APPENDIX A

VKB SWMP Implementation
Technical Memorandums

Technical Memorandum No.1
Public Outreach and Involvement Methodology

Technical Memorandum No. 1

Public Outreach & Involvement Methodology

DATE: July 9th, 2015

TO: Tony Brown, Village of Key Biscayne Public Works Department
Jose Lopez, Village of Key Biscayne Public Works Department

FROM: Michael Adeife, P.E., Project Manager, EAC Consulting, Inc.
Michelle Simmons, Senior Public Information Officer, Media Relations Group, LLC

SUBJECT: Village of Key Biscayne – Implementation of Storm water Master Plan (SWMP)

This technical memorandum provides a detailed description of the public information methodology to be executed as part of the Village of Key Biscayne's project implementation for storm water infrastructure improvements.

1.0 Background

The Village of Key Biscayne (VKB) Council and staff as a result of RFQ 14-02 contracted EAC Consulting, Inc. (EAC), to perform the requisite services to plan, engineer and administer the construction of the needed infrastructure improvements consistent with the Village's Storm water Masterplan. This effort is primarily goaled at protecting the village's residents and business owners from unnecessary flooding and promoting a higher standard of living and storm water serviceability for all the Village's stakeholders.

The implementation of the Village's SWMP ("the project)" has two main task elements:

1. Hydraulic and Hydrologic Analyses and Evaluation of VKB's Storm Watershed.
2. Engineering Design and the Development of Construction Documents for Priority Basins.

Task 1 - Hydraulic and Hydrologic Analyses and Evaluation of VKB's Storm Watershed includes all necessary engineering and technical services to successfully perform the analyses of storm water infrastructure existing village wide currently under the jurisdiction and ownership of the Village (Public Works Department). The effort requires incorporating recent infrastructure improvements undertaken by the Village, updating the existing SWMP to reflect more accurate representative data and other updates the watershed as reflected in new information collected from various sources. In addition, opportunities to incorporate green infrastructure as part of the overall storm water management plan will now be explored in an effort to streamline the amount of new infrastructure required to address determined deficiencies. The Task 1 effort is necessary to properly determine the extent of improvements required consistent with the proposed implementation tasks identified in VKB's RFQ document.

This effort will also incorporate the required sea level rise considerations that will ensure that proposed improvements are sustainable for the next 25 years (YR 2040) and adequate enough to mitigate storm events consistent with current regulatory and jurisdictional standards.

2.0 Public Outreach Approach

The key goals of the public involvement effort for Task 1 will be to educate the public on what is involved in the initial analysis performed for the SWMP and to garner feedback from residents about their experiences with flooding which can be used to address impacts within future design plans.

The project team will serve as an extension of staff to the Village of Key Biscayne and as a liaison between the Village staff and Village residents. The EAC team will work in coordination with Mariana Dominguez-Hardie, VKB's CRS Coordinator to ensure the Village and its residents receive information that are timely and in a method that actively engages residents, keeping in mind their various lifestyle patterns.

Maintaining open lines of communication between residents, business owners and other key stakeholders is crucial to a successful public outreach campaign. During Task 1 and all subsequent Tasks, the project team will identify strategies to disseminate vital information at little to no cost to the Village and to establish a single point of contact that can answer stakeholder questions and alleviate their concerns. Using traditional public outreach techniques along with newer technology strategically, the outreach staff will assist the design team in its fact finding efforts which will be critical during Task 1.

The various outreach activities listed below will be implemented:

2.1 Community Outreach Workshop

A Community Outreach Workshop to solicit public input from potentially affected property owners will be hosted by officials of VKB supported by the EAC team. In keeping with past workshops, this workshop will be held in the Village Council Chambers. Once the date has been confirmed, notifications will be drafted and sent to Village staff for review and approval. The project team will coordinate with local newspaper "The Islander News" to arrange for notice placement in weekly publications (Thursdays) as well as informational columns regarding the status of the project. This workshop will be used as a **MODEL/TEMPLATE** for subsequent planned workshops. After this workshop the EAC project team will work with the Village to define an action plan for the remaining high priority areas, area by area. As part of the EAC team, Media Relations Group (MRG) will tasked with the responsibility for workshop location logistics (set up, break down), meeting collaterals (any handouts such as fact sheets and newsletters, sign in sheets, etc.) and the preparation of meeting summation/records. Property owner notifications will be disseminated via electronic distribution. The project team will work with the Village and distribute using its existing database.

2.2 Community Outreach Notifications

The Islander News: MRG will work with The Islander News, not only to advertise the public meeting but to also provide the Editor with current information to be including in informational news briefs.

E-mail blasts: To ensure a cost effective process of notification, the EAC team will primarily correspond with residents via email. This method can be used to announce the public workshops, and in the future issue emergency correspondence and obtain stakeholder feedback.

Homeowner Association Newsletters/Websites: HOA or Condominium Association representatives will be engaged to assist with distribution of all notifications through their current database of members.

Resident Surveys: Resident surveys can be useful in gaining information on an individual basis. Surveys allow property owners to share their unique experience and have an outlet to provide details specific to how they are affected. During Task 1, it will be vital to gain this information early from those most impacted by flooding. The project team will also use this information to gauge and guide public expectations of the outcome of this project.

Fact Sheets: A fact sheet will be prepared which will be germane to all basins and used for each area and at each of the eight public workshops. Information will be updated as needed throughout the life of the project. This document will be shared with all concerned stakeholders and interested parties.

2.3 Village Website and Project Phone Line

The project team will develop periodic updates, for approval by the Village staff and dissemination through the Village's Information Technology Department for posting. These updates will be used to advise property owners and other stakeholders of the progress of the overall project and details of any necessary construction alerts. This effort, used during Task 1, will serve as back up support to other workshop notifications. Additionally, the EAC project team will request that the Village set up a phone line specific to this project for use by residents to share comments and have any individual concerns addressed.

2.4 Village Phone Line / Message Repository

The EAC project team will request that the Village set up a phone line specific to this project for use by residents to share comments and have any individual concerns addressed.

2.5 Social Media

Social media will be very helpful throughout the life of the project. It can be used to announce public meetings, issue emergency correspondence and obtain stakeholder feedback. The Village has the option of serving as the administrator of the accounts, with the EAC team uploading messages, while tracking and monitoring comments. To assist in managing public opinion, comments can be kept private. The project team will work with the Village Web Manager on this effort.

