FINAL REPORT

For

TIRZ 17 REGIONAL DRAINAGE STUDY

Prepared for the

TIRZ 17

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1 Executive Summary

1.1 Background

The region near the IH-10 and Beltway 8 (Sam Houston Tollway) interchange has been extensively documented as being susceptible to flooding. An extreme rainfall event on the evening and morning of April 27th and 28th, 2009, further emphasized the regional flood risk and demonstrated the need for a regional study. Lockwood, Andrews & Newnam, Inc (LAN) was authorized by the Tax Increment Reinvestment Zone No. 17 Redevelopment Authority (TIRZ 17) to prepare a regional drainage study (TIRZ 17 Regional Drainage Study) for the W151-00-00, W153-00-00, and portions of the W140-01-00 watersheds.

The TIRZ 17 Board agreed to sponsor the study to better understand the regional drainage problems and how to maximize the benefit of the proposed TIRZ 17 Capital Improvement Program (CIP) projects to alleviate the drainage issues identified. The study focus is to identify deficiencies with the existing storm sewer, overland runoff conveyance, and open channel drainage infrastructure located within and around TIRZ 17, and to recommend improvements that benefit the TIRZ and the surrounding community

1.2 Study Limits and Jurisdictional Interest

The TIRZ 17 Regional Drainage Study limits are entirely within the Buffalo Bayou Watershed (W100-00-00). The study boundary was primarily established along major watershed divides that do not receive significant overland flow from adjacent systems. Exhibit 1 graphically defines the study limits. The study region is generally bound on the west by Rummel Creek (W156-00-00) watershed limits north of IH-10 and by the Sam Houston Tollway south of IH-10;by Buffalo Bayou on the south; by portions of Hickory Ridge, Strey Lane ,Knipp Road and Oaktree Drive on the east; and north by Neuens Road.

Due to the complexity of the drainage systems within the study area, the evaluation was separated into primary and secondary study areas. Primary areas were evaluated in detail at the inlet level. Secondary areas consisted of drainage systems determined to have influence on the primary study areas, either through interconnected sub-surface systems or by way of contributing overland sheet flow. Secondary areas were studied at a manhole level with limited evaluation of improvement alternatives.

Agencies having jurisdiction within the study limits included the City of Houston, the Harris County Flood Control District (HCFCD), the City of Hedwig Village, the City of Bunker Hill Village, and the Texas Department of Transportation (TxDOT).

1.3 Analysis

This study expanded upon the XP-SWMM model created as part of the July 2009 "W151-00-00 Implementation Study from Buffalo Bayou to IH-10 for the Harris County Flood Control District." The original model was expanded to include additional detailed storm sewer information within the W151-00-00 watershed, as well as storm sewers and open channels within the W140-01-00

and W153-00-00 watersheds. The hydrologic analysis methodologies utilized for this study were consistent with those previously employed during the 2009 HCFCD study effort.

The analysis utilized the Innovyze InfoWorks SD, and included a two-dimensional overland sheet flow analysis. The existing conditions in the InfoWorks model represents the drainage systems based on the City of Houston Geographic Information Management System (GIMS) data, available record drawings, limited survey, and field reconnaissance. To assist in overland runoff flow analysis, the surface topography was based on the Harris County one-foot LiDAR flown in 2008.

Improvement alternatives were evaluated for 2- and 10-year storm events to be consistent with the referenced HCFCD W151-00-00 Implementation Study and to be consistent with TIRZ 17 goals. Improvement alternatives were also evaluated for the 100-year event to evaluate improvement benefits for the extreme event and to confirm improvement alternatives do not result in adverse hydraulic impacts to the downstream regions.

Public participation and public input were identified as critical components for a successful project. Residents within the study area provided documentation of drainage problems and flooding conditions that resulted from the April 27-28, 2009 storm and other events. To help collect this data, drainage questionnaires were mailed out to 3,600 residents within the study area, and approximately 450 were returned providing additional information about drainage problems in the study area. Limited elevation surveying was also performed to record high water marks, and to correlate record drawings to the project datum.

The model was calibrated to the April 27-28, 2009 event using rainfall information obtained from Harris County Office of Emergency Management (HCOEM) rainfall gauges and stage time hydrographs from United States Geological Survey (USGS) stream level gauges. Inundation limits and maximum water surface elevations were compared to reported flooding locations, collected drainage survey information, and surveyed high water mark elevations. The model calibration confirms over 90% of the inundated structures reported by residents/stakeholders.

The study region was found to have multiple and often related drainage issues including:

- Insufficient storm sewer capacity
- Adverse (outside of the public Right-of-Way and impacting structures) overland sheet flow routes
- Open channels with insufficient capacities and high tail water conditions

Due to the size of the study limits, the area was divided into ten zones. Each zone was identified first by watershed and then by problem areas. While the study area was divided in separate zones, the zones evaluated are often connected to, and influenced by, surrounding zones.

At the completion of this study it is recommended that the storm water model produced should be refined as time goes on as better information is collected and additional projects are constructed in order to create a living and working storm water model.

1.4 Improvement Projects

Improvement options were evaluated at a conceptual level to guide the TIRZ 17 CIP development and are subject to change pending more detailed evaluation during preliminary engineering, design and construction. Many projects within the primary study area are dependent on coordination and cooperation with other entities and are subject to change to accommodate such coordination efforts or to respond to changed conditions.

Enhancements and changes to drainage systems are ongoing and could alter recommendations for this report. Improvements identified under this cover represent the opportunities present at the time of the TIRZ 17 CIP approval in August of 2011. It is our understanding that some improvement opportunities recommended as part of this report may not have the full support of the necessary partners and thus may not be done or done in the form envisioned in this report. This may necessitate re-evaluation of certain recommended projects or the development of alternative projects.

Improvement options were evaluated in greater detail for the primary study areas relative to the secondary study areas. As a result, improvement options for secondary drainage systems are provided for informational purposes only. Further analysis of the secondary areas is recommended prior to advancing improvements.

Within each of the three watersheds (W151-00-00, W153-00-00, and W140-01-00) significant proposed improvement projects were identified to address the primary flooding determined for each watershed. Table 1.1 summarizes the primary drainage issues, proposed improvements to address the identified issues, and critical project components.

1.5 FY 2012 Anticipated Actions

TIRZ 17 will focus on implementation of several of the key projects identified in this report during FY 2012 (August 2011 – June 2012) that were included in the TIRZ's City Council-approved CIP. Included among these are Project W140-A (T-1731A) Briar Branch Channel Improvements with Detention. TIRZ 17 anticipates closing on a detention basin tract in October 2011 and will expedite design and construction of the basin. TIRZ 17 has been actively meeting with HCFCD to discuss channel improvements and this activity will continue during the year. TIRZ 17 has also been actively meeting with numerous other governmental entities on the Strey Lane Project (W151-C) including Bunker Hill Village, Hedwig Village and HCFCD. If this project does not move forward in the manner described in this report, TIRZ 17 will continue to work with interested parties on an alternative project that reduces the tailwater effect in the W151 Channel. Related to this project, TIRZ 17 is continuing the design of the Barryknoll East/West Project W151-A (T-1715). This project will significantly improve the drainage system on Barryknoll between Bunker Hill Road and Gessner Road.

Table 1.1 Watershed Summary

	Drainage Issues	Proposed Major Improvement	Critical Project Components
W140-01-00 (Briar Branch)	**1.** Topography challenges related to the "Long Point" fault. **2.** High tailwater conditions in Briar Branch relative to roadway storm sewer infrastructure. **3.** Widespread structural flooding and inefficient overland sheet flow.	**1.** Channel improvements to W140-01-00 to lower the tail water condition for discharging storm sewers. **2.** Detention required to mitigate the increased conveyance resulting from the channel improvements. **3.** Storm sewer improvements proposed to improve the transport of water to W140-01-00	**1.** Mitigation for channel improvements required **2.** Project requires a coordinated effort from several jurisdictions.
W151-00-00	**1.** Inadequate and under performing interior drainage. **2.** High tailwater conditions in W151-00-00 north of Memorial Drive.	**1. S**ignificant storm sewer trunkline improvements (Barryknoll & Strey Lane) designed to convey water to Buffalo Bayou in-lieu of conveyance improvements to W151-00-00. **2.** Storm sewer improvements to transport water to W151-00-00	**1.** Mitigation is required to ensure no adverse impacts to Buffalo Bayou, however no suitable site for detention was available within the study area due to the current development within this area. Mitigation alternatives include regional detention on Buffalo Bayou. **2.** Project requires a coordinated effort from several jurisdictions.
W153-00-00	**1.** Inadequate conveyance across Memorial for W153-00-00. **2.** High tailwater conditions from Buffalo Bayou. **3.** Inadequate overland sheetflow.	**1.** A relief storm sewer on Tallowood Rd designed to provide an alternative conveyance path to Buffalo Bayou. **2.** Detention to mitigate the increased conveyance resulting from the proposed storm sewer improvements on Memorial. **3.** Storm water conveyance (surface and storm sewer) improvements	**1.** Mitigation is required to ensure no adverse impacts to Buffalo Bayou **2.** Project requires a coordinated effort from several jurisdictions.

Identified potential improvement projects consist of new storm sewer, storm sewers replacements/improvements, overland conveyance improvements, channel improvements, and mitigation detention basins. Improvement projects were evaluated based on a number of categories including: benefit/cost ratio, number of structures and intersections removed from flooding, construction impact to the community, and time to realize benefits. Each improvement was assigned a score based on each of these categories and prioritized according to the total score and benefit. Improvement project performance was evaluated for the 10-year, 24-hour storm event.

Table 1.2 below lists the recommended improvement projects for the study area. These improvements consist of projects inside and outside the TIRZ 17 boundaries. Projects outside the TIRZ 17 boundaries are identified for further evaluation by the agency that has jurisdiction of the project limits, to evaluate their viability.

Table 1.2 Proposed Improvement Projects

Project ID	Improvement Project	Project Type
W100-A	South Gessner Roadway Improvements	Storm Sewer Improvements
W140-A	Briar Branch Channel Improvements with Mitigation Detention	Open Channel Improvements with Detention
W140-B	Windover, Demaret Improvements	Storm Sewer Improvements
W151-A	Barryknoll Lane	Storm Sewer Improvements
W151-B	Kingsride and Frostwood	Storm Sewer Improvements
W151-C	Strey Lane	Storm Sewer Improvements
W153-A	W153 & Tallowood Road Improvements	Storm Sewer Improvements
W153-C	Memorial East	Storm Sewer Improvements
W153-D	West Bough Lane	Storm Sewer Improvements
W153-E	Kimberley Lane	Storm Sewer Improvements
W153-F	Memorial West	Storm Sewer Improvements

2 Introduction

2.1 Project Background

Several studies and projects have been undertaken within the region generally bounded by the Sam Houston Tollway and Bunker Hill Road, and spanning approximately 1.5 miles on either side of IH-10 (see Exhibit 1) in an attempt to alleviate drainage issues across multiple watersheds and jurisdictional divides. These studies and improvement projects have been commissioned by the City of Houston, the Harris County Flood Control District (HCFCD), the Texas Department of Transportation (TxDOT), the City of Hedwig Village, and the City of Bunker Hill Village.

Most recently (July 2009), HCFCD completed the second phase of a study (titled "W151-00-00 Implementation Study from Buffalo Bayou to IH-10") that encompassed a portion of the region within the W151-00-00 watershed. The HCFCD study model was conducted at a storm sewer trunk line level within a one-dimensional (1-D) dynamic model (XP-SWMM) of the core drainage system. Reported drainage issues such as insufficient storm sewer capacity, adverse overland sheet flow routes, and significant ponding were confirmed through the study findings.

The HCFCD study documented extensive structural and street flooding within the W151 watershed south of IH-10, and identified the cause of the flooding to be the inability of the storm sewer and roadway conveyance systems to adequately transport runoff to the receiving W151-00-00 channel.

The inadequate conveyance condition is attributed to several factors including: (1) the lack of a dedicated overland sheet flow route to convey runoff to the channel, (2) undersized storm sewers, and (3) elevated water surface elevations in the receiving channel, limiting the allowable storm sewer discharge. These conditions force runoff to slowly access the channel through undersized storm sewer systems resulting in excessive street ponding and overland sheet flow. During certain events, overflow of runoff from one over-burdened system cascades into another overburdened system to compound the issue for the receiving or downstream storm sewer system.

The HCFCD study identified three improvement components that collectively address the identified drainage issues south of IH-10 in the W151 watershed; (1) channel improvements to lower the water surface elevation in W151, (2) storm sewer trunk line improvements to convey additional discharge to the channel, and (3) detention storage to mitigate for the channel and storm sewer improvements to prevent downstream impacts to Buffalo Bayou. Combinations of the three primary improvements were developed as part of the HCFCD study to produce multiple improvement alternatives.

An extreme rainfall event on the evening and morning of April 27th and 28th, 2009, created a heightened awareness of the problematic drainage conditions in the area. The interconnected nature of the widespread drainage deficiencies experienced during this extreme event further highlighted the need for a regional study. As a result, Lockwood, Andrews & Newnam, Inc (LAN) was authorized by the Tax Increment Reinvestment Zone No. 17 Redevelopment Authority (TIRZ 17) on November 24, 2009 to prepare a regional drainage study (TIRZ 17 Regional Drainage Study or RDS) for the W151-00-00, W153-00-00, and portions of the W140-01-00 watersheds. A key component of the TIRZ 17 RDS was a more detailed understanding of the influence and impacts of overland flow between drainage systems.

Initial investigations identified interaction between the W151-00-00, W153-00-00 and W140-01-00 watersheds by way of interconnected drainage systems and overland flow between basins. A primary focus of the study was to develop a storm water model that more accurately represented the sub-surface and surface hydraulic conditions and their regional interaction relative to previous modeling efforts. An integral component of this assignment was to calibrate the model to available data from the April 2009 event.

In addition, the TIRZ 17 Board requested LAN use modeling information from previous study efforts to the fullest extent possible. In accordance with this direction, the TIRZ 17 RDS did not duplicate the HCFCD modeling effort, but rather was built upon the July 2009 HCFCD study to create a more detailed and inclusive model of the W151-00-00, W153-00-00 and W140-01-00 watersheds. Additionally, the TIRZ 17 RDS builds upon the identified HCFCD core improvements for the W151 watersheds and examines improvement options for the W153-00-00 and W140-01-00 watersheds.

The study objectives included public interaction and general project transparency to allow the area residents the ability to provide a general information regarding drainage patterns and problem areas. Moreover, the timing of this study provided an opportunity to collect valuable calibration data relative to the April 2009 storm event.

2.2 Study Objective

One objective of the TIRZ 17 RDS is to identify regional and individual drainage improvement projects that function collectively as well as independently to benefit the region. As part of this effort, the recommended drainage improvement projects were also evaluated for cost effectiveness. TIRZ 17 CIP projects within the study area were reevaluated for potential to upgrade drainage systems above the minimum City of Houston standard to provide improved protection for the adjacent community.

Consistent with the goals and objectives of the current City of Houston Extended Feasibility Study (EFS) process, the TIRZ 17 RDS took a comprehensive approach to analyzing drainage systems by accounting for impacts of overland sheet flow. EFS objectives include investigate and define reported storm drainage problems, structural flooding, and storm sewer capacity problems and determine if warranted for inclusion within the City of Houston Capital Improvement Projects (CIP).

2.3 Study Methodology

The TIRZ 17 RDS utilized the recent release of the 2008, 1-foot LiDAR topographic data in conjunction with two-dimensional (2-D) overland sheet flow analysis software (Innovyze Infoworks SD). Infoworks SD is a dynamic 2-D drainage analysis software, capable of comprehensively analyzing the entire watershed while simultaneously analyzing the sub-surface storm sewer system and the above-ground overland sheet flow. By utilizing a 2-D overland sheet flow analysis tool the ability to accurately account for overland storm sewer system overflows was incorporated in the study. By combining the two this study was able to better define the extent of the overland sheet flow issues and document the benefit of various improvement alternatives.

Consistent with the City's EFS process, a full analysis of improvement projects will still be required during the Preliminary Engineering Report phase including complete topographic, storm sewer and/or channel survey.

2.4 Study Limits

As previously mentioned, this study builds upon the HCFCD W151-00-00 Implementation Study and expands the study limits to include W153-00-00 and W140-01-00. The evaluation area for the TIRZ 17 RDS primarily comprised the FEMA effective sub-watersheds W151A, W100F, and W140C, within the Buffalo Bayou Watershed (W100-00-00). Sub-watersheds W151A, W100F, and W140C contain the three primary open channel systems, W151-00-00, W153-00-00, and W140-01-00, respectively, which were evaluated as part of this study.

The aforementioned study area was based on the interaction of subsurface and surface storm water between the three sub-watersheds, and the documented drainage problems within each sub-watershed. The W140-01-00 and W151-00-00 sub-watersheds are interconnected through a single Reinforced Concrete Box (RCB) that extends from the upstream end of the W151-00-00 open channel as a 10'x8' RCB, beneath Memorial City Mall (8'x8' RCB) and IH-10 (3-8'x5'), and connects with the W140-01-00 open channel at the Witte Road crossing structure (2-48" pipes) – connected to an 8'x5' RCB that continues north to Long Point Road. In addition, overland sheet flow extends from the W151-00-00 sub-watershed west into the W153-00-00 sub-watershed.

The ArcGIS ArcHydro tool was used to determine overland conveyance paths utilizing the 2008 one-foot LiDAR. These flow paths were also evaluated to determine the need to expand the study area to account for overland flow from adjacent systems. As a result, the study limits were expanded beyond the sub-watershed divide in order to confirm the divide is not breached by overland flow. This methodology facilitated the capture of the extents and sources of potential overland flows and storm water crossing between storm sewer systems that drain to the primary outfalls.

Exhibit 1 identifies the approximate study limits. The limits are generally bound on the west by Rummel Creek (W156-00-00) watershed limits and the Sam Houston Tollway, on the south by Buffalo Bayou (W100-00-00), on the east by Taylorcrest and Oak Tree, and on the north by Neuens Road.

The study area was divided into primary and secondary study areas, as defined on Exhibit 4. Primary areas are the principal part of the study limits targeted, and were evaluated in detail at the inlet level. Secondary areas consist of drainage systems within the study limits determined to have influence on the primary study areas through interconnected sub-surface systems, contributing overland sheet flow, or through boundary conditions such as tail water conditions. For the most part, secondary study areas were studied on a manhole level. Following completion of the initial existing conditions evaluation, the study limits were expanded to capture additional area outside of the original study area, which was determined to influence the primary drainage systems through storm sewer interconnects or system overflow.

2.5 Jurisdictional Interest

The study area encompasses portions of TIRZ 17, the City of Houston, HCFCD, the City of Bunker Hill Village, the City of Hedwig Village, and areas of TxDOT jurisdiction. While TIRZ 17 makes up only 19 percent of the overall study area, the TIRZ 17 RDA Board of Directors agreed to sponsor the larger study to better develop solutions to regional drainage problems. Agency coordination meetings held during the course of the study were organized by the City of Houston

to promote communication and coordination among the different jurisdictional interests, and to facilitate discussions regarding possible regional solutions that span multiple jurisdictions

3 Data Collection

3.1 Existing Data

Existing reports, studies, drainage models, record and as-built drawings, topographic data, flooding complaints, historical rainfall and stream gauge data, and other related data were collected from available sources, used to develop the existing conditions model. This information provided background to assist LAN in evaluating the regional and system drainage issues.

Reports used in conjunction with the TIRZ 17 RDS include:

- Drainage and Flood Control study of Harris County Flood Control District W151-00-00 from Buffalo Bayou to IH-10 – October 2004 – HCFCD, City of Houston, TxDOT
- W151-00-00 Implementation Study From Buffalo Bayou to IH-10 for the Harris County Flood Control District- July 2009 – HCFCD
- Drainage Study Report Impact Analysis of the Rustling Oaks & Fonn Villas Subdivisions – Civiltech Engineering, Inc. – July 2001
- IH-10 – Katy Freeway Reconstruction Project – W151-00-00 Watershed Drainage Impact Mitigation Analysis – TxDOT – February 2002
- Frostwood Drainage Improvement Project – City of Houston Project No. M-1001-01-2 0 Thompson Professional Group, Inc. – July 1999
- Flooding Issue at Frostwood at Broken Bough – Omega Engineers Inc. – January 2008

Model information was utilized from the HCFCD W151-00-00 Implementation Study, the Civiltech Rustling Oaks and Fonn Villas report, and the Katy Freeway Reconstruction report. The topographic and modeling information from these reports was used with limited survey and engineering evaluation. Cross section survey information for Briar Branch, W140-01-00, was utilized from the ongoing HCFCD W140-01-00-X010 Sediment Removal Project. Over 350 sets of as-built drawings covering storm sewer, roadway, waterline, and sanitary sewer improvement projects were obtained from the City of Houston. These as-built drawings were used to verify and update information from the City of Houston GIMS as well as complete missing storm sewer information such as size, material, inlet or manhole locations, and flowline elevations. As-built drawings were also obtained from the City of Bunker Hill Village to supplement storm sewer information east of W151-00-00.

3.2 Topographic Survey

Field survey was performed to establish a consistent datum and to supplement the information available from GIMS and as-built drawings by Landtech Consultants, Inc. Landtech also collected survey topographic data, to determine storm sewer system connectivity at specific intersections and to collect information related to drainage infrastructure identified in the field but lacking available documentation. Additional topographic survey information was collected for areas known to have changed in elevation between the collection of the 2008 LiDAR and the start of this study. Elevations were also collected for known high water marks that were reported from drainage questionnaires from the April 2009 storm event to aid with model calibration.

3.3 Project Datum

Horizontal control for the survey was based on the Texas State Grid Coordinate System, South Central Zone. The vertical datum for the study was the North American Vertical Datum of 1988, 2001 Adjustment.

3.4 Site Visits

Multiple site visits were conducted throughout the duration of the project to confirm information such as sewer locations and inlet layouts. Site visits were also performed to evaluate drainage patterns during rainfall events and to investigate citizen reports from collected drainage questionnaires (refer to Section 3.5.1). Based on confirmation of the field conditions the City's GIMS database was updated as necessary based on record data, observations, and survey data to represent existing conditions.

3.5 Public Input

3.5.1 Drainage Survey

Public participation and public input were critical to the success of the TIRZ 17 RDS. Residents within the study area documented drainage problems and flooding conditions from the April 27-28, 2009, rainfall event, as well as other events. This documentation, in conjunction with a general understanding of regional drainage patterns, proved to be valuable information to the study effort.

Approximately 3,600 drainage questionnaires were mailed to residents within the study area. The questionnaire consisted of a one-page form consisting of check box response questions designed to solicit information relative to the type of observed drainage issues, free response areas for additional comments, and a map to mark areas with known drainage issues. Over 400 drainage surveys were returned through mail, email, and fax. Each returned drainage survey was scanned, geocoded, and digitized with GIS. Questionnaires were geocoded to develop a spatial understanding of reported drainage deficiencies within the area. Copies of the received surveys are included in Appendix A.

Some responses included detailed descriptions or photos of high water marks from the April 27-28, 2009, storm event. These high water elevations were later surveyed to aid in the model calibration. The questionnaires also helped to identify the number of flooded structures for additional model calibration. Graphical representation of the calibration points and reported flooded structures can be found on Exhibit 13.

3.5.2 Community Stakeholder Meetings

Multiple community stakeholder meetings were organized to review the initial results of the existing conditions analysis and the preliminary recommended improvement projects. Representatives from the major home owner associations were invited to participate. Anecdotal information received from the community representatives was used to augment the existing conditions model resulting in a higher level of calibration. Following the development of the preliminary improvement recommendations, separate meetings were held to review projects identified for the study area north and south of IH-10.

3.5.3 Public Meeting

A public meeting was held on June 29, 2011, at Houston Community College's Town and Country Campus, within the boundaries of TIRZ 17. An open house was held prior to the meeting where the public was able to view the proposed projects for each of the major watersheds. This was followed by a detailed technical presentation and a question and answer session. Elected officials for the area were present.

3.6 Project Assumptions and Constraints

Assumptions utilized in the completion of the TIRZ 17 RDS are as follows:

- Existing conditions are based on current field conditions at the time of the study initiation in November 2009. No previously completed project, public infrastructure or private development, were evaluated to evaluate their individual benefits or impacts. No proposed or historic (pre 2009) development conditions were evaluated.
- Pre-project conditions for construction projects substantially complete prior to the start date of the study, November 2009 were not evaluated.
- Storm sewer systems within primary study area were evaluated to the inlet level. Systems outside of this boundary, secondary areas, were evaluated to manhole or trunk line levels of detail. For manhole level analysis, manholes that tie sub-surface and surface features were not limited by inlet capacity or capacity to move water between the surface and storm sewer components.
- The April 27-28, 2009 rainfall event was based on available rain gauge information. Gridded RADAR rainfall depths were relatively consistent throughout the study area and did not offer better results than rainfall gauge information.
- Stream gauge information for the April 27-28, 2009, rainfall event was not available at all storm sewer channel outfalls. Therefore, water surface elevations between gauges at outfalls were interpolated based on known water surface elevations. Gauge locations are shown on Exhibit 6.
- Areas near the southern end of the study area that drain directly into Buffalo Bayou without storm sewer infrastructure or with private infrastructure were not included.
- Drainage areas and accompanying rainfall were associated with inlet or manhole nodes in-lieu of rainfall being placed directly on the 2-D mesh surface (surface used to model overland sheet flow.
- Limited topographic survey was collected to assist in leveling storm sewer flowlines to a common datum. Consistent with the City's EFS process, a full analysis of improvement projects will still be required during the Preliminary Engineering Report phase including complete topographic, utility conflict evaluation, storm sewer and/or channel survey.
- Since the secondary study areas were limited to the secondary study boundary, improvement projects for the secondary study areas may extend beyond the current study limits and warrant more detailed study prior to advancing the improvement alternatives identified.
- The study focused on identifying projects that reduced the potential for structural inundation. Potential improvement projects for areas experiencing only minimal localized flooding were given lower priority.

- All non-surveyed slab elevations were estimated to be six inches above the representative LiDAR elevation for the site.
- Estimated mitigation volumes are calculated as the volume difference between existing and proposed hydrographs plus 20 percent.

4 Hydrology and Hydraulics

4.1 Drainage Criteria

The storm sewer criteria were based on the *City of Houston Infrastructure Design Manual* dated July 2009. In accordance with these standards, the location of the Hydraulic Grade Line (HGL) relative to the gutter line was determined for the 2-year event. The extreme event assessment was simplified by evaluating inundation relative to the public ROW limits.

Also used for establishing the criteria were the *City Storm Water Drainage Analysis and Design Consideration for CIP Projects* clarification memorandum dated November 2009, City *Technical Paper No. 100 and No. 101 dated October 2005,* HCFCD *Policy Criteria & Procedure Manual* dated October 2004, and the HCFCD *Hydrology & Hydraulics Manual* dated December 2009.

4.2 Base/Reference Models

The HCFCD W151-00-00 Implementation Study from Buffalo Bayou to IH-10 XP-SWMM model was used as the initial reference model for this study. This model was revised to reflect existing conditions, imported to InfoWorks SD version 10.0.1, and converted to the current project datum. Additional information for TxDOT systems within the IH-10 corridor was obtained from the XP-SWMM model prepared for the IH-10 corridor reconstruction. Results from the converted model were reviewed for consistency with the XP-SWMM model.

The InfoWorks existing conditions model represents the drainage systems as identified through a combination of the City of Houston GIMS data, available record drawings, limited survey, and field reconnaissance at the time of the study authorization. The surface topography, utilized primarily for overland flow analysis, was based upon the Harris County wide one-foot LiDAR flown in 2008.

4.3 Drainage System Datum Leveling

Referenced models, GIS shapefiles and as-built drawings were provided in a variety of vertical datums. To appropriately evaluate the study area, storm sewer elevation information was converted to the North American Vertical Datum of 1988, 2001 Adjustment and the horizontal datum was NAD1983 Texas State Plane, South Central Zone. Each set of as-built drawings or known vertical datum had three to five representative flowline elevations captured by survey. An elevation adjustment factor was determined for each captured elevation by comparing the captured survey elevation and the elevation recorded on as-built drawings. These adjustment factors were then evaluated for each system and utilized to adjust the entire system to the study datum. Storm sewer pipes flowlines were interpolated from known flowline elevation at minimum slopes required to maintain velocities of 3 feet per second under full flow conditions. Boundaries between storm sewer systems were individually reviewed and adjusted for elevation consistency. All information was compiled and updated within a modified COH GIMS database.

4.4 Hydrologic Methodology

Runoff from each subcatchment is determined by a combination of initial abstractions, runoff volume determination due to infiltration, and runoff routing (timing) determination. This runoff determination known as hydrologic methodology was consistent with the HCFCD *Policy Criteria & Procedure Manual* dated October 2004 and the HCFCD *Hydrology & Hydraulics Manual* dated December 2009. Techniques and parameters were similar to the HCFCD Implementation Study and TxDOT models with the exceptions noted below.

Rainfall totals for Region 2 as detailed by the Tropical Storm Alison Recovery Project (TSARP) white papers were used for all synthetic storm events. Region 2 is generally the central portions of Harris County. Rainfall hyetographs for each storm event were generated using HEC-HMS version 3.3.0 and the effective hydrologic models provided by HCFCD through the M3 system.

Initial rainfall losses were defined for all subcatchments on a watershed wide basis using the values detailed in the TSARP white paper titled "Recommendation for: Replacing HEC-1 Exponential Loss Function in HEC-HMS." Total subcatchment runoff volume was determined using initial abstractions for impervious surfaces and Green & Ampt infiltration for pervious surfaces. Green & Ampt parameters were set to the Buffalo Bayou values as recommended in the TSARP white paper. This is inconsistent with the effective FEMA HEC-HMS model of Buffalo Bayou where Green & Ampt parameters vary by sub-basin. Initial abstractions were initially set to abstractions defined in the effective FEMA models, but modeled water surface elevations and inundation extents fell far short of known water surface elevations. Upon further investigation it appears the initial abstraction values and infiltration parameters within the FEMA effective model were used as calibration parameters. Initial abstraction values within the FEMA effective models were much higher than those as defined by the TSARP white paper leading to volumes of storm water runoff insufficient to match known calibration information. Once initial abstraction and infiltration parameters matched those numbers outlined in the TSARP white paper, the model calibrated to known water surface elevations.

Subcatchment runoff routing was determined using Storm Water Management Model (SWMM) routing utilizing two of the three normally used surfaces; impervious area with initial abstraction, and pervious area with initial abstraction. To be consistent with the HCFCD W151-00-00 implementation study methods, impervious area without initial abstraction, was not determined.

Drainage area boundaries were delineated utilizing 2008 LiDAR data in combination with field visit verification. Boundaries from previous studies, as-built drawings, or models were confirmed prior to inclusion in the study. Percent impervious values were calculated for each drainage area based on aerial imagery and land use data available from the Harris County Appraisal District (HCAD) and HCFCD. The slope for each drainage area was calculated using GIS and the 2008 LiDAR data. Additionally, a drainage width parameter for each drainage area was assigned based on its physical dimensions. Drainage area boundaries are shown on Exhibit 7. These drainage areas were linked to storm sewer pipes via nodes as shown on Exhibits 8 and 9.

Rainfall was applied directly to drainage areas within the model rather than placing the rainfall directly on the 2-D mesh. Applying rainfall directly to the 2-D mesh is not consistent with the currently accepted hydrologic methods within Harris County. Furthermore, it is not practical to define initial losses and infiltration parameters of a 2-D mesh to suitably replicate losses and hydrologic routing of traditional modeling. Additionally, applying rainfall directly to the mesh

does not account for the impervious and pervious cover ratios of drainage areas and would assume a uniform infiltration surface. These assumptions would result in a model not reflective of field conditions and decreased model accuracy. Initial loss, infiltration parameters, and overland roughness values were defined by land use, percent imperviousness, and overland surface conditions as shown on Exhibits 10, 11, and 12.

4.5 Storm Drain System Hydraulics Methodology

4.5.1 Hydraulic Parameters and Calculations

Hydraulic parameters for storm sewers and box culverts were assigned according to the Manning's Roughness n values set forth in the City of Houston Infrastructure Design Manual. Harris County Flood Control drainage channels were modeled with roughness values according to those outlined in the HCFCD *Hydrology & Hydraulics Guidance Manual* and the HCFCD *Policy Criteria & Procedure Manual*. Round storm sewer pipes were set to a Manning's n value of 0.013 and box storm sewers were set to a Manning's n value of 0.015. Additional minor loss coefficients were assigned by relative entrance and exit angles of storm sewer pipes into manholes or inlets.

Major channels such as W151-00-00 and W140-01-00 were modeled using one dimensional (1D) river sections in order to more accurately define channel cross sections. These river sections are linked to the 2-D surface at storm sewer outfalls and other strategic locations in order to represent over bank flow entering and leaving channels. Due to the highly dendritic and nonlinear nature of W153-00-00, it was modeled using a high resolution region of the 2-D surface. Channel roughness values were assigned based on previous modeling efforts, aerial imagery, and field visits. Bridge and culvert crossings in both 1-D and 2-D were modeled using river sections and culverts, respectively.

Hydraulic calculations were handled by InfoWorks SD 10.0.1 with two-dimensional (2-D) capabilities. The software utilizes a combination of numerous numeric methods for solving the Saint Venant equations to determine hydraulic states within the model. Methods employed include an iterative Newton-Raphson double-sweep method, the Preissman 4-point Scheme, implicit Euler Methods, and an implementation of the Mulet and Alcrondo Unstructured Flood (MULFLOOD) solver for 2-D flow. Once subsurface storm sewer capacity has been exceeded, water will overflow onto the 2-D mesh surface (ground surface) of the model. As previously discussed, the 2-D surface was developed using the 2008 Harris County LiDAR supplemented with survey data in areas where topographic changes were known to have occurred. Two-dimensional surfaces in InfoWorks SD are represented with variable resolution meshes. This variable resolution mesh allows the model to have areas of high surface detail mixed with areas of low detail all within one surface model. Vertical structures within the study area were modeled as void spaces to prevent flow through or storage within structures. Overland roughness values for the 2-D surface were developed from land use data, Harris County Appraisal District information, aerial imagery, and field visits.

Stage-time boundary conditions for each storm outfall (within the primary study area) and storm return period (recurrence interval) were developed using a combination of the effective HEC-HMS and HEC-RAS models. Rating curves were developed at each outfall location using HEC-RAS and related to flow-time hydrographs from HEC-HMS to create stage-time hydrographs for each storm sewer outfall point. Storm sewer outfalls not entering a studied HCFCD channel at the study boundary fringes were given a static tail water condition, generally at the top of pipe.

4.5.2 Calibration

The model was calibrated to the April 27-28, 2009, rainfall event using rainfall information from Harris County Office of Emergency Management (HCOEM) rainfall gauges 2250 (W140 Spring Branch at Bingle Road) and 2270 (Buffalo Bayou and Beltway 8 W) and stage time hydrographs from USGS stream level gauges 08073600 (Buffalo Bayou and Beltway 8 W) and 08073700 (Buffalo Bayou at San Felipe Road). Rainfall was applied to subcatchments using Theissen Polygons created from HCOEM gauges known to be reporting during the April 27-28, 2009, event. Stage-time boundary conditions along Buffalo Bayou were interpolated at each storm sewer or channel outfall using stage-time information for gauges 08073600 and 08073700. Inundation limits and maximum water surface elevations were compared to reported flooding locations, data from returned drainage questionnaire information, and surveyed high water marks.

The calibrated model results verified approximately 90% of the 140 inundated structures reported by collected drainage questionnaire mailer data. The model was on average within 0.4-feet of surveyed high water marks representing a model reflective of field conditions. Model calibration is shown in more detail on Exhibit 13. Comparison of the April 2009 storm event to the 10- and 100-year, 24-hour storm events are shown on Exhibits 14 and 15.

Reported ponding during frequent rainfall events does not match ponding shown within the model for the 2-year, 24-hour storm events. Storm sewers within the IH-10 corridor were incorporated into the model as shown on as-built drawings and provided modeling information. Field inspection and confirmation is recommended in order to determine if aspects of the storm sewer systems within the IH-10 corridor were constructed to designed specifications. This field inspection is beyond the scope of the TIRZ 17 RDS and is recommended in Section 5.10Expedited Projects.

4.6 Existing Conditions Results

Of the 55 miles of storm sewer within the study area, 24 miles (5 miles within TIRZ 17, 20 miles outside of TIRZ 17) do not meet the City criteria for a 2-year, 24-hour storm event. Of the four open channels evaluated within the study area, two (W151-00-00 and W153-00-00) generally have a 10-year level of service (stays within banks for this storm frequency). The W151-00-00 watershed appears to have widespread drainage system capacity problems that are a result of a combination of undersized storm sewers, high tail water conditions, and adverse overland conveyance routes. The 153-00-00 watershed appears to have relatively widespread drainage system capacity issues characterized by a general lack of 2-year drainage capacity either in storm sewer or road side ditch. While relatively new storm sewers exist within the watershed, ponding and structural inundation appear to be caused primarily due to high tail water conditions within the W153-00-00 channel north of Memorial Drive. The culvert passing beneath Memorial Drive functions partially as a restrictor during high flow conditions. The W140-01-00 watershed appears to have prevalent drainage system capacity issues that are due to the relatively low topography coupled with restrictive storm sewers. Roadways north of W140-01-00 to the Long Point fault line are lower than the channel top of banks. Adverse overland sheet flow routes exacerbate drainage issues within the region. Existing conditions inundation extents are shown on Exhibits 18-20.

4.6.1 Problem Areas and Deficiencies

The study region was divided into zones as shown in Exhibit 5 to better document problem areas within the study region. Each zone was identified by watershed and if necessary further

subdivided to adequately identify problem areas. While the study area was divided into separate zones it is important to note that even though they are shown as discrete zones, each zone is connected to and influenced by those surrounding it. The zone numbers were assigned based on a combination of watershed, primary/secondary study areas, neighborhood, and political boundaries to facilitate the discussion of drainage problems and do not have significance.

4.6.1.1 *Study Area Zone 1: North of Long Point Road*

Zone Description

This secondary study area (manhole level) of 860 acres is bounded by Neuens Road on the north, Witte Road on the west, Long Point Road on the south, and Crestdale and Oak Tree Drives on the east. This zone is drained by a combination of road side ditches and storm sewer infrastructure with multiple outfalls. This zone is served by storm sewer outfalls on the eastern edge of the study area at Neuens and Dalecrest Roads (8'x5' RCB) that drains east away from the study area, additional storm sewer on the southern edge by trunk lines on Gessner Road, and Witte Road and Conrad Sauer Drive to pumped detention pond. A storm sewer interconnects at the northern edge of the study boundary on Gessner Road and drains a portion of the area between channels W140-01-00 and W140-00-00 southward to Study Zone 1.

Existing Conditions Analysis Results

Approximately half of the storm sewers within Zone 1 can convey the 2-year, 24-hour storm event flow through the subsurface storm sewer system. Portions of the Shadowwood, Tigowona Terrace, and Pine Village neighborhood east of Witte and west of Crestdale are subject to roadway flooding and a limited number of structural inundations during the 2-year. The Royal Oaks Subdivision has limited areas of ponding but does not appear to result in structural flooding during the 2-year, 24-hour storm event. The 10-year, 24-hour storm event appears to cause a significant amount of structural flooding throughout the Shadowwood, Pine Village, Tigowana Terrace, Rollingwood, Enchanted Woods, Spring Oaks, Royal Oaks, and Moss Oaks neighborhoods. Drainage issues are due to insufficient storm sewer capacity and the lack of effective overland sheet flow paths. Roadside ditches interconnected with storm sewer are prevalent, but do not provide adequate capacity to drain the area for the 10-year storm event. Storm water flowing south across Warwana Road within the Shadowwood and Tigowana Terrace Neighborhoods is potentially blocked by an inefficient culvert structure located north of Butlercrest Street at Warwana Road. This 48" culvert with inlet grate structure has the potential to be easily clogged by storm water debris and prevent the road side ditches north of Warwana Road from draining after a storm event. Since this zone is a secondary study area, drainage deficiencies within the area were not studied in detail.

Primary Existing Problem Areas(See Inundation Exhibits 18, 19 and 20)

- Shadowood Drive and Witte – Flat terrain and limited outfall locations along with low ground elevations trap storm water in this area.

- Warwana/Crestdale – Existing storm sewer and roadside ditches are not effective at removing storm water from flat low lying areas north of Warwana and along Crestdale. Storm water ponding around numerous properties in this area.

- Royal Oaks Subdivision – This area was reconstructed to curb and gutter with an outfall to a detention pond near Conrad Sauer and IH-10. The lowered roadways provide storage during storm events; however this reduces local mobility in the area. Structural flooding likely occurs during events equal to or greater than a 10-year storm frequency as shown on the exhibits.

4.6.1.2 *Study Area Zone 2: South of Long Point Road and North of IH-10*

Zone Description

This primary study area (inlet level) of 702 acres is located south of Long Point Road, north of IH-10, east of W156-00-00 (Rummel Creek), and west of Cedar Post Lane. This zone is drained by a combination of storm sewers and open channels. This zone includes two storm sewer and open channel interconnections located at Gessner Road at W140-01-00 (Briar Branch Ditch) and Witte Road at Briar Branch Ditch. These interconnections allow storm water to flow south towards IH-10 or east along Briar Branch Ditch. Additionally, within the zone a concrete pumped detention pond is located at Mathewson Lane and a grass lined detention pond is located north of Westview Drive along Witte Road. Ultimate major outfalls for the zone include 3-8'x5' RCB boxes draining to the south at Witte Road and IH-10, a single 4'x'4' RCB box approximately 1200-feet east of Bunker Hill Road and IH-10 draining to the east, and Briar Branch Ditch (W140-01-00) draining to the east.

Existing Conditions Analysis Results

A portion of the storm sewers meet the 2-year, 24-hour storm event criteria and can convey storm water to ultimate outfalls without localized or structural flooding. The Spring Branch Woods neighborhood is subject to significant flooding with several pockets of structural flooding. Significant portions of the zone are subject to structural inundation during the 10-year, 24-hour storm event due to a combination of issues. The area south of the Long Point Fault line is generally lower than the Briar Branch Ditch top of banks. The low lying area surrounding the channel combined with structure slab elevations less than 6-inches above adjacent ground elevations and insufficient storm sewer capacity result in the potential for frequent structural inundation in this area. The lack of efficient overland sheet flow paths exacerbate ponding issues and force water to build to depths high enough to flood homes before sheet flowing into Briar Branch Ditch when storm sewer capacities are exceeded. Upstream of Bunker Hill Road Briar Branch Ditch transitions to a grass lined channel section and continues to decrease in cross sectional area as it approaches Gessner Road. Gessner Road is connected to W140-01-00 through a heavily silted 36" storm sewer pipe but effectively contributes no flow to W1401-01-00. Between Gessner and Witte Roads channel capacity is severely limited by a relatively small cross section area. A north/south tributary (W140-01-05) to Briar Branch Ditch located between Oak Tree Drive and Cedar Post Lane is of limited capacity and when its capacity is exceeded storm water can essentially bypass the channel and impact areas east of the channel. The channel capacity of W140-01-05 is limited in large part to the elevated tail water condition in W140-01-00. The full conveyance capacity of W140-01-00 cannot be utilized due to roadways located below channel top of banks. Storm water after bypassing channel W140-01-05 can flow east along Westview, Cedardale, and Larston Drives ultimately towards the southeast and back to W140-01-00. The general lack of overland conveyance and storm sewer capacity along portions of Gessner Road and Witte Road south of Westview Drive result in excessive ponding once storm sewer capacity is exceeded.

Primary Existing Problem Areas (See Inundation Exhibits 18, 19 and 20)

- Spring Branch Woods Subdivision – This area is bounded by Gessner, the Longpoint Fault, and Bunker Hill north of the Briar Branch channel. Most roadways in this area are lower than the top of banks for Briar Branch, with some portions of Westview as much as 3-ft below the top of bank or Briar Branch. Due to the elevation difference there is no effective overflow path to Briar Branch, thus storm water in excess of the storm sewer system must fill the subdivision streets before overflowing to Briar Branch.

- Spring Branch ISD Bus Barn Area – South of Briar Branch and west of Witte the low areas of this property are subject of flooding due to restrictions and high tail water in Briar Branch.

- Gessner north of IH-10 – Low area near car wash and Whataburger floods often due to tail water in the IH-10 drainage system. There is no existing gravity connection to Briar Branch.

- Long Point Woods – Same problems as Spring Branch Woods area due to low roadways and ineffective overland flow paths to Briar Branch. Tail water causes backwater and street flooding in the neighborhood due to channel capacity limitations with Briar Branch.

4.6.1.3 *Study Area Zone 3: City Centre and Town and Country Village*

Zone Description

Zone 3 is a primary study (inlet level) area of 174 acres located south of IH-10, west of Town & Country Boulevard, north of Broken Bough Drive, and east of the Sam Houston Tollway Frontage Road which ultimately drains to Buffalo Bayou. This zone is primarily served by storm sewer infrastructure ultimately outfalling into the Sam Houston Tollway storm sewer trunk line at the intersection of Kimberley and Memorial Drive and a relatively small portion of the zone drains south to storm sewers located along Memorial Drive.

Existing Conditions Analysis Results

The majority of the storm sewers within Zone 3 satisfy the 2-year, 24-hour storm event conveyance criteria. However, localized ponding occurs during the 2-year, 24-hour storm event is located along Town & Country Boulevard and West Bough Lane. Most storm sewers within the area are able to convey the 10-year, 24-hour storm event with minimal ponding. Kimberley Lane, recently upgraded to reduce depth of ponding, between the Sam Houston Tollway Frontage Road and West Bough Lane was subject to ponding during both the 2- and 10-year, 24-hour storm events due to the roadway elevation being lower than the adjacent area. This depressed roadway section collected storm water from the surrounding area once the storm sewer capacity is exceeded. Storm water during the extreme storm event crossed Kimberley Lane and flows into the Town & Country Village Shopping Center parking lot and across the southern portion of Zone 3 and into Memorial Drive. Prior to improvements, Kimberley Lane did not meet 2-year criteria.

The storm sewer along Memorial Drive between the Sam Houston Tollway Frontage Road and West Bough Lane is of sufficient capacity to convey the 2-year, 24-hour storm event. During the 2-year and 10-year, 24-hour storm events ponding within the roadway and roadside ditch along

West Bough Lane exists from Kimberly Lane to Memorial Drive. This problem is caused by a general lack of drainage capacity in the storm sewer and roadside ditches.

Primary Existing Problem Areas (See Inundation Exhibits 18, 19 and 20)

- Kimberly Lane – Primary ponding location is at Kimberly and Town and Country due to a depressed or lower portion of Kimberley lane and backwater from the drainage system under the northbound Beltway 8 frontage road along with limited storm sewer capacity along Kimberly.

- West Baugh Lane – Drainage along open ditch areas adjacent to the road is not efficient causing significant ponding in the area, and preventing storm water from entering existing storm sewer at Memorial.

4.6.1.4 *Study Area Zone 4: W153-00-00 and Fonn Villas*

Zone Description

This primary study area (inlet level) of 524-acres is bounded on the north by IH-10, on the west by Town & Country Boulevard and Broken Bough Lane, on the east by Benignus Road, and on the south by Buffalo Bayou on the southern edge of the study area. Zone 4 is mostly comprised of the Fonn Villas Neighborhood and the W153-00-00 channel system. The majority of the area is drained by storm sewers in combination with some roadside ditches. Both the storm sewers and road side ditches outfall to HCFCD channel W153-00-00. Channel W153-00-00 outfalls southward into Buffalo Bayou (W100-00-00). Channel W153-00-00 is enclosed beneath Memorial Drive in a box culvert for approximately 1,050 feet before transitioning back to an open channel section south of prior to outfalling into Buffalo Bayou.

Existing Conditions Analysis Results

The majority of the storm sewers within Zone 4 meet the 2-year, 24-hour storm event criteria. Other locations within the zone are subject to flooding in many low lying streets. During the 2-year, 24-hour storm event, Channel W153-00-00 remains within its banks. Widespread localize flooding and extensive structural flooding are present in the zone during the 10-year, 24-hour storm event.

Drainage issues within Zone 4 are generally characterized by excessive street ponding with some potential structural inundation and insufficient roadside ditch capacity. While relatively new storm sewers exist within the Fonn Villas Subdivision area, ponding and structural inundation are due to high tail water conditions within the W153-00-00 channel north of Memorial Drive. Channel W153-00-00 has limited capacity between Benignus (4-36" round pipes) and Tallowood Roads (72" round pipe) because of restrictive roadway or driveway cross culverts and relatively limited channel cross sectional area. Cross culverts beneath Tallowood Drive partially limit flow crossing beneath the roadway and consequently limit the conveyance capacity of W153-00-00 between Benignus and Tallowood Roads. The channel between Tallowood Road and Memorial Drive is subject to elevated water surface conditions causing structural inundation. The culvert beneath Memorial Drive partially restricts flow beneath the roadway and has the potential to create high water surface elevations on W153-00-00 north of Memorial Drive. Elevated water surface conditions within the channel are partially due to its highly sinuous flow path and natural vegetation that restricts storm water conveyance and overall conveyance capacity south of

Memorial Drive is caused by limited culvert capacity. Ponding along Memorial Drive from West Bough Lane to W153-00-00 is caused by a general lack of drainage capacity in the storm sewers and roadside ditches.

Additionally, the City has identified several locations of diminished or obstructed flow within the W153-00-00 channel. Locations with obstructed flow include three parcels along Hollow Drive with retaining walls that reduce the conveyance of the channel. Other channel obstructions are located on parcels on Benignus Road and Overcup Drive. These obstructions consist of a brick dam, a Sackcrete dam, and rip rap within the channel.

Primary Existing Problem Areas (See Inundation Exhibits 18, 19 and 20)

- Memorial Drive Culvert at W153 Channel – Existing culvert has limited capacity and cause backwater for the channel immediately upstream (north) of Memorial Drive.

- W153 Channel – Existing channel north of Memorial has a number of physical obstructions due to development adjacent to the channel, and limited channel conveyance due to highly sinuous drainage path. This area gets a large amount of overflow from Zone 6.

