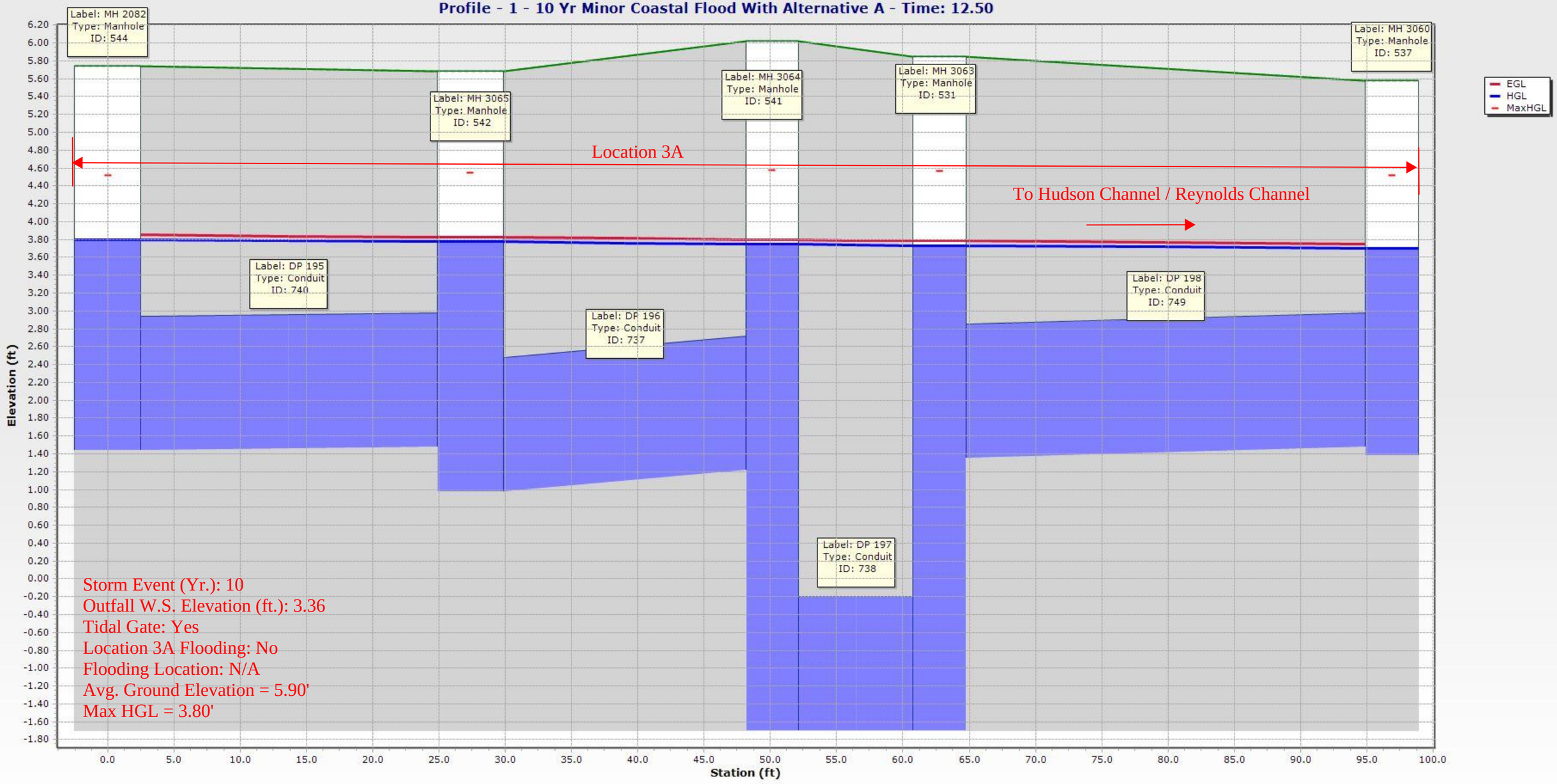


System 3 At Intersection of Lido Blvd. and Regent Dr.

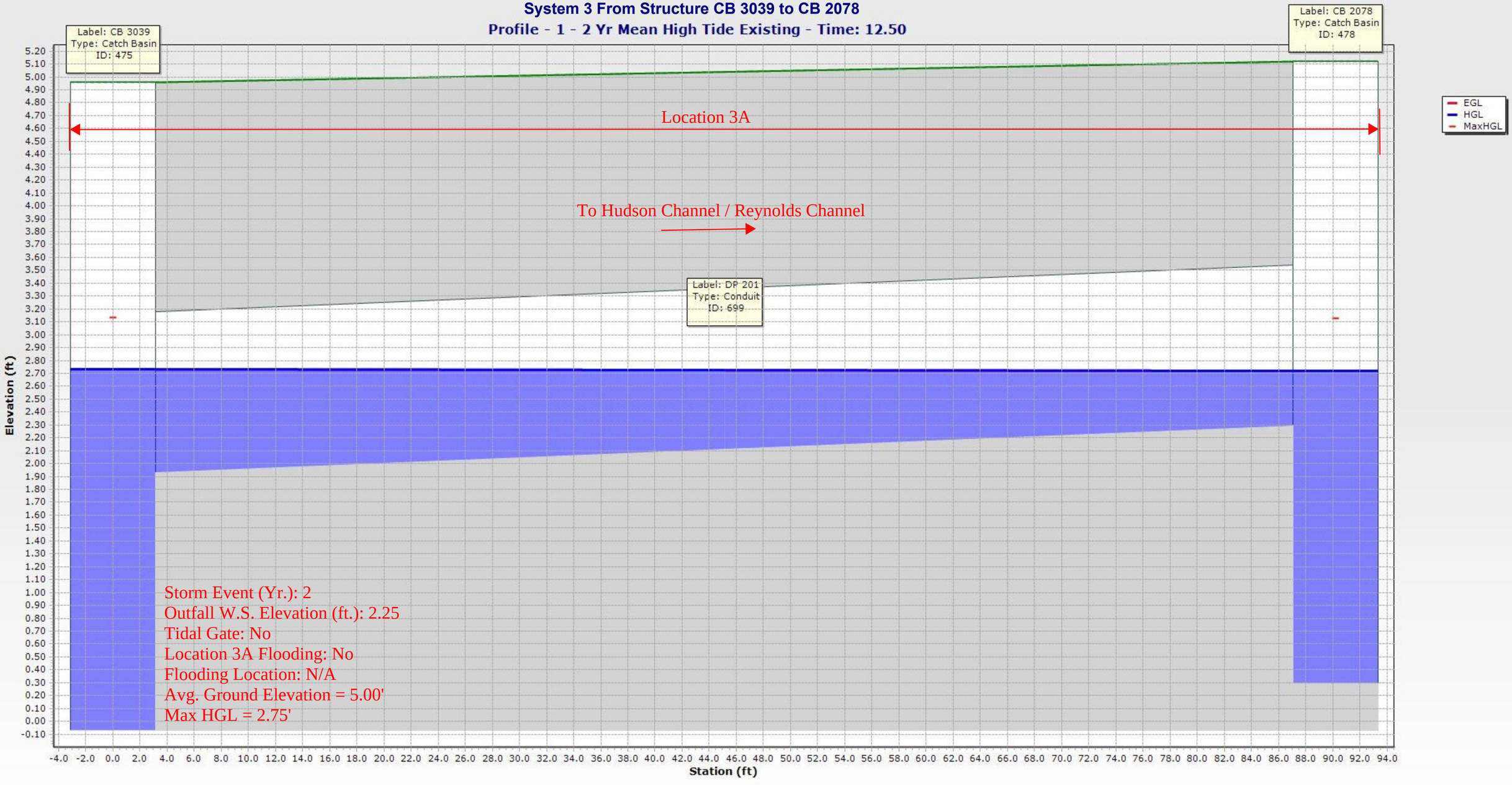


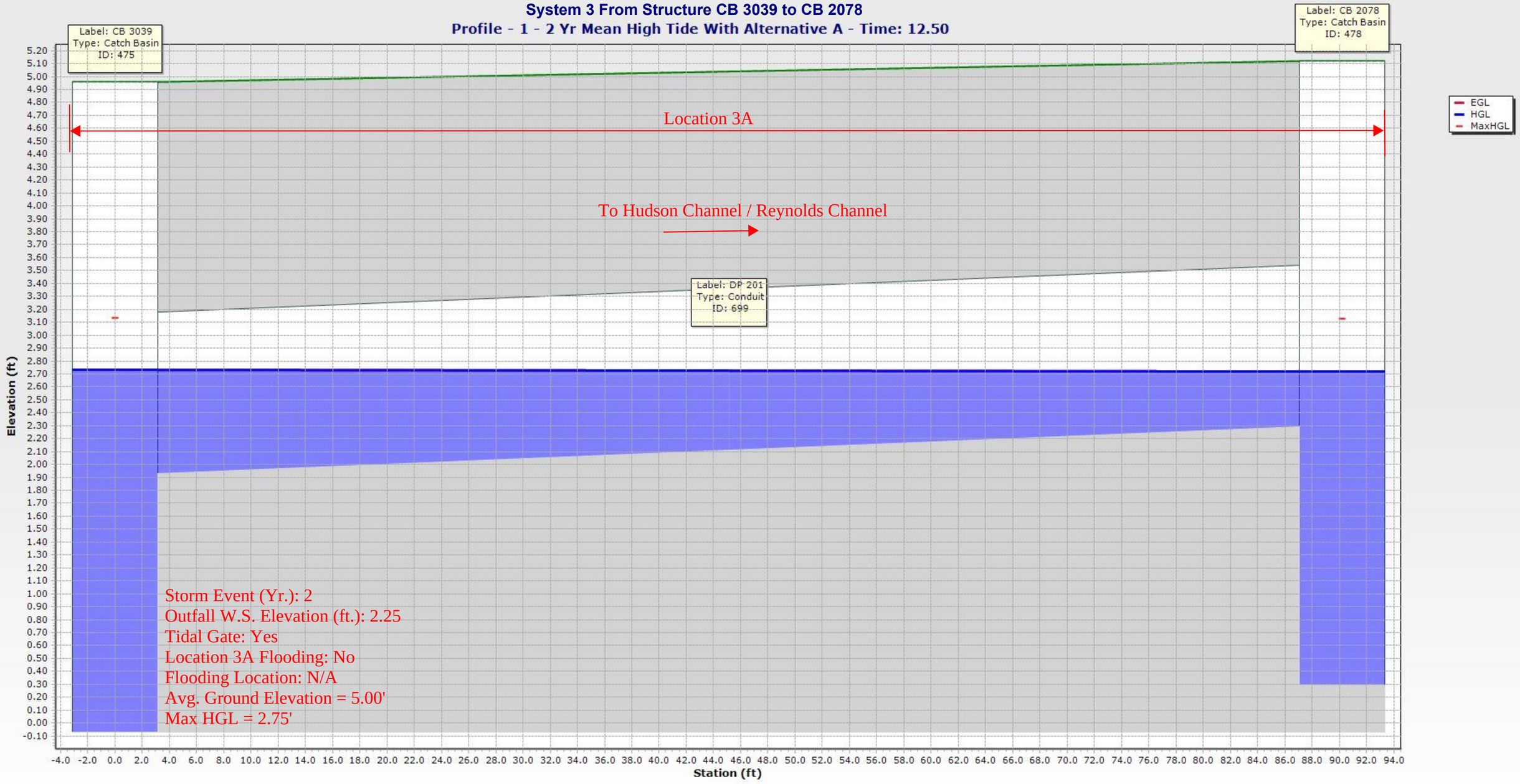
System 3 At Intersection of Lido Blvd. and Regent Dr.

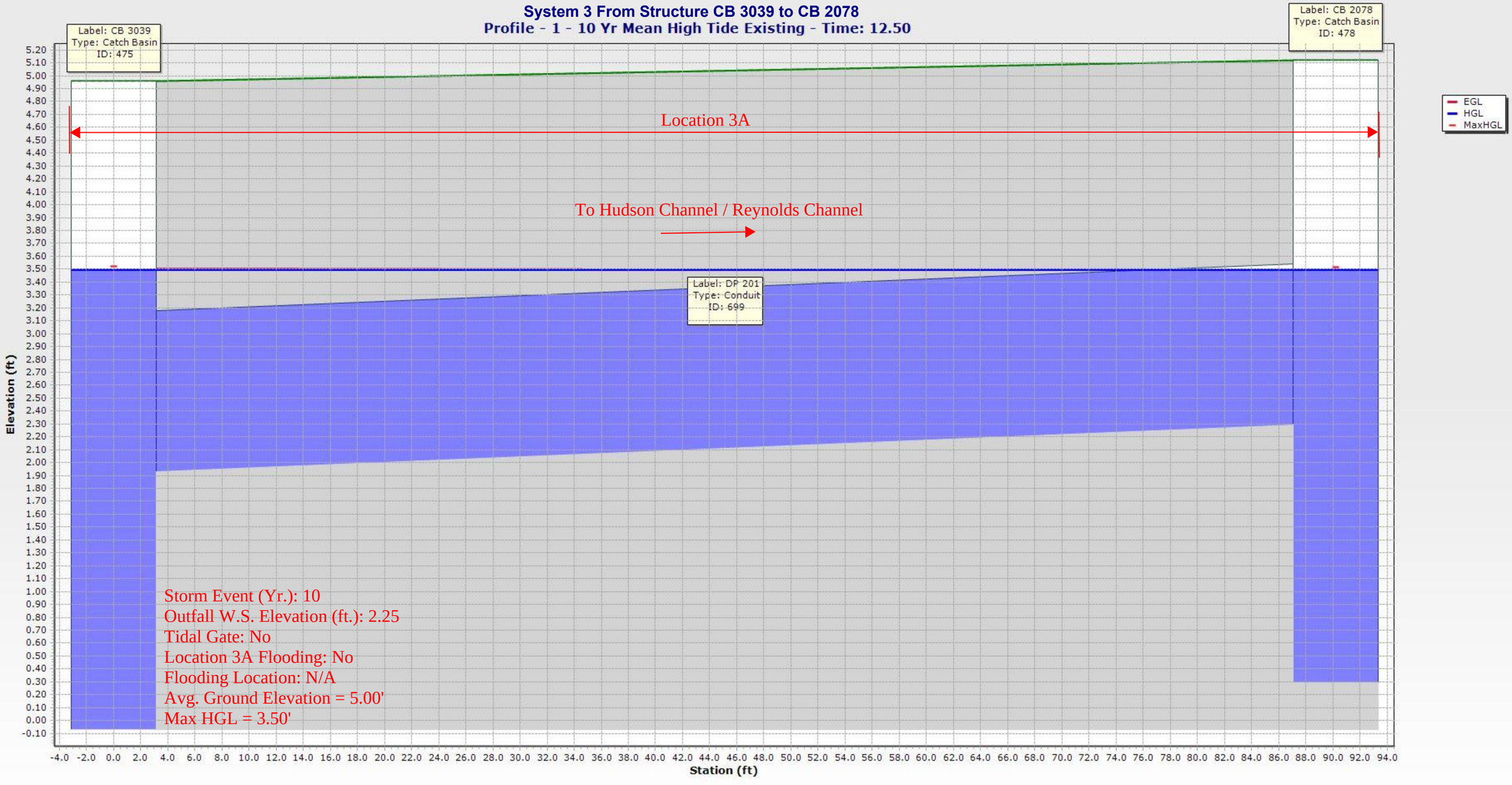
Profile - 1 - 10 Yr Minor Coastal Flood With Alternative A - Time: 12.50