Technical Memorandum No.2
Level of Service (LOS) & Applicable Criteria

Technical Memorandum No. 2

Level of Service (LOS) & Applicable Criteria

DATE: July 9th, 2015

TO: Tony Brown, Village of Key Biscayne Public Works Department
Jose Lopez, Village of Key Biscayne Public Works Department

FROM: Michael Adeife, P.E., Project Manager, EAC Consulting, Inc.

SUBJECT: Village of Key Biscayne – Implementation of Storm water Master Plan (SWMP)

This technical memorandum provides a detailed description of the Village's expectations as it relates to the level of service anticipated for storm water infrastructure under its jurisdiction as well as pertinent and applicable criteria and guidelines governing the levels of operational performance.

1.0 Background

The Village of Key Biscayne (VKB) Council and staff as a result of RFQ 14-02 contracted EAC Consulting, Inc. (EAC), to perform the requisite services to plan, engineer and administer the construction of the needed infrastructure improvements consistent with the Village's Storm water Masterplan. This effort is primarily goaled at protecting the village's residents and business owners from unnecessary flooding and promoting a higher standard of living and storm water serviceability for all the Village's stakeholders.

The implementation of the Village's SWMP ("the project)" has two main task elements:

1. Hydraulic and Hydrologic Analyses and Evaluation of VKB's Storm Watershed.
2. Engineering Design and the Development of Construction Documents for Priority Basins.

Task 1 - Hydraulic and Hydrologic Analyses and Evaluation of VKB's Storm Watershed includes all necessary engineering and technical services to successfully perform the analyses of storm water infrastructure existing village wide currently under the jurisdiction and ownership of the Village (Public Works Department). The effort requires incorporating recent infrastructure improvements undertaken by the Village, updating the existing SWMP to reflect more accurate representative data and other updates the watershed as reflected in new information collected from various sources. In addition, opportunities to incorporate green infrastructure as part of the overall storm water management plan will now be explored in an effort to streamline the amount of new infrastructure required to address determined deficiencies. The Task 1 effort is necessary to properly determine the extent of improvements required consistent with the proposed implementation tasks identified in VKB's RFQ document. . This effort will also incorporate the required sea level rise considerations that will ensure that proposed improvements are sustainable for the next 25 years (YR 2040) and adequate enough to mitigate storm events consistent with current regulatory and jurisdictional standards.

To accurately closely simulate, represent and define the storm water management & flooding conditions as determined through hydraulic and hydrologic modeling analyses, it is imperative to establish acceptable levels of service (LOS) criteria and standards. These criteria will be based on applicable jurisdictional regulations maintained within the State of Florida and Miami Dade County. Furthermore, these criteria and conditions will those developed specific to the Village of Key Biscayne as mandated by the Village's Public Works Department. The established LOS will be utilized as the benchmark for determining deficiencies in the VKB's infrastructure system and for proposing infrastructure improvements in areas where deficiencies are identified.

2.0 Level of Service (LOS) and Applicable Criteria

The primary purposes of LOS criteria are to protect public safety and property. The existing land uses in the Village are defined predominantly by location west or east of Crandon Boulevard. To the west, there exists a large cluster of single family homes, a public recreational area, an elementary school centrally located within the neighborhood and commercial development along Crandon Boulevard. To the east, the land use is primarily multi-family high-rise residential, with some hotel/ commercial development as well as an area designated as single family between East Drive and north of Galen Drive.

As noted in the 2011 SWMP, the village is considered completely developed for the purpose of this storm water evaluation process and future land use changes will considered with negligible variation.

The establishment of LOS for the purpose of this effort is aimed at ensuring that all roadways are maintained for general use, evacuation routes passable for emergencies during high precipitation events and to ensure that infrastructure are in place to control flood stages below homes and buildings as practicable. The LOS criteria will be used to identify and define potential problem after performing all hydraulic and hydrologic calculations and analyses. As previously mentioned, once areas of deficiencies are identified, the LOS criteria will then be used again to evaluate the effectiveness of proposed infrastructure improvements.

The adopted LOS criteria will play a significant role in the capital improvements proposed as they will directly affect the size and cost of proposed infrastructure improvements.

All of the village's current storm water management LOS as established in the 2011 SWMP will be maintained with several modifications for to ensure congruency with applicable jurisdictional guidelines.

Variations have also be made in part based on:

A. Input from the Village's Public Works Department
B. New & updated Hydraulic &Hydrologic (H&H) data
C. Current conventional storm water drainage design practices

The LOS and Criteria established for this evaluation is outlined as follows;

1. The land area encompassed by the public rights-of-way plus an additional 25 feet on either side of each roadway. The 2011 SWMP update limited this criteria to 15 feet on either side of each roadway.
2. The vertical datum for elevation references will be the datum referenced will be the North American Vertical Datum of 1988 (NAVD 88).
3. Consistent with the 2011 SWMP update, all analyses and design evaluations for the Village's storm water management infrastructure shall utilize high tidal elevations in the bay as the tail water condition(s) for the Hydraulics and Hydrologic model. For specificity purposes, this value has been will be determined based on sea level rise considerations derived as part of the analyses procedures. The basis for the determined values will be documented in the H&H Analyses Technical Memorandum.
4. The South Florida Water Management District (SFWMD) standard rainfall and distribution curves for the various storms will be utilized as required for the H&H Analyses.
5. Peak elevations and flows will be determined for each of the basins within VKB's storm water watershed model for the following design storm events for the following events:
    a. 5-year, 72-hours
    b. 10-year, 72-hours
    c. 25-year, 72-hours
    d. 100-year,72-hours

6. Roadway Flooding Criteria : Miami-Dade County RER criteria shall be adhered to requiring the following:

Design Storm Frequencies and Flood Limits		
Roadway Location & Type	Rainfall Frequency	Flood Limits
Residential and Commercial Areas	5-year	To Crown of Street or within 15 feet of dwelling or occupied building
2-Lane Roads in Residential Areas	5-year (10-year for Bridges)	To Crown of Street or within 15 feet of dwelling or occupied building
4-Lane Roads in High Traffic & Density Areas	10-year	To outer edge of Traffic Lanes

7. Other Applicable Criteria:

Design Storm Frequencies and Flood / Discharge Limits		
Roadway Location & Type	Rainfall Frequency	Flood / Discharge Limits
Building Pad /Finish Floor Protection	100-year	Shall not exceed minimum Building Finish Floor Elevation
Outfall Discharges	25-year	Shall not exceed existing discharge rates or established conditions

8. State surface water quality standards as set forth in Chapters 62-4 and 62-302, F.A.C., including the anti-degradation provisions of paragraphs 62-4.242(1)(a) and (b), 62-4.242(2) and (3), F.A.C., and Rule 6 2-302.300, F.A.C., and the special standards for Outstanding Florida Waters and Outstanding National Resource Waters set forth in subsections 62-4.242(2) and (3), F.A.C and the groundwater standards in Chapters 62-520 and 62-550 F.A.C. For design purposes, the volume of runoff to be treated from a site shall be determined by the type of treatment system.