- Tallowood Culvert at W153 Channel – The existing 72-inch culvert pipe is undersized for causing ponding and bypass flows as the storm water overtops Tallowood north of the W153 crossing.

4.6.1.5 *Study Area Zone 5: Memorial City Region*

Zone Description

This primary study area (inlet level) of 350-acres is located south of IH-10, bounded on the east by the eastern edge of the study region at Magdalene Drive, south by Barryknoll Lane, and on the west by Benignus Road. The zone is drained completely by storm sewers outfalling to W151-00-00. Major storm sewer trunk lines are located along Gessner Road (new Gessner Construction) and Barryknoll Lane. Additionally, there is a single 8'x8'/10'x8' box storm sewer passing beneath the food court of Memorial City Mall to outfall into W151-00-00 that drains from Zone 2. Portions of Zone 8 also drain into Barryknoll Lane via storm sewer.

Existing Conditions Analysis Results

Approximately half of the storm sewers within Zone 5 meet criteria for the 2-year, 24-hour storm event. Ponding areas are located along multiple roadways within the zone. The majority of the storm sewers have insufficient capacity to convey the 10-year, 24-hour storm event. The storm sewers along Barryknoll Lane are limited in capacity due to relatively high tail water conditions within the W151-00-00 Channel. Once the Barryknoll storm sewer capacity is exceeded storm water from the easterly portion of the zone travels overland in an easterly direction from Barryknoll Lane into Hedwig Village. Overland flow from the westerly portion of the zone travels south along Gessner Road and Frostwood Drive entering the W153-00-00 watershed.

4.6.1.6 *Study Area Zone 6: Memorial Hollow, Memorial Woods, Memorial Forest, Frostwood Neighborhoods*

Zone Description

This primary study area(inlet level) of 439-acres bound on the south by Memorial Drive, west by Tallowood Road, east by Channel W151-00-00, and on the north by Barryknoll Lane. The area is drained by a combination of storm sewers and roadside ditches draining into W153-00-00 and storm sewers south of Memorial Drive that ultimately outfall to W153-00-00. Significant storm sewer trunk lines are located along Benignus Road (18" RCP), Frostwood Drive (72" RCP), and Gessner Road(7'x6' RCB). The area drains to two separate outfall locations. The southwest portion of the zone drains to W153-00-00 while the rest of the zone drains southward through two storm sewer trunk lines along Gessner Road and Tealwood that outfall directly into Buffalo Bayou.

Existing Conditions Analysis Results

The majority of the storm sewers within the zone do not meet the 2-year, 24-hour criteria. Localized ponding during the 2-year storm event is prevalent in low areas within the zone. Significant roadway ponding and overland surface flows are widespread within the zone during the 10-year, 24-hour storm event. Storm water flows overland from the Memorial Woods subdivision to Gessner Road and ultimately through portions of the Frostwood neighborhoods to W153-00-00. Within the Frostwood neighborhood and the area south of Barryknoll Lane, north of Memorial Drive, west of W151-00-00, and east of Benignus Drive, the topography generally slopes to the southwest towards the W153-00-00 Channel. However, storm sewers in this area generally drain directly south, to Buffalo Bayou. When storm sewer capacity is exceeded, overland sheet flow follows the terrain to the southwest and ultimately to W153-00-00. The result is frequent localized flooding due to ineffective overland flow paths with some structural flooding along Frostwood Drive between Gessner and Benignus Roads. The overland sheet flow paths follow Frostwood Drive south and then west along Perthshire Road, Broken Arrow Street, Broken Bough Drive, and Cobblestone Drive towards Benignus Road and W153-00-00. From the intersection of Perthshire Road and Benignus Road, overland sheet flow extends south to the headwaters of W153-00-00. Storm water flowing overland west along Broken Arrow Street, Broken Bough Drive, and Cobblestone Drive follow routes through structures and a privacy fence east of Benignus Drive to access the W153-00-00 Channel. The existing north/south wooden privacy fence significantly obstructs the overland flow to W153-00-00.

Primary Existing Problem Areas(See Inundation Exhibits 18, 19 and 20)

- Barryknoll Lane – No overland flow path exist along Barryknoll Lane to direct storm water to W151-00-00 as this channel's banks are elevated higher than the surrounding areas. The most significant street ponding is just east of Gessner where the roadway gutter elevations are approximately 2-ft below the top of bank at the W151 channel. Overflows from the road drain to Zone 6 and 8. Storm sewers are undersized based on high tail water conditions.

W151-00-00 Channel – Limited capacity available for W151 Channel creates high tail water conditions that result in backwater at Barryknoll near Gessner, and at Bunker Hill and Barryknoll that is roughly 2.5-ft below the top of bank at the W151 channel. Memorial Drive Culvert at W153 Channel – Existing culvert was constructed with utility obstructions that limit the capacity of the cross-culvert and cause backwater for the channel immediately upstream (north) of Memorial Drive.

4.6.1.7 *Study Area Zone 7: South Gessner*

Zone Description

This primary study area (inlet level) of 150-acres is located south of Memorial Drive, east of Gessner Road, west of Channel W151-00-00, and bounded on the south by Buffalo. The zone is drained by multiple storm sewer systems outfalling to either W151-00-00 or directly to Buffalo Bayou (W100-00-00). Major storm sewer trunk lines are located along Memorial Drive (48" RCP) to W151-00-00 and Gessner Road (60" CMP) to Buffalo Bayou (W100-00-00).

Existing Conditions Analysis Results

Approximately half of the storm sewers within the zone meet 2-year, 24-hour storm sewer criteria. The rest of the storm sewer not meeting minimum criteria create significant areas of excessive ponding along Stoneycreek Drive, Haversham Drive, and portions of Gessner Road. A portion of Gessner Road just north of Buffalo Bayou is depressed relative to the adjacent area. The result is an area of extreme ponding with depths in excess of 3-feet in this portion of Gessner Road. A small portion of the storm sewer within the zone is able to convey the 10-year, 24-hour storm event. However, during the 10-year, 24-hour storm event a majority of the zone experiences significant localized ponding with some structural flooding.

Street and structural flooding are due primarily to insufficient storm sewer capacity adverse overland conveyance routes causing excessive ponding depths. Once storm sewer capacity is exceeded in the northern extents of the zone, storm water overland flow travels south along south to Gessner Road. Overland flow generally travels from the northern portion of the zone southwest or south to south Gessner Road. Storm water also accesses Buffalo Bayou, W100-00-00, through overland means south of Gessner Road along Warrenton Drive and inundates structures in the process. Most of the overland sheet flow is contained to the streets with the exception of areas north of Valley Star between Kilts and Warrenton Drives where storm water passes through and around structures at the end of the cul-de-sac. Additionally, near the intersection of Talmadge and Haversham Drives storm water has the potential to inundate structures between Haversham Drive and Gessner Road due a low spot and insufficient storm sewer relative to the rest of the area.

Primary Existing Problem Areas(See Inundation Exhibits 18, 19 and 20)

- Gessner Road – Excessive street ponding in low area at Warrenton and Plantation. Main contributors to ponding in this area include overflows from storm sewer systems in the neighborhood north and east of Gessner in this area that are undersized. Existing 60-inch CMP outfall to Buffalo Bayou is undersized, and the existing small storm sewer systems that drain to the south have insufficient capacity as well. This area is within the 100-yr flood plain for Buffalo Bayou; however much the ponding is due to the collection of all storm sewer overflows in the area and limited storm sewer capacity to get the water to Buffalo Bayou during more frequent storm events.

- Memorial Drive – Existing storm sewers at Memorial, Warrenton, and Stoney Creek that drain to W151 are undersized and cause overflows to the Gessner Road storm sewer systems that exacerbate ponding at Gessner Road.

4.6.1.8 *Study Area Zone 8: Riedel Estates and Pecan Meadow*

Zone Description

This primary study area (inlet level) of 157-acres is located east of W151-00-00, south of Barryknoll Lane, north of Taylorcrest Road, and approximately bounded on the east by Bunker Hill Drive. The zone is drained primarily by roadside ditches outfalling to storm sewer trunk lines of up to 72" in Barryknoll Lane, Kimberley Lane, Taylorcrest Road, and Bunkerhill Road. The storm sewer trunk lines drain west and outfall into W151-00-00. Several neighborhoods within the zone including Riedel Estates, Bunker Hill Gardens, Bunker Hill Plaza, Bunker Hill Place, and Rainhollow are drained completely by roadside ditches, which drain to the storm sewer trunk line at Barryknoll Lane or Taylorcrest Road.

Existing Conditions Analysis Results

A small portion of the storm sewers within the zone meet the 2-year, 24-hour storm event criteria. Localized ponding is generally prevalent within the area during the 2-year storm event and is excessive along Bunker Hill Road. During the 10-year, 24-hour storm event significant localized ponding and potential for structural flooding within the Riedel Estates neighborhood is present. The roadside ditches within the zone are subject to relatively high tail water conditions due to surcharged storm sewers. Generally, as storm sewer capacity is exceeded on Barryknoll Lane, storm water flows to the south and southeast of Bunker Hill Road into Hedwig Village. Additionally, a limited amount of storm water flows directly south from Taylorcrest Road towards Broken Bough Drive.

Primary Existing Problem Areas(See Inundation Exhibits 18, 19 and 20)

- Bunker Hill Road – This roadway is relatively low as the existing terrain follows historical drainage patterns and generally slopes from the west to east. The area is drained via storm sewer to W151; however overflows from this area drain through properties east of Bunker Hill from Barryknoll to Taylorcrest.

- Riedel Drive – Backwater from Taylorcrest storm sewer system causes significant ponding just north of Taylorcrest at Riedel Drive.

4.6.1.9 *Study Area Zone 9: City of Bunker Hill Village*

Zone Description

Zone 9 is a secondary study area (manhole level) of 239-acres located east of W151-00-00, south of Taylorcrest Road, along Strey Lane, and north of Buffalo Bayou. The zone is drained primarily by storm sewer infrastructure outfalling directly to W151-00-00. Major storm sewer trunk lines are located on Strey Lane and Memorial Drive. This area was included in the study to account for areas draining to W151-00-00.

Existing Conditions Analysis Results

Approximately half of the storm sewer within Zone 9 meets 2-year, 24-hour storm event criteria. The remaining portions of the zone are subject to areas of localized ponding and areas of limited structural inundation for the 2-year storm event. South of Taylorcrest and east of Channel W151-

00-00 localized and structural flooding occur during a 10-year, 24-hour storm event due to insufficient storm sewer capacity. When the capacity of the Strey Lane storm sewer is exceeded overland flow generally flows eastward away from W151-00-00 until reaching Knipp Road. Knipp Road effectively functions as a local high point and prevents water from flowing further east during the 10-year, 24-hour event. Memorial Road from Doncaster Road to Knipp Road also functions as a similar local high point to prevent overland flow from flowing southward. Very little water directly accesses W151-00-00 through overland means due to channel location on a relative high point within the zone.

Primary Existing Problem Areas(See Inundation Exhibits 18, 19 and 20)

- Strey Lane – The lowest areas at Patrick, Surrey, Arbordale, and Raydon have the most significant street ponding for 2-year storm frequency caused by limited inlet and storm sewer capacity.

4.6.1.10 *Study Area Zone 10: W151-00-00 Channel*

Zone Description

Zone 10 is the W151-00-00 channel from Barryknoll Lane to Buffalo Bayou. The W151-00-00 channel south of Barryknoll Lane to Buffalo Bayou consists of two distinct channel cross sections. Between Barryknoll Lane and Memorial Drive, W151-00-00 is a concrete lined prismatic channel section. South of Memorial Drive the channel transitions to a larger natural unimproved channel section with increased channel slope as it drains into Buffalo Bayou.

Existing Conditions Analysis Results

Channel W151-00-00 can convey both the 2-year and 10-year, 24-hour storm events in the concrete lined and natural channel sections. W151-00-00 does not experience frequent bank overtopping, but is limited in the amount of storm water it can convey due to the minimum gutter elevation in the storm sewer areas that drain to W151-00-00. This limits the depth available in the channel for conveyance before flooding adjacent roadways since the location of the channel is relatively high compared to the rest of the area. Water surface elevations during a 10-year, 24-hour storm event at the upstream end of the channel near Barryknoll Lane approach the ground elevation and reduce upstream storm sewer capacity by way of relatively high tail water conditions and create backwater conditions.

5 Improvement Options

Several alternatives were evaluated for each of the identified problem areas. The improvement options discussed in the following sections represent the most effective and constructible projects evaluated for a problem area. Numerous improvement alternatives and variations were considered for each zone. The most viable projects were determined based on the below criteria:

- Eliminate or minimize structural flooding
- Minimize street ponding
- High value solutions that benefit a significant area

Improvement alternatives were recommended primarily to address structural flooding. Excessive street or localized flooding was addressed for locations that influence and impact areas with structural flooding. Improvement alternatives were not recommended for localized problem areas without structural flooding.

Improvement options were evaluated at a conceptual level to guide the TIRZ 17 CIP development and are subject to change pending more detailed evaluation during preliminary engineering, design and construction. Consistent with the City's extended feasibility study process, a full analysis of the most viable improvement projects is required during the Preliminary Engineering Report phase where complete topographic, utilities, storm sewer and/or channel survey can be evaluated to a construction level.

Enhancements and changes to drainage systems are ongoing and could alter recommendations for this report. Improvements identified under this cover represent the opportunities present at the time of the TIRZ 17 CIP approval in August of 2011. It is our understanding that some improvement opportunities recommended as part of this report may not have the full support of the necessary partners and thus may not be done or done in the form envisioned in this report. This may necessitate re-evaluation of certain recommended projects or the development of alternative projects.

Improvement options were evaluated in greater detail for the primary study areas relative to the secondary study areas. As a result, improvement options for secondary drainage systems are provided for informational purposes only. Further analysis of the secondary areas is recommended prior to advancing improvements.

5.1 Design and Evaluation Criteria

Several categories were reviewed to evaluate project viability and compare projects including: funding partners, benefit/cost ratio, number of structures removed from flooding, expedited projects, regional CIP project overlap, constructability, number of intersections removed from flooding, construction impacts to the community, and reliance on other projects. Improvement project performance was evaluated for the 10-year, 24-hour storm event to be consistent with TIRZ

17 goals, the HCFCD Implementation Study and the HCFCD Unit W151-00-00 from Buffalo Bayou to IH-10 Study.

Storm sewers were designed according to the 2-year storm event, but evaluated for the 10-year storm event in order to determine performance under greater events. Improvement alternatives were also evaluated for the 100-year event to evaluate downstream impacts and determine measures required to mitigate no adverse downstream impacts. In circumstances where improvements to overland flow conditions to achieve a sufficient level of surface for the extreme event were not feasible, attempts were made to improve sub-surface drainage systems to prevent structural flooding for the 10-year event. Proposed improvement projects are shown on Exhibits 21 and 22.

5.1.1 Hydraulic Parameters and Calculations

Hydraulic parameters and calculation methods for improvement alternatives were kept consistent with those defined during the existing conditions portion of the modeling effort. Changes were made to roughness values for round pipe storm sewers were replaced with box culverts. Drainage areas remained consistent with existing conditions throughout the improvement alternative evaluation process

5.2 Potential Improvement Options

A number of potential improvement options for the study area were considered, but several were ultimately determined to be unviable for the study area. Existing commercial and private detention basins within the study area were evaluated to determine if it was possible to increase their size in order to provide a regional benefit. It was not possible to improve any of the existing basins to comply with City of Houston, HCFCD, and Harris County requirements and provide a useful regional benefit. Storm sewer improvement projects were also considered along South Bunker Hill between Barryknoll Lane and Taylocrest road, but were deemed unviable due to the lack of benefit to the surrounding area. The high tail water condition present within Barryknoll Lane prevents South Bunker Hill improvements from providing any meaningful benefit.

Other drainage improvement projects exist within the Lumpkin Roadway and Town and Country Road TIRZ 17 CIP projects, but are located outside of the TIRZ 17 Regional Drainage Study area.

5.3 Zone 2: South of Long Point Road and North of IH-10

5.3.1 Briar Branch Channel Improvements with Mitigation Detention – Project ID: W140-A

Location and Improvement Description (Exhibits 23, 24)

This improvement alternative considers the improvements of Briar Branch Ditch, W140-01-00, from an irregular grass lined channel section west of Bunker Hill Road to an improved prismatic concrete lined channel section. Channel improvements consisting of a "U" shaped cross section would extend along W140-01-00 from approximately 1,800-feet east of Bunker Hill Road to the intersection of W140-01-00 and Gessner Road (see Exhibit 24). Due to limited channel right of way, typical channel cross sections are not viable to achieve reasonable improvement benefits. A proposed off-channel detention basin is necessary. The basin may be located east of the Costco and Lowe's at Bunker Hill and IH-10 where there is undeveloped land available. This detention basin will serve to mitigate channel impacts due to increased channel conveyance and storm sewer

improvement projects (W140-A, W140-B) to pre-improvement. Additionally, an in-channel sheet pile weir structure is necessary to provide linear storage upstream of Bunker Hill road.

Existing cross structures at Witte Roads will need to be increased in size from 2-48" RCP's to 2-5'x5' RCB's to compensate for the increased channel conveyance, to maximize the benefits of the proposed improvement, and to match the lowered channel flowline.

Other alternatives investigated include: multiple channel configurations with combinations of grass lined sections or low flow sections to match the channel configuration downstream of Bunker Hill Road, enlarged bridge cross culverts at Bunker Hill Road, and additional in-channel weirs within the Briar Branch Ditch. The eventual improvement of the channel will be determined by HCFCD, the entity responsible for the channel. Depending on the timing of the ultimate channel improvement project, interim improvements may be necessary to realize some of the benefits of the proposed detention pond including possible changes to the Witte Road and Bunker Hill Road bridges that cross the channel.

Evaluation

This improvement offers significant benefits south of the Long Point Fault in terms of ponding and overall flooding reduction. Ponding extents are reduced primarily to the street right of way and results in a significant reduction in flooded structures. Roadway ponding is reduced along Gessner and Witte Roads between W140-00-00 and the IH-10 Frontage Road. Ponding along Cedardale Drive, Larston Street, Pine Lake Drive, Demaret Lane, Windover Lane, and Bunker Hill Road between Westview Drive and W140-01-00 is significantly reduced under this improvement alternative. Additional reductions in roadway ponding are also achieved along the west bound frontage road of IH-10. Through the use of an in channel weir and off channel detention pond, downstream flows in W140-01-00 are maintained or reduced for various frequencies. The improvements remove approximately 138 structures from inundation under the 10-year, 24-hour storm event. Due to low street elevations and the very flat topography north of the Long Point Fault, reductions in street ponding are minimal. This improvement provides minimal benefit to areas east of Bunkerhill Road abutting W140-01-05, Springrock Lane, and Confederate Road. This area is generally lower in elevation relative to the adjacent land west of Bunker Hill and is susceptible to existing tail water conditions immediately downstream of the proposed improvement. The proposed pond by itself, which has limited capacity based on land available, is inadequate to lessen tail water elevations significantly for a 10- and 100-year event. Additional benefits would be possible through channel improvements and detention further downstream. However, a cursory review of potentially available detention sites downstream indicates limited opportunity. Open areas for potential downstream detention are shown in Exhibit 36.

Improvement Type (Major/Considerable/Expedited): Major

Existing TIRZ CIP Project (Yes/No):No

Outfall Channel: Briar Branch W140-01-00

Study Area (Primary/Secondary): Primary

Project Dependence (Yes/No): No

Mitigation Required (Yes/No): Yes – required to prevent downstream impacts on Briar Branch. The estimated mitigation volume necessary to prevent downstream impacts is 43 ac-ft.

Adequate Mitigation Identified (Yes/No): Yes

Mitigation Cost Included (Yes/No): Yes

Project Cost (Includes engineering and ROW): $12,600,000

5.3.2 Localized Storm Sewer Improvements to Windover, Demaret, and Larston Streets – Project ID: W140-B

Location and Improvement Description (Exhibit 27)

This improvement alternative builds on the improvements to Briar Branch Channel and leverages the decreased tail water condition to provide additional conveyance to lower street ponding within neighborhoods. Improvements in this alternative include upsizing existing 15- to 24-inch storm sewer along Demaret Lane and Larston Streets between W140-01-00 and Westview Drive to 3'x3' box storm sewer. Additional storm sewer improvements are required along Windover lane from W140-01-00 to Westview Drive to replace existing dual 24-inch storm sewer with 6'x4' box storm sewer. The new storm sewer along Windover Lane will need to be interconnected with the storm sewer at Westview Drive to offer multiple outfalls and decreased ponding. The interconnect between Windover Lane and Westview Drive storm sewers will assist in decreasing ponding along Westview from at the intersection of Windover Lane to Moorhead Drive. Consideration should be given to the possible extension of improvements to Demaret Lane north to the Westview Drive intersection during the PER phase of this improvement. This extension could serve to improve flooding conditions at the intersection of Westview Drive and Demaret Lane by acting as an additional conveyance route from Westview Drive to Briar Branch.

Evaluation

Localized roadway ponding reductions are achieved in areas immediately near the storm sewer improvements. Sizable ponding reductions are seen at the intersection of Westview Drive and Windover Lane due to the additional storm sewer interconnect. This improvement removes approximately eight additional structures from inundation during the 10-year, 24-hour event when compared to the Briar Branch Channel and detention pond improvement project alone. This project has no value without the proposed improvements for Briar Branch.

Improvement Type (Major/Considerable/Expedited): Considerable

Existing TIRZ CIP Project (Yes/No): No

Outfall: Briar Branch W140-01-00

Study Area (Primary/Secondary): Primary

Project Dependence (Yes/No): Yes – Briar Branch Channel Improvements with Detention

Mitigation Required (Yes/No): Yes – included in Briar Branch Channel Improvements with 43 ac-ft of proposed Detention.

Adequate Mitigation Identified (Yes/No): Yes

Mitigation Cost Included (Yes/No): No – cost included in the Briar Branch Channel Improvements with Detention

Project Cost (Includes engineering): $1,000,000

5.4 Zone 3: City Centre and Town and Country Village

5.4.1 Kimberley Road Improvements – Project ID: W153-E

Location and Improvement Description (Exhibit 28)

This improvement alternative is designed to increase the level of service of the storm sewer along Kimberley Road from the Sam Houston Tollway Frontage Road to West Bough Lane. The intersection of Town and Country Boulevard is subject to excessive ponding during storm events and is frequently impassible. The improvement alternative will reconstruct the roadway approximately 12-inches higher than the existing roadway and install a 6'x3' box culvert in parallel with the existing storm sewer system beneath the roadway surface to offset the existing surface storage. The outfall into the Sam Houston Tollway Frontage Road trunk line system will be limited to pre-improvement flow through the use of a restrictor pipe.

Evaluation

Significant ponding reductions are seen in the vicinity of Kimberley Lane between the Sam Houston Tollway Frontage Road and West Bough Drive. Evaluation of the proposed changes in overland sheet flow for the existing and proposed project scenarios identified no significant changes in flow in the adjacent problem areas. The proposed improvements also reduce the potential for structural inundation.

Improvement Type (Major/Considerable/Expedited): Considerable

Existing TIRZ CIP Project (Yes/No): Yes– T-1718

Outfall: Sam Houston Tollway Frontage Road Storm Sewer

Study Area (Primary/Secondary): Primary

Project Dependence (Yes/No): No

Mitigation Required (Yes/No): No – this project will have no impacts

Adequate Mitigation Identified (Yes/No): N/A

Mitigation Cost Included (Yes/No): N/A

Project Cost (Includes engineering): $3,100,000

5.4.2 West Bough Improvements – Project ID: W153-D and Memorial West – Project ID: W153-F

Location and Improvement Description (Exhibits 29 and 30)

West Bough is a sub-regional drainage divide as the west half of West Bough is served by a storm sewer system that drains west to the Sam Houston Frontage Road and ultimately to Buffalo Bayou. The east half of West Bough drains to a storm sewer system on Memorial that drains to the east ultimately to W153-00-00.

This improvement alternative will increase storm sewer conveyance along West Bough Lane from Kimberley Lane to Memorial Drive. Currently, the storm sewer along West Bough Lane consists of a mix of 18″ storm sewer and relatively shallow roadside ditches. The proposed storm sewer improvements of 36″ storm sewer to 3′x3′ box culverts will be along the east and west sides of West Bough Lane and maintain existing storm sewer connections at Memorial Drive. This improvement alternative also includes a 54″ storm sewer to a 3′x3′ box storm sewer along Memorial Drive provides conveyance capacity for the future West Bough Lane (western side) storm sewer improvements. The proposed improvements will also offset the impact from the addition of two left turn lanes along Memorial Drive between the Sam Houston Tollway Frontage Road and West Bough Lane. The proposed storm sewers will be installed parallel to the existing storm sewer along Memorial Drive to provide inline detention and storm water storage. Throughout the report these improvement projects are referred to separately as W153-D and W153-F.

Other alternatives investigated include: rerouting the drainage area on the west side of West Bough to the west down Memorial Drive instead of southeast and interconnecting both sides of West Bough. Both alternatives were estimated to have undesirable downstream impacts during extreme event conditions and could require more mitigation volume than available on site.

Evaluation

With improved tail water conditions on Memorial Drive, the storm sewer improvements along West Bough Lane will offer significant benefit. However, implemented separately this improvement results in decreased roadway ponding between the northern most entrance of the Town and County Village Shopping Center along West Bough Lane and the Pines Presbyterian Church. Conditions elsewhere remain significantly unchanged.

Improvement Type (Major/Considerable/Expedited): Considerable

Existing TIRZ CIP Project (Yes/No): Yes – T-1718 & T-1726

Outfall: Sam Houston Tollway Frontage Road Storm Sewer

Study Area (Primary/Secondary): Primary

Project Dependence (Yes/No): Yes – Memorial West W153-F

Mitigation Required (Yes/No): No – this project will have no impacts

Adequate Mitigation Identified (Yes/No): Yes – Memorial West W153-F

Mitigation Cost Included (Yes/No): Yes

Project Cost (Includes engineering): $3,600,000

5.5 Zone 4 and Zone 6: W153-00-00, Fonn Villas, Memorial Hollow, Memorial Woods, Memorial Forest, Frostwood Neighborhoods

5.5.1 Memorial East Improvements – Project ID: W153-C

Location and Improvement Description (Exhibit 31)

As previously noted, West Bough is a sub-regional drainage divide as the west half of West Bough is served by a storm sewer system that drains west to the Sam Houston Frontage Road and ultimately to Buffalo Bayou. The east half of West Bough drains to a storm sewer system on Memorial that drains to the east ultimately to W153-00-00.

This improvement alternative will increase storm sewer conveyance along Memorial Drive from West Bough Lane to W153-00-00. The existing 24-inch storm sewer and open roadside ditch will be replaced with 4'x3' to 5'x4' box storm sewers. This improvement alternative provides the necessary flowline depth (W153-D) and conveyance requirements for future eastern West Bough Lane storm sewer improvements previously proposed.

Evaluation

Significant reductions in ponding along Memorial Drive from West Bough Lane to W153-00-00 are possible in this improvement alternative. Overland sheet flow from Memorial Drive to Cobble Stone Drive is eliminated as well as overland sheet flow from Memorial Drive through structures and Boheme Drive to Faust Lane. Overland flow is also reduced from Memorial Drive through private development to Mignon Lane. Roadway ponding is decreased on Boheme Drive between Memorial Drive and Gretel Drive. Roadside ditch ponding is reduced on the north and east side of Memorial Drive. This reduction in ponding extents and depths will remove approximately 10 structures from inundation during a 10-year, 24-hour storm event.

Improvement Type (Major/Considerable/Expedited): Considerable

Existing TIRZ CIP Project (Yes/No): No

Outfall: W153-00-00

Study Area (Primary/Secondary): Primary

Project Dependence (Yes/No): No

Mitigation Required (Yes/No): Yes – Mitigation is necessary to prevent impacts to W153-00-00 and/or Buffalo Bayou. The estimated mitigation volume necessary to prevent downstream impacts is 25 ac-ft.

Adequate Detention Identified (Yes/No): Yes – Mitigation may be provided as part of the W153-00-00 and Tallowood Road storm sewer improvements or provided by HCFCD elsewhere on Buffalo Bayou.

Mitigation Cost Included (Yes/No): No

Project Cost (Includes engineering): $4,100,000

5.5.2 W153-00-00 and Tallowood Road Improvements – Project ID: W153-A

Location and Improvement Description (Exhibit 32A)

This improvement alternative will increase the storm sewer conveyance and add detention storage in the W153-00-00 watershed and reduce the adverse impact of high tail water conditions in Buffalo Bayou. This alternative consists of improving north/south conveyance along Tallowood Road from W153-00-00 to Memorial Drive and replacing the 72" RCP roadway culvert at Tallowood Road and W153-00-00. The Tallowood System functions as a relief or bypass system for W153-00-00 and is in lieu of improvements to the existing box culvert crossing beneath Memorial Drive. Additional storm sewer conveyance in the form of an 8'x8' box storm sewer is proposed on Tallowood Road from Overcup south to Memorial Drive that ultimately outfalls into Buffalo Bayou. The existing to roadway cross culvert at Tallowood Road would be replaced with a 10'x6' culvert in order to increase stormwater conveyance capacity and decrease upstream water surface elevations. There appears to be undeveloped land south of Memorial Drive between Legend Lane and Litchfield Lane that could be used for a detention pond. If available, the potential available storage volume for this site is estimated to be approximately 280 acre-feet. Alternatively, detention could be provided elsewhere along Buffalo Bayou in the form of regional detention.

Other alternatives investigated include: increasing open channel conveyance of W153-00-00 from Tallowood to Memorial Drive, increasing the size of the Memorial Drive culvert crossing, and potentially rerouting upstream contributing flow. The Tallowood relief system provides a more efficient means of increasing downstream conveyance in the W153-00-00 than open channel improvements between Tallowood and Memorial Drive. This portion of the channel is tightly surrounded by homes and has limited room for improvement. Additionally, if this stretch of channel was to be improved without downstream conveyance improvements the overall benefit to the area would be relatively minor. Increasing the W153-00-00 culvert capacity beneath Memorial Drive would be a costly undertaking due to existing sanitary utility conflicts and somewhat limited upstream open channel conveyance. With increased culvert capacity upstream improvements would be necessary to take advantage of the full conveyance capacity. No suitable flow rerouting through new or additional storm sewer was available for any contributing drainage area to W153-00-00 of any meaningful size.

Evaluation

The addition of a parallel storm water conveyance system to W153-00-00 along Tallowood Road provides significant relief to W153-00-00 as shown on Exhibit 31A and reduces the inundation extents of the 10-year, 24-hour storm event within the W153-00-00 watershed. Water surface elevations within the W153-00-00 channel banks are reduced at Memorial Drive. The reduction in water surface within the channel improves the tail water condition for all of the systems north of Memorial Drive including the Fonn Villas Subdivision storm sewer outfalls. With an improved tail water condition, the storm sewers will be able to more efficiently provide drainage and decrease ponding within the neighborhood. Increased conveyance and decreased downstream tail water conditions at W153-00-00 and Tallowood Road remove Tallowood from inundation during the 10-year event.

Improvement Type (Major/Considerable/Expedited): Major

Existing TIRZ CIP Project (Yes/No): No

Outfall Channel: W153-00-00

Study Area (Primary/Secondary): Primary

Project Dependence (Yes/No): No

Mitigation Required (Yes/No): Yes – mitigation is required prior to the construction of the Tallowood System. The estimated mitigation volume necessary to prevent downstream impacts is 130 ac-ft.

Adequate Mitigation Identified (Yes/No): Yes – either from regional detention along Buffalo Bayou or from development of proposed local detention basin. Only a portion of the open site along Memorial Drive would be required.

Mitigation Cost Included (Yes/No): Yes

Project Cost (Includes engineering and ROW): $3,500,000

Approximate Number of Structures Removed from Flooding: 35

5.5.3 W153-00-00 Conveyance Structures – Project ID: W153-B

Location and Improvement Description (Exhibit 31B)

This improvement alternative will increase the storm sewer conveyance in the W153-00-00 watershed and decrease overland sheet flow from entering structures. Included in this improvement alternative are conveyance structures from the western ends of Broken Arrow Street, Broken Bough Drive, and Cobblestone Drive to the headwaters of W153-00-00. Route evaluations for the conveyance structures from the western ends of Broken Arrow Street, Broken Bough Drive, and Cobblestone Drive will need to be completed as part of the standard PER process. There is not a current ROW or easement available along this route. This improvement is proposed in conjunction with the W153-00-00 and Tallowood Improvements and the benefits below include that project. Preliminary pipe sizes are estimated to be 36" but subject to change during PER or final evaluation phases. Alternative routing of this improvement may include storm sewer south down Frostwood to Old Oaks to Tallowood and ultimately to W153-00-00. However, this alignment would be most costly and disruptive to the area.

Other improvement alternatives include conveying excess overland flow through small open swales or additional downstream storm sewer improvements. These open swales would be subject to additional ROW requirements compared to storm sewer improvements leading to increased cost and longer project schedule. Excess overland flow could also be carried away from structures through storm sewer alignments other than those discussed above, but could be limited by available ROW and surface street connectivity.

Evaluation

The addition of storm water conveyance structures from the western ends of Broken Arrow Street, Broken Bough Drive, and Cobblestone Drive to the headwaters of W153-00-00 significantly reduces ponding extents and structural inundations on the aforementioned streets. The inclusion of these conveyance improvements reduces the volume of water crossing the privacy fence located

between Benignus Road and the western ends of Broken Arrow Street, Broken Bough Drive, and Cobblestone Drive.

Improvement Type (Major/Considerable/Expedited): Considerable

Existing TIRZ CIP Project (Yes/No): No

Outfall Channel: W153-00-00

Study Area (Primary/Secondary): Primary

Project Dependence (Yes/No): Yes – To be constructed with W153-00-00 and Tallowood Road Improvements

Mitigation Required (Yes/No): Yes – Mitigation should be included with the construction of the Tallowood System. The estimated mitigation volume necessary to prevent downstream impacts is 130 ac-ft.

Adequate Mitigation Identified (Yes/No): Yes – either from regional detention along Buffalo Bayou or from development of proposed local detention basin. Only a portion of the open site along Memorial Drive would be required.

Mitigation Cost Included (Yes/No): Yes

Project Cost (Includes engineering and ROW): $3,500,000. Project cost included in project W153-A

5.6 Zone 5: Memorial City Region

5.6.1 Barryknoll East and West Improvements – Project ID: W151-A

Location and Improvement Description (Exhibit 32)

This improvement alternative will increase storm sewer conveyance and storage along Barryknoll Lane between Gessner Road and Bunker Hill Road. The goal of this project is to improve the level-of-service along Barryknoll Lane and the adjacent north/south thoroughfares, Bunker Hill Drive and Gessner Road, and to reduce overland sheet flow into the adjacent communities to the south. Dual 10'x6' box storm sewers are proposed between W151-00-00 and Bunker Hill Drive and dual 9'x5' box storm sewer is recommended between Gessner Road and W151-00-00. This improvement alternative was previously identified as part of the HCFCD W151-00-00 Feasibility Study. The proposed storm sewer improvements are similar to those recommended in the HCFCD Implementation Study.

Evaluation

This improvement alternative was evaluated for three different scenarios. Scenario 1 included improved conveyance along Strey Lane. Scenario 2 includes improved conveyance within W151-00-00 without a restriction of discharge from Barryknoll Lane. Scenario 3 assumes no north/south conveyance improvements (no Strey Lane or W151-00-00) requiring a restrictor on Barryknoll Lane to prevent downstream impacts.

Scenario 1 offers significant benefits to the area surrounding Barryknoll Lane including the City of Hedwig Village and the City of Bunker Hill. Inundation extents and limits are reduced in the Riedel Estates, Memorial Woods, Memorial Hollow, and throughout the Memorial City region through this improvement alternative. The Strey Lane storm sewer improvements relieve water from the Barryknoll Storm sewer system and greatly increase the storm sewer level of service within the area. Additional benefits of the Strey Lane storm sewer improvement project are discussed in Section 5.8.1. As part of this improvement alternative overland sheet flow entering the City of Hedwig Village and the City of Bunker Hill Village area is greatly reduced.

Scenario 2 offers moderate benefits to the area surrounding Barryknoll Lane relative to Scenario 1. Inundation extents and limits are moderately reduced in the Riedel Estates, Memorial Woods, Memorial Hollow, and throughout the Memorial City region through this improvement alternative. The improvements to channel W151-00-00 lower the receiving tail water for the Barryknoll Lane storm sewer system and allow the proposed storm sewer to function more efficiently than it does during the existing conditions. Overland sheet flow entering the City of Hedwig Village is marginally reduced and overland sheet flow entering the City of Bunker Hill Village is minimally reduced. It should be noted, conveyance improvements to W151-00-00 result in an instance of excessive freeboard, but would be necessary due to low surrounding street elevations.

Scenario 3 offers mimnal benefits to the area surrounding Barryknoll Lane relative to Scenarios 1 and 2. Storm sewer capacity beneath Barryknoll Lane is primarily controlled by tail water conditions at W151-00-00. Minimal head loss occurs within the proposed storm sewer, but elevated hydraulic grade lines within the storm sewer system are still present due to high tail water conditions at W151-00-00. The Barryknoll Lane area is also influenced by the lack of elevation difference between Barryknoll Lane and the storm sewer outfall into W151-00-00. High tail water conditions within W151-00-00 for the 10-year event are near to the ground elevation of Barryknoll Lane, creating an undesirable hydraulic condition. Due to the tail water level, any significant head loss within the storm sewer system exacerbates roadway ponding. The observed improvements to ponding extents and depths remove approximately four structures from inundation under the 10-year, 24-hour storm event. Significant improvements to drainage in this area depend on future improvements to W151-00-00 or other options to drain storm water away from Barryknoll Lane.

Improvement Type (Major/Considerable/Expedited): Considerable

Existing TIRZ CIP Project (Yes/No): Yes, T-1715

Outfall Channel: W151-00-00

Study Area (Primary/Secondary): Primary

Project Dependence (Yes/No): Yes – Scenarios 1 and 2 depend on the Strey Lane or the W151-00-00 channel improvements, respectively (W151C).

Mitigation Required (Yes/No): Yes – Scenarios 1 and 2 are dependent on projects that require mitigation. Scenario 3 does not increase discharge to W151-00-00 and therefore does not require mitigation.

Adequate Mitigation Identified (Yes/No): No

Mitigation Cost Included (Yes/No): No

Project Cost (Includes engineering): $9,000,000

5.6.2 Frostwood and Kingsride Improvements – Project ID: W151-B

Location and Improvement Description (Exhibit 33)

This improvement alternative will increase storm sewer conveyance along Frostwood Drive from the IH-10 East Bound Frontage Road to Kingsride Lane and along Kingsride Lane from Frostwood Drive to Gessner Road. These storm sewer improvements leverage the downstream improvements discussed in prior sections (W151-A) and those already installed along Gessner Road. In addition, these improvements will help limit overland sheet flow entering the Frostwood neighborhood south of Barryknoll Lane. The existing 48″ to 54″ storm sewer would be replaced with a single 8'x5' box storm sewer.

Evaluation

This improvement alternative reduces ponding along Frostwood Drive from Barryknoll Lane to the East Bound IH-10 Frontage road. Overland sheet flow is prevented from crossing from Kingsride Lane to Barryknoll Lane and consequently overland sheet flow entering the Frostwood neighborhood is reduced. The reduction of overland sheet flow entering the Frostwood Neighborhood reduces ponding along Queensbury Lane, Pinerock Lane, and Woodthorpe Lane between Benignus Road and Gessner Road. Approximately one (1) additional structure is removed from structural flooding during the 10-year, 24-hour storm event when compared to the Barryknoll improvement project alone.

Improvement Type (Major/Considerable/Expedited): Considerable

Existing TIRZ CIP Project (Yes/No): Yes – T-1714, T-1719

Outfall: Gessner Road Storm Sewer

Study Area (Primary/Secondary): Primary

Project Dependence (Yes/No): No – The benefits of the improvement are maximized with the Barryknoll and Strey Lane Improvements (W151-A).

Mitigation Required (Yes/No): No – on its own.

Adequate Mitigation Identified (Yes/No): No

Mitigation Cost Included (Yes/No): No

Project Cost (Includes engineering): $6,700,000

5.7 Zone 7: South Gessner

5.7.1 South Gessner Road Storm Sewer Improvements – Project ID: W100-A

Location and Improvement Description (Exhibit 34)

This improvement alternative will decrease the amount of excessive street ponding located along Gessner Road between Haversham Drive and Stoney Creek Drive. The excessive street ponding

on Gessner Road is primarily due to cascading overland sheet flow paths north of the Gessner Road. Overland sheet flow from the north is due to insufficient upstream storm sewer capacity and the resulting adverse overland conveyance. Existing overland sheet flow originates at the intersection of Memorial Drive and Stoney Creek Drive and flows generally south and southeast along multiple roadways. Additional overland sheet flow within the zone also drains south and southeast to Gessner Road. Flow also enters Haversham Drive at the intersection of Valley Star Drive and Haversham Drive. Storm water eventually accesses Buffalo Bayou, W100-00-00, through overland means south of Gessner Road along Warrenton Drive.

To reduce the cascading overland sheet flow from drainage system to drainage system, improvements are needed to existing 18- to 30-inch storm sewers located along Stoney Creek Drive, Valley Star Drive from Plantation Road to W151-00-00, Haversham Drive from Valley Star to Talmadge Drive, Talmadge Drive from Haversham Drive to W151-00-00. These improvements also require upsizing the secondary storm sewer on Gessner Road from Haversham Drive to Stoney Creek Drive. Additional outfall capacity of the 24" to 30" secondary Gessner Road storm sewer will also be necessary. Improvement recommendations range in size from 3'x3' to 5'x4' box storm sewer. Warrington Drive could also be used as an alternative outfall for the secondary storm sewer system on Gessner Road. Warington Drive is lower in elevation than the surrounding area along Gessner Road and would follow the current path of overland sheet flow. This proposed improvement project could be modified to only include improvements within the City of Houston if a project partnership with the City of Bunker Hill was not possible. The drainage deficiencies in this area could be solved in a variety of ways with other alternative storm sewer improvements.

Another possible alternative is to increase the storm sewer conveyance capacity and remove the restrictor within the main Gessner Road trunk line from Haversham Drive to the system outfall at Buffalo Bayou. This would have the potential for significant downstream impacts on Buffalo Bayou due to increased flow rates and would require mitigation volume elsewhere on Buffalo Bayou. However, even this improvement would likely not create a significant regional benefit.

Evaluation

The combination of the multiple storm sewer improvements offers significant localized benefit to the area near Gessner Road and Buffalo Bayou. Roadway ponding will be significantly reduced along the problem areas for the 10-year, 24-hour storm event. Maximum street ponding at the intersection Warrenton Drive and Gessner Road is significantly reduced from approximately 4.0-feet to 1.7-feet with this proposed improvement. The reduction in ponding extents and decreased depth could allow traffic to pass on the outside lanes of Gessner Road. Additionally, approximately 24 homes are removed from inundation during the 10-year, 24-hour storm event.

Improvement Type (Major/Considerable/Expedited): Considerable

Existing TIRZ CIP Project (Yes/No): No

Outfall: W151-00-00 and W100-00-00

Study Area (Primary/Secondary): Primary

Project Dependence (Yes/No): No

Mitigation Required: Yes – Mitigation required to prevent impacts to Buffalo Bayou. The estimated mitigation volume necessary to prevent downstream impacts is 30 ac-ft.

Adequate Mitigation Identified (Yes/No): Yes - Mitigation could be provided as part of the W153-00-00 and Tallowood Road storm sewer improvements or provided by HCFCD elsewhere on Buffalo Bayou.

Mitigation Cost Included (Yes/No): No

Project Cost (Includes engineering): $2,000,000

5.8 Zone 8 & Zone 9: Riedel Estates, Pecan Meadow, and City of Bunker Hill Village

5.8.1 Strey Lane Road Improvements – Project ID: W151-C

Location and Improvement Description (Exhibit 35)

This improvement alternative will increase storm sewer conveyance from the northern extents of the W151-00-00 drainage area to Buffalo Bayou, W100-00-00. This improvement option builds on a drainage improvement plan by the City of Bunker Hill to construct storm sewer improvements along Strey Lane from Taylorcrest Road to Pebble Hill Drive. The City of Bunker Hill proposes a single box culvert for the described limits coupled with isolating the existing outfalls to W151-00-00 from the eastern side. Implementation of the expanded (relative to the City of Bunker Hill's planned improvements) proposed improvement option benefits several entities as discussed in the Barryknoll Improvements. This potential project was evaluated at the direction of HCFCD and funding in order to determine the maximum size of storm sewer improvements possible and the benefit of such improvements during the 10-year, 24-hour storm event.

Storm sewer improvements include dual 10'x8' box culverts south along Bettina Lane from Barryknoll Lane to Kimberley Lane and south until intersecting Taylorcrest Road at Bunker Hill Elementary School. At Taylorcrest Road the improvements will extend east to Strey Lane where they will outfall to W151-00-00 at Pebble Hill Drive. Minor channel improvements downstream of Pebble Hill Drive may be needed in order to tie into the more steeply sloped section of W151-00-00. Alternatively, if an elevated level of service is not desired the proposed Strey Lane Improvements could consist of a single 9'x6' box culvert south along Bettina Lane from Barryknoll Lane to Kimberley Lane and south until intersecting Taylorcrest Road at Bunker Hill Elementary School. At Taylorcrest Road the improvements will extend east to Strey Lane where they will outfall to W151-00-00 at Pebble Hill Drive.

Existing storm sewer systems outfalling to W151-00-00 east of the channel can be rerouted and cutoff from the channel. Storm sewers east of W151-00-00 along Barryknoll Lane, Kimberley Lane, Taylorcrest Road, Cobblestone Drive, Memorial Drive, and Norvel Court will be disconnected from W151-00-00 and rerouted to drain east into the proposed Strey Lane storm sewer improvements. By removing these existing systems from W151-00-00, the water surface elevations within the channel can be effectively reduced and enable upstream storm sewer systems along Barryknoll Lane to drain more efficiently.

Other alternatives investigated include additional storm sewer south of Pebble Hill Drive to provide a secondary outfall to W151-00-00 in the event that ROW is unable to be secured. This alternative

would have a higher construction cost due to increased box quantities, but could decrease the erosion potential for outfalling two large boxes in one location along W151-00-00. Alternatively, if the City of Bunker Hill chooses not to participate in an expanded improvement option, TIRZ 17 will work with other interested partners in pursuing a project which reduces the water surface elevation in W151-00-00 via other improvements, including improvements to the channel itself.

Evaluation

Significant regional benefits are possible within the study area south of IH-10 with the implementation of this improvement alternative. Maximum ponding depths and extents are reduced through much of the study area east of Gessner Road and south of IH-10. Ponding along Barryknoll Lane between Gessner Road and Bunker Hill Road is reduced. The reduction in ponding also reduces sheet flow from Barryknoll Lane east into Hedwig Village and southwest to the Frostwood Neighborhood. This overland flow reduction significantly reduces the ponding extents and depths east of W151-00-00 between Gaylord Street and Memorial Drive for the 10-year, 24-hour storm event. Ponding extents and depths are reduced within the Frostwood Neighborhood in large part due to the decrease in overland flow south from the intersections of Barryknoll Lane and Frostwood Drive and Barryknoll Lane and Gessner Road. An estimated 95 homes are removed from inundation during the 10-year, 24-hour storm event within the region.

Improvement Type (Major/Considerable/Expedited): Major

Existing TIRZ CIP Project (Yes/No): No

Outfall Channel: W151-00-00

Study Area (Primary/Secondary): Primary and Secondary

Project Dependence (Yes/No): No

Mitigation Required (Yes/No): Yes – Mitigation is required to prevent impacts to Buffalo Bayou. The estimated mitigation volume necessary to prevent downstream impacts is 42 ac-ft.

Adequate Mitigation Identified (Yes/No): Yes - Mitigation for this alternative could be provided for via regional detention on Buffalo Bayou.

Mitigation Cost Included (Yes/No): No

Project Cost (Includes engineering): $12,700,000

5.9 Zones 1 – 10: All Zones

5.9.1 All Projects Combined

Location and Improvement Description (Exhibits 21 and 22)

This improvement scenario considers all proposed improvement projects described above and covers the entire study area. Potential improvement projects for each zone were developed after evaluating drainage deficiencies. These projects consist of a mixture of new storm sewer, storm sewer replacements/improvements, overland conveyance improvements, channel improvements, and mitigation detention basins.

Evaluation

As a result of this evaluation of this area, benefits to level of service for storm water conveyance and reduction of flooding may be achieved if the proposed improvement projects are implemented. Ponding inundation depths and extents, as well as structural flooding are reduced throughout the study area. Overland sheet flow between zones and drainage systems is also reduced with all of the proposed improvement projects.

Mitigation Required (Yes/No): Yes – Mitigation is required to prevent impacts to Buffalo Bayou and Briar Branch.

Adequate Mitigation Identified (Yes/No): A proposed detention basin site has been proposed on W140-01-00 to mitigate for channel improvements to W140-01-00 and minor storm sewer improvements upstream of the basin. For projects discharging into W153-00-00, mitigation could be provided in a potential detention basin located south of Memorial Drive and east of W153-00-00. Alternatively, mitigation could be provided for projects discharging to W153-00-00 via regional detention on Buffalo Bayou. For projects discharging into W151-00-00 or directly into Buffalo Bayou, mitigation could be provided via regional detention on Buffalo Bayou. There volume required to fully mitigate the recommended improvements to the W151-00-00 sub-watershed via are too large to make onsite detention viable. Therefore, partnering with another party for regional detention is recommended.

Mitigation Cost Included (Yes/No): Yes, where applicable

Project Cost (Includes engineering): $60,800,000

5.10 Expedited Projects

Several locations within the study area could benefit from expedited projects in the form of small localized storm sewer improvements. These areas have localized ponding due to underperforming storm sewer pipes or inlets that could be remedied with minor storm sewer improvements. Proposed expedited improvement projects will not modify the outfall pipe so detention is not necessary. Potential improvement project locations are shown on Exhibit 37.

Vanderpool at Longworth

Localized ponding on Vanderpool Lane at Longworth Lane and Tamerlaine Drive could be reduced through increased storm sewer sizes downstream. Storm sewer improvements would be necessary on Tunbridge Lane from Tealwood to Vanderpool Lane and on Vanderpool Lane from Tunbridge Lane to Longworth Lane. Expanded storm sewer sizes will help to reduce localized ponding.