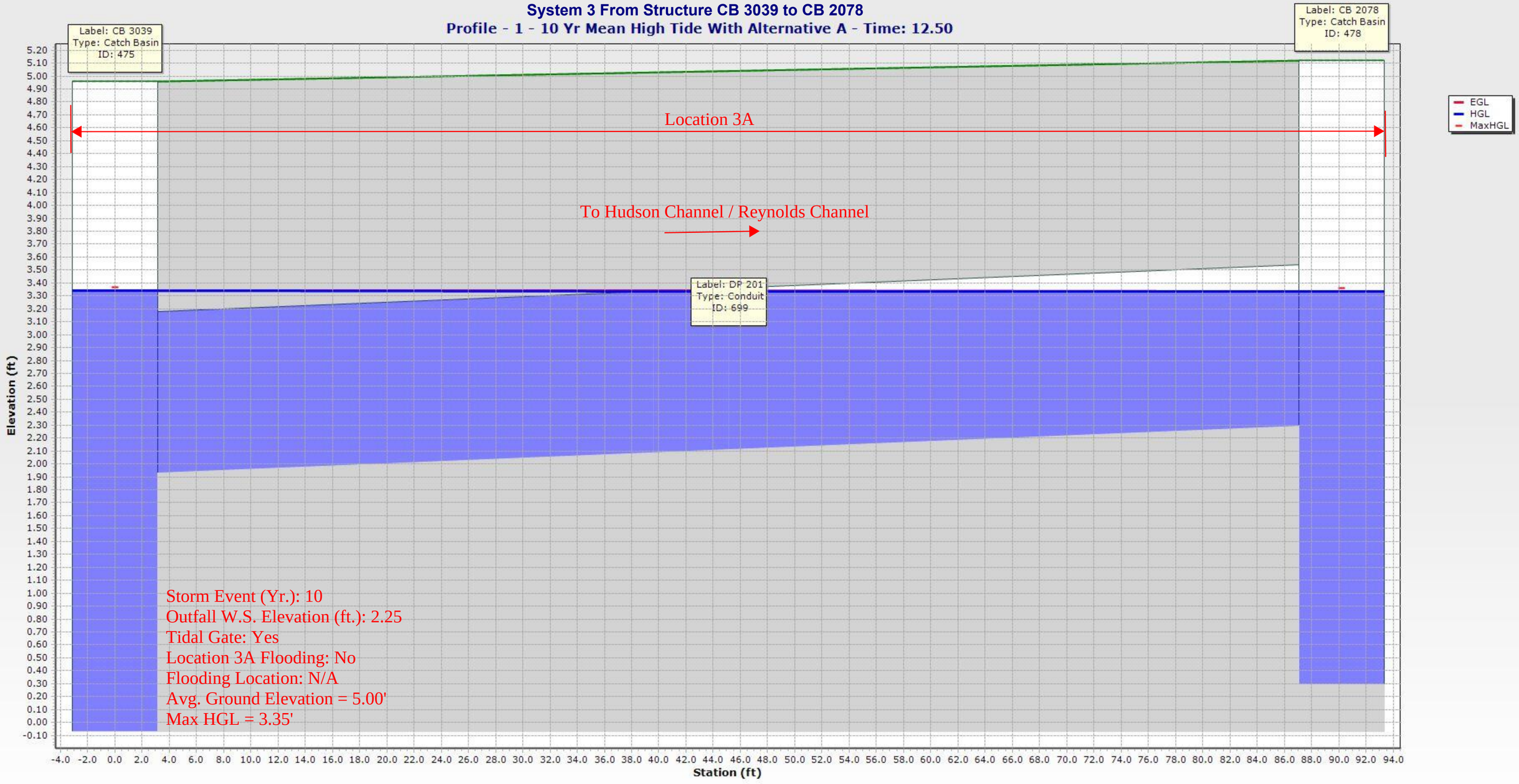


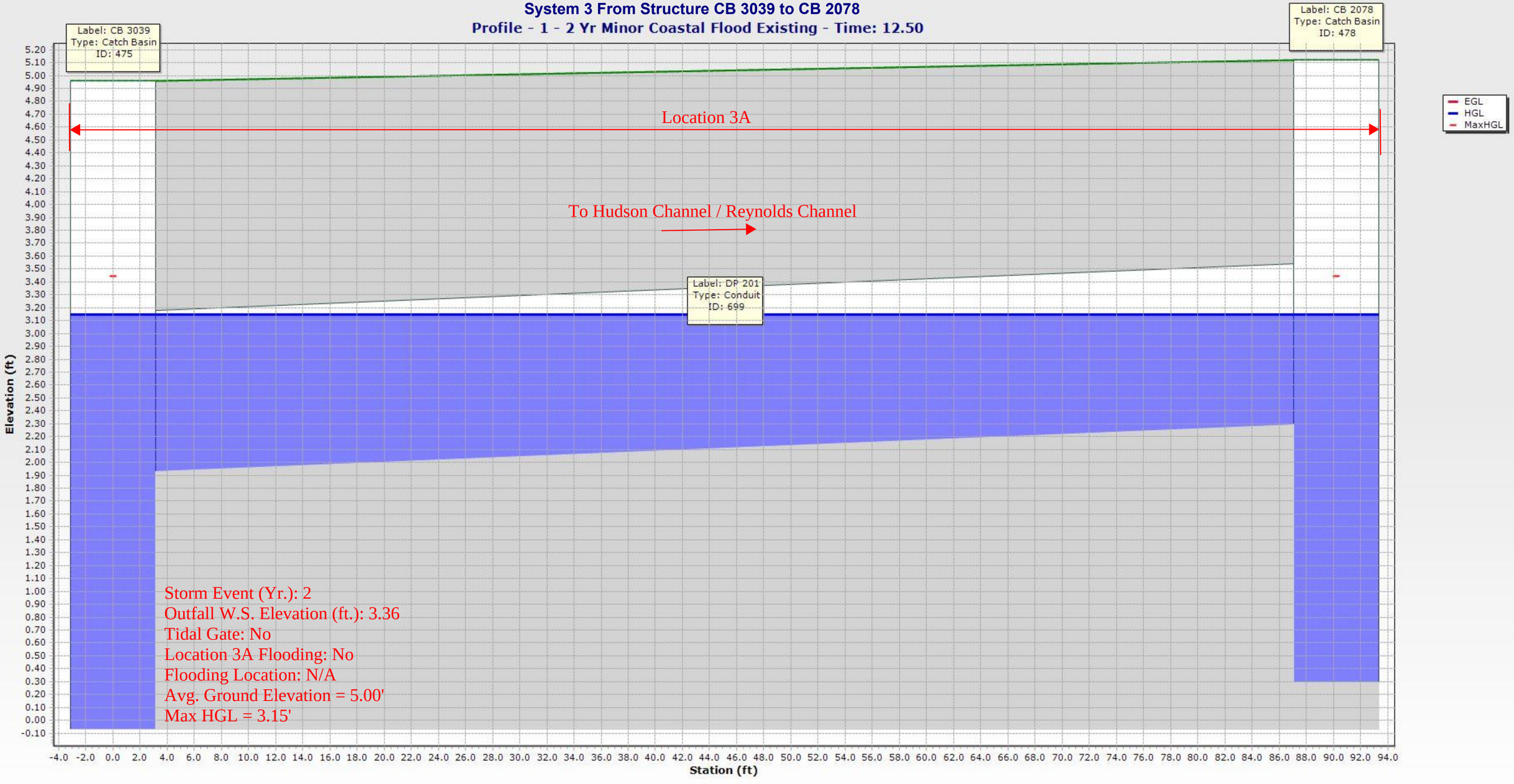
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 3.80'

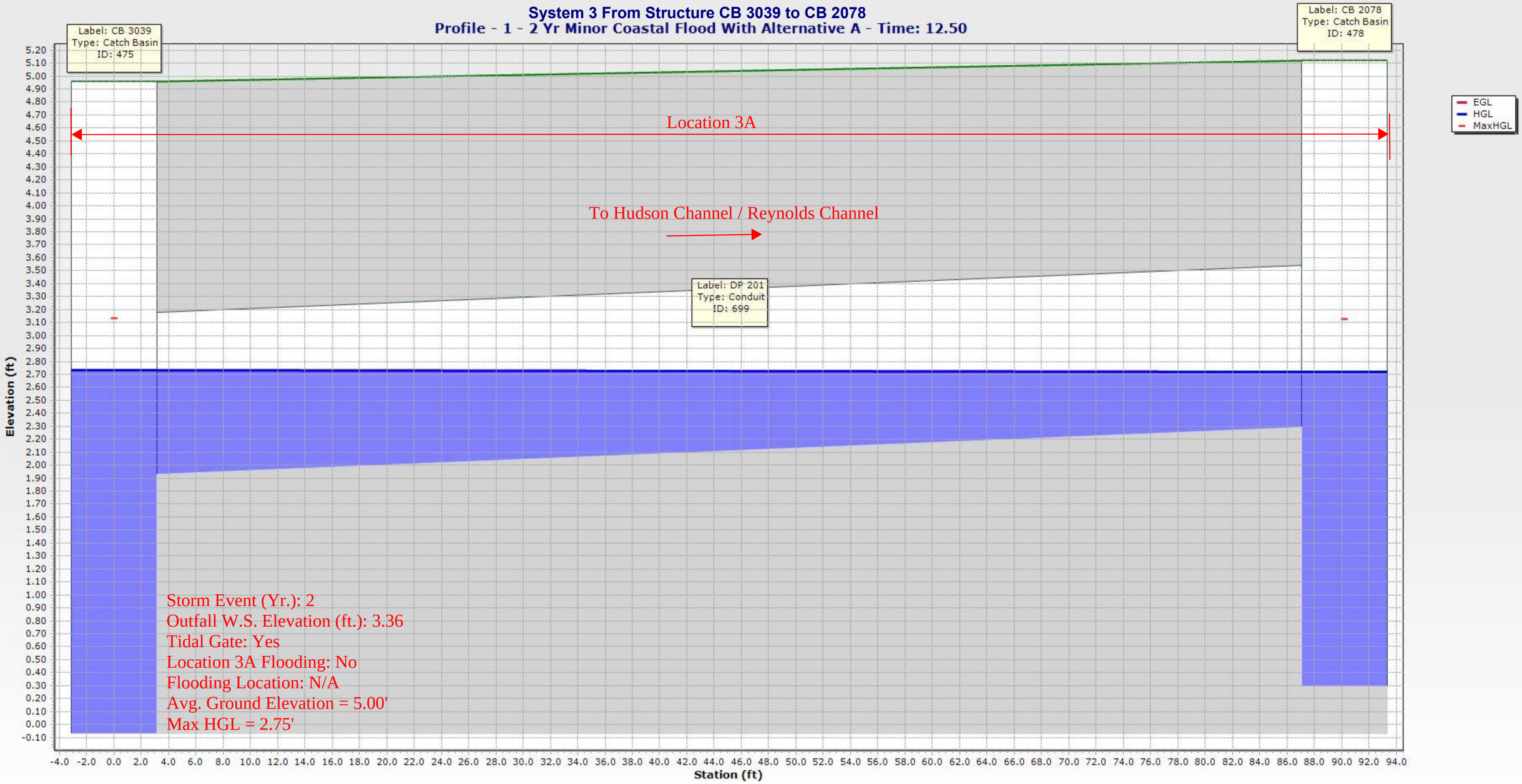

System 3 From Structure CB 3039 to CB 2078
Profile - 1 - 2 Yr Mean High Tide Existing - Time: 12.50
Label: CB 3039
Type: Catch Basin
ID: 475
Label: CB 2078
Type: Catch Basin
ID: 478
EGL
HGL
MaxHGL
Location 3A
To Hudson Channel / Reynolds Channel
Label: DP 201
Type: Conduit
ID: 699
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.00'
Max HGL = 2.75'
Elevation (ft)
Station (ft)


System 3 From Structure CB 3039 to CB 2078
Profile - 1 - 2 Yr Mean High Tide With Alternative A - Time: 12.50
Label: CB 3039
Type: Catch Basin
ID: 475
Label: CB 2078
Type: Catch Basin
ID: 478
Location 3A
To Hudson Channel / Reynolds Channel
Label: DP 201
Type: Conduit
ID: 699
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.00'
Max HGL = 2.75'