   In general, pollution abatement shall be accomplished by requiring storm water management systems to retain or detain with filtration, the run-off generated from the first inch of rainfall on developed sites, or 2.5 inches of run-off generated over the entire site for the percentage of imperviousness on the site, whichever is greater.
9. Water Quantity standards shall be in accordance with SFWMD and Miami Dade RER regulatory requirements.
10. Underground Injection Discharge: The Florida Department of Environmental Protection (FDEP) regulates underground discharge via pressurized or gravity drainage wells through its Underground Injection Control (UIC) program. Wells can only discharge into or above an aquifer that contains a total dissolved solids concentration of less than 10,000 milligrams per liter. For the purposes of these analyses and evaluation the following will be maintained:
    a. All existing wells are assumed to comply with this criteria. Drainage Well evaluation efforts will be required for each priority basin for design purposes and appropriate adjustments made during Task 2 of the SWMP Implementation effort.
    b. Existing wells will be assumed to function at only ***75%*** of the estimated capacities to reflect long term usage.
    c. Within the H&H model, drainage well capacities shall be updated based on all recent well redefinition efforts undertaken by the Village's Public Works Department.

d. In the absence of field measured well capacities, all drainage wells capacities shall default to a determined well capacity estimated by local hydrogeologists familiar with the Village of Key Biscayne and other County barrier municipalities.

11. Existing Basins as delineated in the 2011 SWMP update (identifying 14 separate individual basins) will be maintained. However LIDAR information obtained from the County will be utilized to verify the delineations and applicable adjustments made to reflect topography information.
12. Positive Discharge: All existing outfalls will be field verified by the Village Public Works department prior to finalization of the H&H Analyses & Evaluation process. The results of the findings shall be appropriately incorporated into the effort.
13. Pipe Hydraulic Opening Reduction: All existing cast iron / metal piping that have recently undergone rehabilitation via pipe lining, shall have their respective hydraulic opening appropriately reduced to reflect loss of area. All other existing cast iron/metal pipes within the system will assumed to have lost 50% of the hydraulic opening due to the expected degradation of this pipe material under the subsurface ground water conditions within the Village. The City will implement a capital program that involves relining all metal pipes village-wide.
14. Monitoring Stations: Establishing monitoring locations or stations for groundwater elevations as well above ground flooding information. The EAC team will coordinate this effort with Mission Communications, Inc.
15. It is assumed that for this effort, the storm water infrastructure and hydraulic inter-connectivity presented in the 2011 SWMP update is accurate. No revisions or changes will be proposed to the existing interconnections for the purpose of analyzing existing conditions.
16. Pump Stations: To facilitate the ability of underground injection wells to function in low lying areas, the Village is amenable to evaluating the use of pumps to enable and expedite flows to the non-potable aquifer. The Village's preference for pump stations is for proposed systems to be submersible, duplex and capable of long term use in salt water conditions.
17. Backflow Prevention: The analyses will factor in the placement of conventional back flow prevention devices, specifically at the outfalls and at points of interconnection the central storm water trunk system along Crandon Boulevard. Where the analyses reveals adverse effects due to the incorporation of these devices, the EAC Team will recommend eliminating from proposed infrastructure designs.
18. Green Infrastructure: The project will take into consideration implementation of "Green Infrastructure" where opportunities exist. The use of "Green Infrastructure" will provide better long term planning strategy which is environmentally conscious and results in lower capital and maintenance costs. A toolbox of "Green Infrastructure" components will be developed for this project and will integrate urban and engineering practices to provide overall better preservation of the existing site hydrology by reducing the runoff volume and peak flows while increasing aquifer recharge, reducing pollution, reducing the impacts of Sea Level Rise and climate change and associated mitigation costs. The toolbox will include cost efficient components for increasing the storage and infiltration of storm water, reducing the paved surfaces and improving the conveyances.
19. Key Colony: For the purpose of analyses, no impacts resulting from Key Colony will be included since the Condominium has hired an engineering firm to design improvements (including wells redevelopment) to limit flows from Key Colony across the Sonesta Drive wall. The EAC team will coordinate with the engineer for this project to ensure that this conditions are maintained.

Technical Memorandum No.3
Data Collection

Technical Memorandum No. 3

Data Collection

DATE: July 14th, 2015

TO: Tony Brown, Village of Key Biscayne Public Works Department
Jose Lopez, Village of Key Biscayne Public Works Department

FROM: Michael Adeife, P.E., Project Manager, EAC Consulting, Inc.

SUBJECT: Village of Key Biscayne – Implementation of Storm water Master Plan (SWMP)

This technical memorandum provides a detailed description of the efforts undertaken in gathering and collecting data, materials, and other relevant information required for the analyses of the Village's storm water infrastructure system. The data collection is both an important and integral task towards embarking on the implementation of infrastructure repairs, rehabilitation, replacements and improvements as needed for improving and optimizing the Village's storm water management systems.

1.0 Background

The Village of Key Biscayne (VKB) Council and staff, as a result of RFQ 14-02, contracted EAC Consulting, Inc. (EAC) to perform the requisite services to plan, engineer, and administer the construction of the needed infrastructure improvements consistent with the Village's Stormwater Master Plan (SWMP). This effort is primarily goaled at protecting the Village's residents and business owners from unnecessary flooding and promoting a higher standard of living and storm water serviceability for all of the Village's stakeholders.

The implementation of the Village's SWMP has two main task elements:

1. Hydraulic and Hydrologic Analyses and Evaluation of VKB's Storm Watershed.
2. Engineering Design and the Development of Construction Documents for Priority Basins.