Beauregard Drive at Memorial Drive

Localized ponding east of the intersection of Beauregard Drive and Memorial Drive could be reduced through by modifying storm sewer connectivity. Currently Beauregard Drive between Memorial Drive and Gessner Road drains on to the storm sewer system on Rip Van Winkle. The Gessner Road storm sewer trunk line, located within the intersection of Gessner Road and Beauregard Drive, appears to have excess capacity when compared to the Rip Van Winkle storm sewer system. This inlet or storm sewer connection on Beauregard Drive could be rerouted to

Gessner Road to reduce localized ponding along Beauregard Drive between Memorial Drive and Gessner Road.

South Gessner Road

Localized ponding on Gessner Road between Barryknoll Lane and Kimberley Lane could be reduced through increases in storm sewer sizes. If tail water conditions at Gessner Road and Barryknoll Lane were reduced through proposed improvement projects, additional storm sewer between Barryknoll Lane and Kimberley Lane could prevent additional overland sheet flow from traveling south on Gessner Road.

IH-10 Corridor Storm Sewer Field Confirmation

Field inspection and confirmation of the IH-10 corridor storm sewer system is recommended in order to make the TIRZ 17 RDS storm water model more reflective of field conditions. Currently, the model includes storm sewer information from as-built drawings and provided modeling information. However, the model does not reflect the extent of frontage road ponding as reported by residents during frequent storm events. Information collected during field confirmation could be used to update and revise the TIRZ 17 RDS storm water model.

5.11 Project Prioritization

5.11.1 Project Prioritization

The proposed improvement projects are prioritized according to seven categories in order to rank projects by overall benefit. Categories evaluated for project prioritization include structures removed from flooding with cost/benefit ratios, capital improvement plan project overlap, project dependence, right of way acquisition, positive mobility impact, positive community impact, and project constructability. Prioritization categories are weighted based on perceived benefit to the community.

5.11.1.1 *Cost/Benefit Ratio*

The cost/benefit ratio for each project was determined as the estimated cost of the improvement including engineering, construction, and ROW where applicable, divided by the average annual damage reduction for the 10-year, 24-hour storm event annualized over an assumed project lifespan of 50-years. The damage reduction was determined by calculating the difference between existing conditions potential flooding damage and the damage estimated under the improvement project.

Storm event damage was determined through a combination of maximum ponding and inundation modeling results, GIS structure outlines, HCAD value and parcel information, and depth-damage curves provided by the United States Army Corps of Engineers (USACE). Maximum ponding depths were associated with the structural outline polygons to determine a depth of flooding within each structure. Structural outlines were provided by the City of Houston. The structural outlines were evaluated for completeness and modified as necessary to reflect construction adjacent to the Sam Houston Tollway and IH-10. Structural outlines were then associated with HCAD parcels and appraised values for the 2010 Tax Year.

The USACE provides generic depth-damage curves for relating the flooding depth of a structure to damage value as based on the appraised value of the structure in Economic Guidance Memorandum (EGM) 04-01. These curves and tables provide the means for calculating expected structural and content damage costs based on structural improvement values for one story, two or more story, and split level structures. As the structural outlines and associated ponding depths do not account for slab elevations, it was assumed that structures were only inundated when the inundation depth associated with that structure is greater than six inches. Once damage costs for each structure were determined, the total damage for the entire study area was then determined.

5.11.1.2 *Capital Improvement Project Plan Overlap*

Available Capital Improvement Plans were reviewed for TIRZ 17, the City of Houston, HCFCD, TxDOT, Bunker Hill Village, and Hedwig Village for projects scheduled to occur within the regional study area. Improvement projects that are within the same area as CIP projects were assigned higher prioritization value since partnering and cost sharing agreements could lower the overall improvement project cost.

5.11.1.3 *Project Dependence*

Improvement projects were evaluated for their dependence on other improvement projects in order to function efficiently. Preference was given to stand alone projects not requiring additional improvements beyond the limits of the individual project. Projects requiring multiple phases constructed in sequence were given lower ranking values due to increased cost and construction time.

5.11.1.4 *Right of Way Acquisition*

Improvement projects were rated on the need for additional right of way acquisition necessary for construction. Projects not requiring significant additional right of way were assigned higher prioritization values due to decreased overall project cost and reduced anticipated project time line. Improvement projects were rated on the number of parcels involved in a potential right of way acquisition.

5.11.1.5 *Positive Mobility Impact*

Improvement projects were rated on the impact to mobility within the study area. Mobility impacts were determined by the number of intersections removed from having more than one foot of ponding. Increased mobility within the study area will lead to better emergency response times and improved driving safety during storm events.

5.11.1.6 *Positive Community Impact*

Improvement projects were rated on the positive impact to the community in terms of the reduction of ponding and inundation near schools and churches within the study area.

5.11.1.7 *Constructability*

Improvement projects were rated on overall constructability in general terms of complex, normal, or minimally difficult construction. Constructability was evaluated on project location, ease of equipment access, right of way constraints, and known utility conflicts.

5.11.2 Project Prioritization Weighting Criteria and Results

Prioritization category rankings and weights are shown in Table 5.1 Project Prioritization Categories. The overall project prioritization ranking is shown in Table 5.2 Project Prioritization List – Rank Sort. Table 5.2 sorts the prioritized projects based on their final and overall ranking. Project dependence was accounted for in the overall weighting. However, the rank order of dependent projects could be higher than the independent projects. To further differentiate projects, the ranked projects have been organized in three tiers shown in Table 5.3. Tier I projects are defined as primary projects for addressing the core drainage problems within the three sub-watersheds and projects that other projects depend on. Tier II projects are defined as projects dependent on Tier I projects or are dependent on the ability to mitigate downstream impacts. Tier III projects are projects with two levels of dependence such as the West Bough project. The West Bough project is dependent on both the Memorial East and West improvements. Table 5.4 groups ranked projects north and south of IH-10.Prioritization categories rankings and weights are in Table 5.1 Project Prioritization Categories.

Table 5.1 Project Prioritization Categories

Project Prioritization Categories		Criteria Score		
Category Descriptions	**Percentage**	**10**	**20**	**30**
# of Structures Removed / $mil of Project Cost	20%	0	5	10
Benefit/Cost Ratio	15%	1	1.5	2
CIP Project Overlap	15%	0		1
Project Dependence	15%	2	1	0
ROW Acquisition	10%	2	3	4
Positive Mobility Impacts	10%	5	10	15
Positive Community Impact	10%	1	2	3
Constructability	5%	Complex	Normal	Minimal

Overall improvement project rankings and prioritization are shown in Table 5.2 Project Prioritization List – Rank Sort and Table 5.4 Project Prioritization List..

Table 5.2 Project Prioritization - Rank Sort

Project Prioritization List													
Project Description	Priority	Category Ranking (Score*Weight)											
		Total Score	# OF STRUCTURES REMOVED / $MIL OF PROJECT COST		COST/BENEFIT RATIO		CIP PROJECT OVERLAP	PROJECT DEPENDENCE	ROW ACQUISITION	POSITIVE MOBILITY IMPACT	POSITIVE COMMUNITY IMPACT	CONSTRUCT-ABILITY	CONCEPTUAL COST ESTIMATE
WEIGHT:		--	20%		15.0%		15.0%	15.0%	10.0%	10.0%	10.0%	5.0%	
South Gessner Roadway Improvements	1	24.0	30	11.0	30	2.1	0	30	30	30	20	20	$2,000,000
Briar Branch Channel Improvements with Detention	2	21.5	30	11.0	10	0.5	0	30	30	30	30	10	$15,100,000
Barryknoll East/West	3	19.5	10	0.4	10	0.1	30	10	30	30	30	20	$9,000,000
Kingsride and Frostwood	3	19.5	10	1.2	10	0.2	30	10	30	30	30	20	$6,700,000
Kimberley	5	17.5	0	0.0	10	0.0	30	30	30	10	20	20	$3,100,000
Strey Lane	6	17.0	10	4.1	10	0.4	30	10	10	30	30	10	$12,700,000
W153-00-00 and Tallowood Improvements	7	16.5	20	6.9	20	1.5	0	20	10	30	20	10	$3,500,000
Memorial West	8	15.5	0	0.0	10	0.0	30	30	20	10	10	20	$2,500,000
West Bough	9	15.0	0	0.0	10	0.0	30	20	30	10	10	20	$1,100,000
Windover, Demaret, Larston Improvements: With Channel and Basin Improvements as Base	10	14.5	20	8.0	10	0.4	0	10	30	10	20	30	$1,000,000
Frostwood Conveyance	11	14.5	10	6.9	20	1.5	0	20	10	30	20	10	*
Memorial South/East	12	14.0	10	2.4	10	0.2	0	30	30	10	10	20	$4,100,000
*cost included in W153-A										**Total Improvement Cost**			**$60,800,000**

Table 5.3 Project Tiers

Project Tiers			
Project Category	Project ID	Project Description	CONCEPTUAL COST ESTIMATE
1	W140-A	Briar Branch Channel Improvements with Detention	$15,100,000
	W151-C	Strey Lane	$12,700,000
	W153-A	W153-00-00 and Tallowood Improvements	$3,500,000
	W151-A	Barryknoll East/West	$9,000,000
2	W153-C	Memorial East	$4,100,000
	W100-A	South Gessner Roadway Improvements	$2,000,000
	W151-B	Kingsride and Frostwood	$6,700,000
	W153-B	Frostwood Conveyance	*
	W153-E	Kimberley	$3,100,000
3	W153-D	West Bough	$1,100,000
	W153-F	Memorial West	$2,500,000
	W140-B	Windover, Demaret, Larston Improvements: With Channel and Basin Improvements as Base	$1,000,000
	*cost included in W153-A		

Table 5.4 Project Prioritization List

Project Prioritization List														
Project ID	Project Description	Priority	Category Ranking (Score*Weight)											
			Total Score	# OF STRUCTURES REMOVED / $MIL OF PROJECT COST		COST/BENEFIT RATIO		CIP PROJECT OVERLAP	PROJECT DEPENDENCE	ROW ACQUISITION	POSITIVE MOBILITY IMPACT	POSITIVE COMMUNITY IMPACT	CONSTRUCT-ABILITY	CONCEPTUAL COST ESTIMATE
	WEIGHT:		--	20%		15.0%		15.0%	15.0%	10.0%	10.0%	10.0%	5.0%	
W140-A	Briar Branch Channel Improvements with Detention	2	21.5	30	11.0	10	0.5	0	30	30	30	30	10	$15,100,000
W140-B	Windover, Demaret, Larston Improvements: With Channel and Basin Improvements as Base	10	14.5	20	8.0	10	0.4	0	10	30	10	20	30	$1,000,000
											North Improvement			**$16,100,000**
W100-A	South Gessner Roadway Improvements	1	24.0	30	11.0	30	2.1	0	30	30	30	20	20	$2,000,000
W151-A	Barryknoll East/West	3	19.5	10	0.4	10	0.1	30	10	30	30	30	20	$9,000,000
W151-B	Kingsride and Frostwood	3	19.5	10	1.2	10	0.2	30	10	30	30	30	20	$6,700,000
W153-E	Kimberley	5	17.5	0	0.0	10	0.0	30	30	30	10	20	20	$3,100,000
W151-C	Strey Lane	6	17.0	10	4.1	10	0.4	30	10	10	30	30	10	$12,700,000
W153-A	W153-00-00 and Tallowood Improvements	7	16.5	20	6.9	20	1.5	0	20	10	30	20	10	$3,500,000
W153-F	Memorial West	8	15.5	0	0.0	10	0.0	30	30	20	10	10	20	$2,500,000
W153-D	West Bough	9	15.0	0	0.0	10	0.0	30	20	30	10	10	20	$1,100,000
W153-B	Frostwood Conveyance	11	14.5	10	6.9	20	1.5	0	20	10	30	20	10	*
W153-C	Memorial South/East	12	14.0	10	2.4	10	0.2	0	30	30	10	10	20	$4,100,000
*cost included in W153-A											**South Improvement Subtotal**			**$44,700,000**
											Total Improvement Cost			**$60,800,000**

6 Impact Evaluation

6.1 Impact Evaluation

Proposed improvement projects were evaluated for adverse impacts within the study area. Potential impacts were evaluated using ponding and inundation extents and water surface elevations at modeling nodes. Post project inundation extents and depths were evaluated against existing inundation extents and depths (See Exhibits 21 through 34).

Channels modeled with 1-D river sections were evaluated based on levels at modeling nodes within those channels. Potential downstream impacts were checked based on peak flows from outfall nodes within the model compared to existing conditions. Potential improvement projects requiring mitigation will need to be further evaluated in future PER's to determine downstream impacts and to obtain approvals of jurisdictional agencies.

Channel W140-01-00 was evaluated at selected nodes within the channel during the 100-year, 24-hour storm event to determine if there were any adverse impacts to the study area. Table 6.1 W140-01-00 100-Year WSEL below highlights the difference in water surface elevation from existing to proposed conditions verifying there is not an adverse impact.

Table 6.1 W140-01-00 100-Year WSEL

		100-Year WSEL (ft)		
Location	**Node**	**Existing**	**Proposed**	**Delta**
Upstream End of Briar Branch	ST4125	81.32	79.80	-1.52
	ST3570	81.33	79.80	-1.52
Briar Branch at Gessner	5795	81.33	79.80	-1.52
	5796	80.62	79.79	-0.83
	5786	80.01	79.52	-0.50
	ST2195	79.61	79.51	-0.10
Briar Branch at Windover	-1023_Outfall	79.34	76.26	-3.08
	ST630	78.11	76.24	-1.87
Briar Branch at Bunker Hill Drive	5801-3	76.71	76.23	-0.48
	5803	76.22	74.86	-1.36
W140-01-05	5708608	75.59	74.83	-0.76
Briar Branch at Confederate	6048	75.44	74.82	-0.62

Channel W151-00-00 was evaluated at selected nodes within the channel during the 100-year, 24-hour storm event to determine if there were any adverse impacts to the study area. Table 6.2 W151-00-00 100-Year WSEL below highlights the difference in water surface elevation from existing to proposed conditions. The increase in water surface at two nodes could be mitigated through regional detention elsewhere in the watershed that lowers the water surface elevation at W151-00-00 and Buffalo Bayou or minimal channel improvements downstream of node PB151.

Table 6.2 W151-00-00 100-Year WSEL

		100-Year WSEL (ft)		
Location	**Node**	**Existing**	**Proposed**	**Delta**
Barryknoll Outfall	W151-BOX	77.11	77.12	0.01
	5487	77.06	77.04	-0.03
	W151-KM	76.91	76.80	-0.12
	W151-TC	76.60	76.25	-0.35
	TCN-151	76.58	76.21	-0.37
Taylorcrest Road	TCC-151	76.57	76.20	-0.37
	TCS-151!	76.56	76.18	-0.38
	CB-151	76.28	75.85	-0.44
	W151-BB	76.06	75.57	-0.49
	W151-MM	75.37	74.71	-0.66
Memorial Drive	MW1-151	75.33	74.67	-0.66
	W151BM1	75.28	74.63	-0.66
	W151BM2	75.27	74.61	-0.66
	W151BM3	74.91	74.27	-0.64
	W151BM4	74.78	74.14	-0.64
	W151BM5	74.22	73.61	-0.61
	sc-151	73.28	72.90	-0.38
Pebble Hill Drive	PB151	69.77	70.55	0.78
	VS-151	65.39	66.01	0.62
	TM151	64.11	63.82	-0.29
	W151BM6	63.78	63.78	0.00
	BT-W151	63.78	63.78	0.00
	-1020_Outfall	63.78	63.78	0.00
Buffalo Bayou	W100	63.77	63.77	0.00

Channel W153-00-00 was evaluated at selected locations within the channel during the 100-year, 24-hour storm event to determine if there were any adverse impacts to the study area. Table 6.3 W153-00-00 100-Year WSEL below highlights the difference in water surface elevation from existing to proposed conditions verifying there is not an adverse impact.

Table 6.3 W153-00-00 100-Year WSEL

	100-Year WSEL (ft)		
Location	**Existing**	**Proposed**	**Delta**
DS Benignus	72.41	72.10	-0.31
Mid Benignus & Tallowood	71.77	70.90	-0.87
US Tallowood	71.44	71.36	-0.08
DS Tallowwood	68.45	68.14	-0.31
Approx 700' DS of Tallowood	68.26	67.74	-0.52
Approx 1050' US of Memorial	68.02	67.62	-0.41
US Memorial	67.68	67.51	-0.17
DS Memorial	66.35	66.36	0.01
600' DS of Memorial	66.34	66.35	0.01
US Buffalo Bayou	66.32	66.33	0.00

7 Project Implementation

7.1 Project Costs

7.1.1 Project Cost Data Sources

Cost estimates were developed for the majority of the potential improvement project on a preliminary planning level basis. Major cost items for each improvement alternative were determined and priced such as storm sewer pipe or boxes, large structural items, and roadway removal and replacement. Unit costs for storm sewer pipe and boxes were selected from TxDOT average low bid unit prices for the Houston District. A general cost per lane mile of roadway removal and replacement was developed using previous TIRZ 17 construction bid tabulations to facilitate preliminary cost estimates. Items included in the generalized lane mile cost are removal of existing paving, sub-grade stabilization, concrete paving, water and sanitary replacements, traffic signals, pavement markings/signings, illumination, utility relocations, traffic control plan, and mobilization.

7.1.2 Improvement Option Costs

Detailed proposed improvement project cost estimates were developed for the Briar Branch channel improvements with detention, Kimberley Road improvements, Memorial West, Memorial East, and Strey Lane improvement projects. All other projects had a preliminary cost estimate developed using generalized costs of roadway replacement. Conceptual and detailed improvement cost estimates include engineering costs, land acquisition costs if applicable, and appropriate contingencies. Complete cost estimates by project can be found in Table T3 and total conceptual costs by project can be found in Table 7.1 Improvement Projects Conceptual Cost Estimate.

Table 7.1 Improvement Projects Conceptual Cost Estimate

Project ID	Improvement Project	Conceptual Cost Estimate
W100-A	South Gessner Improvements*	$2,000,000
W140-A	Briar Branch Channel Improvements with Mitigation Detention	$15,100,000
W140-B	Windover, Demaret Improvements	$1,000,000
W151-A	Barryknoll Lane*	$9,000,000
W151-B	Kingsride and Frostwood	$6,700,000
W151-C	Strey Lane*	$12,700,000
W153-A W153-B	Tallowood, Broken Arrow, Broken Bough, Cobblestone Improvements	$3,500,000
W153-C	Memorial East	$4,100,000
W153-D	West Bough Lane	$1,100,000
W153-E	Kimberley Lane	$3,100,000
W153-F	Memorial West	$2,500,000
	Total	**$60,800,000**

*Mitigation cost not included. For all other projects mitigation is inculuded or not required

TABLES

Table T1: Summary of Proposed Improvement Costs

Project ID	Improvement Project	Conceptual Cost Estimate
W100-A	South Gessner Improvements*	$2,000,000
W140-A	Briar Branch Channel Improvements with Mitigation Detention	$15,100,000
W140-B	Windover, Demaret Improvements	$1,000,000
W151-A	Barryknoll Lane*	$9,000,000
W151-B	Kingsride and Frostwood	$6,700,000
W151-C	Strey Lane*	$12,700,000
W153-A W153-B	Tallowood, Broken Arrow, Broken Bough, Cobblestone Improvements	$3,500,000
W153-C	Memorial East	$4,100,000
W153-D	West Bough Lane	$1,100,000
W153-E	Kimberley Lane	$3,100,000
W153-F	Memorial West	$2,500,000
	Total	**$60,800,000**

Table T2: Cost Data Sources

Project Description	Level of Detail	Source
Storm Sewer Improvements to Oak Tree & Warwana	Conceptual	TIRZ 17 RDS
Briar Branch Channel Improvements with Mitigation Detention	Detailed	TIRZ 17 RDS
Localized Storm Sewer Improvements to Windover, Demaret, Lartson Streets	Conceptual	TIRZ 17 RDS
Kimberley Road Improvements	Bid Price	TIRZ 17 RDS
Memorial West Improvements	Conceptual	TIRZ 17 RDS
West bough Improvements	Conceptual	TIRZ 17 RDS
Memorial East Improvements	Conceptual	TIRZ 17 RDS
W153-00-00 and Tallowood Road Improvements	Conceptual	TIRZ 17 RDS
W153-00-00 Conveyance Structures	Conceptual	TIRZ 17 RDS
Barryknoll East and West Improvements	Detailed	Barryknoll PER
Frostwood and Kingsride Improvements	Conceptual	TIRZ 17 RDS
South Gessner Road Storm Sewer Improvements	Conceptual	TIRZ 17 RDS
Strey Lane Improvements	Detailed	TIRZ 17 RDS

Table T3-1: Improvement Project Preliminary Cost Estimate
West Bough Drive Improvements - W153-D

Pay Item	Pay Item Description	Unit	Unit Cost	Quantity	Subtotal
1	Roadway Reconstruction	LF	$ 213	3,000	$ 637,793
5	3'x'3 Box	LF	$ 77	1,004	$ 77,293
6	48" RCP	LF	$ 69	451	$ 31,105
7	36" RCP	LF	$ 62	538	$ 33,331
				Subtotal 1	$ 779,522
				Contingency (30%)	$ 233,857
				Subtotal 2	$ 1,013,379
				Engineering (10%)	$ 101,338
				Total	$ 1,114,717

Table T3-2: Improvement Project Preliminary Cost Estimate
Frostwood Drive and Kingsride Lane Improvements - W151-B

Pay Item	Pay Item Description	Unit	Unit Cost	Quantity	Subtotal
1	8'x5' RCP	LF	$ 204	2,459	$ 501,676.80
2	Roadway Reconstruction	LF	$ 213	9,837	$ 4,182,562.65
				Subtotal 1	$ 4,684,239.45
				Contingency (30%)	$ 1,405,271.83
				Subtotal 2	$ 6,089,511.28
				Engineering (10%)	$ 608,951.13
				Total	$ 6,698,462.41

Table T3-3: Improvement Project Preliminary Cost Estimate
Windover Road, Demaret Lane, and Larston Street - W140-B

Pay Item	Pay Item Description	Unit	Unit Cost	Quantity	Subtotal
1	4'x3' Box	LF	$ 90	1,529	$ 137,592
2	3'x3' Box	LF	$ 77	354	$ 27,273
3	Roadway Reconstruction	LF	$ 213	1,883	$ 400,322
				Subtotal 1	$ 565,187
				Contingency (30%)	$ 169,556
				Subtotal 2	$ 734,743
				Engineering (10%)	$ 73,474
				Total	$ 808,217

Table T3-4: Improvement Project Preliminary Cost Estimate
South Gessner Road Improvements - W100-A

Pay Item	Pay Item Description	Unit	Unit Cost	Quantity	Subtotal
1	6'x4' Box	LF	$ 161	2,032	$ 327,119.80
2	4'x4' Box	LF	$ 92	2,034	$ 187,128.00
3	Roadway Reconstruction	LF	$ 213	4,066	$ 864,379.84
				Subtotal 1	$ 1,378,627.64
				Contingency (30%)	$ 413,588.29
				Subtotal 2	$ 1,792,215.93
				Engineering (10%)	$ 179,221.59
				Total	$ 1,971,437.52

Table T3-5: Improvement Project Preliminary Cost Estimate
W153-00-00 and Tallowood Road Improvements - W153-A

Pay Item	Pay Item Description	Unit	Unit Cost	Quantity	Subtotal
1	8'x8' Box Storm Sewer	LF	$ 315	3,056	$ 962,735
2	10'x6' Box Storm Sewer	LF	$ 304	80	$ 24,320
3	36" Round Storm Sewer	LF	$ 62	1,800	$ 111,600
4	Roadway Reconstruction	LF	$ 213	6,113	$ 1,299,525
5	Tallowood Headwall Structure	EA	$ 10,000	2	$ 20,000
6	W153-00-00 Outfall Structure	EA	$ 50,000	1	$ 50,000
				Subtotal 1	$ 2,468,179
				Contingency (30%)	$ 740,454
				Subtotal 2	$ 3,208,633
				Engineering (10%)	$ 320,863
				Total	$ 3,529,496.50

Table T3-6: Improvement Project Preliminary Cost Estimate
Briar Branch Channel and Detention Mitigation Improvements- W140-A

Detention Pond and Channel Improvements

Pay Item	Pay Item Description	Unit	Unit Cost	Quantity	Subtotal
	Mobilization (5%)	LS		1	$218,439
	Mobilization (5%) Pond	LS		1	$42,282
	Traffic Control	LS	$88,700	1	$88,700
	Proposed 8'x5' Box at Witte Construction	LS	$1,000,000	1	$1,000,000
400 2008	CUT & RESTORING PAV (ASPH)	SY	$60	560	$33,600
2120-03	REMOVE & DISPOSE OF CONCRETE RUBBLE AND CONCRETE STRUCTU	CY	$18	86	$1,514
2120-05	REMOVE & DISPOSE OF CONCRETE CHANNEL LINING	SY	$5	3,200	$16,000
2233-01	CLEARING AND GRUBBING	AC	$2,575	8	$19,567
2233-01	CLEARING AND GRUBBING (POND)	AC	$2,575	8	$21,627
2315-02	EXCAVATION & OFFSITE DISPOSAL	CY	$5	46,550	$223,440
2315-02	EXCAVATION & OFFSITE DISPOSAL (POND)	CY	$5	134,000	$643,200
2376-03	CONCRETE CHANNEL LINING, 6" NOMINAL THICKNESS	SY	$60	50,633	$3,037,986
407 2013	SHEET PILING (AZ - 37)	SF	$52	1,680	$87,360
	REMOVE AND REPLACE FENCE	LF	$30	11,900	$357,000
2921-04	TURF ESTABLISHMENT - SODDING	SY	$4	14,000	$54,600
2921-04	TURF ESTABLISHMENT - SODDING (POND)	SY	$4	8,000	$31,200
	HYDROMULCHING	SY	$1.50	32,400	$48,600
2269-01	TRENCH SHORING SYSTEM,5 TO 20 FEET	LF	$2.00	350	$700
400 2005	CEM STABIL BKFL	CY	$25.00	352	$8,800
2378-01	RIPRAP,GRADATION NO. 1	SY	$27.50	84	$2,310
2378-01	RIPRAP,GRADATION NO. 1 (POND)	SY	$27.50	1,600	$44,000
	SWPPP	LS	$28,800	1	$28,800
	SWPPP (POND)	LS	$16,608	1	$16,608
	Inlets	Ea	$2,500	3	$7,500
464 2005	RC PIPE (CL III) 24 IN	LF	$70	200	$14,000
462 2028	CONC BOX CULV (9 FT X 9 FT)	LF	$532	350	$186,200
2632-70	HEADWALLS AND WINGWALLS	Ea	$40,000	2	$80,000
420 2060	CL B (CONC INTERCEPTOR STRUCTURE)	Ea	$1,300	8	$10,400
465 2005	MANH (COMPL) (TY M) (ON RCB)	Ea	$2,753	4	$11,012
2630-01	TYPE "C" MANHOLE, FOR 42" AND SMALLER	Ea	$2,500	3	$7,500
	REMOVE 20" Water Line AND RELOCATE	LF	$200	120	$24,000
5457 2018	WET CONNECTION (20IN)	Ea	$3,000	2	$6,000
	REMOVE TIMBER BENT (48")	Ea	$500	1	$500
	REMOVE AND REPLACE 21 IN SANITARY SEWER	LF	$80	210	$16,800
	REMOVE AND REPLACE SANITARY MANHOLE	Ea	$2,600	4	$10,400
	ADJUST PRIVATE UTILITIES (ESTIMATED)	LS	$10,000	1	$10,000
	REMOVE AND REPLACE 250 SF BUILDING	SF	$120	250	$30,000
496 2002	REMOVE STR (INLET)	Ea	$500	3	$1,500
496 2003	REMOVE STR (MH)	Ea	$600	3	$1,800
496 2007	REMOVE STR (PIPE)	LF	$6	200	$1,200

Sub Total (Witte Construction Only)	$1,000,000
Sub Total (Channel)	$4,587,228
Sub Total (Pond)	$887,916
Sub Total	$6,475,144
Contingency - 15%	$971,272
Total Construction Cost	**$7,446,416**
Land Acquisition	$6,400,000
Total Construction and Land Acquisition Cost	**$13,900,000**
Engineering Services (15%)	$1,116,962
Total Cost	**$15,100,000**
Total Channel Only	$6,100,000.00
Total Pond Only	$7,600,000.00

Table 3-7a: Strey Lane

Limits: BarryKnoll Lane to Taylor Crest / Strey Lane

Pay Item	Pay Item Description	Unit	Unit Cost	Quantity	Subtotal
	Mobilization (5%)	LS		1	$81,660
	Traffic Control (Includes Flagmen, Paint Striping, Temporary Pavement, & Inst. / Furn/ Move Low Prof CTB)	LS	$171,000	1	$171,000
400 2008	CUT & RESTORING PAV (ASPH)	SY	$60	-	$0
104 2001	REMOVING CONC (PAV)	SY	$6	6,823	$40,936
104 2036	REMOVING CONC (SIDEWALK OR RAMP)	SY	$15	-	$0
360 2001	CONC PVMT (CONT REINF - CRCP) (8")	SY	$55	6,823	$375,265
	6" STABILIZED SUBGRADE	SY	$1.80	6,823	$12,281
260 2004	LIME (QUICKLIME (DRY))	TON	$140	101	$14,168
104 2021	REMOVING CONC (CURB)	LF	$5	1,000	$5,000
360 2018	CURB (TYPE II)	LF	$3	1,000	$3,000
454 2006	HEADER TYPE EXPANSION JOINT	LF	$71	-	$0
104 2017	REMOVING CONC. (DRIVEWAYS)	SY	$10	-	$0
530 2010	DRIVEWAYS CONC	SY	$50	-	$0
	SIDEWALK (8')	SY	$22	-	$0
100 2002	PREPARING ROW	STA	$1,500	23	$34,500
2269-01	TRENCH SHORING SYSTEM,5 TO 20 FEET	LF	$2.00	2,300	$4,600
400 2005	CEM STABIL BKFL	CY	$25.00	2,044	$51,100
2378-21	RIPRAP,GRADATION NO. 2 (GROUTED)	SY	$45.00	-	$0
	SWPPP	LS	$60,000	-	$0
	Inlets	Ea	$2,500	-	$0
462 2031	CONC BOX CULV (10 FT X 7 FT)	LF	$405	2,300	$931,500
2632-70	HEADWALLS AND WINGWALLS	Ea	$20,000	-	$0
465 2005	MANH (COMPL) (TY M) (ON RCB)	Ea	$2,753	3	$8,259
465 2006	MANH (COMPL) (JUNCT BOX) (TY M)	Ea	$12,000	-	$0
	REMOVE 8" Water Line AND RELOCATE (ALL CONNECTIC	LF	$110	500	$55,000
	REMOVE AND RELOCATE SAN SEWER (ALL CONNECTIC	LF	$100	500	$50,000
	ADJUST PRIVATE UTILITIES (ESTIMATED)	LS	$30,000	1	$30,000
	Remove Existing RCP & Manholes	LF	$13	500	$6,500

Sub Total	$1,874,770
Contingency - 15%	$281,215
Total Construction Cost	**$2,200,000**
Engineering Services (10%)	$220,000
Total Cost	**$2,500,000**

Table 3-7b: Strey Lane

Limits: Taylor Crest/Strey Lane to Outfall (Pebble Hill)

Pay Item	Pay Item Description	Unit	Unit Cost	Quantity	Subtotal
	Mobilization (5%)	LS		1	$373,111
	Traffic Control (Includes Flagmen, Paint Striping, Temporary Pavement, & Inst. / Furn/ Move Low Prof CTB)	LS	$610,000	1	$610,000
400 2008	CUT & RESTORING PAV (ASPH)	SY	$60	12,133	$727,998
104 2001	REMOVING CONC (PAV)	SY	$6	1,111	$6,667
104 2036	REMOVING CONC (SIDEWALK OR RAMP)	SY	$15	4,533	$67,995
360 2001	CONC PVMT (CONT REINF - CRCP) (8")	SY	$55	1,111	$61,111
	6" STABILIZED SUBGRADE	SY	$1.80	1,111	$2,000
260 2004	LIME (QUICKLIME (DRY))	TON	$140	229	$32,100
104 2021	REMOVING CONC (CURB)	LF	$5	800	$4,000
360 2018	CURB (TYPE II)	LF	$3	800	$2,400
454 2006	HEADER TYPE EXPANSION JOINT	LF	$71	720	$51,120
104 2017	REMOVING CONC. (DRIVEWAYS)	SY	$10	784	$7,840
530 2010	DRIVEWAYS CONC	SY	$50	784	$39,200
	SIDEWALK (8')	SY	$22	4,533	$99,733
100 2002	PREPARING ROW	STA	$1,500	52	$78,000
2269-01	TRENCH SHORING SYSTEM,5 TO 20 FEET	LF	$2.00	5,211	$10,422
400 2005	CEM STABIL BKFL	CY	$25.00	5,449	$136,218
2378-21	RIPRAP,GRADATION NO. 2 (GROUTED)	SY	$45.00	333	$14,985
	SWPPP	LS	$60,000	1	$60,000
	Inlets	Ea	$2,500	-	$0
464 2001	RC PIPE (CL III) 12 IN	LF	$38	32	$1,216
464 2003	RC PIPE (CL III) 18 IN	LF	$40	180	$7,200
464 2005	RC PIPE (CL III) 24 IN	LF	$50	114	$5,700
464 2007	RC PIPE (CL III) 30 IN	LF	$65	25	$1,625
464 2009	RC PIPE (CL III) 36 IN	LF	$80	23	$1,840
	15" HDPE PIPE	LF	$25	32	$800
	18" HDPE PIPE	LF	$35	78	$2,730
462 2008	CONC BOX CULV (5 FT X 4 FT)	LF	$145	1,530	$221,850
462 2011	CONC BOX CULV (6 FT X 4 FT)	LF	$165	3,136	$517,440
462 2024	CONC BOX CULV (9 FT X 5 FT)	LF	$340	545	$185,300
462 2016	CONC BOX CULV (7 FT X 5 FT)	LF	$330	545	$179,850
462 2032	CONC BOX CULV (10 FT X 8 FT)	LF	$450	4,666	$2,099,700
2632-70	HEADWALLS AND WINGWALLS	Ea	$20,000	1	$20,000
465 2005	MANH (COMPL) (TY M) (ON RCB)	Ea	$2,753	23	$63,319
465 2006	MANH (COMPL) (JUNCT BOX) (TY M)	Ea	$12,000	2	$24,000
	REMOVE 8" Water Line AND RELOCATE (ALL CONNECTI	LF	$110	-	$0
	REMOVE AND RELOCATE SAN SEWER (ALL CONNECTI	LF	$100	9,360	$936,000
	ADJUST PRIVATE UTILITIES (ESTIMATED)	LS	$102,000	1	$102,000
	Remove Existing RCP & Manholes	LF	$13	5,066	$65,858

Sub Total	$6,821,327
Contingency - 15%	$1,023,199
Total Construction Cost	**$7,900,000**
Engineering Services (10%)	$790,000
Total Cost	**$8,700,000**

Table 3-7c: Strey Lane

Strey Lane Side Streets

Pay Item	Pay Item Description	Unit	Unit Cost	Quantity	Subtotal
	Mobilization (5%)	LS		1	$51,549
	Traffic Control (Includes Flagmen, Paint Striping, Temporary Pavement, & Inst. / Furn/ Move Low Prof CTB)	LS	$114,000	1	$114,000
400 2008	CUT & RESTORING PAV (ASPH)	SY	$60	2,104	$126,228
104 2001	REMOVING CONC (PAV)	SY	$6	5,624	$33,746
104 2036	REMOVING CONC (SIDEWALK OR RAMP)	SY	$15	-	$0
360 2001	CONC PVMT (CONT REINF - CRCP) (8")	SY	$55	5,624	$309,337
	6" STABILIZED SUBGRADE	SY	$1.80	5,624	$10,124
260 2004	LIME (QUICKLIME (DRY))	TON	$140	174	$24,418
104 2021	REMOVING CONC (CURB)	LF	$5	1,460	$7,300
360 2018	CURB (TYPE II)	LF	$3	1,460	$4,380
454 2006	HEADER TYPE EXPANSION JOINT	LF	$71	-	$0
104 2017	REMOVING CONC. (DRIVEWAYS)	SY	$10	-	$0
530 2010	DRIVEWAYS CONC	SY	$50	-	$0
	SIDEWALK (8')	SY	$22	-	$0
100 2002	PREPARING ROW	STA	$1,500	37	$54,750
2269-01	TRENCH SHORING SYSTEM,5 TO 20 FEET	LF	$2.00	3,964	$7,928
400 2005	CEM STABIL BKFL	CY	$25.00	-	$0
2378-21	RIPRAP,GRADATION NO. 2 (GROUTED)	SY	$45.00	-	$0
	SWPPP	LS	$60,000	-	$0
	Inlets	Ea	$2,500	25	$62,500
	18" HDPE PIPE	LF	$35	116	$4,060
	24" HDPE PIPE	LF	$40	1,580	$63,200
	30" HDPE PIPE	LF	$50	1,940	$97,000
	36" HDPE PIPE	LF	$60	410	$24,600
	48" HDPE PIPE	LF	$70	34	$2,380
2632-70	HEADWALLS AND WINGWALLS	Ea	$20,000	-	$0
465 2005	MANH (COMPL) (TY M) (ON RCB)	Ea	$2,753	19	$52,307
465 2005	MANH (COMPL) (TY M)	Ea	$2,753	16	$44,048
465 2006	MANH (COMPL) (JUNCT BOX) (TY M)	Ea	$12,000	-	$0
	ADJUST PRIVATE UTILITIES (ESTIMATED)	LS	$18,000	1	$18,000
	Remove Existing RCP & Manholes	LF	$13	845	$10,985

Sub Total	$1,122,839
Contingency - 15%	$168,426
Total Construction Cost	**$1,300,000**
Engineering Services (10%)	$130,000
Total Cost	**$1,500,000**

Table T3-8: Improvement Project Preliminary Cost Estimate
Strey Lane From Barryknoll Lane to Buffalou Bayou, Including Portions of Memorial Drive and Hickory Ridge - W151-C

2-10x8 / 10x10 Box Culverts

Pay Item	Pay Item Description	Unit	Unit Cost	Quantity	Subtotal
	Mobilization (5%)	LS		1	$683,612
	Traffic Control (Includes Flagmen, Paint Striping, Temporary Pavement, & Inst. / Furn/ Move Low Prof CTB)	LS	$864,000	1	$864,000
400 2008	CUT & RESTORING PAV (ASPH)	SY	$60	20,519	$1,231,140
104 2001	REMOVING CONC (PAV)	SY	$6	8,092	$48,552
104 2036	REMOVING CONC (SIDEWALK OR RAMP)	SY	$15	4,533	$67,995
360 2001	CONC PVMT (CONT REINF - CRCP) (8")	SY	$55	8,092	$445,060
	6" STABILIZED SUBGRADE	SY	$1.80	8,092	$14,566
260 2004	LIME (QUICKLIME (DRY))	TON	$140	486	$68,056
104 2021	REMOVING CONC (CURB)	LF	$5	5,030	$25,150
360 2018	CURB (TYPE II)	LF	$3	5,030	$15,090
454 2006	HEADER TYPE EXPANSION JOINT	LF	$71	720	$51,120
104 2017	REMOVING CONC. (DRIVEWAYS)	SY	$10	364	$3,640
530 2010	DRIVEWAYS CONC	SY	$50	364	$18,200
	SIDEWALK (8')	SY	$22	4,533	$99,733
100 2002	PREPARING ROW	STA	$1,500	108	$161,880
2269-01	TRENCH SHORING SYSTEM,5 TO 20 FEET	LF	$2.00	11,048	$22,096
400 2005	CEM STABIL BKFL	CY	$25.00	12,465	$311,625
2378-21	RIPRAP,GRADATION NO. 2 (GROUTED)	SY	$45.00	333	$14,985
	SWPPP	LS	$60,000	1	$60,000
	Inlets	Ea	$2,500	51	$127,500
464 2005	RC PIPE (CL III) 24 IN	LF	$50	306	$15,300
462 2032	CONC BOX CULV (10 FT X 8 FT)	LF	$375	13,320	$4,995,000
462 2034	CONC BOX CULV (10 FT X 10 FT)	LF	$435	5,238	$2,278,530
2632-70	HEADWALLS AND WINGWALLS	Ea	$20,000	2	$40,000
465 2005	MANH (COMPL) (TY M) (ON RCB)	Ea	$2,753	19	$52,307
465 2006	MANH (COMPL) (JUNCT BOX) (TY M)	Ea	$12,000	2	$24,000
	REMOVE 6" Water Line AND RELOCATE (ALL CONNEC	LF	$100	5,400	$540,000
	REMOVE AND RELOCATE SAN SEWER (ALL CONNEC	LF	$80	15,100	$1,208,000
	ADJUST PRIVATE UTILITIES (ESTIMATED)	LS	$150,000	1	$150,000
	Remove Existing RCP & Manholes	LF	$13	6,725	$87,425

Sub Total	$13,724,562
Contingency - 15%	$2,058,684
Total Construction Cost	**$15,800,000**
Engineering Services (10%)	$1,580,000
Total Cost	**$17,400,000**

Table T3-9: Improvement Project Preliminary Cost Estimate

MEMORIAL DRIVE EAST CONSTRUCTION COST ESTIMATE Full Replacement					
Item No.	Item Description	Unit	Quantity	Engineering Estimate	
				Unit Price	Total Price
Drainage					
1	Type BB Inlet	EA	20	$ 2,500.00	$ 50,000.00
2	Type "C" Manhole	EA	10	$ 2,500.00	$ 25,000.00
3	4x3 to 5x4 Box	LF	2843	$ 200.00	$ 568,600.00
4	24" RCP Lead	LF	711	$ 80.00	$ 56,860.00
Roadway					
5	10-inch Reinforced Concrete Pavement	SY	12636	$ 60.00	$ 758,133.33
6	10-inch Reinforced Concrete Pavement (High Early Strength)	SY	591	$ 90.00	$ 53,190.00
7	Reinforced Concrete Driveway	SF	23400	$ 6.00	$ 140,400.00
8	Lime / Fly-Ash Stabilized Subgrade, 6-inch	SY	13227	$ 15.90	$ 210,302.23
9	Lime / Fly-Ash (6% by Dry Weight)	TON	364	$ 130.00	$ 47,284.94
10	2" Asphalt Overlay	TON	1347	$ 130.00	$ 175,170.05
11	6-Inch Concrete Curb	LF	4599	$ 3.70	$ 17,016.30
12	4 1/2" Concrete Sidewalk	SF	4906	$ 4.50	$ 22,077.00
13	Wheelchair ramps	EA	6	$ 600.00	$ 3,600.00
14	Removal of Asphalt Pavement	SY	13214	$ 7.50	$ 99,101.67
15	Removal of Driveways	SY	23400	$ 5.90	$ 138,060.00
16	Roadway Excavation	CY	6613	$ 15.00	$ 99,199.17
17	Portable Concrete Low Profile Traffic Barrier Installed	LF	2843	$ 26.80	$ 76,192.40
18	Portable Concrete Low Profile Traffic Barrier Moved & Reset	LF	2843	$ 5.00	$ 14,215.00
19	Portable Concrete Low Profile Traffic Barrier Removed	LF	2843	$ 6.80	$ 19,332.40
20	Sodding	SY	10275	$ 3.16	$ 32,470.23
21	Removal of Concrete Sidewalk	SY	582	$ 5.90	$ 3,434.46
22	Traffic Control and Regulation	LS	1	$ 345,704.90	$ 345,704.90
23	Illumination	LS	1	$ 50,000.00	$ 50,000.00
Public Utilities					
24	Sanitary Sewer Rehabilitation	LF	220	$ 300.00	$ 66,000.00
25	Sanitary Sewer Manhole Reconstruction	EA	0	$ 5,000.00	$ -
26	Mobilization for Sanitary Sewer Rehabilitation	LS	1	$ 20,000.00	$ 20,000.00
27	Sanitary Sewer By-pass Pumping	LS	1	$ 20,000.00	$ 20,000.00

Total Price	**$ 2,765,639.18**
Contingency (25%)	**$ 691,409.79**
Mobilization (10%)	**$ 345,704.90**
Grand Total	**$ 4,148,458.76**

Table T3-10: Improvement Project Preliminary Cost Estimate

MEMORIAL DRIVE WEST CONSTRUCTION COST ESTIMATE Full Replacement					
Item No.	Item Description	Unit	Quantity	Engineering Estimate	
				Unit Price	Total Price
Drainage					
1	Type BB Inlet	EA	10	$ 2,500.00	$ 25,000.00
2	Type "C" Manhole	EA	6	$ 2,500.00	$ 15,000.00
3	54" RCP to 3x3 Box	LF	924	$ 90.00	$ 83,160.00
4	24" RCP Lead	LF	304	$ 80.00	$ 24,320.00
Roadway					
5	10-inch Reinforced Concrete Pavement	SY	8096	$ 60.00	$ 485,760.00
6	10-inch Reinforced Concrete Pavement (High Early Strength)	SY	245	$ 90.00	$ 22,050.00
7	Reinforced Concrete Driveway	SF	9311	$ 6.00	$ 55,866.00
8	Lime / Fly-Ash Stabilized Subgrade, 6-inch	SY	8096	$ 15.90	$ 128,726.40
9	Lime / Fly-Ash (6% by Dry Weight)	TON	223	$ 130.00	$ 28,943.20
10	2" Asphalt Overlay	TON	825	$ 130.00	$ 107,221.93
11	6-Inch Concrete Curb	LF	2132	$ 3.70	$ 7,888.40
12	4 1/2" Concrete Sidewalk	SF	9190	$ 4.50	$ 41,355.00
13	Wheelchair ramps	EA	4	$ 600.00	$ 2,400.00
14	Removal of Asphalt Pavement	SY	7703	$ 7.50	$ 57,772.50
15	Removal of Driveways	SY	1031	$ 5.90	$ 6,082.90
16	Roadway Excavation	CY	4048	$ 15.00	$ 60,720.00
17	Portable Concrete Low Profile Traffic Barrier Installed	LF	2598	$ 26.80	$ 69,626.40
18	Portable Concrete Low Profile Traffic Barrier Moved & Reset	LF	2598	$ 5.00	$ 12,990.00
19	Portable Concrete Low Profile Traffic Barrier Removed	LF	2598	$ 6.80	$ 17,666.40
20	Sodding	SY	3385	$ 3.16	$ 10,696.60
21	Removal of Concrete Sidewalk	SY	1068	$ 5.90	$ 6,301.20
22	Traffic Control and Regulation	LS	1	$ 184,943.37	$ 184,943.37
23	Median Improvements	LS	1	$ 40,000.00	$ 40,000.00
24	Traffic Signal	LS	1	$ 170,000.00	$ 170,000.00
25	Illumination	LS	1	$ 50,000.00	$ 50,000.00
Public Utilities					

Total Price	**$ 1,479,546.93**
Contingency (25%)	**$ 369,886.73**
Mobilization (10%)	**$ 184,943.37**
Grand Total	**$ 2,219,320.39**

Table T4: Unit Costs

Overall Roadway Costs				
Item	**Unit**	**Qty.**	**Unit ($)**	**Cost ($)**
Remove Exist. Paving	SY	30000	$4	$120,000
Stabilize Subgrade	SY	30000	$6	$180,000
7" Paving (Jointed)	SY	30000	$35	$1,050,000
Water Line (12" PVC)	LF	5280	$50	$264,000
Sanitary Sewer (8"-SDR)	LF	5280	$75	$396,000
Signals	LS	1	$500,000	$500,000
Pvm't. Markings/Signing	LS	1	$200,000	$200,000
Illumination	LS	1	$200,000	$200,000
Utility Adjustmnents	LS	1	$200,000	$200,000
Subtotal				$3,110,000
TCP(10%)				$311,000
Mobilization(5%)				$171,050
Contiengency (25%)				$898,013
Cost/4-Lane Thoroughfare				$4,490,063
			Cost/Lane Mile	**$1,122,516**

Storm Sewer Costs					
RCB Size	**$/LF**	**$/Mile**	**RCB Size**	**$/LF**	**$/Mile**
3' x 2'	$62	$327,360	7' x 7'	$281	$1,483,680
3' x 3'	$77	$406,560	8' x 4'	$204	$1,077,120
4' x 2'	$69	$364,320	8' x 5'	$234	$1,235,520
4' x 3'	$90	$475,200	8' x 6'	$264	$1,393,920
4' x 4'	$92	$485,760	8' x 7'	$295	$1,557,600
5' x 2'	$94	$496,320	8' x 8'	$315	$1,663,200
5' x 3'	$121	$638,880	9' x 4'	$219	$1,156,320
5' x 4'	$135	$712,800	9' x 5'	$261	$1,378,080
5' x 5'	$147	$776,160	9' x 6'	$308	$1,626,240
6' x 3'	$151	$797,280	9' x 8'	$348	$1,837,440
6' x 4'	$161	$850,080	10 ' x 5'	$265	$1,399,200
6' x 5'	$170	$897,600	10' x 6'	$304	$1,605,120
6' x 6'	$214	$1,129,920	10' x 7'	$344	$1,816,320
7' x 3'	$140	$739,200	10' x 8'	$373	$1,969,440
7' x 4'	$181	$955,680	10' x 10'	$500	$2,640,000
7' x 5'	$200	$1,056,000	12' x 5'	$650	$3,432,000
7 ' x 6'	$227	$1,198,560			