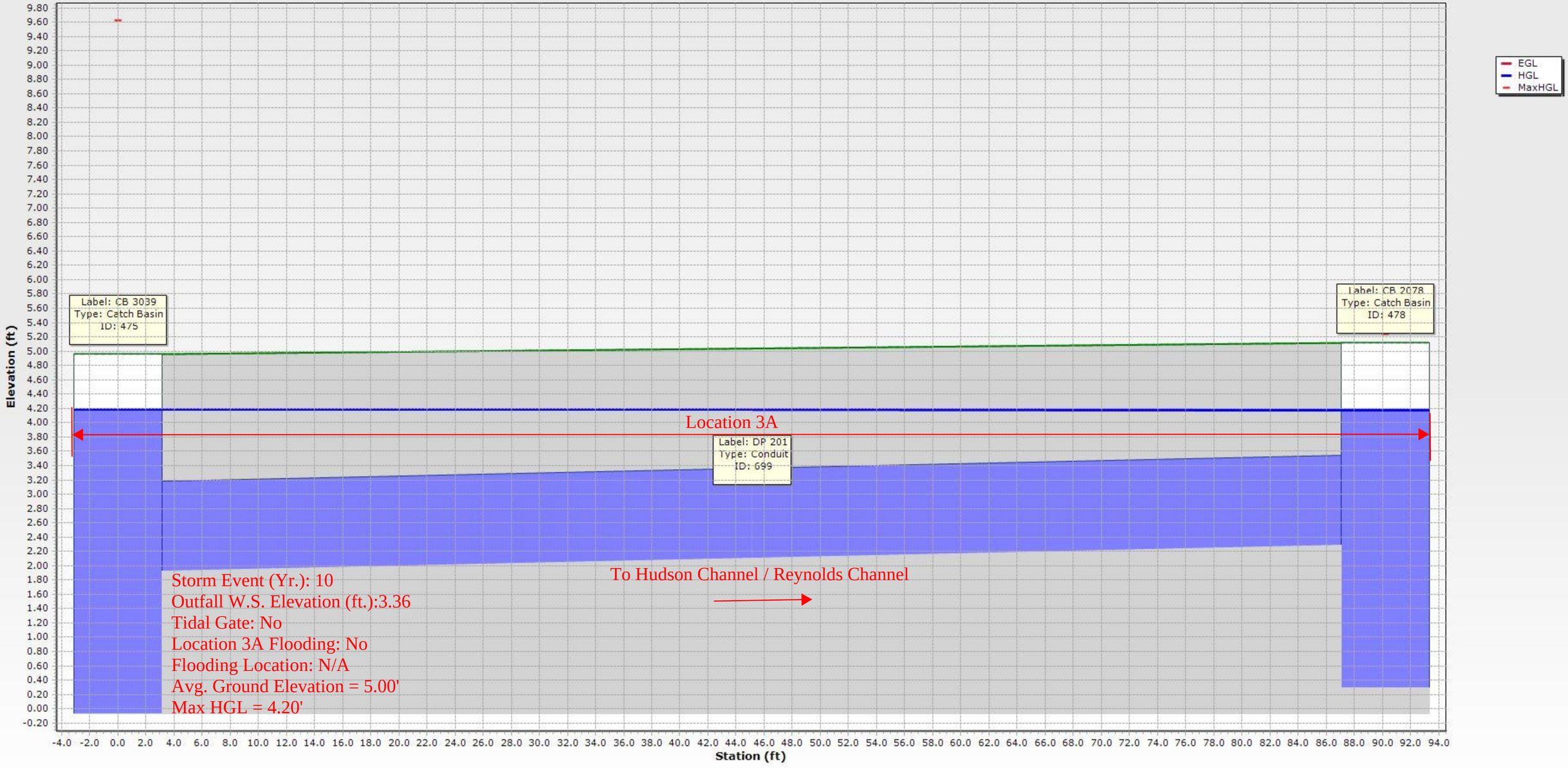

System 3 From Structure CB 3039 to CB 2078
Profile - 1 - 10 Yr Mean High Tide Existing - Time: 12.50
Label: CB 3039
Type: Catch Basin
ID: 475
Label: CB 2078
Type: Catch Basin
ID: 478
EGL
HGL
MaxHGL
Location 3A
To Hudson Channel / Reynolds Channel
Label: DP 201
Type: Conduit
ID: 699
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.00'
Max HGL = 3.50'
Elevation (ft)
Station (ft)

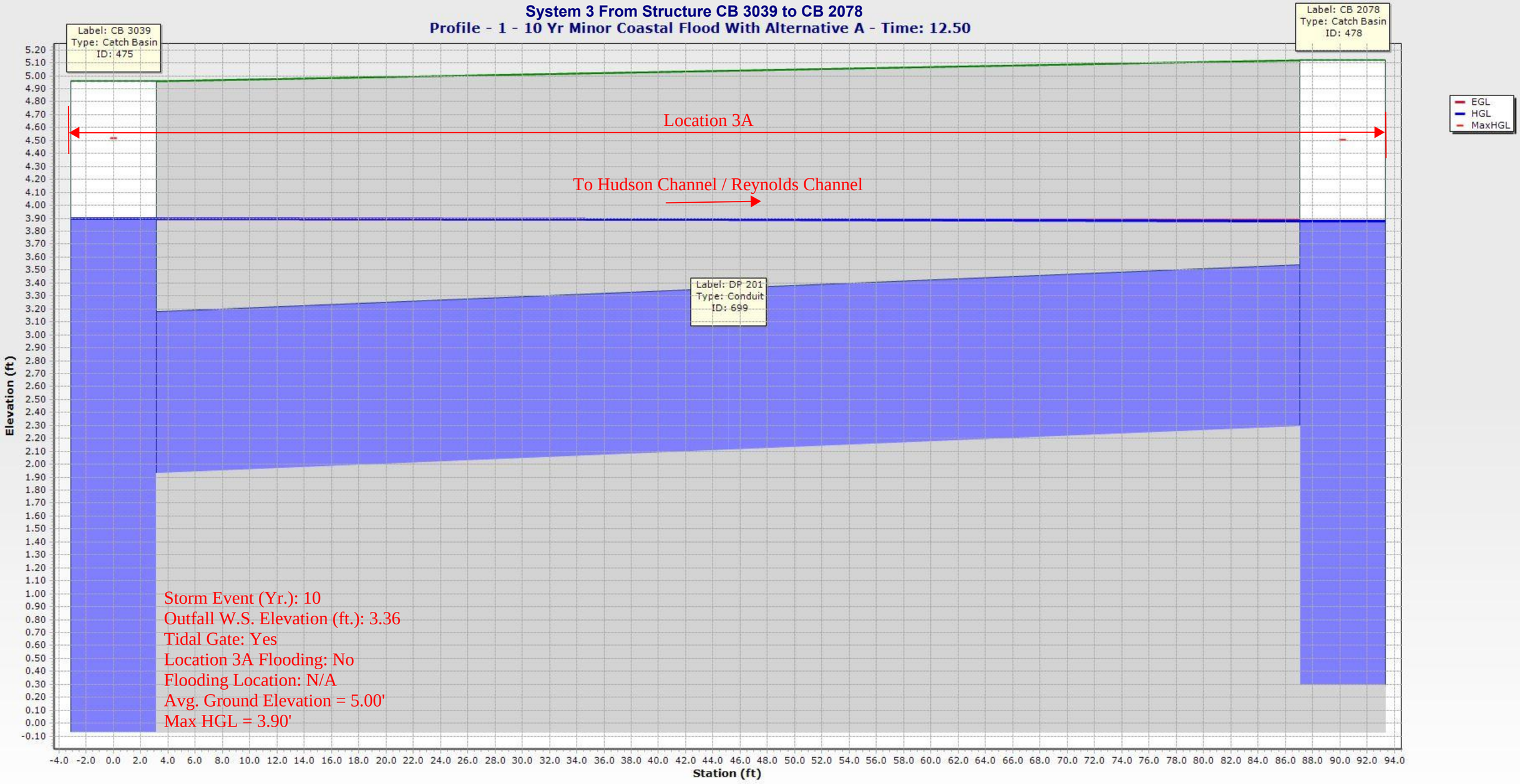

System 3 From Structure CB 3039 to CB 2078
Profile - 1 - 10 Yr Mean High Tide With Alternative A - Time: 12.50
Label: CB 3039
Type: Catch Basin
ID: 475
Label: CB 2078
Type: Catch Basin
ID: 478
EGL
HGL
MaxHGL
Location 3A
To Hudson Channel / Reynolds Channel
Label: DP 201
Type: Conduit
ID: 699
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.00'
Max HGL = 3.35'
Elevation (ft)
Station (ft)

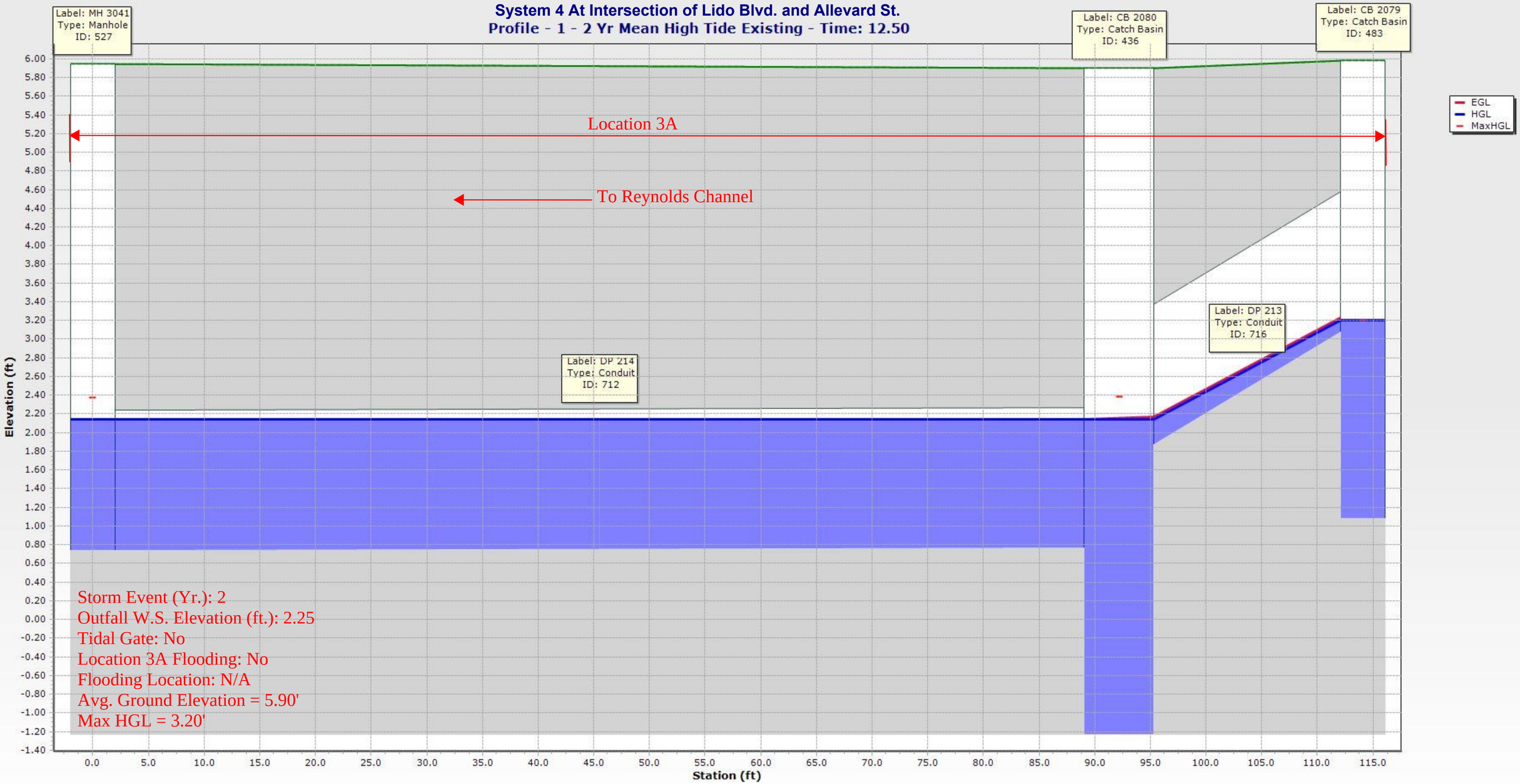

System 3 From Structure CB 3039 to CB 2078
Profile - 1 - 2 Yr Minor Coastal Flood Existing - Time: 12.50
Label: CB 3039
Type: Catch Basin
ID: 475
Label: CB 2078
Type: Catch Basin
ID: 478
EGL
HGL
MaxHGL
Location 3A
To Hudson Channel / Reynolds Channel
Label: DP 201
Type: Conduit
ID: 699
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.00'
Max HGL = 3.15'
Elevation (ft)
Station (ft)

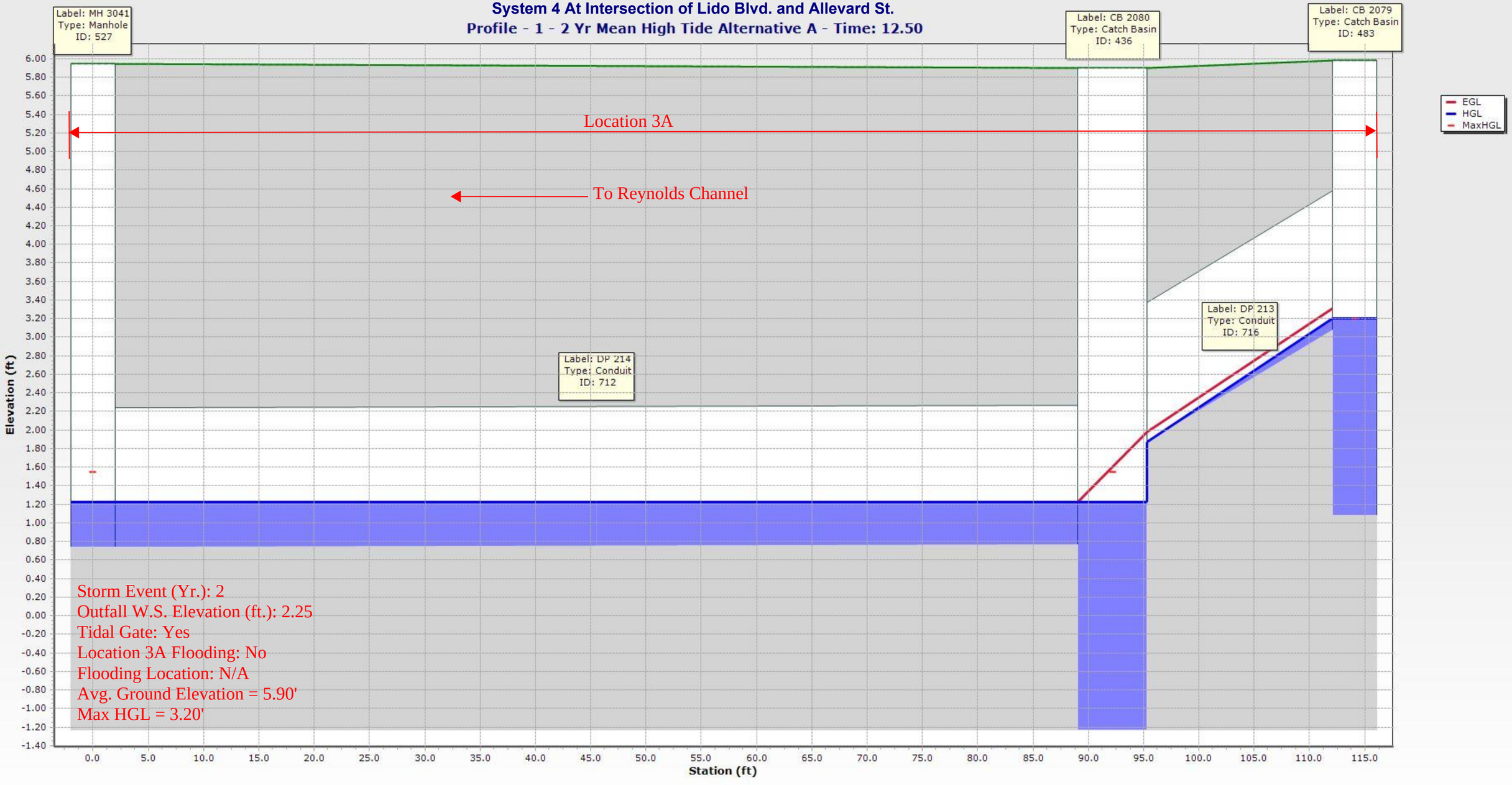

System 3 From Structure CB 3039 to CB 2078
Profile - 1 - 2 Yr Minor Coastal Flood With Alternative A - Time: 12.50
Label: CB 3039
Type: Catch Basin
ID: 475
Label: CB 2078
Type: Catch Basin
ID: 478
Location 3A
To Hudson Channel / Reynolds Channel
Label: DP 201
Type: Conduit
ID: 699
EGL
HGL
MaxHGL
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.00'
Max HGL = 2.75'
Elevation (ft)
Station (ft)