Task 1 - Hydraulic and Hydrologic Analyses and Evaluation of the Village's Storm Watershed includes all necessary engineering and technical services to successfully perform the analyses of the Village-wide existing stormwater infrastructure currently under the jurisdiction and ownership of the Village's Public Works Department. This effort requires incorporating recent infrastructure improvements undertaken by the Village, updating the existing SWMP to reflect more accurate representative data, and other updates to the watershed as reflected in new information collected from various sources. In addition, opportunities to incorporate green infrastructure as part of the overall SWMP will now be explored in an effort to streamline the amount of new infrastructure required to address identified deficiencies. The Task 1 effort is necessary to properly determine the extent of improvements required consistent with the proposed implementation tasks identified in the Village's RFQ document. This effort will also incorporate the required sea level rise (SLR) considerations that will ensure that proposed improvements are sustainable for the next 25 years (YR 2040) and adequate enough to mitigate storm events consistent with current regulatory and jurisdictional standards.

The analyses to be performed under Task 1 will take into consideration the elements and components of the existing system within the Village including but not limited to collection drainage structures, conveyance pipes, outfall structures, system junctions, and disposal infrastructure. The analyses also must consider the hydrologic conditions within the Village such as topography, ground cover, location,

and characteristics of water bodies, ground water, rainfall amounts/patterns, and other pertinent specific local conditions including vulnerability to high tides and SLR.

2.0 Data Gathering Sources

The data collection efforts encompassed a coordinated streamlined approach that involved reaching out to several entities with jurisdiction or that maintain existing records or have been tasked by VKB with the responsibility to handle certain functions on the Village's behalf. The following entities were contacted and coordinated with:

i. Village of Key Biscayne – Public Works Department
ii. Tetra Tech, Inc
iii. Jaffer Well Drilling, A Division of A.C. Schultes of Florida, Inc
iv. Layne Inliner Products
v. A&A Drainage, Inc
vi. Florida International University (FIU)
vii. Federal Emergency Management Agency (FEMA) - National Flood Insurance Program
viii. Florida Department of Transportation (FDOT)
ix. Florida Department of Environmental Protection (FDEP) (Underground Injection Control Program)
x. Miami-Dade County Regulatory and Economic Resources (RER)
xi. Miami-Dade Public works & Waste Management (PWWM)
xii. Miami-Dade County Information Technology Department (ITD)
xiii. South Florida Water Management District (SFWMD)
xiv. National Oceanic and Atmospheric Administration (NOAA)
xv. United States Army Corps of Engineers (USACE)
xvi. United States Geological Survey (USGS)
xvii. Pollution Elimination Corporation (PELCO)
xviii. MODUS

3.0 Data Collection

The following subsections detail the items collected under this data collection task.

3.1 VKB Public Works Inventory & Worksheets

The Village also provided an Existing Drainage Structure Inventory excel spreadsheet documenting what appears to be the assumptions used for the development of the InfoSWMM model network and a Permitted Outfall inventory table identifying all of the Villages permitted outfalls which the Village is in the process of inspecting.

3.2 VKB Public Works - Stormwater Improvement Project As-Builts

The Village provided as-builts for the *Stormwater Improvement Plan Basins 1-8 and Water Distribution Improvements* project showing a submitted date of 8/14/1996 on the cover of the digital set provided. These as-builts are for an extensive stormwater improvement project throughout the Village. It is understood that these as-builts were the initial basis for the GIS based stormwater infrastructure feature classes available from the Village and currently maintained by Tetra Tech.

It is our understanding that that the Village will provide additional design and as-built records for other completed or ongoing projects within the Village.

These items will be evaluated for inclusion into the InfoSWMM model update to be performed by the EAC Team for this project.

3.3 2011 Stormwater Master Plan Report & Models

The existing 2011 SWMP Update developed by Tetra Tech, Inc. was provided in PDF format by the Village. This report provides a detailed description of the activities and analyses performed for the development of the SWMP and the findings substantiated by the analyses performed. Pertinent exhibits and appendices were also provided by the Village.

The 2011 SWMP INFOSWMM models including the hydraulic network, hydrologic parameters, and results files for the simulations performed as part of the Stormwater Master Plan update were also collected as part of this data collection task. The InfoSWMM model version is documented as version 9.0.