Table T5: Node Table

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
1	78.78	75.71	-3.07	77.60	-1.89	79.18	78.42	-0.76	77.60	0.82
10	73.46	69.44	-4.03	72.76	-3.32	74.16	73.92	-0.24	73.03	0.89
10002	81.92	81.55	-0.38	81.41	0.14	82.32	82.32	0.00	83.42	-1.10
10003	81.78	81.56	-0.22	81.57	0.00	82.18	82.17	0.00	83.19	-1.02
10008	75.85	73.23	-2.62	78.17	-4.94	77.88	77.18	-0.69	79.51	-2.33
10009	77.69	74.12	-3.57	76.97	-2.85	78.54	78.40	-0.14	78.40	0.00
10010	77.48	73.99	-3.48	77.04	-3.04	78.24	78.04	-0.19	78.67	-0.62
10011	78.73	77.53	-1.21	78.19	-0.67	79.02	78.96	-0.07	79.48	-0.53
10015	80.17	77.00	-3.17	80.28	-3.28	80.63	80.57	-0.05	80.11	0.46
10017	77.09	72.74	-4.35	76.19	-3.45	77.36	77.29	-0.06	77.10	0.19
10018	75.57	74.87	-0.69	75.41	-0.54	75.97	75.88	-0.09	76.37	-0.49
10019	79.05	75.89	-3.16	80.00	-4.11	79.66	79.24	-0.41	80.02	-0.78
10020	79.52	76.46	-3.07	80.05	-3.59	80.64	80.35	-0.29	80.33	0.02
10021	79.04	75.83	-3.21	79.85	-4.02	79.68	79.17	-0.51	79.15	0.02
10022	78.85	75.85	-3.00	77.74	-1.89	79.26	78.96	-0.30	78.20	0.76
10023	79.00	75.85	-3.15	78.66	-2.81	79.48	79.14	-0.34	79.06	0.08
10032	80.84	80.31	-0.53	80.65	-0.34	81.21	81.06	-0.14	81.52	-0.46
10033	81.33	80.37	-0.96	81.44	-1.08	81.80	81.74	-0.06	81.59	0.15
10034	80.60	79.45	-1.15	80.60	-1.14	81.03	80.97	-0.05	82.05	-1.08
10035	80.63	79.46	-1.17	80.83	-1.36	81.68	81.58	-0.10	80.75	0.83
10036	76.82	76.72	-0.10	81.82	-5.10	81.88	81.62	-0.26	80.99	0.63
10037	75.51	75.51	0.00	81.10	-5.59	81.74	81.61	-0.13	81.37	0.24
10038	78.39	75.88	-2.51	77.34	-1.47	78.71	78.28	-0.43	78.71	-0.43
10040	79.84	77.02	-2.82	79.30	-2.27	80.20	80.03	-0.17	80.16	-0.13
10041	74.07	69.40	-4.67	73.45	-4.05	74.61	74.06	-0.55	73.29	0.77
10044	82.40	80.74	-1.65	82.29	-1.55	83.28	83.25	-0.03	81.77	1.48
10046	80.80	79.24	-1.56	82.18	-2.93	81.91	81.83	-0.08	82.43	-0.60
10048	78.83	77.52	-1.31	78.12	-0.60	79.21	79.10	-0.10	78.43	0.68
10049	78.07	76.14	-1.93	78.60	-2.46	78.52	78.23	-0.28	78.03	0.21
10051	77.27	74.82	-2.44	77.24	-2.42	77.91	77.23	-0.68	77.59	-0.36
10052	77.27	74.82	-2.45	77.29	-2.47	77.95	77.27	-0.68	78.18	-0.91
10053	76.94	74.42	-2.52	76.84	-2.42	77.61	76.70	-0.91	78.00	-1.30
10054	76.55	73.95	-2.61	78.00	-4.06	77.21	76.02	-1.19	78.24	-2.22
10055	76.98	73.47	-3.51	77.18	-3.71	77.84	77.37	-0.47	78.22	-0.85
10056	76.58	73.32	-3.26	77.13	-3.82	77.61	76.86	-0.75	78.84	-1.98
10057	76.12	74.08	-2.04	78.39	-4.31	76.80	75.54	-1.26	78.63	-3.08
10058	75.86	74.06	-1.80	77.99	-3.93	76.72	75.92	-0.81	79.27	-3.35
10059	75.92	73.37	-2.55	77.89	-4.52	78.26	77.98	-0.28	79.46	-1.47
10060	78.78	75.72	-3.06	77.31	-1.59	79.18	78.43	-0.75	77.60	0.83
10061	78.65	75.71	-2.94	77.10	-1.39	79.02	78.36	-0.66	78.23	0.14
10062	78.79	75.74	-3.05	77.30	-1.56	79.18	78.57	-0.61	77.96	0.61
10063	78.84	75.74	-3.10	77.99	-2.25	79.19	78.70	-0.49	78.32	0.38
10064	78.73	75.82	-2.92	78.20	-2.38	79.09	78.78	-0.31	78.67	0.10
10065	79.04	76.37	-2.67	79.13	-2.76	79.29	79.19	-0.10	78.88	0.32
10066	78.91	75.76	-3.15	78.78	-3.02	79.16	78.88	-0.27	78.97	-0.08
10067	79.21	76.88	-2.34	79.55	-2.68	79.57	79.44	-0.13	79.38	0.06
10068	79.18	76.71	-2.47	79.12	-2.41	79.44	79.32	-0.13	79.48	-0.16
10069	79.15	75.85	-3.29	79.14	-3.28	79.54	79.28	-0.26	79.86	-0.58
10070	79.15	75.85	-3.29	79.18	-3.33	79.49	79.27	-0.22	79.29	-0.01
10071	79.03	75.86	-3.17	78.97	-3.11	79.58	79.18	-0.40	78.67	0.51
10072	79.09	75.92	-3.17	79.64	-3.72	79.71	79.46	-0.25	80.45	-0.99
10073	79.50	76.38	-3.11	80.20	-3.82	80.23	80.19	-0.04	79.68	0.51
10074	79.48	76.37	-3.11	80.07	-3.70	80.19	80.14	-0.05	79.71	0.43
10075	79.21	76.04	-3.17	79.21	-3.17	79.64	79.38	-0.27	79.48	-0.10
10076	79.23	76.07	-3.16	79.28	-3.22	79.54	79.38	-0.17	79.40	-0.02
10077	79.06	75.91	-3.15	78.92	-3.02	79.60	79.26	-0.34	79.16	0.10
10078	79.12	76.22	-2.90	80.01	-3.79	80.07	79.41	-0.66	79.91	-0.50
10079	79.54	76.78	-2.75	79.63	-2.84	79.93	79.86	-0.07	79.82	0.04
10080	79.06	76.97	-2.08	78.42	-1.45	79.65	79.33	-0.32	80.02	-0.69
10081	79.06	76.97	-2.08	79.54	-2.57	79.79	79.33	-0.46	79.97	-0.64
10083	79.83	76.81	-3.01	79.53	-2.72	80.30	80.07	-0.23	79.56	0.51
10084	79.82	76.79	-3.03	79.57	-2.78	80.30	80.07	-0.22	79.63	0.45
10086	75.01	73.57	-1.45	75.44	-1.87	76.06	76.05	-0.01	76.37	-0.32
10087	63.77	63.46	-0.30	62.63	0.83	64.04	63.92	-0.12	63.95	-0.03
10095	82.85	81.58	-1.27	82.75	-1.17	83.23	83.23	0.00	82.93	0.30

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
10096	82.33	82.14	-0.19	82.08	0.06	82.46	82.46	0.00	83.81	-1.35
10097	82.58	82.54	-0.03	82.53	0.01	82.68	82.68	0.00	82.45	0.23
10098	83.02	82.60	-0.42	82.52	0.08	83.20	83.20	0.00	83.09	0.11
10099	83.95	82.66	-1.29	83.82	-1.16	84.20	84.20	0.00	83.27	0.93
10100	83.39	82.73	-0.65	83.24	-0.51	83.72	83.72	0.00	83.53	0.19
10101	82.96	82.63	-0.34	81.96	0.67	83.19	83.19	0.00	83.19	0.00
10102	83.69	82.77	-0.92	83.20	-0.43	84.47	84.47	0.00	83.88	0.59
10103	83.83	82.92	-0.91	83.30	-0.38	84.33	84.32	0.00	83.36	0.97
10106	82.71	82.28	-0.42	82.13	0.15	83.24	83.23	0.00	83.71	-0.48
10107	82.92	82.41	-0.51	81.95	0.46	83.47	83.46	0.00	83.85	-0.39
10108	83.73	82.85	-0.88	83.35	-0.49	84.34	84.34	0.00	83.98	0.35
10109	83.19	82.79	-0.40	82.70	0.09	83.72	83.72	0.00	83.64	0.08
10110	84.16	83.21	-0.95	86.10	-2.89	84.86	84.85	-0.01	85.67	-0.82
10111	84.49	83.39	-1.10	85.69	-2.30	85.49	85.48	-0.01	85.18	0.30
10112	84.08	83.45	-0.63	83.72	-0.26	84.27	84.27	0.00	85.05	-0.78
10113	82.68	82.43	-0.25	81.99	0.45	83.32	83.32	0.00	82.70	0.61
10114	84.40	83.54	-0.86	82.98	0.56	85.17	85.17	0.00	81.75	3.42
10115	84.85	83.80	-1.05	82.21	1.60	86.22	86.22	0.00	82.64	3.58
10118	83.36	79.40	-3.96	82.82	-3.42	83.83	83.83	0.00	82.90	0.93
10119	83.13	82.60	-0.53	82.50	0.09	83.50	83.50	0.00	83.03	0.47
10120	81.85	81.51	-0.33	81.15	0.36	82.11	82.11	0.00	81.69	0.42
10121	83.15	82.44	-0.71	82.03	0.41	83.77	83.77	0.00	82.39	1.38
10123	81.86	81.53	-0.33	81.11	0.42	82.19	82.19	0.00	82.79	-0.60
10124	81.98	81.13	-0.85	79.95	1.18	82.42	82.42	0.00	81.33	1.09
10128	83.49	82.95	-0.54	82.29	0.66	83.80	83.80	0.00	83.55	0.24
10135	84.37	82.95	-1.43	83.25	-0.31	85.00	85.00	0.00	84.49	0.51
10136	83.34	82.67	-0.67	82.19	0.48	83.81	83.81	0.00	84.95	-1.14
10138	85.86	84.75	-1.11	85.68	-0.93	86.06	86.05	-0.01	87.43	-1.37
10140	74.29	69.34	-4.95	74.15	-4.81	74.87	73.95	-0.92	73.03	0.92
10141	77.40	74.80	-2.60	78.11	-3.31	78.32	78.32	0.00	76.00	2.32
10142	75.23	73.83	-1.40	77.55	-3.72	75.76	75.77	0.00	76.20	-0.44
10143	75.23	73.82	-1.41	78.41	-4.59	75.76	75.76	0.00	76.52	-0.77
10144	75.22	73.81	-1.41	78.41	-4.60	75.72	75.72	0.00	76.07	-0.35
10145	78.33	74.90	-3.43	78.25	-3.35	78.79	78.79	0.00	75.59	3.20
10146	77.10	74.61	-2.49	77.21	-2.60	77.43	77.43	0.00	76.73	0.69
10147	74.82	74.01	-0.81	74.23	-0.21	75.03	75.03	0.00	74.22	0.82
10149	69.38	65.24	-4.14	68.58	-3.34	69.76	69.44	-0.32	69.67	-0.23
10150	69.00	65.24	-3.77	67.91	-2.67	69.27	69.05	-0.22	69.53	-0.48
10152	78.48	75.73	-2.75	80.80	-5.07	79.07	79.05	-0.02	80.99	-1.94
10153	72.22	71.18	-1.04	71.62	-0.44	73.36	73.35	-0.01	73.99	-0.65
10154	71.49	68.04	-3.46	70.86	-2.83	71.87	71.82	-0.06	71.74	0.07
10155	76.28	72.39	-3.89	76.20	-3.81	76.83	76.78	-0.05	77.23	-0.45
10156	76.31	72.39	-3.92	76.34	-3.95	76.91	76.87	-0.05	76.84	0.03
10161	73.38	69.27	-4.11	73.90	-4.63	74.12	74.06	-0.05	74.08	-0.02
10162	73.28	69.27	-4.01	73.09	-3.82	73.56	73.52	-0.04	75.53	-2.01
10163	73.50	69.44	-4.07	75.28	-5.85	74.43	74.29	-0.14	74.54	-0.25
10164	73.46	69.55	-3.91	73.36	-3.81	74.06	73.92	-0.14	74.52	-0.60
10166	73.23	69.98	-3.25	73.47	-3.49	74.13	73.96	-0.17	74.52	-0.56
10171	78.74	76.67	-2.07	81.15	-4.48	79.15	79.14	-0.01	80.03	-0.89
10172	74.93	70.89	-4.04	74.95	-4.06	75.82	75.75	-0.07	75.26	0.49
10174	70.46	67.00	-3.46	69.88	-2.88	71.55	71.28	-0.27	70.67	0.61
10175	70.28	67.00	-3.28	69.47	-2.47	71.38	71.11	-0.27	70.85	0.26
10176	70.49	66.16	-4.32	70.02	-3.85	71.41	71.15	-0.26	70.84	0.31
10177	70.36	66.16	-4.20	69.59	-3.43	71.37	71.11	-0.26	71.05	0.06
10182	71.39	66.65	-4.74	71.09	-4.44	72.03	71.83	-0.20	71.50	0.33
10188	73.17	71.74	-1.42	73.07	-1.32	73.48	73.42	-0.06	73.97	-0.55
10192	73.38	69.39	-3.98	73.75	-4.35	74.09	74.01	-0.08	73.94	0.07
10193	73.40	69.39	-4.01	73.17	-3.78	74.50	74.39	-0.11	75.08	-0.69
10194	73.33	69.09	-4.24	73.66	-4.57	74.26	74.15	-0.12	73.75	0.40
10196	73.03	69.09	-3.94	72.80	-3.71	73.21	73.19	-0.02	75.15	-1.96
10199	73.20	69.23	-3.97	73.49	-4.26	73.90	73.81	-0.10	75.04	-1.24
10204	74.66	69.94	-4.72	74.17	-4.23	75.49	75.43	-0.06	75.86	-0.43
10205	74.58	69.84	-4.74	74.17	-4.33	75.13	75.07	-0.06	75.55	-0.48
10206	74.79	70.37	-4.42	74.11	-3.74	75.45	75.40	-0.05	76.45	-1.05
10207	74.89	70.37	-4.52	74.74	-4.37	75.56	75.52	-0.05	75.65	-0.14
10210	76.21	73.23	-2.97	77.34	-4.11	77.40	77.36	-0.04	78.11	-0.75

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
10214	78.26	71.54	-6.71	78.08	-6.54	79.08	79.06	-0.02	78.60	0.46
10237	69.85	69.81	-0.03	73.01	-3.20	72.01	72.12	0.11	72.96	-0.84
10245	79.66	78.48	-1.18	78.21	0.27	80.28	80.20	-0.08	78.99	1.21
10247	79.83	78.88	-0.95	78.35	0.53	80.66	80.69	0.04	77.29	3.41
10251	80.04	78.84	-1.20	80.66	-1.82	80.59	80.47	-0.12	81.09	-0.62
10254	80.01	78.80	-1.21	79.23	-0.43	80.65	80.52	-0.13	79.59	0.93
10255	80.06	78.76	-1.31	79.34	-0.59	80.77	80.61	-0.16	79.87	0.73
10257	80.23	79.23	-1.01	78.65	0.57	80.93	80.75	-0.18	79.84	0.91
10258	80.22	79.24	-0.98	78.79	0.45	80.99	80.80	-0.18	79.90	0.90
10260	73.60	73.01	-0.59	78.16	-5.15	78.34	78.23	-0.11	78.47	-0.24
10261	73.60	73.01	-0.59	78.41	-5.40	78.30	78.13	-0.17	78.48	-0.35
10262	72.81	72.37	-0.44	77.07	-4.70	74.82	74.82	-0.01	79.17	-4.35
10263	73.12	72.64	-0.48	78.99	-6.35	76.24	76.17	-0.07	78.84	-2.68
10264	72.19	72.15	-0.04	75.67	-3.52	72.35	72.35	0.00	76.54	-4.19
10265	72.65	72.30	-0.34	76.52	-4.22	74.06	74.06	0.00	77.30	-3.25
10266	72.78	72.36	-0.42	76.83	-4.47	74.62	74.62	0.00	79.03	-4.40
10285	79.66	78.53	-1.13	79.35	-0.82	80.26	80.19	-0.07	81.42	-1.23
10289	73.60	73.01	-0.59	78.81	-5.80	78.35	78.17	-0.18	78.59	-0.43
10290	73.60	73.01	-0.59	78.11	-5.10	78.34	78.17	-0.17	78.39	-0.23
10297	80.26	78.76	-1.51	81.31	-2.55	81.18	81.09	-0.09	82.27	-1.18
10298	66.88	65.45	-1.43	66.32	-0.87	68.64	67.33	-1.31	66.71	0.62
10299	67.13	65.54	-1.58	66.94	-1.39	67.91	67.07	-0.84	68.80	-1.73
10300	67.76	65.45	-2.31	67.11	-1.66	69.64	68.45	-1.19	66.07	2.38
10301	67.87	65.55	-2.32	67.74	-2.20	68.83	67.77	-1.06	68.65	-0.88
10302	75.71	75.36	-0.34	74.36	1.00	76.14	76.06	-0.08	75.26	0.79
10304	75.30	74.35	-0.95	74.67	-0.32	75.79	75.66	-0.13	76.10	-0.45
10306	75.29	74.35	-0.94	74.86	-0.51	75.78	75.65	-0.13	75.95	-0.30
10308	75.03	74.03	-1.00	74.65	-0.62	75.59	75.27	-0.32	75.98	-0.70
10309	75.31	74.03	-1.28	74.97	-0.94	76.01	75.72	-0.29	75.83	-0.12
10311	74.99	73.22	-1.77	75.21	-1.99	75.68	75.07	-0.61	75.78	-0.72
10313	74.99	73.22	-1.77	75.00	-1.77	75.42	75.06	-0.36	76.65	-1.59
11	74.32	69.31	-5.01	74.15	-4.84	74.90	74.04	-0.86	72.82	1.22
12	74.20	0.00	-74.20	73.59	-73.59	74.54	0.00	-74.54	73.21	-73.21
13	74.06	0.00	-74.06	73.97	-73.97	74.22	0.00	-74.22	72.85	-72.85
14	74.06	69.74	-4.32	73.81	-4.07	74.56	74.09	-0.48	73.29	0.80
15	74.04	69.36	-4.69	72.46	-3.10	74.62	74.05	-0.57	73.20	0.85
16	68.47	67.29	-1.19	72.73	-5.44	71.97	72.08	0.11	72.94	-0.86
18	71.30	69.79	-1.51	72.17	-2.38	72.87	72.83	-0.04	73.63	-0.81
2	61.55	52.05	-9.50	62.12	-10.07	63.29	62.94	-0.35	62.81	0.12
20000	74.04	64.71	-9.33	73.91	-9.20	74.21	72.99	-1.22	74.00	-1.01
20001	72.70	64.63	-8.07	72.41	-7.78	72.79	72.69	-0.10	72.57	0.12
20002	72.66	64.58	-8.08	72.36	-7.78	72.75	72.56	-0.19	72.21	0.35
20003	72.71	64.58	-8.14	72.79	-8.22	72.86	72.56	-0.31	72.78	-0.23
20004	72.46	64.53	-7.93	72.34	-7.81	72.54	72.42	-0.13	71.75	0.67
20005	72.25	64.44	-7.81	72.11	-7.67	72.47	72.12	-0.34	71.78	0.34
20006	71.98	64.42	-7.57	71.62	-7.20	72.20	71.99	-0.20	72.06	-0.07
20007	71.69	64.38	-7.30	71.02	-6.63	71.90	71.83	-0.07	71.15	0.68
20008	71.84	64.35	-7.49	71.79	-7.44	72.06	71.78	-0.28	71.32	0.46
20009	71.79	64.32	-7.46	71.46	-7.14	72.00	71.66	-0.33	71.56	0.11
20053	76.47	73.45	-3.03	78.48	-5.03	78.12	77.19	-0.92	79.15	-1.96
20057	69.61	64.23	-5.38	69.51	-5.28	69.77	70.12	0.35	69.59	0.53
20058	69.34	64.22	-5.12	69.05	-4.83	69.47	69.96	0.49	69.06	0.89
20059	69.00	64.22	-4.78	68.81	-4.59	69.11	69.79	0.68	68.99	0.80
20060	68.84	64.21	-4.63	68.88	-4.67	68.94	69.61	0.67	69.11	0.50
20061	68.68	64.20	-4.48	68.63	-4.43	68.74	69.44	0.70	69.39	0.05
20062	68.40	64.19	-4.21	68.38	-4.19	68.49	69.05	0.56	68.39	0.66
20063	67.98	64.16	-3.81	67.64	-3.47	68.28	68.47	0.20	68.19	0.28
20064	67.98	64.15	-3.83	66.16	-2.01	68.32	68.41	0.09	67.64	0.77
20065	67.72	63.67	-4.06	68.02	-4.35	68.02	67.34	-0.68	68.84	-1.50
20066	67.67	63.67	-4.00	67.15	-3.48	67.84	67.34	-0.50	68.38	-1.04
20067	67.78	63.67	-4.12	68.01	-4.34	68.08	67.34	-0.74	68.36	-1.02
20068	67.81	63.67	-4.14	67.74	-4.08	68.12	67.34	-0.78	68.39	-1.04
20069	67.83	63.66	-4.17	68.88	-5.22	68.26	67.34	-0.91	67.83	-0.49
20071	67.78	63.66	-4.12	67.09	-3.43	68.05	67.31	-0.73	67.14	0.18
20072	67.79	63.66	-4.13	68.25	-4.60	68.05	67.26	-0.78	68.68	-1.42
20073	67.84	63.62	-4.22	67.22	-3.60	68.07	67.22	-0.85	67.30	-0.08

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
20074	67.92	63.62	-4.30	67.30	-3.69	68.14	67.22	-0.92	67.38	-0.16
20075	67.96	63.61	-4.35	67.41	-3.80	68.18	67.22	-0.96	67.13	0.10
20076	67.51	63.58	-3.93	66.84	-3.26	67.92	67.22	-0.70	67.18	0.04
20077	67.52	63.45	-4.07	68.17	-4.72	68.20	67.22	-0.98	67.83	-0.61
20078	67.13	63.24	-3.90	68.78	-5.54	67.69	67.22	-0.47	68.27	-1.06
20079	66.70	63.00	-3.70	66.92	-3.91	67.51	67.21	-0.30	67.60	-0.39
20080	66.01	62.88	-3.13	66.44	-3.56	67.46	67.22	-0.24	66.87	0.34
20081	62.55	62.06	-0.50	66.48	-4.42	67.50	67.32	-0.19	66.02	1.29
20083	68.27	60.89	-7.38	53.63	7.26	67.68	67.56	-0.12	49.84	17.71
20084	68.40	63.39	-5.01	66.46	-3.07	71.20	70.39	-0.81	66.97	3.42
20085	68.47	64.60	-3.88	66.96	-2.36	71.13	70.37	-0.76	67.31	3.05
20086	68.54	64.96	-3.58	66.66	-1.71	71.07	70.34	-0.72	67.35	2.99
20087	68.63	65.33	-3.30	66.91	-1.57	70.99	70.31	-0.68	67.22	3.09
20088	68.70	65.62	-3.08	67.36	-1.74	70.93	70.29	-0.64	67.11	3.18
20089	68.77	65.94	-2.83	66.45	-0.51	70.86	70.26	-0.60	67.73	2.53
20090	68.84	66.22	-2.62	67.43	-1.20	70.80	70.24	-0.56	67.53	2.70
20101	78.62	75.29	-3.33	80.50	-5.21	79.17	79.51	0.34	79.53	-0.02
20102	78.70	76.01	-2.69	76.48	-0.47	79.23	79.51	0.28	79.67	-0.16
20103	78.71	76.06	-2.64	79.39	-3.33	79.24	79.51	0.28	79.67	-0.16
20104	78.76	76.24	-2.53	79.36	-3.12	79.27	79.51	0.24	79.64	-0.13
20105	78.92	76.63	-2.29	79.62	-2.99	79.39	79.53	0.14	79.64	-0.10
20106	79.08	76.96	-2.13	79.23	-2.27	79.52	79.55	0.03	79.64	-0.09
20107	79.24	77.31	-1.93	78.84	-1.53	79.66	79.63	-0.03	79.58	0.05
20108	79.25	77.46	-1.79	78.94	-1.48	79.63	79.60	-0.03	76.63	2.97
20109	79.25	77.56	-1.70	79.28	-1.72	79.62	79.59	-0.03	76.63	2.96
20110	79.27	77.89	-1.39	79.19	-1.30	79.56	79.53	-0.03	77.13	2.40
20111	79.24	77.74	-1.49	78.72	-0.98	79.55	79.52	-0.03	76.63	2.89
20112	79.36	78.29	-1.07	79.12	-0.83	79.64	79.61	-0.04	77.21	2.40
20113	79.59	78.69	-0.90	78.98	-0.29	80.04	80.00	-0.04	77.21	2.80
20114	79.50	78.69	-0.81	79.18	-0.49	79.80	79.75	-0.05	77.21	2.54
20115	79.24	78.69	-0.55	78.83	-0.14	79.50	79.48	-0.02	77.21	2.27
20116	79.20	75.32	-3.88	77.88	-2.57	79.84	79.49	-0.35	79.79	-0.30
20117	79.47	75.32	-4.14	78.13	-2.81	80.24	79.60	-0.64	80.11	-0.51
20118	79.22	75.32	-3.90	77.86	-2.54	79.87	79.44	-0.43	79.97	-0.52
20119	76.47	73.45	-3.03	77.93	-4.48	78.11	77.19	-0.92	79.64	-2.45
20120	76.47	73.45	-3.03	78.20	-4.75	78.13	77.19	-0.94	78.95	-1.76
20121	76.47	73.45	-3.03	78.36	-4.91	78.14	77.19	-0.95	78.95	-1.76
20122	76.35	73.39	-2.96	78.43	-5.04	77.84	76.83	-1.02	78.94	-2.12
20123	76.23	73.35	-2.88	78.78	-5.43	77.55	76.46	-1.09	78.94	-2.49
20124	76.11	73.30	-2.82	77.09	-3.80	77.33	76.25	-1.08	77.92	-1.68
20125	76.53	74.28	-2.26	79.12	-4.84	77.97	77.10	-0.87	78.01	-0.91
20126	76.83	74.43	-2.40	79.31	-4.89	78.38	77.72	-0.66	79.56	-1.84
20127	77.22	74.62	-2.60	78.91	-4.29	78.93	78.54	-0.38	79.24	-0.69
20128	77.47	74.74	-2.74	78.63	-3.89	79.19	79.00	-0.19	79.69	-0.69
20129	77.47	74.74	-2.74	78.64	-3.91	79.15	78.98	-0.17	79.69	-0.71
20130	75.96	73.28	-2.68	76.12	-2.84	77.06	76.23	-0.83	78.53	-2.30
20131	79.35	76.95	-2.40	78.69	-1.75	79.99	79.46	-0.53	79.61	-0.15
20132	79.25	76.90	-2.36	78.40	-1.50	79.90	79.41	-0.49	79.35	0.06
20133	79.50	76.91	-2.59	78.85	-1.94	80.13	79.55	-0.58	79.30	0.25
20134	79.50	76.91	-2.59	78.93	-2.02	80.13	79.56	-0.58	79.51	0.05
20135	79.53	76.99	-2.54	79.42	-2.42	80.18	79.53	-0.66	79.47	0.06
20136	78.95	76.39	-2.56	78.03	-1.65	79.57	78.95	-0.62	79.09	-0.14
20137	79.39	76.39	-3.00	78.42	-2.03	80.07	79.10	-0.96	79.03	0.07
20138	79.21	75.95	-3.26	77.98	-2.04	79.83	79.02	-0.81	78.74	0.28
20139	79.20	76.03	-3.17	78.16	-2.13	79.83	79.04	-0.79	79.37	-0.33
20140	79.07	75.80	-3.27	77.49	-1.69	79.68	78.77	-0.91	80.05	-1.28
20141	79.42	75.80	-3.62	77.71	-1.90	80.21	79.03	-1.19	79.04	-0.01
20142	79.19	74.46	-4.73	77.88	-3.42	79.81	78.47	-1.34	79.17	-0.70
20142-1	79.15	74.59	-4.56	77.70	-3.11	79.77	78.52	-1.25	78.88	-0.36
20144	73.42	64.71	-8.70	72.66	-7.95	73.60	72.99	-0.61	72.95	0.04
20145	70.39	64.25	-6.14	71.15	-6.90	70.71	70.75	0.05	71.44	-0.68
20155	71.60	64.30	-7.30	71.10	-6.80	71.80	71.47	-0.33	71.30	0.17
20156	71.57	64.28	-7.30	71.54	-7.27	71.75	71.28	-0.47	71.65	-0.37
20157	71.39	64.27	-7.12	71.46	-7.20	71.54	71.10	-0.45	71.79	-0.70
20158	70.54	64.26	-6.28	71.49	-7.23	70.97	70.92	-0.05	71.87	-0.95
20159	70.46	64.26	-6.21	71.52	-7.27	70.85	70.84	-0.01	71.56	-0.72

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
20160	70.70	64.26	-6.43	70.96	-6.70	71.07	71.00	-0.07	71.85	-0.85
20161	70.39	64.25	-6.14	70.87	-6.62	70.71	70.75	0.04	71.44	-0.68
20162	70.30	64.25	-6.05	69.99	-5.74	70.54	70.67	0.13	70.25	0.42
20163	70.05	64.24	-5.81	69.68	-5.44	70.19	70.53	0.34	69.99	0.55
20164	70.04	64.24	-5.80	69.71	-5.47	70.18	70.40	0.21	69.90	0.49
21	72.50	70.53	-1.97	73.40	-2.87	74.26	73.78	-0.49	72.85	0.92
22	74.91	74.89	-0.02	74.86	0.03	75.04	75.04	0.00	76.26	-1.23
23	75.53	75.49	-0.04	75.40	0.09	75.69	75.69	0.00	76.39	-0.70
24	75.37	75.35	-0.02	75.31	0.04	75.40	75.40	0.00	76.40	-1.01
25	75.37	75.33	-0.05	75.24	0.09	75.45	75.45	0.00	74.83	0.62
26	75.24	75.18	-0.06	75.07	0.11	75.49	75.48	-0.01	75.69	-0.21
27	74.51	74.34	-0.17	73.95	0.39	74.91	74.89	-0.02	74.16	0.74
28	74.08	74.06	-0.02	74.04	0.02	74.45	74.44	-0.01	74.98	-0.53
29	72.55	72.52	-0.03	72.10	0.42	72.91	72.90	-0.01	75.38	-2.48
3	61.30	52.35	-8.95	58.84	-6.50	62.29	62.23	-0.06	61.06	1.17
30	75.75	75.69	-0.06	75.50	0.19	75.84	75.84	0.00	74.82	1.02
30000	82.70	80.82	-1.88	82.20	-1.38	86.46	86.32	-0.13	80.06	6.26
30001	80.41	78.84	-1.57	80.59	-1.75	82.78	82.58	-0.20	80.38	2.20
30002	84.73	82.29	-2.45	81.75	0.54	90.14	90.06	-0.08	82.74	7.32
30003	77.66	75.92	-1.74	75.29	0.64	79.97	79.59	-0.38	75.76	3.83
30004	77.40	75.65	-1.75	74.65	1.00	79.71	79.31	-0.40	75.76	3.55
30005	75.73	74.25	-1.47	74.01	0.24	77.64	77.14	-0.51	75.89	1.24
30006	75.13	73.79	-1.34	74.01	-0.22	76.84	76.29	-0.55	75.09	1.20
30007	82.11	80.41	-1.70	82.15	-1.75	85.24	85.09	-0.14	80.06	5.03
30008	79.26	77.68	-1.57	79.17	-1.49	81.42	81.18	-0.24	80.38	0.79
30009	76.94	75.26	-1.68	74.59	0.67	79.21	78.78	-0.43	75.65	3.13
30010	81.39	80.04	-1.34	80.91	-0.86	83.32	83.21	-0.12	80.06	3.15
30011	81.40	80.24	-1.16	79.75	0.49	82.94	82.86	-0.08	80.45	2.41
30012	81.00	79.47	-1.53	80.98	-1.51	83.35	83.18	-0.17	80.06	3.12
30013	78.55	76.84	-1.71	78.41	-1.57	80.95	80.62	-0.32	78.82	1.80
30014	76.02	74.53	-1.48	74.80	-0.27	77.87	77.41	-0.46	75.56	1.85
30015	74.06	73.09	-0.97	76.14	-3.05	75.20	74.84	-0.36	76.57	-1.73
30016	74.56	73.37	-1.19	74.60	-1.23	76.04	75.47	-0.57	75.09	0.38
30017	76.73	75.09	-1.64	75.04	0.05	78.91	78.47	-0.44	75.65	2.82
30018	81.22	79.72	-1.50	81.00	-1.28	83.56	83.40	-0.17	80.06	3.34
30019	84.76	82.27	-2.49	82.78	-0.51	90.71	90.63	-0.09	82.74	7.88
30020	79.76	78.14	-1.62	79.36	-1.22	82.14	81.89	-0.25	80.38	1.51
30021	77.18	75.45	-1.73	73.92	1.52	79.49	79.08	-0.41	75.76	3.31
30022	76.35	74.76	-1.58	74.47	0.29	78.46	77.99	-0.47	75.56	2.43
30023	79.26	77.57	-1.69	79.60	-2.03	81.71	81.43	-0.28	80.38	1.04
30024	73.66	72.88	-0.79	80.81	-7.94	74.43	74.60	0.17	73.61	1.00
30025	73.84	72.98	-0.86	75.46	-2.48	74.77	74.70	-0.08	75.61	-0.91
30026	73.64	72.86	-0.78	80.95	-8.09	74.41	74.58	0.17	73.19	1.39
30027	81.38	79.90	-1.48	80.99	-1.09	83.70	83.55	-0.16	80.06	3.49
30028	0.00	0.00	0.00	81.94	0.00	0.00	0.00	0.00	84.00	0.00
30029	73.39	71.68	-1.71	81.55	-9.87	74.67	74.67	0.00	83.99	-9.32
30030	76.84	75.72	-1.13	73.43	2.29	76.99	76.14	-0.85	74.17	1.96
30031	76.76	75.71	-1.05	73.02	2.69	76.17	76.14	-0.04	73.44	2.70
30032	82.44	80.75	-1.69	82.29	-1.54	83.28	83.25	-0.03	82.41	0.84
30033	82.58	80.95	-1.63	83.60	-2.65	83.44	83.42	-0.02	83.39	0.03
30034	83.10	81.63	-1.47	82.47	-0.84	83.76	83.75	-0.01	82.89	0.86
30035	83.31	81.63	-1.67	82.99	-1.35	83.93	83.93	-0.01	83.22	0.70
30036	80.81	79.25	-1.56	82.57	-3.33	81.92	81.84	-0.09	83.01	-1.18
30037	81.47	79.71	-1.75	83.04	-3.32	83.06	83.04	-0.02	83.13	-0.09
30038	78.36	75.68	-2.68	76.91	-1.23	78.73	78.21	-0.52	76.75	1.47
30039	78.18	75.67	-2.51	76.97	-1.30	78.49	78.04	-0.45	77.42	0.62
30040	78.29	75.61	-2.68	77.51	-1.90	78.69	77.95	-0.73	77.42	0.53
30041	78.29	75.61	-2.68	77.20	-1.59	78.67	77.93	-0.74	77.36	0.57
30042	77.60	71.51	-6.10	77.21	-5.70	78.14	77.97	-0.18	77.76	0.21
30043	77.57	71.57	-6.00	77.46	-5.89	78.13	78.06	-0.06	77.88	0.18
31	73.50	71.18	-2.32	74.08	-2.90	73.88	73.78	-0.11	73.39	0.38
3121295	72.22	71.18	-1.04	71.56	-0.39	73.38	73.36	-0.02	73.97	-0.60
3121297	70.60	66.04	-4.55	70.26	-4.22	71.35	71.07	-0.28	71.05	0.02
3121300	71.28	69.77	-1.52	72.63	-2.86	72.90	72.85	-0.05	73.03	-0.19
3121301	72.22	70.69	-1.54	73.41	-2.72	73.04	73.03	-0.01	73.53	-0.50
3121302	70.32	65.88	-4.44	69.82	-3.94	71.00	70.68	-0.32	70.77	-0.09

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3121305	67.00	65.84	-1.16	73.01	-7.17	71.23	71.30	0.06	74.46	-3.16
3121307	66.55	63.45	-3.10	73.14	-9.69	71.05	71.09	0.05	73.24	-2.14
3121309	71.86	69.47	-2.38	72.63	-3.15	72.68	72.56	-0.13	73.30	-0.75
3121310	69.82	69.47	-0.35	68.48	0.99	70.45	70.19	-0.26	69.77	0.42
3121320	71.53	68.05	-3.48	71.75	-3.69	71.93	71.96	0.03	72.05	-0.09
3121327	66.85	63.96	-2.89	67.14	-3.18	68.34	67.38	-0.97	68.07	-0.69
3121330	66.37	63.96	-2.41	65.36	-1.40	68.31	67.37	-0.94	66.75	0.62
3121332	66.22	63.96	-2.27	66.12	-2.16	68.33	67.41	-0.91	66.99	0.42
3121694	67.64	64.65	-2.99	73.22	-8.57	71.62	71.65	0.03	73.55	-1.90
3121695	67.13	64.16	-2.97	72.44	-8.27	71.36	71.40	0.04	72.68	-1.28
3121696	68.67	65.67	-3.01	72.68	-7.01	72.14	72.16	0.02	74.73	-2.57
3121697	68.14	65.13	-3.01	73.47	-8.35	71.88	71.90	0.03	74.09	-2.19
3121698	69.20	66.21	-2.99	72.71	-6.50	72.39	72.41	0.01	74.66	-2.26
3121699	68.48	68.10	-0.37	72.91	-4.80	71.94	72.04	0.11	73.13	-1.09
3121701	70.42	70.36	-0.06	72.51	-2.15	71.95	72.06	0.11	72.81	-0.74
3121712	72.20	70.68	-1.52	72.79	-2.11	72.92	72.89	-0.04	73.45	-0.56
3121713	72.29	71.23	-1.06	72.08	-0.86	72.92	72.89	-0.03	73.05	-0.16
3121719	71.80	68.04	-3.76	71.22	-3.18	72.09	72.06	-0.04	71.33	0.72
3121720	71.57	69.08	-2.49	71.53	-2.46	71.94	71.96	0.02	72.05	-0.09
3121732	68.92	67.49	-1.43	67.66	-0.16	69.29	69.14	-0.15	68.26	0.87
3124520	63.25	60.11	-3.14	66.94	-6.83	69.34	69.37	0.03	65.98	3.39
3124527	68.19	66.70	-1.49	66.59	0.10	68.70	68.18	-0.52	65.57	2.60
3124545	60.95	57.99	-2.96	66.94	-8.95	67.83	67.83	-0.01	67.19	0.64
3124561	60.38	57.45	-2.93	65.35	-7.91	66.53	67.25	0.72	67.40	-0.15
3124561-2	60.38	57.50	-2.88	65.61	-8.11	66.37	67.27	0.90	67.75	-0.48
3124572	60.36	57.30	-3.06	65.25	-7.95	66.79	67.21	0.42	66.13	1.07
3124572-2	60.35	57.23	-3.12	64.90	-7.67	66.91	67.19	0.29	65.78	1.42
3124572-3	60.35	57.11	-3.24	65.01	-7.90	66.95	67.18	0.23	65.60	1.58
3124579	60.65	55.54	-5.11	68.17	-12.63	67.48	67.48	0.00	67.45	0.03
3126581	73.30	67.83	-5.47	74.20	-6.37	74.07	74.05	-0.02	73.18	0.87
3126583	72.88	67.47	-5.41	73.73	-6.26	73.68	73.53	-0.15	74.13	-0.60
3126584	73.77	73.31	-0.46	74.15	-0.84	74.31	74.24	-0.07	73.26	0.98
3126585	73.47	73.01	-0.46	73.66	-0.65	74.05	73.96	-0.08	73.04	0.92
3126586	75.69	74.88	-0.81	75.32	-0.45	76.20	76.16	-0.04	74.98	1.18
3126590	75.66	74.87	-0.79	75.43	-0.56	76.17	76.15	-0.02	76.88	-0.73
3126593	74.24	73.66	-0.58	73.75	-0.09	75.31	74.77	-0.54	74.35	0.42
3126595	74.21	71.24	-2.97	72.27	-1.03	75.34	74.27	-1.07	73.49	0.78
3126596	71.45	70.58	-0.87	73.87	-3.29	72.54	72.34	-0.19	72.30	0.04
3126597	73.03	72.55	-0.48	73.80	-1.25	73.65	73.53	-0.12	72.64	0.90
3126598	72.76	72.26	-0.50	74.09	-1.83	73.41	73.28	-0.14	72.43	0.85
3126599	71.03	66.13	-4.90	72.71	-6.58	72.15	72.01	-0.15	73.03	-1.02
3126600	72.48	71.96	-0.52	71.72	0.24	73.17	73.02	-0.15	72.40	0.62
3126602	75.50	74.71	-0.79	77.20	-2.49	75.96	75.94	-0.02	77.03	-1.08
3126603	75.61	74.70	-0.90	76.53	-1.83	76.17	76.16	-0.02	77.19	-1.03
3126605	74.24	73.67	-0.57	73.32	0.34	75.49	74.74	-0.75	73.99	0.75
3126607	73.85	72.92	-0.93	72.84	0.08	75.13	74.39	-0.73	73.89	0.51
3126608	72.11	71.57	-0.54	72.66	-1.09	72.84	72.67	-0.18	72.73	-0.06
3126615	75.58	74.64	-0.95	77.35	-2.72	76.18	76.16	-0.02	77.03	-0.87
3126616	68.67	65.85	-2.81	70.21	-4.35	69.33	69.94	0.60	71.05	-1.12
3126617	75.86	74.67	-1.19	77.82	-3.15	76.48	76.46	-0.01	76.62	-0.16
3126618	72.94	70.95	-1.99	72.47	-1.52	73.64	72.62	-1.02	74.34	-1.72
3126619	75.60	75.13	-0.47	75.00	0.13	75.99	75.99	-0.01	75.93	0.05
3126620	74.10	73.04	-1.06	75.26	-2.21	75.04	74.69	-0.36	75.70	-1.01
3126621	75.57	74.62	-0.95	77.71	-3.08	76.17	76.15	-0.02	77.20	-1.05
3126622	75.56	74.61	-0.95	76.63	-2.03	76.15	76.14	-0.02	76.41	-0.28
3126625	75.56	74.61	-0.95	77.94	-3.33	76.15	76.13	-0.02	77.66	-1.53
3126630	74.31	73.59	-0.72	73.50	0.09	74.85	74.79	-0.05	74.44	0.35
3126633	74.11	73.07	-1.04	74.28	-1.21	74.85	74.73	-0.13	74.72	0.00
3126634	75.59	74.67	-0.92	77.25	-2.58	76.17	76.16	-0.01	76.79	-0.64
3126635	75.57	74.66	-0.91	77.64	-2.98	76.11	76.10	-0.01	77.23	-1.14
3126637	75.59	74.68	-0.91	76.09	-1.40	76.15	76.13	-0.02	76.31	-0.18
3126639	75.60	74.70	-0.90	76.05	-1.35	76.15	76.13	-0.02	76.35	-0.22
3126641	75.69	74.74	-0.96	75.49	-0.76	76.19	76.18	-0.01	75.48	0.70
3126645	74.12	73.30	-0.82	72.81	0.48	74.82	74.79	-0.03	74.61	0.17
3126646	74.13	73.16	-0.98	73.59	-0.44	74.84	74.77	-0.07	74.12	0.65
3126647	74.10	73.07	-1.03	73.33	-0.26	74.82	74.73	-0.09	74.06	0.67

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3126648	75.61	74.87	-0.73	75.49	-0.62	75.97	75.96	-0.01	75.21	0.76
3126650	74.36	73.77	-0.59	72.79	0.98	74.92	74.89	-0.03	74.69	0.20
3126651	73.98	72.92	-1.06	74.50	-1.58	74.73	74.67	-0.06	74.46	0.21
3126652	77.11	75.38	-1.73	77.08	-1.70	77.51	77.51	0.00	75.95	1.55
3126653	71.82	71.57	-0.25	71.44	0.13	72.20	72.20	0.00	71.24	0.96
3126654	74.25	73.99	-0.26	73.98	0.01	74.45	74.44	-0.01	73.38	1.06
3126655	74.08	73.39	-0.69	72.48	0.91	74.92	74.89	-0.03	73.66	1.23
3126656	73.03	72.32	-0.70	71.98	0.34	73.80	73.77	-0.03	73.82	-0.05
3126657	73.78	72.68	-1.11	72.24	0.43	74.63	74.59	-0.04	74.11	0.47
3126895	72.95	69.28	-3.67	73.71	-4.43	73.67	73.48	-0.19	74.13	-0.65
3126896	73.03	69.40	-3.64	72.37	-2.98	73.62	73.37	-0.25	73.42	-0.04
3126897	71.03	66.13	-4.90	72.47	-6.34	72.15	72.03	-0.12	73.03	-1.00
3126898	71.03	66.32	-4.71	71.93	-5.61	72.15	72.01	-0.14	72.10	-0.09
3126899	69.83	65.71	-4.11	70.86	-5.15	70.76	70.55	-0.21	71.73	-1.18
3126900	69.83	65.71	-4.12	70.22	-4.51	70.75	70.42	-0.33	70.61	-0.18
3126901	68.67	65.88	-2.79	69.79	-3.91	69.33	69.92	0.59	71.35	-1.43
3126905	71.58	71.46	-0.12	70.72	0.74	71.70	71.70	0.00	71.10	0.61
3126907	74.08	71.24	-2.85	71.72	-0.48	75.20	74.28	-0.92	73.49	0.79
3126911	73.89	73.33	-0.56	72.94	0.39	75.22	74.40	-0.82	73.99	0.41
3126925	73.98	73.35	-0.64	73.18	0.17	74.59	74.51	-0.09	74.44	0.06
3126934	75.35	74.98	-0.37	74.78	0.20	75.57	75.57	0.00	75.93	-0.36
3126936	74.07	73.61	-0.46	73.50	0.11	75.13	74.53	-0.60	74.35	0.18
3126940	75.27	74.71	-0.56	74.83	-0.12	75.41	75.39	-0.02	76.17	-0.78
3126941	75.50	74.71	-0.79	75.79	-1.08	75.96	75.94	-0.02	77.19	-1.24
3126942	75.86	74.67	-1.19	76.08	-1.41	76.31	76.31	0.00	76.52	-0.21
3126943	75.86	74.67	-1.19	76.37	-1.70	76.47	76.46	-0.01	76.87	-0.41
3126944	75.38	74.70	-0.68	75.16	-0.47	75.63	75.62	-0.01	76.26	-0.64
3126945	75.28	74.66	-0.62	75.05	-0.39	75.38	75.38	0.00	77.23	-1.86
3126946	75.49	74.87	-0.62	74.84	0.04	75.81	75.80	-0.01	75.21	0.59
3126948	74.92	74.80	-0.12	74.73	0.08	74.96	74.96	0.00	75.95	-0.99
3126949	75.75	75.38	-0.36	75.45	-0.07	75.85	75.85	0.00	76.05	-0.20
3126950	75.43	75.23	-0.20	75.10	0.13	75.49	75.49	0.00	75.95	-0.46
3126952	73.88	73.61	-0.27	72.94	0.67	74.14	74.12	-0.01	73.36	0.76
3127609	78.11	70.74	-7.36	78.19	-7.45	78.67	78.38	-0.28	76.43	1.95
3127610	78.12	70.74	-7.38	77.26	-6.52	78.80	78.42	-0.38	76.19	2.23
3127611	78.04	70.67	-7.36	77.13	-6.45	78.74	78.34	-0.40	75.80	2.54
3127612	78.00	70.62	-7.38	77.80	-7.18	78.71	78.28	-0.44	76.75	1.53
3127613	77.96	70.56	-7.40	78.48	-7.92	78.68	78.19	-0.49	77.71	0.48
3127614	77.92	70.51	-7.42	78.57	-8.06	78.66	78.13	-0.52	77.95	0.18
3127615	77.86	70.41	-7.45	78.65	-8.24	78.61	78.00	-0.60	77.13	0.87
3127616	77.84	70.39	-7.45	78.55	-8.16	78.60	77.98	-0.61	77.13	0.85
3127617	77.86	70.33	-7.54	78.69	-8.37	78.65	77.99	-0.66	76.34	1.65
3127618	77.89	70.22	-7.67	78.62	-8.40	78.73	77.99	-0.74	77.37	0.62
3127619	77.92	70.12	-7.80	78.65	-8.53	78.82	77.99	-0.83	77.67	0.32
3127620	77.93	70.08	-7.86	78.29	-8.21	78.86	78.00	-0.86	75.70	2.30
3127621	77.90	70.05	-7.85	78.87	-8.83	78.85	77.96	-0.89	75.64	2.32
3127622	77.80	71.31	-6.49	77.51	-6.20	78.77	78.63	-0.14	77.34	1.28
3127623	77.86	70.02	-7.84	78.62	-8.60	78.80	77.93	-0.87	77.96	-0.03
3127624	77.83	70.02	-7.82	77.62	-7.60	78.79	78.05	-0.74	77.74	0.31
3127625	76.27	#N/A	#N/A	77.52	#N/A	76.82	#N/A	#N/A	75.75	#N/A
3127629	75.55	74.59	-0.96	75.33	-0.74	76.12	76.09	-0.03	76.77	-0.69
3127630	75.54	74.58	-0.96	74.50	0.08	76.12	76.09	-0.03	76.87	-0.78
3127632	75.55	74.59	-0.96	73.81	0.78	76.16	76.13	-0.03	75.88	0.24
3127633	75.05	74.56	-0.49	74.29	0.26	75.70	75.68	-0.02	76.16	-0.48
3127634	75.54	74.59	-0.96	74.05	0.53	76.14	76.11	-0.03	76.73	-0.62
3127736	76.31	72.50	-3.81	75.29	-2.79	76.59	76.29	-0.30	75.41	0.89
3128889	75.55	75.33	-0.22	75.21	0.12	75.70	75.69	0.00	76.06	-0.36
3128890	74.17	73.62	-0.55	73.13	0.49	74.86	74.84	-0.01	74.39	0.45
3128891	73.88	73.68	-0.20	72.58	1.10	73.98	73.98	0.00	73.43	0.55
3128892	70.33	70.00	-0.34	69.61	0.39	70.85	70.77	-0.08	69.50	1.26
3128893	74.48	74.06	-0.42	73.93	0.13	75.08	75.06	-0.02	74.12	0.94
3128894	73.75	72.45	-1.30	74.06	-1.61	74.62	74.59	-0.03	74.47	0.12
3128895	75.54	75.09	-0.45	75.18	-0.10	75.75	75.75	0.00	76.07	-0.32
3128896	74.62	73.43	-1.19	74.97	-1.54	75.16	75.15	-0.01	75.65	-0.49
3128897	73.79	72.97	-0.81	73.25	-0.28	74.44	74.42	-0.02	73.70	0.73
3128898	74.24	73.03	-1.22	73.69	-0.66	75.12	75.10	-0.02	73.77	1.33