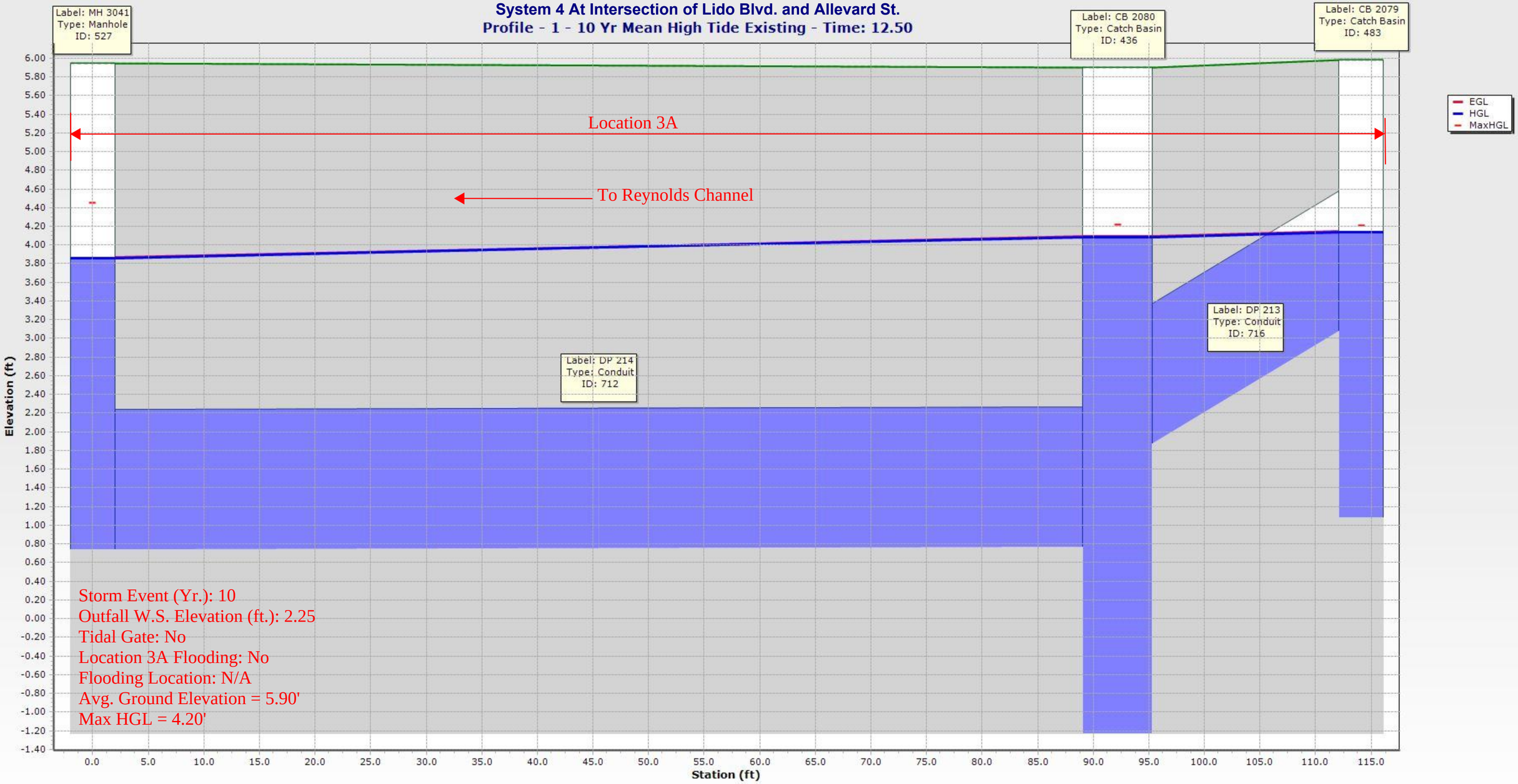
System 3 From Structure CB 3039 to CB 2078
Profile - 1 - 10 Yr Minor Coastal Flood Existing - Time: 12.50

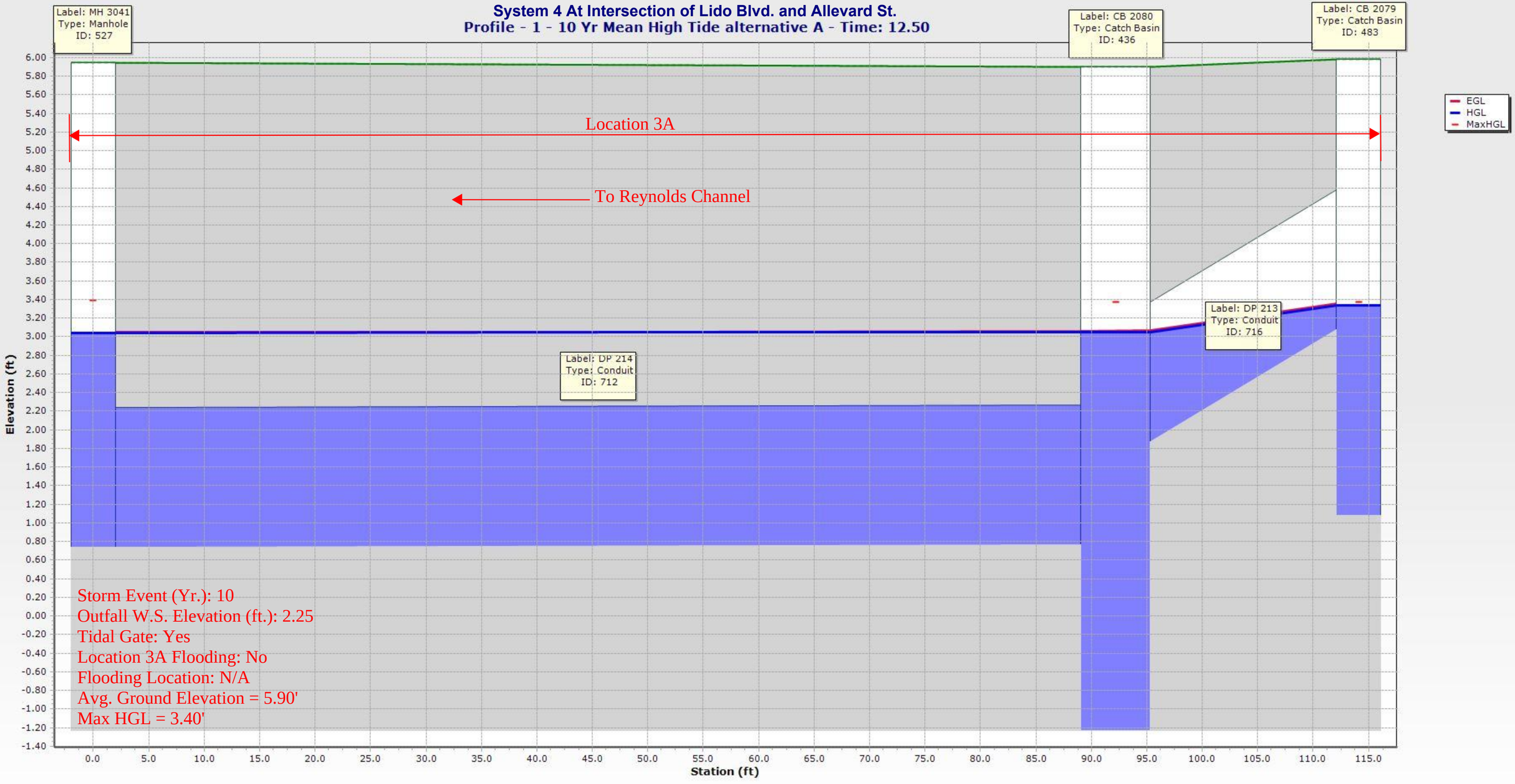



System 3 From Structure CB 3039 to CB 2078
Profile - 1 - 10 Yr Minor Coastal Flood With Alternative A - Time: 12.50
Label: CB 3039
Type: Catch Basin
ID: 475
Label: CB 2078
Type: Catch Basin
ID: 478
EGL
HGL
MaxHGL
Location 3A
To Hudson Channel / Reynolds Channel
Label: DP 201
Type: Conduit
ID: 699
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.00'
Max HGL = 3.90'
Elevation (ft)
Station (ft)


System 4 At Intersection of Lido Blvd. and Allevard St.
Profile - 1 - 2 Yr Mean High Tide Existing - Time: 12.50
Label: MH 3041
Type: Manhole
ID: 527
Label: CB 2080
Type: Catch Basin
ID: 436
Label: CB 2079
Type: Catch Basin
ID: 483
EGL
HGL
MaxHGL
Location 3A
To Reynolds Channel
Label: DP 214
Type: Conduit
ID: 712
Label: DP 213
Type: Conduit
ID: 716
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 3.20'


System 4 At Intersection of Lido Blvd. and Allevard St.
Profile - 1 - 2 Yr Mean High Tide Alternative A - Time: 12.50
Label: MH 3041
Type: Manhole
ID: 527
Label: CB 2080
Type: Catch Basin
ID: 436
Label: CB 2079
Type: Catch Basin
ID: 483
Location 3A
To Reynolds Channel
Label: DP 214
Type: Conduit
ID: 712
Label: DP 213
Type: Conduit
ID: 716
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 3.20'


System 4 At Intersection of Lido Blvd. and Allevard St.
Profile - 1 - 10 Yr Mean High Tide Existing - Time: 12.50
Label: MH 3041
Type: Manhole
ID: 527
Label: CB 2080
Type: Catch Basin
ID: 436
Label: CB 2079
Type: Catch Basin
ID: 483
EGL
HGL
MaxHGL
Location 3A
To Reynolds Channel
Label: DP 214
Type: Conduit
ID: 712
Label: DP 213
Type: Conduit
ID: 716
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 4.20'
Elevation (ft)
Station (ft)