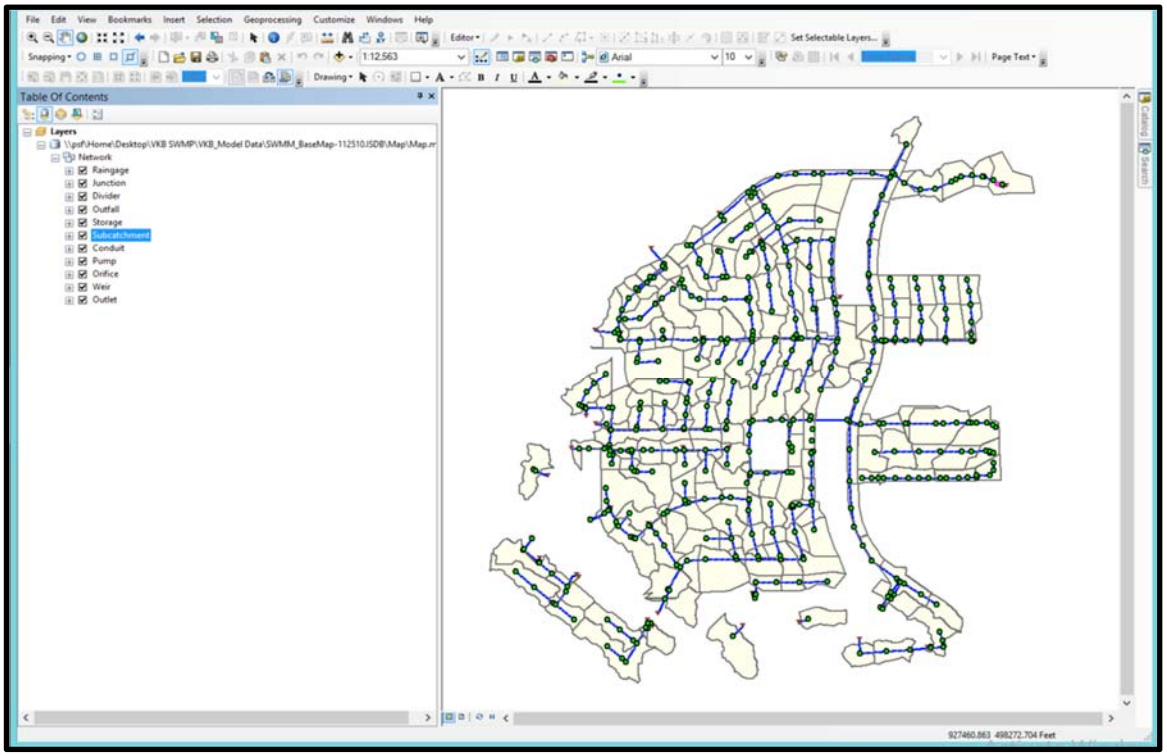

Figure 1 – Village of Key Biscayne InfoSWMM Network Schematic in ArcMap

In addition to the 2011 SWMP, the Village also provided the 1993 Stormwater Management Master Plan report prepared by Williams, Hatfield, and Stoner, Inc. (WHS) which documents the observations, testing, analytical methodologies, findings, and recommendations developed by WHS.

3.4 Topographic Data

The most readily available topographic data for large expanses of land is typically LiDAR based topographic data. LIDAR, which stands for Light Detection and Ranging, is a remote sensing method that uses a pulsed laser to measure the distance between the Earth and the collection unit typically based onboard a plane. These distance measurements, combined with other data recorded by the plane's airborne systems, can be used to generate topographic elevations points which can then be used to prepare detailed topographic models of the shape of the surface surveyed.

LiDAR data was available for VKB's geographic limits from a central repository of LiDAR data hosted by Florida International University (FIU) at their GIS-RS Center and sponsored by the International Hurricane Research Center at FIU. The LiDAR dataset is a topographic survey conducted for the State of Florida Division of Emergency Management LiDAR Project under the guidance of a Licensed and

Professional Surveyor/Mapper. This data is intended to support the creation and refinement of integrated ground and surface water models and Federal Emergency Management Agency Flood Insurance Rate Maps (FEMA FIRM).

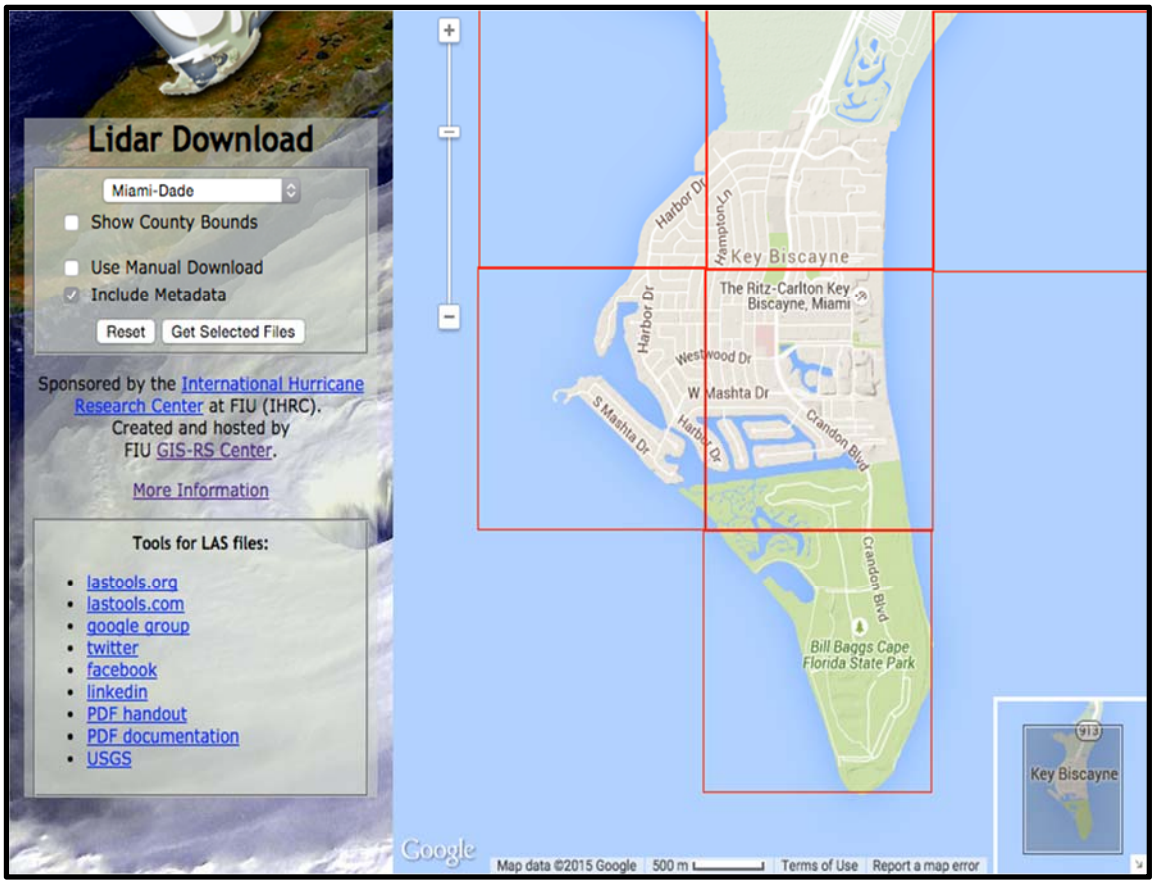

Figure 2 – Florida International University's Web Based LiDAR Data Repository

The most readily available LiDAR based data points were collected from August 2007 through January 2008. According to datasets metadata, the point cloud was collected at a density sufficient to support a maximum final post spacing of 4 feet for unobscured areas. The LiDAR data is available in 5000' by 5000' tiles, four of which encompass the Village. The LiDAR data is a bare earth representation of the topography where buildings and canopy are removed from the dataset.

The EAC team approached Miami-Dade County in June 2015 in order to verify that the data collected from FIU was the latest LiDAR based topographic dataset available. According to a representative from the Stormwater Utility Planning Division within Miami-Dade County (County), the County was in the process of collecting new LiDAR data and the LiDAR data was not going to be available in the near future. This newer data set would represent a more accurate and detailed representation of the topography of the Village and should be considered for future inclusion into the Village's GIS data repository and into the Village's InfoSWMM models utilized for the Stormwater Master Plan.