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3128899	73.47	72.09	-1.38	74.01	-1.92	74.44	74.42	-0.02	74.32	0.10
3128900	72.66	72.64	-0.03	74.36	-1.72	72.68	72.68	0.00	74.41	-1.73
3128901	70.99	69.84	-1.14	74.33	-4.48	72.10	72.09	-0.02	74.60	-2.51
3128902	69.16	68.12	-1.04	75.11	-6.99	70.35	70.33	-0.02	74.64	-4.31
3128903	73.17	73.07	-0.10	73.14	-0.08	73.22	73.22	0.00	73.87	-0.66
3128904	73.30	71.86	-1.44	73.99	-2.14	74.35	74.33	-0.02	74.75	-0.42
3128906	74.65	73.51	-1.14	74.92	-1.41	75.10	75.10	0.00	75.49	-0.39
3128907	74.69	74.03	-0.66	73.53	0.50	75.41	75.40	-0.01	73.91	1.48
3128910	68.31	67.49	-0.81	73.54	-6.04	69.41	69.40	-0.01	71.97	-2.58
3128912	60.40	57.74	-2.65	66.24	-8.50	65.75	67.36	1.60	65.93	1.43
3128912-2	60.39	57.70	-2.69	65.68	-7.98	66.05	67.34	1.29	66.33	1.01
3128914	71.63	71.24	-0.39	73.12	-1.88	73.32	73.32	0.00	73.82	-0.50
3128919	75.20	74.64	-0.56	74.49	0.14	75.73	75.73	0.00	74.36	1.37
3128923	74.32	73.21	-1.11	73.14	0.06	74.99	74.99	0.00	74.00	0.99
3128927	73.78	72.56	-1.22	73.88	-1.32	74.22	74.22	0.00	73.72	0.49
3128933	73.28	71.98	-1.31	73.14	-1.16	73.99	73.99	0.00	73.36	0.63
3128936	73.09	71.38	-1.71	73.24	-1.86	74.13	74.13	0.00	73.73	0.40
3129197	69.45	69.29	-0.17	68.58	0.70	69.69	69.67	-0.02	69.52	0.15
3129203	73.31	72.92	-0.39	71.81	1.11	73.62	73.62	0.00	74.77	-1.15
3129206	73.08	72.64	-0.44	71.85	0.80	73.44	73.44	0.00	73.39	0.06
3129207	73.35	72.84	-0.51	72.01	0.84	73.73	73.73	0.00	74.22	-0.48
3129210	72.41	71.38	-1.03	71.99	-0.61	73.56	73.56	0.00	74.23	-0.67
3129211	72.39	71.38	-1.01	72.31	-0.93	73.44	73.44	0.00	73.67	-0.24
3129214	75.41	75.08	-0.33	74.80	0.28	75.51	75.51	0.00	75.62	-0.11
3129218	72.93	72.42	-0.50	72.24	0.18	73.71	73.69	-0.02	73.77	-0.08
3129220	74.09	73.62	-0.47	72.93	0.69	74.60	74.59	-0.01	74.92	-0.34
3129222	74.18	73.84	-0.34	73.62	0.22	74.67	74.65	-0.02	74.12	0.53
3129224	73.08	72.54	-0.54	72.40	0.14	73.68	73.66	-0.03	73.70	-0.04
3129225	72.89	72.34	-0.56	72.31	0.03	73.54	73.54	0.00	73.62	-0.08
3129228	73.91	73.74	-0.16	73.14	0.60	74.05	74.05	0.00	74.15	-0.10
3129230	72.49	71.89	-0.61	71.26	0.62	73.01	73.01	0.00	72.23	0.78
3129661	75.99	75.67	-0.31	75.40	0.27	76.28	76.28	0.00	76.01	0.27
3129693	74.82	74.62	-0.21	73.91	0.70	74.97	74.97	0.00	75.71	-0.74
3135795	70.74	69.28	-1.46	71.73	-2.45	71.99	71.99	0.00	72.95	-0.96
3135797	67.25	66.52	-0.73	71.25	-4.73	67.88	67.88	0.00	71.75	-3.87
3135799	67.94	66.99	-0.95	70.90	-3.90	68.61	68.61	0.00	71.87	-3.26
3136183	70.74	69.28	-1.46	71.16	-1.88	71.42	71.42	0.00	72.20	-0.78
3136185	70.74	69.28	-1.46	70.70	-1.42	71.39	71.39	0.00	71.31	0.08
3136192	59.37	52.06	-7.31	61.51	-9.44	66.01	66.00	-0.01	64.57	1.43
3136842	70.25	59.07	-11.18	67.72	-8.65	70.70	69.20	-1.50	70.15	-0.95
3136846	69.01	57.98	-11.04	68.79	-10.82	69.59	64.56	-5.03	70.37	-5.82
3136847	69.21	58.59	-10.62	68.48	-9.89	69.90	67.12	-2.79	71.35	-4.23
3136848	67.35	58.82	-8.53	65.46	-6.65	67.97	67.52	-0.45	66.51	1.01
3136849	66.11	57.37	-8.74	65.54	-8.17	67.14	63.82	-3.32	67.36	-3.54
3136909	69.23	64.54	-4.69	68.66	-4.13	70.03	67.10	-2.93	70.09	-2.99
3136910	68.28	63.91	-4.37	68.03	-4.12	68.50	67.59	-0.91	70.35	-2.77
3136911	68.29	63.51	-4.78	68.06	-4.55	68.43	67.12	-1.32	71.90	-4.78
3136912	70.08	62.41	-7.67	68.91	-6.50	70.40	67.12	-3.29	70.05	-2.94
3136913	69.75	61.44	-8.31	68.52	-7.08	70.08	67.12	-2.97	71.44	-4.32
3136914	67.29	61.14	-6.16	65.08	-3.94	67.73	67.16	-0.57	68.40	-1.24
3136915	66.60	61.14	-5.47	64.81	-3.67	66.98	66.42	-0.56	66.62	-0.20
3136916	66.88	60.81	-6.07	65.29	-4.48	67.26	66.72	-0.55	67.83	-1.12
3136919	70.03	63.61	-6.42	68.59	-4.98	70.43	69.38	-1.04	71.09	-1.70
3136920	70.26	64.42	-5.83	67.72	-3.30	70.68	69.65	-1.03	69.85	-0.20
3136921	69.93	64.58	-5.35	67.31	-2.73	70.33	69.23	-1.10	70.15	-0.92
3138977	56.89	54.13	-2.76	62.33	-8.21	63.78	63.78	0.00	63.47	0.31
3139198	59.14	52.05	-7.09	60.62	-8.57	62.55	63.55	1.00	60.66	2.89
3143189	86.96	86.06	-0.90	86.61	-0.55	87.81	87.81	-0.01	86.91	0.89
3143195	88.12	86.90	-1.23	88.04	-1.14	88.78	88.78	0.00	88.01	0.77
3143196	86.80	85.90	-0.91	86.38	-0.48	87.72	87.71	-0.01	88.35	-0.64
3143197	87.03	85.97	-1.06	87.70	-1.73	88.32	88.32	0.00	88.35	-0.04
3143201	86.57	85.71	-0.86	86.09	-0.39	87.53	87.52	0.00	86.37	1.16
3143205	86.07	85.19	-0.88	86.88	-1.69	87.15	87.14	-0.01	87.05	0.09
3143206	86.73	85.78	-0.94	88.45	-2.67	88.24	88.23	-0.02	87.76	0.46
3143209	86.40	84.65	-1.75	86.31	-1.66	86.63	86.63	0.00	87.02	-0.39
3143210	85.43	84.54	-0.89	86.76	-2.22	86.44	86.44	-0.01	86.93	-0.50

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3143211	85.45	84.54	-0.91	86.72	-2.18	87.13	87.12	0.00	86.96	0.16
3143212	85.91	84.94	-0.97	86.55	-1.61	86.91	86.91	0.00	86.70	0.21
3143213	86.43	85.58	-0.85	86.40	-0.82	87.04	87.03	0.00	86.84	0.20
3143214	87.08	86.31	-0.77	86.50	-0.19	87.64	87.64	0.00	86.77	0.87
3143215	87.11	86.64	-0.47	86.67	-0.03	87.49	87.49	0.00	87.44	0.06
3143216	87.21	87.00	-0.21	86.98	0.02	87.54	87.54	0.00	87.52	0.02
3143221	84.96	84.09	-0.87	85.14	-1.06	85.64	85.63	-0.01	86.74	-1.11
3143227	85.39	84.85	-0.55	85.55	-0.70	85.65	85.65	0.00	85.68	-0.04
3143228	87.28	86.72	-0.56	86.65	0.07	87.85	87.85	0.00	86.45	1.40
3143232	84.21	83.38	-0.83	84.10	-0.72	84.60	84.59	-0.01	85.84	-1.25
3143235	84.86	83.77	-1.08	86.14	-2.36	86.30	86.30	-0.01	86.46	-0.16
3143236	85.19	84.31	-0.88	86.67	-2.36	86.07	86.06	-0.01	86.65	-0.59
3143456	84.46	83.41	-1.06	84.28	-0.87	84.93	84.92	-0.01	84.96	-0.05
3143457	84.52	83.44	-1.08	84.53	-1.09	84.90	84.89	-0.01	85.84	-0.95
3143458	84.81	84.57	-0.25	84.32	0.25	85.01	85.01	0.00	85.50	-0.49
3143459	84.94	84.63	-0.31	84.39	0.24	85.17	85.17	0.00	86.13	-0.96
3143473	84.96	84.09	-0.87	85.99	-1.90	85.64	85.63	-0.01	86.74	-1.11
3143474	85.08	84.13	-0.95	85.44	-1.31	86.00	86.00	-0.01	86.45	-0.46
3143475	85.49	84.57	-0.91	86.62	-2.05	87.22	87.22	0.00	87.16	0.05
3143477	86.04	84.98	-1.06	86.44	-1.46	86.98	86.98	-0.01	86.85	0.12
3143478	86.04	84.99	-1.06	86.65	-1.66	86.91	86.91	0.00	87.26	-0.35
3143498	86.96	86.06	-0.90	86.73	-0.66	87.81	87.81	0.00	87.23	0.58
3143499	86.80	85.90	-0.91	86.11	-0.22	87.72	87.72	0.00	86.83	0.88
3143507	86.91	85.61	-1.30	86.35	-0.74	87.68	87.67	0.00	86.75	0.92
3144582	87.39	86.23	-1.16	85.47	0.76	88.36	88.35	-0.01	85.82	2.54
3144583	85.84	84.25	-1.58	87.72	-3.47	87.00	86.91	-0.09	85.43	1.48
3144584	86.87	84.75	-2.13	87.43	-2.68	87.73	87.71	-0.01	87.26	0.45
3144586	84.13	83.20	-0.93	83.61	-0.40	84.79	84.79	-0.01	83.35	1.43
3144587	85.78	83.82	-1.96	86.76	-2.95	86.89	86.87	-0.03	86.91	-0.04
3144591	86.05	84.32	-1.73	86.96	-2.65	87.05	87.03	-0.02	86.98	0.05
3144598	86.36	84.64	-1.72	85.91	-1.27	87.05	87.03	-0.02	85.53	1.50
3144599	85.29	83.40	-1.90	86.75	-3.36	86.67	86.60	-0.06	86.23	0.37
3144600	84.90	84.20	-0.70	86.59	-2.39	85.69	85.67	-0.02	85.41	0.25
3144602	83.13	81.98	-1.15	82.28	-0.30	83.87	83.87	-0.01	82.93	0.93
3144603	83.24	82.19	-1.06	82.26	-0.07	83.93	83.92	-0.01	82.57	1.35
3144605	83.12	81.90	-1.22	82.42	-0.52	83.81	83.80	-0.01	82.34	1.46
3144606	83.05	81.76	-1.29	82.05	-0.29	83.74	83.72	-0.01	82.88	0.84
3144607	83.36	82.32	-1.04	82.59	-0.28	83.98	83.97	-0.01	82.70	1.27
3144608	82.90	81.50	-1.41	82.10	-0.61	83.62	83.60	-0.01	82.57	1.03
3144609	84.82	82.98	-1.84	86.27	-3.29	86.44	86.34	-0.10	86.37	-0.03
3144610	84.57	82.77	-1.80	86.77	-4.00	86.00	85.81	-0.19	86.37	-0.56
3144612	83.77	82.86	-0.91	82.19	0.67	84.37	84.36	-0.02	84.21	0.15
3144613	83.76	82.83	-0.93	82.60	0.23	84.37	84.36	-0.02	82.55	1.81
3144614	83.48	82.75	-0.73	82.47	0.28	83.87	83.85	-0.02	83.32	0.53
3144615	83.54	82.79	-0.75	82.63	0.16	83.93	83.91	-0.02	83.52	0.39
3144616	82.56	80.94	-1.62	82.24	-1.29	83.38	83.36	-0.02	82.47	0.89
3144617	83.93	82.58	-1.35	85.77	-3.19	85.21	85.06	-0.15	86.75	-1.69
3144618	82.91	82.72	-0.20	82.53	0.19	83.17	83.14	-0.03	84.91	-1.77
3144619	83.97	83.17	-0.80	82.94	0.23	84.68	84.58	-0.10	83.91	0.66
3144620	83.88	82.00	-1.88	85.16	-3.16	85.13	84.92	-0.22	86.75	-1.83
3144622	84.87	83.18	-1.69	85.18	-2.00	85.53	85.47	-0.05	86.04	-0.56
3144623	83.34	82.86	-0.47	83.67	-0.81	84.06	84.01	-0.05	85.10	-1.09
3144624	85.53	84.19	-1.35	84.90	-0.71	86.01	85.99	-0.02	86.03	-0.03
3144627	83.93	83.09	-0.84	82.52	0.57	84.67	84.57	-0.11	83.06	1.51
3144628	83.93	83.04	-0.89	82.35	0.69	84.75	84.62	-0.13	83.09	1.52
3144629	83.52	81.89	-1.62	84.46	-2.56	84.81	84.67	-0.14	85.09	-0.42
3144630	83.00	81.14	-1.85	84.85	-3.71	84.67	84.29	-0.38	85.08	-0.79
3144631	84.02	83.02	-1.00	83.78	-0.75	84.66	84.59	-0.08	84.48	0.11
3144632	83.49	82.89	-0.60	85.00	-2.12	83.86	83.85	-0.01	83.77	0.08
3144633	83.47	82.85	-0.62	85.44	-2.59	83.86	83.85	-0.02	83.64	0.21
3144635	82.78	80.89	-1.89	85.47	-4.59	85.40	84.86	-0.55	85.13	-0.27
3144637	83.86	83.01	-0.86	84.00	-0.99	84.50	84.42	-0.08	85.14	-0.72
3144638	83.29	82.87	-0.42	84.72	-1.85	83.85	83.83	-0.02	84.99	-1.16
3144640	83.87	83.14	-0.73	82.25	0.89	84.16	84.15	0.00	82.66	1.49
3144641	83.56	82.99	-0.57	82.92	0.07	83.86	83.85	-0.01	84.01	-0.16
3144642	83.55	82.80	-0.75	81.53	1.27	84.02	84.01	0.00	82.84	1.18

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3144643	83.23	82.86	-0.37	82.49	0.37	83.66	83.66	0.00	82.55	1.10
3144646	83.66	82.87	-0.80	82.60	0.27	84.19	84.18	-0.01	84.08	0.10
3144647	84.14	82.97	-1.17	83.21	-0.23	84.82	84.82	-0.01	84.34	0.47
3144648	83.27	82.96	-0.31	82.63	0.33	83.58	83.58	-0.01	84.00	-0.43
3144650	80.28	78.57	-1.71	83.72	-5.15	81.71	80.87	-0.84	82.18	-1.31
3144652	78.85	77.76	-1.10	79.48	-1.72	79.94	79.55	-0.38	79.31	0.24
3144911	84.62	82.98	-1.64	84.45	-1.47	84.98	84.95	-0.03	85.65	-0.70
3144912	84.77	83.07	-1.69	84.56	-1.49	85.38	85.35	-0.03	86.15	-0.81
3144913	85.74	84.24	-1.50	85.73	-1.49	86.29	86.28	-0.01	86.03	0.25
3144914	85.50	84.22	-1.28	84.40	-0.18	85.99	85.97	-0.02	84.58	1.39
3144915	84.95	83.71	-1.24	85.87	-2.17	86.09	86.06	-0.04	86.04	0.02
3144916	84.88	83.22	-1.66	84.70	-1.48	85.43	85.39	-0.03	85.07	0.32
3144917	83.93	82.05	-1.88	85.06	-3.02	85.19	85.06	-0.13	86.87	-1.82
3144918	84.02	82.40	-1.61	84.09	-1.69	84.71	84.65	-0.06	85.00	-0.35
3144919	82.33	80.25	-2.08	82.43	-2.18	83.77	83.29	-0.48	84.40	-1.12
3144920	81.03	80.29	-0.74	80.23	0.06	81.98	81.77	-0.21	81.67	0.10
3144928	84.90	84.20	-0.70	85.00	-0.80	85.17	85.17	0.00	85.88	-0.71
3144930	84.23	84.11	-0.12	84.01	0.10	84.33	84.33	0.00	84.55	-0.22
3144931	83.99	83.18	-0.80	82.77	0.41	84.70	84.60	-0.10	84.26	0.33
3144932	83.98	82.02	-1.95	84.57	-2.54	84.96	84.89	-0.07	85.09	-0.19
3144935	84.01	83.02	-0.99	83.88	-0.85	84.61	84.53	-0.08	84.60	-0.07
3144936	83.90	83.02	-0.88	83.42	-0.39	84.53	84.45	-0.08	84.75	-0.31
3144937	83.14	82.91	-0.23	82.57	0.34	83.35	83.35	0.00	84.00	-0.66
3144938	83.12	82.91	-0.21	82.46	0.46	83.30	83.29	0.00	83.46	-0.17
3144944	82.12	81.88	-0.24	81.43	0.45	82.36	82.36	0.00	83.35	-0.99
3144951	83.54	82.59	-0.95	82.44	0.15	84.09	84.09	0.00	84.34	-0.26
3144952	82.82	82.33	-0.49	81.95	0.37	83.33	83.33	0.00	83.16	0.17
3144955	83.82	83.08	-0.74	81.64	1.44	84.08	84.08	0.00	82.45	1.63
3144956	83.93	83.19	-0.74	82.03	1.16	84.20	84.20	-0.01	82.66	1.53
3144962	83.08	81.98	-1.10	80.79	1.19	83.98	83.97	-0.01	81.89	2.08
3144967	84.79	84.23	-0.57	84.57	-0.35	85.06	85.06	-0.01	85.87	-0.81
3145914	82.87	82.20	-0.67	82.47	-0.27	83.23	83.20	-0.03	83.93	-0.73
3145917	81.83	81.04	-0.79	81.87	-0.83	82.32	82.23	-0.09	82.23	-0.01
3145921	81.26	80.56	-0.69	79.38	1.19	81.83	81.64	-0.19	80.16	1.48
3145924	80.85	80.14	-0.72	79.89	0.25	81.56	81.26	-0.30	79.47	1.78
3145928	81.09	79.82	-1.27	80.33	-0.52	81.74	81.48	-0.26	78.95	2.53
3145930	80.49	79.52	-0.97	78.54	0.98	81.20	81.00	-0.20	78.84	2.16
3145931	80.24	79.13	-1.12	80.10	-0.98	80.90	80.73	-0.17	79.18	1.54
3146011	80.11	79.13	-0.98	79.13	0.00	80.75	80.51	-0.23	79.26	1.25
3146012	79.72	79.19	-0.53	79.09	0.11	80.39	80.22	-0.17	79.42	0.80
3146013	80.62	79.55	-1.07	78.72	0.82	81.59	81.39	-0.20	78.64	2.76
3146014	80.54	79.52	-1.02	78.09	1.43	81.52	81.32	-0.20	78.46	2.87
3146015	79.53	79.09	-0.44	78.74	0.35	80.11	79.88	-0.23	79.74	0.14
3146016	79.79	79.34	-0.46	78.42	0.91	80.38	80.16	-0.22	80.18	-0.03
3146017	80.21	79.65	-0.56	78.20	1.44	80.83	80.70	-0.13	79.51	1.19
3146018	82.04	81.04	-1.00	81.99	-0.94	82.32	82.28	-0.04	82.23	0.05
3146023	83.08	82.45	-0.62	82.68	-0.23	83.42	83.41	-0.02	83.55	-0.14
3146024	80.04	79.57	-0.47	78.74	0.83	80.63	80.37	-0.26	80.13	0.24
3146025	80.05	79.58	-0.47	78.86	0.72	80.64	80.39	-0.26	79.50	0.89
3146026	80.64	79.96	-0.69	79.09	0.86	81.39	81.23	-0.16	80.03	1.21
3146600	79.85	77.14	-2.71	79.35	-2.21	80.63	79.98	-0.65	79.34	0.64
3146601	80.06	78.00	-2.07	78.85	-0.86	80.72	80.20	-0.52	79.26	0.94
3146604	80.07	77.47	-2.60	79.56	-2.09	80.73	80.18	-0.56	79.74	0.43
3146605	80.09	77.09	-3.00	79.80	-2.72	80.80	80.18	-0.62	79.82	0.36
3146608	79.84	76.82	-3.02	78.98	-2.16	80.48	79.97	-0.52	79.73	0.24
3146617	79.70	75.31	-4.39	80.82	-5.51	80.49	79.62	-0.88	77.04	2.57
3146618	79.69	75.32	-4.38	80.89	-5.58	80.49	79.61	-0.88	80.98	-1.36
3146735	79.27	75.33	-3.93	77.39	-2.06	80.01	79.42	-0.59	78.54	0.88
3146736	81.14	77.88	-3.26	80.97	-3.10	82.10	81.84	-0.26	80.98	0.87
3146737	79.71	76.49	-3.21	80.36	-3.87	80.40	79.87	-0.53	79.54	0.32
3146738	79.63	76.14	-3.49	79.66	-3.52	80.19	79.70	-0.49	79.38	0.32
3146739	78.68	75.31	-3.37	77.56	-2.25	79.02	78.63	-0.39	77.97	0.66
3146740	80.16	75.35	-4.81	79.28	-3.93	81.21	80.57	-0.64	79.90	0.67
3146742	79.60	77.91	-1.69	79.26	-1.34	80.04	79.68	-0.36	79.21	0.46
3146747	78.59	76.45	-2.14	77.42	-0.97	78.77	78.57	-0.20	77.89	0.67
3146748	79.63	77.59	-2.05	79.49	-1.90	79.85	79.68	-0.16	79.51	0.17

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3146749	79.88	77.35	-2.53	79.69	-2.33	80.39	79.98	-0.41	79.63	0.35
3146752	79.75	78.18	-1.58	79.52	-1.35	80.13	79.87	-0.27	79.46	0.41
3146756	80.07	78.03	-2.04	79.48	-1.45	80.51	80.15	-0.36	79.34	0.81
3146757	79.71	77.89	-1.83	78.97	-1.08	80.44	80.03	-0.41	79.40	0.63
3146767	80.03	78.90	-1.13	78.78	0.12	80.88	80.43	-0.45	79.26	1.17
3146769	79.80	75.32	-4.47	77.92	-2.59	80.51	79.83	-0.68	79.03	0.80
3148988	78.55	77.88	-0.67	77.27	0.61	79.13	79.11	-0.02	77.85	1.25
3148991	79.01	77.88	-1.13	78.09	-0.21	79.61	79.58	-0.03	78.33	1.24
3148995	77.10	74.29	-2.81	76.35	-2.06	77.80	77.74	-0.06	77.97	-0.23
3148996	76.50	73.58	-2.92	77.40	-3.82	78.09	78.05	-0.05	78.11	-0.06
3149290	76.29	74.25	-2.04	76.24	-1.99	76.74	76.74	0.00	76.54	0.20
3149291	76.25	74.23	-2.02	76.54	-2.31	76.75	76.75	0.00	76.54	0.22
3149292	76.22	74.19	-2.03	76.49	-2.30	76.80	76.80	0.00	76.73	0.07
3149347	78.97	77.94	-1.03	77.93	0.01	79.60	79.57	-0.03	78.52	1.05
3149348	79.15	78.09	-1.06	77.96	0.13	79.86	79.82	-0.03	78.33	1.49
3149349	78.24	77.75	-0.49	76.80	0.95	78.83	78.81	-0.02	77.89	0.91
3149350	78.39	77.84	-0.55	77.05	0.79	79.06	79.04	-0.02	78.52	0.52
3149359	76.04	74.14	-1.90	77.26	-3.13	76.59	76.59	0.00	77.26	-0.67
3152351	76.45	74.66	-1.80	76.01	-1.36	77.11	77.05	-0.06	78.21	-1.16
3152354	78.39	78.18	-0.21	77.92	0.27	78.53	78.53	0.00	79.62	-1.08
3152355	76.42	72.60	-3.82	76.09	-3.49	77.11	77.05	-0.05	77.49	-0.44
3152356	76.30	72.03	-4.27	76.62	-4.59	77.44	77.38	-0.06	77.19	0.19
3152359	78.38	78.12	-0.26	77.94	0.18	78.52	78.52	0.00	79.21	-0.69
3152361	76.75	73.15	-3.61	75.86	-2.71	77.48	77.45	-0.03	77.54	-0.09
3152366	76.21	71.96	-4.25	75.80	-3.84	76.86	76.83	-0.03	77.10	-0.27
3152367	76.03	71.49	-4.54	76.89	-5.40	76.87	76.83	-0.04	76.94	-0.11
3152368	78.32	77.81	-0.51	78.32	-0.51	78.52	78.52	0.00	78.67	-0.15
3152369	78.27	77.64	-0.64	78.20	-0.56	78.51	78.51	0.00	78.30	0.22
3152372	76.27	71.93	-4.34	76.19	-4.26	77.06	76.97	-0.09	76.72	0.25
3152373	76.22	74.56	-1.66	76.01	-1.45	76.94	76.94	0.00	77.01	-0.07
3152374	75.84	74.13	-1.71	76.64	-2.51	76.36	76.36	0.00	76.93	-0.58
3152375	75.21	73.83	-1.38	73.97	-0.14	75.59	75.59	0.00	74.15	1.44
3152376	75.19	73.77	-1.42	73.88	-0.11	75.58	75.58	0.00	74.14	1.44
3152382	75.29	70.27	-5.02	76.02	-5.75	76.17	76.13	-0.04	77.64	-1.51
3152386	75.95	72.62	-3.33	74.98	-2.35	76.34	76.30	-0.04	76.02	0.29
3152387	75.38	71.23	-4.16	75.28	-4.05	75.62	75.61	0.00	75.30	0.31
3152389	74.93	69.85	-5.07	75.17	-5.31	75.82	75.77	-0.06	75.93	-0.17
3152390	75.39	71.19	-4.20	74.95	-3.76	75.69	75.68	-0.01	75.83	-0.15
3152391	74.85	69.69	-5.16	75.37	-5.67	75.75	75.70	-0.06	76.43	-0.73
3152393	75.11	70.77	-4.35	75.05	-4.28	75.51	75.49	-0.03	74.78	0.71
3152395	74.68	69.42	-5.26	74.19	-4.78	75.53	75.46	-0.07	75.86	-0.40
3152396	74.22	68.92	-5.30	74.68	-5.76	75.27	75.19	-0.08	75.25	-0.06
3152397	74.22	70.32	-3.91	74.19	-3.87	74.63	74.50	-0.13	73.68	0.81
3152401	71.74	69.08	-2.67	73.61	-4.53	73.67	73.64	-0.02	73.24	0.40
3152402	72.07	69.25	-2.82	73.10	-3.85	73.79	73.82	0.03	73.37	0.45
3152402!	0.00	0.00	0.00	73.10	0.00	0.00	0.00	0.00	73.37	0.00
3152403	73.37	69.44	-3.94	73.98	-4.55	74.39	74.27	-0.12	73.75	0.51
3152404	73.91	69.74	-4.17	73.17	-3.43	74.40	74.04	-0.36	72.93	1.10
3152405	73.24	68.31	-4.93	74.39	-6.08	74.17	74.06	-0.11	74.04	0.02
3152406	73.32	68.28	-5.04	73.94	-5.67	74.26	74.16	-0.10	75.63	-1.47
3152408	74.73	71.81	-2.92	74.66	-2.85	74.98	74.68	-0.30	74.83	-0.15
3152412	74.35	70.24	-4.11	73.94	-3.70	74.84	74.15	-0.70	73.20	0.94
3152414	73.11	68.11	-5.01	74.09	-5.99	74.04	73.93	-0.11	74.14	-0.21
3152415	73.27	69.24	-4.04	73.34	-4.11	74.26	74.19	-0.07	75.59	-1.40
3152417	72.39	67.50	-4.89	72.70	-5.20	73.13	73.01	-0.12	74.24	-1.23
3152731	74.63	74.61	-0.02	74.58	0.04	74.71	74.71	0.00	74.93	-0.22
3152732	74.63	74.60	-0.03	74.55	0.05	74.85	74.85	0.00	76.38	-1.52
3152733	74.77	74.69	-0.08	74.28	0.42	75.04	75.03	-0.01	75.59	-0.56
3152734	75.44	75.02	-0.42	74.86	0.16	75.75	75.75	-0.01	75.74	0.01
3152735	74.40	74.23	-0.16	73.95	0.28	74.79	74.78	-0.01	74.98	-0.20
3152736	75.53	75.36	-0.17	74.91	0.45	75.93	75.92	-0.01	74.75	1.17
3152737	73.46	70.90	-2.56	73.20	-2.29	73.79	73.70	-0.09	73.38	0.31
3152738	73.88	70.33	-3.55	73.23	-2.89	74.21	74.13	-0.08	73.49	0.65
3152739	73.96	69.75	-4.20	73.00	-3.25	74.40	73.99	-0.41	73.07	0.92
3152740	73.83	69.75	-4.08	72.58	-2.84	74.28	73.56	-0.72	74.61	-1.04
3152741	76.24	74.67	-1.57	75.43	-0.76	77.05	77.06	0.00	76.99	0.06

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3152742	76.22	74.61	-1.61	75.26	-0.65	76.96	76.96	0.00	77.01	-0.05
3152743	75.84	74.13	-1.71	75.28	-1.14	76.36	76.36	0.00	76.93	-0.57
3152744	75.85	74.14	-1.72	76.49	-2.36	76.40	76.40	0.00	76.67	-0.27
3152745	75.02	73.83	-1.19	73.50	0.33	75.37	75.37	0.00	74.37	1.00
3152746	75.03	73.83	-1.20	73.81	0.02	75.37	75.37	0.00	74.15	1.22
3152749	78.45	78.21	-0.24	78.17	0.04	78.68	78.68	0.00	79.62	-0.93
3152750	78.19	78.03	-0.16	77.63	0.39	78.30	78.30	0.00	78.99	-0.69
3152751	74.25	70.54	-3.71	74.33	-3.79	75.27	75.19	-0.08	74.31	0.89
3152758	74.65	69.37	-5.29	74.08	-4.71	74.94	74.14	-0.80	74.83	-0.70
3152759	74.65	71.92	-2.73	73.92	-2.00	74.94	74.20	-0.74	74.89	-0.69
3152760	72.50	69.27	-3.23	73.61	-4.34	74.27	73.84	-0.44	72.85	0.98
3152761	72.50	69.29	-3.21	73.49	-4.20	74.25	73.93	-0.33	73.44	0.48
3152782	70.38	67.53	-2.85	73.44	-5.91	72.95	72.94	0.00	73.97	-1.03
3152783	69.68	66.70	-2.98	73.24	-6.54	72.62	72.63	0.01	73.33	-0.70
3152784	70.79	67.97	-2.82	73.22	-5.25	73.14	73.13	-0.01	74.98	-1.84
3152785	71.22	68.45	-2.78	72.99	-4.55	73.34	73.33	-0.01	73.97	-0.64
3152787	73.02	70.28	-2.74	74.51	-4.23	74.28	74.27	-0.01	75.00	-0.73
3152788	74.08	71.43	-2.65	76.91	-5.48	75.02	75.02	0.00	75.51	-0.49
3152789	74.56	71.96	-2.60	76.57	-4.61	75.31	75.30	0.00	75.05	0.25
3152790	74.95	72.46	-2.49	75.37	-2.91	75.53	75.53	0.00	74.58	0.96
3152791	75.32	73.86	-1.46	75.22	-1.37	75.76	75.76	0.00	76.20	-0.44
3152792	75.40	73.90	-1.51	75.36	-1.47	75.85	75.85	0.00	76.77	-0.92
3152793	75.51	73.94	-1.57	75.49	-1.55	75.89	75.89	0.00	76.31	-0.42
3152794	75.72	74.02	-1.70	75.97	-1.96	76.17	76.17	0.00	76.53	-0.36
3152812	78.28	77.65	-0.63	77.56	0.09	78.57	78.57	0.00	78.30	0.27
3152813	78.30	77.68	-0.62	77.46	0.22	78.68	78.68	0.00	78.57	0.11
3152816	75.19	73.80	-1.39	74.09	-0.30	75.58	75.58	0.00	75.25	0.33
3152818	76.48	73.15	-3.33	75.68	-2.54	77.07	77.02	-0.05	76.62	0.40
3152819	76.72	73.15	-3.57	75.58	-2.43	77.33	77.30	-0.03	77.54	-0.24
3152822	75.66	72.64	-3.02	74.49	-1.85	76.04	76.00	-0.04	75.96	0.04
3152823	75.99	72.95	-3.04	74.81	-1.86	76.40	76.36	-0.04	75.85	0.51
3152831	74.93	70.89	-4.04	75.26	-4.37	75.80	75.73	-0.07	75.93	-0.21
3153772	79.07	75.89	-3.18	80.13	-4.24	79.72	79.33	-0.39	80.18	-0.85
3153774	80.70	76.10	-4.60	80.20	-4.09	81.30	80.51	-0.79	81.05	-0.55
3153775	78.71	72.99	-5.72	78.28	-5.29	79.12	79.11	-0.01	81.02	-1.91
3153778	80.53	80.12	-0.41	79.22	0.90	80.98	80.98	0.00	79.44	1.54
3153779	78.48	72.07	-6.41	78.83	-6.76	79.07	79.05	-0.02	81.29	-2.24
3153780	80.20	79.78	-0.42	79.02	0.76	80.65	80.65	0.00	79.78	0.87
3153781	78.36	71.89	-6.47	77.88	-5.99	79.08	79.07	-0.02	79.06	0.00
3153782	78.99	76.95	-2.04	77.80	-0.84	79.58	79.56	-0.03	79.45	0.11
3153784	78.30	71.71	-6.60	78.63	-6.93	79.09	79.07	-0.02	79.64	-0.57
3153786	79.76	79.11	-0.65	78.86	0.25	80.36	80.36	0.00	79.16	1.20
3153951	83.16	80.54	-2.63	78.67	1.87	89.29	89.28	-0.01	79.82	9.47
3153952	79.04	74.59	-4.45	78.13	-3.54	80.09	80.08	-0.01	81.02	-0.94
3153953	79.03	76.98	-2.05	78.00	-1.03	79.72	79.69	-0.03	79.45	0.25
3153954	79.01	76.99	-2.02	77.76	-0.77	79.71	79.68	-0.03	79.52	0.16
3153956	80.43	80.09	-0.34	79.54	0.55	80.92	80.92	0.00	80.68	0.24
3153957	79.66	79.38	-0.28	78.45	0.93	79.92	79.92	0.00	79.15	0.76
3153958	79.82	79.52	-0.30	78.44	1.08	80.10	80.10	0.00	79.44	0.66
3153959	79.51	79.21	-0.30	78.34	0.87	79.78	79.78	0.00	79.78	0.00
3153960	79.52	79.23	-0.30	78.54	0.69	79.78	79.78	0.00	79.88	-0.10
3153961	79.05	78.60	-0.44	78.08	0.52	79.41	79.41	0.00	78.98	0.43
3153962	79.15	78.73	-0.42	78.18	0.55	79.49	79.49	0.00	78.91	0.58
3153967	79.99	78.80	-1.19	79.68	-0.88	80.60	80.48	-0.12	80.12	0.36
3153968	80.00	78.75	-1.25	79.76	-1.01	80.68	80.52	-0.16	79.97	0.55
3154961	79.35	78.06	-1.29	79.91	-1.85	80.03	79.95	-0.08	80.36	-0.41
3156918	79.45	78.46	-0.99	78.11	0.35	80.34	80.34	0.00	78.93	1.41
3156919	77.86	71.19	-6.67	77.75	-6.56	78.65	78.62	-0.02	78.91	-0.29
3156921	80.06	76.04	-4.02	79.50	-3.45	80.53	80.18	-0.35	79.84	0.34
3156922	78.99	75.87	-3.12	77.64	-1.77	79.43	79.19	-0.24	77.85	1.34
3156923	80.04	76.04	-4.00	79.03	-2.99	80.53	80.12	-0.42	79.84	0.28
3156924	79.52	75.99	-3.53	78.56	-2.58	79.92	79.69	-0.23	78.72	0.97
3156925	79.44	75.98	-3.46	78.44	-2.47	79.82	79.58	-0.25	78.91	0.67
3156926	79.02	78.07	-0.95	77.79	0.28	79.69	79.68	0.00	78.10	1.58
3156927	78.61	75.88	-2.73	78.04	-2.16	78.93	78.41	-0.53	78.08	0.33
3156929	77.56	77.02	-0.53	76.06	0.97	78.21	78.08	-0.13	77.66	0.42

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3156930	78.38	77.54	-0.84	77.49	0.05	78.99	78.99	0.00	78.24	0.75
3156931	77.46	76.42	-1.04	76.40	0.02	78.06	77.74	-0.32	78.09	-0.35
3156932	76.81	70.37	-6.44	77.65	-7.28	77.81	77.78	-0.03	78.30	-0.52
3156933	76.45	70.16	-6.29	78.08	-7.91	77.41	77.37	-0.04	78.28	-0.91
3156934	78.74	76.76	-1.97	77.71	-0.95	79.01	78.65	-0.36	77.60	1.06
3156935	77.63	76.24	-1.40	76.89	-0.66	78.64	78.17	-0.47	76.81	1.36
3156936	77.87	77.12	-0.75	77.24	-0.13	78.53	78.53	0.00	77.65	0.88
3156937	77.22	75.99	-1.22	77.54	-1.55	77.95	77.60	-0.35	77.77	-0.17
3156938	77.48	76.75	-0.73	77.18	-0.44	78.13	78.12	0.00	77.71	0.41
3156939	76.01	69.91	-6.10	77.16	-7.25	76.94	76.89	-0.05	78.11	-1.22
3156940	76.66	75.93	-0.72	74.73	1.20	77.41	77.20	-0.22	76.29	0.90
3156941	76.90	75.82	-1.08	75.67	0.15	77.62	77.25	-0.37	77.02	0.23
3156942	76.80	76.22	-0.59	76.74	-0.52	77.35	77.35	0.00	76.57	0.77
3156943	75.67	69.73	-5.94	75.85	-6.12	76.49	76.44	-0.06	76.19	0.25
3156945	75.14	69.58	-5.56	75.10	-5.52	75.89	75.83	-0.06	76.63	-0.80
3156946	75.08	69.45	-5.63	76.36	-6.91	75.88	75.77	-0.11	76.26	-0.50
3156947	76.02	75.65	-0.37	75.55	0.11	76.53	76.52	0.00	76.34	0.19
3156948	78.41	77.00	-1.41	77.64	-0.64	78.69	78.38	-0.31	77.51	0.87
3156949	76.31	75.35	-0.96	74.96	0.39	77.07	76.64	-0.42	75.81	0.84
3156950	75.95	75.22	-0.73	73.76	1.46	76.75	76.43	-0.32	75.24	1.19
3156951	75.63	75.22	-0.41	74.41	0.81	76.15	76.15	0.00	75.22	0.93
3156952	74.59	69.01	-5.57	75.50	-6.49	75.37	75.24	-0.13	75.41	-0.17
3156953	75.75	74.99	-0.75	74.57	0.43	76.41	76.09	-0.32	75.24	0.85
3156955	75.05	74.48	-0.57	74.91	-0.43	75.59	75.59	0.00	75.58	0.01
3156957	73.93	68.42	-5.51	74.45	-6.04	74.70	74.53	-0.17	74.17	0.36
3156958	75.37	74.94	-0.43	77.27	-2.33	75.84	75.72	-0.12	76.49	-0.77
3156963	74.50	73.97	-0.52	75.07	-1.10	74.98	75.00	0.02	75.22	-0.22
3156964	73.92	68.16	-5.75	74.82	-6.66	74.99	74.90	-0.09	75.24	-0.34
3156965	74.64	74.05	-0.59	74.06	-0.01	75.10	75.10	0.00	74.30	0.79
3156966	73.65	68.01	-5.65	74.66	-6.65	74.65	74.57	-0.08	75.11	-0.55
3156967	73.42	72.06	-1.36	74.27	-2.21	74.76	74.58	-0.18	75.26	-0.68
3156968	73.50	67.87	-5.64	74.87	-7.01	74.47	74.38	-0.09	75.30	-0.92
3156969	75.26	74.62	-0.64	74.30	0.32	75.91	75.66	-0.26	75.03	0.63
3156970	74.73	73.82	-0.91	74.55	-0.73	75.54	75.29	-0.24	75.03	0.26
3156971	75.80	74.96	-0.84	76.12	-1.16	76.61	76.58	-0.03	76.18	0.40
3156972	73.32	67.69	-5.63	74.61	-6.92	74.23	74.11	-0.12	74.88	-0.77
3156973	73.03	67.53	-5.50	74.57	-7.05	73.86	73.70	-0.16	74.86	-1.16
3157189	78.95	77.94	-1.01	77.67	0.27	79.41	79.41	0.00	78.10	1.31
3157190	78.42	77.49	-0.94	77.11	0.38	78.84	78.84	0.00	78.75	0.09
3157191	77.72	76.78	-0.94	76.49	0.29	78.12	78.11	0.00	78.31	-0.20
3157192	77.85	76.83	-1.02	76.76	0.07	78.24	78.24	0.00	78.81	-0.57
3157193	77.42	76.87	-0.55	76.69	0.17	77.91	77.90	0.00	77.65	0.25
3157194	76.62	76.28	-0.34	75.92	0.36	77.04	77.04	0.00	77.45	-0.41
3157195	75.60	75.54	-0.06	75.35	0.20	76.05	76.05	0.00	76.57	-0.53
3157196	75.71	75.40	-0.31	75.05	0.36	76.10	76.09	-0.01	76.42	-0.33
3157198	75.25	74.64	-0.61	74.15	0.48	75.66	75.65	0.00	74.85	0.80
3157199	75.20	74.60	-0.60	74.53	0.07	75.63	75.62	-0.01	75.58	0.04
3157201	78.14	77.70	-0.44	77.16	0.54	78.53	78.52	0.00	78.60	-0.08
3157202	78.49	77.99	-0.50	77.49	0.50	78.88	78.88	0.00	78.93	-0.05
3157211	75.11	74.55	-0.56	74.37	0.18	75.73	75.43	-0.31	74.88	0.55
3157212	75.36	74.63	-0.73	74.32	0.31	76.02	75.69	-0.33	75.10	0.59
3157215	75.41	75.00	-0.42	74.87	0.13	76.16	75.71	-0.45	76.45	-0.74
3157216	75.88	75.17	-0.71	74.97	0.20	76.65	76.20	-0.45	76.37	-0.17
3157219	76.96	75.89	-1.07	75.78	0.11	77.67	77.30	-0.37	77.61	-0.31
3157220	76.82	75.74	-1.08	75.42	0.32	77.54	77.17	-0.37	76.88	0.28
3157223	80.20	76.16	-4.04	78.66	-2.50	81.20	80.83	-0.38	79.81	1.02
3157224	80.12	76.08	-4.04	78.61	-2.53	80.88	80.51	-0.38	79.23	1.27
3157225	79.52	76.00	-3.52	77.93	-1.93	79.95	79.71	-0.23	78.72	1.00
3157226	79.53	76.00	-3.52	77.94	-1.93	79.98	79.75	-0.23	78.79	0.96
3157227	78.99	75.88	-3.11	77.40	-1.53	79.43	79.19	-0.24	77.85	1.34
3157228	78.99	75.88	-3.12	77.44	-1.56	79.44	79.20	-0.24	78.15	1.05
3157231	77.84	76.77	-1.06	77.32	-0.55	78.09	77.79	-0.30	77.80	-0.01
3157232	77.83	76.75	-1.08	76.53	0.23	78.21	77.89	-0.33	77.57	0.32
3157233	77.60	76.93	-0.66	76.68	0.25	77.79	77.55	-0.23	77.45	0.10
3157234	77.20	76.48	-0.71	76.19	0.30	77.40	77.15	-0.24	77.51	-0.36
3157236	75.04	74.93	-0.12	74.88	0.04	75.23	75.10	-0.13	76.53	-1.43

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3157237	74.92	74.80	-0.12	74.68	0.12	75.03	74.99	-0.04	76.39	-1.40
3157238	77.39	74.03	-3.36	77.64	-3.61	78.76	78.73	-0.03	78.36	0.36
3157243	73.92	68.21	-5.71	73.67	-5.46	74.56	74.51	-0.05	73.95	0.55
3157245	74.39	73.81	-0.58	73.53	0.28	74.79	74.78	0.00	74.30	0.48
3158624	77.30	71.61	-5.69	76.24	-4.63	77.73	78.27	0.55	77.55	0.72
3158625	77.48	71.59	-5.89	76.80	-5.21	78.00	78.15	0.14	77.67	0.47
3158626	77.60	71.56	-6.05	76.79	-5.24	78.14	78.04	-0.10	78.00	0.04
3158627	77.60	71.55	-6.05	76.84	-5.29	78.14	78.03	-0.11	77.79	0.24
3158628	77.59	0.00	-77.59	76.92	-76.92	78.12	0.00	-78.12	78.25	-78.25
3158629	77.56	0.00	-77.56	77.15	-77.15	78.05	0.00	-78.05	77.81	-77.81
3158630	77.55	71.28	-6.27	76.74	-5.47	78.05	77.96	-0.09	77.25	0.71
3158631	77.54	71.17	-6.37	77.28	-6.10	78.05	77.97	-0.09	77.91	0.05
3158632	77.53	71.14	-6.39	77.43	-6.29	78.05	77.97	-0.09	78.31	-0.34
3158633	77.52	71.07	-6.45	77.27	-6.20	78.05	77.97	-0.09	77.55	0.41
3158634	77.40	71.07	-6.33	77.42	-6.35	78.03	78.00	-0.03	78.14	-0.14
3158636	77.96	73.93	-4.03	76.41	-2.48	78.58	78.32	-0.26	76.84	1.48
3158638	78.24	72.42	-5.82	76.83	-4.41	78.83	78.72	-0.11	77.79	0.93
3158639	77.56	71.04	-6.52	77.14	-6.10	78.06	77.96	-0.10	77.78	0.18
3158640	77.51	75.30	-2.21	77.37	-2.07	78.10	77.95	-0.15	76.93	1.02
3158641	77.73	75.53	-2.20	78.03	-2.50	78.32	77.63	-0.69	79.30	-1.66
3158642	77.48	75.51	-1.97	76.96	-1.45	77.97	77.57	-0.41	78.48	-0.92
3158643	77.87	75.55	-2.32	77.30	-1.75	78.28	77.74	-0.53	78.02	-0.28
3158644	78.12	75.59	-2.53	77.36	-1.77	78.50	77.88	-0.63	78.45	-0.58
3158646	77.05	75.44	-1.61	77.91	-2.47	77.57	77.35	-0.22	78.83	-1.48
3158647	78.44	75.67	-2.77	76.40	-0.73	78.84	78.20	-0.64	76.75	1.45
3158648	78.01	70.94	-7.07	76.98	-6.04	78.54	77.96	-0.58	77.63	0.33
3158650	77.72	75.89	-1.83	77.23	-1.35	78.26	78.05	-0.21	77.40	0.64
3158652	77.77	75.67	-2.09	77.42	-1.75	78.16	77.82	-0.34	78.76	-0.94
3158659	77.44	75.67	-1.77	76.89	-1.22	78.26	77.70	-0.56	76.78	0.92
3158662	77.27	70.75	-6.52	76.96	-6.21	78.03	77.99	-0.04	78.35	-0.36
3158663	77.53	76.38	-1.16	77.21	-0.83	78.11	78.59	0.48	77.83	0.76
3158668	77.13	70.37	-6.77	76.88	-6.52	77.81	78.00	0.19	77.52	0.47
3158669	77.34	73.48	-3.86	76.66	-3.18	78.05	77.96	-0.09	77.25	0.71
3158671	77.33	70.36	-6.97	76.86	-6.50	78.04	78.00	-0.04	77.14	0.86
3158673	77.14	75.30	-1.85	76.93	-1.63	77.92	77.97	0.05	77.05	0.92
3158674	77.20	75.05	-2.15	76.66	-1.61	77.98	77.97	0.00	77.11	0.86
3158676	76.89	#N/A	#N/A	76.95	#N/A	77.69	#N/A	#N/A	76.98	#N/A
3158677	76.66	#N/A	#N/A	76.29	#N/A	77.21	#N/A	#N/A	76.67	#N/A
3158891	77.12	75.67	-1.45	76.44	-0.77	77.98	77.40	-0.58	76.78	0.63
3158892	77.38	75.67	-1.70	77.02	-1.35	77.75	77.41	-0.34	78.76	-1.35
3158893	78.42	75.68	-2.74	76.62	-0.94	78.84	78.24	-0.61	76.75	1.49
3158894	78.30	75.67	-2.63	76.43	-0.76	78.72	78.14	-0.58	77.42	0.72
3158895	77.77	75.58	-2.19	77.70	-2.12	78.43	77.92	-0.51	78.26	-0.34
3158896	77.67	75.54	-2.12	76.97	-1.42	78.26	77.74	-0.52	78.63	-0.90
3158897	77.76	75.82	-1.94	78.07	-2.25	78.37	77.72	-0.65	79.30	-1.58
3158898	77.73	75.54	-2.19	77.68	-2.14	78.32	77.64	-0.68	78.92	-1.28
3158902	77.14	75.31	-1.83	76.87	-1.56	77.58	77.39	-0.18	76.93	0.47
3158904	77.00	76.38	-0.63	76.73	-0.35	77.31	77.24	-0.07	78.39	-1.15
3158905	77.54	76.38	-1.16	76.82	-0.45	77.89	77.83	-0.06	77.97	-0.14
3158907	77.06	75.05	-2.01	76.41	-1.36	77.85	77.79	-0.06	77.58	0.21
3158908	76.89	75.30	-1.59	76.60	-1.30	77.68	77.62	-0.06	76.96	0.65
3158909	77.08	74.93	-2.16	76.34	-1.42	77.79	77.68	-0.11	77.46	0.21
3158910	76.84	70.35	-6.48	76.19	-5.84	77.54	78.00	0.45	77.18	0.82
3158913	77.07	75.35	-1.72	76.42	-1.07	77.47	77.37	-0.10	77.68	-0.31
3158914	77.00	75.35	-1.65	76.77	-1.42	77.36	77.28	-0.08	77.55	-0.27
3158915	77.59	73.52	-4.07	76.94	-3.42	78.26	78.18	-0.08	77.66	0.51
3158917	77.09	74.57	-2.53	76.68	-2.11	77.52	77.35	-0.17	78.27	-0.93
3158918	77.60	74.10	-3.51	77.09	-2.99	78.02	77.74	-0.28	77.63	0.11
3158919	77.60	74.11	-3.49	76.52	-2.42	78.02	77.74	-0.28	77.89	-0.16
3158920	77.42	74.39	-3.03	77.23	-2.84	77.94	77.73	-0.21	77.64	0.09
3158933	77.48	76.62	-0.85	78.52	-1.90	79.77	80.79	1.01	78.42	2.36
3158938	77.08	74.30	-2.78	75.63	-1.33	77.64	77.74	0.11	77.35	0.39
3158939	77.10	72.21	-4.89	75.00	-2.78	77.65	77.77	0.12	77.48	0.28
3158940	77.49	75.77	-1.71	77.20	-1.43	77.98	77.57	-0.41	78.50	-0.93
3175098	88.72	88.16	-0.56	88.05	0.11	89.08	89.08	0.00	89.18	-0.09
3175100	89.16	87.98	-1.18	88.55	-0.58	89.56	89.56	0.00	88.92	0.64