System 4 At Intersection of Lido Blvd. and Allevard St.
Profile - 1 - 10 Yr Mean High Tide alternative A - Time: 12.50
Label: MH 3041
Type: Manhole
ID: 527
Label: CB 2080
Type: Catch Basin
ID: 436
Label: CB 2079
Type: Catch Basin
ID: 483
EGL
HGL
MaxHGL
Location 3A
To Reynolds Channel
Label: DP 214
Type: Conduit
ID: 712
Label: DP 213
Type: Conduit
ID: 716
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 2.25
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 3.40'
Elevation (ft)
Station (ft)
6.00
5.80
5.60
5.40
5.20
5.00
4.80
4.60
4.40
4.20
4.00
3.80
3.60
3.40
3.20
3.00
2.80
2.60
2.40
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
-0.40
-0.60
-0.80
-1.00
-1.20
-1.40
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0
55.0
60.0
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75.0
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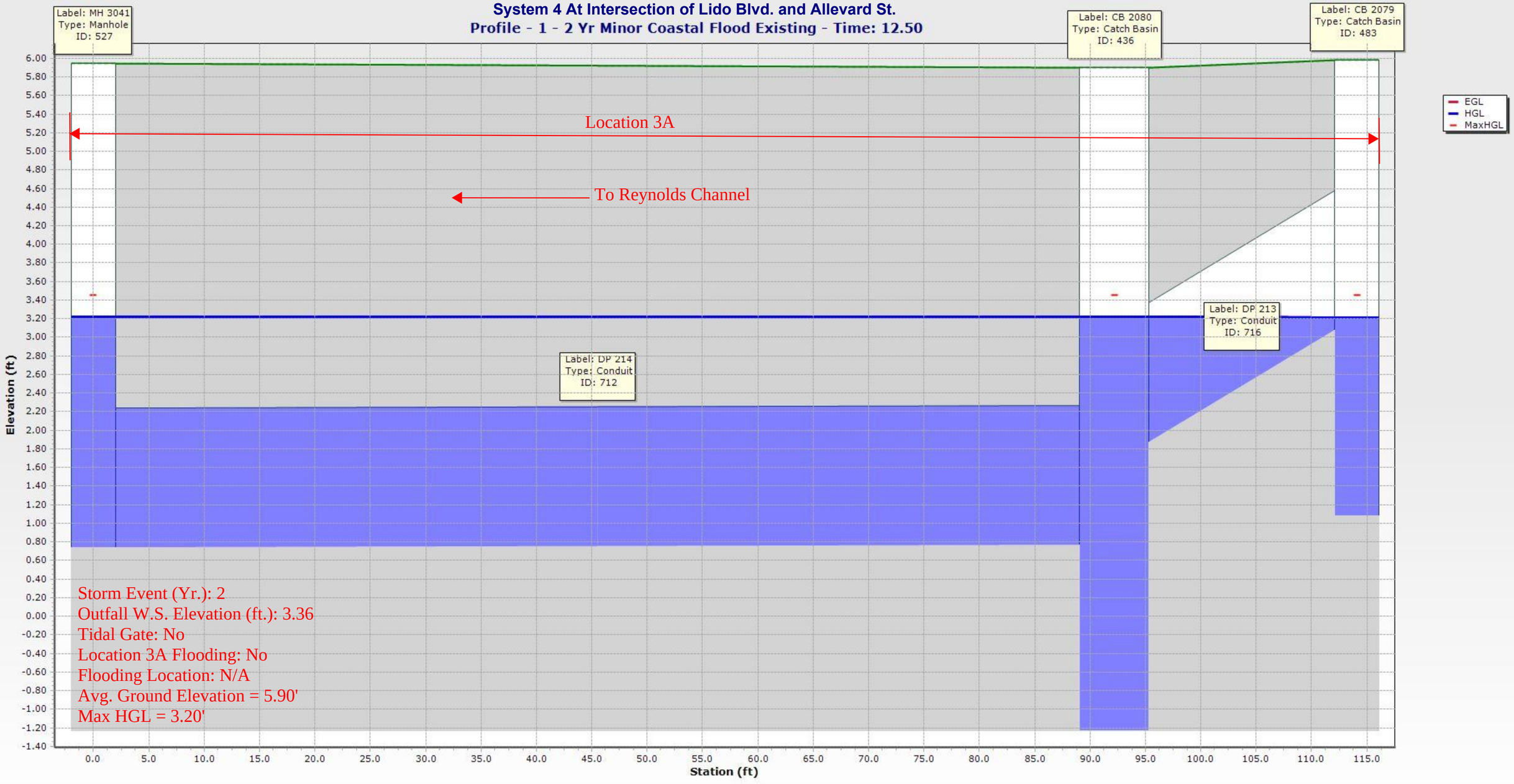
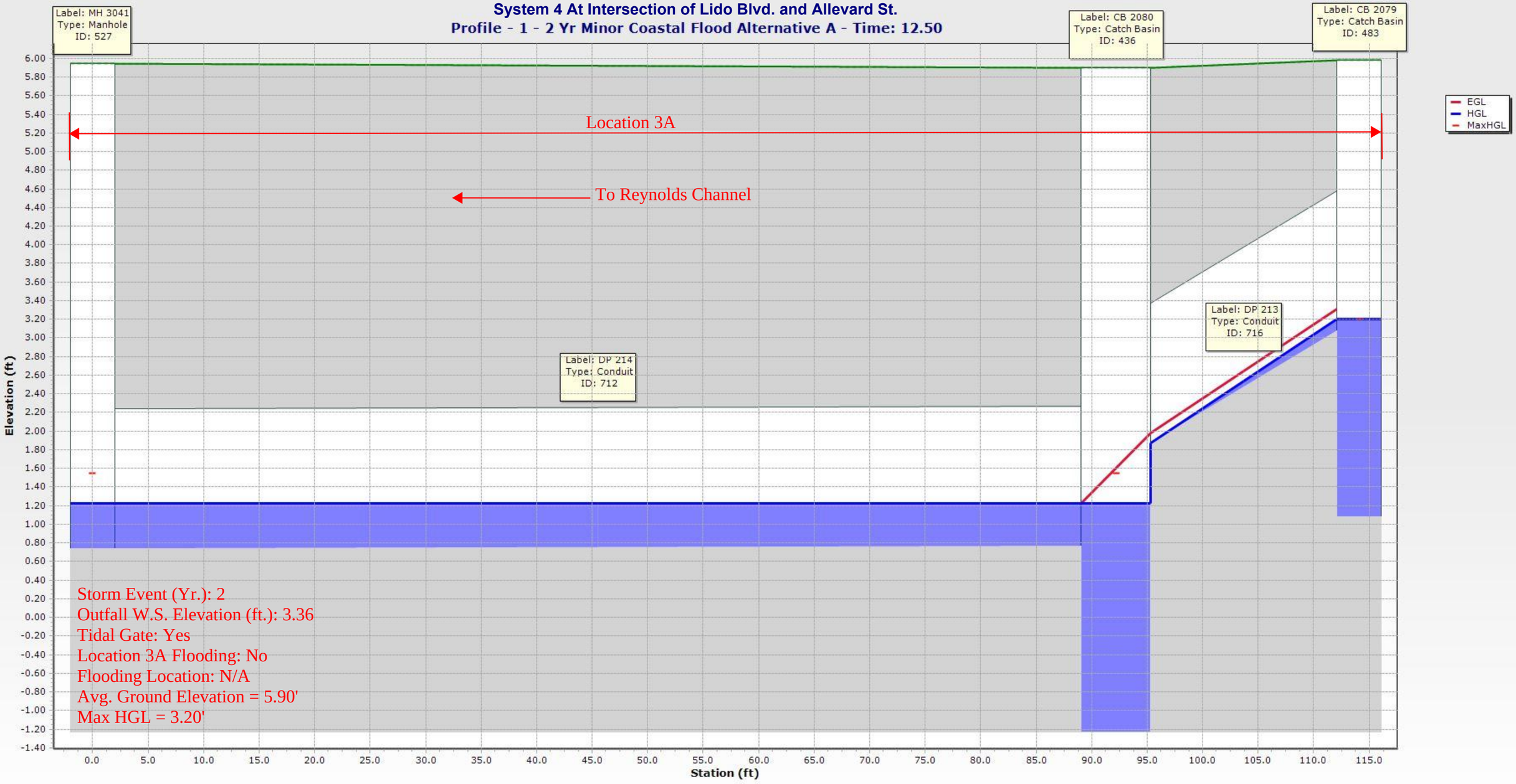
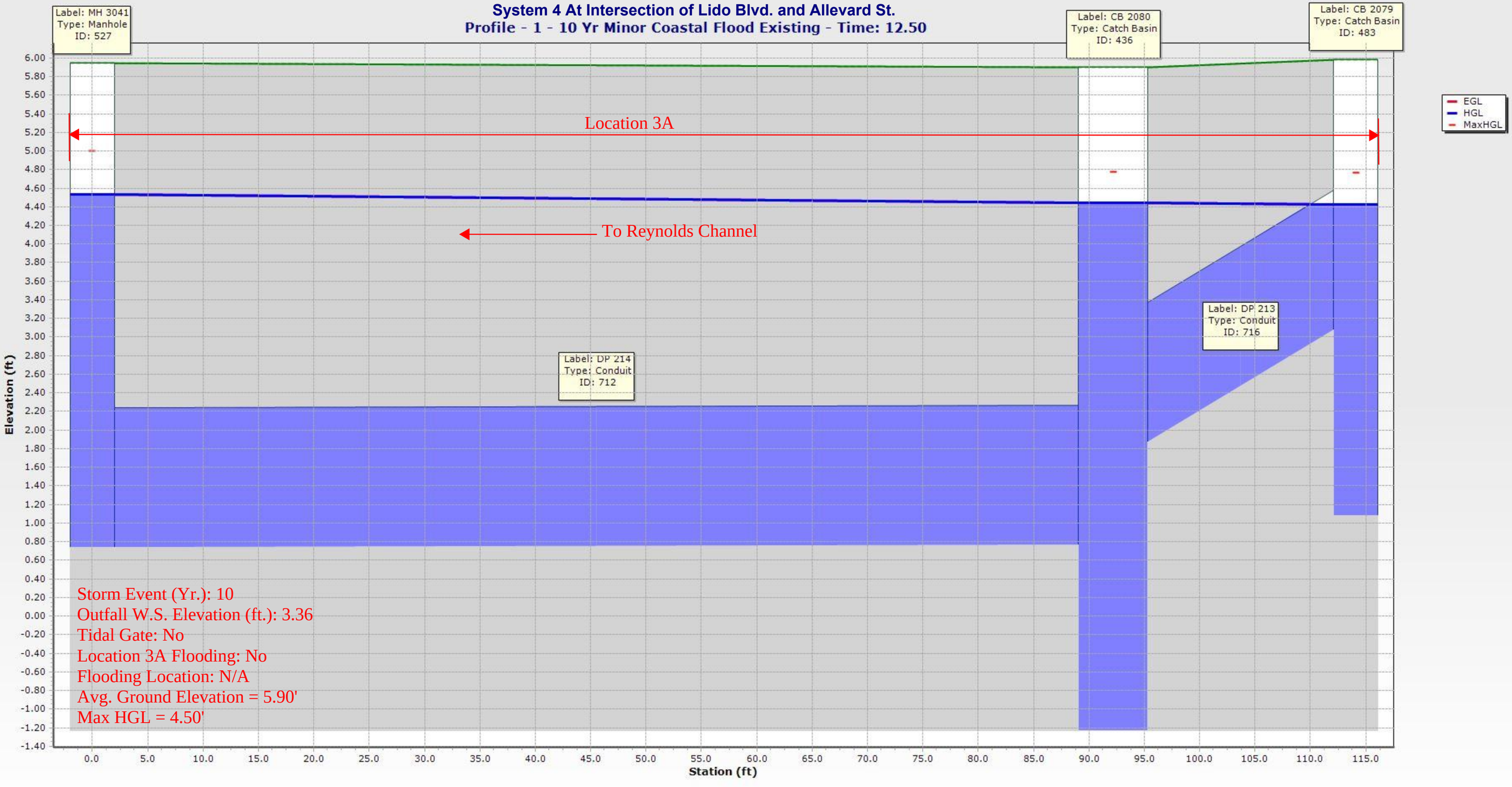
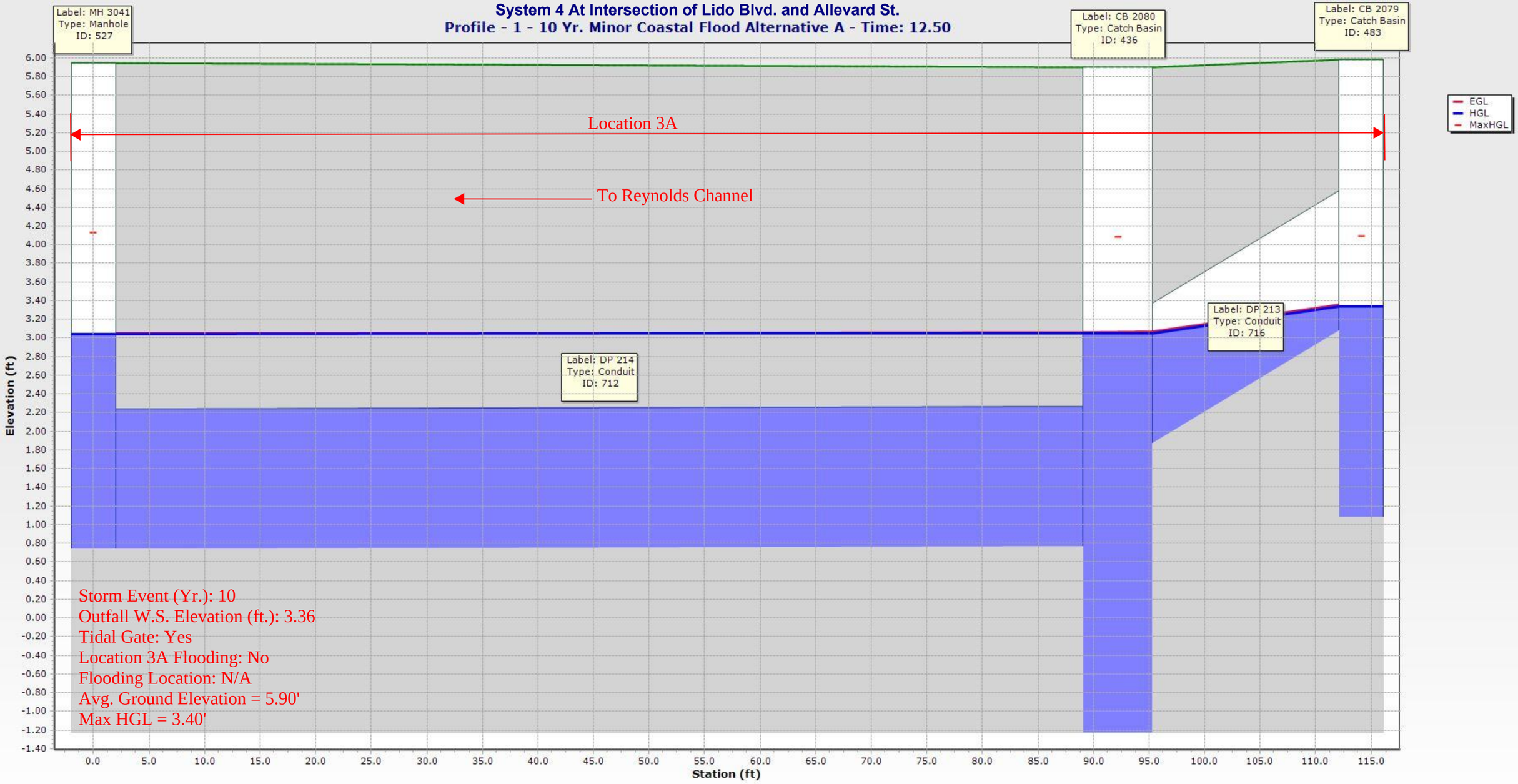
85.0
90.0
95.0
100.0
105.0
110.0
115.0


System 4 At Intersection of Lido Blvd. and Allevard St.
Profile - 1 - 2 Yr Minor Coastal Flood Existing - Time: 12.50
Label: MH 3041
Type: Manhole
ID: 527
Label: CB 2080
Type: Catch Basin
ID: 436
Label: CB 2079
Type: Catch Basin
ID: 483
EGL
HGL
MaxHGL
Location 3A
To Reynolds Channel
Label: DP 214
Type: Conduit
ID: 712
Label: DP 213
Type: Conduit
ID: 716
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 3.20'


System 4 At Intersection of Lido Blvd. and Allevard St.
Profile - 1 - 2 Yr Minor Coastal Flood Alternative A - Time: 12.50
Label: MH 3041
Type: Manhole
ID: 527
Label: CB 2080
Type: Catch Basin
ID: 436
Label: CB 2079
Type: Catch Basin
ID: 483
Location 3A
To Reynolds Channel
Label: DP 214
Type: Conduit
ID: 712
Label: DP 213
Type: Conduit
ID: 716
EGL
HGL
MaxHGL
Elevation (ft)
Station (ft)
Storm Event (Yr.): 2
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 3.20'