The EAC team has also approached the original developers of the 2011 SWMP Update in order to collect the topographic DEM used for the SWMP. This process is being finalized and the DEM will also be verified for conformance with retrieved information previously described.

3.5 GIS Data

Miami-Dade County's (County) Information Technology Department (ITD) through its GIS Division maintains a central repository of geographic data comprised of numerous layers; the street network and property (parcel) layers being the primary base layers. This GIS data is available through the County's GIS Self Services website. This website allows users to search through and choose GIS data that is pertinent to their interests.

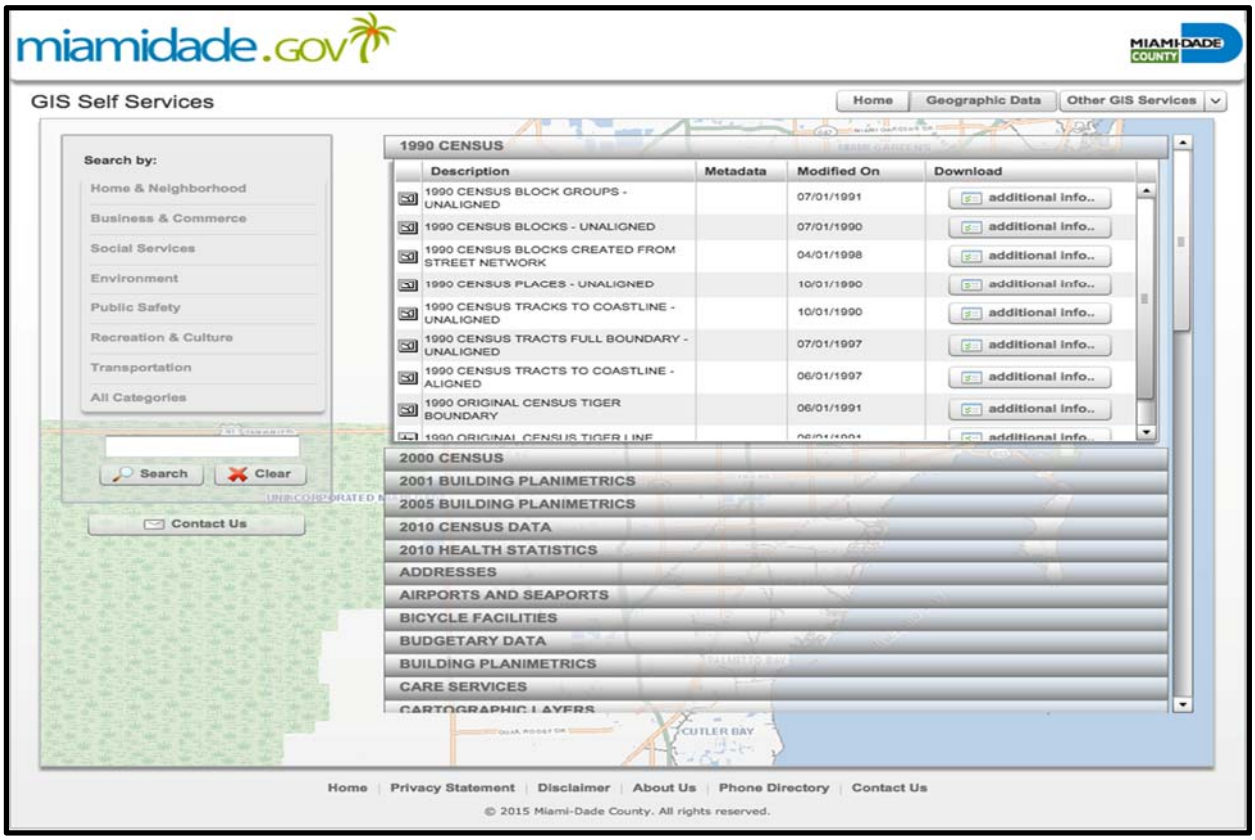

Figure 3 – Miami-Dade County GIS Self Service Website

In addition, the EAC team coordinated with the Village to collect GIS data that is maintained by the Village. The data includes two geodatabases that represent the available GIS feature classes maintained and used by the Village. The following is a listing and short description of the individual feature classes within the two geodatabases provided:

1. VKB_Stormwater2015 (Personal Geodatabase and associated Feature Classes)
    a. ComplaintAreas - This dataset includes complaints logged and identified by parcel boundaries with physical address and SWMP basin area name.
    b. Exfiltration - This dataset seems to be exfiltration trenches done for a specific project, Civic Center, and provides the length of each segment.
    c. MiamiDadeBM - This dataset includes Miami-Dade County benchmarks near the Village and includes the benchmark name and source.
    d. NGS_BM - This dataset includes benchmarks identified in NOAA's National Geodetic Survey (NGS), which includes the data source, datum, adjusted elevation, and condition of the benchmark.

e. parcel_centroids_address_file - This dataset includes the centroid of the parcel boundaries within the Village.
f. Pipes_07192011 - This dataset includes the pipe network within the Village and includes the pipe diameter, pipe type, comments (most comments state assumption of pipe diameter), inverts, editor and last update date, which appears to have last been last updated in June 2015.
g. Flow - This dataset includes the same information as Pipes_07192011, but with data that does not match Pipes_07192011 in the each item. This dataset does not include the editor and last edited date.
h. RLP - The dataset contains parcel boundaries of Repeated Loss Properties (RLP) with its corresponding physical address and the type of complaint.
i. StudyArea - This dataset contains the Village's study area limits and excludes the majority of parcels along the east coast of the Village.
j. SW_Structures - This dataset includes the stormwater structures data. It includes an associated project name, Design ID, rim elevation, invert elevation, the SWMP basin name, and the editor and last edited date.
k. Strucs_07192011 - This dataset appears to be the same as the SW_Structures dataset, but created prior to SW_Structures.
l. SWMMP2010Update_Basin - This dataset includes the Village basin boundary of the Village's SWMP 2010 Update.
m. SWMMP2010Update_SubCatchment - This dataset includes the Village sub-basin boundary of the Village's SWMP 2010 Update.
n. VKB_Boundary - This dataset includes geographic boundary of Miami-Dade County and the Village.