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3175102	88.61	87.78	-0.83	88.17	-0.39	89.19	89.19	0.00	88.83	0.36
3175104	88.73	87.71	-1.02	88.96	-1.25	89.36	89.36	0.00	89.25	0.11
3175107	87.94	87.15	-0.79	87.33	-0.18	88.59	88.59	0.00	86.24	2.35
3175109	87.37	86.48	-0.89	88.49	-2.02	88.17	88.17	0.00	88.34	-0.18
3175111	87.36	86.47	-0.89	88.70	-2.23	88.16	88.16	0.00	89.38	-1.23
3175112	87.68	86.82	-0.86	88.05	-1.23	88.45	88.45	0.00	88.59	-0.15
3175113	87.80	86.99	-0.81	86.58	0.41	88.56	88.56	0.00	87.51	1.05
3175114	87.88	87.20	-0.69	87.78	-0.58	88.62	88.62	0.00	87.75	0.87
3175115	87.88	87.20	-0.69	87.35	-0.15	88.62	88.62	0.00	87.97	0.64
3175121	87.87	87.20	-0.67	87.28	-0.08	88.60	88.59	0.00	88.19	0.41
3175122	87.87	87.20	-0.67	88.05	-0.86	88.60	88.59	0.00	87.81	0.79
3175261	87.80	86.99	-0.81	87.69	-0.70	88.56	88.56	0.00	88.05	0.51
3175272	85.64	85.36	-0.28	84.81	0.55	85.83	85.83	0.00	84.85	0.97
3175279	88.58	87.69	-0.89	88.40	-0.71	89.02	89.02	0.00	89.39	-0.38
3176092	86.11	84.55	-1.56	87.29	-2.74	87.40	87.39	0.00	86.50	0.89
3176094	90.18	88.74	-1.43	87.11	1.63	92.42	92.42	0.00	86.50	5.92
3176096	85.65	84.30	-1.35	86.35	-2.05	86.69	86.69	0.00	86.13	0.56
3176098	85.39	84.13	-1.26	87.47	-3.34	86.41	86.41	0.00	86.46	-0.05
3176100	85.48	84.40	-1.07	86.58	-2.18	86.37	86.37	0.00	86.79	-0.42
3176102	85.78	84.92	-0.86	84.19	0.73	86.59	86.59	0.00	84.44	2.15
3176104	86.62	85.63	-0.98	87.64	-2.00	87.56	87.56	0.00	86.89	0.67
3176105	85.23	84.90	-0.33	84.67	0.23	85.50	85.50	0.00	83.12	2.38
3176107	83.30	82.87	-0.43	83.51	-0.64	83.79	83.79	0.00	84.77	-0.97
3176108	85.19	84.80	-0.39	84.09	0.71	85.46	85.45	0.00	84.51	0.94
3176109	83.24	82.87	-0.37	82.14	0.73	83.57	83.57	0.00	83.69	-0.12
3176110	84.40	83.34	-1.06	84.38	-1.05	84.98	84.98	0.00	85.01	-0.04
3176112	86.30	85.31	-0.98	86.97	-1.66	87.22	87.24	0.02	84.52	2.72
3176113	84.30	83.33	-0.97	82.95	0.38	84.83	84.83	0.00	84.15	0.68
3176115	86.41	85.35	-1.06	84.45	0.90	87.25	87.24	-0.02	84.95	2.29
3176245	82.93	80.68	-2.26	83.89	-3.21	84.69	84.69	0.00	82.63	2.06
3176246	83.32	81.53	-1.79	84.54	-3.01	84.69	84.69	0.00	83.70	0.99
3176247	83.81	82.43	-1.37	82.52	-0.09	84.78	84.78	0.00	84.46	0.31
3176248	84.06	82.82	-1.24	82.77	0.06	84.89	84.89	0.00	84.21	0.68
3176249	84.41	83.23	-1.18	83.92	-0.69	85.17	85.17	0.00	83.87	1.30
3176251	84.77	83.60	-1.17	84.62	-1.02	85.56	85.56	0.00	85.80	-0.24
3176254	86.26	84.67	-1.59	86.03	-1.36	86.86	86.86	0.00	85.94	0.91
3176255	85.20	84.03	-1.17	86.00	-1.97	86.10	86.10	0.00	86.03	0.07
3176274	85.26	84.93	-0.32	84.61	0.32	85.51	85.50	-0.01	84.49	1.01
3176275	86.36	85.36	-1.00	85.87	-0.51	86.85	86.84	-0.01	85.20	1.65
3177634	87.87	87.18	-0.69	87.65	-0.47	88.61	88.61	0.00	87.81	0.80
3177638	87.87	87.21	-0.66	87.33	-0.13	88.63	88.63	0.00	87.93	0.70
3177642	87.79	87.07	-0.71	86.89	0.19	88.60	88.59	0.00	87.41	1.18
3177643	88.03	87.07	-0.95	88.12	-1.04	88.63	88.63	0.00	88.57	0.06
3177646	88.71	88.07	-0.64	88.46	-0.39	89.29	89.29	0.00	88.81	0.47
3177647	0.00	0.00	0.00	87.82	0.00	0.00	0.00	0.00	88.31	0.00
3177653	87.77	87.02	-0.75	86.83	0.18	88.57	88.57	0.00	88.56	0.01
3177657	88.71	88.07	-0.64	89.10	-1.03	89.20	89.20	0.00	88.67	0.53
3177664	87.59	86.83	-0.75	86.60	0.24	88.33	88.33	0.00	87.95	0.37
3177674	87.17	86.41	-0.76	86.18	0.23	87.87	87.87	0.00	87.77	0.10
3177675	87.57	86.69	-0.88	87.41	-0.72	88.23	88.22	0.00	87.93	0.29
3177677	87.17	86.38	-0.79	86.37	0.01	87.87	87.87	-0.01	87.35	0.51
3177678	87.20	86.38	-0.82	87.15	-0.77	87.84	87.83	0.00	87.81	0.02
3177683	87.00	86.15	-0.86	85.83	0.32	87.83	87.83	0.00	87.55	0.28
3177966	88.71	88.07	-0.64	88.03	0.04	89.20	89.20	0.00	88.69	0.51
3177985	87.00	86.15	-0.86	86.53	-0.38	87.83	87.83	0.00	86.96	0.87
3177990	87.68	86.85	-0.83	86.57	0.28	88.20	88.20	0.00	86.79	1.42
3178003	87.77	87.02	-0.75	87.40	-0.38	88.57	88.57	0.00	88.22	0.36
3178015	87.82	87.21	-0.61	87.45	-0.24	88.40	88.40	0.00	87.84	0.56
3178751	86.73	86.26	-0.47	85.84	0.42	87.13	87.13	0.00	85.99	1.14
3178752	86.80	86.26	-0.54	86.71	-0.45	87.13	87.13	0.00	86.94	0.19
3178753	86.51	85.37	-1.14	86.85	-1.48	87.30	87.29	-0.02	85.18	2.11
3178754	84.53	83.37	-1.16	83.86	-0.49	85.28	85.28	0.00	83.23	2.06
3178755	86.68	86.26	-0.41	85.89	0.38	87.02	87.01	-0.01	85.98	1.03
3178756	84.53	83.38	-1.15	83.61	-0.23	85.28	85.28	0.00	83.91	1.37
3178758	86.29	85.49	-0.80	85.86	-0.37	86.62	86.61	-0.01	86.51	0.10
3178759	86.28	85.53	-0.74	85.42	0.12	86.58	86.57	0.00	86.62	-0.04

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3178760	86.49	85.61	-0.88	86.02	-0.41	86.82	86.81	0.00	86.30	0.51
3178761	86.50	85.74	-0.75	85.68	0.06	86.81	86.80	-0.01	86.51	0.29
3178762	86.53	85.37	-1.16	87.54	-2.18	87.36	87.34	-0.02	84.99	2.35
3178763	87.05	86.23	-0.82	86.93	-0.71	87.40	87.39	0.00	86.09	1.30
3178765	86.43	85.85	-0.58	86.00	-0.15	86.63	86.63	0.00	86.11	0.52
3178767	84.60	83.38	-1.22	83.51	-0.13	85.69	85.69	0.00	82.71	2.97
3178768	84.62	83.38	-1.24	83.37	0.02	85.69	85.69	0.00	83.64	2.04
3178769	84.69	83.41	-1.28	84.18	-0.77	85.72	85.72	0.00	82.20	3.52
3178770	84.71	83.43	-1.28	84.36	-0.93	85.76	85.76	0.00	84.08	1.68
3178771	84.74	83.47	-1.27	85.15	-1.68	85.80	85.80	0.00	83.83	1.97
3178772	84.79	83.53	-1.26	85.53	-2.00	85.89	85.89	0.00	82.64	3.25
3178773	84.78	83.53	-1.24	84.71	-1.17	85.80	85.80	0.00	83.57	2.22
3178775	87.60	85.80	-1.80	87.23	-1.43	88.27	88.27	-0.01	85.61	2.65
3178778	86.55	85.48	-1.07	86.36	-0.88	87.11	87.10	-0.01	86.22	0.88
3178779	86.83	85.68	-1.15	86.52	-0.84	87.44	87.43	-0.02	87.25	0.17
3178781	84.75	83.54	-1.22	83.50	0.04	85.76	85.76	0.00	82.70	3.06
3178783	84.78	83.54	-1.23	83.66	-0.11	85.80	85.80	0.00	81.75	4.05
3178785	86.95	85.43	-1.52	87.55	-2.12	88.01	88.00	0.00	86.83	1.17
3178787	86.39	84.96	-1.42	87.97	-3.01	87.40	87.37	-0.04	86.15	1.21
3178788	86.39	84.96	-1.42	87.46	-2.49	87.40	87.37	-0.04	87.04	0.33
3178790	84.54	83.44	-1.10	85.89	-2.45	85.51	85.50	0.00	82.93	2.57
3178791	84.47	83.39	-1.09	85.77	-2.38	85.45	85.44	-0.01	83.20	2.24
3178792	86.52	84.48	-2.04	87.28	-2.80	87.45	87.44	-0.02	87.37	0.07
3178793	86.76	84.98	-1.77	86.99	-2.01	87.47	87.45	-0.01	87.19	0.27
3178794	87.54	86.12	-1.41	87.25	-1.12	88.17	88.16	-0.01	86.59	1.57
3178797	86.84	85.43	-1.42	86.64	-1.21	87.35	87.34	-0.01	86.63	0.71
3178987	82.78	82.60	-0.18	82.12	0.48	82.91	82.91	0.00	83.20	-0.29
3178988	82.31	82.18	-0.13	81.77	0.41	82.39	82.39	0.00	82.93	-0.54
3178989	84.21	82.73	-1.48	81.97	0.76	85.08	85.08	0.00	81.75	3.33
3178992	85.07	84.85	-0.22	84.47	0.38	85.28	85.27	-0.01	85.18	0.09
3179002	86.34	86.10	-0.24	85.69	0.41	86.57	86.56	0.00	86.83	-0.27
3179010	85.42	85.05	-0.37	84.31	0.74	85.76	85.76	-0.01	86.63	-0.88
3179011	85.80	85.41	-0.39	85.28	0.14	86.12	86.12	-0.01	86.22	-0.10
3179012	85.30	84.82	-0.49	84.33	0.49	85.67	85.66	-0.01	83.88	1.78
3179013	85.47	85.22	-0.25	84.93	0.28	85.72	85.71	-0.01	85.61	0.09
3179018	85.27	85.04	-0.23	84.78	0.26	85.53	85.52	-0.01	87.25	-1.73
3179019	85.63	85.36	-0.27	84.52	0.83	85.78	85.77	0.00	85.03	0.75
3179020	85.74	85.38	-0.36	85.29	0.08	86.02	86.02	0.00	86.83	-0.81
3179021	85.50	85.31	-0.19	85.20	0.11	85.59	85.59	0.00	87.11	-1.52
3179024	86.39	84.96	-1.43	86.51	-1.55	87.05	87.04	-0.01	86.93	0.11
3179025	86.26	84.96	-1.30	86.17	-1.21	86.50	86.49	-0.01	87.04	-0.55
3179029	86.85	86.12	-0.73	85.93	0.19	87.07	87.07	0.00	87.37	-0.30
3179030	85.64	84.58	-1.06	85.37	-0.79	85.90	85.88	-0.01	87.42	-1.54
32	73.96	69.76	-4.20	74.20	-4.45	74.32	73.99	-0.33	74.48	-0.49
3212854	77.22	71.29	-5.93	77.29	-6.00	77.34	77.49	0.15	76.43	1.06
3212856	77.27	71.20	-6.07	77.41	-6.21	77.41	77.58	0.17	76.88	0.70
3212857	77.43	71.41	-6.02	77.74	-6.34	77.53	77.68	0.15	76.89	0.79
3212858	77.45	70.87	-6.58	78.25	-7.38	77.67	78.06	0.40	76.78	1.29
3212859	77.92	70.79	-7.13	78.22	-7.43	78.32	78.24	-0.08	77.94	0.30
3212860	77.98	70.78	-7.20	78.36	-7.59	78.42	78.29	-0.13	77.61	0.68
3218806	83.22	82.43	-0.79	82.11	0.32	83.71	83.70	0.00	81.33	2.37
3218808	81.41	80.48	-0.93	80.01	0.46	82.53	82.50	-0.04	80.37	2.13
3218814	81.78	80.93	-0.85	81.13	-0.20	82.58	82.55	-0.02	81.87	0.69
3218819	82.04	81.19	-0.85	81.76	-0.57	82.91	82.89	-0.02	81.90	0.99
3218824	82.39	81.54	-0.85	81.52	0.02	83.10	83.09	-0.01	82.48	0.62
3218829	83.13	81.99	-1.14	81.82	0.17	83.91	83.90	-0.01	82.73	1.17
3218832	80.48	79.45	-1.03	81.83	-2.38	82.15	82.15	0.00	80.90	1.25
3218866	80.26	78.76	-1.51	82.82	-4.06	81.18	81.09	-0.09	82.34	-1.25
3218873	78.67	77.28	-1.39	78.11	-0.83	79.04	78.92	-0.12	78.55	0.36
3219151	81.80	80.93	-0.87	81.42	-0.49	82.39	82.38	-0.01	81.87	0.51
3219152	81.78	80.96	-0.82	81.10	-0.13	82.43	82.41	-0.02	81.87	0.55
3219153	81.26	80.43	-0.83	79.55	0.88	82.19	82.17	-0.02	80.37	1.81
3219183	79.57	79.29	-0.28	79.07	0.23	80.43	80.42	-0.01	79.21	1.20
3219184	79.46	79.22	-0.24	78.89	0.33	80.11	80.10	-0.01	80.90	-0.81
3219186	76.71	75.84	-0.86	77.91	-2.06	78.21	78.18	-0.03	79.22	-1.04
3219196	78.83	78.64	-0.18	78.02	0.62	79.06	79.05	-0.01	78.74	0.31

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3219197	78.00	77.84	-0.15	77.14	0.70	78.19	78.18	0.00	79.33	-1.14
3219198	79.14	78.59	-0.55	78.20	0.39	79.41	79.40	0.00	80.27	-0.87
3219200	75.29	74.79	-0.50	73.94	0.85	75.81	75.71	-0.10	75.18	0.52
3219201	75.09	74.65	-0.44	73.72	0.94	75.51	75.43	-0.08	75.14	0.28
3221259	77.63	75.33	-2.30	77.67	-2.33	78.16	77.71	-0.45	78.47	-0.76
3221268	77.09	74.60	-2.49	76.97	-2.37	77.77	76.96	-0.80	77.75	-0.79
3221271	76.40	73.79	-2.61	77.55	-3.76	77.08	75.83	-1.25	77.99	-2.16
3221280	75.90	73.34	-2.56	78.13	-4.79	76.59	75.33	-1.26	78.88	-3.55
3223778-2	72.31	72.31	0.00	75.62	-3.31	72.31	72.31	0.00	76.91	-4.60
3223788	77.32	75.96	-1.36	76.91	-0.95	77.53	77.53	0.00	77.58	-0.06
3223789	77.52	75.58	-1.94	76.89	-1.31	77.91	77.91	0.00	77.31	0.60
3223793	77.53	75.49	-2.04	76.89	-1.40	78.10	78.16	0.05	76.99	1.17
3223795	77.46	75.27	-2.19	76.62	-1.35	78.05	78.27	0.22	76.93	1.33
3223798	77.39	75.03	-2.37	76.51	-1.49	77.94	78.25	0.31	76.94	1.31
3223799	77.36	74.79	-2.57	76.34	-1.55	77.89	78.44	0.55	77.33	1.11
3223937	77.35	74.79	-2.57	76.27	-1.48	77.86	78.26	0.41	76.80	1.47
3223939	77.36	75.03	-2.34	76.66	-1.63	77.88	78.15	0.27	77.03	1.12
3223941	77.32	75.28	-2.04	76.47	-1.20	77.84	77.93	0.10	76.57	1.36
3223944	77.42	75.49	-1.94	76.43	-0.95	77.93	77.91	-0.02	77.69	0.22
3223945	77.56	75.69	-1.87	76.91	-1.23	78.05	78.05	0.00	78.58	-0.54
3223947	77.43	76.02	-1.41	77.00	-0.98	77.79	77.79	0.00	77.48	0.30
3224458	77.32	74.51	-2.81	76.14	-1.63	77.82	79.07	1.25	77.33	1.74
3224459	77.27	74.19	-3.07	76.91	-2.72	77.70	80.47	2.77	77.80	2.67
3224460	77.27	71.69	-5.58	76.82	-5.13	77.71	80.48	2.77	77.31	3.16
3224461	77.27	71.67	-5.60	75.94	-4.27	77.71	79.74	2.03	77.08	2.66
3224462	77.29	71.66	-5.63	76.34	-4.68	77.73	79.23	1.50	76.97	2.26
3224463	77.30	71.65	-5.65	76.66	-5.02	77.75	78.90	1.14	77.36	1.54
3224465	76.99	74.76	-2.23	76.07	-1.31	77.21	77.13	-0.08	76.85	0.29
3224466	76.99	75.04	-1.95	75.98	-0.95	77.19	77.09	-0.10	76.01	1.08
3224467	77.01	75.26	-1.76	76.57	-1.32	77.20	77.11	-0.09	76.11	1.00
3224468	76.96	75.41	-1.55	76.51	-1.11	77.10	77.00	-0.10	75.55	1.46
3224469	77.02	75.40	-1.61	77.08	-1.67	77.20	77.11	-0.10	76.76	0.34
3224470	77.01	75.60	-1.40	76.96	-1.36	77.21	77.12	-0.08	76.74	0.38
3224471	76.96	75.78	-1.18	76.86	-1.08	77.18	77.05	-0.13	75.62	1.43
3224472	77.01	75.78	-1.23	76.62	-0.84	77.26	77.19	-0.07	76.81	0.38
3224473	76.99	75.78	-1.22	76.92	-1.14	77.18	77.10	-0.09	76.22	0.87
3224474	76.85	75.78	-1.08	76.61	-0.84	77.05	76.97	-0.08	76.18	0.79
3224476	76.75	75.78	-0.97	76.13	-0.35	76.89	76.82	-0.08	76.62	0.20
3224477	76.69	75.78	-0.91	76.48	-0.70	76.82	76.74	-0.08	75.76	0.98
3224478	77.11	72.91	-4.20	76.76	-3.86	77.30	77.19	-0.10	75.44	1.75
3224479	77.25	72.91	-4.35	76.83	-3.92	77.53	77.47	-0.06	75.62	1.85
3224480	76.25	72.52	-3.73	76.08	-3.55	76.37	76.30	-0.07	75.51	0.78
3224481	76.25	72.42	-3.84	75.79	-3.37	76.37	76.30	-0.07	76.06	0.24
3224482	77.00	72.65	-4.35	76.78	-4.14	77.10	77.07	-0.03	75.79	1.27
3224483	76.95	72.54	-4.41	76.73	-4.19	77.02	76.99	-0.03	75.55	1.44
3224484	76.91	72.46	-4.45	76.80	-4.34	76.95	76.94	-0.02	76.12	0.82
3224485	76.44	72.19	-4.25	76.21	-4.02	76.54	76.47	-0.07	75.82	0.65
3224487	76.88	72.34	-4.55	76.47	-4.14	76.91	76.91	-0.01	76.59	0.31
3224488	76.49	72.08	-4.41	76.51	-4.43	76.56	76.51	-0.05	76.37	0.14
3224489	76.89	72.22	-4.67	76.78	-4.56	76.92	76.92	0.00	76.40	0.52
3224490	76.50	72.04	-4.47	76.36	-4.33	76.57	76.53	-0.04	76.19	0.34
3224491	76.54	71.96	-4.58	76.49	-4.54	76.59	76.56	-0.03	76.69	-0.13
3224492	76.92	72.03	-4.89	76.81	-4.77	76.95	76.95	0.00	76.55	0.40
3224493	76.58	71.89	-4.68	76.28	-4.39	76.62	76.60	-0.02	76.20	0.40
3224494	76.73	71.82	-4.92	76.64	-4.82	76.76	76.77	0.00	76.51	0.26
3224495	76.96	71.83	-5.13	76.81	-4.98	76.99	77.01	0.02	76.49	0.53
3224496	76.98	71.69	-5.29	76.90	-5.21	77.03	77.06	0.03	76.00	1.06
3224497	77.04	71.65	-5.39	76.92	-5.27	77.09	77.14	0.05	76.67	0.47
3224609	77.28	73.62	-3.67	76.13	-2.51	77.63	77.56	-0.06	77.23	0.34
3224610	77.07	73.02	-4.06	75.68	-2.67	77.35	77.28	-0.06	77.12	0.17
3224612	77.32	74.53	-2.79	75.87	-1.33	77.84	79.03	1.19	76.29	2.73
3224614	76.84	74.76	-2.08	76.00	-1.24	77.00	76.90	-0.10	76.57	0.32
3224615	76.99	75.04	-1.95	75.97	-0.93	77.16	77.06	-0.10	76.53	0.53
3224619	76.07	73.08	-3.00	75.66	-2.59	76.21	76.11	-0.09	75.90	0.21
3234001	89.22	89.22	0.00	83.95	5.27	157.80	157.84	0.04	84.50	73.33
3234041	83.14	81.18	-1.96	84.44	-3.27	84.79	84.79	0.00	84.39	0.40

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
3234043	81.78	80.16	-1.62	85.69	-5.53	84.29	84.30	0.00	83.39	0.91
3234049	82.95	81.58	-1.36	85.05	-3.46	85.17	85.16	0.00	82.93	2.23
3234050	82.11	81.56	-0.54	84.19	-2.63	83.93	83.93	0.00	83.39	0.54
3234051	83.79	82.71	-1.07	83.42	-0.71	85.23	85.23	0.00	83.73	1.50
3234052	83.76	82.71	-1.05	84.14	-1.43	84.85	84.84	0.00	83.87	0.97
3234054	83.79	82.85	-0.94	83.87	-1.02	85.22	85.22	0.00	83.66	1.56
3234057	83.15	81.81	-1.34	84.99	-3.18	85.24	85.23	0.00	82.24	3.00
3234058	70.40	70.40	0.00	85.12	-14.72	85.51	85.52	0.01	82.45	3.07
3234059	83.50	82.19	-1.31	85.43	-3.24	85.52	85.51	0.00	83.81	1.70
3234307	81.45	78.56	-2.90	83.32	-4.76	84.02	84.02	0.00	82.40	1.61
3234312	89.55	84.73	-4.81	83.31	1.42	96.93	96.94	0.02	84.50	12.44
3234315	79.79	76.91	-2.89	83.59	-6.69	82.75	82.76	0.00	84.00	-1.25
3236559	84.34	82.96	-1.38	84.24	-1.27	84.87	84.87	0.00	84.09	0.77
3236568	84.10	82.66	-1.44	85.01	-2.35	85.60	85.61	0.01	83.27	2.34
3236569	83.98	82.62	-1.36	85.23	-2.61	85.57	85.57	0.01	83.09	2.48
3236576	84.34	82.95	-1.39	84.13	-1.18	84.88	84.88	0.00	85.03	-0.14
3236582	84.40	82.73	-1.67	85.11	-2.38	86.04	86.03	0.00	83.58	2.46
3236584	84.45	82.74	-1.70	84.75	-2.00	86.24	86.23	-0.01	82.92	3.31
3236585	84.45	82.80	-1.65	85.24	-2.44	86.12	86.12	-0.01	82.92	3.20
3236588	83.90	82.77	-1.13	85.30	-2.53	84.92	84.92	0.00	83.88	1.04
3236589	83.36	82.71	-0.64	85.00	-2.28	83.72	83.72	0.00	83.42	0.29
3236590	84.36	82.94	-1.42	83.86	-0.92	85.09	85.09	0.00	84.40	0.69
3236593	84.44	82.96	-1.49	83.91	-0.95	85.76	85.76	0.00	83.83	1.93
3236596	84.04	82.92	-1.12	83.99	-1.07	84.94	84.94	0.00	83.83	1.11
3236615	84.46	82.60	-1.86	84.77	-2.17	86.89	86.87	-0.02	82.69	4.18
3236631	84.69	82.33	-2.36	82.69	-0.36	89.58	89.52	-0.06	82.74	6.78
3236632	84.64	82.39	-2.24	82.61	-0.22	88.88	88.83	-0.05	82.79	6.03
3236633	84.47	82.47	-2.00	84.05	-1.59	87.28	87.25	-0.02	82.98	4.28
3236634	84.48	82.41	-2.07	83.63	-1.22	87.46	87.44	-0.03	83.02	4.41
3236636	83.06	82.46	-0.60	82.53	-0.07	83.50	83.50	0.00	82.08	1.42
33	72.43	69.68	-2.74	73.60	-3.91	73.74	73.74	0.00	74.07	-0.33
34	73.06	70.30	-2.76	74.65	-4.36	74.38	74.37	-0.01	75.14	-0.77
35	74.15	71.44	-2.71	75.30	-3.86	75.22	75.21	0.00	75.13	0.08
36	74.85	72.02	-2.83	75.14	-3.12	75.38	75.38	0.00	74.20	1.18
38	72.50	69.29	-3.21	73.80	-4.51	74.32	73.98	-0.34	72.45	1.53
40	76.27	74.27	-2.00	75.97	-1.70	76.72	76.72	0.00	76.54	0.18
40007	79.53	#N/A	#N/A	80.53	#N/A	80.06	#N/A	#N/A	80.91	#N/A
40008	79.53	#N/A	#N/A	81.65	#N/A	80.06	#N/A	#N/A	80.36	#N/A
40009	79.53	#N/A	#N/A	81.35	#N/A	80.06	#N/A	#N/A	81.62	#N/A
40010	79.53	#N/A	#N/A	80.91	#N/A	80.06	#N/A	#N/A	81.35	#N/A
40011	79.53	#N/A	#N/A	80.91	#N/A	80.06	#N/A	#N/A	81.29	#N/A
40012	79.53	#N/A	#N/A	80.53	#N/A	80.06	#N/A	#N/A	80.01	#N/A
40013	79.53	#N/A	#N/A	79.15	#N/A	80.06	#N/A	#N/A	79.88	#N/A
40014	79.53	#N/A	#N/A	79.27	#N/A	80.10	#N/A	#N/A	79.55	#N/A
40015	79.56	#N/A	#N/A	80.70	#N/A	80.29	#N/A	#N/A	79.87	#N/A
40032	79.52	78.25	-1.27	77.29	0.96	80.16	80.04	-0.12	79.34	0.70
40033	79.52	78.27	-1.25	77.28	0.99	80.11	80.00	-0.12	79.17	0.83
40034	79.52	78.28	-1.24	77.74	0.55	80.10	79.99	-0.12	78.05	1.93
40035	79.53	78.30	-1.23	77.77	0.53	80.11	79.98	-0.13	78.05	1.93
40036	79.53	78.31	-1.22	77.84	0.47	80.11	79.98	-0.13	78.16	1.83
40037	79.55	78.38	-1.17	78.29	0.09	80.15	80.02	-0.13	78.74	1.28
40038	79.58	78.42	-1.16	78.48	-0.06	80.18	80.05	-0.13	78.79	1.26
40039	79.61	78.45	-1.15	78.17	0.28	80.20	80.08	-0.12	78.12	1.96
40040	79.62	78.49	-1.14	77.76	0.73	80.22	80.10	-0.12	78.41	1.69
40041	79.64	78.53	-1.11	77.78	0.75	80.25	80.13	-0.11	78.22	1.91
40042	79.70	78.63	-1.07	78.32	0.31	80.31	80.21	-0.10	78.05	2.15
40043	73.53	72.55	-0.98	77.63	-5.08	76.26	76.23	-0.03	78.16	-1.93
40044	73.53	72.55	-0.98	77.79	-5.24	76.26	76.23	-0.04	78.52	-2.29
40045	73.46	72.52	-0.94	79.61	-7.09	76.01	75.97	-0.03	77.60	-1.63
40046	73.25	72.48	-0.77	76.90	-4.42	75.35	75.33	-0.03	77.26	-1.94
40047	73.04	72.44	-0.60	75.84	-3.40	74.69	74.67	-0.02	76.54	-1.86
40048	72.81	72.40	-0.41	75.97	-3.56	73.92	73.90	-0.02	76.59	-2.69
40049	72.54	72.36	-0.19	76.03	-3.68	73.05	73.04	-0.01	76.37	-3.33
40050	73.60	72.52	-1.08	78.53	-6.01	76.34	76.30	-0.04	78.01	-1.71
40051	73.98	72.53	-1.45	77.50	-4.97	77.04	76.98	-0.06	77.16	-0.18
40052	73.60	72.52	-1.08	77.74	-5.22	76.34	76.30	-0.04	78.01	-1.71

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
40053	73.60	72.52	-1.08	77.63	-5.10	76.34	76.30	-0.04	78.21	-1.91
40054	74.02	72.53	-1.49	76.92	-4.39	77.14	77.08	-0.06	77.16	-0.08
40055	74.08	72.54	-1.54	77.14	-4.61	77.32	77.26	-0.06	77.60	-0.34
41	78.38	78.20	-0.18	78.17	0.03	78.52	78.52	0.00	79.21	-0.69
4157471	71.67	68.06	-3.62	73.16	-5.11	72.05	71.92	-0.14	74.34	-2.43
4157472	71.68	68.04	-3.64	72.41	-4.37	72.10	71.94	-0.16	73.16	-1.22
4157473	71.66	68.04	-3.62	72.19	-4.15	72.11	71.95	-0.16	73.46	-1.52
4157474	71.59	68.05	-3.54	72.09	-4.04	71.97	71.95	-0.02	73.24	-1.28
4157475	71.52	68.05	-3.47	71.42	-3.37	71.75	71.95	0.20	72.07	-0.12
4157476	71.61	68.05	-3.56	72.12	-4.07	72.04	71.95	-0.09	73.34	-1.39
4157477	71.63	68.04	-3.59	72.09	-4.05	72.11	71.95	-0.15	72.87	-0.92
4159533	77.20	70.39	-6.80	74.36	-3.96	77.64	77.21	-0.43	75.80	1.41
4161803	78.34	77.71	-0.63	77.55	0.16	79.03	78.66	-0.37	79.78	-1.12
4161810	83.60	81.92	-1.68	84.03	-2.11	84.73	84.61	-0.12	84.82	-0.21
4161811	83.97	83.15	-0.81	82.81	0.35	84.68	84.57	-0.10	83.09	1.48
4161812	83.99	83.09	-0.90	83.26	-0.16	84.67	84.57	-0.10	83.61	0.95
4165577	75.70	73.22	-2.49	77.95	-4.73	77.07	76.29	-0.78	79.15	-2.86
4165579	75.85	73.22	-2.62	78.61	-5.38	77.87	77.18	-0.69	79.33	-2.15
4165581	75.92	73.23	-2.69	77.91	-4.68	78.25	77.96	-0.29	79.46	-1.50
4165583	75.93	73.76	-2.17	77.89	-4.13	78.39	78.20	-0.19	78.41	-0.21
4165585	73.60	73.01	-0.59	78.30	-5.29	78.30	78.13	-0.17	79.11	-0.98
4165604	75.71	73.22	-2.49	77.95	-4.73	77.11	76.29	-0.82	79.15	-2.86
4165605	75.71	73.22	-2.49	78.56	-5.34	77.07	76.29	-0.78	78.48	-2.19
4165607	75.92	73.38	-2.55	77.98	-4.60	78.25	77.96	-0.28	78.07	-0.10
4165610	75.93	74.10	-1.83	78.00	-3.89	78.39	78.20	-0.19	78.63	-0.43
4165614	73.66	73.12	-0.53	79.44	-6.32	78.36	78.18	-0.17	78.81	-0.63
4165616	73.73	73.23	-0.51	78.71	-5.48	78.48	78.31	-0.17	79.20	-0.89
4195558	66.58	66.02	-0.55	70.69	-4.66	67.35	67.35	0.00	71.90	-4.55
4195560	65.57	65.17	-0.40	69.81	-4.64	66.23	66.23	0.00	70.70	-4.47
42	71.62	68.09	-3.53	71.30	-3.21	71.88	71.89	0.01	72.82	-0.94
43	71.99	67.14	-4.85	71.99	-4.85	72.67	72.53	-0.14	72.89	-0.36
5	69.83	65.71	-4.12	70.87	-5.16	70.77	70.63	-0.14	71.73	-1.10
50	78.19	77.76	-0.43	77.52	0.23	78.67	78.65	-0.02	78.41	0.23
5000	77.06	73.51	-3.55	77.32	-3.81	77.89	77.48	-0.41	78.22	-0.74
5001	87.05	85.83	-1.22	86.18	-0.35	87.58	87.57	-0.01	86.10	1.47
5002	79.04	75.87	-3.17	79.11	-3.24	79.47	79.22	-0.26	79.14	0.08
5003	79.17	76.70	-2.46	79.06	-2.36	79.45	79.31	-0.14	79.22	0.10
5004	78.32	77.83	-0.49	78.42	-0.58	78.51	78.51	0.00	79.09	-0.58
5005	78.48	76.92	-1.56	77.93	-1.01	78.85	78.69	-0.16	77.41	1.28
5007	83.44	82.46	-0.98	82.14	0.32	84.03	84.02	-0.01	82.81	1.21
5008	80.03	78.84	-1.19	80.28	-1.44	80.69	80.54	-0.15	80.12	0.42
5009	80.72	79.82	-0.90	80.20	-0.38	81.42	81.19	-0.23	79.19	2.00
5010	83.08	82.02	-1.06	83.90	-1.89	83.71	83.70	-0.02	84.11	-0.41
5011	84.53	83.70	-0.83	84.27	-0.58	84.98	84.97	-0.01	86.21	-1.24
5012	80.96	80.28	-0.68	79.91	0.38	81.62	81.35	-0.27	79.50	1.85
5013	86.47	85.61	-0.87	85.74	-0.13	87.48	87.47	-0.01	87.09	0.38
5014	78.95	75.84	-3.11	79.51	-3.67	79.43	79.11	-0.32	79.15	-0.03
5015	79.02	75.88	-3.13	78.58	-2.70	79.51	79.20	-0.31	80.99	-1.79
5016	79.05	75.89	-3.16	79.91	-4.03	79.63	79.24	-0.39	80.02	-0.78
5017	79.05	75.89	-3.16	78.46	-2.57	79.61	79.24	-0.37	80.07	-0.83
5021	73.99	69.76	-4.23	72.15	-2.39	74.46	74.10	-0.37	72.48	1.61
5022	82.99	81.63	-1.36	82.53	-0.90	83.69	83.68	-0.01	82.88	0.80
5023	82.69	81.13	-1.56	82.25	-1.12	83.47	83.45	-0.02	81.74	1.72
5025	81.99	80.37	-1.62	82.43	-2.06	83.06	83.03	-0.04	81.97	1.06
5026	81.73	80.11	-1.62	82.67	-2.56	82.86	82.81	-0.05	82.42	0.40
5027	81.24	79.64	-1.59	82.76	-3.12	82.43	82.36	-0.07	81.89	0.47
5028	77.82	75.62	-2.19	77.88	-2.25	78.30	77.94	-0.36	78.28	-0.34
5029	78.96	76.13	-2.82	78.87	-2.74	79.23	79.20	-0.04	78.75	0.45
5030	78.39	75.84	-2.55	78.20	-2.36	78.73	78.57	-0.16	78.25	0.32
5031	76.98	73.47	-3.51	77.19	-3.72	77.85	77.37	-0.48	78.22	-0.85
5032	76.57	73.31	-3.27	77.09	-3.78	77.60	76.84	-0.75	78.76	-1.92
5033	76.12	73.50	-2.61	77.94	-4.44	76.80	75.54	-1.26	78.63	-3.08
5034	75.86	73.24	-2.62	77.93	-4.69	76.72	75.92	-0.81	79.27	-3.35
5035	75.56	73.21	-2.34	78.35	-5.14	76.36	75.88	-0.48	70.65	5.24
5039	74.49	70.46	-4.03	74.48	-4.02	74.98	74.21	-0.77	74.17	0.03
5040	74.53	71.04	-3.50	74.80	-3.77	74.96	74.32	-0.64	74.83	-0.52

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
5041	74.60	71.56	-3.04	74.81	-3.25	74.95	74.48	-0.46	74.84	-0.36
5042	75.70	73.16	-2.54	75.49	-2.33	76.04	76.00	-0.04	74.77	1.23
5043	68.45	67.25	-1.20	73.32	-6.07	71.89	72.00	0.11	73.92	-1.92
5044	71.30	69.79	-1.51	71.90	-2.11	72.86	72.82	-0.04	73.58	-0.76
5046	72.20	70.68	-1.52	72.86	-2.18	72.92	72.88	-0.04	73.25	-0.37
5047	71.53	68.05	-3.48	71.71	-3.66	71.93	71.96	0.03	72.05	-0.09
5049	75.76	74.08	-1.68	77.61	-3.53	76.24	76.24	0.00	77.78	-1.53
5050	83.11	82.45	-0.66	82.69	-0.25	83.47	83.44	-0.02	84.45	-1.01
5052	79.80	75.32	-4.48	80.51	-5.19	80.61	79.70	-0.91	79.10	0.61
5054	80.19	78.31	-1.88	80.43	-2.12	81.28	80.68	-0.61	79.31	1.36
5055	81.09	79.27	-1.82	85.09	-5.81	82.65	81.90	-0.74	83.64	-1.73
5057	77.39	73.67	-3.72	77.11	-3.44	78.21	77.96	-0.25	78.40	-0.43
5058	78.72	77.20	-1.52	78.19	-0.99	79.08	79.03	-0.05	79.54	-0.50
5059	83.38	82.35	-1.02	82.77	-0.42	83.98	83.97	-0.01	83.11	0.86
5065	85.19	84.31	-0.88	86.00	-1.69	86.04	86.03	-0.01	86.65	-0.62
5066	79.71	75.32	-4.39	80.74	-5.43	80.51	79.62	-0.89	79.90	-0.29
5067	79.81	76.44	-3.37	80.58	-4.14	80.61	79.79	-0.82	79.59	0.20
5068	79.81	75.74	-4.07	80.22	-4.48	80.61	79.73	-0.88	79.48	0.25
5069	79.81	75.36	-4.45	80.47	-5.11	80.61	79.72	-0.90	77.90	1.81
5070	80.11	78.92	-1.19	78.47	0.45	80.74	80.35	-0.39	79.10	1.25
5071	79.98	77.86	-2.12	77.55	0.31	80.66	80.26	-0.40	79.05	1.21
5072	82.77	80.89	-1.88	84.89	-4.00	84.50	84.08	-0.42	85.13	-1.04
5073	82.07	80.16	-1.91	85.10	-4.94	83.78	83.23	-0.55	84.21	-0.98
5074	83.45	81.63	-1.82	85.08	-3.46	84.98	84.66	-0.32	86.75	-2.08
5076	78.80	75.72	-3.08	77.40	-1.68	79.20	78.47	-0.73	77.73	0.74
5078	78.89	75.82	-3.07	79.17	-3.36	79.33	78.89	-0.44	78.97	-0.08
5079	78.87	75.75	-3.12	78.87	-3.11	79.27	78.66	-0.61	78.97	-0.31
5080	78.93	75.84	-3.09	78.85	-3.01	79.38	79.08	-0.30	79.47	-0.39
5081	79.02	75.82	-3.20	79.57	-3.75	79.59	79.10	-0.49	79.15	-0.05
5082	79.06	75.83	-3.23	78.80	-2.97	79.62	79.17	-0.44	78.59	0.59
5083	78.98	75.85	-3.13	79.31	-3.46	79.47	79.15	-0.31	79.29	-0.14
5084	79.03	75.84	-3.19	80.48	-4.64	79.60	79.15	-0.45	80.42	-1.26
5085	78.99	75.86	-3.13	79.28	-3.42	79.50	79.17	-0.32	78.67	0.51
5086	79.03	75.85	-3.18	79.48	-3.62	79.62	79.18	-0.43	78.67	0.52
5087	79.04	75.84	-3.20	79.37	-3.53	79.59	79.16	-0.43	80.42	-1.26
5088	78.91	75.86	-3.05	78.65	-2.79	79.45	79.08	-0.38	78.68	0.39
5089	79.04	75.87	-3.17	79.34	-3.47	79.62	79.22	-0.40	79.48	-0.26
5090	79.01	75.87	-3.13	79.17	-3.30	79.51	79.20	-0.31	79.57	-0.38
5091	79.02	75.88	-3.14	78.45	-2.56	79.52	79.21	-0.31	79.57	-0.36
5092	79.05	75.89	-3.16	78.73	-2.84	79.62	79.24	-0.38	79.57	-0.33
5093	79.03	75.89	-3.14	78.63	-2.75	79.54	79.22	-0.32	80.88	-1.66
5094	79.05	75.89	-3.16	80.03	-4.14	79.62	79.24	-0.38	79.86	-0.61
5095	79.06	75.89	-3.17	78.69	-2.80	79.64	79.26	-0.38	78.98	0.28
5096	79.70	76.57	-3.13	79.62	-3.05	80.00	79.85	-0.15	79.55	0.30
5098	79.26	75.89	-3.38	79.40	-3.52	80.01	79.67	-0.34	79.39	0.28
51	78.24	71.48	-6.76	78.17	-6.69	79.09	79.06	-0.02	79.24	-0.18
5107	75.62	74.71	-0.92	75.49	-0.79	76.15	76.13	-0.02	75.87	0.26
5109	75.79	74.88	-0.91	75.57	-0.69	76.34	76.26	-0.08	74.98	1.29
5110	75.69	74.86	-0.83	74.54	0.31	76.18	76.12	-0.06	75.07	1.05
5114	68.40	67.24	-1.16	73.20	-5.97	71.78	71.89	0.11	73.91	-2.02
5115	70.35	67.70	-2.65	73.12	-5.42	72.30	72.05	-0.25	73.03	-0.98
5116	71.39	68.00	-3.39	72.74	-4.74	72.38	72.04	-0.34	72.61	-0.57
5117	71.48	68.03	-3.45	72.12	-4.09	72.18	71.99	-0.19	72.33	-0.34
5118	76.19	74.44	-1.76	78.56	-4.13	78.24	78.24	0.00	75.40	2.84
5120	72.39	71.72	-0.67	71.70	0.02	73.00	72.97	-0.02	72.88	0.10
5121	64.26	60.90	-3.36	66.94	-6.03	69.85	69.90	0.05	70.15	-0.24
5122	69.17	65.41	-3.76	67.93	-2.52	69.41	69.22	-0.19	69.40	-0.18
5123	67.10	63.99	-3.11	66.82	-2.82	68.28	67.29	-0.99	68.83	-1.54
5124	72.68	70.81	-1.87	71.20	-0.40	73.07	73.03	-0.04	72.26	0.77
5125	70.45	66.15	-4.30	69.84	-3.68	71.37	71.11	-0.26	70.84	0.27
5126	60.73	55.61	-5.12	67.60	-12.00	67.56	67.56	0.00	67.45	0.11
5127	68.04	65.85	-2.19	69.72	-3.87	69.16	69.65	0.49	69.76	-0.11
5128	68.08	65.28	-2.79	69.92	-4.64	69.16	69.54	0.38	69.27	0.27
5129	68.10	65.00	-3.10	68.66	-3.67	69.15	68.96	-0.19	69.37	-0.41
5131	68.13	64.94	-3.19	66.65	-1.72	69.15	68.58	-0.57	65.82	2.76
5132	70.39	67.00	-3.39	69.69	-2.69	71.45	71.18	-0.27	70.67	0.51