System 4 At Intersection of Lido Blvd. and Allevard St.
Profile - 1 - 10 Yr Minor Coastal Flood Existing - Time: 12.50
Label: MH 3041
Type: Manhole
ID: 527
Label: CB 2080
Type: Catch Basin
ID: 436
Label: CB 2079
Type: Catch Basin
ID: 483
EGL
HGL
MaxHGL
Location 3A
To Reynolds Channel
Label: DP 214
Type: Conduit
ID: 712
Label: DP 213
Type: Conduit
ID: 716
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: No
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 4.50'
Elevation (ft)
Station (ft)


System 4 At Intersection of Lido Blvd. and Allevard St.
Profile - 1 - 10 Yr. Minor Coastal Flood Alternative A - Time: 12.50
Label: MH 3041
Type: Manhole
ID: 527
Label: CB 2080
Type: Catch Basin
ID: 436
Label: CB 2079
Type: Catch Basin
ID: 483
EGL
HGL
MaxHGL
Location 3A
To Reynolds Channel
Label: DP 214
Type: Conduit
ID: 712
Label: DP 213
Type: Conduit
ID: 716
Storm Event (Yr.): 10
Outfall W.S. Elevation (ft.): 3.36
Tidal Gate: Yes
Location 3A Flooding: No
Flooding Location: N/A
Avg. Ground Elevation = 5.90'
Max HGL = 3.40'
Elevation (ft)
Station (ft)
6.00
5.80
5.60
5.40
5.20
5.00
4.80
4.60
4.40
4.20
4.00
3.80
3.60
3.40
3.20
3.00
2.80
2.60
2.40
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
-0.40
-0.60
-0.80
-1.00
-1.20
-1.40
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0
55.0
60.0
65.0
70.0
75.0
80.0
85.0
90.0
95.0
100.0
105.0
110.0
115.0

Appendix F

Green Stormwater Infrastructure (GSI) (Watershed Areas and Stormwater Runoff)

Date: 2017May06 | Made by: RTB | Checked by: DLF

Possible green infrastructure to be implemented within the Town of Hempstead's Lido West Town Park

Possible green infrastructure to be implemented within the Town of Hempstead's Lido West Town Park, which is located on the south side of Lido Boulevard opposite Regent Drive. Specific green infrastructure design details (i.e., type, size, etc.), ownership, maintenance, etc. to be determined by the appropriate Town, County, State and other appropriate agencies. All elevations provided are in NAVD1988 unless specifically noted otherwise. As per Section 6.3 of the NYSDEC Stormwater Management Design Manual, the intent of the proposed infiltration green infrastructure is to capture surface stormwater runoff and temporarily store it before allowing it to infiltrate into the soil over a two-day period. When the water elevation in the green infrastructure attains EL 4.7 ft, it will begin to overflow into the south flowline of Lido Blvd and then into the drainage structures on the south side of Lido Blvd.

Residential properties on the west boundary of the subject park property: Provide minimum 25-ft buffer from green infrastructure. Provide the same buffer from the tennis courts situated south of the proposed green infrastructure and the access/egress road located east of the proposed green infrastructure. Set the northern edge of the potential green infrastructure a minimum 15-ft from the approximate highway boundary (assumed to be the existing fence line).

Roadway Low Point Elevations on Lido Blvd, west of Regent Drive = EL 4.6 ft; (This will be held as the high water EL of the proposed green infrastructure).
Approximate Groundwater Elevation = EL 2.70 ft;

The existing 15-inch RCP drainage trunk line that runs along Lido Blvd approximate southern highway boundary directly north of the proposed green infrastructure lies partially within groundwater (INV ELS vary from EL 1.97 ft to EL 2.23 ft).

Due to the high groundwater elevation (and its fluctuations with the tidal cycle), any effective green infrastructure improvement will involve the interception of stormwater surface runoff only.

Assume bottom of proposed green infrastructure improvement = EL 3.70 ft. This provides an approximate 12-inch "filter medium" between the bottom of the green infrastructure and the groundwater table.

REF: NYSDEC Stormwater Management Design Manual (2015Jan):

Section 5.1 Planning for Green Infrastructure: Preservation of Natural Features and Conservation Design
The first step in planning for stormwater management using green infrastructure is to avoid or minimize land disturbance by preserving natural areas. Development should be strategically located based on the location of resource areas and physical conditions at a site. [NOTE: The Town Park property varies in elevation from EL 6.0 ft to EL 10.0 ft. In order to implement green infrastructure in this park property, excavation will be required. The bottom of the proposed green infrastructure will be at EL 3.70 ft.]

Section 6.3 – Stormwater Infiltration; Subsection 6.3.1 - Feasibility (page 6-34): The bottom of the infiltration facility shall be separated by at least three feet vertically from the seasonally high water table or bedrock layer, as documented by on-site soil testing. (Four feet in sole source aquifers).
It should be noted that the EPA has designated the aquifer beneath Nassau and Suffolk Counties as a Sole Source Aquifer (SSA). New Jersey, New York, Puerto Rico, US Virgin Islands and (8) Tribal Nations make up EPA Region 2.
(https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b)

As such, at this location, it will be necessary to provide a 4-ft separation between the bottom of the green infrastructure and the water table. SINCE THE PROPOSED TOH-LIDO WEST TOWN PARK GREEN INFRASTRUCTURE ONLY HAS 12-INCHES SEPARATION TO THE WATER TABLE, NYSDEC APPROVAL WILL BE REQUIRED FOR THE CONSTRUCTION OF THE PROPOSED GREEN INFRASTRUCTURE.

APPROXIMATE AREA OF BOTTOM OF GREEN INFRASTRUCTURE (EL 3.70 FT) = 80,415 SF = 1.846 ACRES;
APPROXIMATE AREA OF HIGH WATER ELEVATION OF GREEN INFRASTRUCTURE (EL 4.60 FT; LOW POINT EL ON LIDO BLVD) = 82,515 SF = 1.894 ACRES;
APPROXIMATE STORAGE VOLUME PROVIDED BY GREEN INFRASTRUCTURE =
[(80,415 SF + 82,515 SF)/2] x (4.60 FT - 3.70 FT) = 73,318.5 CUBIC FEET

AS NOTED ABOVE, DUE TO THE HIGH GROUNDWATER ELEVATION IN THIS AREA, THIS GREEN INFRASTRUCTURE WILL INTERCEPT SURFACE RUNOFF ONLY; SPECIFICALLY THE RUNOFF DESTINED FOR THE TWO CURB INLETS LOCATED ON THE SOUTH SIDE OF LIDO BLVD, JUST WEST OF REGENT DRIVE; THE TWO CURB INLETS ARE 100 FT +/- APART;

Date: 2017May06 | Made by: RTB | Checked by: DLF

Possible green infrastructure to be implemented within the Town of Hempstead's Lido West Town Park

TOTAL WATERSHED AREA DRAINING TO THESE (2) EXISTING CURB INLETS = 90,374 SF (2.07 ACRES)
LIDO BLVD AREA SUBTOTAL = (700 FT x 45 FT) = 31,500 SF (0.72 ACRES); Use conservative runoff coefficient of 1.0;
RESIDENCE #170 EVA DRIVE IMPERVIOUS AREA (ROOF, PATIO) = 6,670 SF (O.15 ACRES); Use conservative runoff coefficient of 1.0;
TURFED AREAS = (90,374 SF - 31,500 SF - 6,670 SF) = 52,204 SF (1.198 ACRES); Use conservative runoff coefficient of 0.4;

The "weighted" runoff coefficient for this 2.07 acre watershed area is:
[(0.72)(1.0)+(0.15)(1.0)+1.2(0.40)]/2.07 = 0.65

THE TOTAL PARK AREA OCCUPIED BY THE GREEN INFRASTRUCTURE = 2.8 ACRES, SAY 3 ACRES (= 130,680 SF). The runoff generated by this 3 acre footprint must also be accommodated by the green infrastructure. To be conservative, use a runoff coefficient of 0.4 for the green infrastructure footprint area.

The "weighted" runoff coefficient for the 3 acre green infrastructure footprint is: 0.4

LIDO-POINT LOOKOUT DESIGN STORM CRITERIA (SCS Type 3 Rainfall Distribution storm for 2-yr and 10-yr return frequencies. 24-hr total rainfall for 2-yr storm is 3.36 inches and for the 10 yr storm is 4.99 inches.

Calculate the total volume of stormwater runoff that can be expected from a 2yr return frequency storm:
TOTAL WATERSHED AREA DRAINING TO THESE (2) EXISTING CURB INLETS = 90,374 SF (2.07 ACRES);
The "weighted" runoff coefficient for this 2.07 acre watershed area is: 0.65
Total 24-hr precipitation for a storm with a 2 year return frequency = 3.36 inches = 0.28 ft;

(0.28 ft) * (0.65)(90,374 SF) = 16,448 CF (from the 2.07 acre tributary area)

(0.28 ft)*(0.40)(130,680 SF) = 14,636 CF (from within the green infrastructure footprint)

The total runoff volume developed is (16,448 CF + 14,636 CF) = 31,084 CF, which is approximately 42 percent of the available green infrastructure capacity.
The available storage volume of the proposed green infrastructure is 73,318 CF.

Calculate the total volume of stormwater runoff that can be expected from a 10yr return frequency storm:
TOTAL WATERSHED AREA DRAINING TO THESE (2) EXISTING CURB INLETS = 90,374 SF (2.07 ACRES);
The "weighted" runoff coefficient for this 2.07 acre watershed area is: 0.65
Total 24-hr precipitation for a storm with a 10 year return frequency = 4.99 inches = 0.416 ft;

(0.416 ft) * (0.65)(90,374 SF) = 24,437 CF, which is approximately 33 percent of the green infrastructure capacity.

(0.416 ft)*(0.40)(130,680 SF) = 21,745 CF (from within the green infrastructure footprint)

The total runoff volume developed is (24,437 CF + 21,745 CF) = 46,182 CF, which is approximately 63 percent of the available green infrastructure capacity.
The available storage volume of the proposed green infrastructure is 73,318 CF.

The excess capacity of the proposed green infrastructure can be reduced by raising the bottom elevation of the green infrastructure to provide greater than 12-inch (+/-) separation to the water table.

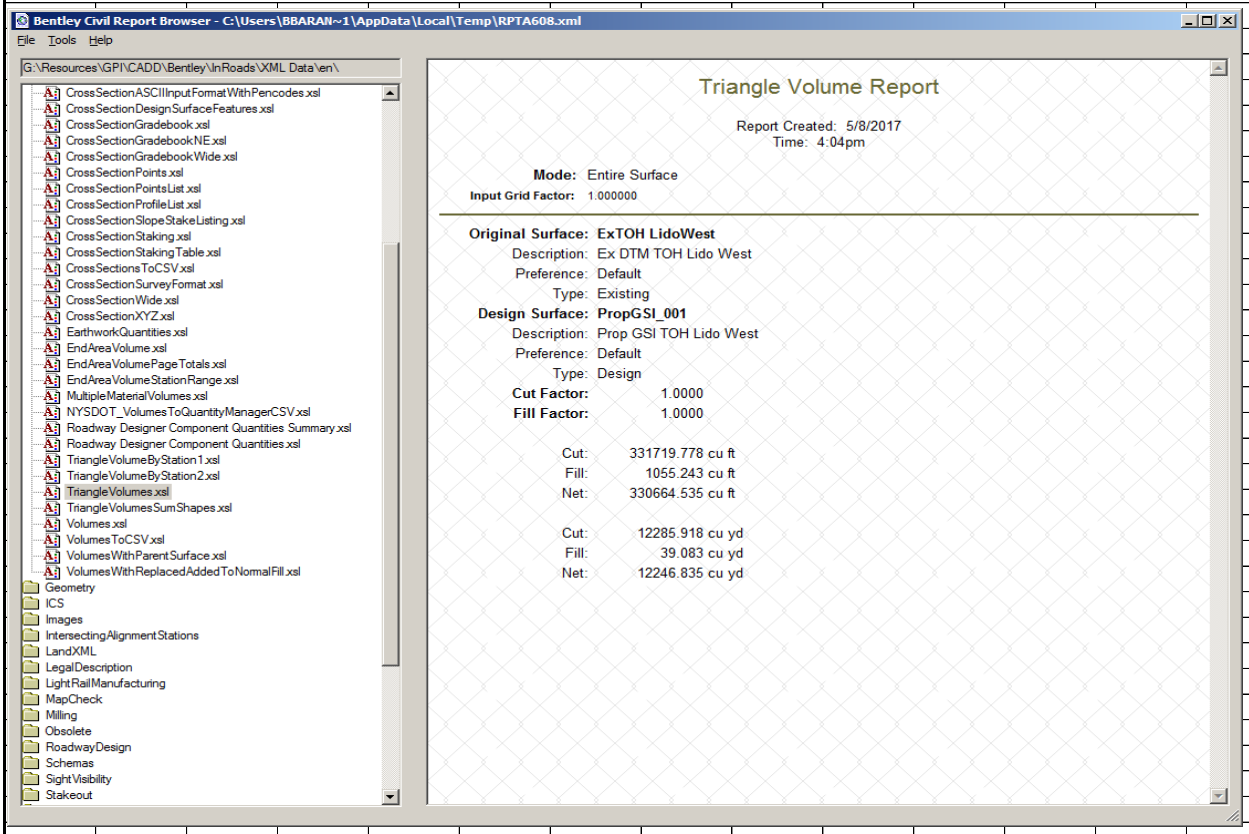
Date: 2017May06							Made by: RTB		Checked by: DLF	