2. Base (File Geodatabase and associated Feature Classes)
   a. BuildingFootprints - This dataset includes the building footprint shapes last updated in November 2008.
   b. CriticalMeterParcels - This dataset appears to include the critical facilities. There are several parcels identified within the Village, along with the facility type (school, police, and utility). The facilities identified are St. Agnes School, Key Biscayne Elementary School, Key Biscayne Police Department, and Key Biscayne Fire Rescue)
   c. CriticalSiteParcels - This dataset also appears to include the critical facilities. There are several parcels identified within the Village, along with the facility type (library, parks, helicopter landing, and other). The facilities identified are Miami-Dade Public Library Key Biscayne Branch, Village Green Park, St. Christopher's by-the-Sea, Key Biscayne Community Church, and Key Biscayne Presbyterian Church.
   d. EdgeOfPavement - This dataset represents the edge of pavement with the Village.
      Edge of pavement (roadway depicted)
   e. GolfCourses - Not applicable to Village.
   f. Hydrolines_24K - This dataset does not contain any features within the Village. However, per metadata, this data was collected as part of the National Mapping Program and contains Hydrological Line Features from the USGS 1:24000 scale DLG's.
   g. Land_24K - This dataset is the land boundary. Per metadata, this dataset contains Hydrological Poly Features from the USGS 1:24000 scale DLG's.
   h. LandArea - This dataset represents the land area/shoreline in coastal areas, but does not contain features with the Village.
   i. MajorHydro - Not applicable to Village.
   j. Municipal - Not applicable to Village. This dataset seems to be only applicable for Port St. Lucie, St. Lucie Village, and Fort Pierce.
   k. MunicipalBoundaries - This dataset includes the geographical Village boundary.

l. NHDPlus_Flowlines_ 100K - Not applicable to Village.
m. NHDPlus_ WaterBodies_100K - Not applicable to Village.
n. Parcels - This dataset includes parcel boundaries. However, no data for parcels is provided within the Village boundary. Therefore, it is not applicable.
o. Parks - This dataset includes the park areas with the Village.
p. ParksPreserves - Not applicable to Village.
q. Railroad - Not applicable to Village.
r. Riverlines - Not applicable to Village.
s. Streets - This dataset includes the streets layer in Miami-Dade County & St. Lucie County.
t. WaterBodies - Not applicable to Village.
u. WaterBodies_24K - This dataset includes the boundaries of water bodies. Per metadata, the dataset contains Hydrological Poly Features from the USGS 1:24000 scale DLG's.

The feature classes related to stormwater infrastructure also contain edit tracking which will enable the EAC team to focus updates to the InfoSWMM models based on what items have changed since the development of the 2011 SWMP InfoSWMM models – currently there are modifications to 135 pipe segments and 8 drainage structures/manholes.

Additionally, VKB maintains a GIS feature class which collects annotated data from the VKB staff pinpointing areas in need of additional investigation by the Village's contractors. This feature class logs all inquiries as they are input and addressed.

Lastly, a map exhibit illustrating flood prone areas was reviewed on-site at the Village. This map shows areas where flooding has been observed throughout the VKB based on documented site visits by Village staff.

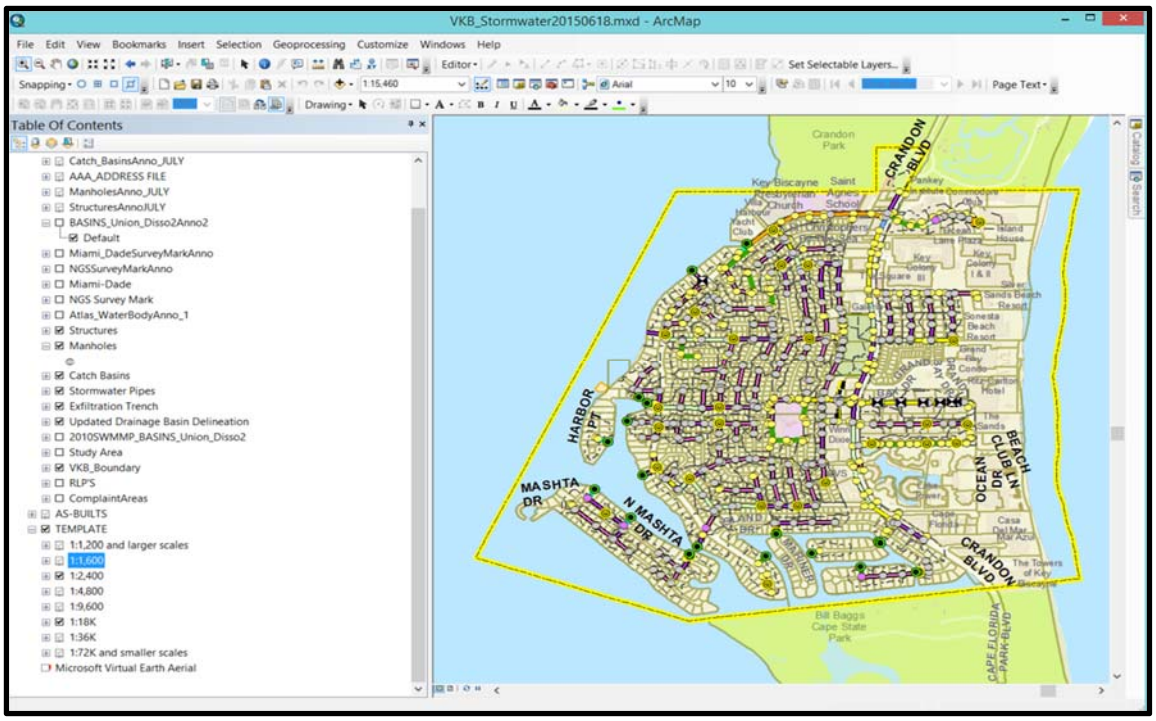

Figure 4 – Village of Key Biscayne GIS-based Stormwater Infrastructure Data

3.6 Village Stormwater Management System Maintenance Records

The Village maintains two companies under contract for the purposes of maintaining their stormwater infrastructure. As of this writing, Jaffer Well Drilling, A Division of A.C. Schultes of Florida, Inc. (Jaffer) and A&A Drainage, Inc. (A&A) have active contracts. Jaffer is a well drilling contractor specializing in the development and maintenance of wells. A&A is a maintenance contractor specializing in the maintenance and physical inspecting of stormwater infrastructure systems.