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
5133	69.93	67.24	-2.69	69.44	-2.20	70.71	70.45	-0.26	70.84	-0.40
5134	68.20	65.00	-3.20	67.91	-2.91	69.16	68.31	-0.85	68.15	0.15
5135	68.47	65.03	-3.44	68.55	-3.53	69.17	68.52	-0.65	68.39	0.13
5136	68.58	65.10	-3.48	68.19	-3.10	69.19	68.66	-0.52	68.34	0.33
5137	68.82	65.12	-3.70	68.72	-3.61	69.28	68.87	-0.42	67.84	1.02
5138	69.07	65.14	-3.93	68.68	-3.54	69.45	69.08	-0.38	68.70	0.38
5140	69.24	65.18	-4.06	68.34	-3.16	69.61	69.27	-0.34	69.05	0.22
5141	70.38	70.27	-0.11	73.35	-3.07	72.05	72.17	0.11	72.97	-0.80
5142	73.52	69.44	-4.08	73.90	-4.46	74.26	74.19	-0.07	74.52	-0.32
5143	70.03	65.69	-4.33	69.81	-4.12	70.62	70.28	-0.34	70.54	-0.26
5144	69.95	67.24	-2.71	69.47	-2.23	70.59	70.31	-0.28	70.36	-0.04
5145	69.66	69.35	-0.31	68.52	0.82	70.33	70.04	-0.28	69.75	0.29
5146	70.49	69.14	-1.35	69.30	-0.16	71.16	70.93	-0.23	70.58	0.35
5147	69.95	66.70	-3.26	69.21	-2.52	70.60	70.31	-0.28	70.84	-0.53
5148	70.54	66.20	-4.34	69.98	-3.78	71.38	71.12	-0.26	71.54	-0.42
5149	70.56	66.25	-4.31	69.47	-3.22	71.19	70.98	-0.21	71.25	-0.27
5151	71.05	66.36	-4.69	70.82	-4.46	71.73	71.50	-0.23	71.77	-0.27
5152	73.22	68.21	-5.01	74.03	-5.83	74.16	74.04	-0.11	75.16	-1.12
5153	73.15	68.39	-4.76	73.81	-5.42	74.07	73.97	-0.10	75.52	-1.55
5154	73.37	69.98	-3.39	73.25	-3.27	74.43	74.36	-0.07	74.70	-0.34
5155	73.26	70.23	-3.03	72.40	-2.17	74.02	73.95	-0.07	75.09	-1.15
5156	73.47	71.29	-2.19	73.25	-1.97	74.65	74.56	-0.09	74.35	0.20
5157	73.46	69.41	-4.05	73.67	-4.25	74.41	74.28	-0.14	74.17	0.11
5158	73.41	69.40	-4.02	73.54	-4.14	74.38	74.25	-0.13	74.02	0.23
5159	73.38	69.26	-4.12	73.41	-4.16	74.07	74.00	-0.07	74.08	-0.08
5160	73.30	68.79	-4.51	73.56	-4.76	74.21	74.10	-0.11	74.06	0.04
5163	72.22	70.10	-2.12	70.52	-0.42	72.90	72.76	-0.14	71.41	1.35
5164	73.54	68.41	-5.13	74.13	-5.72	74.50	74.41	-0.09	75.86	-1.45
5165	74.55	69.29	-5.26	74.70	-5.41	75.51	75.44	-0.07	74.50	0.94
5166	75.28	69.61	-5.67	75.17	-5.56	76.04	75.99	-0.06	76.19	-0.21
5167	75.45	69.65	-5.80	75.18	-5.53	76.23	76.17	-0.06	75.95	0.22
5168	76.33	75.72	-0.61	75.74	-0.02	77.04	77.00	-0.04	76.23	0.77
5170	76.90	70.67	-6.23	76.74	-6.08	77.83	77.79	-0.03	78.26	-0.47
5171	77.01	70.51	-6.50	77.53	-7.03	78.02	77.98	-0.03	78.36	-0.38
5172	78.35	71.86	-6.49	78.03	-6.18	79.09	79.07	-0.02	78.87	0.20
5173	78.74	73.74	-4.99	80.47	-6.73	79.15	79.14	-0.01	81.68	-2.55
5174	78.72	73.00	-5.72	78.27	-5.27	79.12	79.11	-0.01	81.37	-2.26
5175	79.00	77.42	-1.58	78.93	-1.51	79.53	79.50	-0.03	79.81	-0.32
5176	79.02	77.67	-1.35	78.36	-0.69	79.60	79.57	-0.03	79.03	0.54
5177	78.97	77.98	-0.99	77.85	0.13	79.53	79.51	-0.03	78.52	0.98
5178	78.36	77.87	-0.50	77.78	0.09	78.83	78.81	-0.02	78.41	0.39
5179	79.20	78.10	-1.11	78.46	-0.37	79.86	79.83	-0.03	78.44	1.39
5181	74.68	69.48	-5.20	74.76	-5.28	75.61	75.54	-0.07	75.90	-0.36
5183	75.72	70.90	-4.82	76.53	-5.62	76.54	76.50	-0.04	77.07	-0.57
5184	75.72	70.91	-4.81	75.98	-5.08	76.45	76.43	-0.03	76.38	0.05
5185	75.99	71.56	-4.43	75.84	-4.28	76.57	76.52	-0.04	76.83	-0.30
5186	76.48	73.98	-2.51	76.88	-2.90	77.59	77.55	-0.04	78.50	-0.95
5187	76.47	74.33	-2.14	76.50	-2.17	77.33	77.26	-0.07	78.12	-0.86
5188	76.31	72.39	-3.92	76.34	-3.95	76.94	76.89	-0.05	77.23	-0.35
5189	76.37	72.67	-3.71	75.66	-2.99	77.02	76.97	-0.05	77.38	-0.41
5190	76.13	71.66	-4.48	76.52	-4.86	76.93	76.89	-0.04	76.79	0.10
5191	76.44	72.33	-4.10	75.63	-3.30	77.34	77.21	-0.13	76.63	0.58
5193	75.21	73.80	-1.41	75.97	-2.17	75.66	75.66	0.00	74.22	1.45
5194	75.23	73.83	-1.41	76.98	-3.15	75.76	75.76	0.00	75.31	0.46
5195	75.20	73.92	-1.29	74.52	-0.61	75.55	75.55	0.00	74.18	1.37
5196	74.95	74.05	-0.90	75.60	-1.55	75.31	75.31	0.00	74.23	1.08
5197	75.38	74.18	-1.20	78.61	-4.43	76.26	76.26	0.00	76.26	0.00
5198	75.93	74.36	-1.58	77.38	-3.03	77.45	77.45	0.00	75.61	1.84
5199	76.48	74.36	-2.12	77.84	-3.48	76.86	76.87	0.00	77.78	-0.91
52	76.34	75.83	-0.50	75.76	0.07	77.02	76.98	-0.04	75.90	1.08
5200	78.05	74.83	-3.22	78.36	-3.53	78.54	78.54	0.00	77.51	1.03
5201	76.65	74.53	-2.11	76.57	-2.04	76.90	76.90	0.00	76.12	0.77
5205	80.16	79.13	-1.02	79.25	-0.12	80.79	80.56	-0.23	79.26	1.29
5206	80.03	79.18	-0.85	79.09	0.10	80.67	80.44	-0.23	79.11	1.33
5207	80.30	79.25	-1.05	78.45	0.80	80.97	80.79	-0.18	79.84	0.95
5208	82.62	81.44	-1.18	81.30	0.14	83.90	83.85	-0.05	80.23	3.62

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
5209	78.78	76.67	-2.12	83.07	-6.40	80.06	79.78	-0.28	79.26	0.52
5212	76.70	75.37	-1.33	78.72	-3.36	77.22	77.17	-0.05	78.93	-1.76
5214	78.93	76.80	-2.13	83.10	-6.30	80.27	80.02	-0.25	79.26	0.76
5215	79.35	77.70	-1.66	81.10	-3.40	80.35	80.15	-0.20	80.79	-0.64
5217	79.67	78.27	-1.39	79.93	-1.65	80.46	80.28	-0.18	80.50	-0.23
5218	79.55	78.08	-1.46	80.39	-2.30	80.41	80.23	-0.18	80.87	-0.64
5222	59.11	52.00	-7.11	40.11	11.89	65.93	65.93	0.00	60.72	5.20
5225	76.51	75.54	-0.97	76.36	-0.82	77.24	77.02	-0.22	76.73	0.29
5233	79.59	78.13	-1.46	79.93	-1.80	80.45	80.31	-0.14	81.27	-0.97
5235	79.60	78.17	-1.43	80.90	-2.73	80.51	80.44	-0.07	79.63	0.81
5236	79.53	78.19	-1.33	78.70	-0.50	80.20	80.09	-0.11	79.30	0.78
5237	79.53	78.18	-1.35	79.39	-1.21	80.23	80.11	-0.12	79.30	0.81
5250	79.60	78.17	-1.43	80.65	-2.48	80.46	80.28	-0.17	80.55	-0.27
5251	79.60	78.17	-1.43	82.23	-4.06	80.45	80.28	-0.17	80.77	-0.50
5252	79.53	78.18	-1.35	77.59	0.59	80.23	80.11	-0.12	79.87	0.24
5253	67.14	66.23	-0.91	67.66	-1.43	67.99	67.97	-0.03	69.58	-1.61
5255	79.60	78.16	-1.44	80.11	-1.95	80.47	80.29	-0.18	79.95	0.34
5257	79.61	78.16	-1.45	79.85	-1.69	80.47	80.34	-0.12	80.38	-0.03
5259	59.25	52.05	-7.20	42.20	9.85	65.99	65.98	0.00	62.21	3.78
5265	59.35	52.05	-7.30	53.20	-1.14	66.03	66.02	0.00	62.28	3.75
5271	79.54	78.17	-1.37	78.29	-0.12	80.26	80.13	-0.13	80.38	-0.24
5281	60.03	59.79	-0.24	70.91	-11.12	66.07	66.05	-0.02	71.75	-5.69
5287	62.63	62.48	-0.15	71.66	-9.18	66.09	66.07	-0.03	71.98	-5.91
5299	60.62	55.51	-5.11	28.16	27.35	67.45	67.45	0.00	67.45	0.00
53	76.02	72.88	-3.13	77.12	-4.23	76.94	76.89	-0.05	78.19	-1.30
5300	60.62	55.51	-5.11	28.16	27.35	67.45	67.45	0.00	67.45	0.00
5319	60.34	57.04	-3.30	43.88	13.16	67.02	67.17	0.15	65.40	1.77
5343	78.45	67.52	-10.94	77.63	-10.11	79.38	74.98	-4.40	77.72	-2.74
5344	77.63	68.11	-9.51	77.69	-9.58	78.16	75.37	-2.79	76.48	-1.10
5345	76.24	#N/A	#N/A	78.12	#N/A	76.75	#N/A	#N/A	76.70	#N/A
5346	75.61	#N/A	#N/A	78.45	#N/A	76.13	#N/A	#N/A	76.67	#N/A
5347	75.31	#N/A	#N/A	75.30	#N/A	75.58	#N/A	#N/A	74.06	#N/A
5348	74.68	72.91	-1.77	76.86	-3.95	75.23	74.75	-0.47	76.81	-2.05
5350	74.69	72.83	-1.85	75.88	-3.05	75.24	74.75	-0.49	75.86	-1.11
5351	74.71	72.78	-1.93	76.42	-3.65	75.28	74.75	-0.53	76.12	-1.37
5352	74.72	72.75	-1.97	76.61	-3.86	75.30	74.72	-0.58	76.41	-1.69
5353	74.73	72.73	-2.00	76.14	-3.41	75.31	74.70	-0.61	76.46	-1.76
5354	78.49	77.92	-0.57	77.46	0.45	79.30	79.28	-0.02	76.37	2.91
5355	76.21	73.08	-3.13	75.66	-2.58	76.58	75.98	-0.60	75.59	0.40
5356	76.06	72.96	-3.09	75.16	-2.20	76.24	75.84	-0.40	75.59	0.25
5357	75.92	72.41	-3.51	74.84	-2.43	76.07	75.73	-0.33	76.07	-0.33
5358	75.86	68.74	-7.11	76.19	-7.44	76.02	75.35	-0.67	76.27	-0.92
5359	72.24	66.86	-5.38	75.26	-8.40	72.81	71.92	-0.88	74.14	-2.21
5360	73.60	73.01	-0.59	77.99	-4.98	78.34	78.17	-0.17	78.51	-0.34
5361	73.60	73.01	-0.59	78.87	-5.86	78.29	78.11	-0.17	78.47	-0.36
5366	69.35	69.24	-0.11	71.45	-2.20	69.45	69.45	0.00	72.23	-2.78
5367	66.91	66.31	-0.60	71.39	-5.09	67.75	67.74	0.00	72.23	-4.48
5369	76.26	75.48	-0.77	74.18	1.30	77.21	77.19	-0.02	75.67	1.52
5371	80.52	#N/A	#N/A	77.82	#N/A	82.95	#N/A	#N/A	76.92	#N/A
5377	74.45	68.58	-5.87	72.84	-4.27	75.40	74.08	-1.33	73.99	0.08
5378	73.65	67.85	-5.80	72.35	-4.50	74.09	72.43	-1.66	74.13	-1.71
5384	60.38	57.55	-2.83	65.90	-8.35	66.22	67.29	1.07	66.02	1.27
5386	67.98	67.24	-0.75	74.08	-6.84	68.97	68.96	-0.01	71.97	-3.01
5388	69.50	69.38	-0.13	74.49	-5.11	69.98	69.97	-0.01	73.82	-3.85
5390	60.40	57.77	-2.63	66.22	-8.45	65.70	67.37	1.67	65.93	1.44
5392	60.76	57.85	-2.92	45.75	12.10	65.06	67.42	2.35	45.78	21.63
5392-2	61.09	57.87	-3.22	45.75	12.12	64.86	67.44	2.58	46.33	21.10
5392-3	60.92	57.86	-3.07	48.24	9.61	64.87	67.42	2.55	46.33	21.09
5392-4	60.65	57.84	-2.81	53.97	3.87	65.34	67.41	2.07	45.78	21.63
5392-5	60.86	57.85	-3.01	54.71	3.15	65.10	67.42	2.32	46.33	21.09
5392-6	60.69	57.85	-2.84	53.97	3.87	65.28	67.41	2.13	45.78	21.63
5392-7	61.06	57.87	-3.19	45.75	12.12	65.04	67.43	2.39	45.78	21.65
5398	0.00	63.77	63.77	52.45	0.00	0.00	67.26	67.26	67.08	0.00
54	75.67	71.77	-3.90	76.24	-4.47	76.52	76.46	-0.05	76.61	-0.15
5400	73.76	72.57	-1.20	74.76	-2.20	74.63	74.59	-0.04	75.22	-0.63
5402	0.00	64.13	64.13	53.15	0.00	0.00	68.31	68.31	66.21	0.00

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
5404	65.51	63.96	-1.55	62.25	1.71	68.32	67.41	-0.90	67.03	0.39
5405	67.78	67.96	0.18	58.45	9.51	77.26	74.84	-2.42	58.53	16.32
5405-2	67.91	66.67	-1.24	58.45	8.22	76.47	74.10	-2.37	58.72	15.38
5406	67.97	65.53	-2.43	69.14	-3.61	69.16	69.60	0.45	69.76	-0.16
5407	67.87	65.31	-2.56	67.41	-2.10	69.12	67.78	-1.34	68.45	-0.67
5408	67.30	65.29	-2.01	66.81	-1.52	68.59	67.28	-1.31	67.45	-0.17
5411	70.07	69.81	-0.26	66.19	3.62	71.21	71.11	-0.09	65.77	5.34
5412	70.56	69.89	-0.67	69.34	0.55	71.36	71.25	-0.11	68.64	2.60
5413	71.86	71.30	-0.56	70.08	1.23	72.63	72.44	-0.19	68.70	3.74
5427	75.69	74.82	-0.87	73.73	1.09	76.83	76.80	-0.04	73.92	2.87
5428	74.53	73.92	-0.62	73.56	0.36	74.87	74.79	-0.09	74.03	0.76
5429	74.63	73.04	-1.60	74.87	-1.84	75.07	74.75	-0.32	74.99	-0.24
5430	74.64	73.01	-1.63	75.03	-2.02	75.08	74.75	-0.32	75.08	-0.33
5431	73.98	73.73	-0.25	73.42	0.30	74.15	74.11	-0.04	73.42	0.69
5432	74.46	73.91	-0.55	73.90	0.01	74.76	74.68	-0.08	73.94	0.74
5433	74.57	73.92	-0.65	73.90	0.02	74.90	74.77	-0.13	73.98	0.79
5434	74.63	73.15	-1.48	75.12	-1.97	75.08	74.76	-0.32	75.15	-0.39
5435	74.63	73.09	-1.54	75.02	-1.93	75.10	74.75	-0.35	75.16	-0.41
5441	74.96	74.45	-0.51	73.68	0.77	75.59	75.35	-0.24	75.03	0.32
5442	72.39	69.67	-2.72	73.12	-3.45	73.80	73.79	-0.01	74.40	-0.61
5446	77.40	72.91	-4.49	76.66	-3.75	77.63	77.53	-0.10	75.42	2.10
5448	76.22	74.43	-1.80	75.33	-0.91	76.39	76.29	-0.10	75.44	0.85
5450	76.62	75.78	-0.84	76.43	-0.65	76.74	76.66	-0.08	76.11	0.55
5482	78.80	70.62	-8.18	78.35	-7.72	79.38	78.47	-0.91	76.98	1.49
5486	75.83	75.76	-0.07	75.76	0.00	76.07	75.93	-0.14	75.62	0.31
5487	76.56	75.27	-1.29	68.91	6.36	77.05	77.04	-0.01	75.20	1.84
5496	77.96	74.01	-3.96	76.23	-2.22	78.70	78.44	-0.26	77.56	0.89
5500	78.26	74.10	-4.16	76.98	-2.88	79.36	79.10	-0.26	77.12	1.98
5505	78.13	72.36	-5.76	78.12	-5.76	78.59	78.36	-0.23	78.00	0.36
5506	77.49	73.45	-4.04	78.15	-4.71	78.01	78.19	0.18	78.00	0.19
5507	81.83	77.38	-4.44	77.25	0.13	89.68	89.68	0.00	77.36	12.32
5508	78.98	75.83	-3.15	78.04	-2.21	79.37	79.07	-0.31	78.59	0.48
5540	80.57	#N/A	#N/A	78.78	#N/A	81.89	#N/A	#N/A	73.68	#N/A
5541	79.10	67.51	-11.59	76.83	-9.32	80.87	74.92	-5.95	76.30	-1.38
5542	79.35	77.70	-1.66	82.56	-4.86	80.35	80.15	-0.20	81.20	-1.05
5552	78.68	76.59	-2.09	79.48	-2.89	79.91	79.62	-0.29	79.26	0.36
5553	76.19	74.19	-2.00	76.71	-2.52	76.75	76.75	0.00	76.85	-0.10
5557	78.93	76.80	-2.13	82.57	-5.77	80.27	80.02	-0.25	78.95	1.07
5563	77.31	75.50	-1.81	79.05	-3.55	77.99	77.51	-0.48	79.30	-1.79
5564	78.04	76.05	-1.99	79.52	-3.47	79.01	78.63	-0.38	79.35	-0.71
56	74.89	69.51	-5.38	74.39	-4.88	75.64	75.58	-0.06	76.45	-0.87
5611	78.11	70.10	-8.01	76.68	-6.58	79.06	77.60	-1.46	76.84	0.76
5612	76.30	#N/A	#N/A	79.08	#N/A	76.92	#N/A	#N/A	76.29	#N/A
5614	78.42	76.34	-2.08	82.73	-6.39	79.54	79.22	-0.33	79.35	-0.13
5617	79.08	75.89	-3.18	78.53	-2.64	79.71	79.33	-0.38	79.45	-0.12
5618	65.28	65.28	0.00	79.89	-14.61	65.28	65.28	0.00	80.13	-14.85
5632	79.59	78.16	-1.43	82.31	-4.14	80.43	80.25	-0.18	82.38	-2.13
5639	79.81	78.49	-1.32	79.24	-0.75	80.57	80.40	-0.17	81.00	-0.60
5654	80.10	78.91	-1.20	78.84	0.07	80.49	80.42	-0.07	79.94	0.48
5659	80.48	78.91	-1.57	79.35	-0.44	80.60	80.76	0.16	80.39	0.37
5665	80.31	78.90	-1.40	80.28	-1.38	80.56	80.45	-0.11	80.99	-0.54
5667	79.98	78.77	-1.21	81.03	-2.26	80.65	80.50	-0.15	80.12	0.38
5667!	79.96	78.74	-1.23	80.26	-1.53	80.64	80.49	-0.15	80.41	0.08
5669	80.18	78.87	-1.31	81.55	-2.68	80.58	80.46	-0.12	83.56	-3.10
5671	80.00	78.82	-1.18	79.60	-0.78	80.61	80.48	-0.13	81.83	-1.35
5671!	79.99	78.79	-1.20	80.36	-1.57	80.63	80.49	-0.14	80.82	-0.33
5672	79.81	78.49	-1.32	81.05	-2.56	80.57	80.40	-0.17	80.82	-0.43
5673	79.90	78.62	-1.27	79.32	-0.69	80.62	80.46	-0.17	80.65	-0.20
5686	79.66	78.27	-1.39	77.50	0.77	80.46	80.28	-0.18	81.32	-1.04
5687	79.74	78.38	-1.36	79.44	-1.06	80.51	80.33	-0.18	80.39	-0.06
57	73.51	71.25	-2.27	73.22	-1.98	74.73	74.63	-0.10	74.56	0.06
5700	79.66	78.28	-1.39	77.45	0.83	80.45	80.28	-0.18	81.32	-1.04
5701	79.66	78.28	-1.39	81.03	-2.75	80.45	80.28	-0.17	81.48	-1.20
5708608	74.74	73.00	-1.74	80.50	-7.50	75.46	74.83	-0.63	75.85	-1.02
5708608-2	74.74	73.27	-1.48	75.95	-2.69	75.46	74.83	-0.63	76.36	-1.53
5708649	76.42	75.54	-0.88	75.87	-0.33	77.12	76.80	-0.33	77.05	-0.25

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
5708650	76.19	75.52	-0.67	75.43	0.09	76.85	76.53	-0.32	76.68	-0.15
5708651	76.16	75.52	-0.64	75.40	0.12	76.81	76.50	-0.32	76.27	0.22
5708668	76.61	75.80	-0.81	75.20	0.60	77.18	77.03	-0.15	76.09	0.94
5708685	76.76	75.74	-1.02	75.64	0.10	77.38	77.14	-0.24	76.98	0.16
5708686	76.94	75.80	-1.14	75.51	0.28	77.70	77.57	-0.14	76.60	0.97
5708689	76.76	75.87	-0.89	75.01	0.86	77.55	77.44	-0.11	75.59	1.85
5739	79.81	78.49	-1.33	79.41	-0.93	80.57	80.40	-0.18	80.35	0.04
5744	86.25	81.24	-5.02	71.33	9.91	87.59	86.59	-1.01	79.94	6.65
5746	79.67	78.32	-1.34	80.56	-2.24	80.41	80.26	-0.16	81.39	-1.13
5750	79.66	78.40	-1.26	78.63	-0.23	80.29	80.20	-0.09	78.54	1.66
5763	79.67	78.63	-1.03	78.85	-0.22	80.28	80.24	-0.04	80.10	0.14
5765	79.67	78.65	-1.02	77.90	0.75	80.29	80.25	-0.03	78.90	1.35
5770	79.80	78.79	-1.02	79.20	-0.42	80.52	80.57	0.05	79.13	1.45
5771	79.80	78.84	-0.96	79.15	-0.31	80.55	80.68	0.12	78.82	1.86
5774	72.85	72.39	-0.46	78.56	-6.17	75.13	75.11	-0.02	78.15	-3.04
5776	72.41	72.23	-0.19	77.39	-5.17	73.17	73.17	0.00	78.40	-5.24
5779	72.73	72.34	-0.39	76.90	-4.56	74.42	74.42	0.00	78.34	-3.93
5781	80.09	78.95	-1.14	80.24	-1.30	80.77	80.61	-0.16	79.67	0.94
5783	80.13	79.01	-1.13	79.47	-0.46	80.81	80.64	-0.16	79.05	1.59
5784	73.77	65.13	-8.64	64.30	0.83	81.69	81.52	-0.16	80.66	0.86
5786	79.57	75.30	-4.28	75.11	0.18	80.17	79.52	-0.65	74.35	5.17
5788	79.57	75.30	-4.27	80.22	-4.93	80.16	79.52	-0.64	74.35	5.17
5789	80.78	80.04	-0.75	79.25	0.79	81.48	81.20	-0.28	79.67	1.53
5790	80.32	79.87	-0.45	79.37	0.50	80.92	80.63	-0.28	80.08	0.55
5793	81.26	80.92	-0.34	80.91	0.01	81.82	81.57	-0.25	79.64	1.93
5794	80.85	75.32	-5.54	83.95	-8.63	81.64	79.80	-1.84	79.68	0.12
5795	80.06	75.32	-4.74	80.61	-5.29	80.88	79.80	-1.08	79.00	0.81
5796	79.90	75.32	-4.58	80.59	-5.27	80.73	79.79	-0.94	79.59	0.20
5796-2	78.86	75.32	-3.54	76.60	-1.28	79.28	78.72	-0.56	77.43	1.29
5798	79.96	75.32	-4.64	80.93	-5.61	80.79	79.80	-0.99	79.78	0.02
58	73.19	71.74	-1.45	73.09	-1.34	73.56	73.54	-0.02	73.97	-0.43
5801	75.58	73.23	-2.35	70.98	2.26	76.40	76.04	-0.36	70.65	5.40
5801-2	75.58	73.23	-2.35	70.98	2.26	76.40	76.04	-0.36	70.65	5.40
5801-3	75.61	73.28	-2.33	70.98	2.30	76.44	76.23	-0.21	70.65	5.59
5802	75.50	73.16	-2.33	80.84	-7.68	76.25	75.53	-0.72	78.57	-3.04
5802-2	75.50	73.16	-2.33	80.84	-7.68	76.25	75.54	-0.72	78.57	-3.04
5802-3	75.39	73.02	-2.37	80.84	-7.82	76.07	74.86	-1.20	78.57	-3.71
5803	75.38	73.02	-2.36	80.33	-7.31	76.05	74.86	-1.19	78.55	-3.69
5804	80.02	77.21	-2.81	79.97	-2.76	80.61	80.13	-0.48	79.63	0.50
5805	74.74	73.44	-1.30	71.01	2.44	75.44	74.83	-0.61	71.73	3.10
5806	81.04	80.36	-0.67	79.68	0.68	81.67	81.42	-0.25	80.13	1.29
5809	80.04	77.48	-2.55	79.72	-2.23	80.56	80.13	-0.43	79.51	0.62
5813	75.08	73.63	-1.45	77.80	-4.17	75.88	75.22	-0.66	77.72	-2.50
5814	75.61	74.06	-1.55	77.76	-3.70	76.55	75.89	-0.67	77.80	-1.91
5816	76.15	74.61	-1.54	76.86	-2.25	77.31	76.89	-0.42	76.88	0.01
5817	76.39	75.17	-1.22	75.99	-0.82	77.27	76.95	-0.32	76.29	0.66
5818	75.85	74.30	-1.54	77.51	-3.21	76.84	76.32	-0.52	77.46	-1.14
5819	80.07	77.76	-2.31	79.59	-1.83	80.55	80.15	-0.40	79.21	0.94
5822	80.27	77.85	-2.42	79.56	-1.71	80.71	80.35	-0.36	79.34	1.01
5825	75.34	74.03	-1.31	75.31	-1.28	76.01	75.76	-0.25	75.97	-0.21
5826	74.99	73.22	-1.77	75.39	-2.17	75.76	75.07	-0.69	75.88	-0.81
5827	74.70	73.06	-1.64	76.75	-3.69	75.45	74.89	-0.56	77.31	-2.42
5829	72.06	69.69	-2.37	72.08	-2.39	72.43	72.42	-0.01	72.07	0.34
5830	80.01	77.88	-2.13	79.65	-1.77	80.45	80.11	-0.34	79.46	0.66
5834	80.11	77.88	-2.23	79.44	-1.56	80.74	80.35	-0.38	79.53	0.83
5835	79.96	77.88	-2.08	78.98	-1.10	80.62	80.23	-0.39	79.19	1.04
5837	79.95	77.85	-2.09	77.80	0.06	80.61	80.22	-0.39	79.05	1.17
5839	79.55	77.87	-1.69	77.95	-0.08	80.20	79.82	-0.38	78.92	0.90
5841	83.26	82.58	-0.68	82.95	-0.37	83.62	83.59	-0.02	84.32	-0.72
5845	80.05	77.89	-2.17	79.60	-1.72	80.89	80.39	-0.49	79.38	1.01
5848	80.16	78.24	-1.92	80.40	-2.16	81.17	80.62	-0.55	79.27	1.35
5849	76.73	75.80	-0.93	75.26	0.55	77.38	77.26	-0.12	75.78	1.48
5850	76.93	75.75	-1.19	76.10	-0.35	77.55	77.40	-0.15	76.60	0.80
5854	75.34	74.35	-0.98	74.96	-0.61	75.87	75.74	-0.13	76.10	-0.36
5857	79.96	78.33	-1.63	78.84	-0.51	80.59	80.24	-0.35	79.15	1.09
5859	76.68	75.81	-0.86	75.47	0.34	77.40	77.29	-0.11	76.09	1.20

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
5860	75.29	74.72	-0.57	74.21	0.50	75.84	75.74	-0.10	75.07	0.66
5861	75.64	75.25	-0.39	74.17	1.08	76.13	76.05	-0.08	75.69	0.36
5863	84.61	83.77	-0.84	84.52	-0.75	85.09	85.08	-0.01	86.46	-1.38
5867	76.70	75.84	-0.86	75.81	0.03	77.56	77.45	-0.11	76.09	1.36
5868	76.70	75.84	-0.86	76.74	-0.90	77.68	77.58	-0.10	78.71	-1.13
5870	76.70	75.84	-0.86	78.32	-2.47	78.21	78.18	-0.03	79.13	-0.95
5871	76.71	75.91	-0.80	79.05	-3.14	78.21	78.18	-0.03	79.14	-0.96
5874	78.71	78.47	-0.24	77.31	1.16	79.00	79.00	0.00	79.33	-0.33
5876	79.37	78.74	-0.63	78.58	0.16	79.77	79.77	-0.01	80.27	-0.50
5879	82.19	80.75	-1.43	81.66	-0.90	83.56	83.53	-0.03	82.17	1.36
5881	75.75	75.43	-0.31	87.25	-11.81	82.57	81.92	-0.65	88.55	-6.62
5883	88.00	87.76	-0.24	86.99	0.77	88.29	88.29	0.00	88.66	-0.37
5887	79.32	78.67	-0.64	78.74	-0.07	79.65	79.64	-0.01	80.13	-0.49
5888	79.20	78.50	-0.70	78.78	-0.28	79.64	79.62	-0.02	80.18	-0.56
5890	84.71	82.98	-1.74	86.68	-3.70	86.06	85.88	-0.18	85.65	0.23
5891	85.48	83.82	-1.65	86.98	-3.16	86.72	86.60	-0.12	85.32	1.28
5895	79.22	78.28	-0.94	79.22	-0.94	80.11	80.03	-0.07	79.69	0.34
5896	79.23	78.04	-1.19	80.70	-2.67	80.61	80.47	-0.14	79.69	0.78
5897	79.36	79.02	-0.33	77.23	1.80	79.85	79.84	0.00	80.10	-0.26
59	72.83	71.85	-0.98	71.80	0.04	73.26	73.23	-0.03	72.21	1.02
5902	88.31	88.05	-0.25	87.35	0.70	88.57	88.57	0.00	88.12	0.45
5905	86.06	84.58	-1.48	87.86	-3.28	87.14	87.08	-0.07	87.61	-0.53
5906134	81.07	80.91	-0.16	86.99	-6.07	82.57	81.93	-0.64	88.66	-6.74
5906135	88.01	87.77	-0.24	87.05	0.72	88.32	88.31	0.00	88.99	-0.67
5906136	88.03	87.78	-0.25	86.77	1.01	88.34	88.34	0.00	88.36	-0.02
5906137	88.06	87.80	-0.26	86.81	0.99	88.38	88.38	0.00	88.18	0.20
5906138	88.11	87.84	-0.28	87.13	0.70	88.45	88.45	0.00	88.57	-0.12
5906139	88.14	87.85	-0.29	87.15	0.70	88.48	88.48	0.00	88.81	-0.33
5906140	88.15	87.86	-0.29	86.66	1.20	88.49	88.49	0.00	88.40	0.08
5906141	88.27	87.96	-0.32	87.10	0.85	88.65	88.65	0.00	87.96	0.68
5906142	88.28	87.96	-0.32	86.97	0.99	88.66	88.66	0.00	88.14	0.52
5906143	88.34	88.00	-0.34	87.63	0.37	88.75	88.75	0.00	88.80	-0.04
5906172	88.39	88.12	-0.26	87.59	0.53	88.69	88.68	0.00	88.39	0.29
5906175	88.12	87.85	-0.28	86.46	1.39	88.46	88.45	0.00	88.60	-0.15
5906176	88.08	87.79	-0.29	88.14	-0.35	88.43	88.43	0.00	88.47	-0.04
5906177	87.95	87.73	-0.22	86.57	1.16	88.22	88.22	0.00	88.18	0.03
5906183	87.86	87.56	-0.30	86.56	1.00	88.23	88.23	0.00	88.46	-0.23
5906184	87.72	86.91	-0.80	86.29	0.62	88.18	88.18	0.00	88.07	0.11
5906227	86.82	85.94	-0.88	86.16	-0.22	87.90	87.90	0.00	87.36	0.53
5906228	87.00	86.14	-0.87	86.38	-0.24	87.90	87.90	0.00	87.58	0.32
5906232	88.48	88.12	-0.36	86.53	1.59	88.91	88.91	0.00	87.91	0.99
5906233	88.44	88.15	-0.29	88.12	0.04	88.73	88.73	0.00	88.25	0.48
5906234	88.46	88.17	-0.29	86.83	1.34	88.85	88.85	0.00	87.66	1.18
5906250	88.38	87.60	-0.78	86.92	0.68	88.92	88.91	0.00	88.26	0.65
5906258	87.64	86.91	-0.72	85.84	1.07	88.11	88.11	0.00	87.81	0.30
5906312	88.36	88.01	-0.35	86.85	1.16	88.79	88.79	0.00	88.30	0.49
5906313	88.40	88.03	-0.37	87.27	0.76	88.85	88.85	0.00	88.26	0.59
5906314	88.46	88.05	-0.41	89.04	-0.99	89.12	89.12	0.00	88.88	0.24
5906316	88.43	88.07	-0.37	87.67	0.39	88.86	88.86	0.00	88.49	0.37
5906317	88.32	88.01	-0.31	87.08	0.93	88.72	88.72	0.00	88.44	0.27
5906318	88.45	88.05	-0.40	87.23	0.82	89.11	89.11	0.00	88.61	0.49
5906319	88.29	87.97	-0.32	86.76	1.21	88.81	88.81	0.00	89.08	-0.27
5906321	88.42	88.01	-0.42	88.03	-0.02	89.16	89.16	0.00	88.38	0.77
5906330	88.03	87.81	-0.22	87.05	0.76	88.42	88.42	0.00	88.35	0.06
5906331	88.42	88.01	-0.42	86.74	1.27	89.08	89.07	0.00	88.05	1.02
5906359	88.34	88.02	-0.32	86.86	1.16	88.77	88.77	0.00	88.53	0.23
5906361	88.35	88.03	-0.32	86.97	1.05	88.77	88.77	0.00	87.97	0.80
5906388	88.41	88.04	-0.37	87.17	0.87	88.85	88.85	0.00	87.82	1.04
5906390	88.37	88.01	-0.37	87.55	0.45	88.81	88.81	0.00	88.44	0.37
5906410	88.85	88.30	-0.55	86.45	1.85	89.53	89.53	0.00	87.37	2.15
5906476	88.38	88.06	-0.32	86.76	1.30	88.72	88.72	0.00	87.06	1.66
5906479	88.40	88.08	-0.32	86.89	1.19	88.72	88.72	0.00	87.26	1.46
5906481	89.51	89.18	-0.32	88.24	0.95	89.97	89.96	0.00	88.00	1.96
5916	88.42	88.05	-0.37	87.40	0.65	88.86	88.86	0.00	87.88	0.98
5921	86.51	85.18	-1.33	87.91	-2.73	87.44	87.41	-0.03	85.78	1.63
5923	86.54	85.26	-1.28	87.83	-2.58	87.44	87.42	-0.03	86.84	0.57

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
5926	86.56	85.36	-1.20	87.25	-1.89	87.44	87.41	-0.03	85.59	1.82
5928	87.41	86.67	-0.75	86.42	0.25	88.04	88.04	0.00	87.34	0.70
5929	87.52	86.75	-0.77	86.68	0.07	88.16	88.16	0.00	87.50	0.66
5940	88.52	88.19	-0.34	87.51	0.68	88.93	88.93	0.00	88.42	0.50
5942	83.27	82.54	-0.73	81.74	0.80	83.83	83.83	0.00	83.91	-0.08
5952	86.51	85.37	-1.14	86.68	-1.32	87.31	87.29	-0.02	85.22	2.07
5960	86.36	85.34	-1.02	86.83	-1.49	87.23	87.21	-0.02	84.07	3.15
5963	85.72	85.14	-0.58	84.92	0.22	86.14	86.13	-0.01	83.81	2.31
5967	87.07	86.14	-0.92	87.38	-1.23	87.88	87.88	0.00	86.89	0.99
5968	86.85	85.91	-0.94	87.74	-1.84	87.72	87.72	0.00	87.28	0.45
5974	86.00	85.10	-0.89	87.06	-1.96	86.84	86.84	0.00	86.88	-0.04
5979	84.55	83.38	-1.18	86.16	-2.78	85.33	85.33	0.00	85.72	-0.40
5982	84.22	82.99	-1.23	84.50	-1.51	85.02	85.02	0.00	84.44	0.57
5985	83.91	82.59	-1.32	84.64	-2.05	84.82	84.82	0.00	84.88	-0.06
5988	83.67	82.21	-1.46	83.10	-0.89	84.71	84.71	0.00	83.50	1.21
5990	83.51	81.92	-1.59	83.48	-1.56	84.68	84.68	0.00	84.16	0.52
5993	83.41	81.73	-1.68	83.07	-1.35	84.68	84.68	0.00	84.52	0.16
5997	83.23	81.32	-1.90	84.99	-3.67	84.69	84.70	0.00	85.36	-0.66
5999	83.14	81.14	-2.00	85.14	-4.00	84.70	84.70	0.00	84.37	0.33
60	72.13	70.51	-1.63	70.37	0.14	72.57	72.51	-0.06	71.78	0.74
6000343	78.23	75.58	-2.65	77.85	-2.27	78.53	78.50	-0.03	78.83	-0.33
6000344	78.28	74.48	-3.79	77.60	-3.11	78.62	78.57	-0.05	78.97	-0.40
6000349	78.28	74.48	-3.79	78.33	-3.85	78.62	78.57	-0.05	78.97	-0.40
6000350	78.27	74.48	-3.79	77.66	-3.18	78.60	78.55	-0.05	78.12	0.43
6000356	78.31	74.24	-4.07	77.72	-3.48	79.15	79.03	-0.12	79.27	-0.24
6000361	78.25	74.24	-4.01	77.32	-3.08	78.83	78.71	-0.12	78.66	0.05
6000371	78.05	73.93	-4.12	78.19	-4.26	78.73	78.59	-0.14	79.08	-0.49
6000373	77.95	73.81	-4.15	77.86	-4.05	78.57	78.42	-0.15	78.30	0.12
6000374	77.95	73.81	-4.15	78.58	-4.77	78.57	78.42	-0.15	78.32	0.10
6000381	77.78	73.51	-4.28	77.27	-3.76	78.31	78.16	-0.15	78.32	-0.16
6000382	77.78	73.76	-4.02	77.59	-3.83	78.30	78.15	-0.15	78.32	-0.17
6000383	77.76	73.76	-4.00	76.82	-3.06	78.28	78.12	-0.15	78.46	-0.34
6000389	77.61	72.49	-5.13	77.19	-4.70	78.14	77.98	-0.16	78.38	-0.40
6000391	77.59	71.46	-6.13	77.29	-5.83	78.12	77.97	-0.15	78.41	-0.44
6000393	77.61	73.64	-3.96	76.74	-3.10	78.13	77.97	-0.16	78.38	-0.42
6000394	77.64	73.67	-3.97	77.62	-3.95	78.15	77.99	-0.16	78.27	-0.28
6003	83.02	80.86	-2.15	84.29	-3.42	84.70	84.70	0.00	83.07	1.63
6006	82.81	80.41	-2.40	84.46	-4.06	84.68	84.68	0.00	83.27	1.41
6013	80.92	78.01	-2.91	84.79	-6.78	83.66	83.66	0.00	84.00	-0.34
6016	78.62	75.85	-2.78	83.54	-7.70	81.75	81.75	0.00	84.00	-2.25
6018	84.34	81.26	-3.08	84.05	-2.80	86.73	86.74	0.00	84.05	2.68
6021	88.25	87.48	-0.77	87.51	-0.03	88.85	88.84	0.00	88.30	0.54
6023	88.41	87.62	-0.80	87.72	-0.10	88.99	88.99	0.00	88.81	0.18
6028	88.79	87.93	-0.86	88.55	-0.62	89.41	89.41	0.00	89.14	0.26
6029620	82.04	81.24	-0.80	82.16	-0.93	82.52	82.45	-0.07	82.23	0.21
6029622	82.01	81.22	-0.80	82.47	-1.25	82.50	82.43	-0.07	82.71	-0.28
6029624	81.73	81.08	-0.65	79.35	1.73	82.18	82.10	-0.08	81.17	0.93
6029625	82.03	81.22	-0.81	83.86	-2.63	82.55	82.48	-0.07	84.00	-1.52
6029631	81.01	80.86	-0.15	80.63	0.24	81.14	81.08	-0.07	81.17	-0.10
6029632	80.75	80.55	-0.20	79.71	0.84	81.21	80.91	-0.30	80.20	0.71
6029638	80.03	77.75	-2.28	79.19	-1.44	80.83	80.32	-0.51	79.52	0.80
6029640	79.95	78.14	-1.81	78.97	-0.83	80.62	80.21	-0.41	79.84	0.37
6029643	80.03	78.65	-1.38	78.06	0.59	80.66	80.27	-0.40	79.72	0.55
6029649	80.43	78.96	-1.47	79.06	-0.09	81.07	80.67	-0.40	79.67	1.00
6029650	80.03	78.66	-1.37	78.98	-0.33	80.66	80.27	-0.40	79.72	0.55
6029658	80.12	78.93	-1.19	79.03	-0.11	80.75	80.35	-0.39	79.10	1.25
6029660	80.32	79.46	-0.86	78.94	0.52	80.94	80.55	-0.39	79.75	0.80
6029661	80.34	79.50	-0.83	79.33	0.18	80.97	80.57	-0.39	79.75	0.82
6029662	80.47	79.63	-0.83	79.45	0.18	81.10	80.70	-0.39	79.83	0.87
6029677	79.98	77.97	-2.01	78.22	-0.25	80.65	80.26	-0.39	79.12	1.14
6029685	79.97	78.00	-1.97	78.33	-0.33	80.62	80.24	-0.38	79.32	0.93
6029687	79.84	78.00	-1.83	78.17	-0.17	80.47	80.11	-0.37	79.60	0.50
6029695	79.82	78.02	-1.81	78.20	-0.18	80.46	80.09	-0.37	79.59	0.50
6029697	79.81	78.05	-1.76	78.78	-0.74	80.43	80.07	-0.35	79.96	0.11
6029708	79.72	77.93	-1.79	79.05	-1.12	80.24	79.99	-0.24	80.77	-0.78
6029724	79.68	77.73	-1.95	77.87	-0.15	80.58	79.96	-0.62	78.62	1.34

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
6029730	80.08	78.38	-1.70	81.00	-2.62	81.11	81.01	-0.11	81.73	-0.72
6029738	79.82	77.63	-2.19	79.43	-1.80	80.38	80.01	-0.37	79.81	0.20
6029740	79.72	77.44	-2.28	78.76	-1.32	80.28	79.75	-0.53	79.90	-0.15
6029741	79.50	77.44	-2.05	78.54	-1.10	80.05	79.59	-0.46	79.39	0.20
6029751	80.09	78.52	-1.57	81.86	-3.34	81.13	81.01	-0.11	82.87	-1.86
6029753	80.05	78.54	-1.50	82.18	-3.64	80.88	80.79	-0.09	82.42	-1.63
6029755	80.09	78.52	-1.57	81.76	-3.24	81.13	81.01	-0.11	82.77	-1.75
6029762	80.61	79.05	-1.56	81.62	-2.57	81.51	81.45	-0.05	82.42	-0.97
6029770	81.24	79.89	-1.35	81.17	-1.28	81.84	81.83	-0.01	81.91	-0.08
6029772	82.50	81.36	-1.15	80.59	0.77	85.03	85.03	0.00	81.32	3.71
6029773	81.72	81.30	-0.42	80.81	0.48	82.25	82.25	0.00	81.32	0.93
6029774	81.43	81.06	-0.37	80.56	0.50	81.92	81.91	0.00	81.73	0.18
6029809	76.56	75.84	-0.71	75.39	0.46	77.10	76.94	-0.15	76.09	0.86
6029814	76.76	76.00	-0.76	75.68	0.32	77.30	77.16	-0.13	75.66	1.50
6029820	76.25	75.84	-0.40	75.90	-0.06	76.56	76.44	-0.12	79.13	-2.69
6029823	75.77	75.43	-0.34	74.72	0.71	76.19	76.12	-0.08	75.30	0.82
6031	89.07	88.19	-0.88	87.76	0.42	89.85	89.85	0.00	88.75	1.10
6037	89.73	89.04	-0.69	88.59	0.45	90.32	90.32	0.00	90.73	-0.42
6040	89.73	88.99	-0.75	90.17	-1.18	90.33	90.33	0.00	90.63	-0.30
6045	74.41	72.98	-1.43	80.28	-7.30	75.15	74.81	-0.33	72.42	2.40
6046	80.07	78.91	-1.16	80.90	-1.99	80.49	80.40	-0.09	81.97	-1.57
6047	79.81	78.49	-1.32	79.81	-1.33	80.57	80.39	-0.17	81.32	-0.93
6048	74.60	72.99	-1.61	80.43	-7.44	75.32	74.82	-0.50	73.89	0.93
6049	73.08	71.29	-1.79	69.54	1.75	74.68	74.66	-0.01	72.42	2.25
6050	72.13	72.13	0.00	75.42	-3.29	72.13	72.13	0.00	75.87	-3.74
6052572	82.30	81.50	-0.80	82.71	-1.21	82.78	82.72	-0.06	83.93	-1.21
6052574	82.69	81.77	-0.93	83.31	-1.55	83.33	83.30	-0.03	83.76	-0.46
6052575	82.75	81.79	-0.97	83.64	-1.86	83.50	83.48	-0.03	83.68	-0.21
6052576	82.69	81.77	-0.92	82.34	-0.57	83.08	83.06	-0.01	83.44	-0.38
6052589	83.72	82.44	-1.29	83.59	-1.15	84.37	84.36	-0.01	83.98	0.38
6052590	83.70	82.59	-1.12	83.14	-0.55	84.37	84.36	-0.01	84.06	0.29
6052591	83.58	82.45	-1.12	83.27	-0.82	84.06	84.06	-0.01	83.98	0.08
6052597	84.05	82.61	-1.44	84.54	-1.93	84.74	84.74	0.00	85.37	-0.64
6052599	84.42	82.81	-1.61	85.01	-2.21	85.20	85.20	0.00	84.23	0.97
6052601	84.66	83.69	-0.97	84.90	-1.22	85.22	85.22	0.00	84.75	0.46
6052608	84.66	83.86	-0.80	83.62	0.24	85.20	85.20	0.00	84.69	0.52
6052609	84.55	83.71	-0.84	84.00	-0.29	84.95	84.95	0.00	84.37	0.58
6052620	84.98	81.94	-3.04	84.87	-2.93	85.37	85.37	0.00	85.13	0.24
6052621	82.28	80.72	-1.56	85.05	-4.33	82.45	82.45	0.00	84.97	-2.52
6052633	0.00	0.00	0.00	68.38	0.00	0.00	0.00	0.00	85.36	0.00
6055502	79.35	77.70	-1.66	82.44	-4.74	80.35	80.16	-0.20	80.41	-0.25
6055522	65.06	65.06	0.00	79.18	-14.12	79.79	79.34	-0.46	80.36	-1.02
6055537	79.34	77.75	-1.59	80.88	-3.13	80.26	80.10	-0.16	80.93	-0.83
6055539	79.34	77.79	-1.55	80.12	-2.32	80.21	80.07	-0.14	80.72	-0.65
6055549	79.34	77.79	-1.54	80.44	-2.65	80.13	80.02	-0.11	80.64	-0.62
6055555	79.34	77.92	-1.41	79.43	-1.50	80.02	79.95	-0.07	80.05	-0.10
6055561	80.43	76.09	-4.34	79.70	-3.61	80.91	80.41	-0.50	80.71	-0.30
6061092	88.45	88.12	-0.33	88.31	-0.19	88.67	88.66	0.00	88.68	-0.02
6061094	88.01	87.94	-0.07	87.27	0.67	88.09	88.09	0.00	88.61	-0.52
6061230	89.01	88.82	-0.19	88.11	0.71	89.22	89.22	0.00	88.46	0.75
6061231	0.00	0.00	0.00	73.76	0.00	0.00	0.00	0.00	88.64	0.00
6061276	88.48	88.10	-0.38	88.08	0.02	88.91	88.91	0.00	88.21	0.71
6061278	88.37	88.10	-0.28	87.85	0.25	88.58	88.58	0.00	89.27	-0.69
6061287	88.50	88.14	-0.36	86.82	1.31	88.92	88.92	0.00	87.59	1.33
6061295	88.51	88.15	-0.36	87.04	1.11	88.92	88.92	0.00	88.24	0.68
6061297	88.47	88.15	-0.32	87.48	0.67	88.78	88.77	0.00	89.11	-0.34
6061307	88.58	88.22	-0.36	88.49	-0.26	88.95	88.95	0.00	89.22	-0.27
6061308	88.52	88.19	-0.34	87.53	0.66	88.93	88.93	0.00	88.40	0.53
6061320	88.58	88.29	-0.29	88.09	0.20	88.93	88.93	0.00	89.07	-0.15
6061322	89.00	88.66	-0.35	88.18	0.47	89.37	89.37	0.00	88.89	0.48
6061332	88.57	88.29	-0.27	87.74	0.55	88.90	88.90	0.00	88.59	0.31
6061338	88.54	88.29	-0.24	87.86	0.43	88.85	88.85	0.00	88.74	0.11
6061347	88.64	88.40	-0.24	88.32	0.08	89.04	89.04	0.00	88.93	0.11
6061355	88.78	88.39	-0.38	87.86	0.54	89.17	89.17	0.00	87.80	1.37
6061365	88.83	88.43	-0.39	87.90	0.53	89.20	89.20	0.00	88.38	0.82
6061368	88.63	88.23	-0.40	87.46	0.76	88.97	88.97	0.00	88.32	0.64