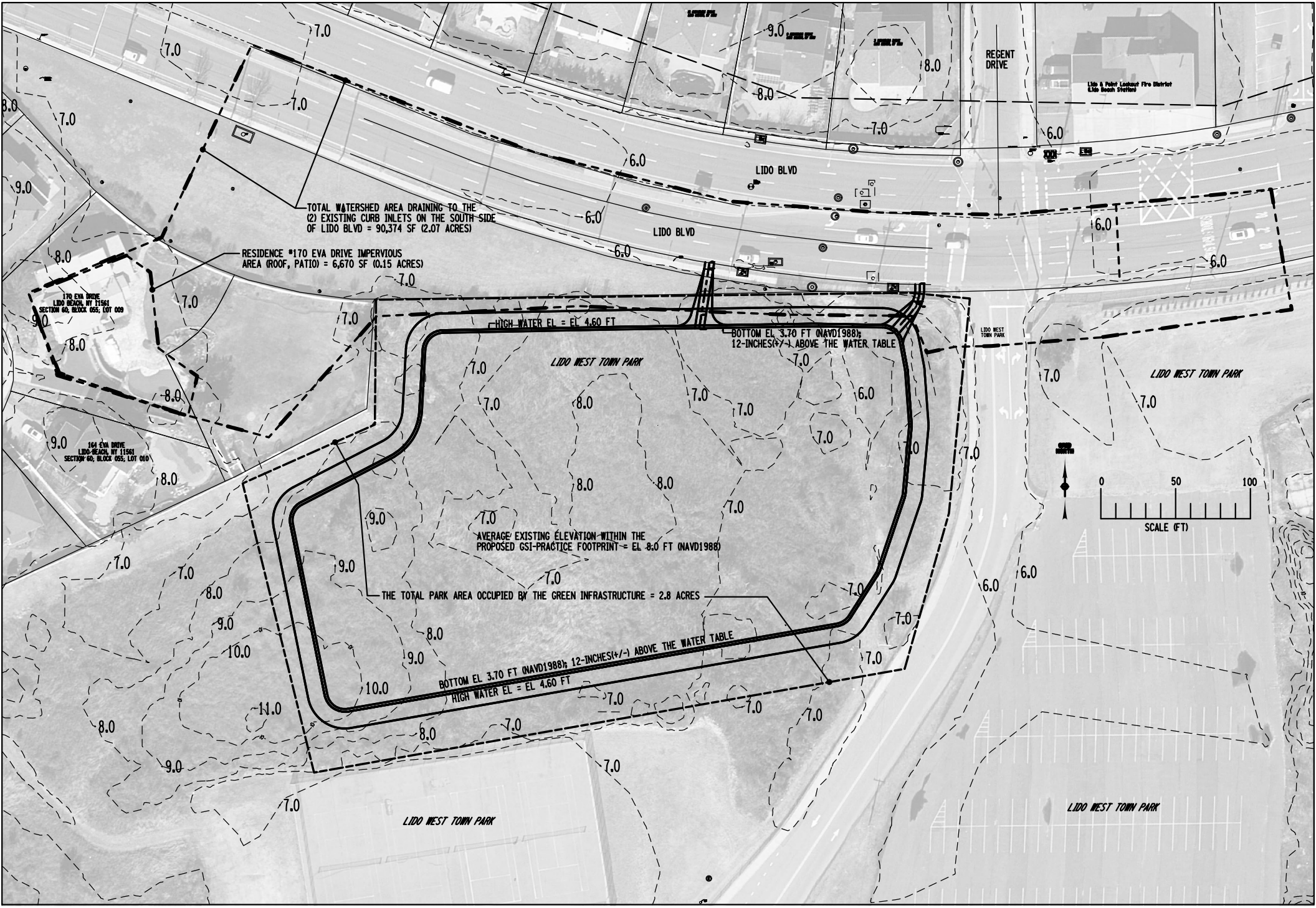
Possible green infrastructure to be implemented within the Town of Hempstead's Lido West Town Park

Use InRoads to calculate the earthwork:
Existing Surface: Ex DTM TOH Lido West.dtm
Proposed Surface: PropGSI_001.dtm

Below is the InRoads volume report generated using the accurate Triangular Volume Method.

Required Excavation = 12,286 CY
The available storage volume of the proposed green infrastructure is 73,318 CF = 2,715.5 CY





PROPOSED GREEN INFRASTRUCTURE PRACTICE WITHIN LIDO WEST TOWN PARK (SOUTH SIDE OF LIDO BLVD OPPOSITE REGENT DRIVE)

Appendix G

Memorandum of Findings (GPI to DASNY (3/8/17) Regarding Special Hydraulic Modeling Simulations Conducted Throughout School Property)

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

MEMORANDUM

TO: Jim Sullivan

FROM: Deane Fabrizio

DATE: 3/08/2017

RE: Lido Beach-Point Lookout Drainage Report
Follow-up to Project Status – Drainage Report Meeting at GOSR on 2/8/17
GPI Project No. 2016023.00

Jim,

Pursuant to our project status meeting held at the GOSR offices in Farmingdale on 2/8/17, specifically in regard to DASNY/GOSR review comments on the DRAFT drainage report prepared by GPI and submitted to DASNY on 12/23/16, the following is a brief summary and status of the follow-up GPI investigations requested by GOSR representatives. This memo revises that last submitted to DASNY and dated 2/28/17.

At the referenced meeting GOSR representatives requested additional investigations be conducted by GPI to gather additional information on observed flooding conditions within the project area.

Please find attached, at the end of this memo, aerial graphics representing NY Rising report and identified area Locations 3A through 3F of the existing "Drainage System Structure Map", for reader reference. Specific maps are referenced in the narrative below for reader reference and convenience.

In general the following three (3) action items were itemized by GOSR:

I. GPI was asked to conduct additional interviews with contacts noted below.
II. GPI was asked to perform additional hydraulic modelling simulations.
III. GPI was asked to perform a site inspection during a rain storm event

I. Additional Interviews

The following contacts were provided by GOSR:

A. Town of Hempstead - (Doug Tuman, Commissioner, Jeff Tierney, Deputy Commissioner, Kevin Almiral, Civil Engineer) (1-516-489-5000)

B. Lido Beach Fire Department - Chas Thompson, Commissioner (1-516-318-2244)

A. Town of Hempstead - GPI representatives have spoken via phone and in person at the Town, with all three (3) Town of Hempstead representatives noted above on the following dates; 2/13/17 (phone), 2/17/17 (phone), 2/21/17 (Town Offices). In addition, GPI was asked by Mr. Tierney to contact Mr. Craig Mollo, Deputy Commissioner of the Town Highway Department at 1-516-812-3514, for additional information regarding the Town Highway Department experiences with flooding and general maintenance practices. GPI made numerous attempts to contact Mr. Mollo on 2/17/17, 2/21/17, 2/23/17, and finally succeeding to reach Mr. Mollo on 2/27/17.

The following is a summary of those conversations with the Town representatives, with those discussions concerning NY Rising Location 3A noted first in order of presentation. Project locations other than 3A are presented following those concerning Location 3A.

1. GPI review of complaint forms provided by the Town found a report of flooding in the vicinity of Fairway Road, Richmond Road, and Hazzard Road at Blackheath Road (south of Lido Boulevard and NY Rising area location 3A) on Sunday 8/14/11, where a purported 11 inches of rainfall was cited in the complaint, an extremely significant rain event of great proportion. This observed flooding event is also coincident with flooding observed on Lido Boulevard, within NY rising area Location known as 3A.This reported event was also reported by Long Beach Fire Commissioner Chas Thompson, when separately interviewed by GPI on 2/23/17, and summarized in item B4 below *(See attached Project Location 3A Drainage System Structure Map*).

2. The Town confirmed the existence of the inverted siphons reported by GPI on Allevard Street near Ocean Boulevard and on Pinehurst Street near Ocean Boulevard.

3. The Town confirmed observed flooding on Ocean Boulevard near Allevard Street and Pinehurst Street not only during major storm events, but during moderate rain fall coincident with high tide events. These locations are also upstream of the existing inverted siphons previously noted on Allevard Street and Pinehurst Street *(See attached Project Location 3D Drainage System Structure Map).*

4. The Town advised GPI that ponding/flooding within the Point Lookout area occurs often (non-specific frequency) at the north east end of Bayside Drive, the lowest elevation of Point Lookout, where existing drainage is prone to clogging due to wind blow sand and accumulation of road sand at the low point.

5. The Town advised GPI that within the Point Lookout area, specifically at the east end of Lido Boulevard at the intersections of Lynbrook Avenue and Mineola Avenue street flooding occurs often (no-specific frequency), during moderate to severe rain and tidal events. It is noted that in general, Lido Boulevard within the Point Lookout area has been identified in the NYR Report as area location 3C *(See attached Project Location 3D Drainage System Structure Map*).

6. The Town advised GPI that in general the Point Lookout area roads that run north and south have flat longitudinal slopes, with no existing drainage inlets or pipes within the roadway. These north/south roads typically have grass/sand shoulders (low impact green infrastructure) where roadway cross-slopes encourage storm water runoff to drain into the shoulder area where it moves slowly to the north where it is to be intercepted by drain inlets located on the east/west roadway of Beech Street, Lido Boulevard, and finally at the north end along Bayside Avenue. The Town noted that the permeable grass/sand shoulders clog and limit the rate at which the shoulder can absorb the storm water resulting in constant ponding and nuisance street flooding.

7. The Town provided GPI with copies of complaint forms for GPI's review. Upon inspection of these forms the complaints range from clogged catch basin inlets, debris in catch basin structures, and flooding during major rainfall events. The complaints are generally referred to the Town highway department whose actions general require some type of cleaning to remove debris from inlets, catch basins, and storm sac insert filters.

8. In addition to responding to complaints and performing emergency cleaning, Town highway department representatives confirmed that they perform regular maintenance (non-specific frequency) by cleaning catch basins and storm sac insert filters. The Town also reported that they do not perform regular cleaning of pipes, unless there is an indication of or reported blockage or collapse.

B. Lido Beach Fire Department - In regard to Item B above, GPI representatives have spoken with Commissioner Chas Thompson both by phone on visited with him in the field, on 2/16/17 and 2/23/17 respectively.

The field meeting covered all topics discussed via phone on 2/16/17, and is summarized as follows:

Field Meeting – Discuss flooding conditions observed in the vicinity of the Lido Boulevard/Regent Drive intersection:

Meeting Date:	Thursday, 2017Feb23
Start Time:	3 pm
Location:	Lido and Point Lookout Firehouse located on the NE corner of the Lido Boulevard/Regent Drive intersection

Meeting Attendees:
Chas Thompson, Fire Commissioner – Lido and Point Lookout Fire District
Bob Baranowski (GPI)

Bob Baranowski met with Chas Thompson at the Lido and Point Lookout Firehouse located on the northeast corner of the Lido Boulevard/Regent Drive intersection. The purpose of the meeting was to discuss the flooding conditions that Mr. Thompson has observed on Lido Boulevard in proximity to the above noted firehouse. Following is a brief summary of the topics discussed in the field.

1) Mr. Thompson noted Superstorm Sandy (2012Oct29) inundated the Lido and Point Lookout Firehouse at Regent Drive with approximately 4 feet of water. It is believed the storm surge from Reynold's Channel (to the north) had more of an impact on the Lido Beach/Point Lookout roadway/property flooding than the Atlantic Ocean storm surge (to the south). It is further believed the dunes constructed along the Atlantic Ocean side of Lido Beach helped to curtail flooding from the Atlantic Ocean storm surge.

   Mr. Thompson noted that during Sandy, vehicles were actually observed floating at the intersection of Greenway Road and Lido Boulevard. Mr. Thompson also noted the flooding experienced as a result of Sandy was the worst he has ever seen in Lido Beach, Point Lookout and Long Beach. *(See attached Project Location 3A Drainage System Structure Map*).

   It was agreed Superstorm Sandy was an extreme historical storm event, especially with regard to its prolonged storm surge. Sandy was the largest storm to land ashore in New York's history.

2) Mr. Thompson indicated ponding water is most prevalent on Lido Boulevard after a short, intense rainfall. Normal rainfall events do not cause ponding along Lido Boulevard.

3) Mr. Thompson indicated the section of Lido Boulevard between Blackheath Road and Allevard Street is prone to flooding, particularly the section between Greenway Road and Regent Drive. Mr. Thompson noted the existing curb inlet on the south side of Lido Boulevard, approximately 170 ft west of the centerline of Regent Drive, is where ponding water is usually first observed. GPI noted this particular curb inlet is the lowest structure on Lido Boulevard between Blackheath Road and Allevard Street. GPI also noted the observed ponding at this curb inlet is consistent with GPI's stormwater model, which also indicates this is the first drainage structure where hydraulic grade line issues are encountered (i.e., ponding occurs). GPI indicated the two isolated low points on Lido Boulevard between Greenway Road and Regent Drive are the two lowest sections of Lido Boulevard between Maple Boulevard and Harrogate Street, which is identified as Location 3A in the NY Rising Community Reconstruction Program Report dated March 2014 *(See attached Project Location 3A Drainage System Structure Map*).

4) Mr. Thompson noted there was a particular storm event in 2011, just prior to Hurricane Irene (2011Aug28), where marked flooding was observed on Lido Boulevard between Regent Drive and Greenway. The right lane and right shoulder in both Lido Boulevard directions were not passable for passenger cars. Vehicular traffic was forced to use the left lane to pass through the flooded area of Lido Boulevard. It was noted the water receded from Lido Boulevard within a couple of hours *(See attached Project Location 3A Drainage System Structure Map*). *[GPI Post-Meeting Note: Mr. Thompson was referring to the rain event of Sunday, 2011Aug14. Within a 24-hr period, Lido Beach received a remarkable 10.87 inches of rainfall. This much precipitation in a 24-hr period exceeds the precipitation that can be expected from a 100-year storm event, which is 8.8-inches of rainfall in a 24-hr period. This particular storm event was of historical proportions.]*

5) Mr. Thompson noted after a short, intense rainfall stormwater can be seen bubbling out of the drainage manhole covers situated in the Lido Boulevard pavement, just west of Regent Drive. GPI noted this is where there is an inverted siphon constructed within the pipe crossing beneath Lido Boulevard *(See attached Project Location 3A Drainage System Structure Map*).

6) Mr. Thompson noted on a few occasions, he has observed County forces cleaning out the catch basins on Lido Boulevard.

II. Additional Hydraulic Modelling Simulations

To assist the reader in interpreting the information provided in this section, the following definitions/clarification of terms is provided. In addition, the reader is directed to "Project Location 3A Drainage System Structure Map" of this memorandum for additional clarity.

- 10 Year Storm Event: A storm event that occurs, on average, once every ten years, or has a 10% probability of occurring or being exceeded in any given year.

- Max HGL Elevation (ft): The maximum water surface elevation that can be expected within the structures of the same drainage pipe network during a given storm event. To prevent visible ponding on a roadway, this elevation must be lower than the drainage structure grate elevations.

- Street flooding: The hydraulic capacity of the drainage system is taxed and visible ponding has started to occur within the roadway.

- Tidal Gate: A device typically installed at or near a drainage system outfall that prevents tidal waters from backflowing into the drainage pipe network.

- Mean Low Tide: The Mean Low Tide Elevation for the Lido Beach/Point Lookout area based on USGS tidal data. For this comprehensive watershed area, this is EL. -2.48 ft (NAVD88).

- Mean High Tide: The Mean High Tide Elevation for the Lido Beach/Point Lookout area based on USGS tidal data. For this comprehensive watershed area, this is EL. 2.25 ft (NAVD88).