Jaffer Well Drilling is tasked with testing, maintaining, and redeveloping the existing 28 Village owned wells, at the discretion of the Village. The Village maintains a program where, depending on available funding, a specific number of wells are identified for cleaning/maintenance on a rotating basis. Jaffer provides the Village with flow rates prior to and after cleaning/maintenance activities and the testing and maintenance records are maintained by the Village and updated regularly using the data provided by Jaffer.

VKB Public Works staff provided the EAC team with a table identifying the wells and their locations; the physical dimensions of the wells including cased and uncased depths; the depth of sedimentation observed prior to cleaning; the date of the most recent cleaning/maintenance/; the pre- and post-maintenance flow rates; and the date the activities were performed.

A&A Drainage, Inc was recently tasked with cleaning and surveying the Villages stormwater infrastructure systems. Based on our understanding, A&A Drainage, Inc follows the Village's maintenance program, at the discretion of the Village, and provides input for refining the Village's GIS based stormwater infrastructure feature classes. A&A surveys the Village's stormwater management systems and inputs their findings into an ArcGIS Online-based maintenance feature class maintained by the Village. These findings are compared to the existing stormwater infrastructure data and are then propagated into the Village's master stormwater infrastructure feature classes.

The well data available from Jaffer and the field-verified stormwater infrastructure data available from A&A Drainage, Inc will be evaluated for inclusion into the InfoSWMM model update to be performed by the EAC team for this project.

APPENDIX B

Public Meeting Records

Public Workshop Report
October 6, 2015

DATE: October 11, 2015

TO: Tony Brown, Village of Key Biscayne Public Works Department
Jose Lopez, Village of Key Biscayne Public Works Department

FROM: Michael Adeife, P.E., Project Manager, EAC Consulting, Inc.

SUBJECT: Village of Key Biscayne – Implementation of Storm water Master Plan (SWMP)

Attendees:

Name	Organization	Email
Mayra Peña Lindsay, Mayor	VKB	
John Gilbert, Village Manager	VKB	jgilbert@keybiscayne.fl.gov
Jud Kurlancheek, Director,	VKB	jkurlancheek@keybiscayne.fl.gov
Jose G. Lopez	VKB	jlopez@keybiscayne.fl.gov
Mariana Dominguez - Hardie	VKB	mdominguez@keybiscayne.fl.gov
Tony Brown	VKB	tbrown@keybiscayne.fl.gov
Ana de Varona	VKB	adevarona@keybiscayne.fl.gov
Michael "Mike" Adeife	EAC	madeife@eacconsult.com
Eduardo Garces	EAC	egarces@eacconsult.com
Mark Kuntz	EAC	mkuntz@eacconsult.com
Cesar Borges	Aluces Corp	cborges@alucescorp.com
Georgio Tachiev	GIT	georgio@gitconsulting.net
Michelle Simmons	MRG	MSimmons@mrgmiami.com

Summary:

The public meeting was held on Tuesday, October 6, 2015, from 6pm until 8pm at the Village Council Chamber. Residents were invited to attend the open house portion of the workshop from 6:00pm until 6:30pm.

All residents in attendance had the opportunity to speak with the project team and discuss their individual concerns. The presentation began at 6:40pm, with opening remarks from the Village Manager and a welcome address from the Mayor. Jose Lopez opened the workshop, with various members of staff providing detailed information about the implementation plan.

After the presentation, the project team conducted a Q&A session. All residents were provided comment cards and given the opportunity to speak publicly. Questions were addressed to the project team and all comments were documented for future action. The presentation ended at 7:28pm. There were a total of 10 residents present. No comment cards were left at the public workshop.

Tuesday, October 6, 2015, 6 p.m. to 8 p.m.
Village of Key Biscayne Council Chamber
560 Crandon Boulevard, Key Biscayne, FL 33149

VILLAGE OF KEY BISCAYNE
STORMWATER MANAGEMENT PLAN
PUBLIC WORKSHOP

SIGN-IN SHEET

NAME	ORGANIZATION	ADDRESS	PHONE	EMAIL
JoANN YOUNG	Homeowner	60 00 Harbor Dr 1204	305 361 2384	jawyoung@aol.com
tony FERNANDEZ	HOMEowner CCE Board MBR	127 OCEAN LN DR	305 710 0339	TONYFER@GMAIL.COM
Michael + Tana Henderson	Homeowner	482 Hampton Ln	305-361-2446	mdhenderson7@aol.com
Pedro Colpa	Resident	201 Galen Dr	305-361-5555	peterkalpa@gmail.com
Jessica Garcia	VKB	88 W. McIntyre St	786.801.4618	Jgarcia@keybiscayne.fl.gov
JOSE MATOS	CONTRACTOR/OWNER	625 CURTISWOOD DR	3053005238	JFMATOS@ME.COM
Katie Hagemann	Miami Dade County		786.427.5210	hagemke miamidade.gov
MARILENE KONO	Resident	425 ALLENDALE RD	305-361-8112	marilenekono@gmail.com
Nestor Valenzuela	Resident.	815 Harbor Drive	305.776.2683	dh._valenzuela@yahoo.com

Tuesday, October 6, 2015, 6 p.m. to 8 p.m.
Village of Key Biscayne Council Chamber
560 Crandon Boulevard, Key Biscayne, FL 33149

VILLAGE OF KEY BISCAYNE
STORMWATER MANAGEMENT PLAN
PUBLIC WORKSHOP

SIGN-IN SHEET

NAME	ORGANIZATION	ADDRESS	PHONE	EMAIL
Ana de Varona	VKB	88 W. McIntyre St.	305-365-7574	adevarona@keybiscayne.fl.gov
Mariana Dominguez H	VKB	432 Ridgewood Rd	305 365 3504	mdominguez@...
Jose G. Lopez	VKB	88 McIntyre St.	786-351-2343	jlopez@keybiscayne.ft.gov ~~jlopez@bellso.~~
Cesar Borges	Alvces Corp	8501 SW 124th st., Suite 204A	786-505-8065	CBORGES@alvescorp.com
Mike Adelfe	EAC			
Eduardo Graces	EAC			
Randy Kuntz	EAC			
Michelle Simons	MRG			
Mayor				
Dir, Public Works				