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
6061377	88.69	88.27	-0.42	87.68	0.59	89.11	89.11	0.00	88.40	0.71
6061387	88.66	88.30	-0.36	87.49	0.81	89.12	89.11	0.00	88.78	0.33
6061395	88.52	88.19	-0.34	87.54	0.65	88.93	88.92	0.00	89.12	-0.20
6061397	88.53	88.20	-0.33	87.71	0.49	88.93	88.93	0.00	88.40	0.53
6061405	88.57	88.22	-0.35	88.28	-0.06	89.00	89.00	0.00	88.69	0.31
6061415	88.59	88.23	-0.35	87.46	0.77	89.04	89.04	0.00	89.52	-0.48
6061423	88.61	88.27	-0.35	87.43	0.84	89.06	89.06	0.00	89.26	-0.20
6061431	88.67	88.30	-0.38	87.94	0.36	89.12	89.12	0.00	89.16	-0.04
6061433	88.85	88.34	-0.51	88.69	-0.35	89.28	89.28	0.00	89.31	-0.03
6061441	88.85	88.39	-0.46	88.37	0.02	89.28	89.27	0.00	89.37	-0.09
6061443	89.08	88.39	-0.69	88.16	0.23	89.40	89.40	0.00	89.82	-0.42
6061451	88.62	88.33	-0.29	87.89	0.44	88.92	88.92	0.00	88.82	0.10
6061459	88.68	88.32	-0.36	89.01	-0.69	89.14	89.14	0.00	89.63	-0.49
6061461	88.69	88.34	-0.36	89.10	-0.77	89.14	89.14	0.00	89.16	-0.02
6061463	88.70	88.35	-0.35	88.31	0.04	89.13	89.13	0.00	89.59	-0.46
6061466	88.73	88.39	-0.34	87.89	0.50	89.13	89.13	0.00	89.01	0.12
6061468	88.74	88.39	-0.34	87.99	0.41	89.14	89.14	0.00	88.88	0.25
6061471	88.75	88.40	-0.36	88.42	-0.03	89.15	89.15	0.00	88.68	0.47
6061479	88.97	88.45	-0.52	88.52	-0.08	89.39	89.38	0.00	89.17	0.21
6061481	88.95	88.46	-0.49	88.18	0.28	89.25	89.25	0.00	89.63	-0.38
6061489	88.60	88.37	-0.23	87.96	0.42	88.86	88.86	0.00	89.21	-0.35
6061497	88.96	88.64	-0.32	88.09	0.55	89.38	89.38	0.00	89.50	-0.12
6061499	88.74	88.54	-0.20	88.24	0.29	88.95	88.95	0.00	89.91	-0.96
6062507	88.65	88.35	-0.30	88.00	0.35	89.02	89.02	0.00	89.24	-0.23
6062515	88.93	88.54	-0.38	88.51	0.03	89.40	89.40	0.00	89.30	0.10
6062523	88.93	88.54	-0.38	89.45	-0.91	89.41	89.40	0.00	90.36	-0.95
6062528	88.73	88.42	-0.32	87.93	0.49	89.09	89.09	0.00	89.17	-0.09
6062536	88.80	88.43	-0.37	88.62	-0.19	89.20	89.20	0.00	88.98	0.22
6062544	89.06	88.60	-0.46	88.40	0.20	89.52	89.52	0.00	89.49	0.03
6062552	88.72	88.40	-0.32	87.81	0.59	89.06	89.06	0.00	88.92	0.13
6062554	88.37	88.09	-0.28	87.59	0.50	88.71	88.71	0.00	88.51	0.20
6062562	88.69	88.39	-0.30	87.78	0.61	89.02	89.02	0.00	88.92	0.10
6062570	88.67	88.39	-0.29	88.03	0.36	89.00	89.00	0.00	89.32	-0.33
6062572	88.67	88.41	-0.27	88.39	0.01	88.97	88.97	0.00	89.29	-0.32
6062580	88.94	88.59	-0.35	88.44	0.15	89.29	89.29	0.00	88.89	0.41
6062588	88.66	88.37	-0.29	87.89	0.49	88.99	88.99	0.00	88.27	0.72
6062598	88.29	88.17	-0.13	87.57	0.59	88.49	88.49	0.00	88.53	-0.04
6073349	89.33	89.01	-0.32	88.84	0.16	89.61	89.61	0.00	90.15	-0.54
6073352	89.69	89.43	-0.26	88.93	0.50	89.97	89.97	0.00	89.01	0.95
6073404	0.00	0.00	0.00	72.87	0.00	0.00	0.00	0.00	89.89	0.00
6073416	0.00	0.00	0.00	72.53	0.00	0.00	0.00	0.00	89.88	0.00
6073420	89.63	89.35	-0.28	88.85	0.50	89.93	89.93	0.00	89.35	0.58
6073424	89.46	89.34	-0.13	89.05	0.29	89.65	89.65	0.00	89.94	-0.29
6073426	89.48	89.35	-0.13	89.18	0.16	89.66	89.66	0.00	89.74	-0.08
6073433	89.64	89.06	-0.58	88.70	0.37	90.05	90.05	0.00	89.66	0.39
6073436	90.18	90.38	0.20	90.30	0.08	90.88	90.88	0.00	90.70	0.18
6073438	89.90	89.35	-0.55	88.84	0.51	90.47	90.47	0.00	90.22	0.25
6073447	89.90	89.30	-0.60	89.33	-0.04	90.49	90.48	0.00	90.59	-0.11
6073451	89.79	89.12	-0.67	89.31	-0.19	90.36	90.36	0.00	90.10	0.25
6073459	89.73	89.00	-0.73	90.25	-1.25	90.32	90.32	0.00	90.50	-0.18
6073463	89.69	89.03	-0.66	88.67	0.36	90.18	90.18	0.00	90.34	-0.16
6073469	89.67	89.04	-0.62	88.78	0.26	90.08	90.08	0.00	90.36	-0.28
6073473	89.65	89.03	-0.62	89.42	-0.40	90.05	90.05	0.00	89.28	0.77
6073491	89.71	88.93	-0.78	89.35	-0.42	90.31	90.31	0.00	90.27	0.03
6075001	89.70	88.92	-0.77	88.74	0.19	90.30	90.30	0.00	90.31	-0.01
6075003	89.54	88.80	-0.74	88.71	0.09	90.14	90.14	0.00	89.94	0.19
6075006	88.64	87.91	-0.73	88.12	-0.21	89.21	89.20	0.00	88.40	0.80
6075008	88.52	87.90	-0.62	88.04	-0.13	89.01	89.01	0.00	89.45	-0.44
6075011	88.88	88.50	-0.38	88.87	-0.37	89.62	89.62	0.00	88.91	0.71
6075013	88.90	88.53	-0.36	88.86	-0.32	89.69	89.69	0.00	89.18	0.51
6075016	88.66	88.23	-0.43	87.42	0.81	89.13	89.13	0.00	87.92	1.21
6075019	88.66	88.08	-0.59	88.32	-0.24	89.19	89.19	0.00	88.52	0.67
6075021	88.58	88.41	-0.17	88.29	0.11	89.12	89.12	0.00	89.01	0.11
6075024	88.69	88.57	-0.12	88.34	0.23	89.12	89.12	0.00	90.26	-1.14
6075027	88.62	87.80	-0.82	88.52	-0.72	89.20	89.20	0.00	88.54	0.66
6075033	88.62	87.83	-0.79	88.90	-1.07	89.20	89.20	0.00	88.99	0.21

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
6075039	88.53	87.91	-0.62	87.61	0.29	89.01	89.01	0.00	88.35	0.66
6075045	88.73	88.07	-0.65	88.08	0.00	89.38	89.38	0.00	88.89	0.49
6075065	88.88	88.52	-0.36	88.42	0.10	89.63	89.62	0.00	89.19	0.44
6075083	88.66	87.98	-0.67	88.34	-0.36	89.19	89.19	0.00	88.67	0.52
6075085	88.58	88.01	-0.56	87.48	0.54	89.10	89.09	0.00	88.17	0.92
6075095	88.65	88.23	-0.41	87.64	0.60	89.09	89.09	0.00	87.92	1.17
6075097	88.65	88.23	-0.42	87.41	0.82	89.11	89.11	0.00	87.92	1.19
6075103	88.67	88.27	-0.40	88.35	-0.09	89.11	89.10	0.00	88.72	0.38
6075107	88.67	88.25	-0.42	88.13	0.12	89.11	89.10	0.00	88.76	0.34
6075111	88.67	88.29	-0.38	88.46	-0.18	89.11	89.11	0.00	89.08	0.03
6075121	88.69	88.57	-0.12	88.56	0.01	89.13	89.13	0.00	89.79	-0.66
6075123	88.69	88.57	-0.12	88.56	0.01	89.12	89.12	0.00	89.69	-0.57
6075125	88.68	88.54	-0.14	88.58	-0.05	89.12	89.12	0.00	89.47	-0.36
6075451	89.69	88.92	-0.78	88.44	0.48	90.30	90.30	0.00	90.00	0.31
6075459	89.69	88.90	-0.79	88.28	0.62	90.35	90.35	0.00	88.64	1.70
6075463	90.05	88.91	-1.15	88.35	0.55	91.59	91.59	0.00	88.99	2.60
6075465	89.72	88.90	-0.82	87.77	1.12	90.53	90.53	0.00	89.50	1.02
6076543	89.65	89.40	-0.26	88.74	0.65	89.92	89.92	0.00	89.40	0.51
6076557	88.64	87.93	-0.71	87.76	0.17	89.19	89.19	0.00	88.48	0.71
6076597	88.66	88.18	-0.48	87.85	0.33	89.15	89.15	0.00	88.51	0.64
6076632	88.52	88.40	-0.12	87.94	0.46	88.70	88.70	0.00	88.60	0.10
6076635	0.00	0.00	0.00	73.18	0.00	0.00	0.00	0.00	87.85	0.00
61	73.03	70.34	-2.69	73.09	-2.75	73.35	73.34	-0.01	74.71	-1.37
6198704	75.60	75.23	-0.37	87.38	-12.15	82.53	81.91	-0.62	87.84	-5.93
6198706	75.31	74.92	-0.39	87.85	-12.93	82.45	81.89	-0.56	88.73	-6.84
6198708	74.67	74.14	-0.53	87.32	-13.18	82.25	81.85	-0.39	88.16	-6.31
6198711	74.57	74.01	-0.56	87.31	-13.30	82.16	81.83	-0.33	87.61	-5.78
6198730	73.87	73.10	-0.77	85.59	-12.49	81.96	81.78	-0.18	86.27	-4.49
6198761	73.85	72.13	-1.72	84.90	-12.78	81.91	81.74	-0.17	85.73	-3.99
6198771	73.85	71.74	-2.11	85.00	-13.27	81.89	81.72	-0.17	85.47	-3.74
6198780	73.84	71.40	-2.45	85.27	-13.87	81.87	81.71	-0.16	85.59	-3.88
6198784	73.84	71.27	-2.57	85.11	-13.83	81.86	81.70	-0.16	85.11	-3.42
6198788	73.84	71.04	-2.80	84.18	-13.14	81.84	81.68	-0.16	84.53	-2.85
6198792	73.83	70.54	-3.30	82.41	-11.88	81.80	81.65	-0.15	83.77	-2.12
6198793	78.55	78.25	-0.30	82.60	-4.35	81.81	81.65	-0.15	84.29	-2.64
6198800	73.82	69.31	-4.51	80.74	-11.43	81.73	81.59	-0.14	81.24	0.35
6198804	73.81	69.08	-4.74	80.44	-11.37	81.70	81.56	-0.14	81.07	0.49
6198806	76.48	76.05	-0.43	79.88	-3.83	81.37	81.25	-0.11	80.98	0.28
6198808	75.71	75.64	-0.08	80.39	-4.75	81.68	81.55	-0.13	81.07	0.48
6198813	76.50	76.07	-0.43	80.08	-4.01	81.37	81.25	-0.11	80.95	0.30
6198814	76.50	76.06	-0.43	79.95	-3.89	81.37	81.25	-0.11	80.98	0.28
6198824	73.81	68.90	-4.91	80.47	-11.57	81.69	81.54	-0.15	80.99	0.56
6198825	76.00	75.93	-0.07	80.20	-4.27	81.62	81.49	-0.13	81.25	0.24
6198826	76.01	75.94	-0.08	80.62	-4.69	81.67	81.54	-0.13	81.62	-0.08
6198834	73.80	68.64	-5.16	80.77	-12.13	81.69	81.54	-0.15	80.83	0.71
6198836	73.80	68.46	-5.33	80.33	-11.86	81.69	81.53	-0.15	81.39	0.15
6198837	75.79	75.58	-0.21	80.58	-5.00	81.69	81.54	-0.15	81.10	0.44
6198838	75.83	75.76	-0.06	80.38	-4.61	81.69	81.53	-0.15	81.39	0.15
6198839	75.93	75.84	-0.10	80.45	-4.61	81.68	81.53	-0.15	81.85	-0.32
6198853	73.79	68.15	-5.64	80.91	-12.76	81.69	81.53	-0.15	81.44	0.10
6198854	77.12	77.09	-0.03	81.21	-4.11	81.73	81.60	-0.14	81.32	0.27
6198858	73.78	67.14	-6.64	81.22	-14.08	81.69	81.53	-0.16	81.21	0.32
6198859	77.60	77.36	-0.25	81.22	-3.86	81.64	81.51	-0.13	81.26	0.24
6198860	77.49	77.29	-0.20	81.92	-4.63	81.75	81.54	-0.21	81.52	0.02
6198869	79.15	78.07	-1.08	80.52	-2.45	81.61	81.49	-0.11	81.50	0.00
6198872	80.59	79.45	-1.14	80.60	-1.15	81.63	81.53	-0.10	82.05	-0.52
6198873	79.15	78.07	-1.08	80.19	-2.12	81.58	81.47	-0.11	81.50	-0.03
6198874	79.17	78.08	-1.10	80.71	-2.63	81.60	81.49	-0.11	81.16	0.33
6198884	81.08	80.09	-0.98	80.89	-0.79	81.70	81.61	-0.09	81.52	0.08
6198885	81.08	80.10	-0.97	80.50	-0.40	81.68	81.58	-0.09	81.52	0.06
6198886	81.09	80.10	-1.00	81.11	-1.01	81.71	81.61	-0.09	80.85	0.76
6198892	81.17	80.31	-0.85	81.09	-0.78	81.78	81.68	-0.10	81.44	0.24
6198894	80.96	80.31	-0.64	80.74	-0.43	81.62	81.46	-0.16	81.89	-0.44
62	73.36	68.92	-4.44	74.42	-5.51	74.34	74.23	-0.12	74.09	0.14
6240364	77.11	76.02	-1.10	75.38	0.64	77.88	77.42	-0.45	77.07	0.36
6240366	77.05	75.92	-1.13	75.35	0.57	77.79	77.35	-0.44	76.94	0.41

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
6240369	77.18	75.92	-1.27	76.17	-0.26	77.90	77.50	-0.40	77.77	-0.27
6240371	77.04	75.91	-1.13	75.90	0.01	77.81	77.43	-0.38	77.02	0.41
6240381	76.32	75.40	-0.92	75.25	0.15	77.09	76.67	-0.42	75.81	0.86
6240385	75.68	74.99	-0.69	74.45	0.54	76.35	76.02	-0.33	75.24	0.78
6240390	75.73	75.08	-0.65	74.72	0.36	76.38	76.04	-0.34	76.35	-0.30
6240392	75.69	74.93	-0.77	74.45	0.47	76.35	76.03	-0.32	75.30	0.73
6240394	75.86	75.06	-0.81	73.92	1.13	76.54	76.31	-0.23	74.76	1.55
6240403	75.44	74.60	-0.84	73.17	1.43	76.09	75.77	-0.31	74.76	1.01
6240410	74.96	74.50	-0.46	73.68	0.82	75.57	75.33	-0.24	75.03	0.30
6240412	75.16	74.71	-0.45	74.31	0.40	75.73	75.47	-0.26	75.68	-0.21
6240418	75.00	74.55	-0.46	73.97	0.58	75.62	75.38	-0.24	75.03	0.36
6240420	75.21	74.78	-0.43	73.62	1.16	75.88	75.63	-0.25	75.22	0.41
6240423	75.23	74.79	-0.44	73.99	0.80	75.89	75.63	-0.25	75.22	0.42
6240426	75.29	74.84	-0.46	74.02	0.81	75.96	75.70	-0.26	75.03	0.67
6240428	74.96	74.50	-0.45	73.84	0.66	75.58	75.35	-0.23	75.03	0.32
6240431	74.97	74.51	-0.45	73.89	0.62	75.58	75.35	-0.23	75.03	0.32
6240434	74.97	74.51	-0.46	73.84	0.67	75.60	75.36	-0.24	75.12	0.23
6240436	74.48	73.92	-0.56	73.82	0.10	75.27	75.03	-0.24	75.03	0.00
6240438	74.41	73.73	-0.67	73.96	-0.23	75.23	75.00	-0.23	74.73	0.27
6240440	74.35	73.43	-0.92	73.42	0.01	75.23	75.01	-0.22	74.11	0.91
6240448	74.17	72.93	-1.24	74.59	-1.66	75.17	74.97	-0.21	74.26	0.71
6240450	74.23	73.24	-0.99	73.11	0.12	75.17	74.96	-0.21	73.90	1.07
6240454	74.14	72.93	-1.21	73.27	-0.34	74.92	74.72	-0.20	74.29	0.43
6240457	73.87	72.93	-0.94	73.20	-0.27	74.58	74.38	-0.19	74.48	-0.09
6240459	73.99	72.79	-1.20	73.30	-0.51	74.75	74.72	-0.04	73.96	0.75
6240460	73.78	72.48	-1.30	73.60	-1.12	74.62	74.59	-0.03	74.47	0.11
6240468	73.69	72.37	-1.32	73.97	-1.60	74.57	74.54	-0.03	74.95	-0.41
6240470	73.63	72.29	-1.34	73.88	-1.59	74.48	74.45	-0.03	74.77	-0.31
6240475	73.54	72.18	-1.36	73.42	-1.24	74.45	74.43	-0.02	74.32	0.10
6240478	73.35	71.92	-1.43	74.44	-2.53	74.43	74.41	-0.03	75.08	-0.68
6240481	73.35	71.92	-1.43	74.00	-2.08	74.42	74.40	-0.02	74.94	-0.55
6240484	73.20	71.71	-1.49	74.58	-2.86	74.33	74.30	-0.02	74.75	-0.45
6240488	73.20	71.71	-1.49	73.67	-1.96	73.95	73.94	-0.01	74.71	-0.77
6240496	72.01	70.66	-1.35	74.20	-3.54	73.15	73.13	-0.02	74.42	-1.29
6240498	71.52	70.26	-1.26	74.83	-4.57	72.65	72.63	-0.02	75.15	-2.52
6243003	71.52	70.26	-1.26	74.72	-4.47	72.65	72.63	-0.02	74.95	-2.32
6243007	74.06	72.92	-1.14	73.89	-0.97	74.78	74.73	-0.05	74.46	0.27
6243014	73.82	73.07	-0.75	73.33	-0.26	74.44	74.41	-0.03	74.04	0.38
6243016	74.19	73.27	-0.93	73.66	-0.39	74.79	74.77	-0.02	74.23	0.53
6243018	74.21	73.45	-0.77	72.82	0.63	74.95	74.92	-0.03	73.64	1.29
6243021	74.14	73.36	-0.77	72.31	1.06	74.72	74.69	-0.02	73.64	1.06
6243027	74.19	73.05	-1.14	73.58	-0.53	74.89	74.80	-0.10	74.06	0.74
6243039	74.13	73.32	-0.82	73.89	-0.57	74.84	74.77	-0.07	74.31	0.45
6243041	74.37	73.76	-0.61	73.15	0.61	75.11	75.08	-0.03	74.03	1.06
6243044	73.78	73.28	-0.50	72.34	0.94	74.46	74.40	-0.06	74.03	0.38
6243061	74.19	73.12	-1.07	74.12	-1.00	74.90	74.76	-0.14	74.72	0.04
6243074	74.45	73.31	-1.13	74.20	-0.89	74.95	74.93	-0.02	74.89	0.04
6243076	74.61	73.49	-1.12	74.91	-1.42	75.15	75.14	-0.01	75.43	-0.28
6243079	74.48	73.49	-0.99	74.05	-0.56	74.91	74.90	-0.01	75.22	-0.32
6243082	74.17	73.31	-0.86	73.65	-0.34	74.59	74.56	-0.03	74.89	-0.33
6243089	74.18	73.12	-1.05	75.08	-1.96	75.08	74.74	-0.34	75.70	-0.95
6243092	74.11	73.13	-0.98	73.18	-0.05	75.41	74.64	-0.77	73.89	0.75
6243099	74.13	73.13	-1.00	73.91	-0.79	75.20	74.59	-0.62	74.45	0.13
6243101	74.40	73.09	-1.31	73.67	-0.58	75.57	74.80	-0.77	74.38	0.42
6243103	73.71	72.40	-1.30	72.86	-0.46	75.03	74.18	-0.85	74.39	-0.21
6243105	73.90	71.74	-2.16	73.14	-1.39	75.23	74.25	-0.98	74.37	-0.12
6243107	73.84	70.93	-2.92	71.52	-0.59	75.18	73.86	-1.32	73.09	0.77
6243134	74.25	73.11	-1.15	73.75	-0.64	75.53	74.74	-0.80	74.50	0.24
63	80.25	78.54	-1.72	76.17	2.37	81.68	80.85	-0.83	82.18	-1.33
6342965	64.79	64.33	-0.46	63.19	1.15	65.12	65.02	-0.10	65.48	-0.46
6342972	65.01	64.57	-0.44	64.40	0.17	65.32	65.24	-0.08	65.90	-0.66
6342975	64.47	64.37	-0.10	64.18	0.19	64.54	64.52	-0.02	64.81	-0.29
6342978	64.71	64.45	-0.26	64.19	0.27	64.93	64.87	-0.06	65.90	-1.04
6342980	74.75	73.12	-1.63	72.93	0.19	75.68	75.68	0.00	77.97	-2.30
6342982	65.46	64.97	-0.49	64.92	0.06	65.81	65.75	-0.05	65.74	0.01
6342987	65.38	64.97	-0.41	64.78	0.19	65.63	65.59	-0.04	65.74	-0.15

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
6342988	65.37	64.99	-0.38	64.74	0.25	65.60	65.56	-0.04	66.51	-0.95
6342990	65.91	65.30	-0.61	65.64	-0.34	66.33	66.29	-0.04	66.65	-0.36
6342992	66.32	65.61	-0.71	66.51	-0.90	66.87	66.84	-0.03	67.72	-0.88
6342994	66.53	65.76	-0.77	66.87	-1.11	67.17	67.14	-0.03	67.80	-0.66
6342996	66.71	65.90	-0.81	67.38	-1.48	67.42	67.39	-0.03	68.21	-0.83
6343000	66.53	65.76	-0.77	67.45	-1.69	67.26	67.21	-0.05	68.48	-1.27
6347501	66.53	65.76	-0.77	67.40	-1.63	67.20	67.17	-0.03	67.70	-0.54
6347502	66.53	65.76	-0.77	66.97	-1.20	67.20	67.17	-0.03	68.48	-1.32
6347504	67.37	66.40	-0.98	68.02	-1.62	68.27	68.25	-0.03	69.67	-1.42
6347510	67.37	66.40	-0.97	67.69	-1.29	67.99	67.98	-0.01	69.24	-1.26
6347512	67.78	66.72	-1.06	69.12	-2.39	68.79	68.77	-0.02	70.80	-2.03
6347518	69.09	67.81	-1.29	73.54	-5.73	70.47	70.45	-0.02	73.89	-3.45
6347522	69.09	67.81	-1.29	73.14	-5.33	70.47	70.45	-0.02	74.84	-4.39
6347529	69.09	68.79	-0.30	73.30	-4.51	70.47	70.45	-0.02	74.33	-3.88
6347533	69.65	68.31	-1.35	73.64	-5.33	71.12	71.10	-0.02	75.12	-4.02
6347535	70.05	68.66	-1.39	73.21	-4.55	71.57	71.55	-0.02	74.03	-2.48
6347537	70.31	68.90	-1.42	72.88	-3.98	71.87	71.86	-0.02	74.84	-2.98
6347539	70.64	69.18	-1.45	72.64	-3.45	72.25	72.24	-0.02	74.29	-2.06
6347541	70.64	69.18	-1.45	72.70	-3.52	72.25	72.24	-0.02	74.64	-2.40
6347550	70.64	69.19	-1.45	72.98	-3.80	72.25	72.24	-0.02	73.87	-1.64
6347552	70.90	69.45	-1.45	74.61	-5.16	72.52	72.50	-0.02	75.35	-2.85
6347554	71.22	69.77	-1.45	75.12	-5.36	72.84	72.82	-0.01	76.66	-3.84
6347556	71.63	70.17	-1.47	75.88	-5.71	73.24	73.23	-0.01	75.45	-2.22
6347558	72.81	71.30	-1.51	75.14	-3.84	74.32	74.31	-0.01	75.49	-1.18
6347560	73.05	71.53	-1.51	74.97	-3.44	74.53	74.52	-0.01	76.77	-2.26
6347576	73.81	72.30	-1.51	74.48	-2.18	75.13	75.12	-0.01	75.57	-0.45
6347578	73.90	72.40	-1.50	74.54	-2.13	75.18	75.18	-0.01	75.69	-0.51
6347580	77.85	75.68	-2.17	77.24	-1.56	78.34	77.92	-0.43	77.75	0.16
6347582	74.10	72.45	-1.65	74.31	-1.86	75.09	75.09	-0.01	75.26	-0.17
6347590	74.17	72.71	-1.46	75.57	-2.86	75.36	75.35	-0.01	76.33	-0.97
6347592	73.95	72.46	-1.49	74.60	-2.14	75.21	75.20	-0.01	75.69	-0.48
6347597	73.95	72.46	-1.49	74.13	-1.67	75.08	75.07	-0.01	75.57	-0.50
6347610	74.44	73.01	-1.43	74.62	-1.61	75.54	75.53	-0.01	74.74	0.80
6347612	74.40	72.96	-1.44	74.17	-1.21	75.51	75.51	-0.01	76.02	-0.51
6347617	74.39	72.96	-1.44	74.23	-1.27	75.24	75.23	-0.01	75.69	-0.46
6347620	74.51	73.09	-1.42	74.93	-1.84	75.56	75.55	-0.01	75.50	0.05
6347625	74.51	73.09	-1.42	75.22	-2.13	75.57	75.57	-0.01	76.79	-1.23
6347644	74.71	73.30	-1.41	74.85	-1.55	75.66	75.65	-0.01	76.55	-0.90
6347646	74.77	73.38	-1.39	75.19	-1.81	75.68	75.67	-0.01	76.69	-1.02
6347648	74.82	73.45	-1.36	74.95	-1.50	75.68	75.68	-0.01	76.69	-1.01
6347654	74.71	73.30	-1.41	74.66	-1.36	75.48	75.48	-0.01	76.54	-1.07
6347657	75.35	74.34	-1.01	74.89	-0.55	76.04	76.04	0.00	76.43	-0.39
6347662	74.82	73.45	-1.37	74.77	-1.32	75.72	75.72	-0.01	76.57	-0.85
6347663	74.80	73.45	-1.35	74.65	-1.20	75.51	75.51	-0.01	76.69	-1.18
6347665	74.95	73.57	-1.39	74.58	-1.02	75.72	75.71	-0.01	76.22	-0.51
6347671	75.00	73.64	-1.36	75.04	-1.40	75.73	75.72	-0.01	76.50	-0.77
6347674	75.04	73.72	-1.33	74.76	-1.05	75.76	75.75	-0.01	76.50	-0.74
6347680	74.95	73.57	-1.38	75.85	-2.28	75.72	75.72	0.00	76.22	-0.50
6347681	74.81	73.72	-1.10	74.46	-0.74	75.43	75.42	-0.01	76.50	-1.08
6347682	75.13	73.72	-1.41	75.25	-1.53	75.95	75.94	-0.01	76.46	-0.52
6347684	75.17	73.84	-1.33	73.74	0.10	75.92	75.91	-0.01	76.66	-0.76
6347692	75.22	73.91	-1.32	73.81	0.10	75.96	75.95	-0.01	75.30	0.66
6347700	75.30	74.05	-1.25	74.02	0.03	76.01	76.00	-0.01	76.16	-0.16
6347704	75.36	74.20	-1.16	73.63	0.57	76.05	76.04	-0.01	77.05	-1.01
6347718	75.56	74.59	-0.97	74.06	0.52	76.17	76.15	-0.02	75.86	0.29
6347720	75.63	74.65	-0.98	73.95	0.70	76.21	76.20	-0.02	76.76	-0.56
6347728	75.73	74.86	-0.87	74.18	0.67	76.24	76.22	-0.02	75.63	0.59
6347730	75.70	74.79	-0.91	74.04	0.75	76.23	76.21	-0.02	76.17	0.05
6347736	75.76	74.92	-0.84	74.33	0.58	76.25	76.23	-0.02	75.67	0.56
6347746	75.49	74.80	-0.69	74.41	0.39	76.05	76.01	-0.03	76.65	-0.64
6347748	75.77	74.97	-0.81	74.81	0.15	76.25	76.23	-0.02	77.53	-1.30
6347750	75.85	75.03	-0.83	74.63	0.40	76.33	76.31	-0.03	75.74	0.56
6347752	75.93	75.08	-0.85	74.95	0.13	76.40	76.37	-0.03	76.13	0.24
6347754	76.00	75.16	-0.84	75.59	-0.43	76.50	76.44	-0.05	75.91	0.53
6347760	76.02	75.20	-0.82	75.33	-0.12	76.52	76.46	-0.07	76.22	0.24
6347765	76.10	75.26	-0.84	75.77	-0.51	76.68	76.57	-0.12	76.60	-0.04

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
6347767	76.23	75.33	-0.91	75.53	-0.20	76.86	76.73	-0.14	76.54	0.19
6347769	76.12	75.30	-0.81	75.66	-0.36	76.74	76.53	-0.21	76.37	0.16
6347771	75.93	75.35	-0.59	75.30	0.05	76.56	76.34	-0.21	76.78	-0.44
6347773	76.43	75.39	-1.04	75.94	-0.54	77.11	76.86	-0.25	77.13	-0.27
6347775	76.61	75.46	-1.15	75.85	-0.39	77.28	76.99	-0.29	76.31	0.69
6347777	76.33	75.49	-0.85	75.35	0.13	76.86	76.64	-0.22	76.65	-0.02
6347782	76.80	75.55	-1.25	77.81	-2.26	77.82	77.25	-0.56	77.84	-0.59
6347784	76.81	75.66	-1.15	76.79	-1.13	77.71	77.25	-0.46	77.74	-0.49
6347786	76.98	75.55	-1.43	77.23	-1.67	77.87	77.38	-0.49	78.51	-1.14
6347788	77.15	75.55	-1.60	76.93	-1.37	78.07	77.54	-0.53	77.68	-0.15
6347790	76.38	75.54	-0.84	75.14	0.40	77.30	76.96	-0.34	76.81	0.15
6347976	75.68	74.72	-0.96	74.74	-0.02	76.23	76.21	-0.02	78.35	-2.13
6347987	75.89	75.00	-0.89	74.61	0.39	76.35	76.31	-0.04	76.13	0.19
6347988	75.92	75.03	-0.89	74.65	0.38	76.39	76.35	-0.04	76.75	-0.40
6347990	75.98	75.16	-0.82	75.47	-0.31	76.48	76.44	-0.04	75.63	0.81
6347998	75.10	73.76	-1.35	75.03	-1.27	75.84	75.83	-0.01	76.82	-0.99
6348000	74.58	72.88	-1.70	73.42	-0.54	75.36	75.35	0.00	74.56	0.80
6348502	74.58	73.00	-1.58	73.16	-0.17	75.35	75.35	0.00	73.59	1.76
6348512	74.60	73.28	-1.32	75.99	-2.72	75.68	75.67	-0.01	76.55	-0.87
6348516	74.81	73.61	-1.20	74.64	-1.04	75.57	75.57	0.00	75.18	0.39
6348518	75.18	74.09	-1.09	74.90	-0.81	75.72	75.72	0.00	76.09	-0.37
6348523	75.08	74.09	-0.99	74.42	-0.34	75.48	75.48	0.00	76.62	-1.14
6348524	75.12	74.09	-1.03	74.28	-0.19	75.54	75.54	0.00	76.09	-0.55
6348526	74.93	73.67	-1.26	76.07	-2.41	75.79	75.78	-0.01	76.74	-0.96
6348528	75.73	74.54	-1.20	75.05	-0.52	76.46	76.46	0.00	76.20	0.27
6348532	75.98	74.69	-1.29	74.63	0.05	76.67	76.67	0.00	76.33	0.34
6348552	75.35	74.60	-0.75	73.94	0.66	76.46	76.44	-0.02	75.28	1.16
6348554	74.95	74.56	-0.40	73.52	1.04	75.70	75.68	-0.02	76.07	-0.40
6348565	75.51	74.89	-0.62	76.36	-1.48	76.44	76.37	-0.07	77.15	-0.78
6348567	75.50	74.87	-0.63	75.36	-0.50	76.13	76.08	-0.04	77.51	-1.43
6348569	75.41	75.01	-0.40	74.60	0.41	75.92	75.91	-0.01	77.36	-1.45
6348571	75.51	74.97	-0.54	75.87	-0.90	76.29	76.24	-0.04	77.16	-0.92
6348573	75.43	75.06	-0.37	74.45	0.61	76.12	76.10	-0.02	77.42	-1.32
6348579	75.42	75.06	-0.36	74.47	0.58	75.95	75.94	-0.01	77.06	-1.13
6348583	75.70	75.18	-0.52	74.83	0.34	76.22	76.19	-0.03	75.36	0.83
6348587	75.49	75.10	-0.39	74.56	0.53	75.94	75.91	-0.03	75.37	0.54
6348591	75.92	75.22	-0.70	75.64	-0.42	76.41	76.38	-0.03	77.11	-0.73
6348595	75.99	75.55	-0.44	75.49	0.05	76.46	76.44	-0.02	76.09	0.36
6348599	75.73	75.30	-0.43	75.02	0.28	76.13	76.10	-0.04	76.09	0.01
6348607	75.53	75.22	-0.32	75.17	0.05	75.68	75.66	-0.02	77.07	-1.41
6348609	76.72	75.74	-0.98	75.18	0.56	77.42	77.14	-0.27	75.97	1.17
6348621	76.31	75.53	-0.77	75.83	-0.30	76.81	76.59	-0.22	76.98	-0.39
6348623	76.29	75.67	-0.61	75.77	-0.10	76.83	76.62	-0.20	77.12	-0.50
6348629	75.81	75.35	-0.45	74.82	0.53	76.28	76.07	-0.21	76.52	-0.45
6348633	75.78	75.28	-0.50	74.84	0.44	76.38	76.17	-0.22	76.40	-0.24
6348641	76.02	75.42	-0.60	75.72	-0.30	76.66	76.46	-0.20	76.86	-0.40
6348643	76.19	75.55	-0.65	75.03	0.51	76.70	76.66	-0.04	76.46	0.20
6348659	76.84	76.09	-0.75	76.05	0.04	77.43	77.29	-0.13	77.35	-0.05
6348664	76.76	76.06	-0.70	75.76	0.30	77.23	77.08	-0.15	77.35	-0.27
6348665	76.45	75.91	-0.54	75.58	0.33	76.89	76.75	-0.14	76.75	-0.01
6348667	76.84	75.82	-1.01	76.45	-0.63	77.71	77.27	-0.44	77.67	-0.40
6348671	77.00	76.37	-0.63	75.48	0.89	77.99	77.80	-0.18	76.71	1.10
6348683	77.00	75.54	-1.46	76.40	-0.86	77.93	77.36	-0.57	77.17	0.20
6348691	77.61	76.23	-1.38	75.86	0.37	78.30	77.91	-0.40	76.59	1.31
6348693	77.29	75.87	-1.42	76.51	-0.64	77.77	77.38	-0.39	77.96	-0.58
6351174	56.98	54.15	-2.84	65.82	-11.68	63.70	63.70	0.00	65.40	-1.70
6351176	56.96	54.14	-2.82	65.90	-11.75	63.72	63.71	0.00	65.77	-2.06
6351178	56.95	54.14	-2.81	65.42	-11.28	63.73	63.73	0.00	65.39	-1.67
6351180	56.93	54.13	-2.80	65.01	-10.88	63.75	63.75	0.00	63.85	-0.10
6351189	58.06	58.06	0.00	64.81	-6.75	63.75	63.75	0.00	63.65	0.10
6351206	58.20	58.20	0.00	64.72	-6.52	63.75	63.75	0.00	64.05	-0.30
6351212	56.98	54.15	-2.84	67.07	-12.93	63.70	63.70	0.00	65.12	-1.43
6351213	54.86	54.86	0.00	65.31	-10.45	63.70	63.70	0.00	66.54	-2.85
6351218	60.89	60.89	0.00	64.97	-4.08	63.70	63.70	0.00	65.29	-1.59
6351222	57.01	54.15	-2.86	63.64	-9.49	63.68	63.68	0.00	64.14	-0.46
6351226	57.03	54.16	-2.87	61.97	-7.81	63.66	63.66	-0.01	63.96	-0.30

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
6351228	57.11	54.17	-2.94	62.82	-8.65	63.63	63.63	-0.01	64.21	-0.59
6351235	61.74	52.05	-9.69	62.42	-10.36	63.18	62.83	-0.35	63.51	-0.69
6351240	61.72	56.76	-4.96	61.64	-4.88	63.13	62.58	-0.55	64.40	-1.82
6351244	62.12	57.30	-4.82	62.48	-5.18	64.29	63.68	-0.61	63.34	0.34
6351252	61.85	57.57	-4.28	61.28	-3.71	63.53	62.84	-0.69	63.34	-0.49
6351263	61.74	56.70	-5.04	62.05	-5.35	62.82	62.45	-0.36	63.54	-1.09
6351269	61.61	52.05	-9.56	62.11	-10.06	62.98	62.83	-0.16	63.52	-0.69
6351277	57.90	54.79	-3.12	62.08	-7.29	63.61	63.60	-0.01	62.81	0.79
6351284	61.61	56.81	-4.80	61.79	-4.98	62.87	62.42	-0.45	63.39	-0.97
6351287	61.61	56.77	-4.84	61.88	-5.11	62.80	62.35	-0.45	63.52	-1.17
6351304	61.56	54.49	-7.07	64.40	-9.91	64.57	62.79	-1.78	64.37	-1.58
6351312	61.56	54.50	-7.06	62.02	-7.52	63.29	62.53	-0.76	64.26	-1.73
6351318	57.91	55.12	-2.79	62.09	-6.96	63.42	63.42	-0.01	64.29	-0.88
6351320	60.74	58.43	-2.31	61.97	-3.54	63.27	63.25	-0.01	63.10	0.16
6351329	60.74	58.43	-2.31	62.56	-4.13	63.23	63.23	0.00	64.25	-1.03
6351330	60.74	58.43	-2.31	62.71	-4.29	63.19	63.19	0.00	63.10	0.09
6351336	61.56	52.05	-9.50	59.99	-7.94	62.93	62.57	-0.36	61.44	1.13
6351340	58.77	56.34	-2.43	60.03	-3.69	63.60	63.59	-0.01	62.10	1.48
6351342	61.56	52.14	-9.42	59.05	-6.91	62.78	62.43	-0.35	60.63	1.80
6351344	59.23	57.13	-2.09	59.34	-2.21	63.59	63.58	-0.01	60.76	2.81
6351346	61.56	52.24	-9.32	58.34	-6.10	62.66	62.30	-0.36	59.82	2.48
6351350	59.95	58.24	-1.71	58.61	-0.37	63.58	63.57	-0.01	59.59	3.98
6351354	60.55	58.42	-2.12	59.65	-1.22	63.58	63.57	-0.01	61.13	2.45
6351356	61.26	58.65	-2.61	61.85	-3.20	63.59	63.58	-0.01	63.73	-0.16
6351358	62.07	58.91	-3.17	63.47	-4.56	64.11	63.98	-0.13	64.98	-1.01
6351363	62.07	59.00	-3.08	63.58	-4.58	63.87	63.82	-0.05	66.20	-2.39
6351366	62.07	59.54	-2.53	63.82	-4.27	64.12	63.98	-0.14	65.09	-1.12
6351371	62.21	53.70	-8.51	59.99	-6.29	63.15	62.50	-0.65	61.05	1.45
6351376	61.90	54.98	-6.92	59.29	-4.31	62.83	62.15	-0.68	60.04	2.11
6351381	61.57	53.20	-8.36	58.30	-5.10	62.57	61.94	-0.62	59.37	2.57
6351386	61.62	53.84	-7.78	58.20	-4.36	62.65	62.05	-0.60	59.83	2.23
6351399	61.35	53.62	-7.74	58.11	-4.50	62.31	61.87	-0.43	59.41	2.46
6351400	60.24	53.29	-6.95	58.51	-5.22	61.15	60.59	-0.56	61.16	-0.58
6351406	60.83	59.35	-1.47	58.93	0.43	63.58	63.56	-0.03	61.45	2.11
6351408	61.61	60.34	-1.27	59.81	0.54	63.63	63.54	-0.09	60.59	2.96
6351410	61.68	52.44	-9.24	59.65	-7.21	62.59	62.31	-0.29	61.68	0.63
6351412	62.20	52.57	-9.62	60.30	-7.73	63.00	62.41	-0.59	60.54	1.87
6351414	62.13	61.00	-1.13	60.49	0.51	63.67	63.54	-0.13	60.71	2.83
6351416	62.53	52.65	-9.88	60.54	-7.88	63.25	62.48	-0.77	61.37	1.11
6351418	62.96	52.75	-10.21	61.67	-8.92	63.58	62.57	-1.01	62.78	-0.20
6351420	62.77	61.82	-0.95	61.74	0.08	63.72	63.53	-0.19	62.45	1.08
6351422	63.44	52.83	-10.61	62.80	-9.96	63.90	62.87	-1.03	63.20	-0.33
6351431	63.30	52.86	-10.44	63.72	-10.86	63.65	62.88	-0.77	62.54	0.35
6351436	62.68	58.26	-4.42	61.95	-3.69	62.96	62.63	-0.34	62.82	-0.20
6351439	63.33	58.81	-4.52	62.73	-3.92	63.67	63.16	-0.51	64.87	-1.70
6351450	63.74	62.90	-0.85	63.10	-0.21	64.07	63.85	-0.22	64.86	-1.02
6351452	64.44	62.90	-1.54	64.22	-1.32	64.72	64.47	-0.25	64.87	-0.41
6351477	63.61	62.89	-0.72	62.50	0.39	64.07	63.85	-0.22	63.72	0.13
64	69.91	67.46	-2.45	69.47	-2.02	70.38	70.18	-0.19	70.75	-0.56
65	70.72	66.11	-4.61	70.46	-4.36	71.48	71.21	-0.27	70.84	0.37
66	70.65	66.31	-4.34	69.57	-3.27	71.22	71.02	-0.20	71.66	-0.65
67	70.54	69.22	-1.32	69.54	-0.31	71.21	70.98	-0.23	70.10	0.88
68	70.29	68.91	-1.38	68.99	-0.08	70.94	70.70	-0.24	70.07	0.63
69	69.94	66.22	-3.72	69.34	-3.11	70.58	70.26	-0.32	70.95	-0.69
7	78.32	77.83	-0.49	78.23	-0.39	78.51	78.51	0.00	78.67	-0.16
70	68.72	65.54	-3.18	68.02	-2.48	68.98	68.87	-0.11	69.89	-1.02
71	69.49	65.29	-4.20	68.64	-3.35	69.90	69.59	-0.31	69.53	0.06
72	72.56	70.53	-2.04	72.05	-1.52	72.91	72.82	-0.09	73.34	-0.52
7204174	82.65	80.05	-2.60	81.98	-1.93	84.65	84.65	0.00	82.70	1.95
7207349	79.25	75.89	-3.36	79.89	-4.00	80.04	79.67	-0.37	79.39	0.28
73	72.74	69.57	-3.17	72.84	-3.27	73.38	73.34	-0.05	74.56	-1.22
74	73.20	69.14	-4.05	73.73	-4.58	74.08	73.97	-0.11	74.95	-0.98
75	73.23	69.98	-3.25	73.47	-3.49	74.13	73.96	-0.17	75.29	-1.33
76	73.52	69.44	-4.08	73.74	-4.30	74.44	74.30	-0.14	74.54	-0.25
77	73.38	69.03	-4.34	73.24	-4.20	74.22	74.11	-0.11	73.94	0.17
78	71.75	69.08	-2.68	73.87	-4.80	73.78	73.71	-0.07	74.01	-0.31

Node ID	Exist 2-yr HGL (ft)	Prop 2-yr HGL (ft)	Prop - Exist 2-yr HGL (ft)	Existing Critical Elevation	Prop 2yr HGL vs. Critical Elev	Exist 100-yr WSE	Prop 100-yr WSE	Prop - Exist 100-yr HGL (ft)	Existing Allowable MPE	Prop 100yr HGL vs. MPE
79	73.29	68.54	-4.75	73.43	-4.89	74.21	74.10	-0.11	73.75	0.35
9	73.55	0.00	-73.55	73.48	-73.48	74.05	0.00	-74.05	72.92	-72.92
Briar Branch	0.00	0.00	0.00	80.19	0.00	0.00	0.00	0.00	66.19	0.00
BT-W151	56.87	54.12	-2.76	69.75	-15.63	63.78	63.78	0.00	66.18	-2.41
CB-151	75.81	74.00	-1.80	82.02	-8.02	76.27	75.85	-0.42	70.81	5.04
Mathewson_Inlet	0.00	0.00	0.00	53.61	0.00	0.00	0.00	0.00	80.66	0.00
MW1-151	74.73	72.68	-2.05	81.17	-8.49	75.31	74.67	-0.65	69.50	5.17
PB151	68.79	66.87	-1.92	76.50	-9.63	69.75	70.55	0.80	74.78	-4.23
sc-151	72.51	70.62	-1.89	78.15	-7.53	73.26	72.90	-0.36	75.13	-2.23
ST1090	77.07	73.30	-3.77	80.12	-6.82	77.87	76.25	-1.62	78.90	-2.64
ST1275	77.38	73.30	-4.08	80.40	-7.10	78.12	76.26	-1.86	77.21	-0.95
ST1365	77.59	73.31	-4.29	80.55	-7.25	78.28	76.26	-2.02	77.21	-0.95
ST1555	78.36	75.29	-3.07	80.39	-5.11	78.92	79.51	0.59	76.63	2.88
ST1645	78.42	75.29	-3.13	80.27	-4.98	78.97	79.51	0.54	79.40	0.11
ST1740	78.52	75.29	-3.23	80.16	-4.87	79.07	79.51	0.44	79.61	-0.10
ST1830	78.59	75.29	-3.30	80.46	-5.17	79.14	79.51	0.37	79.47	0.04
ST1925	78.67	75.29	-3.38	80.75	-5.46	79.22	79.51	0.29	79.86	-0.35
ST2010	78.73	75.29	-3.43	80.09	-4.80	79.29	79.51	0.22	79.71	-0.20
ST2195	78.85	75.29	-3.56	80.31	-5.02	79.43	79.51	0.08	79.23	0.29
ST2380	78.97	75.29	-3.68	80.90	-5.61	79.55	79.51	-0.04	79.93	-0.42
ST2475	79.01	75.29	-3.72	81.04	-5.74	79.64	79.52	-0.12	79.53	-0.01
ST2655	79.19	75.29	-3.89	81.42	-6.13	79.81	79.52	-0.30	80.26	-0.75
ST2750	79.32	75.30	-4.03	81.59	-6.29	79.93	79.52	-0.42	74.35	5.17
ST3285	79.93	75.32	-4.61	83.71	-8.39	80.76	79.80	-0.97	79.10	0.70
ST3410	79.98	75.32	-4.66	84.25	-8.93	80.80	79.80	-1.00	79.89	-0.10
ST3570	80.02	75.32	-4.70	84.09	-8.77	80.84	79.80	-1.03	79.62	0.18
ST370	76.02	73.28	-2.73	78.76	-5.48	77.11	76.24	-0.87	77.86	-1.62
ST3760	80.06	75.32	-4.74	84.54	-9.22	80.87	79.80	-1.07	79.29	0.52
ST3950	80.08	75.32	-4.76	85.09	-9.77	80.89	79.80	-1.09	80.13	-0.33
ST4125	80.12	75.32	-4.81	81.27	-5.95	80.93	79.80	-1.13	80.15	-0.35
ST450	76.10	73.28	-2.82	80.35	-7.06	77.18	76.24	-0.94	77.86	-1.62
ST540	76.20	73.29	-2.91	80.53	-7.25	77.25	76.24	-1.01	77.86	-1.62
ST630	76.38	73.29	-3.09	80.58	-7.30	77.37	76.24	-1.13	79.12	-2.88
ST990	76.92	73.30	-3.62	80.80	-7.50	77.76	76.25	-1.51	79.35	-3.10
TCC-151	76.09	74.37	-1.72	82.49	-8.12	76.56	76.20	-0.36	71.14	5.06
TCN-151	76.10	74.37	-1.72	82.49	-8.12	76.57	76.21	-0.36	70.74	5.47
TCS-151!	76.08	74.35	-1.73	82.49	-8.14	76.55	76.18	-0.37	76.61	-0.43
TCS1	77.71	70.99	-6.73	77.01	-6.03	78.16	78.08	-0.08	76.11	1.97
TCS2	77.72	70.87	-6.84	77.60	-6.72	77.86	78.06	0.20	76.76	1.30
TCS3	78.66	70.79	-7.87	78.22	-7.43	79.05	78.24	-0.81	76.65	1.59
TCS4	78.81	70.36	-8.45	78.61	-8.25	79.16	78.10	-1.07	77.13	0.97
TCS5	79.06	70.00	-9.06	78.92	-8.91	79.93	77.92	-2.01	78.55	-0.63
TM151	57.12	54.93	-2.19	71.00	-16.07	64.12	63.82	-0.30	67.64	-3.82
VS-151	64.03	62.13	-1.90	76.59	-14.46	65.39	66.01	0.62	73.77	-7.76
W100	56.87	54.12	-2.76	69.75	-15.63	63.77	63.77	0.00	49.56	14.22
W151-BB	75.56	73.70	-1.86	81.63	-7.93	76.04	75.57	-0.48	76.55	-0.98
W151-BOX	76.60	75.35	-1.25	80.59	-5.24	77.10	77.12	0.02	79.18	-2.05
W151-KM	76.43	75.01	-1.42	81.91	-6.90	76.90	76.80	-0.11	73.66	3.13
W151-MM	74.77	72.73	-2.05	80.99	-8.26	75.35	74.71	-0.64	71.13	3.58
W151-TC	76.12	74.41	-1.71	82.49	-8.08	76.59	76.25	-0.34	76.99	-0.75
W151BM1	74.68	72.62	-2.06	81.49	-8.87	75.27	74.63	-0.65	71.84	2.79
W151BM2	74.66	72.60	-2.06	80.28	-7.68	75.26	74.61	-0.65	74.93	-0.32
W151BM3	74.26	72.24	-2.02	80.73	-8.49	74.90	74.27	-0.63	76.01	-1.74
W151BM4	74.11	72.11	-2.01	80.45	-8.34	74.77	74.14	-0.63	76.27	-2.13
W151BM5	73.49	71.58	-1.91	81.14	-9.56	74.20	73.61	-0.59	75.54	-1.93
W151BM6	56.88	54.12	-2.76	69.75	-15.63	63.78	63.78	0.00	50.04	13.73

APPENDICES

APPENDIX A: Drainage Questionnaires Received

AVAILABLE UPON REQUEST

APPENDIX B: Model Output

AVAILABLE UPON REQUEST