- Minor Coastal Flooding Elevation: The water surface elevation developed by the National Weather Service at which 1 ft to 2 ft of inundation can be expected in shoreline and vulnerable areas. There is a low threat of property damage and no direct threat to life. A few shoreline and vulnerable roadways and adjacent properties will experience shallow flooding. For the Lido Beach/Point Lookout area this is EL. 3.36 ft (NAVD88).

- Common Drainage Manhole (DMH) No. 13091: The existing DMH located at the west end of the Nassau County Drainage Easement that is contiguous to the LELBMS south property line and the Residence #82 Regent Drive north property line. The existing 24-inch RCP and 30-inch RCP drainage trunk lines exit this DMH in a northerly direction and continue beneath the LELBMS property. A single 24-inch RCP enters this DMH from the east. This DMH was Gayron deBruin (GdB) Survey Point No. 13091.

- Upstream of common DMH No. 13091 – This refers to the drainage structures, south of common DMH No. 13091 that contribute to the drainage trunk line on Regent Drive, along the south side of Lido Boulevard (within the 1960's realignment area) between Greenway Road and Regent Drive. The transverse drainage pipe crossing beneath Lido Boulevard is comprised of an 18-inch RCP inverted siphon that was installed to avoid an existing 18-inch diameter sanitary sewer interceptor that passes directly over the drainage pipe's inverted siphon.

- Downstream of common DMH No. 13091 (24-inch RCP) – This refers to the drainage structures, north of common DMH No. 13091 that contribute storm water runoff to the 24-inch RCP drainage trunk line. This consists of drainage structures on LELBMS property and on Harbor Drive, north of the LELBMS property.

- Downstream of common DMH No. 13091 (30-inch RCP) – This refers to the drainage structures, north of common DMH No. 13091 that contribute storm water runoff to the 30-inch RCP drainage trunk line. This consists of drainage structures on LELBMS property and on Lagoon Drive East, which is situated just west of the LELBMS property. The 30-inch RCP trunk line ultimately discharges to Hudson Channel via a 36-inch RCP outfall.

As directed by GOSR at the Wednesday, 2017Feb08 Project Status Meeting, GPI has conducted additional analyses on the drainage systems that ultimately discharge through the existing 24-inch RCP and the 30-inch RCP drainage trunk lines that pass through the Lido Elementary/Long Beach Middle School (LELBMS) property.

The 24-inch RCP drainage trunk line discharges into Reynold's Channel, situated north of the LELBMS property. The 30-inch RCP drainage trunk line ultimately discharges into Hudson Channel (via a 36-inch RCP outfall), situated west of the LELBMS property. Hudson Channel is parallel to, and west of Lagoon Drive East, which is contiguous to the western boundary of the LELBMS property.

GPI conducted drainage model simulations for the 10-year recurrence interval storm event for the following (3) outfall tailwater conditions:

a) Mean Low Tide tailwater conditions;
b) Mean High Tide tailwater conditions, and;
c) Minor Coastal Flooding tailwater conditions.

For each of the (3) above noted tailwater conditions, GPI ran (2) distinct Alternatives.

- For Alternative A, the 24-inch RCP and 30-inch RCP through the LELBMS property were retained intact, as they currently exist.

- For Alternative B, the 24-inch RCP is assumed to be bulkheaded within the existing common DMH (No. 13091) it shares with the existing 30-inch RCP. This common DMH is located at the west end of the Nassau County Drainage Easement, which is contiguous to the LELBMS south property line and the Residence #82 Regent Drive north property line. With this 24-inch RCP bulkheaded within the above noted common DMH, it can no longer receive any stormwater runoff from the Lido Boulevard drainage system; it can only receive runoff from the LELBMS property and from the drainage structures on Harbor Drive, north of the LELBMS property. This common DMH is identified as Gayron deBruin (GdB) Survey Point No. 13091.

Additionally, GPI was directed by DASNY (on behalf of GOSR) via telephone on Thursday 2017Mar02 to conduct additional drainage analyses. Specifically, GPI was to conduct a single additional simulation (Alternative C) for the Minor Coastal Flooding tailwater conditions with the following (2) additional parameters:

a) The 30-inch RCP trunk line is equipped with a tidal gate (backflow preventer). A likely location for this device is immediately upstream of the existing DMH located on Lagoon Drive East, approximately 145 feet east of the 36-inch diameter RCP outfall at Hudson Channel, and;

b) The 24-inch RCP is bulkheaded within the existing common DMH (No. 13091) it shares with the existing 30-inch RCP, as described above for the Alternative B. When bulkheaded within the common DMH, the 24-inch RCP can no longer receive any stormwater runoff from the Lido Boulevard drainage system; it will only receive runoff from the LELBMS property and from the drainage structures on Harbor Drive, north of the LELBMS property.

Following is a brief summary of the various drainage model simulations conducted by GPI.

1) **SIMULATION 1**

Simulation 1A
Storm Recurrence Interval: **10 Year Event**
Outfall Tailwater Condition: **Mean Low Tide**
Alternative Selected: **Alternative A** - The 24-inch RCP and 30-inch RCP are retained intact, as they currently exist.
Street Flooding: **None**

Simulation 1B
Storm Recurrence Interval: **10 Year Event**
Outfall Tailwater Condition: **Mean Low Tide**
Alternative selected: **Alternative B** - The 24-inch RCP is assumed to be bulkheaded within existing Common DMH No. 13091. The 24-inch RCP can no longer receive any stormwater runoff from the Lido Boulevard drainage system; it can only receive runoff from the LELBMS property and from the drainage structures on Harbor Drive, north of the LELBMS property.
Street Flooding: **None**

The results of these (2) simulations indicate the bulkheading of the existing 24-inch RCP had the following effects on the Maximum HGL Elevations:

- Upstream of Common DMH No. 13091:
  Average increase in Maximum HGL Elevations = +0.1 feet (+1.2 inches)

- Downstream of Common DMH No. 13091 (30-inch RCP):
  No change in Maximum HGL Elevations.

- Downstream of Common DMH No. 13091 (24-inch RCP):
  No change in Maximum HGL Elevations.

2) **SIMULATION 2**

Simulation 2A
Storm Recurrence Interval: **10 Year Event**
Outfall Tailwater Condition: **Mean High Tide**
Alternative Selected: **Alternative A** - The 24-inch RCP and 30-inch RCP are retained intact, as they currently exist.
Street Flooding: **None**

Simulation 2B
Storm Recurrence Interval: **10 Year Event**
Outfall Tailwater Condition: **Mean High Tide**
Alternative Selected: **Alternative B** - The 24-inch RCP is assumed to be bulkheaded within existing Common DMH No. 13091. The 24-inch RCP can no longer receive any stormwater runoff from the Lido Boulevard drainage system; it can only receive runoff from the LELBMS property and from the drainage structures on Harbor Drive, north of the LELBMS property.
Street Flooding: **None**

The results of these (2) simulations indicate the bulkheading of the existing 24-inch RCP had the following effects on the Maximum HGL Elevations:

- Upstream of Common DMH No. 13091:
  Average decrease in Maximum HGL Elevations = -0.15 feet (-1.8 inches)

- Downstream of Common DMH No. 13091 (30-inch RCP):
  Average decrease in Maximum HGL Elevations = -0.05 feet (-0.6 inches)

- Downstream of Common DMH No. 13091 (24-inch RCP):
  Average increase in Maximum HGL Elevations = +0.1 feet (+1.2 inches)

3) **SIMULATION 3**

Simulation 3A
Storm Recurrence Interval: **10 Year Event**
Outfall Tailwater Condition: **Minor Coastal Flooding**
Alternative Selected: **Alternative A** - The 24-inch RCP and 30-inch RCP are retained intact, as they currently exist.
Street Flooding: **Yes, on Lido Boulevard between Greenway Road and Regent Drive. Minor flooding also indicated on Audrey Drive/Eva Drive, south of Lido Boulevard.**

Simulation 3B
Storm Recurrence Interval: **10 Year Event**
Outfall Tailwater Condition: **Minor Coastal Flooding**
Alternative Selected: **Alternative B** - The 24-inch RCP is assumed to be bulkheaded within existing Common DMH No. 13091. The 24-inch RCP can no longer receive any stormwater runoff from

the Lido Boulevard drainage system; it can only receive runoff from the LELBMS property and from the drainage structures on Harbor Drive, north of the LELBMS property.
Street Flooding: **Yes, on Lido Boulevard between Greenway Road and Regent Drive.**

Simulation 3C
Storm Recurrence Interval: **10 Year Event**
Outfall Tailwater Condition: **Minor Coastal Flooding**
Alternative Selected: **Alternative C** - The 24-inch RCP is assumed to be bulkheaded within existing Common DMH No. 13091. The 24-inch RCP can no longer receive any stormwater runoff from the Lido Boulevard drainage system; it can only receive runoff from the LELBMS property and from the drainage structures on Harbor Drive, north of the LELBMS property. The 30-inch RCP is equipped with a tidal gate (backflow preventer) immediately upstream of the 36-inch RCP outfall into Hudson Channel.
Street Flooding: **None**

Comparison of Simulation 3A and Simulation 3B results indicate the bulkheading of the existing 24-inch RCP had the following effects on the Maximum HGL Elevations:

- Upstream of Common DMH No. 13091:
  Average decrease in Maximum HGL Elevations = -0.25 feet (-3.0 inches)

- Downstream of Common DMH No. 13091 (30-inch RCP):
  Average increase in Maximum HGL Elevations = +0.1 feet (+1.2 inches)

- Downstream of Common DMH No. 13091 (24-inch RCP):
  Average increase in Maximum HGL Elevations = +0.1 feet (+1.2 inches)

- Flooding on Audrey Drive/Eva Drive eliminated; Flooding still present on Lido Boulevard between Greenway Road and Regent Drive.

Comparison of Simulation 3A and Simulation 3C results indicate the bulkheading of the existing 24-inch RCP coupled with the installation of a tidal gate (backflow preventer) in the 30-inch RCP outfall had the following effects on the Maximum HGL Elevations:

- Upstream of Common DMH No. 13091:
  Average decrease in Maximum HGL Elevations = -0.3 feet (-3.6 inches)

- Downstream of Common DMH No. 13091 (30-inch RCP):
  Average decrease in Maximum HGL Elevations = -0.15 feet (-1.8 inches)

- Downstream of Common DMH No. 13091 (24-inch RCP):
  Average increase in Maximum HGL Elevations = -0.15 feet (-1.8 inches)

- Flooding eliminated on Audrey Drive/Eva Drive and on Lido Boulevard.

Summary

The results of the various simulations indicate bulkheading the 24-inch RCP has very minor effects on the Maximum HGL Elevations (i.e., hydraulic performance) of the Lido Boulevard drainage system. It also has very minor effects on the Maximum HGL Elevations for the drainage systems located downstream of Common DMH No. 13091.

Within Common DMH No. 13091, the downstream 24-inch RCP and the downstream 30-inch RCP provide redundancy for the Lido Boulevard drainage system (upstream of Common DMH NO. 13091). If either the 24-inch RCP or 30-inch RCP downstream drainage pipes become obstructed, the other drainage pipe will provide a discharge path for the Lido Boulevard drainage system.

Based on GPI's review of Gayron deBruin field data, it appears a more robust cleaning schedule of both drainage pipes downstream of Common DMH No. 13091 may need to be implemented. As such, the redundancy provided for the Lido Boulevard drainage system (via Common DMH No. 13091) is even more critical. As such, it is recommended the 24-inch RCP and 30-inch RCP downstream of Common DMH No. 13091 be retained in their current arrangement.

The results of Simulation 3C reveal the installation of a tidal backflow preventer, just upstream of the Hudson Channel 36-inch RCP outfall, eliminated the stormwater ponding expected for the 10 year storm event under Minor Coastal Flooding tailwater conditions. The tidal gate does lower the HGL of the entire system, which effectively gives the drainage system additional capacity.

As noted earlier, it is recommended the 24-inch RCP and the 30-inch RCP downstream of Common DMH No. 13091 be retained in their current arrangement. As such, to achieve the additional system capacity benefits offered by a tidal gate (backflow preventer), it will be necessary to install a tidal gate on both the 24-inch RCP and the 30-inch RCP downstream of Common DMH No. 13091.

III. Rain Event Field Inspection

A rain event was forecasted for Tuesday late night (2/28/17) and Wednesday (3/1/17) morning/afternoon. GPI monitored the weather forecast and visited the site on Wednesday 3/1/17 afternoon, where it was forecasted at 80% chance of precipitation with thunderstorms in the Lido Beach area. GPI visited Lido Beach in early afternoon at about 2:00 PM and stayed on site until about 6:00PM. Although during the times present on site the weather was threatening with dark skies and high winds, ultimately only very minor rain fell on the project area within the time noted.

GPI

Hydrologic and Hydraulic Study
Lido Beach and Point Lookout
Nassau County, New York

Project Location 3A
Drainage System
Structure Map

GPI JOB NO.	SCALE:	DATE:	FIGURE NO.
BAB-2016023.00	None	December 2016	

GPI

Hydrologic and Hydraulic Study
Lido Beach and Point Lookout
Nassau County, New York

Project Location 3B
Drainage System
Structure Map

GPI JOB NO.	SCALE:	DATE:	FIGURE NO.
BAB-2016023.00	None	December 2016	

GPI

Hydrologic and Hydraulic Study
Lido Beach and Point Lookout
Nassau County, New York

Project Location 3C
Drainage System
Structure Map

GPI JOB NO.	SCALE:	DATE:	FIGURE NO.
BAB-2016023.00	None	December 2016	

GPI

Hydrologic and Hydraulic Study
Lido Beach and Point Lookout
Nassau County, New York

Project Location 3D
Drainage System
Structure Map

GPI JOB NO.	SCALE:	DATE:	FIGURE NO.
BAB-2016023.00	None	December 2016	

GPI

Hydrologic and Hydraulic Study
Lido Beach and Point Lookout
Nassau County, New York

Project Location 3E
Drainage System
Structure Map

GPI JOB NO.	SCALE:	DATE:	FIGURE NO.
BAB-2016023.00	None	December 2016	

GPI

Hydrologic and Hydraulic Study
Lido Beach and Point Lookout
Nassau County, New York

Project Location 3F
Drainage System
Structure Map

GPI JOB NO.	SCALE:	DATE:	FIGURE NO.
BAB-2016023.00	None	December 2016	